eDocument Workflow Data Ingestion Form

DERR - Hazardous Waste Permitting

Note: All HW Permitting Documents fall under "Permit-Intermediate" doc type.

Keyword Summary:

Secondary ID:	OHD048415665	**Stamped date on doc:**	8/1/2023
Facility Name:	Ross Incineration Services, Inc.		
County:	Lorain	**CBI/Trade Secret Info (see protocol below)**	
Program:	RCRA C – Hazardous Waste	**Request contains CBI/TS claim?**	Yes
Permit Type:	Permit-to-Install and Operate	**Was a "public" copy included?**	Yes
Permit Subtype:	Application and Support	**Financial Assurance Info (see protocol below)**	
Permit Classification:	Permit Application	**Request contains FA policy/account # info?**	No
Permit Purpose:	Renewal	**Contingency Plan Info (see protocol below)**	
Confidentiality Status:	Public Record for Publication	**Request contains facility staff pers/home phone #'s?**	No

CBI/Trade Secret Protocol

Applications or requests that contain a claim of Confidential Business Information (CBI) or "trade secret" **are not be ingested** into the Agency's eDoc system. However, any claims must be made at the time of application submission, as required by both OAC rule 3745-49-03 and OAC rule 3745-50-30. Permittees must comply with the complete requirements of the above-cited rules, which include, among other things, submission of a corresponding "public" copy of the application or request which should be ingested into eDocs.

Financial Assurance Info Protocol

If the application contains "original signature" financial assurance documents, these documents **must be forwarded** to CO FA staff (Shawn Sellers or Melissa Cheung) as these types of documents must be secured in CO's fireproof file cabinet. Also, even if the FA information included in a mod application is not "original signature", if it includes information like insurance policy, bank account, letter of credit or bond numbers, these impacted pages should simply be physically removed and not scanned/included as a part of the ingested application. In place of the removed page, a page can be inserted which states: "Pages of this application which contain financial assurance mechanism details specific to policy or account numbers have been removed from this web-available version of the document."

Regarding review of FA components of mods, ERAS has set up a tracking/request system on SharePoint where DO staff can make a review request the HW FA Review Request list which can be accessed from the DMWM's Financial Assurance site.

Contingency Plan Info Protocol

If the application contains facility staff personal/home phone number information, the impacted pages should simply be physically removed and not scanned/included as a part of the ingested application. In place of the removed page, a page can be inserted which states: "Pages of this application which contain facility staff personal/home phone number information have been removed from this web-available version of the document."

Form Completed by: Elijah Lucas 8/8/2023

Comments

Ross Environmental Services, Inc.
A member of The RossWay Group®

THE ROSSWAY GROUP®
Family Owned, Future Focused®

150 Innovation Dr.
Elyria, OH 44035
www.rossincineration.com

Patricia R. Lawson
Vice President, Corp. Compliance
and Risk Mgmt.
plawson@rossenvironmental.com
Direct Phone: (440) 366-2070
Direct Fax: (440) 366-2370

August 1, 2023

Electronic Submittal via LiquidFiles

Ms. Anne M. Vogel, Director
The Ohio Environmental Protection Agency
c/o Division of Environmental Response and Revitalization, Hazardous Waste Permit Section
50 West Town Street, Suite 700
Columbus, Ohio 43216-1049

Re: Ross Incineration Services, Inc.
EPA ID No.: OHD 048 415 665
Ohio EPA ID Number 02-47-0295
Hazardous Waste Facility Installation and Operation RCRA Part B Permit Renewal Application

Dear Ms. Vogel:

Ross Environmental Services, Inc., on behalf of Ross Incineration Services ("RIS"), hereby submits an application for permit renewal pursuant to Condition A.6 - Duty to Reapply and Permit Expiration of its Ohio Hazardous Waste Facility Installation and Operation Resource Conservation and Recovery Act ("RCRA") Part B Permit ("Permit") which states:

> A.6 Duty to Reapply and Permit Expiration
> OAC Rules 3745-50-40(D), 3745-50-58(B), 3745-50-56 and ORC Section 3734.05(H)
>
> (a) If the Permittee wishes to continue an activity allowed by this permit after the expiration date of this permit, the Permittee must submit a completed permit application for a hazardous waste facility installation and operation permit renewal and any necessary accompanying general plans, detailed plans, specifications, and such information as the Director may require, to the Director no later than one hundred eighty (180) days prior to the expiration date of this permit, unless a later submittal date has been authorized by the Director upon a showing of good cause.

Ohio Environmental Protection Agency ("Ohio EPA") is authorized to administer much of the hazardous waste management program in lieu of the Federal program. As an authorized state, Ohio has the responsibility for evaluating RIS' RCRA Part B Permit Renewal Application, except for those portions derived from rules for which Ohio is not yet authorized. Those portions of RIS' Permit Renewal Application for which Ohio has responsibility evaluating and approving (see Table below) are being submitted with an electronic copy provided via LiquidFiles, the Secure File Transfer System used by Ohio EPA.

Part A Application	Section G – Contingency Plan
Section B – Facility Description	Section H – Personnel Training
Section C – Waste Analysis Plan	Section I – Closure Plan
Section D – Process Description	Section J – Corrective Action
Section E – Groundwater Monitoring	Section K – Other Federal Laws
Section F – Procedures to Prevent Hazards	Section L - Certification

RCRA AIR EMISSION STANDARDS

On June 12, 2023, the Ohio EPA became authorized to administer the air emission standards in 40 CFR Part 264, Subpart AA covering process vents, Subpart BB covering leaks from equipment handling hazardous wastes, or Subpart CC which covers tanks and containers handling hazardous wastes. Therefore, Ohio EPA is now responsible for issuing and administering this portion of the RCRA Part B Permit to cover operations at RIS which are subject to the RCRA air emission standards. Information regarding how RIS complies with the above RCRA Air Emission Standards is contained in the Permit Application.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASTE ANALYSIS PLAN COMMENTS

In December, 2014, United States Environmental Protection Agency ("USEPA") sent Waste Analysis Plan ("WAP") comments to Ohio EPA. Written responses to USEPA WAP comments have been included as Attachment A.

REQUEST TO CONDUCT A RISK ASSESSMENT

RIS understands that Ohio EPA wants RIS to complete a risk assessment as part of the Permit renewal. However, RIS needs to understand the scope of the risk assessment. As such, RIS proposes to schedule a meeting with Ohio EPA to discuss expectations for a risk assessment.

Thank you for your consideration in this matter. Should you have any comments or questions regarding this request, please contact Susan Kaiser of my staff at 440.748.5847 or me at 440.366.2070.

Sincerely yours,

Patricia R. Lawson
Vice President, Corporate Compliance and Risk Management
Ross Environmental Services, Inc., on behalf of
Ross Incineration Services, Inc.

Attachment

cc: Bradley Mitchell – Division of Environmental Response and Revitalization, Ohio EPA, Central Office
Nyall McKenna – Division of Environmental Response and Revitalization, Ohio EPA, Northeast District, *cover letter only*
Karen Nesbit – Division of Environmental Response and Revitalization, Ohio EPA, Northeast District

ATTACHMENT A
USEPA WAP Comment Responses

Section C
Ross Incineration Services
Waste Analysis Plan (WAP)
Notice of Deficiency from USEPA
August 2023

USEPA Comment 1: In the Waste Analysis Plan (WAP), when "metals" analysis is required, it is not clear which metals are to be analyzed. The discrepancy evaluation section for *medium rate-of-generation* wastes lists thresholds for MACT metals, implying that they are run for at least those wastes. Other metals are listed on the list of recommended test methods; however, it is not clear when those metals are to be analyzed.

Ross Response: RIS' metals program includes, at a minimum, all MACT metals (Arsenic, Beryllium, Cadmium, Chromium, Lead and Mercury). Specifically, as indicated in Section C – *WAP, Subsection C-2e (1)(b)(ii)(A) Mandatory Analyses* RIS gathers information to confirm MACT metals. Refer to the following WAP excerpt.

> "**Metals Analysis.** During the fingerprint process, RIS gathers information to confirm Maximum Achievable Control Technology ("MACT") metals concentration. Specifically, during RIS' confirmatory sampling process for inbound wastes, RIS samples for Arsenic, Beryllium, Cadmium, Chromium, Lead and Mercury, regardless of the rate at which the waste is generated. The frequency of metals sampling and analysis is based on the ROG listed on the WPS and as follows."

Even though at a minimum RIS tests for MACT metals, RIS also tests for any Universal Treatment Standard ("UTS") metals on an as-needed basis. For example, RIS analyzes its residuals for all UTS metals, total and Toxic Characteristic Leach Procedure ("TCLP") metals.

Additionally, for certain profiles RIS requires generators to either submit analytical data to characterize wastes or RIS can analyze a waste for TCLP and/or other metals. RIS' operational chemists also request metal analysis (e.g. aluminum, magnesium, mercury, phosphorous, titanium and zinc), when such analytical provides pertinent valuable profile information applicable to the treatment conducted at RIS. In summary, RIS tests for those metals that provides information meaningful for a particular profile. No changes have been incorporated into RIS' WAP.

USEPA Comment 2: Also, we did not find within the WAP any reference to exemption from Subpart CC, Organic Air Emissions for Tanks, Containers, and Surface Impoundments for a number of tanks and the filter press unit that require waste analysis to justify exemption. We did not find, within the WAP, any reference to this requirement or the sampling methods frequencies, test methods, or other information gathering requirements meant to address this permit condition.

Ross Response: RIS is not seeking an exemption from Subpart CC to the units to which the standard is applicable.

USEPA Comment 3: The decision-making process for waste acceptability should be recorded in the operating record of the facility. The plan states that they will be recorded in the customer files, and it is not clear if the customer files are to be part of the operating record.

Ross Response: RIS has incorporated all decision-making criteria for waste acceptability in its Operating Record for more than thirty-five (35) years. To demonstrate compliance with the Operating Record requirement, RIS' Application states:

> "RIS will confirm the composition and evaluate the properties of all off-site and on-site generated hazardous waste prior to storage, treatment, shipment off site, or disposal. All such waste analyses, determinations and evaluations will be documented in the facility operating record. Where generator knowledge is used in this determination process, all supporting data relied upon by RIS will be maintained in the operating record."

Even though RIS believes its intent to maintain appropriate information in its Operating Record is already clear, RIS has modified its WAP as indicated below:

> "RIS documents its decision-making process for waste acceptability in the customer files, which are part of RIS' Operating Record."

USEPA Comment 4: Generator Knowledge – Ross should be aware that as a TSD facility, Ross is separately (from the generator) responsible for any generator knowledge Ross accepts in the operation of the facility.

Ross Response: RIS is aware of this and appreciates the confirmation. Within its application, RIS has acknowledged its responsibility as indicated below:

> "In accordance with the regulations governing hazardous waste management, responsibility for waste characterization rests with the generator[2]. Each generator, including RIS for waste generated on-site, must provide information on a Waste Product Survey ("WPS") Form (See Exhibit B to this WAP). Before RIS treats, stores, or disposes of any hazardous wastes, or non-hazardous wastes, RIS shall obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, this analysis shall contain all information which must be known to treat, store, or dispose of the waste. The analysis may include data developed under Chapter 3745-51 and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes. RIS may arrange for the generator of the hazardous waste to supply part, or all of the information required. If the generator does not supply the information, and RIS chooses to accept the hazardous waste, RIS is responsible for obtaining the information required to comply with OAC 3745-54-13."

No changes have been incorporated into RIS' WAP.

USEPA Comment 5: Reactivity – References to reactive cyanide and reactive sulfide concentrations of 250 mg/L and 500 mg/L may be outdated. Similar methodology once published in Draft form in SQ-846 has since been withdrawn. Please revisit this requirement.

Ross Response: According to the characteristic of Reactivity codified in 40 CFR 261.23, "reactive waste is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment." USEPA has not identified a test method applicable to Reactive cyanide or sulfide bearing wastes. Specifically, there are no standardized SW-846 test methods to determine a hazardous waste characteristic of reactivity. At one time, USEPA issued empirical standards for certain levels of cyanide or sulfide bearing wastes but withdrew that guidance in 1998. As such, it is up to "generator's knowledge" to determine if a waste meets any of the stated criteria. The criteria to identify reactive wastes, then, is purely narrative and descriptive.

In the preamble to the Generator Improvement Rule ("GIR"), which took effect on May 30, 2017, EPA includes language to support over-classification of reactive wastes. The preamble indicates that if a generator suspects a waste is reactive but is unsure, it is acceptable to "overclassify" the waste as a D003:

> "Even if the waste may not be hazardous, 'over managing' the waste is acceptable and meets the requirements of 262.11 because the generator has made a determination intended to ensure beyond a doubt, proper and protective management of the waste within the RCRA program."

As a waste handler using its knowledge about reactive waste, RIS chooses to use the outdated 250 and 500 mg/L references.

USEPA Comment 6: Scrubber water sampling frequency – Cd(2) states that scrubber water is sampled at least quarterly, however, the Table in C-d(3) states it will be biannually.

Ross Response: RIS samples its scrubber water quarterly. In Section C – *WAP* C-2d (2) *On-Site Generated Waste*, RIS states that it "will evaluate the waste generated on-site from the incineration process, i.e., incinerator ash, scrubber water and filter cake, at least quarterly. Additionally, in Section C – *WAP* C-3c(c (3) *Analysis of Treatment Residues* RIS states residual waste streams are identified, sampled and analyzed as follows.

Waste Stream	Frequency	Analysis Performed[1]
Incinerator Ash	Quarterly	Universal Treatment Standard List Constituents
Scrubber Water	Annually	Universal Treatment Standard List Constituents
Scrubber Water	Three times per year	Appendix IX List Constituents
Filter Cake	Annually	Universal Treatment Standard List Constituents
Filter Cake	Three times per year	Appendix IX List Constituents

No changes have been incorporated into RIS' WAP.

USEPA Comment 7: Exemptions from Waste Component Verification – The description of "component verification" for water and dirt wastes does not specify if the contaminant(s) being verified is merely one that is identified on the waste product survey or a larger list of potential contaminants.

Ross Response: Prior to shipment of certain off-site generated wastes to the facility, the generator must provide RIS with Waste Component Verification ("WCV"). The purpose of WCV is to verify the

components listed on the WPS. To ensure the safe and effective management of waste at the facility, it is essential that high quality information is collected when the WPS is developed. WCV is intended to provide RIS with additional documentation to assist in verifying generator assertions supplied in the WPS. No changes have been incorporated into RIS' WAP.

USEPA Comment 8: V-list exemptions – The list of materials exempt from sampling and analysis appears to be overly broad. Many hazardous wastes are toxic and facilities such as Ross are expected to be able to handle such materials, including sampling and analytical activities using appropriate safeguards (PPE, fume hoods, non-sparking tools, etc.). The concern is that this exemption could be interpreted so broadly as to eliminate waste analysis requirements for most wastes. The "Medically Oriented" waste exemption from sampling may also be interpreted too broadly. The materials described could easily include many important waste components of sufficient mass so as to impact permit compliance. Incidents with discarded chemical-oxygen demand test tubes (not in Ohio) which could easily fit within the description provided for medically oriented waste serve to illustrate this issue. The tubes may not be labeled but contain significant amounts of hexavalent chromium and mercury. It is not clear that the broadly exempted materials listed here would ensure compliance. The WAP should contain a description of how one would ascertain the mass of regulated waste components conservatively on contaminated piping or other industrial debris. Clearly, the need to incinerate such material implies a potential of contamination. The mass of regulated waste components that may be combined with some of these debris categories should be accounted for. It is not clear that adequate generator knowledge is used to substitute for the lack of analytical data. Lastly, some of these materials are able to be sampled. Other facilities have reduced filters in size to allow for extraction.

While some samples may not require preservation due to their matrix or specified analysis, there is no blanket exemption from preservation because of a 72-hour "typical" time for processing.

Ross Response: RIS handles many toxic hazardous wastes safely completing sampling and analytical activities on toxic wastes using appropriate safeguards (PPE, fume hoods, non-sparking tools, etc.). As such, RIS safely manages large volumes of poison inhalation hazard wastes, phosgene wastes, chloroformate wastes, alkali metal wastes, etc. Rather, "V-list exemptions apply to small number of waste profiles that either pose a danger to outside labs should samples be sent off-site for analysis or for which sampling does not offer additional valuable information regarding the characteristics or hazards of the waste."

The exemption has not eliminated waste analysis requirements for most wastes. Rather, V-waste exemptions enable RIS to focus its resources on wastes for which sample data provides meaningful information. RIS suggests that sampling filters provides no meaningful data. Specifically, reducing filters in size to allow for extraction offers no valuable data. Rather than the BTU of the filter, RIS is interested in the contaminant on the filter and, specifically, the waste's generator is the best source for relevant knowledge. USEPA points to instances with discarded chemical-oxygen demand test tubes in which a lack of labeling could potentially impact permit compliance. RIS grants that the tube itself may not be labeled, however, the generator which used the tubes has detailed knowledge of the tubes and the contamination related to the tube's use. In this case, generator knowledge is also the best source of information.

The WAP already describes measurement of the mass of regulated waste components conservatively on contaminated piping or other industrial debris. RIS' WPS and its data gathering process, which rely on interaction with generators, identifies the mass of contaminants on piping or other industrial debris. Generators may choose to wipe test piping, or perform other remediation processes (high pressure washing, inactivating contaminants with an applicable solvent) to minimize contaminants or piping and other industrial debris.

RIS doesn't agree with USEPA's conclusion that "the need to incinerate such material implies a potential of contamination." Rather, generators may be taking a conservative approach to disposal by destruction. Additionally, certain generators have a zero-landfill strategy. RIS strongly believes that its partnership with its generators, in combination with its procedures and processes, already account for the concentration of regulated waste components combined with received debris.

USEPA states "It is not clear that adequate generator knowledge is used to substitute for the lack of analytical data." Yet, in many instances throughout its WAP, RIS consistently refers to "generator knowledge" as a substitute for analytical data. No changes have been incorporated into RIS' WAP.

USEPA Comment 9: Discrepancy Range – It is not clear that the discrepancy range provided may be adequate. A large mass wastestream at 10ppm mercury that runs up to 109 ppm mercury in a particular sample would not flag as discrepant although this could be a significant increase in mercury processed in the incinerator. Also, the mercury threshold in the section describing sample frequency for medium rate of generation wastes seems high at 75 ppm total mercury. It would help to see the derivation of these thresholds (derived from MACT, etc.).

Ross Response: . When RIS samples waste, the actual sample results are used to calculate RIS feed rates and MACT metal compliance. As such, the example identified by USEPA could not happen. Specifically, if a "large mass wastestream" profiled at 10 ppm mercury were tested at 109 ppm, the profile would not be flagged discrepant. However, the entire mass would be incinerated at 109 ppm and RIS would be compliant with MACT. At no time would there "be a significant increase in mercury processed in the incinerator."

Additionally, if a generator indicates zero ppm chromium in a waste, rather than assigning 0 ppm to the profile RIS conservatively assigns a default value of 25 ppm for chromium to the profile. Consequently, RIS conservatively calculates MACT metal compliance using default values for profiles with no concentration of certain metals.

Derivation of the thresholds were determined with the concurrence of RIS' Ohio EPA Permit writer prior to its original Permit issuance and was based on decades of metals data. The metals data clearly identified customer profiles could be grouped into high, medium, and low rate of generation ("ROG"). Ohio EPA and RIS agreed that it was prudent to match the metals testing frequency to the waste receipt frequency and to test profiles with higher metal concentrations more frequently. RIS' programmatic focus is to confirm generator knowledge used to profile the waste. In other words, RIS spends time and resources on wastes that have a greater potential to impact metals compliance. As such, the metals testing program, which was created by RIS' original Permit Writer, requires RIS to frequently sample waste streams received in large quantities. Thus, RIS samples profiles with a low ROG at a relatively low

frequency. However, RIS samples low ROG profiles with higher concentrations of metals (over the threshold) at a commensurately higher frequency. No changes have been incorporated into RIS' WAP.

USEPA Comment 10: LDR Incinerator Residuals Sampling – It is not clear that the sampling protocol may be robust enough to document compliance. The plan indicated that one composite sample if several grabs of treated waste is prepared and analyzed to document compliance. In the event of an exceedance, one additional composite sample is collected to "confirm" the exceedance. In consideration of the LDR standard that any one true grab sample must pass the LDR treatment standard, it would seem that compositing may not be appropriate, and that more than one sample location may be necessary to document compliance with LDR for large residual loads. We do not know if Ross has data on spatial variability within individual large loads of incinerator-derived residuals that would justify the limited number of samples collected.

Since the LDR is set at the 99th percentile of BDAT performance, EPA notes that typically any one grab sample should pass the LDR for enforcement purposes. This is not stating that anyone (or a few) grab samples or composites may be comparable to the LDR standard for the purpose of documenting compliance in a permit. In fact, in the 1988 Methodology for Developing BDAT document, it states that "as a practical matter, facilities will have to be designed to meet an average level of performance that is more stringent than the standard in order to ensure continuous compliance with the standard."

Ross Response: RIS residuals are shipped off-site to permitted TSD facilities for further treatment. RIS' ash, filter cake and scrubber water are sent off site with an LDR Notification rather than certification. As such, it is the destination facility whose sampling protocol needs to be robust enough to document compliance with the referenced standard. Rather, RIS documents the effectiveness of its process rather than if a residual meets LDR.

TSD facilities that receive RIS residuals require RIS to analyze its residuals for the entire UTS list of constituents on an annual basis. RIS exceeds the destination facility requirements by analyzing its ash quarterly for the entire UTS list of constituents. Filter cake and scrubber water are analyzed annually for the entire UTS list of constituents and for the Appendix IX list of constituents in the remaining quarters. No changes have been incorporated into RIS' WAP.

Ross Incineration Services, Inc.
Part A Application
August, 2023

PUBLIC INFORMATION VERSION

Ross Incineration Services, Inc.
A member of The Ross Way Group

Part A Application
Revision Log/Inventory of Pages

Page	Previous Revision #	Previous Revision Date	Current Rev. #	Current Rev. Date	New to this Revision	Deleted this Revision	Updated this Revision	Notes
Part A Application								
A-i	--	--	0	August 2023	☒	☐	☐	
A-1	--	--	0	August 2023	☒	☐	☐	
A-2	--	--	0	August 2023	☒	☐	☐	
A-3	--	--	0	August 2023	☒	☐	☐	
A-4	--	--	0	August 2023	☒	☐	☐	
A-5	--	--	0	August 2023	☒	☐	☐	
A-6	--	--	0	August 2023	☒	☐	☐	
A-7	--	--	0	August 2023	☒	☐	☐	
A-8	--	--	0	August 2023	☒	☐	☐	
A-9	--	--	0	August 2023	☒	☐	☐	
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A-28	--	--	0	August 2023	☒	☐	☐	
A-29	--	--	0	August 2023	☒	☐	☐	

MAIL THE COMPLETED FORM TO: Ohio EPA, DERR P.O. Box 1049 Columbus, OH 43216-1049	Ohio Environmental Protection Agency **RCRA SUBTITLE C SITE IDENTIFICATION FORM**	**For Ohio EPA Use Only**

1. Reason for Submittal	**Reason for Submittal:** ☐ Obtaining or updating an EPA ID number for regulated activity ☐ As a component of the Hazardous Waste Report for the year _____ ☐ Notifying that regulated activity is no longer occurring at this site ☒ As a component of a First or Revised RCRA Hazardous Waste Part A Permit Application			
2. Site EPA ID Number	***OHD048415665***			
3. Site Name	***Ross Incineration Services, Inc. ("RIS")***			
4. Site Location Information	Street Address: ***36790 Giles Road***			
	City, Town, or Village: ***Grafton***			County: ***Lorain***
	State: ***OH***	Country: ***USA***		Zip: ***44044***
5. Site Land Type	☒ Private ☐ County ☐ District ☐ Federal ☐Indian ☐ Municipal ☐ State ☐ Other			
6. North American Industry Classification System (NAICS)	A. (Primary) ***562211***	B.		
	C.	D.		
7. Site Contact Person:	First Name: ***Neil***	MI: ***E***	Last Name: ***Gorman***	
	Title: ***Vice President, Ross Incineration Services, Inc.***			
	Street or P.O. Box: ***36790 Giles Road***			
	City, Town, or Village: ***Grafton***			
	State: ***OH***	Country: ***USA***	Zip Code: ***44044***	
	E-mail: ***ngorman@rossincineration.com***			
	Phone & Ext.: ***440.748.5816***		Fax: ***440.366.3816***	
8. Legal Owner and Operator of the Site Additional Owners and/or Operators should be listed in the Comment Section or on another copy of this form page.	Name of Site's Legal Owner: ***Ross Consolidated Corp.***		Date Became Owner (mm/dd/yyyy): ***01/01/1981***	
	Owner Type: ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other			
	Street or P.O. Box: ***36790 Giles Road***		City: ***Grafton***	
	State: ***OH***	Country: ***USA***	Zip Code: ***44044***	
	E-mail: ***jlarson@rossincineration.com***		Phone: ***440.366.3802***	
	Name of Site's Operator: ***Ross Incineration Services, Inc.***		Date Became Operator (mm/dd/yyyy): ***01/01/1981***	
	Operator Type: ☒ Private ☐ County ☐ District ☐ Federal ☐ Indian ☐ Municipal ☐ State ☐ Other			
	Street or P.O. Box: ***36790 Giles Road***		City: ***Grafton***	
	State: ***OH***	Country: ***USA***	Zip Code: ***44044***	
	Email: ***ngorman@rossincineration.com***		Phone: ***440.748.5816***	

9. Type of Regulated Waste Activity (If "Yes" Mark "X" in the appropriate boxes.)

A. Hazardous Waste Activities:

1. Generator of Hazardous Waste
(choose only one of the following three categories or leave blank if not a Generator)

☒ a. **Large Quantity Generator (LQG):**
Greater than 1,000 kg/mo (2,200 lbs.) of non-acute hazardous waste; or

☐ b. **Small Quantity Generator (SQG):**
100 to 1,000 kg/mo (220-2,200 lbs.) of non-acute hazardous waste; or

☐ c. **Very Small Quantity Generator (VSQG):**
Less than 100 kg/mo of non-acute hazardous waste

If applicable, indicate other generator activities

☐ d. Temporary Generator (generate from a one-time event and not from on-going processes). If "Yes", provide an explanation in the Comments.

☐ e. Episodic Generator (a VSQG or SQG generating hazardous waste from a planned or unplanned episodic event, lasting no more than 60 days, that moves you to a higher generator category). If yes, you must fill out the Episodic Generator Addendum

2. Biennial Hazardous Waste Report Generator Status (choose only one if the reason for submittal is the Biennial Hazardous Waste Report)

☒ a. **Large Quantity Generator (LQG):**
Greater than 1,000 kg (2,200 lbs.) of non-acute hazardous waste was generated at the site in any one month; or

☐ b. **Small Quantity Generator (SQG):**
In one or more months, the site generated greater than 100 kg (220 lbs.) but in no month, did it generate more than 1,000 kg (2,200 lbs.) of non-acute hazardous waste; or

☐ c. **Very Small Quantity Generator (VSQG):**
The site generated no more than 100 kg (220 lbs.) of non-acute hazardous waste in any one month; or

☐ d. **Non-Generator:**
The site did not generate any hazardous waste during the calendar year.

3. Transporter of Hazardous Waste
☐ a. Transporter
☐ b. Transfer Facility (at your site)

☒ **4. Treater, Storer or Disposer of Hazardous Waste (at your site)**
Note: A hazardous waste permit is required for this activity.

5. Recycler of Hazardous Waste (at your site)
Note: A hazardous waste permit may be required for this activity.
☐ a. Recycler who stores prior to recycling
☐ b. Recycler who does not store prior to recycling
☐ c. 72-hour Recycler

6. Exempt Boiler and/or Industrial Furnace
☐ a. Small Quantity On-site Burner Exemption
☐ b. Smelting, Melting and Refining Furnace Exemption

☐ **7. Underground Injection Control**

☒ **8. Receives Hazardous Waste from Off-site**

☒ **9. United States Importer of Hazardous Waste**

10. Recognized Trader
☐ a. Importer
☐ b. Exporter

11. Spent Lead Acid Battery
☐ a. Importer
☐ b. Exporter

☒ **12. Electronic Manifest Broker**

☐ **13. LQG Consolidation of VSQG Hazardous Waste** (an LQG notifying of consolidating VSQG hazardous waste under control of the same person pursuant to OAC 3745-52-17). If yes, you must fill out the LQG Consolidation of VSQG Hazardous Waste Addendum

14. Notification of LQG Site Closure for a Central Accumulation Area (CAA) (optional) or Entire Facility (required)
a. ☐ Central Accumulation Area (CAA) or ☐ Entire Facility
b. Expected Closure Date: _____ (mm/dd/yyyy)
c. Requesting New Closure Date: _____ mm/dd/yyyy)
d. Date Closed: _____ (mm/dd/yyyy)
☐ 1. In compliance with the closure performance standards of OAC rule 3745-52-17(A)(8)(c)
☐ 2. Not in compliance with the closure performance standards of OAC rule 3745-52-17(A)(8)(c)

10. Waste codes for Federally Regulated Hazardous Wastes. Please list the codes for the federally regulated hazardous waste handled at your site. List them in the order they are presented in the regulations (e.g., D001, D003, F007, U112). Use an additional page if more space is needed.

D001	*D002*	*D003*	*D004*	*D005*	*D006*	*D007*
D008	*D009*	*D010*	*D011*	*D012*	*D013*	*D014*
D015	*D016*	*D017*	*D018*	*D019*	*D020*	*D021*
D022	*D023*	*D024*	*D025*	*D026*	*D027*	*D028*

11. Universal Waste Activities

1. Handler of Universal Waste (choose only one of the following or leave blank if not a Handler of Universal Waste)

☐ a. Small Quantity Handler of Universal Waste (SQHUW): Accumulates less than 5,000 kg

☒ b. Large Quantity Handler of Universal Waste (LQHUW): Accumulates 5,000 kg or more

	Managed
Batteries	☒
Pesticides	☒
Mercury Containing Equipment	☒
Lamps	☒
Aerosol Cans	☒
Antifreeze	☒
Paint/ Paint Related	☒

☒ 2. **Destination Facility for Universal Waste** (Note: A hazardous waste permit is required for this activity.)

12. Used Oil Activities

1. Used Oil Transporter

☐ a. Transporter ☐ b. Transfer Facility (at your site)

2. Used Oil Processor and/or Re-refiner

☒ a. Processor ☐ b. Re-refiner

☒ **3. Off-Specification Used Oil Burner**

4. Used Oil Fuel Marketer

☐ a. Marketer Who Directs Shipments of Off-Specification Used Oil to Off-Specification Used Oil Burner ☐ b. Marketer Who First Claims the Used Oil Meets the Specifications

13. Pharmaceutical Activities- Notification for opting into or withdrawing from the management of hazardous waste pharmaceuticals pursuant to OAC rules 3745-266-500 through 3745-266-510

1. Opting into or currently operating under OAC rules 3745-266-500 through 3745-266-510 for the management of hazardous wastes pharmaceuticals. Mark only one:

☐ a. Healthcare Facility

☐ b. Reverse Distributor

☐ **2. Withdrawing from OAC rules 3745-266-500 through 3745-266-510 for the management of hazardous waste pharmaceuticals**

14. Eligible Academic Entities with Laboratories – Notification for opting into or withdrawing from managing laboratory hazardous wastes pursuant to OAC rules 3745-52-200 through 3745-52-216

1. Opting into or currently operating under OAC rules 3745-52-200 through 3745-52-216 for the management of hazardous wastes in laboratories. Mark all that apply:

☐ a. College or University

☐ b. Teaching hospital that is owned by or has a formal written affiliation agreement with a college or university

☐ c. Non-profit Institute that is owned by or has a formal written affiliation agreement with a college or university

☐ **2. Withdrawing from OAC rules 3745-52-200 through 3745-52-216 for the management of hazardous waste in laboratories**

15. Comments

Approved waste codes have been listed on an additional page.

16. Certification. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or person who manage the system, or those persons directly responsible for gathering the information, the information is submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature of Legal Owner of the Site, an authorized representative	Name (type or print)	
James N. Larson	*James N. Larson*	
Email	**Official Title**	**Date (mm/dd/yyyy)**
jlarson@rossincineration.com	*President & CEO, RCC*	*07/27/2023*
Signature of Site Operator, an authorized representative	**Name (type or print)**	
Neil E. Gorman	*Neil E. Gorman*	
Email	**Official Title**	**Date (mm/dd/yyyy)**
ngorman@rossincineration.com	*Vice President, RIS*	*07/28/2023*

PERMITTED WASTE CODES

Ross Incineration Services, Inc.

Rely on Ross. We do it right!

"D" Waste Codes

D001	D012	D023	D034
D002	D013	D024	D035
D003	D014	D025	D036
D004	D015	D026	D037
D005	D016	D027	D038
D006	D017	D028	D039
D007	D018	D029	D040
D008	D019	D030	D041
D009++	D020	D031	D042
D010	D021	D032	D043
D011	D022	D033	

"F" Waste Codes

F001	F011
F002	F012
F003	F019
F004	F024
F005	F025
F006	F032
F007	F034
F008	F035
F009	F037
F010	F038
	F039+

"K" Waste Codes

K001	K025	K050	K102	K141
K002	K026	K051	K103	K142
K003	K027	K052	K104	K143
K004	K028	K060	K105	K144
K005	K029	K061	K106	K145
K006	K030	K062	K107	K147
K007	K031	K069	K108	K148
K008	K032	K071	K109	K149
K009	K033	K073	K110	K150
K010	K034	K083	K111	K151
K011	K035	K084	K112	K156
K013	K036	K085	K113	K157
K014	K037	K086	K114	K158
K015	K038	K087	K115	K159
K016	K039	K088	K116	K161
K017	K040	K093	K117	K169
K018	K041	K094	K118	K170
K019	K042	K095	K123	K171
K020	K043	K096	K124	K172
K021	K044	K097	K125	K174+
K022	K045	K098	K126	K175+
K023	K046	K099	K131	K176+
K024	K047	K100	K132	K177+
	K048	K101	K136	K178
	K049			K181

"P" Waste Codes

P001	P020	P041	P063	P082	P105	P127
P002	P021	P042	P064	P084	P106	P128
P003	P022	P043	P065	P085	P108	P185
P004	P023	P044	P066	P087	P109	P188
P005	P024	P045	P067	P088	P110	P189
P006	P026	P046	P068	P089	P111	P190
P007	P027	P047	P069	P092+	P112	P191
P008	P028	P048	P070	P093	P113	P192
P009	P029	P049	P071	P094	P114	P194
P010	P030	P050	P072	P096	P115	P196
P011	P031	P051	P073	P097	P116	P197
P012	P033	P054	P074	P098	P118	P198
P013	P034	P056	P075	P099	P119	P199
P014	P036	P057	P076	P101	P120	P201
P015	P037	P058	P077	P102	P121	P202+
P016	P038	P059	P078	P103	P122	P203
P017	P039	P060	P081	P104	P123	P204
P018	P040	P062				P205

"U" Waste Codes

U001	U020	U038	U058	U077	U095	U115	U134+	U155	U176	U196	U217	U243	U373
U002	U021	U039	U059	U078	U096	U116	U135	U157	U177	U197	U218	U244	U387
U003	U022	U041	U060	U079	U097	U117	U136	U158	U178	U200	U219	U246	U389
U004	U023	U042	U061	U080	U098	U118	U137	U159	U179	U201	U220	U247	U394
U005	U024	U043	U062	U081	U099	U119	U138	U160	U180	U202	U221	U248	U395
U006	U025	U044	U063	U082	U101	U120	U140	U161	U181	U203	U222	U249	U404
U007	U026	U045	U064	U083	U102	U121	U141	U162	U182	U204	U223	U271	U409
U008	U027	U046	U066	U084	U103	U122	U143	U163	U183	U205	U225	U278	U410
U009	U028	U047	U067	U085	U105	U123	U144	U164	U184	U206	U226	U279	U411
U010	U029	U048	U068	U086	U106	U124	U145	U165	U185	U207	U227	U280	
U011	U030	U049	U069	U087	U107	U125	U146	U166	U186	U208	U228	U328	
U012	U031	U050	U070	U088	U108	U126	U147	U167	U187	U209	U234	U353	
U014	U032	U051	U071	U089	U109	U127	U148	U168	U188	U210	U235	U359	
U015	U033	U052	U072	U090	U110	U128	U149	U169	U189	U211	U236	U364	
U016	U034	U053	U073	U091	U111	U129	U150	U170	U190	U213	U237	U367	
U017	U035	U055	U074	U092	U112	U130	U151+	U171	U191	U214+	U238	U372	
U018	U036	U056	U075	U093	U113	U131	U152	U172	U192	U215+	U239		
U019	U037	U057	U076	U094	U114	U132	U153	U173	U193	U216+	U240		
						U133	U154	U174	U194				

EPA hazardous waste numbers that are acceptable for incineration based on the Ohio Permit and the Federal Permit for Ross Incineration Services, Inc. Ross Incineration reserves the right to suspend receipts of any given code. Please contact the Customer Service Department at 1-800-878-7677 for verification.

+ Contact customer service for availability for these waste codes.

++ Contact customer service for availability if mercury concentration is greater than 260 ppm.

EPA ID Number	O	H	D	0	4	8	4	1	5	6	6	5

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United States Environmental Protection Agency

HAZARDOUS WASTE PERMIT PART A FORM

1. Facility Permit Contact

First Name	**Neil**	MI	**E**	Last Name	**Gorman**
Title	**Vice Pres., Ross Incineration Services, Inc.**				
Email	**ngorman@rossincineration.com**				
Phone	**440.748.5816**	Ext	**N/A**	Fax	**440.366.3816**

2. Facility Permit Contact Mailing Address

Street Address	**36790 Giles Road**	
City, Town, or Village	**Grafton**	
State **OH**	Country **USA**	Zip Code **44044**

3. Facility Existence Date (mm/dd/yyyy)

1/1/1981

4. Other Environmental Permits

A. Permit Type	B. Permit Number													C. Description
R	O	H	D	0	4	8	4	1	5	6	6	5		**Federal RCRA Part B Permit**
E	0	2	4	7	0	5	0	2	7	8				**Ohio EPA Air Permit-to-Install, Incinerator**
N	3	G	R	0	0	3	0	9	*	G	G			**Ohio EPA Stormwater Permit - Industrial**
E	0	2	4	7	0	5	0	2	7	8				**Ohio EPA Clean Air Act Title V Permit**
E	5	2	5	2	3	1	5	2	9	4	7	2	3	**APHIS Permit to Recive Soil**

5. Nature of Business

Ross Incineration Services is a hazardous waste treatment, storage and disposal facility. The primary service that is offered is treatment of hazardous waste by incineration; RIS also incinerates non-hazardous wastes. In addition to incineration services, RIS accumulates hazardous, non-hazardous and universal wastes for transshipment to offsite treatment facilities. RIS typically transships materials in their original container, but may repackage materials to larger or smaller container sizes for transshipment, and in the case of repackaging into larger containers, may bulk or blend materials in permitted treatment tanks.

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6. Process Codes and Design Capacities

Line Number		A. Process Code			B. Process Design Capacity		C. Process Total Number of Units	D. Unit Name
					(1) Amount	(2) Unit of Measure		
0	1	S	0	1	1,064,800	G	10	Container Storage Units
0	2	S	0	2	1,125,040	G	49	Tank Storage Units
0	3	T	0	1	122,000	G	004	Tank Treatment Units
0	4	T	0	3	26,057	J	001	Incinerator
R	E	F	E	R	TO	Page A-9	for	information.

7. Description of Hazardous Wastes (Enter codes for Items 7.A, 7.C and 7.D(1))

Line No.		A. EPA Hazardous Waste No.				B. Estimated Annual Qty of Waste	C. Unit of Measure	D. Processes									
								(1) Process Codes									(2) Process Description (if code is not entered in 7.D1))
0	1	D	0	0	1	84725	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	2	D	0	0	2	11550	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	3	D	0	0	3	2500	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	4	D	0	0	4	200	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	5	D	0	0	5	75	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	6	D	0	0	6	2650	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	7	D	0	0	7	6650	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	8	D	0	0	8	5800	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
0	9	D	0	0	9	900	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
1	0	D	0	1	0	550	T	S	0	1	S	0	2	T	0	1	T03, T04, X99
1	1	D	0	1	1	75	T	S	0	1	S	0	2	T	0	1	T03, T04, X99

8. Map

Attach to this application a topographical map, or other equivalent map, of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all spring, rivers, and other surface water bodies in this map area. See instructions for precise requirements.

9. Facility Drawing

All existing facilities must include a scale drawing of the facility. See instructions for more detail.

10. Photographs

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment, and disposal areas; and sites of future storage, treatment, or disposal areas. See instructions for more detail.

11. Comments

Additional Hazardous Waste Descriptions including EPA Hazardous Waste Numbers, Estimated Annual Quanitity of Waste, Unit of Measure, and Process Codes are listed on a separate sheet.

EPA ID NO: O | H | D | | 0 | 4 | 8 | | 4 | 1 | 5 | | 6 | 6 | 5 | OMB #: 2050-0024 Expires 04/30/2024

Section 8. Process - Codes and Design Capacities

The following information refers to lines 1. through 6 of Section 6 – *Process Codes and Design Capacities* of the Part A application and describes the processes associated with the facility's capacity. The line numbers 1. through 6 are designated on the Active Facility Site Plan, Drawing No. D-90-031.

1. S01 1,064,800 gallons - designates the container storage areas, including the Container Storage Facility (702,350 gallons design capacity), Bulk Storage Area #1 (64,632 gallons design capacity), Bulk Storage Area #2 (80,790 gallons design capacity), Oxidizer Storage Building (7,920 gallons design capacity), two Waste Storage Bays (each with a 121,180 gallon design capacity for a total of 242,360 gallons of design capacity), a third Waste Storage Bay (80,000 gallons design capacity), a Container Storage Area (33,000 gallons design capacity), a Process Dock West Storage Area (42,000 gallon design capacity), and a Guard Rail Storage Area (137,500 gallon design capacity). While the combined design capacity of the above ten areas exceeds the permitted hazardous waste container storage amount, the storage of hazardous waste containers in these locations will be limited to a maximum of 1,064,800 gallons overall.

2. S02 1,125,040 gallons - includes 42 storage tanks in the tank farm (tanks 23A through 64 @ 9,920 gallons each); two (2) scrubber water sludge storage tanks in the filter press building (tanks 67 and 68 @ 3,627 gallons each) ; one (1) storage and treatment tank (tank 70 @ 10,000 gallons); two (2) agitated tanks for storage and treatment (tanks 73 and 74 @ 7,500 gallons each); one (1) surge tank (tank 79 @ 56,400 gallons) and one (1) maintenance storage tank (tank 75 @ 617,000 gallons).

3. T01 122,000 gallons per day - designates the treatment capacity of tanks 70, 73, and 74 [72,000 gallons/day]. Additional handling codes, as part of the facility operating record pursuant to OAC 3745-54-73, includes T40 (filtration) and T50 (blending); and treatment capacity of the surge tank, tank 79 [50,000 gallons/day]. Additional handling codes, as part of the facility operating record pursuant to OAC 3745-54-73, includes T23 (chemical precipitation) and T34 (adsorption).

4. T03 26,057 pounds per hour (105,120 tons/year) – designates the incinerator treatment capacity. Additional handling codes, as part of the facility operating record pursuant to OAC 3745-54-73, includes T06 (Liquid Injection Incinerator) and T07 (Rotary Kiln Incinerator).

5. T04 111,000 gallons per day – designates the treatment capacity of the miscellaneous waste management unit referred to as the filter press unit.

6. X99 400 tons per day – designates the amount of hazardous waste that can be repackaged in the miscellaneous waste management unit referred to as the barge.

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9. Description of Hazardous Wastes (Repeated and continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
	1	D	0	0	1	84725	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	2	D	0	0	2	11550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	3	D	0	0	3	2500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	4	D	0	0	4	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	5	D	0	0	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	6	D	0	0	6	2650	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	7	D	0	0	7	6650	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	8	D	0	0	8	5800	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
	9	D	0	0	9	900	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	0	D	0	1	0	550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	1	D	0	1	1	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	2	D	0	1	2	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	3	D	0	1	3	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	4	D	0	1	4	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	5	D	0	1	5	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	6	D	0	1	6	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	7	D	0	1	7	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	8	D	0	1	8	2000	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	9	D	0	1	9	150	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	0	D	0	2	0	150	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	1	D	0	2	1	375	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	2	D	0	2	2	150	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	3	D	0	2	3	225	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	4	D	0	2	4	225	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	5	D	0	2	5	225	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	6	D	0	2	6	225	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	7	D	0	2	7	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	8	D	0	2	8	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	9	D	0	2	9	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	0	D	0	3	0	1000	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	1	D	0	3	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	2	D	0	3	2	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	3	D	0	3	3	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	4	D	0	3	4	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	5	D	0	3	5	1100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	6	D	0	3	6	1750	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	7	D	0	3	7	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	8	D	0	3	8	800	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	9	D	0	3	9	175	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

EPA ID NO: O | H | D | | 0 | 4 | 8 | | 4 | 1 | 5 | | 6 | 6 | 5 |

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
4	0	D	0	4	0	225	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	1	D	0	4	1	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	2	D	0	4	2	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	3	D	0	4	3	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	4	F	0	0	1	3500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	5	F	0	0	2	3700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	6	F	0	0	3	21500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	7	F	0	0	4	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	8	F	0	0	5	32100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	9	F	0	0	6	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	0	F	0	0	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	1	F	0	0	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	2	F	0	0	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	3	F	0	1	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	4	F	0	1	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	5	F	0	1	2	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	6	F	0	1	9	1750	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	7	F	0	2	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	8	F	0	2	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	9	F	0	2	7	17000	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	0	F	0	3	2	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	1	F	0	3	4	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	2	F	0	3	5	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	3	F	0	3	7	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	4	F	0	3	8	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	5	F	0	3	9	900	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	6	K	0	0	1	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	7	K	0	0	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	8	K	0	0	3	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	9	K	0	0	4	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	0	K	0	0	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	1	K	0	0	6	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	2	K	0	0	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	3	K	0	0	8	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	4	K	0	0	9	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	5	K	0	1	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	6	K	0	1	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	7	K	0	1	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	8	K	0	1	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	9	K	0	1	5	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
8	0	K	0	1	6	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	1	K	0	1	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	2	K	0	1	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	3	K	0	1	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	4	K	0	2	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	5	K	0	2	1	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	6	K	0	2	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	7	K	0	2	3	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	8	K	0	2	4	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	9	K	0	2	5	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	0	K	0	2	6	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	1	K	0	2	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	2	K	0	2	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	3	K	0	2	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	4	K	0	3	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	5	K	0	3	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	6	K	0	3	2	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	7	K	0	3	3	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	8	K	0	3	4	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	9	K	0	3	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	0	K	0	3	6	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	1	K	0	3	7	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	2	K	0	3	8	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	3	K	0	3	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	4	K	0	4	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	5	K	0	4	1	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	6	K	0	4	2	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	7	K	0	4	3	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	8	K	0	4	4	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	9	K	0	4	5	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	0	K	0	4	6	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	1	K	0	4	7	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	2	K	0	4	8	400	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	3	K	0	4	9	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	4	K	0	5	0	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	5	K	0	5	1	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	6	K	0	5	2	750	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	7	K	0	6	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	8	K	0	6	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
1	9	K	0	6	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	0	K	0	6	9	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	1	K	0	7	1	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	2	K	0	7	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	3	K	0	8	3	400	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	4	K	0	8	4	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	5	K	0	8	5	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	6	K	0	8	6	750	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	7	K	0	8	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	8	K	0	8	8	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	9	K	0	9	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	0	K	0	9	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	1	K	0	9	5	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	2	K	0	9	6	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	3	K	0	9	7	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	4	K	0	9	8	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	5	K	0	9	9	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	6	K	1	0	0	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	7	K	1	0	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	8	K	1	0	2	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	9	K	1	0	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	0	K	1	0	4	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	1	K	1	0	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	2	K	1	0	6	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	3	K	1	0	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	4	K	1	0	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	5	K	1	0	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	6	K	1	1	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	7	K	1	1	1	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	8	K	1	1	2	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	9	K	1	1	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	0	K	1	1	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	1	K	1	1	5	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	2	K	1	1	6	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	3	K	1	1	7	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	4	K	1	1	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	5	K	1	2	3	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	6	K	1	2	4	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	7	K	1	2	5	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	8	K	1	2	6	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	9	K	1	3	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	0	K	1	3	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	1	K	1	3	6	1700	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	2	K	1	4	1	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	3	K	1	4	2	550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)										(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
6	4	K	1	4	3	300	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
6	5	K	1	4	4	75	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
6	6	K	1	4	5	50	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
6	7	K	1	4	7	200	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
6	8	K	1	4	8	200	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
6	9	K	1	4	9	400	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	0	K	1	5	0	75	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	1	K	1	5	1	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	2	K	1	5	6	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	3	K	1	5	7	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	4	K	1	5	8	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	5	K	1	5	9	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	6	K	1	6	1	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	7	K	1	6	9	1900	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	8	K	1	7	0	1500	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
7	9	K	1	7	1	1500	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	0	K	1	7	2	3200	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	1	K	1	7	4	1700	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	2	K	1	7	5	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	3	K	1	7	6	1700	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	4	K	1	7	7	1700	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	5	K	1	7	8	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	6	K	1	8	1	1700	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	7	P	0	0	1	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	8	P	0	0	2	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
8	9	P	0	0	3	75	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	0	P	0	0	4	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	1	P	0	0	5	75	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	2	P	0	0	6	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	3	P	0	0	7	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	4	P	0	0	8	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	5	P	0	0	9	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	6	P	0	1	0	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	7	P	0	1	1	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	8	P	0	1	2	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
9	9	P	0	1	3	25	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
0	0	P	0	1	4	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
0	1	P	0	1	5	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
0	2	P	0	1	6	500	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
0	3	P	0	1	7	100	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
0	4	P	0	1	8	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99
0	5	P	0	2	0	10	T	S	0	1	S	0	2	T	0	1		T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)
0	6	P	0	2	1	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
0	7	P	0	2	2	1100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
0	8	P	0	2	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
0	9	P	0	2	4	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	0	P	0	2	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	1	P	0	2	7	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	2	P	0	2	8	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	3	P	0	2	9	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	4	P	0	3	0	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	5	P	0	3	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	6	P	0	3	3	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	7	P	0	3	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	8	P	0	3	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
1	9	P	0	3	7	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	0	P	0	3	8	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	1	P	0	3	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	2	P	0	4	0	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	3	P	0	4	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	4	P	0	4	2	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	5	P	0	4	3	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	6	P	0	4	4	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	7	P	0	4	5	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	8	P	0	4	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
2	9	P	0	4	7	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	0	P	0	4	8	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	1	P	0	4	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	2	P	0	5	0	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	3	P	0	5	1	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	4	P	0	5	4	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	5	P	0	5	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	6	P	0	5	7	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	7	P	0	5	8	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	8	P	0	5	9	200	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
3	9	P	0	6	0	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
4	0	P	0	6	2	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
4	1	P	0	6	3	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
4	2	P	0	6	4	15	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
4	3	P	0	6	5	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
4	4	P	0	6	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
4	5	P	0	6	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	6	P	0	6	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	7	P	0	6	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	8	P	0	7	0	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	9	P	0	7	1	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	0	P	0	7	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	1	P	0	7	3	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	2	P	0	7	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	3	P	0	7	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	4	P	0	7	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	5	P	0	7	7	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	6	P	0	7	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	7	P	0	8	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	8	P	0	8	2	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	9	P	0	8	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	0	P	0	8	5	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	1	P	0	8	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	2	P	0	8	8	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	3	P	0	8	9	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	4	P	0	9	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	5	P	0	9	3	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	6	P	0	9	4	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	7	P	0	9	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	8	P	0	9	7	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	9	P	0	9	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	0	P	0	9	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	1	P	1	0	1	15	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	2	P	1	0	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	3	P	1	0	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	4	P	1	0	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	5	P	1	0	5	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	6	P	1	0	6	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	7	P	1	0	8	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	8	P	1	0	9	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	9	P	1	1	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	0	P	1	1	1	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	1	P	1	1	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	2	P	1	1	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	3	P	1	1	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	4	P	1	1	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
8	5	P	1	1	6	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	6	P	1	1	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	7	P	1	1	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	8	P	1	2	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	9	P	1	2	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	0	P	1	2	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	1	P	1	2	3	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	2	P	1	2	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	3	P	1	2	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	4	P	1	8	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	5	P	1	8	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	6	P	1	8	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	7	P	1	9	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	8	P	1	9	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	9	P	1	9	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	0	P	1	9	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	1	P	1	9	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	2	P	1	9	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	3	P	1	9	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	4	P	1	9	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	5	P	2	0	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	6	P	2	0	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	7	P	2	0	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	8	P	2	0	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	9	P	2	0	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	0	U	0	0	1	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	1	U	0	0	2	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	2	U	0	0	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	3	U	0	0	4	150	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	4	U	0	0	5	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	5	U	0	0	6	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	6	U	0	0	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	7	U	0	0	8	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	8	U	0	0	9	1300	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	9	U	0	1	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	0	U	0	1	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	1	U	0	1	2	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	2	U	0	1	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	3	U	0	1	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
2	4	U	0	1	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	5	U	0	1	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	6	U	0	1	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	7	U	0	1	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	8	U	0	2	0	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	9	U	0	2	1	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	0	U	0	2	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	1	U	0	2	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	2	U	0	2	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	3	U	0	2	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	4	U	0	2	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	5	U	0	2	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	6	U	0	2	8	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	7	U	0	2	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	8	U	0	3	0	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	9	U	0	3	1	550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	0	U	0	3	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	1	U	0	3	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	2	U	0	3	4	550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	3	U	0	3	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	4	U	0	3	6	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	5	U	0	3	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	6	U	0	3	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	7	U	0	3	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	8	U	0	4	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	9	U	0	4	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	0	U	0	4	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	1	U	0	4	4	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	2	U	0	4	5	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	3	U	0	4	6	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	4	U	0	4	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	5	U	0	4	8	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	6	U	0	4	9	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	7	U	0	5	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	8	U	0	5	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	9	U	0	5	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	0	U	0	5	3	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	1	U	0	5	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	2	U	0	5	6	2000	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)
6	3	U	0	5	7	150	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
6	4	U	0	5	8	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
6	5	U	0	5	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
6	6	U	0	6	0	200	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
6	7	U	0	6	1	200	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
6	8	U	0	6	2	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
6	9	U	0	6	3	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	0	U	0	6	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	1	U	0	6	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	2	U	0	6	7	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	3	U	0	6	8	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	4	U	0	6	9	200	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	5	U	0	7	0	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	6	U	0	7	1	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	7	U	0	7	2	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	8	U	0	7	3	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
7	9	U	0	7	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	0	U	0	7	5	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	1	U	0	7	6	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	2	U	0	7	7	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	3	U	0	7	8	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	4	U	0	7	9	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	5	U	0	8	0	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	6	U	0	8	1	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	7	U	0	8	2	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	8	U	0	8	3	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
8	9	U	0	8	4	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	0	U	0	8	5	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	1	U	0	8	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	2	U	0	8	7	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	3	U	0	8	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	4	U	0	8	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	5	U	0	9	0	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	6	U	0	9	1	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	7	U	0	9	2	25	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	8	U	0	9	3	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
9	9	U	0	9	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
0	0	U	0	9	5	100	T	S	0	1	S	0	2	T	0	1	T03 T04 X99
0	1	U	0	9	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04 X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
0	2	U	0	9	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	3	U	0	9	8	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	4	U	0	9	9	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	5	U	1	0	1	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	6	U	1	0	2	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	7	U	1	0	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	8	U	1	0	5	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	9	U	1	0	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	0	U	1	0	7	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	1	U	1	0	8	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	2	U	1	0	9	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	3	U	1	1	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	4	U	1	1	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	5	U	1	1	2	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	6	U	1	1	3	400	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	7	U	1	1	4	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	8	U	1	1	5	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	9	U	1	1	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	0	U	1	1	7	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	1	U	1	1	8	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	2	U	1	1	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	3	U	1	2	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	4	U	1	2	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	5	U	1	2	2	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	6	U	1	2	3	550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	7	U	1	2	4	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	8	U	1	2	5	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	9	U	1	2	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	0	U	1	2	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	1	U	1	2	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	2	U	1	2	9	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	3	U	1	3	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	4	U	1	3	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	5	U	1	3	2	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	6	U	1	3	3	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	7	U	1	3	4	3000	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	8	U	1	3	5	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	9	U	1	3	6	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	0	U	1	3	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	1	U	1	3	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
4	2	U	1	4	0	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	3	U	1	4	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	4	U	1	4	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	5	U	1	4	4	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	6	U	1	4	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	7	U	1	4	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	8	U	1	4	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	9	U	1	4	8	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	0	U	1	4	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	1	U	1	5	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	2	U	1	5	1	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	3	U	1	5	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	4	U	1	5	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	5	U	1	5	4	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	6	U	1	5	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	7	U	1	5	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	8	U	1	5	8	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	9	U	1	5	9	150	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	0	U	1	6	0	1100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	1	U	1	6	1	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	2	U	1	6	2	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	3	U	1	6	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	4	U	1	6	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	5	U	1	6	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	6	U	1	6	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	7	U	1	6	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	8	U	1	6	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
6	9	U	1	6	9	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	0	U	1	7	0	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	1	U	1	7	1	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	2	U	1	7	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	3	U	1	7	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	4	U	1	7	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	5	U	1	7	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	6	U	1	7	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	7	U	1	7	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	8	U	1	7	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
7	9	U	1	8	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	0	U	1	8	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
8	1	U	1	8	2	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	2	U	1	8	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	3	U	1	8	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	4	U	1	8	5	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	5	U	1	8	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	6	U	1	8	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	7	U	1	8	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	8	U	1	8	9	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
8	9	U	1	9	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	0	U	1	9	1	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	1	U	1	9	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	2	U	1	9	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	3	U	1	9	4	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	4	U	1	9	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	5	U	1	9	7	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	6	U	2	0	0	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	7	U	2	0	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	8	U	2	0	2	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
9	9	U	2	0	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	0	U	2	0	4	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	1	U	2	0	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	2	U	2	0	6	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	3	U	2	0	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	4	U	2	0	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	5	U	2	0	9	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	6	U	2	1	0	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	7	U	2	1	1	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	8	U	2	1	3	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
0	9	U	2	1	4	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	0	U	2	1	5	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	1	U	2	1	6	75	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	2	U	2	1	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	3	U	2	1	8	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	4	U	2	1	9	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	5	U	2	2	0	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	6	U	2	2	1	900	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	7	U	2	2	2	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	8	U	2	2	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
1	9	U	2	2	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	0	U	2	2	6	550	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

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9. Description of Hazardous Wastes (Continued. Use the additional Sheets(s) as necessary; number pages sequentially.)

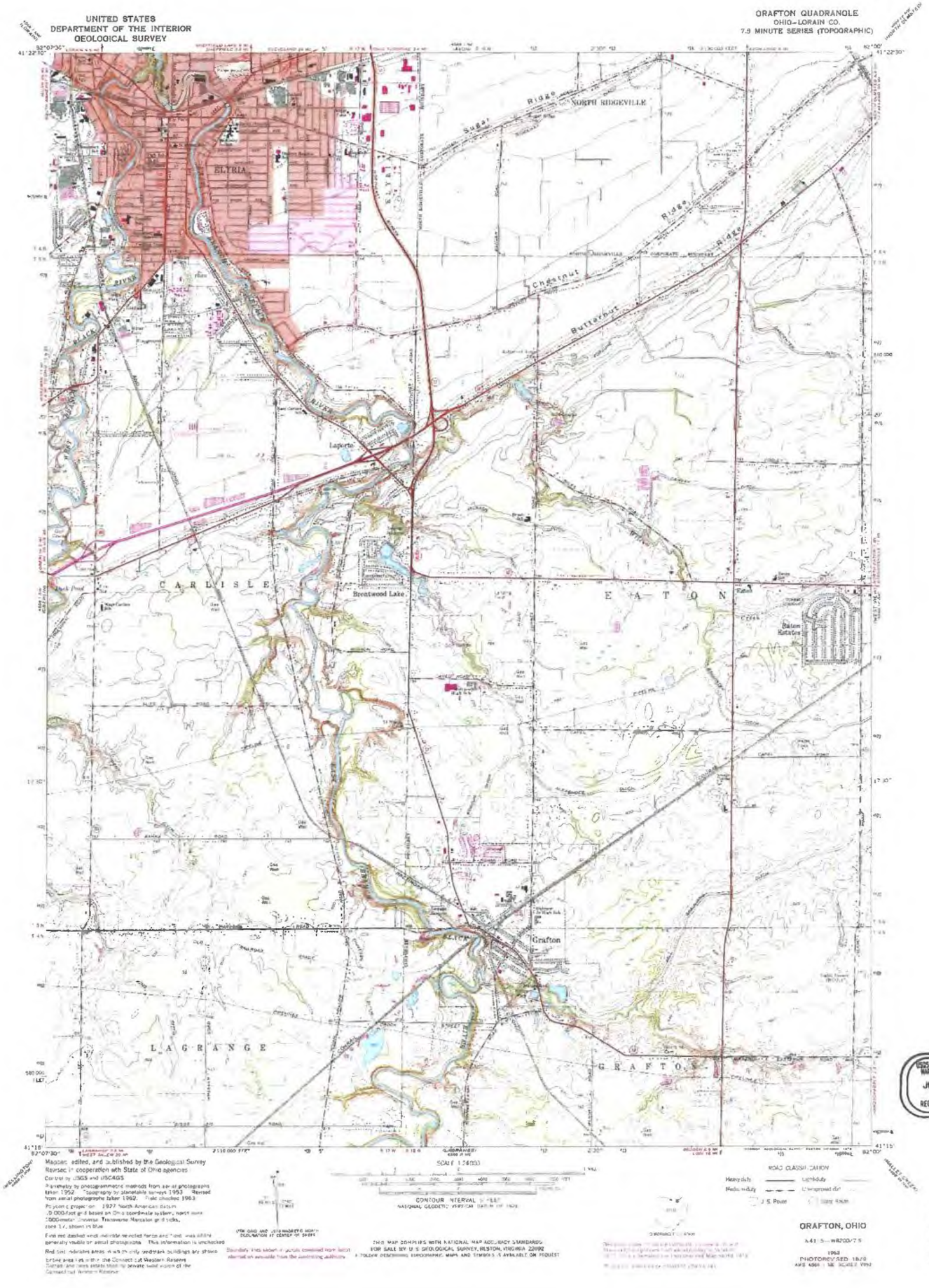
Line Number		A. EPA Hazardous Waste No. (enter code)				B. Estimated Annual Qty Of Waste	C. Unit of Measure (enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If a code is not entered in 9.D.1)		
2	1	U	2	2	7	400	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	2	U	2	2	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	3	U	2	3	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	4	U	2	3	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	5	U	2	3	6	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	6	U	2	3	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	7	U	2	3	8	50	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	8	U	2	3	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
2	9	U	2	4	0	200	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	0	U	2	4	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	1	U	2	4	4	10	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	2	U	2	4	6	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	3	U	2	4	7	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	4	U	2	4	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	5	U	2	4	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	6	U	2	7	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	7	U	2	7	8	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	8	U	2	7	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
3	9	U	2	8	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	0	U	3	2	8	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	1	U	3	5	3	25	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	2	U	3	5	9	500	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	3	U	3	6	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	4	U	3	6	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	5	U	3	7	2	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	6	U	3	7	3	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	7	U	3	8	7	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	8	U	3	8	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
4	9	U	3	9	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	0	U	3	9	5	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	1	U	4	0	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	2	U	4	0	4	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	3	U	4	0	9	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	4	U	4	1	0	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99
5	5	U	4	1	1	100	T	S	0	1	S	0	2	T	0	1	T03	T04	X99

U.S.G.S. Topographic Map

Grafton, OH Quadrangle

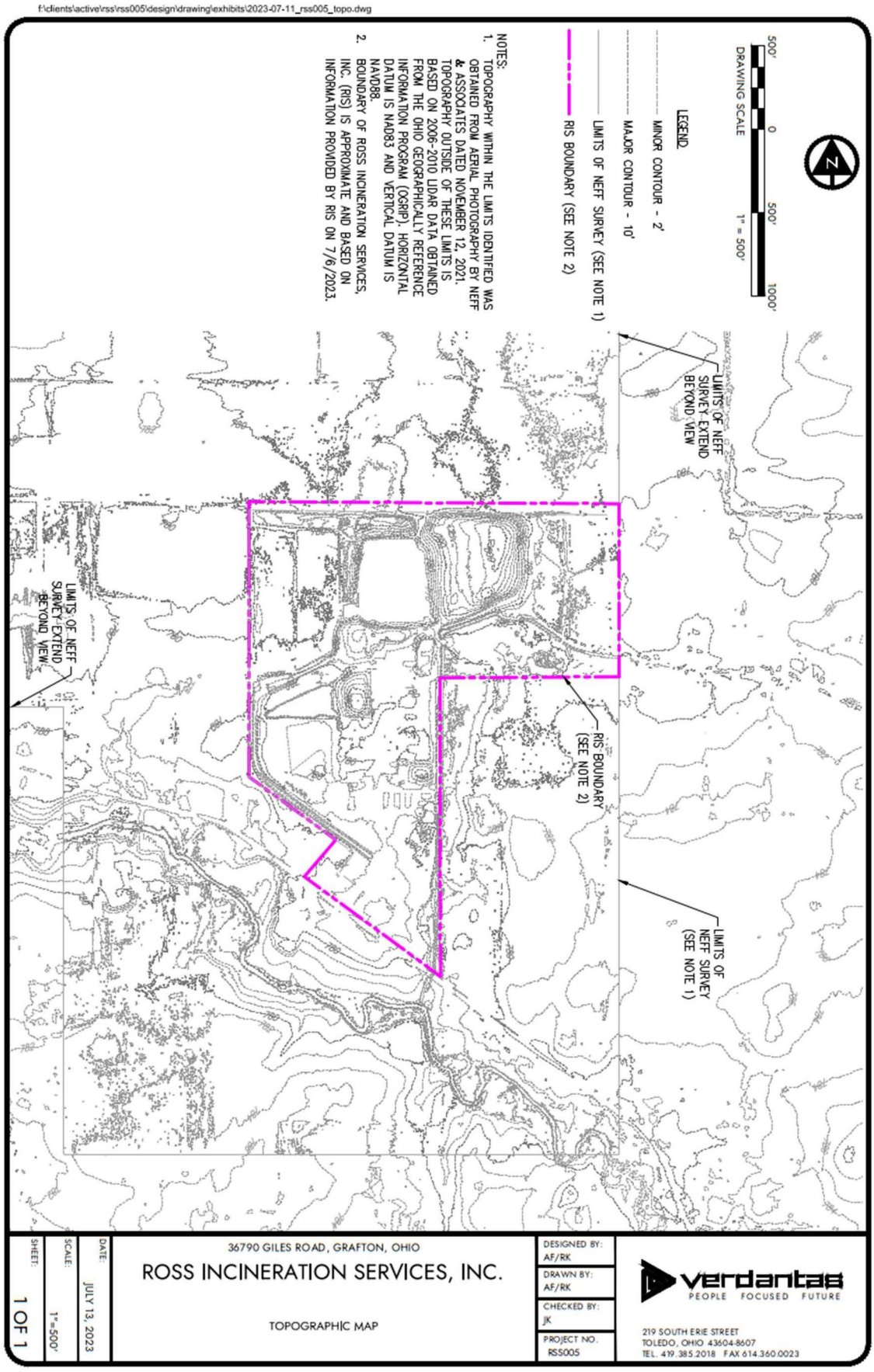
7.5 Minute Series

[1979 (planimetric version) and 2010 (photogrammetric version)]




USGS
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY
US Topo
GRAFTON QUADRANGLE
OHIO
SCALE 1:24 000
GRAFTON, OH

Facility Topographic Map with One Mile Radius


f:\clients\active\rss\rss005\design\drawing\exhibits\2023-07-11_rss005_topo.dwg
DRAWING SCALE
500' 0 500' 1000'
1" = 500'
LEGEND
MINOR CONTOUR - 2'
MAJOR CONTOUR - 10'
LIMITS OF NEFF SURVEY (SEE NOTE 1)
RIS BOUNDARY (SEE NOTE 2)
NOTES:
1. TOPOGRAPHY WITHIN THE LIMITS IDENTIFIED WAS OBTAINED FROM AERIAL PHOTOGRAPHY BY NEFF & ASSOCIATES DATED NOVEMBER 12, 2021. TOPOGRAPHY OUTSIDE OF THESE LIMITS IS BASED ON 2006-2010 LIDAR DATA OBTAINED FROM THE OHIO GEOGRAPHICALLY REFERENCE INFORMATION PROGRAM (OGRIP). HORIZONTAL DATUM IS NAD83 AND VERTICAL DATUM IS NAVD88.
2. BOUNDARY OF ROSS INCINERATION SERVICES, INC. (RIS) IS APPROXIMATE AND BASED ON INFORMATION PROVIDED BY RIS ON 7/6/2023.
LIMITS OF NEFF SURVEY EXTEND BEYOND VIEW
LIMITS OF NEFF SURVEY EXTEND BEYOND VIEW
RIS BOUNDARY (SEE NOTE 2)
LIMITS OF NEFF SURVEY (SEE NOTE 1)
36790 GILES ROAD, GRAFTON, OHIO
ROSS INCINERATION SERVICES, INC.
TOPOGRAPHIC MAP
DESIGNED BY: AF/RK
DRAWN BY: AF/RK
CHECKED BY: JK
PROJECT NO. RSS005
DATE: JULY 13, 2023
SCALE: 1"=500'
SHEET: 1 OF 1
verdantas
PEOPLE FOCUSED FUTURE
219 SOUTH ERIE STREET
TOLEDO, OHIO 43604-8607
TEL. 419.385.2018 FAX 614.360.0023

Addendum to Topographic Map

In June 1995, a thorough well survey was conducted in the Ross Incineration Services, Inc. site vicinity to identify local groundwater users. During the survey, all residences and businesses within a 1-mile radius of the site were contacted. The following information was learned from this study. There are no drinking water wells located within a 0.25 mile radius of the facility. A use study was completed in 2021, which confirmed the accuracy of the 1995 well survey.

PUBLIC INFORMATION VERSION
Confidential information has been removed from this page.

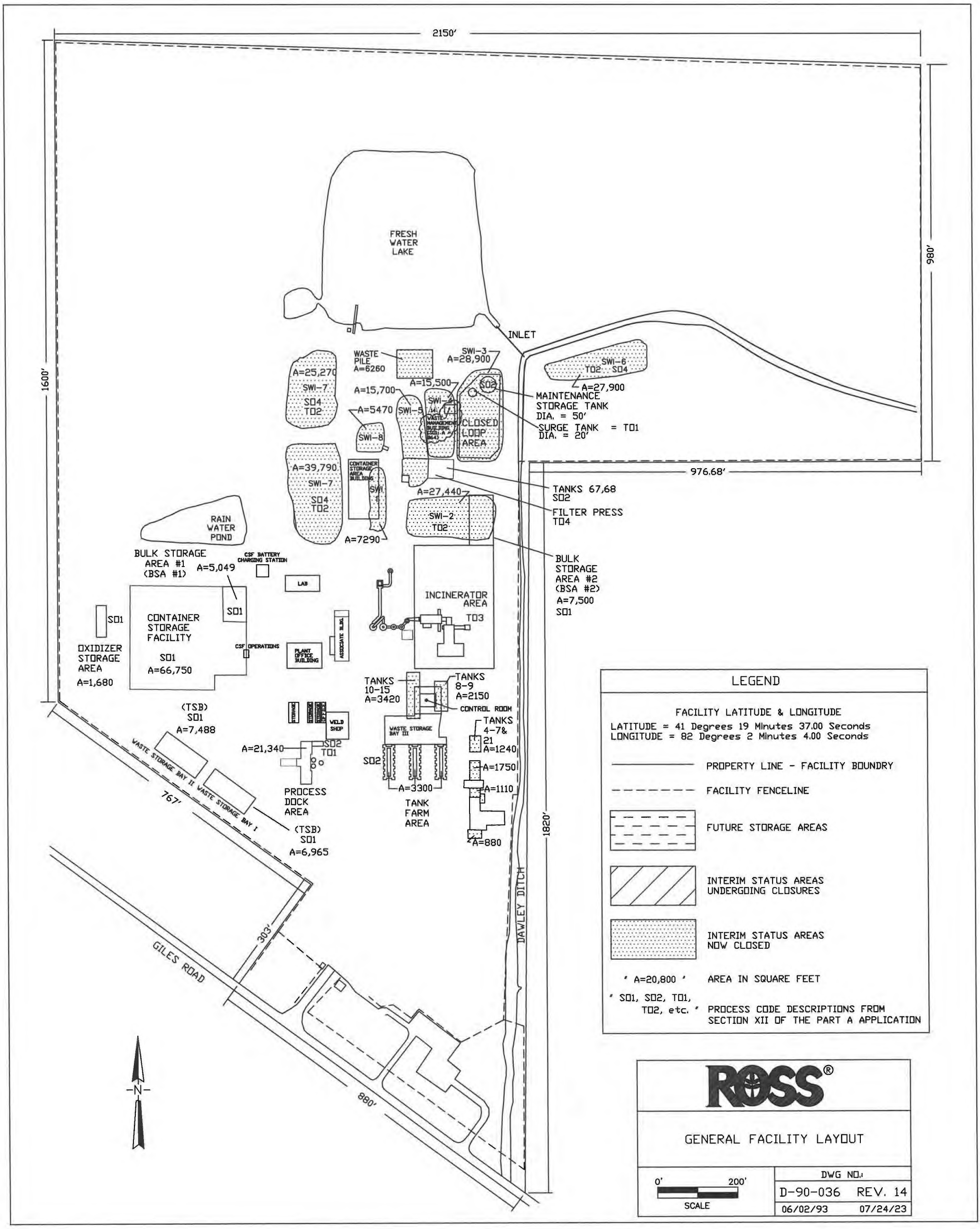
Active Facility Site Plan with location of Past, Present and Future Hazardous Waste Management Areas

Drawing No. D-90-031

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its incineration system and tanks within the closed loop scrubber water system. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

General Facility Layout

Drawing No. D-90-036



LEGEND

FACILITY LATITUDE & LONGITUDE

LATITUDE = 41 Degrees 19 Minutes 37.00 Seconds
LONGITUDE = 82 Degrees 2 Minutes 4.00 Seconds

- PROPERTY LINE - FACILITY BOUNDRY
- FACILITY FENCELINE
- FUTURE STORAGE AREAS
- INTERIM STATUS AREAS UNDERGOING CLOSURES
- INTERIM STATUS AREAS NOW CLOSED
- ' A=20,800 ' AREA IN SQUARE FEET
- ' S01, S02, T01, T02, etc. ' PROCESS CODE DESCRIPTIONS FROM SECTION XII OF THE PART A APPLICATION

ROSS®

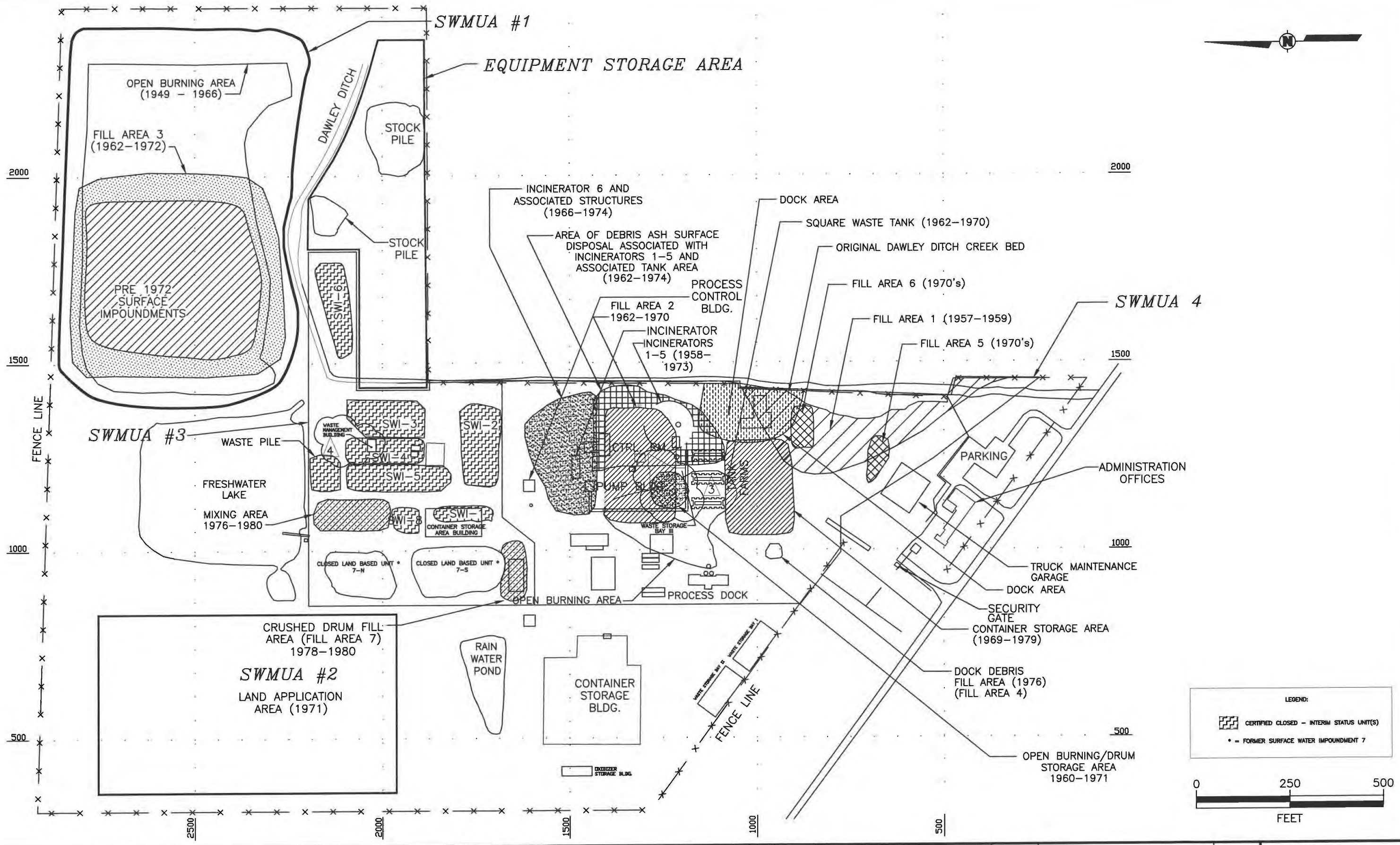
GENERAL FACILITY LAYOUT

0' 200'
SCALE

DWG NO.:
D-90-036 REV. 14
06/02/93 07/24/23

Pre-RCRA Past Waste Management Areas
And
Solid Waste Management Units

Drawing No. D-90-084



PHILIP ENVIRONMENTAL

TITLE: PRE–RCRA PAST WASTE MANAGEMENT AREAS AND SOLID WASTE MANAGEMENT UNITS

D–90–084 REV. 4

NO.	REVISION	BY	APPR.	DATE
4	FACILITY UPDATE	JF		07/23
3	FACILITY UPDATE	JF		12/20
2	FACILITY UPDATE	SK		08/19
1	FACILITY UPDATE	JF		02/18

SCALE	DATE:		DATE:
DWN:	DATE	CHKD:	DATE
DES:	DATE	APPD:	DATE

PROJECT NO: ROSS

FIGURE X

REV: 4

Addendum to

Drawing No. D-90-084

Past Solid Waste Management Practice Areas Addendum

This addendum provides a summary of the various solid waste management practices utilized at the RIS facility from the facility's year of initial operation, 1949, to the present. This summary is based on more detailed data and information presented in the Facility Background Report contained in Section 2 of the RCRA Facility Investigation (RFI) Work Plan dated November 3, 1993. RIS has separated the facility into four areas of past solid waste management practices consistent with its approved RFI Work Plan. Although past practices are represented graphically on Drawing D-90-084, Rev.3, this addendum is a descriptive summary of each past practice area for known treatment, storage or disposal activities, which has occurred at the RIS facility.

Past Practices Occurring in Solid Waste Management Area #1

1. Open Burning Area. Between 1949 and 1966, wastes were brought to the facility and open burned. This activity occurred throughout most of SWMU #1, which is located in the extreme northeastern corner of the facility.
2. Fill Area 3. Additional land disposal of wastes occurred throughout the center and along the western border of SWMUA #1. The life span of this landfill was 1962-1972.
3. Pre-1972 Surface Impoundments. Several surface impoundments were used in the western half of SWMUA #1. These surface impoundments were initially constructed in late 1968 or early 1969 for the handling and disposal of wastewater treatment sludges, incinerator ash, and household wastes. These impoundments were closed in 1972, using the clay soil excavated during construction of the fresh water lake as a cap for the landfill.

Past Practices Occurring in Solid Waste Management Area #2

1. Land Application Area. This area was used for approximately 2 months in 1971; the material was spread by dispersing a supernatant from a water truck while driving the truck over the area.

Past Practices Occurring in Solid Waste Management Area #3

1. Scrubber Water Impoundments. (SWI) Between 1975 and 1988, the scrubber water from incinerator number 7 air pollution control equipment was treated and stored in a series of eight surface impoundments. All scrubber water impoundments have since been closed. All waste was removed from SWI-1, SWI-2, SWI-3, SWI-4, SWI-5, SWI-6 and SWI-8 and these units were backfilled to grade. SWI-7 was closed in-place and is now an engineered land based unit. All units have been certified closed in accordance with Ohio EPA approvals.
2. Mixing Area. A mixing area, located in the northwest corner of SWMUA #3, was in use beginning in 1976. In 1985 this area was excavated, the waste material was found to be non-hazardous and was sent off-site for disposal.
3. Crushed Drum Fill Area (Fill Area 7). Between 1978 and 1980, miscellaneous steel scrap was placed next to the southern portion of the SWI 7 containment dike into Fill Area 7 and then covered with additional soil. Fill material was removed from this area in 2012. Scrap steel and soil was removed from this area and sent off-site for further treatment and disposal. This area was then backfilled, re-graded and vegetated with grass.
4. Waste Pile. In 1976, the Waste Pile was used for the storage of mixed wastewater treatment sludge and automobile shreddings. Upon construction of the scrubber water impoundments and the generation of scrubber water sludge, the Waste Pile was used for mixing the scrubber sludge from SWI-8 with incinerator ash and lime. The waste pile consisted of a 6,375-square-foot uncurbed concrete pad which was sloped to an earthen sump for containment of run-off liquid. Liquids collected in the sump were gravity drained through a pipeline to SWI-3. The waste pile has been since closed. Ohio EPA certified closure on February 3, 2001.

Past Practices Occurring in Solid Waste Management Area #4

1. Fill Area 2. A small landfill area, Fill Area 2, was located in the area just south of incinerator number 7, the main chamber of the current incinerator. The use of this fill area occurred between 1962 and 1970. A portion of this area was excavated in 2012 to allow for placement of a tanker direct feed pad. Excavated soil and landfill materials were sent off-site for further treatment and disposal. The excavated area was then covered with a concrete pad.
2. Incinerator No. 6, warehouse building, and tank. The sixth incinerator began operations in the north portion of SWMUA #4 in 1966. The sixth incinerator was located in the area just east of the main chamber of the current incinerator. Located immediately south of the sixth incinerator was a warehouse building, which was initially used to store solid wastes prior to incineration. These solid wastes consisted mainly of paper, cardboard and wood from industrial sources. Solid waste storage continued in this building until 1971 when the building was then used as a weld shop and maintenance area. Beginning in 1973, an aboveground tank was located adjacent to the warehouse building. This tank was used to store wastewater intended for incineration.
3. Incinerators Nos. 1-5. Of the seven incinerators used at the facility since 1958, the first five incinerators were operated between 1958-1973. The first four incinerators were liquid burner units. All five units were built in the same general area, just northeast of the existing tank farm.
4. Area of debris and ash surface disposal associated with incinerators 1-5 and associated tank area. Ash and debris are found in this area. In 1974, two groups of storage tanks were installed north of the dock area. These tanks were all located above ground and remained in use until 1987.
5. Fill Area 1. Between 1957 and 1959, in the area located just southwest of the old Dock Area, a part of Dawley Ditch was rerouted at the southern end of its flow through the facility. The resulting abandoned channel was utilized for the disposal of solid waste materials. During a plant expansion, some of the waste material from this area was excavated and tested prior to off-site disposal. Both solid waste and leachate was tested and found to be non-hazardous.
6. Fill Areas 5 and 6. During the 1970s, additional land disposal practices occurred in Fill areas 5 and 6 located in the southern section of SWMUA #4. These two fill areas were utilized for disposal of auto shreddings exclusively.
7. Square Waste Tank. This tank, an in-ground clay-bottomed tank located northwest of the old dock area, was used to store waste sludge between 1962 and 1970. In 1970, its contents were removed and the area was later back-filled with soil and abandoned.
8. Dock Area. The first dock area for loading and unloading containerized waste was constructed about 1960. This area was located in the southeast section of SWMUA #4. By 1973, an earthen dike for containment for surface run-off surrounded the dock area. A fire occurred in 1975, resulting in damage to the dock. Within 3 months the dock had been reconstructed and operations continued until 1987.
9. Dock Debris Fill Area (Fill Area 4). Building debris from the dock fire in 1975 was buried in Fill Area 4, which was located in the area south of existing Tank Farm I.
10. Container Storage Area. Between 1969 and 1979, a facility container storage area was located just south of existing Tank Farm I. The containers stored here ranged in size from small cans and 55-gallon drums to tank trucks and box trailers.
11. Open Burning Area near Current Process Dock. An open burning area was located west of the area in which the first five incinerators were located. The burning that occurred in this area resulted in clean drums that were then sold as scrap steel.
12. Open Burning/Drum Storage Area. This area is where storage of the empty crushed drums occurred and was located within the open burning area west of the area in which the first five incinerators were located. The burning that occurred in this area resulted in clean drums that were then sold as scrap steel.

Aerial Photograph of Ross Incineration Services, Inc.

Winter 2021

Ross Incineration Services, Inc.
RCRA Part B Application
Section B - Facility Description
August 2023

PUBLIC INFORMATION VERSION

Ross Incineration Services, Inc.

Section B - Facility Description
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Exhibit A - List of Figures

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Section B - Facility Description								
B-i	--	--	0	August 2023	☐	☐	☐	
B-ii	--	--	0	August 2023	☐	☐	☐	
B-iii	--	--	0	August 2023	☐	☐	☐	
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B-3	--	--	0	August 2023	☐	☐	☐	
B-4	--	--	0	August 2023	☐	☐	☐	
B-5	--	--	0	August 2023	☐	☐	☐	
B-6	--	--	0	August 2023	☐	☐	☐	
B-7	--	--	0	August 2023	☐	☐	☐	
Exhibit A to Section B - Figures								
B-1	--	--	0	August 2023	☐	☐	☐	
B-2	--	--	0	August 2023	☐	☐	☐	
B-3	--	--	0	August 2023	☐	☐	☐	
B-4	--	--	0	August 2023	☐	☐	☐	
B-5	--	--	0	August 2023	☐	☐	☐	
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B-8	--	--	0	August 2023	☐	☐	☐	
B-9	--	--	0	August 2023	☐	☐	☐	
B-10	--	--	0	August 2023	☐	☐	☐	
B-11	--	--	0	August 2023	☐	☐	☐	
Appendices to Section B								
Appendix B-1	--	--	0	August 2023	☐	☐	☐	
Appendix B-2	--	--	0	August 2023	☐	☐	☐	

Facility Description

Definitions:

1) Facility: The area within the fence line.

2) Active Facility: The area within the dike where waste management activity occurs.

This section provides a general description of the hazardous waste management facility as required by OAC 3745-50-44 (A)(1). This description is intended to acquaint the permit application reviewer/permit writer with an overview of the facility. More complete details can be found in the appropriate sections of this permit application.

B-1 General Description

Ross Incineration Services, Inc., (RIS) is located approximately 3.5 miles north-northeast of the city limits of Grafton, Ohio. The nearest major road intersection is Ohio State Routes 82 and 83 approximately 1 mile south and east of the facility. Figure B-1 is a general facility location map. The street and mailing address is:

Ross Incineration Services, Inc.
36790 Giles Road
Grafton, Ohio 44044

RIS is a commercial hazardous waste treatment and storage facility. The primary service offered by this facility is treatment by incineration of hazardous waste from off-site generators. Examples of the types of industries served by RIS are the chemical, paints and coatings and automotive industries. Hazardous wastes received from off-site generation are stored in both containers and tanks. Residues from the incinerator and associated emission control equipment are stored in containers and tanks. On-site generated wastes include, but are not limited to, incinerator ash, filter cake from the Closed Loop Scrubber Water system filter press, and spent scrubber water, as well as wastes generated from decontamination procedures and personal protective equipment. A description of RIS' on-site generated waste process and types can be found in Section C-3(a)(6) in Section C - *Waste Analysis Plan*, of this application. Ross Transportation Services, Inc., ("RTS")

leases property in the southeast corner of the RIS facility. The RTS occupied areas include the truck maintenance garage and a waste transfer facility as shown in Figure B-2, "Active Facility Site Plan with Material Flows."

The facility contact for the hazardous waste management activities at RIS is:

Mr. James N. Larson
President, Ross Incineration Services, Inc.
(440) 748-5802

B-1a RCRA Operating Record

RIS maintains a RCRA Operating Record in compliance with OAC 3745-54-73. RIS' Ohio Hazardous Waste Installation and Operation RCRA Part B Permit authorizes RIS to maintain portions of the Operating Record that are more than three (3) years old at an off-site location and to collect, store and/or manage data required by its Permit or the Part B application in hard or electronic copy.

Documentation which makes up the RCRA Operating Record and is greater than three (3) years old, may be stored at the following off-site location:

Access Corp.
One Andrews Circle
Brecksville, OH 44141

RCRA operating records which are greater than three (3) years old are stored at the above off-site location, if they are required by regulation to be stored until completion of facility closure. These operating records include, but are not limited to, those documents associated with RIS' Waste Analysis Plan, tank certifications and assessments, incinerator monitoring data, Contingency Plan implementation records, Closure Plan records, cost estimates for facility Closure, and personnel training records.

B-2 Topographic Map

B-2a General Requirements OAC 3745-50-44(A)(19)

Figure B-3 is the topographic map. Figure B-3 contains 2-ft. contours with 1 in. equals 200-ft. scale and includes a 1000 ft. perimeter around the facility boundaries. A United States Geological Survey Map is included with Figure B-4. The facility legal boundary is

depicted on Figure D-90-036 found in the Part A application incorporated into the State Part B Permit application.

Land Uses: The surrounding land use is rural and agricultural. Land use planning and regulation is performed by the Eaton Township of Lorain County, Ohio. The zoning map for the area is enclosed as Figure B-5.

Hazardous and Solid Waste Management Units: The hazardous waste management units of the facility that are the subject of this application consist of storage in containers, treatment and storage in tanks, an incineration treatment unit and treatment with a filter press. Figure B-2 shows the locations of the hazardous waste management units. Figure B-6 shows the location of the solid waste management units.

Wind Rose: Figure B-7 shows an annual wind rose of meteorological data collected from 2014 through 2022 at the Lorain-Elyria weather station.

Access Control: The facility is surrounded by a 6-ft. chain-link fence topped with 3 strands of barbed wire with access through the limited access gates. Visitors must sign in and out of the facility. Access control is discussed in further detail in Section F – *Procedures to Prevent Hazards*.

Injection and Withdrawal Wells: The site has no injection or withdrawal wells.

Buildings, Treatment, Storage, Disposal Areas and Other Structures: Figure B-2 shows the existing and proposed buildings and structures on the active facility as well as the hazardous waste management units of this application.

Recreation Areas: There are no recreation areas within 1/4 mile of the facility.

Runoff Control Systems: Three sides of the active facility are surrounded by a clay dike with an elevation of 780 feet Mean Sea Level ("MSL"). The dike averages 3 feet in height and 6 to 10 feet in width. The dike has a 3 to 1 slope and is covered with vegetation. The fourth side (south) is at an elevation of >782 MSL, exceeding that of the dike. Runoff from specific process areas and hazardous waste management units within the facility is controlled via engineered structures and these controls are discussed in detail in the following sections:

Container Storage Facility	D-1a(3)(d)
Oxidizer Storage Building	D-1a(4)(d)
Waste Storage Bays	D-1a(5)(d)
Bulk Storage Area #1	D-1a(6)(d)
Container Storage Area ("CSA")	D-1a(7)(d)
Waste Management Building ("WMB")	D-1a(8)(d)
Bulk Storage Area #2	D-1b(1)(d)
Tank Systems	D-2d(1)(b)
Filter Press	D-8(b)(1)

Access and Internal Roads: Figure B-2 shows the roads within the active facility area. Speed limit and caution signs are posted along the road to control traffic movement. Designated hazardous waste transport routes are also shown on Figure B-2.

Storm, Sanitary, and Process Sewers: Figure B-8 shows storm, sanitary and process sewers, for the active facility. There are no drainage systems which discharge storm water or process water off the active facility during normal operations. All rainwater that falls onto the active hazardous waste management units is routinely pumped to the maintenance storage tank or the incineration system. Rainwater in the active facility (except within hazardous waste management units) is routinely drained or pumped to the maintenance storage tank, rainwater pond or the incineration system. RIS may discharge surface rainwater runoff into Dawley Ditch from active portions of the facility, on a case by case basis within the guidelines of its Stormwater Pollution Prevention Plan. A centralized sanitary sewage treatment system serves employee buildings, the truck maintenance garage, and administrative offices. The treated effluent from the sanitary sewer system located near the employee buildings is discharged to the rainwater pond and is used as make up water to the incineration process.

Loading & Unloading Areas: These areas are marked on Figure B-2.

Surface Waters: There is a rainwater pond and a fresh water lake on the facility property (Figure B-2). Dawley Ditch runs along the eastern boundary of the facility and Willow Creek runs somewhat parallel to Giles Road approximately 500 ft. south of the facility boundary (Figure B-6). Figure B-10 shows the flow of surface waters in the vicinity of and from each operation unit.

For purposes of possible future expansion, RIS evaluated the northwestern portion of the facility, also known as the Land Application Area. The Land Application Area was a pre-RCRA waste management area where waste waters were land applied for a brief period of time in the early 1970s. The Land Application Area was evaluated as part of the RIS RCRA Facility Investigation ("RFI"), and the following summarizes the findings for the Land Application Area: the native soil is primarily silty clay; no fill or discolored soil was identified; although very low levels of constituents were detected, no constituents were detected above human health risk screening levels. A Surface Water Delineation study indicated that there are two (2) small palustrine emergent ("PEM") isolated wetlands in the area.

Flood Control/Drainage Barrier: A small area of the RIS facility associated with Dawley Ditch is located within a 100-year flood zone. Figure B-9 entitled "Location of 100-year Flood Zone" illustrates this area of the facility. RIS has constructed and maintains a clay dike that has adequate run-off control to prevent washout in the event of a 100-year flood.

B-2b Additional requirements for land disposal facilities OAC 3745-50-44(B)(3) and (4), 3745-54-95, 3745-54-97

The requirements of this section are not applicable. This facility is not a land disposal facility.

B-3 Location Information

B-3a Seismic Standard OAC 3735-54-18(A)

As this is an existing, rather than a new facility, the seismic standard does not apply. Additionally, Lorain County, Ohio is not listed in Appendix VI of 40 CFR 264, therefore, demonstration of compliance with the seismic standard is not required.

B-3b Floodplain Standard OAC 3745-50-44(A)(11)(c) and (d), 3745-54-18(B)

A small area of the RIS facility associated with Dawley Ditch is located within a 100-year Flood Zone. As a result of an engineering analysis and evaluation of hydrologic forces in the area surrounding Dawley Ditch, RIS has concluded that the Dawley Ditch channel and its flood plain can contain the estimated 100-year flood event. Refer to Appendix B-1 for the engineering analysis conducted on Dawley Ditch. In addition, RIS has constructed a

dike of compacted clay to protect the property from future floods and any changes that may occur due to infilling of land within the drainage basin. The top of the dike is at an elevation of 780 feet MSL or more. The dike is approximately 6 to 10 feet wide and has side slopes with a 3:1 ratio. An independent engineering consultant performed a field inspection of the dike and determined that it is covered with dense vegetation and well maintained. RIS' consultant also reviewed geotechnical test results of site soil samples that are considered representative of the native soil properties found on-site. Because the dike was constructed with native soil, its properties are reasonably represented by the geotechnical test results provided in Attachment 1 to Appendix B-1. The geotechnical test results indicated that the soil used to construct the dike is a silty clay loam having a very low permeability. Based on the review of the geotechnical test results and the field inspection of the dike, the characteristics of the dike are sufficient to resist washout of the dike during a 100-year 24-hour storm event and hazardous waste management activities will not be affected. The dike was constructed prior to the Flood Insurance Administration determination of the flood plain and it will not restrict floodway flows.

Isolated portions of the RIS facility, such as the area east of the North Landfill and a very small portion of the equipment storage area may receive some 100-year storm event back water. An independent engineering consultant evaluated the North Landfill cap (cap) and its ability to resist washout in a 100-year 24-hour storm event (i.e., 100-year flood). Geotechnical test results of soil samples collected in 1995 from the landfill cap were evaluated and a field inspection of the cap was completed. Geotechnical test results are provided in Attachment 1 to Appendix B-1. According to these test results, the soil used to construct the cap has a very low permeability. The field inspection of the cap found it covered with vegetation and well maintained. Based on the review of the geotechnical test results and the field inspection of the cap the characteristics of the cap are sufficient resist washout of the cap during a 100-year 24-hour storm event. In addition, RIS maintains the cap by assuring vegetation is thick and erosion is kept in check.

B-4 Traffic Information OAC 3745-50-44(A)(10)

Access to RIS Incineration Services, Inc. is from Giles Road. Figure B-2 shows the on-site roads and vehicular traffic patterns. All roads in the facility are two-way. Within the plant, traffic vehicles consist mostly of box trailers, tankers, pickups, forklifts, and other

equipment. The approximate distribution of traffic typically entering and exiting the facility in a given day is as follows:

Passenger Vehicles - an average of 10 - 20 per day
Hazardous Waste Transport Vehicles - an average of 25 - 35 per day
Service Vehicles - an average of 20 - 30 per day
Heavy Equipment (on-site) - an average of 40 – 50 per day

Service Vehicles include contractor and vendor vehicles (such as the catering service, various sales vehicles). Heavy equipment includes all equipment vehicles used in the plant and only in the plant such as forklifts, front-end loaders and box trailers. These vehicles are not licensed to leave the facility. Hazardous waste transport vehicles include semi-tractors with trailers and tankers.

Traffic is controlled by two-way direction roads with excess width to allow sufficient clearance for two vehicles. Speed limit and caution signs are also posted near the weigh scales. All roads are constructed of concrete, or with compacted aggregate which is resurfaced whenever the need arises. The roads are capable of bearing loads up to 50,000 pounds per axle. Tractor trailers with five axles are currently the largest vehicles used to deliver wastes to the facility. The maximum gross tractor trailer weight is less than 80,000 pounds per the federal and state load limit laws. In order to comply with DOT Regulations, no axle can carry more than 34,000 pounds. Over the road vehicles will reach the facility by turning off of Ohio State Route 82 at Lorain County Giles Road. The distance along Giles Road to the facility is approximately one mile. Both roads are classified as primary roads and as such are available for general usage. Future plans include placing an access control gate on Ohio State Route 83 just south of Cooley Road.

Exhibit A - Figures

Figure B-1. General Facility Location Map

Figure B-1 General Facility Location Map

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this Figure

Figure B-2. Active Facility Site Plan with Material Flows

Drawing D-90-003

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its incineration system and tanks within the closed loop scrubber water system. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

Figure B-2 - Facility Site Plan with RTS Transfer Line

[Bramhall Figure, 2015]

DATE	NO.	DESCRIPTION

DRAWN BY IAD

CHECKED BY AMK

BRAMHALL
ENGINEERING AND SURVEYING CO., INC.
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:
ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044
(440) 748-5800

SURVEY EXHIBIT
ROSS TRANSPORTATION SERVICES, INC.
LEASE AGREEMENT
TOWNSHIP OF EATON, COUNTY OF LORAIN, STATE OF OHIO

SHEET 1 OF 1

JOB NO. 11-3097P

Figure B-3 - Facility Topographic Map

500′ 0 500′ 1000′

DRAWING SCALE 1″ = 500′

LEGEND

- MINOR CONTOUR - 2'
- MAJOR CONTOUR - 10'
- LIMITS OF NEFF SURVEY (SEE NOTE 1)
- RIS BOUNDARY (SEE NOTE 2)

NOTES:

1. TOPOGRAPHY WITHIN THE LIMITS IDENTIFIED WAS OBTAINED FROM AERIAL PHOTOGRAPHY BY NEFF & ASSOCIATES DATED NOVEMBER 12, 2021. TOPOGRAPHY OUTSIDE OF THESE LIMITS IS BASED ON 2006-2010 LIDAR DATA OBTAINED FROM THE OHIO GEOGRAPHICALLY REFERENCE INFORMATION PROGRAM (OGRIP). HORIZONTAL DATUM IS NAD83 AND VERTICAL DATUM IS NAVD88.
2. BOUNDARY OF ROSS INCINERATION SERVICES, INC. (RIS) IS APPROXIMATE AND BASED ON INFORMATION PROVIDED BY RIS ON 7/6/2023.

LIMITS OF NEFF SURVEY EXTEND BEYOND VIEW

LIMITS OF NEFF SURVEY (SEE NOTE 1)

RIS BOUNDARY (SEE NOTE 2)

LIMITS OF NEFF SURVEY EXTEND BEYOND VIEW

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PEOPLE FOCUSED FUTURE
219 SOUTH ERIE STREET
TOLEDO, OHIO 43604-8607
TEL. 419.385.2018 FAX 614.360.0023

DESIGNED BY:	DRAWN BY:	CHECKED BY:	PROJECT NO.
AF/RK	AF/RK	JK	RSS005

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD, GRAFTON, OHIO

TOPOGRAPHIC MAP

DATE: JULY 13, 2023

SCALE: 1″=500′

SHEET: 1 OF 1

f:\clients\active\rss\rss005\design\drawing\exhibits\2023-07-11_rss005_topo.dwg

Figure B-4. Topographic Map of Surrounding Area

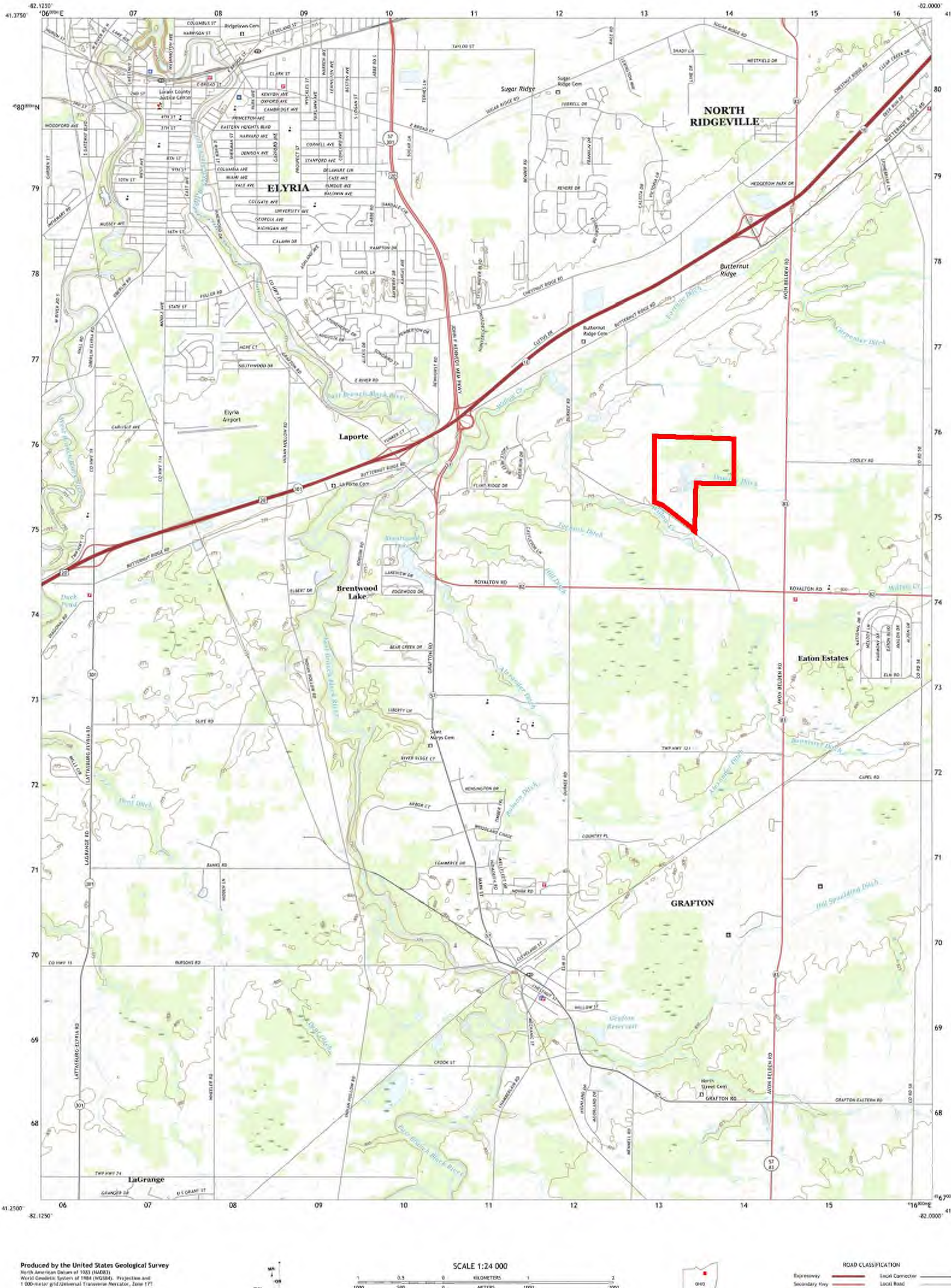
U.S. Geological Survey Topographic Map

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

GRAFTON QUADRANGLE
OHIO - LORAIN COUNTY
7.5-MINUTE SERIES



Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid:Universal Transverse Mercator, Zone 17T
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery .... NAIP, July 2015 - October 2015
Roads .... U.S. Census Bureau, 2016
Names .... GNIS, 1979 - 2019
Hydrography .... National Hydrography Dataset, 1899 - 2019
Contours .... National Elevation Dataset, 2010
Boundaries .... Multiple sources; see metadata file 2017 - 2018
Wetlands .... FWS National Wetlands Inventory 2006 - 2007

MN
GN
8°6′
144 MILS
0°42′
12 MILS

UTM GRID AND 2019 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

U.S. National Grid
100,000 - m Square ID
MF
Grid Zone Designation
17T

SCALE 1:24 000

KILOMETERS 1 0.5 0 1 2
METERS 1000 500 0 1000 2000
MILES 1 0.5 0 1
FEET 1000 0 1000 2000 3000 4000 5000 6000 7000 8000 9000 10000

CONTOUR INTERVAL 5 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

This map was produced to conform with the National Geospatial Program US Topo Product Standard, 2011.
A metadata file associated with this product is draft version 0.6.18

OHIO
QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

ADJOINING QUADRANGLES

1 Lorain
2 Avon
3 North Olmsted
4 Oberlin
5 West View
6 Wellington
7 Lagrange
8 Mallet Creek

ROAD CLASSIFICATION
Expressway
Secondary Hwy
Ramp
Local Connector
Local Road
4WD
Interstate Route
US Route
State Route

GRAFTON, OH
2019

CONFIDENTIAL

Figure B-5 - Zoning Map of Surrounding Area

Official Eaton Township Zoning Map

Eaton Township, Lorain County, Ohio

Zoning Map Adopted: April 21, 2009 - Resolution 09-139

Chair, Eaton Township Trustees

Township Trustee

Township Trustee

Township Fiscal Officer

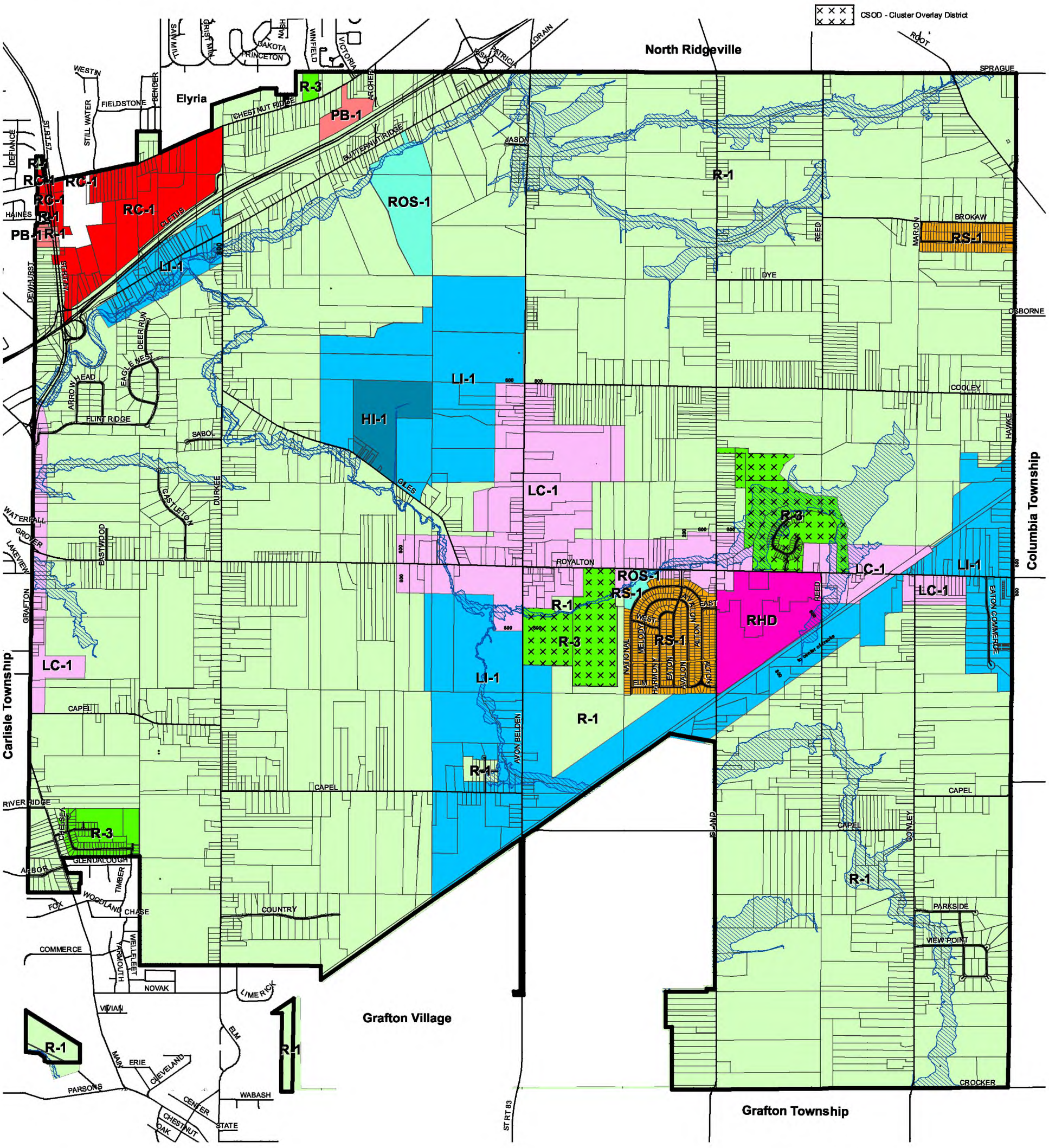
Included Amendments:

6/15/1998	1/19/2006
6/29/2000	1/27/2006
10/17/2002	4/13/2007
11/11/2003	6/14/2007
12/25/2003	11/1/2007
5/6/2004	1/10/2008
8/6/2004	4/9/2014
8/15/2004	8/18/2015
9/26/2005	11/17/2015
10/18/2005	10/18/2016
	6/20/2017

This zoning map is a graphic representation of the zoning resolutions of Eaton Township. It is not intended to replace the zoning resolutions for legal purposes of determining zoning designation.

Zoning Designations

- FEMA Floodzone - Adopted 8/2008
- ROS-1 - Recreational Open Space District
- R-1 - Residential District
- R-2 - Residential District
- R-3 - Residential District
- RHD - Residential High Density District
- RS-1 - Special Residential District
- LC-1 - Local Commercial District
- PB-1 - Professional Business District
- RC-1 - Regional Commercial District
- LI-1 - Light Industrial District
- HI-1 - Heavy Industrial District
- CSOD - Cluster Overlay District



Map Produced by:

Lorain County Auditor
J. Craig Snodgrass, CPA, CGFM
GIS Department
4/24/2018 - mr

Map Scale

0 0.5 1 2 Miles

0 2,400 4,800 9,600 Feet

1 " = 2,861 '

1:34,336

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

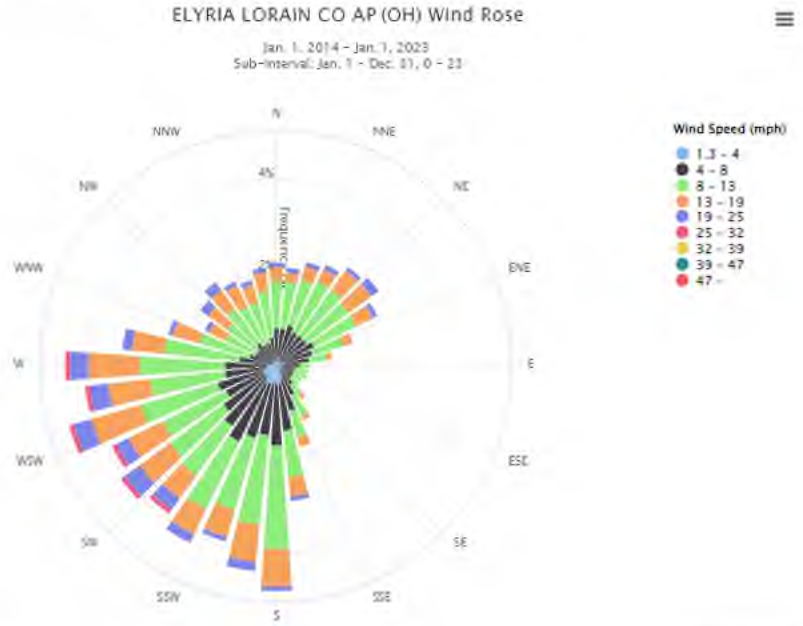
Figure B-6 Facility Site Plan with Solid Waste Management Units

Drawing D-90-908

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its incineration system. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

Figure B-7 - Wind Rose
2014 - 2023

Figure B-6 Ross Incineration Services, Inc. - Wind Rose



ELYRIA LORAIN CO AP (OH) - Wind Frequency Table (percentage)

Latitude : 41.3461
Longitude : -82.1794
Elevation : 794 ft.
Element : Mean Wind Speed

Start Date : Jan. 1, 2014
End Date : Jan. 1, 2023
# of Days : 3288 of 3288
obs : poss : 76543 of 78912

Sub Interval Windows
Start End
Date Jan. 1 Dec. 31
Hour 0 23

(Greater than or equal to initial interval value and Less than ending interval value.)

Range (mph)	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350	Total
1.3 - 4	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	6.7
4 - 8	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.6	0.6	0.4	0.3	0.3	0.3	0.3	0.4	0.5	0.7	1.0	1.3	1.1	1.2	1.4	1.3	1.1	0.9	1.0	0.9	0.9	0.7	0.5	0.4	0.4	0.5	0.4	0.4	0.5	25.5
8 - 13	1.0	1.0	1.0	1.2	1.2	1.1	1.0	0.7	0.4	0.2	0.3	0.3	0.2	0.2	0.3	0.5	0.6	1.0	2.2	1.9	1.6	1.6	1.3	1.4	1.5	1.7	1.6	1.8	1.6	1.1	0.7	0.8	0.9	0.9	0.9	1.0	36.6
13 - 19	0.3	0.2	0.3	0.3	0.5	0.6	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.8	0.8	0.6	0.6	0.6	0.8	0.8	1.1	0.9	1.1	0.7	0.6	0.4	0.5	0.5	0.5	0.4	0.4	16.0
19 - 25	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.1	0.2	0.3	0.4	0.3	0.4	0.4	0.4	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	4.7
25 - 32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
32 - 39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
39 - 47	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
47 -	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total(%)	2.2	2.1	2.3	2.4	2.6	2.8	2.4	1.7	1.2	0.8	0.7	0.7	0.6	0.7	0.8	1.2	1.8	2.8	4.8	4.3	4.0	4.1	3.9	4.1	4.0	4.6	4.1	4.4	3.4	2.5	1.8	2.0	2.3	2.1	1.9	2.2	90.5
Calm (<1.3)																																					9.4
Ave Speed	9.5	9.2	9.2	9.8	10.3	10.7	9.8	8.6	7.3	6.9	7.0	6.9	6.6	7.2	7.7	7.8	8.1	8.7	9.5	9.9	9.4	9.3	10.1	11.0	11.2	11.9	11.9	11.8	11.3	11.1	11.0	11.6	11.5	11.2	10.5	10.3	9.2

Midwestern Regional Climate Center cli-MATE: MRCC Application Tools Environment Generated at: 3/20/2023 3:48:06 PM CDT

PUBLIC INFORMATION VERSION
Confidential Information has been Removed

Figure B-8 - General Site Plan

Underground Sewers - Storm, Sanitary and Process
Active Portion of the Facility

Drawing P-90-041

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its incineration system. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

Figure B-9 - Location of a 100-year Flood Zone

Drawing D-90-055

National Flood Hazard Layer FIRMette

FEMA

82°2'23"W 41°19'43"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

82°1'45"W 41°19'16"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **6/13/2023 at 11:15 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

82°1'57"W 41°19'43"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

82°1'20"W 41°19'15"N

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

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National Flood Hazard Layer FIRMette

FEMA

82°2'22"W 41°19'25"N

82°1'45"W 41°18'58"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

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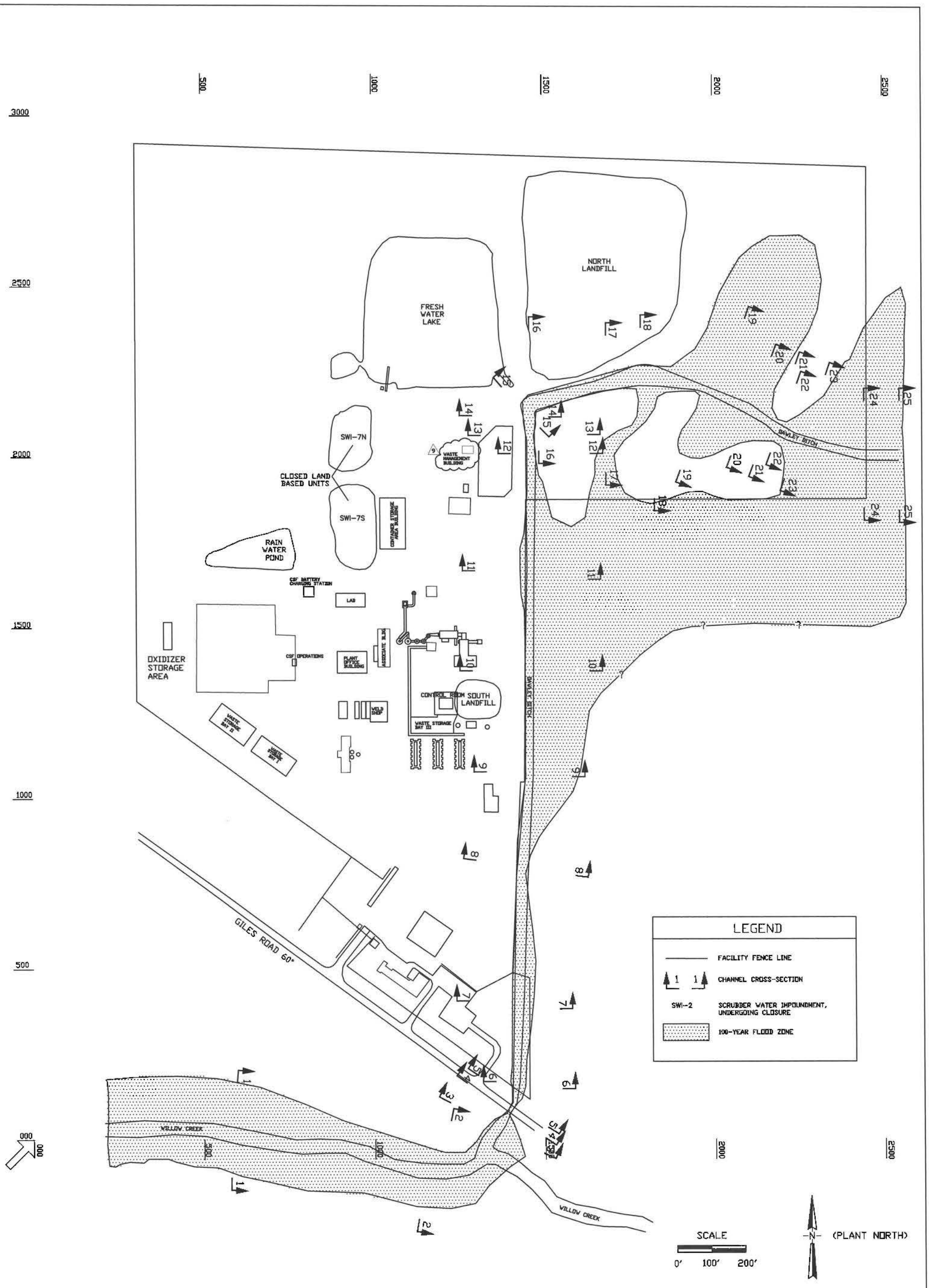
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	SECTION B, NOD'S	REW	8/95		
2	FACILITY UPDATE	JF	2/98		
3	FACILITY UPDATE	JF	3/01		
4	FACILITY UPDATE	JF	03/06		
5	FACILITY UPDATE				
6	FACILITY UPDATE	JF	02/18		
7	FACILITY UPDATE	SK	06/19		
8	FACILITY UPDATE	JF	12/20		
9	FACILITY UPDATE	JF	07/23		
10					

ROSS®

DRAWN REW DATE 8/95
CHECKED DATE
APPROVED DATE

SUPERSEDES
SUPERSEDED BY
SCALE N.T.S.

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.
PROJECT NAME
DWG. TITLE LOCATION OF 100-YEAR FLOOD ZONE
CORPORATION
DWG. NO. D-90-055 REV. 9

Figure B-10 - Surface Water Flow Diagram

Drawing D-90-042

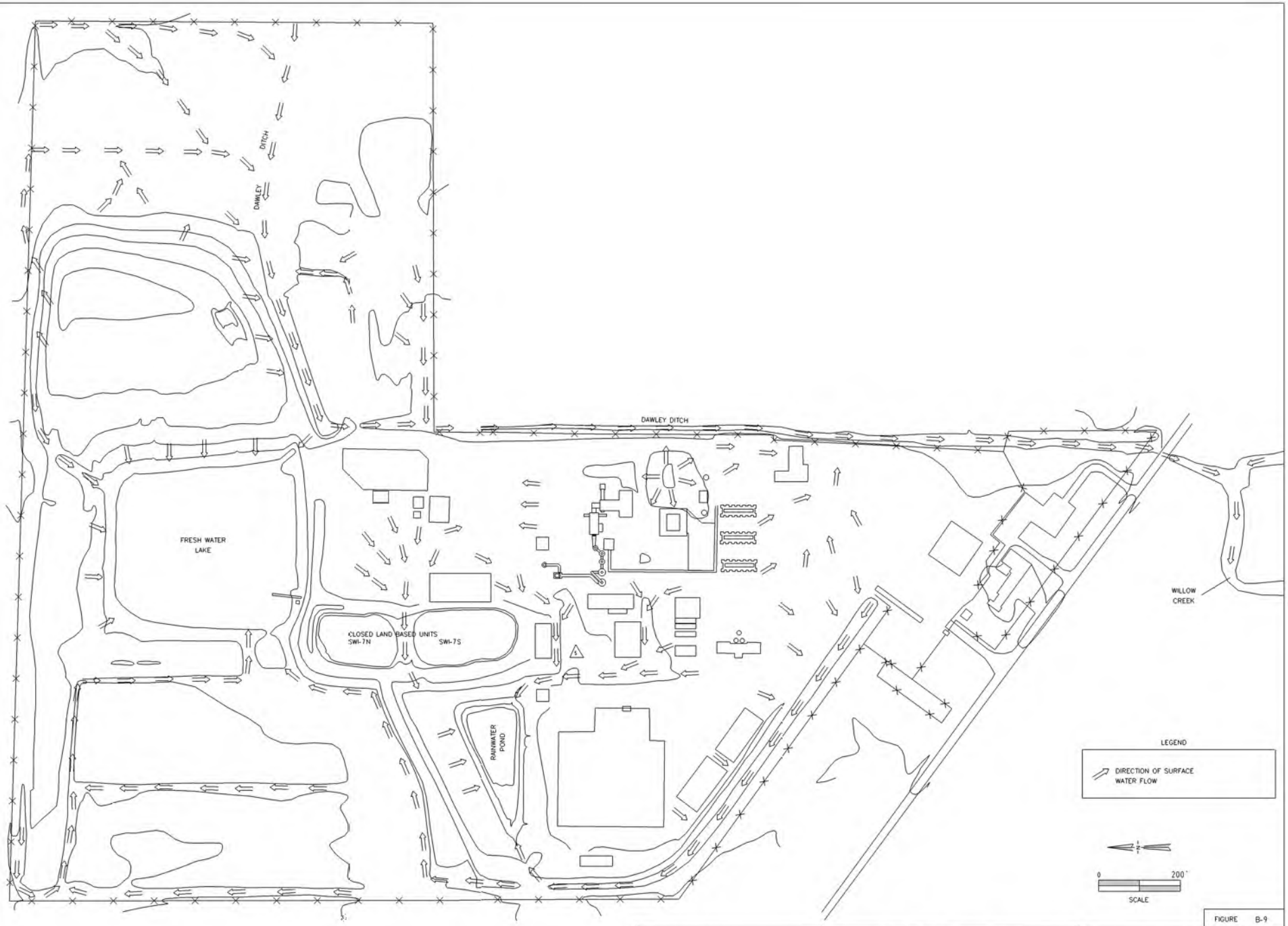
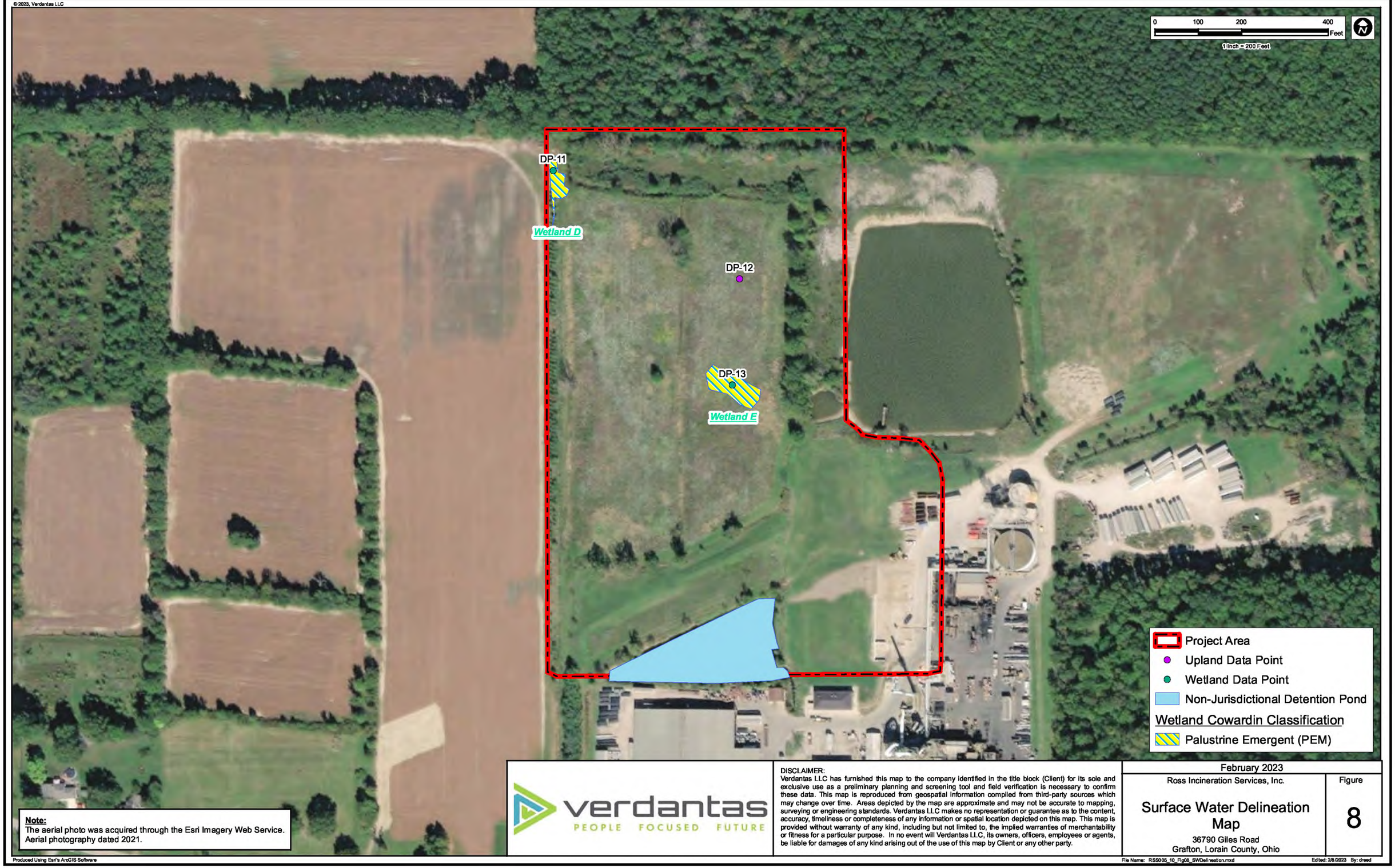


FIGURE B-9

DR. NO.: D-90-842 REV. 6 JF ASSIGNED: 9/29/93 REVISED 12/20	WESTON MANAGERS DESIGNERS/CONSULTANTS	Three Hawthorn Parkway Vernon Hills, Illinois 60061	SURFACE WATER DRAINAGE MAP ROSS INCINERATION SERVICES, INC. Grafton, Ohio

Figure B-11 – Surface Water Delineation Map for Northwest Portion of Facility



Note:
The aerial photo was acquired through the Esri Imagery Web Service. Aerial photography dated 2021.

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PEOPLE FOCUSED FUTURE

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February 2023

Ross Incineration Services, Inc.

Surface Water Delineation Map

36790 Giles Road
Grafton, Lorain County, Ohio

Figure 8

Produced Using Esri's ArcGIS Software

File Name: RSS005_10_Fig08_SWDelineation.mxd

Edited: 2/8/2023 By: dreed

Appendix B-1

Engineering Analysis - 100 year Floodplain

Table of Contents

Engineering Analysis

Engineering Analysis

Introduction

Dawley Ditch is a waterway that is a tributary to Willow Creek that acts a tributary to the Black River. In response to a Notice of Deficiency ("NOD") issued by the Ohio Environmental Protection Agency ("OEPA"), RIS contracted R. E. Warner and Associates, Inc, an independent consultant, to evaluate the effects of a 100-year storm on the RIS property. The following report summarizes the procedures followed to determine a 100-year storm flow and resulting flood zone, and discusses the potential of impact of a storm event on the RIS property and surrounding area. The following information was based on an original report entitled, "100 Year Flood Plain Study," authored by R. E. Warner and Associates, Inc. (consultant) dated August, 1995, a supplemental engineering study also authored by R. E. Warner and Associates, Inc. entitled, "100-year Storm Event - Engineering Study Results" dated April, 2001, and reevaluation of the study in 2023, based on revisions to potential 100-year 24-hour rain events.

100 Year Flood Plain Study Summary

The original evaluation contained a HEC-2 computer analysis of Willow Creek. In addition, the consultant established survey cross-sections and obtained necessary elevation data from the RIS facility in order to perform a HEC-2 computer analysis for the Dawley Ditch drainage basin. The 1995 100-Year Flood Plain Study on file in RIS" operating Record and is included here by reference. The location of FEMA designated flood zones are shown in Section B, Figure B1-1 .

The consultant estimated the 100-year storm elevation using the U. S. Geological Survey Water-Resources Investigation Report 93-4080 entitled "Estimation of Flood Volumes and Simulation of Flood Hydrographs for Ungaged Small Rural Streams in Ohio". Boundaries were created to eliminate any geographical bias from region to region. The value for peak flow discharge (Q) was calculated to be 388 cfs (cubic feet per second).

The value of the Q determined from this calculation was able to be reduced further since a portion of the drainage area is collected and stored in the fresh water lake on the RIS property. The 100-year storm was routed through the lake utilizing TR-55 routing software. Results indicate that the lake stores nearly 110 cfs of the 121-cfs flow from the 100-year storm. Therefore, the 100-year peak flow rate for Dawley Ditch was reduced by

50 cfs as a conservative measure. Further analysis was completed on lake storage and associated water levels. (See Appendix B-1, Supplemental 100-year Storm Event Study Summary).

The final value of Q for the 100-year storm is 338 cfs. This value along with cross-sectional data collected in the field, were input into a HEC-2 data file. Using the HEC-2 computer information for Willow Creek, a new cross-section was established on Willow Creek which corresponds with the location of Section W from the Willow Creek HEC-2 data. This location became the starting point cross-section for the Dawley Ditch HEC-2 computer analysis. The attached field cross-sections detail the ground surface elevation profiles and the estimated elevation of the 100-year flood water surface. The computer program generated a table giving the value of the critical water surface (flood stage) elevation at each cross-section. The water surface elevations increase for each upstream section. Some minor fluctuations in the water surface may result from the constriction of the channel by either a structure or a natural variation along the channel.

The program calculates water surface elevations by performing step back water calculations, using the Manning's formula and loss equations, from section to section. The HEC-2 computer program performs the step back water calculations to determine the upstream water surface elevation within certain parameters.

Supplemental 100-Year Storm Event Study Summary

In April 2000, the independent engineering consultant performed a supplemental engineering study to provide beginning water level assumptions for the Fresh Water Lake (lake) and to address the effect a 100-year 24-hour storm event would have on the water level of the lake and the boundaries of the projected flood plain area. The Freshwater Lake and Dawley Ditch are connected by two eight inch diameter steel pipes. During seasonal wet weather (spring), the water level in the Freshwater Lake remains close to pipe elevation (i.e. approximately 775 feet above MSL). Refer to FEMA designated flood zones are shown in Section B, Figure B1-1. The primary function of the pipes is to fill the lake with surface water from Dawley Ditch when enough water is in the ditch. Within approximately 48 hours following a storm event, water levels in Dawley Ditch and the lake fall to an elevation of about 775 feet above MSL. This is the seasonal wet weather, base flow water level elevation in Dawley Ditch and the lake. In seasonally drier months, the base flow water level elevations in Dawley Ditch and the lake drop below the elevation of the lake-

pipe connections. The lake rarely receives surface water from Dawley Ditch during the drier months of the year.

The primary function of the lake is a source of fresh water for use in RIS' air pollution control system. When the incineration system is operating water must be added to the air pollution control system at the rate of approximately 125 gallons per minute. Approximately forty percent of the water needed for the air pollution control system is obtained from the lake. In the supplemental engineering study the consultant modeled the effects of a 100-year 24-hour storm event on the watershed in the immediate vicinity of the lake. The modeling included a hydrograph report with staged backup calculations for a 100-year 24-hour storm event. Although RIS routinely pumps water from the lake it was not considered in the modeling. In addition, the consultant assumed that the 100-year 24-hour storm event would occur during the seasonally wetter months of the year when the water level in the lake is approximately pipe elevation.

Factoring in the typical water level of the lake (i.e., approximately 775 feet above MSL), the consultant determined that the storage capacity of the lake is adequate to contain the 50-cfs peak flow value calculated in the 1995 study. The consultant supported the determination with the following data:

- the lake had sufficient storage capacity because of its size (approximately four acres),
- the typical water level elevation of the lake is approximately 775 feet above MSL and
- the top of the bank elevation of the lake is 780 feet above MSL.

The HEC-2 modeling determined that the peak flow during a 100-year 24-hour storm event in Dawley Ditch would raise the water level in the ditch to the flood stage elevation of 778.98 feet above MSL. Factoring in storage of water from Dawley Ditch during the 100-year 24-hour storm event, the consultant determined that the lake level at flood stage may reach the elevation calculated for Dawley Ditch cross-section 15 which is 778.98 feet above MSL.

Further increases in the water level of the lake may be contributed from a drainage area immediately surrounding the lake. The drainage area includes 11.86 acres. Additional stormwater runoff to the lake from this drainage area could raise the lake level from the flood stage elevation of 778.98 feet above MSL to an elevation of 779.37 above MSL

above. The consultant also determined that this water level elevation is contained within the lake basin and does not impact the projected boundaries of the flood plain area. The 2001 study is on file in RIS operating record.

2023 Supplemental 100-Year Storm Event Study Summary

In 2023, the 100-Year Flood Plain Study was revisited to account for changes in published rainfall estimates, changes to the Freshwater Lake, and changes to the topography at the facility.

In 2004, RIS closed Scrubber Water Impoundment 6 ("SWI-6"). SWI-6 was located in the northern portion of the Equipment Storage Area ("ESA"). Closure was completed by removal and stabilization of sludges and underlying clay, and backfilling of the area. Ohio EPA approved the closure of SWI-6 in 2004. The completion of closure in this area required regrading of the SWI-6 area. In addition, in 2019, RIS placed gravel foundation in the Equipment Storage Area. The purpose of the additional grading and gravel was to increase the base of the ESA to allow RIS to store empty trailers and purchased commodities in the area. It is estimated that these changes increased the overall elevation in the northeastern portion of the ESA about 0.5 feet.

In addition, in 2016, RIS expanded the footprint of the Freshwater Lake to the north. The acreage increased from 3.89 acres to 4.05 acres, increasing the storage of the Freshwater Lake by about 6,970 cubic feet, or about 52,140 gallons. In addition, the northern and western sides of the Freshwater Lake were increased significantly (up to 2 feet), increasing the containment elevation of the Freshwater Lake.

In 2020 and 2021, RIS removed sediment and 6" of underlying clays from an 800' stretch of Dawley Ditch under RIS' Corrective Action program. The project improved both storage and flow in the ditch.

Finally, a 2023 evaluation of National Flood Hazard Maps, published by the Federal Emergency Management Agency ("FEMA"), confirmed that that areas of flood hazard are consistent with the original 100-Year Storm Event Study.

Conclusions

As indicated on the attached drawings, the 100-year flood elevation does not impact any permitted units or unit areas. The facility is surrounded by a compacted clay dike with an average top elevation of 785 feet MSL. The clay dike runs parallel to the west side of the

ditch, and the south side of the Freshwater Lake. The dike was constructed to protect the processing areas of the facility. The dike wall averages three feet in height and six to ten feet in width. The dike has a three to one slope, and is covered with dense vegetation that is well maintained. The dike was constructed with native soil and its properties are reasonably represented by the geotechnical test results of native soil provided in Attachment 1 to Appendix B-1. Geotechnical test results of native soil samples collected in 1994 were reviewed and can be described as a silty clay loam having a very low permeability ranging from 2.4×10^{-6} to 2.5×10^{-8} centimeters per second. Based on the review of the geotechnical test results and a field inspection of the dike by the consultant concluded that the characteristics of the dike are sufficient resist washout of the dike during a 100-year 24-hour storm event. In addition, RIS maintains the dike by assuring vegetation is thick and erosion is kept in check.

Isolated portions of the RIS facility, such as the area east of the north landfill and a small portion of the equipment storage area, may receive some 100-year storm back water. The North Landfill cap (cap) is able to resist washout in a 100-year 24-hour storm event. Geotechnical test results are provided in Attachment 1 to Appendix B-1. According to geotechnical test results, the soil used to construct the cap has a very low permeability ranging from 6.0×10^{-6} to 1.6×10^{-8} centimeters per second. A field inspection of the cap found it covered with vegetation and well maintained. Based on the review of the geotechnical test results and the field inspection of the cap the consultant concluded that the characteristics of the cap are sufficient resist washout of the cap during a 100-year 24-hour storm event. RIS maintains the cap by assuring vegetation is present and erosion is kept in check.

The 100-year flood studies conducted in 1995 and 2001 by demonstrate that the existing flood protection measures on the RIS property are adequate. The flooding resulting from the 100-year storm is contained and permitted facilities protected by the dikes along Dawley Ditch.

In 2023, the 100-Year Flood Plain Study was revisited to account for changes to the Freshwater Lake, and changes to the topography at the facility. The 2023 review of National Flood Hazard Maps, published by the Federal Emergency Management Agency ("FEMA"), confirmed that that areas of flood hazard are consistent with the original 100-Year Storm Event Study.

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. **The community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Ohio State Plane North zone 4976 (FIPSZONE 3401). The **horizontal datum** was NAD83. Differences in datum, spheroid, projection or state plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the **same vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was derived from the Lorain County Auditor from photography dated 2002, and from USGS digital orthophoto quadrangles dated 1998 or later.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

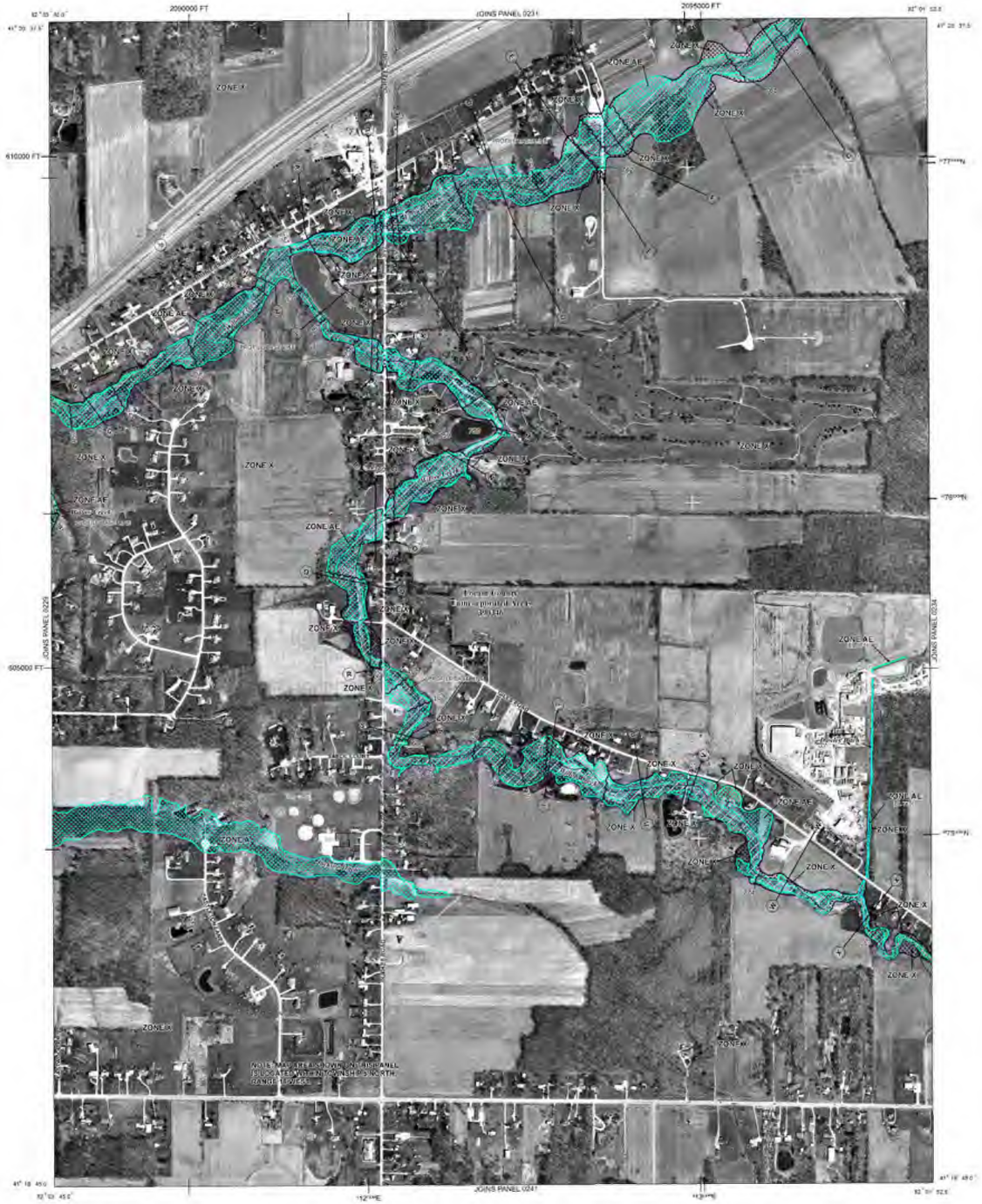
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The **profile base lines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile base line**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

PANEL INDEX



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100 year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard May include Zones A, AE, AH, AO, A1-99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside of the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 Base Flood Elevation line and value; elevation in feet*
- (EL 101) Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- (A) — (A) Cross section line
- (23) — (23) Transect line
- 97°07'45.0", 41°24'22.5" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4627000 mE 1000-meter Universal Transverse Mercator grid values, zone 17
- 2250000 FT 5000-foot grid ticks: Ohio State Plane North Coordinate System, 4976 zone (FIPSZONE 3401), Lambert Conformal Conic
- KA0015 × Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 19, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For communities map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
100 0 100 200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0233D

FIRM
FLOOD INSURANCE RATE MAP
LORAIN COUNTY, OHIO
AND INCORPORATED AREAS

PANEL 233 OF 410
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
[illegible]	[illegible]	[illegible]	[illegible]

Notice to User: The **Map Number** shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications to the subject community.

MAP NUMBER
39093C0233D
EFFECTIVE DATE
AUGUST 19, 2008

Federal Emergency Management Agency

Appendix B-2

Surface Water Delineation Summary

Ross Incineration Services, Inc.
Surface Water Delineation Report for Northwest Portion of the Facility
Executive Summary
February 2023

The Ross Incineration Services, Inc. facility ("RIS" or "facility") is located at 36790 Giles Road Grafton, Ohio, in Lorain County. Verdantas LLC ("Verdantas") was contracted by RIS to conduct a surface water delineation of wetlands and waterbodies within a 22.7-acre survey boundary ("Project Area"). The purpose of this surface water delineation was to determine the extent and quality of surface waters within the Project Area that may be subject to applicable regulation. This is an executive summary of the methodologies and results of the surface water delineation for the Project Area.

Overview

A surface water delineation involves the identification of wetlands, streams, and other relatively permanent surface water features that may be subject to federal and/or state jurisdiction. Generally, Federal and Ohio regulation define wetlands as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas that are delineated in accordance with the 1987 U.S. Army Corps of Engineers ("USACE") wetland delineation manual and any other procedures and requirements adopted by the USACE for delineating wetlands (OAC 3745-1-02).

According to current regulatory wetland criteria, a wetland must have hydric soils, evidence of inundated or saturated conditions, and a predominance of hydrophytic vegetation. When all three of these criteria are met, a wetland is present and is subject to federal and/or state regulations and permitting. Verdantas completed both a desktop review and an in-field review to evaluate surface water in the Project Area.

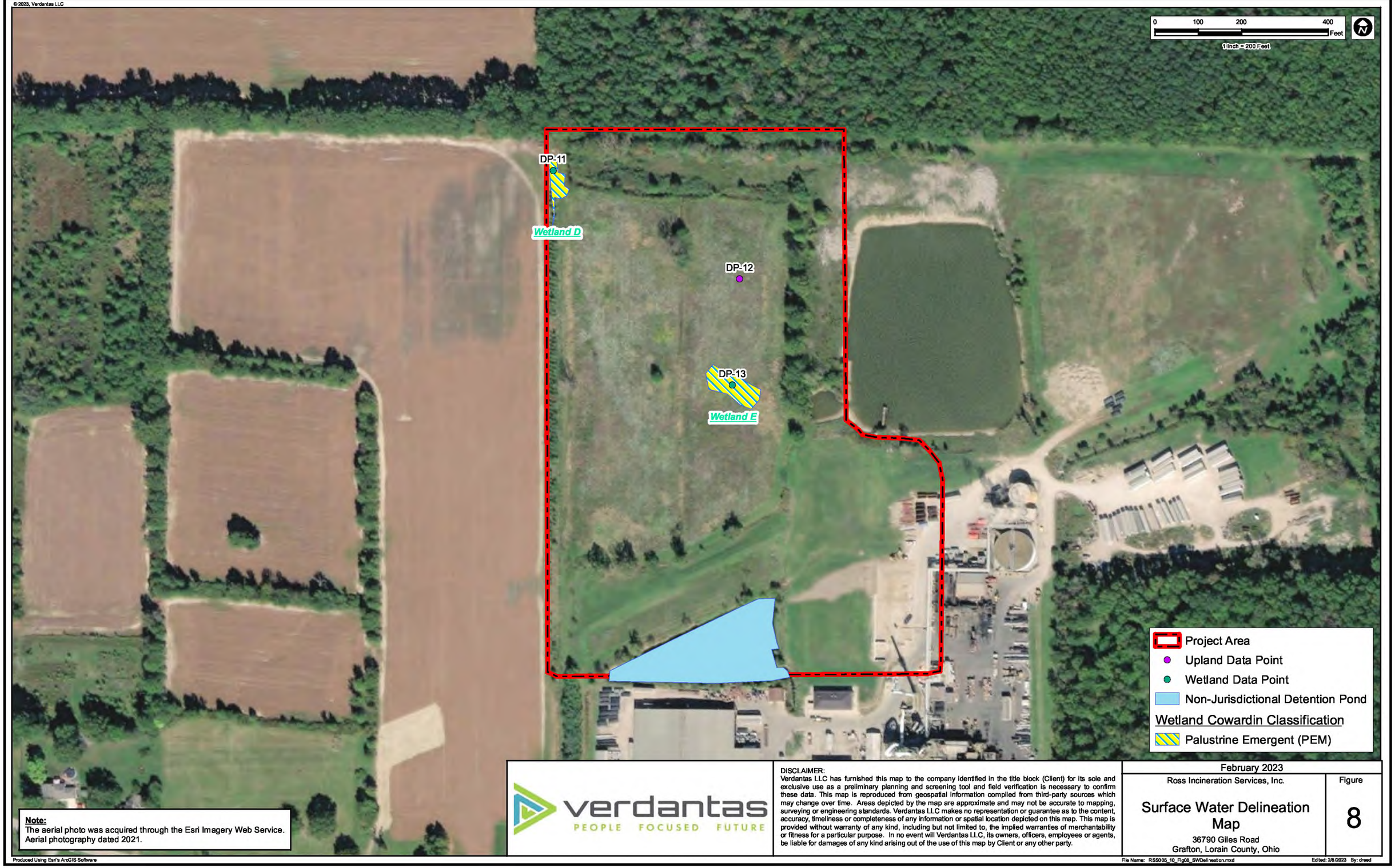
Desktop Review Results

The USGS topographic map for the Grafton, Ohio quadrangle indicates that topography slopes southwest toward Willow Creek. The Project Area has sustained limited industrial use. The Project Area is located within the Black-Rocky Watershed (HUC-8 04110001). The 100-year floodplain of Willow Creek is located approximately 700 ft south of the Project Area. The Project Area is located within an area where streams are eligible for permitting through the Ohio 401 Water Quality Certification for Nation-Wide Permits.

Wetlands and Waterbody Delineation

To refine the information gathered during the desktop review, Verdantas collected hydrology, soil, and vegetation data at three locations within the Project Area. Wetland determination data were used to develop a surface water delineation map (attached). The Project Area was dominated by herbaceous vegetation including cockspur grass (*Echinochloa crus-galli*), and fowl manna grass (*Glyceria striata*).

Two wetlands were delineated, comprising a total of 0.216 acres within the 22.7 acre Project Area. Both wetlands (Wetlands D and E) were determined to be Category 1. Category 1 Wetlands are generally small, low-diversity wetlands and have a predominance of non-native invasive species. These two wetlands are non-abutting and not adjacent to relatively permanent waters, likely making them non-jurisdictional under current federal guidelines (33 CFR Part 328). Because isolated wetlands are regulated in Ohio, these wetlands would likely fall under the jurisdiction of the state of Ohio (OAC 3745-1-02 and OAC 3745-1-50). No streams were delineated within the Project Area. Surface waters delineated by Verdantas are subject to USACE review and concurrence.



Note:
The aerial photo was acquired through the Esri Imagery Web Service. Aerial photography dated 2021.

verdantas
PEOPLE FOCUSED FUTURE

DISCLAIMER:
Verdantas LLC has furnished this map to the company identified in the title block (Client) for its sole and exclusive use as a preliminary planning and screening tool and field verification is necessary to confirm these data. This map is reproduced from geospatial information compiled from third-party sources which may change over time. Areas depicted by the map are approximate and may not be accurate to mapping, surveying or engineering standards. Verdantas LLC makes no representation or guarantee as to the content, accuracy, timeliness or completeness of any information or spatial location depicted on this map. This map is provided without warranty of any kind, including but not limited to, the implied warranties of merchantability or fitness for a particular purpose. In no event will Verdantas LLC, its owners, officers, employees or agents, be liable for damages of any kind arising out of the use of this map by Client or any other party.

February 2023

Ross Incineration Services, Inc.

Surface Water Delineation Map

36790 Giles Road
Grafton, Lorain County, Ohio

Figure 8

Produced Using Esri's ArcGIS Software

File Name: RSS005_10_Fig08_SWDelineation.mxd

Edited: 2/8/2023 By: dreed

Ross Incineration Services, Inc.
Grafton, Ohio

Section C
Waste Characteristics and Waste Analysis Plan

August 2023

Public Information Version

Ross Incineration Services, Inc.
A member of The RossWay Group

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Section C

Waste Characteristics

This section describes the chemical and physical nature of the hazardous wastes stored and treated at Ross Incineration Services, Inc. ("RIS")[1]. It also describes the Waste Analysis Plan ("WAP") for sampling, testing, and evaluating the waste to assure that sufficient information is available for the waste's safe handling and processing. The information in this WAP is submitted in accordance with the requirements of OAC 3745-50-44(A)(2), 50-44(A)(3), 50-44(C)(1), 50-44(C)(2), 50-44(C)(7), 50-44(C)(8), 54-13(A), 55-75(C), 55-91(B)(2), and 55-92(A)(2).

C-1 Chemical and Physical Analysis OAC 3745-50-44(A)(2); OAC 3745-54-13

Wastes received and generated at RIS vary widely in chemical and physical characteristics. Typical hazardous and non-hazardous waste types received at the RIS facility are: halogenated and non-halogenated spent solvents, paint wastes, off-specification commercial chemical products, consumer products, and spill residues. Such wastes are generated by the following industries: paint and coatings, organic and inorganic chemical, adhesive, pesticide, petroleum refining, pharmaceuticals, and the ink formulation industries. Wastes generated at RIS primarily consist of residues resulting from the incineration process including kiln ash, bottom ash, fly ash sludge, filter cake and scrubber water. Other RIS generated waste may include screen and tank clean-outs, sump clean-outs, lab samples and contaminated personal protective equipment. This list is not comprehensive, but represents most categories of waste handled at RIS . Residual wastes generated from the incineration process are disposed of off-site and other types of RIS generated wastes are typically treated on-site in the incinerator. The basis for listing the waste to be received at the facility is in accordance with OAC 3745-51- Identification and Listing of Hazardous Waste and can include any hazardous waste for which RIS is permitted to receive. A list of waste codes RIS is permitted to accept is found in RIS' Part A.

[1] References to RIS throughout this document refer to Ross Incineration Services, Inc. However, RIS may subcontract certain activities hereunder to other companies or any other qualified party under contract to RIS.

RIS may receive and store hazardous waste without intending to treat said waste on-site. RIS will refer to this category of waste as transshipped waste. Transshipped waste is waste generated off-site yet received, possibly treated in anticipation of further treatment/disposal and stored at RIS. Transshipped waste may ultimately be destined for treatment either on-site or at another permitted solid waste management facility off-site. RIS typically transships materials in their original container, but may repackage materials to larger or smaller container sizes for transshipment. In the case of repackaging into larger containers, RIS may bulk or blend materials in permitted treatment tanks.

In accordance with the regulations governing hazardous waste management, responsibility for waste characterization rests with the generator[2]. Each generator, including RIS for waste generated on-site, must provide information on a Waste Product Survey ("WPS") Form (See Exhibit B to this WAP). Before RIS treats, stores, or disposes of any hazardous wastes, or non-hazardous wastes, RIS shall obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, this analysis shall contain all information which must be known to treat, store, or dispose of the waste. The analysis may include data developed under Chapter 3745-51 and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes. RIS may arrange for the generator of the hazardous waste to supply part, or all of the information required. If the generator does not supply the information, and RIS chooses to accept the hazardous waste, RIS is responsible for obtaining the information required to comply with OAC 3745-54-13. RIS' WAP identifies the methods used to obtain the information necessary to store and treat the waste, which includes: obtaining a comprehensive profile of the waste characteristics (i.e., chemical composition, physical properties, reactivity and stability, etc.) through the WPS, confirmatory fingerprint sampling and visual inspection, compatibility testing when appropriate and necessary, and Waste Component Verification ("WVC"). RIS will confirm the composition and evaluate the properties of all off-site and on-site generated hazardous waste prior to storage, treatment, shipment off site, or disposal. All such waste analyses, determinations and evaluations will be documented in the facility operating record. Where generator knowledge is used in this determination process, all supporting data relied upon by RIS will be maintained in the operating record.

[2] For the purposes of this WAP, *generator* means a customer of RIS who is a generator, intermediary, broker, or other entity who is party to the manifest and/or is contracting RIS for TSDF services.

For on-site generated waste, an indication of the hazard associated with the waste (e.g., written description of hazardous characteristic) and the following information will be documented: WPS number, identification of the process generating the waste, location of the process generating the waste, physical description and chemical composition of the waste, location of the accumulation point for the waste and storage location of the waste.

RIS may also treat, store and dispose of non-hazardous waste in the units utilized for hazardous waste. Non-hazardous waste may be fed to the incinerator simultaneously with hazardous waste. RIS will adequately characterize all non-hazardous waste prior to storage, treatment or disposal at RIS to insure compatibility with hazardous waste during storage, treatment or disposal. Table C1-1, entitled "*Hazardous Wastes which are Prohibited or Restricted at RIS*," lists certain types of waste restricted or prohibited at RIS. If a waste carries the waste code identified in Column 1 and exhibits the characteristic described in Column 2, the listed restriction or prohibition applies. Any waste listed in Column 3 as "direct feed to the incinerator" will be processed through the incinerator via the auger shredder or secondary combustion chamber by feeding bulk liquids directly from a tanker truck without tank storage or by feeding containerized wastes without commingling with any other wastes. Direct feed materials will not be stored in on-site storage tanks.

[2] For the purposes of this WAP, *generator* means a customer of RIS who is a generator, intermediary, broker, or other entity who is party to the manifest and/or is contracting RIS for TSDF services.

Table C1-1 Hazardous Wastes Which are Prohibited or Restricted at RIS

Column 1	Column 2	Column 3
If the following waste codes are applicable and	**The waste exhibits the following properties then**	**The following restrictions apply**
D003, K013, K041, K044, K045, K047, P009, P048, P065, P081, P112, U163, U189, U234,	Shock, heat or friction sensitive[2]	Prohibited from receipt at the facility
D002	Corrosive	Restricted from storage in the tank farms[1]
D003, K044, K045, K047, P006, P015, P040, P041, P065, P067, P068, P073, P081, P105, P112, P122, U017, U033, U096, U105, U106, U133, U160, U163, U177, U189, U234,	Reactive explosive when heated under containment as indicated in OAC 3745-51-23 (A) (6)	Direct feed to incinerator[5]
D003, K011, K013, K027, K044, K045, K047, P064, P065, P073, P074, P081, P096, P105, P112, U006, U020, U023, U030, U033, U096, U160, U189, U223, U234,	Water reactive	Restricted from storage in the tank farms[1]
D003, P031, P033, P056, P063, P076, P078, P096, U033, U043, U045, U075, U115, U121, U135, U153, U237	Gaseous at ambient temperature and pressure according to United States Department of Transportation ("US DOT") cylinder packaging.[6]	Prohibited from receipt at the facility
D003, F007, F008, F009, F010, F011, F012, K007, K044, K045, K047, K060, P013, P021, P029, P030, P031, P033, P063, P065, P069, P074, P081, P098, P099, P104, P106, P108, P112, P121, U033, U189, U205, U234, U246	Reactive cyanide at concentrations greater than 250 mg/l and reactive sulfide at concentrations greater than 500 mg/l	Restricted from storage in the tank farms[1]
K044, K045, K046, K047, K061, K069, K084, K101, K102, K175[7], K178, P015, P076, P078, P087, U151	Not amenable to incineration unless a constituent of a mixture that is otherwise incinerable	Prohibited from incineration unless a constituent of a mixed waste can be significantly reduced in toxicity or volume by incineration[4]
K044, K045, K046, K047, P076, P087	Explosive	Prohibited from receipt at the facility.
F027	Acutely Hazardous	Prohibited[3]
All "P" waste codes not otherwise specified above that RIS is permitted to accept	Acutely hazardous	Restricted from storage in the tank farms[1]
Waste Codes listed in OAC 3745-270-03 (D004, D005, D006, D007, D008, D009, D010, D011, F006, F007, F008, F009, F010, F011, F012, K002, K003, K004, K005, K006, K007, K008, K061, K069, P010, P011, P012, P013, P029, P074, P087, P104, P120, P121, U032, U145, U151, U204, U205, U216)	None of the Criteria in OAC 3745-270-03 (C)	Prohibited from incineration

[1] These wastes are restricted from storage in tank farms under normal operating conditions. "Normal operating conditions" means in the absence of an emergency situation where a threat to human health or the environment exists which warrants short-term storage in a tank to remediate the potential threat.
[2] Shock, heat or friction sensitive as defined by the US DOT.
[3] Prohibited from receipt at the facility; storage limited to wastes from on-site closure activities.
[4] These wastes will be trans-shipped to other waste management facilities and will meet all other WAP criteria and permit conditions for handling and storage. RIS' waste tracking system clearly identifies trans-shipped wastes.
[5] Direct Feed to Incinerator means the waste will not be commingled with other wastes [redacted]
[6] Excludes aerosol cans.
[7] Store Only

C-1a Containerized Waste OAC 3745-50-44(C)(1)(b)(i); OAC 3745-55-75(C)

RIS' Container Storage Facility ("CSF"), Waste Storage Bays ("WSB #1", "WSB #2" and "WSB #3"), Bulk Storage Area #1 ("BSA #1"), Oxidizer Storage Building ("OSB"), the Container Storage Area ("CSA"), the Waste Management Building ("WMB"), the Process Dock West Storage Area ("PDWSA"), and the Guard Rail Storage Area ("GRSA") are designed and operated for storage of containers with free liquids in compliance with OAC 3745-55-75(B). Hence, the determination of the existence of free liquids using the paint filter method is not required for containers stored in these areas. However, RIS' Bulk Storage Area #2 ("BSA #2") is designed and operated for storage of containers without free liquids. Hence, RIS uses the paint filter method to determine the existence of free liquids for containers stored in BSA #2, unless the waste is identified as a "V" pharmaceutical waste or other appreciably* empty container.

RIS' container storage facilities meet the secondary containment requirements as defined in OAC 3745-55-75. Specifically, the base of the container storage areas is free of cracks or gaps and constructed of high density concrete which is sufficiently compatible and impervious to all wastes as described in Section D – *Process Description*. As such, no specific waste analysis is needed to ensure that waste is compatible with the coating material.

RIS also stores on-site generated residues in areas surrounding the incinerator. Solid waste generated on-site is visually inspected to ensure the waste is free of liquids.

C-1b Waste in Tank Systems OAC 3745-55-91(B)(2); OAC 3745-55-92(A)(2)

Typical hazardous and non-hazardous waste types stored in tanks at RIS are high and low BTU halogenated, non-halogenated, flammable and/or ignitable wastes as described in *Section C-1 - Chemical and Physical Analysis.* In addition, RIS' tank systems store fly ash sludge, scrubber water and/or sludge. RIS may blend waste in certain tanks for shipment offsite. Typically, off-site generated waste stored in the tank system will fall within or be blended to fall within the following parameters:

Characteristic	Maximum Value	Minimum Value
HHV, Btu/#	25,000	0
Flashpoint, °F	N/A	-65
Viscosity, Cp.	20,000	1
Halogens/Halides %	95	0
Specific Gravity	2.17	0.600
pH	12.5	2.5

For a description of storage tanks dedicated to storage of specific waste types, the categories of wastes stored in each tank or combination of tanks, and tanks and procedures used for blending, please refer to Section D-a (2) – *Tank System Description* of this Part B Application.

For off-site generated waste, RIS recognizes the importance of determining the compatibility of the waste with the tanks and tank systems. The data provided on the WPS will be the primary data used to determine the compatibility of the waste and the tank's design. Liquids are sampled and analyzed in accordance with this WAP and then classified as to their compatibility with the tanks and tank systems. After classification, the waste is transferred to tank storage, direct fed to the incineration system, or shipped offsite. Appendix C-1 "*Compatibility Guidelines*" outlines RIS' procedures for determining compatibility of waste stored in tanks and tank systems. No off-site generated waste will be stored for more than 12 months in a tank except as provided for in the land disposal regulations pursuant to OAC 3745-270-50.

Table C1-1 "*Hazardous Wastes, which are Prohibited or Restricted at RIS*," provides further clarification on wastes, which are prohibited or restricted from tank storage at RIS. Waste found to produce general corrosion rates greater than 50 mils (thousandths of an inch) per year, based on information provided on the WPS, will not be stored in the tank systems. Waste with general corrosion rates between 30 and 50 mils per year will be stored for no longer than 30 days in the tank systems. RIS expects to lose some tank thickness due to material storage with varying corrosion rates. The amount of thickness actually lost is evaluated through the *Tank Corrosion Plan* (please refer to Appendix D-1). The *Tank Corrosion Plan* identifies the corrosion allowance for the tanks and establishes procedures to be followed if additional monitoring indicates that the allowance has been exceeded.

C-1c Waste in Piles OAC 3745-50-44(C)(4)(b)

RIS is not seeking a permit to operate a waste pile.

C-1d Landfilled Wastes OAC 3745-57-14

RIS is not seeking a permit to operate a landfill.

C-1e Reserved.

C-1f Wastes to be Land Treated OAC 3745-50-44(C)(5)(d)

RIS is not seeking a permit to operate a hazardous waste land treatment unit.

C-1g Waste in Miscellaneous Waste Management Units OAC 3745-50-44(C)(9)(d)

RIS is seeking to permit two miscellaneous waste management units: the filter press and the barge.

C-1g (1) The Filter Press, a Miscellaneous Waste Management Unit

As a part of the ongoing thermal treatment operations at RIS, scrubber water sludge is generated from the blow-down operations of the closed loop scrubber water system. To minimize the volume of spent scrubber water sludge requiring off-site treatment and/or disposal, RIS utilizes a filter press to dewater sludges. The filter press creates a damp cake of compressed solids ("filter cake") that is subsequently moved to an off-site treatment and/or disposal facility.

Filter cake waste codes include Ohio Environmental Protection Agency and United States Environmental Protection Agency (together referred to "EPA") hazardous waste codes processed through the incineration system. Specifically, all EPA hazardous waste codes processed through the incineration system are carried over to the scrubber water and sludge generated during treatment per the "derived-from" rule (OAC 3745-51-03). The scrubber

water sludge is processed through the filter press; thus, the EPA hazardous waste codes applicable to the filter cake will vary according to which waste is incinerated. The turnover cycle of the scrubber water inherent in the air pollution control system determines which EPA hazardous waste codes will be applicable to the filter cake.

RIS currently has a process for tracking "derived-from" waste codes for all residuals generated from its incineration process. Waste fed to the incineration system is documented in hard copy and/or computerized formats. Documentation may include the waste's container identification number ("CIN"), WPS number, shipment number, and/or other comparable data source. Also documented is the date and time that the waste is fed to the incinerator. By using the list of WPS's or CIN's processed over a given time period, an accurate listing of all waste codes incinerated for the time period is generated. This listing of waste codes is then applied to all incineration residues produced during this time period.

Scrubber water is constantly re-circulated through the closed loop scrubber water treatment system and reused in the incinerator air pollution control equipment. RIS periodically removes scrubber water and scrubber water sludge from the closed loop system for treatment and/or disposal. Scrubber water may be treated with reagents as necessary prior to shipment off-site. Scrubber water sludge is de-watered in the on-site filter press and is sent off-site as a filter cake.

Periodically, RIS purges the scrubber water and sludge from the closed loop system. The system is then refilled with fresh water. From the purge time forward, until the next purge, RIS associates all waste codes incinerated with the scrubber water and sludge. A running list of waste codes is maintained so that as periodic removals of water and/or sludge are made for treatment and disposal, all accumulated waste codes up until the removal are associated with the scrubber water, sludge and filter cake.

Waste codes associated with the waste residue may be subject to land disposal restrictions and for those wastes that have established treatment standards, the residue will be

accompanied by a notification stating the appropriate treatment standards as described in *Section C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions.*

Details regarding the filter press unit description are included in Section D – *Process Description*, Subsection D-8a – *The Filter Press, a Miscellaneous Unit*. Other required information such as waste characterization, containment system details, prevention of air emissions, filter press operating standards, migration of waste constituents from the filter press, and treatment effectiveness of the filter press are also included in Subsection D-8a – *The Filter Press, a Miscellaneous Unit*.

C-1g (2) Barge, a Miscellaneous Waste Management Unit

The barge is a three-sided open top box used for the repackaging of hazardous waste from roll-offs, vacuum boxes, dump trailers, flatbeds, tankers and other vehicles. Although the barge was designed as a mobile unit, it is typically stationary. The barge is not a waste storage unit.

Waste repackaged in the barge may come from off-site or on-site generated sources. As such, the waste codes assigned by the generator of the waste carry over to the repackaged containers and may include any EPA hazardous waste codes for which RIS is permitted. RIS has a process for tracking waste codes for all wastes received and processed at RIS. Waste codes are documented in hard copy and/or computerized formats. Documentation may include the waste's CIN, WPS number, shipment number, and/or other comparable data source.

Waste codes associated with repackaged waste may be subject to land disposal restrictions. For those wastes that have established treatment standards, off-site shipments will be accompanied by a notification stating the appropriate treatment standards as described in *Section C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions.*

Details regarding the barge description are included in Section D – *Process Description*, Subsection D-8b – *The Barge, a Miscellaneous Unit*. Other required information such as

waste characterization, containment system details, prevention of air emissions, barge operating standards, migration of waste constituents from the barge, and treatment effectiveness of the barge are also included in Subsection D-8a – *The Filter Press, a Miscellaneous Unit.*

Waste Analysis Plan

In accordance with the regulatory requirements set forth in OAC 3745-54-13, this WAP describes in detail the methods and procedures RIS uses to obtain chemical and physical information on the waste managed at its facility. This information is used to ensure proper storage, treatment and disposal of hazardous waste and compliance with the land disposal restriction program.

C-2 Waste Analysis Plan

This WAP describes in detail the sampling procedures and protocols RIS[1] utilizes to characterize, sample, and manage hazardous waste at its facility. This WAP outlines procedures for the following:

- **Waste Characterization** [OAC 3745-54-13 (B)(1), (B)(2), (B)(5)]- a description of the parameters and rationale used to confirm incoming waste to the facility, characterize residual waste from the facility and the test methods employed for the selected parameters.
- **Sampling Methods and Frequency** [OAC 3745-54-13 (B)(3), (B)(4)] - a description of the sampling strategies and equipment; sampling QA/QC procedures; and frequency at which off-site and on-site generated waste is analyzed.
- **Waste Approval and Acceptance Procedures** [OAC 3745-54-13 (B)(5), (C)] - the pre-acceptance procedures (e.g., waste classification, WCV, waste review procedures), incoming waste receiving procedures (e.g., receiving procedures and confirmatory analysis); sampling exemptions; and waste management/processing procedures.
- **Additional Requirements for Handling Ignitable, Reactive or Incompatible waste** [OAC 3745-54-13 (B)(6)] - additional procedures necessary for safe storage and treatment of ignitable, reactive or incompatible wastes.
- **Waste Analysis Pertaining to Land Disposal Restrictions** [OAC 3745-270] - procedures for analysis, notifications and certifications required to comply with LDR restrictions.

C-2a Parameters and Rationale [OAC 3745-54-13 (B)(1)]

The generator[2], in accordance with the Waste Materials Service Agreement between the generator and RIS is required to supply information regarding the chemical composition and characteristics of each waste stream handled by the facility. The data required under the WAP is supplied by the generator via the WPS (see Exhibit B to this WAP). The WPS contains a comprehensive disclosure of the chemical composition of the waste and

[1] References to RIS throughout this document refer to Ross Incineration Services, Inc. However, RIS may subcontract certain activities hereunder to companies or any other qualified party under contract to RIS.

[2] For the purposes of this WAP, *generator* means a customer of RIS who is a generator, intermediary, broker or other entity who is party to the manifest and/or is contracting RIS for TSDF services.

specifies the information needed to treat and store the waste. Specific informational requirements and parameters selected for evaluation are indicated on the WPS form. The basis and rationale for each informational requirement or parameter is discussed in Table C2-1.

[1] References to RIS throughout this document refer to Ross Incineration Services, Inc. However, RIS may subcontract certain activities hereunder to companies or any other qualified party under contract to RIS.

[2] For the purposes of this WAP, g*enerator* means a customer of RIS who is a generator, intermediary, broker or other entity who is party to the manifest and/or is contracting RIS for TSDF services.

Table C2-1 WPS Information Rationale

Section #	Information / Parameters	Rationale
1	WPS Number	Number assigned by RIS which allows RIS to uniquely identify each specific waste stream.
2	Generator Information	Allows RIS to develop historical information on the generator for administrative purposes.
3	General Waste Information	This allows the generator to give an adequate description of the physical appearance, odor, consistency, and any other pertinent data to fully describe the waste material(s). It also provides information on the generating process which can be used for screening procedures during the inspection or fingerprint analysis and allows RIS to plan on expected variations, generation amounts and frequency of shipment.
4	Shipping Containers	This allows RIS to evaluate its ability to take the waste as packed by the generator and to establish a clear processing method(s) prior to its arrival at the facility.
5	Waste Stream Chemical Composition	This allows RIS to evaluate the makeup and consequent characteristics of each WPS. This information is used with the information provided in Sections 7, 8 and 9 to establish handling methods and personal protective equipment that will be acceptable for continued processing of the generator's waste.
6	Source of Information	This allows RIS to evaluate the validity of the information supplied by the generator. The generator must indicate whether analytical data, generator knowledge or "other" were used to complete the WPS.
7	Specific Analysis of Waste	In addition to the specific justification identified below, information in this section is used with information gathered in sections 5, 8 and 9 to establish proper handling methods and personal protective equipment.
	Total Concentration of Halogen, Sulfur, Nitrogen, and Phosphorous	This information is used to estimate potential for acid generation and effects on stack emissions. Total Chlorine is used for a comparison point for fingerprint analysis and is used to determine the impact on compliance requirements for RIS' chlorine feed rate and the corresponding regulatory emissions standards for HCl.
	Metals	This information allows RIS to estimate the impact on compliance requirements for meeting regulatory standards for incinerator ash, sludge, and air emissions.
	PCB's	This information is necessary to document compliance with TSCA. RIS does not accept waste that contains Toxic Substance Control Act ("TSCA") regulated PCBs. RIS does not accept waste containing PCBs over 50 ppm.
	Insecticides, Pesticides, Herbicides or Rodenticides	This information is used to provide waste characterization data.
	Dioxins, Total Available Cyanides, Total Available Sulfides, and Amenable Cyanides	This information is necessary to determine whether or not the waste stream is prohibited by the permit and to ensure proper handling and safety procedures for acceptable waste streams.
	Asbestos	This information is necessary to determine whether or not the waste stream is prohibited by the permit (regulated under TSCA) and to ensure proper handling and safety procedures for acceptable waste streams.
	Radioactivity	This information is necessary to determine whether or not the waste stream is prohibited by the permit and to ensure proper handling and safety procedures for acceptable waste streams. RIS does not accept waste regulated by the Nuclear Regulatory Commission.
	Infectious	The information is necessary to determine whether or not the waste stream is prohibited by the permit (i.e., regulated as an "infectious waste") and to ensure proper handling and safety procedures for acceptable waste streams.
	Material Identification Systems	This information is used to develop proper handling and safety procedures. This information may be based on National Fire Protection Association, Global Harmonization System or any other Occupational Safety and Health Administration ("OSHA") recognized labeling or material identification system.
8	Physical Properties	In addition to the specific justification identified below, the information in this section is used with the information gathered in sections 5, 7 and 9 to establish proper handling methods and personal protective equipment.

Table C2-1 WPS Information Rationale (Continued)

Section #	Information and Parameters	Rationale
	Physical State	To determine proper handling procedures and determine conformity during the visual inspection process.
	Viscosity	This allows RIS to determine pumpability and handling procedures and is used as a comparison point for fingerprint analysis.
	Pumpability	This allows RIS to determine proper handling procedures.
	Multi-Layered	This allows RIS to determine proper sampling and handling procedures.
	Dissolved Solids	This allows RIS to provide an indication of waste composition and to with other information provided. This information is also used to determine proper handling procedures.
	Suspended solids	This allows RIS to predict handling or pumping limitations, and storage and feed methods. Also used as a crosscheck with other information supplied.
	Heat Value/BTU value	This allows RIS to determine energy released upon combustion and handling procedures. This physical property also provides a comparison point for fingerprint.
	Ash content	This allows RIS to estimate the amount of solids to be generated for disposal and to assure compliance.
	Flashpoint	This allows RIS to determine ignitability and to identify handling procedures. This information is also for RCRA and US DOT classification. This number also sets a comparison point for fingerprint analysis.
	Vapor pressure	This is relevant for safe handling of the material.
	Specific gravity/density	This allows RIS to assure waste is handled properly. Parameter also serves as a comparison point for fingerprint analysis.
	pH	This allows RIS to evaluate corrosivity; to determine handling procedures; to comply with storage restrictions for wastes, and to set a comparison point for fingerprint analysis.
	Corrosivity	This data is provided for steel corrosion rate and allows RIS to determine potential effects upon plant equipment (e.g., storage tanks, feed mechanisms, and combustion chambers) for proper storage and treatment.
	Color	To provide a means of visually checking the waste to compare with information reported on the WPS.
	Odorous	This allows RIS to determine handling procedures to minimize odors at the facility and protect its employees.
	Dusting Hazard	This allows RIS to identify hazards present from a material if it is agitated and to determine handling procedures to minimize fugitive dust emissions and employee exposure hazards.
9	Reactivity and Stability	This information is necessary to ensure incompatible wastes are not mixed or otherwise handled inappropriately and to ensure compliance with permit restrictions and prohibitions. The presence/absence of cyanide and sulfide are used as a comparison point for fingerprint analysis.
10	EPA and US DOT Information	Waste codes are requested, along with a summary of the reason for the listed waste code. This information is necessary to ensure that only permitted wastes are allowed on site. US DOT information will provide information for shipment scheduling and possible emergency information for spills or releases, etc.
11	Land Disposal Restrictions	This information is necessary to ensure compliance with OAC 3745-270.
12	Certification	Certification by the generator is necessary to authenticate the information provided on the waste product survey and all attached documentation is accurate and complete. The certification must be signed by an individual authorized to represent the generator and be accountable for information on the WPS.

To assure the safe and effective management of waste at the facility, it is essential that quality information is collected when WPSs are developed. RIS also requires generators to provide WCV. WCV is intended to provide RIS with additional documentation to assist in verifying the generator's assertions supplied in the WPS. Given good descriptions of wastes to be received, RIS may modify waste handling and management practices to optimize safety and efficiency. The focus of WCV is verification of the components listed in Section 5 of the WPS at the concentrations indicated. If the data is valid, subsequent decisions about waste management will be accurate. WCV requirements are further discussed in Section C-2e (1)(a)(v) of the WAP.

RIS will evaluate each WPS form and establish the limits of variations that will be acceptable for continued processing of the generator's waste. RIS will accept varying ranges for a waste provided the material does not compromise processing of the waste and will not cause a safety concern. The overall parameters must be justified by the composition of the waste. Limitations of the chemical and physical characteristics of the wastes to be processed are based on the incinerator system operating limits, as well as the storage and management practices utilized.

Either the customer or RIS can initiate WPS modifications. These modifications are completed with generator input and sign-off. WPS modifications may be identified during WPS renewal or as a result of a discrepancy, and modifications can be communicated through verbal or written means. If the customer initiates the modifications, a member of the technical staff will evaluate the request for technical consistency and determine if the changes will alter the plan for management of the material. If the changes are significant, a new WPS and management plan may be developed. If RIS and the customer agree to changes verbally, a member of the technical staff will follow-up these verbal communications with a written transcript of the WPS modifications. The person making the modification will initial and date the change. Support documentation is filed with the WPS.

C-2b Test Methods - Generator Profiling [OAC 3745-54-13 (B)(2)]

Before RIS treats, stores, or disposes of any hazardous wastes, or non-hazardous wastes, RIS shall obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, this analysis shall contain all the information which must be known to treat, store, or dispose of the waste.

The analysis may include data developed under Chapter 3745-51 and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes. RIS may arrange for the generator of the waste to supply part, or all, of the information required. If the generator does not supply the information, and RIS chooses to accept the waste, RIS is responsible for obtaining the information required to comply with OAC 3745-54-13. Information related to Quality Assurance / Quality Control for the Fingerprint Lab and for RIS' off-site contract lab is found in Section C-2c and Section C, Appendix C-3 Sampling Plan, Section 5.0 Sampling Quality Assurance and Quality Control Procedures. The generator is required to characterize his waste based on either testing methods set forth in rules 3745-51-20 to 3745-51-24 of the Administrative Code (or according to an equivalent method approved by the Region V Administrator of U.S.EPA) or; through generator knowledge by applying knowledge of the hazard characteristic in light of the materials or process used. Physical, chemical, and thermodynamic analysis of the waste conducted by the generator in accordance with OAC 3745-52-11 (C)(1), will be conducted following ASTM, EPA or EPA-sponsored methods in accordance with OAC 3745-51-20 Appendix II. The methods which may be used by the generator for completing the WPS are listed in Table C2-2 entitled "Test Methods and References." In addition, the EPA sponsored methods recommended by Hatayana, et al., in EPA 600/2-80-076, "A Method for Determining the Compatibility of Hazardous Waste" and "Design and Development of a Hazardous Waste Reactivity Testing Protocol" by Acurex Corporation in EPA-600/2-84-057 may be used by the generator to identify incompatible waste streams.

If RIS receives analytical data from the generator, this data is evaluated by the technical staff, and suspect data is routed through the Fingerprint Laboratory. In the event that RIS finds the suspect analytical data unacceptable, the data will be discarded, and additional information requested from the generator, or RIS may choose to conduct the analysis at an

outside laboratory. If RIS conducts the analysis to gather additional WPS data, then RIS will ensure that its off-site contract lab will follow the prescribed methods. This is done through routine audits of the contract lab. If the generator assumes the responsibility of waste characterization per the WPS, then it is also the generator's responsibility to assure that its lab follows the appropriate waste analyses methods.

Table C2-2 Test Methods and References

Analysis Parameter	Measurement technique	Method No.*
Acrolein, acrylonitrile	GCMS	8260B
Aluminum	ICP, ICP/MS	6010C, 6020A
Amenable Cyanide	Distillation, colorimetric UV	9010B or 9012A
Antimony	ICP, ICP/MS	6010C, 6020A
Aromatic volatile organics	GCMS	8260B
Arsenic	ICP, ICP/MS	6010C, 6020A
Ash content	Physical evaluation	D482-87
Barium	ICP, ICP/MS	6010C, 6020A
Beryllium	ICP, ICP/MS	6010C, 6020A
Cadmium	ICP, ICP/MS	6010C, 6020A
Chlorinated herbicides	Gas chromatography	8151A
Chlorinated hydrocarbons	GC/MS	8260B, or 8270C
Chromium	ICP, ICP/MS	6010C, 6020A
Waste Compatibility	Waste Compatibility	ASTM D 5058 - Test Method A
Copper	ICP, ICP/MS	6010C, 6020A
Corrosivity	pH measurement	7040, 9041A, or 9045C
Cyanide	Colorimetric	9012A, or 9010B
Dioxins	High Resolution Gas Chromatography	8280B Mod, 8290A
Dissolved Solids	Gravimetric	APHA 2540C
Endothall (P088)	Gas Chromatography (EPA Method)	EPA 548.1
Flashpoint liquids	Pensky-Martens Closed-Cup , Seta flash closed tester	1010, ASTM D93
Ignitability nonliquids	Setaflash open cup	1030
Free Liquids	Physical Evaluation (Paint Filters Liquids Test)	9095
Halogenated volatile organics	GC/MS	8260B
Higher heating value	Physical evaluation	ASTM D240
Kinematic viscosity	Physical evaluation	ASTM D445
Land Ban -Preparation **	Preparation TCLP Leaching Procedure	1311
Lead	ICP, ICP/MS	6010C, 6020A
Magnesium	ICP, ICP/MS	6010C, 6020A
Mercury	CVAA	7470A / 7471A

Table C2-2 Test Methods and References

Analysis Parameter	Measurement technique	Method No.*
Nickel	ICP, ICP/MS	6010C, 6020A
Nitroaromatics and cyclic ketones	GC/MS	8270C
Nonhalogenated volatile organics	Gas chromatography	8015B, 8260B
Organochlorine pesticides, PCBs	Gas chromatography	8081B
Organophosphorus pesticides	Gas chromatography	8141A
Phenols	GC/MS, Distillation color	8270C, 9065
Phthalate esters	GC/MS	8270C
Polychlorinated Biphenyls	Indicates presence and concentration of PCBs wastes.	8082
Polynuclear aromatic hydrocarbons	GC/MS	8270C
Reactivity	RCRA definition	
Selenium	ICP, ICP/MS	6010C, 6020A
Semi volatile organics	Gas chromatography/mass spectroscopy	8270C
Silicon	ICP	6010C
Silver	ICP, ICP/MS	6010C, 6020A
Sodium	ICP	6010C
Solids content	Physical evaluation	APHA 2540B
Specific gravity	Physical evaluation	ASTM D4052 OR D2320
Sulfide	Titrimetric Technique	9031, 9034. APHA 4500.S_2E
Suspended Solids	Gravimetric	EPA 160.2, APHA 2540D
Thallium	ICP, ICP/MS	6010C, 6020A
Total halides	Combustion/Titration, Ion chromatography	5050/9056, 9020
Toxicity	Toxicity Characteristic Leaching Procedures	1311
Vapor pressure		ASTM D2879
Volatile organics	Gas chromatography/mass spectroscopy	8260B
Warfarin (P001)	High Pressure Liquid Chromatography (HPLC), GC/MS	"HPLC", 8270C
Water content	Karl Fisher titration	ASTM 6304
Zinc	ICP, ICP/MS or furnace	6010C, 6020A

* Test methods for Evaluating Solid Waste (SW-846) US EPA, May 2020, VII edition. unless otherwise noted, or most current version.

** Design and Development of a Hazardous Waste Reactivity Testing Protocol US EPA document No. EPA-600/2-84-057, Feb. 1984

ASTM - American Society for Testing and Materials

NACE - National Association for Corrosion Engineers

C-2c Sampling Methods [OAC 3745-54-13(B)(3)]

The methods to be used for sampling and characterizing the waste for the WPS and for on-site confirmatory sampling will vary with the form and consistency of the waste. In general, the sampling methods are those represented in Appendix C-3, Sampling Plan.

Appropriate safety and personal protection devices and procedures, as identified on the Handling Instructions, will be followed at all times. Deviations from the standard sampling methods will be noted in the Operating Record.

C-2c (1) Sampling Strategies and Equipment

The equipment used for sampling waste material will vary with the form and consistency of the materials to be sampled. RIS receives waste material in a variety of containers and physical states. The typical types of containers include five-gallon pails, various drum sizes (10 gallon to 110 gallon), gaylords, pallets of individual cardboard boxes, roll-off containers and tankers. RIS sampling strategies and equipment are described in *Section C, Appendix C-3 - Sampling Plan, Section 1.0 "Sampling Strategies"* and *Section 2.0 "Sampling Equipment."*

C-2c (1)(a) Sampling of Off-Site Generated Waste

Samples are collected from randomly identified containers using the appropriate piece of equipment. Procedures and equipment may be updated to reflect new equipment and procedures as new technology is employed. RIS' sampling procedures are described in *Section C, Appendix C-3 - Sampling Plan, Section 5.1.1 Standard Operating Procedures for Off-Site Generated Wastes.* Safety equipment, procedures, and special instructions for each specific waste are identified in the Handling Instructions for each waste.

C-2c (1)(b) Sampling of On-Site Generated Waste

Residuals generated by RIS requiring sampling and analysis include kiln ash, filter cake and scrubber water. RIS' sampling strategies and equipment are described in *Section C, Appendix C-3 - Sampling Plan, Section 1.0 "Sampling Strategies"* and *Section 2.0 "Sampling Equipment."*

RIS also blends hazardous waste for shipment offsite. RIS samples and analyzes each shipment using the same procedures and standards referenced in *Section C, Appendix C-3 - Sampling Plan.*

C-2c (2) Sampling Quality Assurance and Quality Control Procedures

C-2c(2)(a) On-Site Fingerprint Laboratory

The on-site Fingerprint Lab is organized to ensure that the efficient gathering of data necessary to confirm the physical and chemical properties of the waste received at the facility are consistent with the information provided on the WPS. The Fingerprint Laboratory is stocked with the equipment and supplies necessary to perform the fingerprint analysis described in this WAP. RIS' sampling quality assurance and quality control procedures are described in *Section C, Appendix C-3 - Sampling Plan, Section 5.0 "Sampling Quality Assurance and Quality Control."*

C-2c (2)(b) Decontamination of Sampling Equipment

RIS' sampling equipment decontamination methods are described in *Section C, Appendix C-3 - Sampling Plan, Section 3.0 "Maintaining and Decontaminating Sampling Equipment."*

C-2c (2)(c) Sample Control Procedures

RIS' sample control procedures are described in *Section C, Appendix C-3 - Sampling Plan, Section 5.0 "Sample Quality Assurance and Quality Control Procedures."* A description of typical sample control information and an example Laboratory Logbook information are included as Exhibit G and Exhibit H respectively in this WAP. The sample control information provides documentation that sampling was completed and aids RIS in documenting sample acceptance and rejection. Both the Fingerprint Lab Results Log and sample control information are maintained for each sample and are recorded in the Operating Record. The contract lab reports metals analysis and PCB analysis results to the Fingerprint Lab. The information is then recorded in RIS' computer database. Additionally, copies (hard or electronic) of outside analytical data are maintained in RIS archive files

C-2c (2)(d) Quality Assurance/Quality Control (QA/QC) Tests

RIS quality assurance and quality control procedures are described in *Section C, Appendix C-3 - Sampling Plan, Section 5.0 "Sampling Quality Assurance and Quality Control Procedures."* RIS conducts routine audits of contract lab (s), which conduct additional analysis of waste materials as required by the WAP (e.g., metals, PCBs). These audits follow Standard Operating Procedures ("SOPs") established by the Fingerprint Lab. The SOPs for contract lab auditing are maintained at the on-site Fingerprint Lab. RIS' quality assurance and quality control procedures are described in *Section C, Appendix C-3 - Sampling Plan, Section 5.0 "Sampling Quality Assurance and Quality Control Procedues."*

C-2d Frequency of Analysis [OAC 3745-54-13(B)(4)]

C-2d (1) Off-Site Generated Waste

As described in Section C-1, the generator, in accordance with the Waste Materials Service Agreement (see Exhibit A) between the generator and RIS, is required to supply information regarding the chemical composition and characteristics of each waste stream to be handled by RIS. The data required under the WAP is supplied by the generator via the WPS (see Exhibit B). The WPS contains a comprehensive disclosure of the chemical composition of the waste and specifies the information needed to treat and store the waste. The generator is required to certify the information provided on the WPS.

Each generator will be required to reevaluate his waste using data developed under OAC 3745-51, or his knowledge of the waste for each waste stream that is offered to RIS but has not been shipped to RIS in greater than 12 months. If the generator determines his waste is consistent with the current WPS, only recertification is necessary. If the generator determines his waste is inconsistent with his current WPS, the generator must either revise the existing WPS or submit a new WPS, which correctly characterizes the waste. RIS may revise the WPS on behalf of the generator on a case-by-case basis, with generator explanation and approval, if fingerprint analysis results routinely fall outside acceptable parameters for a particular shipment. If a discrepancy in chemical properties results in a change in Handling Instructions, a WPS modification will result. The generator is also

[1]Non-infectious wastes mean wastes which do not meet the definition of "infectious waste" under OAC Rule 3745-27-01(I)(6).

required to update the WPS whenever the process generating the waste changes or when the waste itself changes. A description of the WPS Renewal Form is included as Exhibit C. RIS will perform the confirmatory fingerprint analysis on incoming waste to the facility at the frequencies described in *Section C-2e - Additional Requirements for Waste Generated Off-Site.*

C-2d (2) On-Site Generated Waste

RIS will evaluate the waste generated on-site from the incineration process, i.e., incinerator ash, scrubber water and filter cake, at least quarterly. Residual RIS waste is exempt from fingerprint analysis. The frequency of residuals sampling is outlined in Section C-3c.

RIS will evaluate wastes blended for shipment offsite prior to each shipment. RIS will perform confirmatory fingerprint analysis on outbound blended waste per the parameters outlined in Table C2-4, *RIS Fingerprint Analysis Parameters and Test Methods* per *Section C – WAP, Appendix C-2 – Fingerprint SOPs* to accurately characterize the waste sent to offsite facilities.

C-2e Additional Requirements for Waste Generated Off-Site [OAC 3745-54-13(B)(5) and (C)]

C-2e (1) Waste Approval and Acceptance Procedures

RIS' waste approval and acceptance procedures, as outlined in the subsections below, determine the acceptability of specific wastes for receipt at the facility. These procedures dictate what information a potential customer must provide to enable RIS to approve the waste stream for storage and treatment. Before RIS treats, stores, or disposes of any hazardous wastes, or non-hazardous wastes, RIS shall obtain a detailed chemical and physical analysis of a representative sample of the wastes. At a minimum, this analysis shall contain all the information which must be known to treat, store, or dispose of the waste. The analysis may include data developed under Chapter 3745-51 and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes. RIS may arrange for the generator of the waste to supply part, or all of the information required. If the generator does not supply the information, and RIS

[1]Non-infectious wastes mean wastes which do not meet the definition of "infectious waste" under OAC Rule 3745-27-01(I)(6).

chooses to accept the waste, RIS is responsible for obtaining the information required to comply with OAC 3745-54-13. In addition, these procedures define the acceptance protocols for each type of waste in question.

C-2e(1)(a) Pre-acceptance Procedures

RIS' waste approval and handling procedures, developed in conformance to OAC 3745-54-13, ensure the information provided by the generator is correct and verifiable. Prior to the first shipment of any waste to the facility, the generator must execute a Waste Materials Service Agreement, complete a WPS Form, and in certain cases, provide information verifying the components listed on the WPS. The WPS form and any supplemental information is reviewed prior to acceptance of the waste by appropriate personnel representing technical staff, Receiving, Incineration and Corporate EHS Departments. Decisions regarding acceptance of waste materials are generally made by the technical staff or managers of each of these departments. RIS' evaluation process includes review of the WPS and supplemental data (e.g., WCV in the form of analytical data, safety data sheets, etc.) and RIS' capabilities to accept the waste. For instance, RIS reviews the waste stream to determine if the facility is permitted to accept the hazardous waste codes associated with the waste, the waste is amenable for incineration, the facility has the appropriate storage and processing capabilities and procedures, and the facility's health and safety capabilities and procedures are adequate for handling the waste. RIS develops waste Handling Instructions ("HIs") based on the composition, properties and associated hazards of the waste. RIS also evaluates potential process codes and feed locations applicable to the waste. RIS determines the appropriate incinerator feed protocols based on several variables including the chemical composition and physical state of the waste stream (e.g., pumpability, metals content, corrosivity), feed location design, feed rates, system feed rates, feed location permit restrictions, and safety considerations. Each waste stream considered for acceptability at RIS is evaluated as a unique and distinct entity using the review process and criteria described in this section. Waste may be rejected for shipment to the facility for various reasons including permit restrictions (e.g., waste code prohibitions or restrictions, the waste not being amenable to incineration), an unjustifiable safety or processing risk, processing capability considerations and economic viability. RIS

[1]Non-infectious wastes mean wastes which do not meet the definition of "infectious waste" under OAC Rule 3745-27-01(I)(6).

documents its decision-making process for waste acceptability in the customer files, which are part of RIS' Operating Record.

If insufficient information is provided by the generator, RIS may request additional information from the generator at any point in the acceptance and approval process, or may choose to supplement the information, with generator consent, using various informational resources. Typical resources consulted in supplementing the information gathered on the WPS and making waste acceptance determinations include information available from common chemical desk references such as SAX Dangerous Properties of Industrial Materials by Richard J. Lewis, Sr., The MERCK Index, Hawley's Condensed Chemical dictionary, Farm Chemicals Handbook, and the internet.

C-2e(1)(a)(i) Waste Classifications

Based on the information provided by the generator on the WPS, and supplemental information gathered by RIS, RIS will classify the waste as either a Standard Waste or a Special Waste. In determining whether a waste is a Standard Waste or a Special Waste, technical staff reviews the WPS information (chemical composition, physical state, etc.) and supplemental information, and prepare recommendations for the classification of the waste. This recommendation is reviewed and verified by appropriate representatives of the Receiving, Production, and Corporate EHS departments. If the waste is recommended to be a Special Waste, the Special Waste Review Committee ("SWRC") *(see Section C-2e(1)(a)(vi) Special Waste Review Committee)* also reviews and verifies the determination. No department can re-classify a Special Waste to a Standard Waste, however, any department or committee reviewing the waste can reclassify a Standard Waste as a Special Waste or reject the waste.

Standard Waste is all waste that is not characterized as a Special Waste as further described below. A Special Waste would include the following:

- Any waste stream that upon opening, sampling, or inspecting the container under normal atmospheric conditions, has a potential to ignite, release a poisonous vapor in sufficient quantities to threaten human health or the

[1]Non-infectious wastes mean wastes which do not meet the definition of "infectious waste" under OAC Rule 3745-27-01(I)(6).

- environment, creates a physical hazard to employees or reacts violently or uncontrollably. Special Wastes include certain air and water reactive wastes and certain materials that are poisonous by inhalation. Criteria mentioned above are determined by SWRC on a case-by-case basis using US DOT and OSHA standards. Any very strong oxidizer, based on NFPA criteria, and solid wastes exhibiting the properties of explosives and munitions. The following wastes are examples of wastes included in this category (only if they exhibit the associated property): strong oxidizers and propellants such as peroxides, chlorates, perchlorates, persulfates, azides, nitrates, mercury cyanate, lead styphate, diazodinitrophenol ("DDNP"), tetrazene, nitroglycerin, nitrocellulose, nitramines, nitroaromatics, picric acid, ammonium picrate, black powder, benite, and temperature/heat sensitive materials.
- Waste streams generated by a facility that manufactures, distributes, or uses explosives or munitions, as determined by generator disclosure on the WPS or if indicated by a review of the components and process generating the waste as disclosed on the WPS.
- All "X" wastes, as defined in Section C-2e (1)(a)(ii).

A waste that may meet the definition of a Special Waste due to its hazardous properties may be managed as a Standard Waste when RIS' experience in waste management, ability to manage the hazards associated with the waste, and historical experience with the waste indicates it is not necessary to submit the waste to the Special Waste review process. In such cases, the waste stream may be re-classified as a Standard Waste and the re-classification is documented by placement on the "Approved Standard Components List.

C-2e (1)(a)(ii) "X" Class Wastes

"X" Class Wastes are waste streams which cannot be opened due to their potential to adversely affect human health and the environment. Examples of such wastes include wastes that: are spontaneously ignitable and/or spontaneously reactive under normal atmospheric conditions (air and water reactive); give off poisonous vapors; are non-infectious[1], pandemic cleanup wastes; and are non-infectious[1] wastes covered under the Health Insurance Portability and Accountability Act ("HIPPA"). RIS will only accept "X"

[1]Non-infectious wastes mean wastes which do not meet the definition of "infectious waste" under OAC Rule 3745-27-01(I)(6).

Class Wastes with written approval from Ohio EPA Northeast District Office. When requesting written approval, RIS will specify: customer(s), waste name/type, an estimated quantity of waste involved, and provide a statement of need. "X" Class Waste streams will not be sampled for fingerprinting and will not be visually inspected.

C-2e (1)(a) (iii) "V" Class Waste

"V" Class Wastes are waste streams which do not spontaneously ignite or uncontrollably react upon opening the container to normal atmospheric conditions but could react or pose a toxicity threat to human health and the environment during handling, sampling, or testing. A waste is classified as a "V" waste depending on the composition of the waste:

1) RIS determines a waste to be a "V" waste if the concentration of reactive components, or the reactivity data indicates the waste should not be agitated or disturbed for sampling purposes as they could pose certain risks to human health or the environment. The specific concentration of reactive components varies per waste stream and component.
2) RIS also determines a waste to be a "V" waste if the waste is a controlled substance received as a result of law enforcement drug destruction or if the waste is a pharmaceutical product (e.g., DEA-regulated substance, FDA-regulated drug), or would be considered a pharmaceutical product if it met intended specifications, and for which the generator has provided RIS with data sufficient to quantify the composition and characterize the properties of the waste. Specifically, pharmaceutical products (e.g., DEA regulated substances and FDA regulated drugs) which cannot be sent off-site for testing will be treated as a "V" waste. If drugs/medications not otherwise classified as "V" Class wastes are combined, as a result of normal handling practices, with regulated pharmaceuticals, then the entire container will be treated as a "V" waste.
3) RIS determines a waste to be a "V" waste if it is an extremely odorous material (such as mercaptan). Again, this is determined on a case-by-case basis.

4) RIS determines a material to be a "V" waste if a concentration of toxic components, or toxicity data, indicates that sampling may pose a significant health risk. The specific amount of toxic material varies per waste stream and component.
5) RIS also determines materials regulated by the Animal and Plant Health Inspection Service ("APHIS") to be a "V" waste.
6) "V" waste includes medically oriented waste. Medically oriented waste consists of discarded materials from hospitals, clinics, scholastic institutions, and laboratories including, but not limited to, medical, research, industrial, analytical, and pharmaceutical labs. Medically oriented waste does not meet the definition of "infectious waste" under OAC Rule 3745-27-01 (I)(6). RIS will perform a visual inspection on 100% of the medically oriented waste containers, and confirmation of the contents by comparison to the applicable WPS, in lieu of any waste sampling.
7) A Standard Waste may be classified as a "V" waste if a representative sample cannot be readily obtained. Examples include: concrete block, steel pieces, process equipment, filters, railroad ties, utility poles, wooden objects, empty containers, tanks, piping, valves and fittings, building demolition debris, rocks and boulders, brick, tile, cinder block, chunks of concrete, contaminated debris, contaminated PPE, etc. "V" waste will be visually inspected but will not be sampled for fingerprinting. At a minimum, standard "V" waste will be inspected per the 10% visual inspection program, and special "V" waste will be 100% inspected with additional visual inspection requirements imposed by the SWRC, as needed.
8) A Standard Waste may be classified as a "V" waste if a fingerprint would not provide additional valuable information regarding the characteristics or hazards of the waste. A Standard Waste may be classified as a "V" waste if a fingerprint would not provide information to further protect human health and/or the environment. Certain wastes, such as Universal Waste, household waste, consumer commodities, out-of-date products and off-specification commercial products have already been sufficiently characterized during the approval process.

9) Documentation used to characterize "V" wastes may include labels, product specification sheets, batch sheets, safety data sheets or other documentation.

The technical staff will complete the initial review of the WPS and will refer the WPS to the SWRC if it potentially meets the definition of a Special Waste. Standard and Special Wastes will be evaluated and processed as described in Sections C-2e(1)(b) through C-2e(1)(e).

C-2e (1)(a)(iv) Small Containers in Combination Packaging (as defined by the US DOT)

RIS receives small containers in combination packaging, including Lab Packs and Loose Packs. A Lab Pack is a container holding smaller inner containers of waste which typically, but not exclusively, consist of laboratory reagents. Lab Pack wastes may not all have similar characteristics, although they are of a common US DOT Hazard Class for packaging and transportation purposes. Lab Packs may contain an absorbent material, such as vermiculite, and will include a packing list which specifically describes their contents. Lab Packs are subject to the exemptions provided under 49 CFR 173.12 (e.g., generic shipping name, and exceptions from specific packaging requirements and land disposal restrictions). Additionally, Lab Packs are limited in the amount of material they can hold, based on the volume of the outer container.

A Loose Pack is a container that holds smaller inner containers of waste having similar characteristics (i.e., same chemical family) and US DOT shipping descriptions. Such waste is typically laboratory oriented, though other wastes of a similar nature may also be contained in Loose Packs. A Loose Pack may or may not include an absorbent material, and the outer container is not typically accompanied by a packing list. However, its inner containers are labeled to identify their contents. Loose Packs do not have the same restrictions on inner container size or volumes as Lab Packs. Regulatory exemptions for Lab Packs (e.g., generic shipping name, and exceptions from specific packaging requirements and land disposal restrictions) do not apply to Loose Packs.

In general, a Lab Pack may hold waste streams which represent different US DOT shipping descriptions, while a loose pack contains waste streams which have similar US DOT shipping descriptions.

C-2e (1)(a)(iv)(A) Lab Packed Waste

Prior to receiving any Lab Pack containers at RIS, pre-acceptance criteria in accordance with this WAP must be met.

In addition, a packing list that details the internal contents of each shipping container must be approved. Typically, copies of the packing list are either attached to the corresponding shipping container or forwarded to RIS electronically prior to container receipt. Once received, the Lab Pack container will undergo visual inspection whereby each shipping container will be unpacked, and the internal contents will be inventoried against the corresponding packing list. If an RIS agent performed the packaging of the Lab Pack containers off-site, and the lab pack shipping containers are received at RIS still sealed by a tamper-proof RIS designated tag, then the unpacking and inventory of the Lab Pack container may be waived, and the visual inspection requirements considered complete.

C-2e (1)(a)(iv)(B) Loose Packs

A Loose Pack determination is made by technical staff at the time the WPS is prepared by the customer. When Loose Packs are received at RIS, the outer containers are examined to confirm they match the manifest. CIN labels, which identify the drums as Loose Packs, are placed on the outer containers so they can be tracked internally by RIS. 100% of each Loose Pack is unloaded, opened, and the inner containers are visually inspected. The identity of the contents on the inner container labels are recorded on a "Visual Inspection Worksheet" (see Exhibit L) by trained RIS personnel. The inner containers are then repacked, and the outer loose pack containers are closed and placed in storage. The Visual Inspection Work Sheet is compared

against the Loose Pack WPS to confirm that the contents identified on the labels of the inner containers are consistent with the chemical characteristics identified on the WPS.

C-2e (1)(a)(v) Waste Component Verification ("WCV")

Prior to shipment of certain off-site generated wastes to the facility, the generator must provide RIS with WCV. The purpose of WCV is to verify the components listed on the WPS. To ensure the safe and effective management of waste at the facility, it is essential that high quality information is collected when the WPS is developed. WCV is intended to provide RIS with additional documentation to assist in verifying generator assertions supplied in the WPS. Given better descriptions of waste to be received, RIS may modify waste handling and management practices to optimize safety and efficiency. The focus of WCV is verification of the components listed in Section 5 of the WPS at the concentrations indicated.

If the data is valid, subsequent decisions about waste management will be accurate. All WCV requirements are a one-time requirement unless the waste changes. If upon receipt of WCV, RIS determines that it cannot manage the waste at its facility, RIS will notify the generator, prior to shipment, that the waste is rejected for shipment to the facility. It is the intent that most frequently this information will be provided by the generator. The following are acceptable sources of waste component verification:

1. Safety Data Sheet(s) ("SDS") that specifically describe the components listed in Section 5 of the WPS.
    - Applicable for pure materials, out-of-date products, off-specification material for which the SDS is still representative, spills, etc.
    - Multiple SDSs may be used on a profile. The customer must identify what portion of the waste stream is represented by each SDS.
    - A single SDS may apply to several WPSs. The customer must identify what portion of each waste stream is represented by the SDS.
    - A "typical" SDS may be used for certain waste types exhibiting similar characteristics but minor differences in properties (e.g., paint waste stream with different pigments).

- RIS may maintain a database of SDSs for common constituents in hazardous waste accepted by the facility. RIS will obtain the customer's written consent to use SDSs in RIS' database to meet WCV requirements.
- An SDS will be acceptable for waste contained in aerosol cans.

2. Laboratory analysis that specifically quantifies components listed in Section 5 of the WPS.
   - Test results from commercial or generator on-site labs are acceptable.
   - Multiple analytical results per profile are acceptable. The customer must define the proportion of the waste stream that each result represents.
   - A single set of analytical results may be used in multiple WPSs. The generator must identify what portion of the waste is represented by the analytical results.
3. Raw material analytical data or SDSs may be used if the customer can identify what portion of the waste stream is identified by the data. Feed stock data may be used to confirm the data in Section 5 of the WPS for wastes in aerosol cans. RIS will verify that generator processing of the feed or raw materials did not generate new constituents and/or create new hazards.
4. Waste Process Validation ("WPV") at generation site. Prior to the first shipment of waste to the facility, RIS may conduct WPV. During WPV, RIS visually inspects the waste at the generation point and documents details regarding the generation process itself, the waste components of the process, and special handling requirements, if any. This validation will satisfy the requirements of WCV in circumstances designated by the SWRC.
5. Generator Description and Certification of the Process. The generator must explain the waste generation process, provide a detailed description of the characterization methodology to capture the reasoning behind the component description on the WPS, and certify the accuracy of such information. Utilization of this type of WCV will be considered on a limited case-by-case basis. This option may only be used in conjunction with another WCV option to supplement the information provided, however, it may not stand alone as WCV. This option would be sought when one or more of the traditional means of WCV is available but leave gaps that require generator description and certification. In some cases, a generator may have in his or her possession an

SDS or set of analytical results that require amplification or explanation before fully fitting the definition of WCV. For example, this WCV may be appropriate for an aborted organic synthesis in which documentation is available for reactants and products, but not for the intermediates which are present in the waste stream. In this case, a description of the situation, along with an SDS or analytical for reactants and products, would satisfy the WCV requirement.

6. Labeling information that specifically identifies the contents for commercially available products (e.g., consumer products, and aerosol cans).

Waste material/components exempt from the verification requirements are:

1. Inert solids (e.g., dirt, organic absorbents, inorganic absorbents, etc.);
2. Water;
3. Debris (e.g., filters, PPE, wood);
4. Materials that cannot readily be sampled or for which component testing is meaningless (e.g., concrete, railroad ties, steel, tar, asphalt, inert organic and inorganic fillers and lubricants);
5. Empty containers (RCRA empty containers with residues may require supporting data to substantiate that they meet the definition of RCRA empty); and
6. Non-regulated materials.

Additionally, RIS will require contaminant verification only for the contaminants in water and dirt. However, the water or dirt component of these mixtures or derived-from wastes will be exempted from the verification requirements herein.

C-2e(1)(a)(vi) Special Waste Review Committee ("SWRC")

Wastes that are characterized as Special Wastes by the technical staff will be reviewed by the SWRC prior to agreement to receive the waste. This committee will consist of individuals with expertise in the areas of safety, health and environmental, regulatory

requirements, RIS receiving practices and procedures, RIS incinerator practices and procedures, processing and equipment capabilities, chemistry, and profiling.

The committee will be responsible for the review and approval, or rejection, on a case-by-case basis, of Special Wastes. The SWRC will provide the expertise required to safely handle waste that will be incinerated at RIS using available reference information along with OSHA and US DOT standards. The SWRC may also choose to enlist the services of certain persons outside of RIS who are experts in a given field or manufacturing area to supply information that will be used by the committee to evaluate, approve or reject Special Waste. The SWRC will utilize the customer and his or her knowledge of the waste to gather additional information needed to assist in the evaluation of the Special Waste stream.

Following review of a Special Waste stream, the SWRC may refer a waste stream back to the standard waste approval process if it feels the waste stream has not been properly classified as a Special Waste.

If the SWRC approves a Special Waste for shipment to RIS, the SWRC will be responsible for approving HIs and processing codes for Special Wastes. The committee will also specify any special pre-shipment, shipment or processing requirements for the waste stream. After the SWRC has completed their review, determined that the waste stream can be received by RIS, and generated special HIs, the committee authorizes the technical staff to pursue the business opportunity. Pre-shipment requirements may include any pre-shipment samples that may be requested, special packaging or container sizes, a visit to the generating facility to observe waste handling practices, process validation, sealing the containers, etc. Shipment requirements can include special equipment necessary prior to processing a given material, custom process supervision requirements and special requirements imposed by RIS.

C-2e (1)(a)(vii) Generator Waste Characterization

The generator, in accordance with the Waste Materials Service Agreement (see Exhibit A) between the generator and RIS, is required to supply information regarding the composition

and chemical characteristics of each waste stream to be handled by RIS. The WPS contains a comprehensive disclosure of the chemical composition of the waste and specifies the information needed to treat and store the waste. Information required on the WPS includes halogen content, sulfur content, metals content, BTU value, toxicity data, general physical characteristics, reactivity characteristics, and ignitability. Although the WPS also contains limited information on the incompatibilities of the waste, the WPS, in conjunction with WCV, provides sufficient information to technical staff for use in evaluating applicable waste incompatibilities. If the required WPS information necessary to treat, store or dispose of the waste cannot be obtained from the generator, from his knowledge of the waste or from the data developed under OAC 3745-51, it will not be accepted for treatment, storage or disposal at RIS.

A listing of approved test methods is included with the instructions for completing the WPS and is also included with this WAP in *Section C-2b Test Methods*. Independent verification of WPS data may be obtained by RIS whenever a new customer's waste characteristics significantly differ from the characteristics one would expect based on published literature and application of engineering judgment. Independent verification may include any of the following: a literature review of information available from common chemical desk references such as SAX Dangerous Properties of Industrial Materials by Richard J. Lewis, Sr., The MERCK Index, Hawley's Condensed Chemical dictionary, Farm Chemicals Handbook, the internet, a data review of OSHA and US DOT standards, a data review of analytical test methods and results; a waste component review, or a waste process inspection. Test methods used are consistent with OAC 3745-51-20, Appendix, and in most cases, sampling methods are included in the California Department of Health Services, Berkeley, California, document entitled "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA #600/2-80/018 and Test Methods for Evaluating Solid Waste, (SW-846) May 2020 edition.

C-2e (1)(b) Waste Acceptance Procedures (Incoming Waste Shipment Procedures)

C-2e (1)(b)(i) Receiving Procedures

Once a waste is approved for receipt at RIS, the incoming waste shipment procedures will be followed. RIS' waste acceptance and handling procedures check the information provided by the generator is correct and verifiable. For certain waste types, RIS requires the generator to provide WCV, demonstrating the chemical composition of the waste stream prior to receiving the waste at the facility. A more detailed description of the purpose and requirements for WCV can be found in *Section C-2e(1)(a)(v) Waste Component Verification*. In addition, RIS generates independent information through physical inspection and fingerprint test of waste streams.

Upon arrival of the waste shipment at RIS, the truck driver shall be required to submit pertinent papers, such as the manifest, bill of lading, and/or shipper and land disposal restriction documentation to the receiving agent. Truck driver's hauling bulk loads are directed to the weigh scales where the incoming weight is recorded. The receiving agent verifies that the manifest has been properly executed by the generator and the transporter, that the D.O.T description and the waste codes are acceptable for receipt by RIS, and that the WPS has been approved for acceptance.

The receiving agent then notifies a Receiving Foreman, or his representative, that the shipment has arrived. The Receiving Foreman determines which dock and/or unloading area (e.g., CSF, process dock) is appropriate for the waste(s). See *Section C-2e (1)(a)(iv)* for receiving procedures for Lab Pack waste and Loose Packs. The shipment of waste will be taken to the Receiving facilities (e.g., process dock, CSF), where Receiving will verify the amount or count for each WPS identified on the manifest, bill of lading or the shipper. The waste count or amount is verified; the Land Ban attachments are reviewed for completeness; and the Receiving Department determines that no significant quantity discrepancies exist as defined by OAC 3745-54-72. While any variation in piece count is considered a significant quantity discrepancy for containerized loads, a significant quantity discrepancy for bulk loads is defined to be a variation in weight of ten percent or more. RIS receives waste into its facility after an authorized Receiving person signs the manifest.

Signature on the manifest designates receipt of the waste at RIS, NOT acceptance into the facility. Since RIS only accepts conforming waste, waste is only accepted into RIS after it is determined to be a conforming waste. This determination may take place at numerous points prior to treatment.

Initial inspection of the waste by RIS, either at the customer site or following arrival at the facility, is documented by means of the Physical Inspection Summary (see Exhibit D). The Physical Inspection Summary accompanies the waste as it is managed at the facility.

The Discrepancy Report documents the identification and resolution when a discrepancy is discovered in the waste received compared to the waste listed on the manifest and the WPS. The HIs provide the RIS operators with specific handling methods to be used, precautionary measures, toxicity data, and any other information that may be required to handle the waste. Additionally, compatibility testing may be completed once the waste is received on-site. When final disposition of the waste has been completed, the manifest, LDR Notification and Certification, Shipper, Physical Inspection Summary, Compatibility Test Documentation and HIs become a part of the Operating Record. Descriptions of the above-described waste characterization and management forms are included as Exhibits to this WAP as outlined below:

Exhibit A:	RIS Waste Materials Service Agreement
Exhibit B:	RIS Waste Product Survey (WPS) Description
Exhibit C:	RIS WPS Renewal Letter
Exhibit D:	RIS Physical Inspection Summary
Exhibit E:	RIS Discrepancy Report
Exhibit F:	RIS Handling Instructions
Exhibit G:	RIS Sample Testing Information
Exhibit H:	RIS Lab Worksheet
Exhibit I	RIS Notification and Certification Form
Exhibit J	Compatibility Test Documentation Summary
Exhibit K	RIS Metals and PCB Logic Flow Charts
Exhibit L	Visual Inspection Worksheet

The forms described in this WAP are typical forms to be used by RIS. These forms may be

updated with equivalent information based on changes in the regulations, customer needs, facility operations or company policies. Data gathered for these forms may be electronically generated and/or stored and maintained on microfilm, computer, computer floppy disks, magnetic tape disks, microfiche or other appropriate electronic media. The data will be maintained in a form suitable and readily available for expeditious inspection and review.

C-2e(1)(b)(ii) Confirmatory Analysis Parameters and Frequency

Waste shipments received at RIS are inspected and analyzed in accordance with this WAP to assure the waste received is within acceptance limits of the waste designated on the accompanying manifest, shipper and WPS form. In general, RIS' confirmatory process takes up to 96 hours. Once the initial confirmatory waste acceptance determination has been made, and the waste has been released for processing, RIS moves the waste to a permitted storage location. At times, RIS receives waste that does not conform to the WPS and manages the nonconformance as a discrepancy. Discrepant material is staged on concrete at RIS, until further determinations regarding acceptance and the final disposition of the waste can be made. As such RIS appropriately excludes discrepant waste from the 96-hour clock.

Confirmatory analytical methods are classified as either Mandatory Analyses or Supplemental Analyses.

- Mandatory Analyses are performed on incoming waste shipments in order to confirm a waste stream and ensure the proper waste management technique can be utilized.
- Supplemental Analyses are performed as directed by facility management to augment existing information on the waste, to further confirm a waste, or to further ensure the appropriate waste management technique can be utilized.

This arrangement allows a tiered approach to waste management, enabling RIS to structure the analyses to define process operations for various treatment or storage processes. Incoming waste is subject to the Mandatory Analyses as a first step in the analytical scheme. Supplemental Analyses are additional analyses performed according to need. Facility management may select additional analyses to augment the mandatory screening or to provide operational controls for processing. The parameters that constitute Mandatory and Supplemental Analyses are listed below. A description of analytical

methods which may be used to determine these parameters can be found in *Section C-2b, Test Methods*.

In the event of a discrepancy, technical staff review the customer file and/or applicable laboratory analysis to identify steps necessary to resolve the discrepancy. Depending on the severity and frequency of the discrepancy, technical staff formulates a remedy ranging from modification of a single waste profile to rejection of the waste.

C-2e (1)(b)(ii)(A) Mandatory Analyses

The Mandatory Analyses are performed to provide general WPS confirmation and are used to indicate proper storage, processing, transfer or permit compliance. Additionally, Mandatory Analyses consist of basic fingerprint analysis, visual inspection procedures, metals testing and PCB testing.

Fingerprint Analysis. RIS will conduct fingerprint analysis to characterize incoming waste streams and to determine whether the incoming waste conforms to the WPS. The fingerprint analysis will be conducted in RIS' on-site Fingerprint Laboratory. All waste streams, except those designated as "DO NOT SAMPLE", as described in *Section C-2e(1)(c) Sampling Exemptions* will be randomly sampled and inspected by the Receiving Department, unless otherwise specified in the HIs.

Ten percent (10%) of containers of each WPS (waste stream) in each shipment will be opened and randomly sampled for fingerprint analysis. For palletized materials, RIS will determine the appropriate level of sampling and inspection to meet the intent of 10% WPS sampling/inspection requirement (e.g., 10% of the universe by weight or volume). For aerosols with labels, RIS will compare the label to the WPS information. In the absence of a label, if possible, RIS will conduct fingerprint analysis as necessary and appropriate, as determined by RIS, and consistent with the intent of the 10% WPS sampling/inspection requirement. Lab Packs and Loose Packs will be categorized using the waste characterizations for Standard and Special Waste discussed in *Section C-2e(1)(a)(i) - Waste Classifications* and inspected accordingly as described under "Visual Inspection" and in *Section C-2e (1)(a)(iv) – Small Containers in Combination Packaging.* Wastes designated as APHIS wastes are either not physically sampleable or pose an unreasonable risk to

human health and/or the environment during sampling and analysis. As such, APHIS wastes that are incinerated using the side door feed mechanism will not be sampled.

In certain circumstances, RIS may elect to have the sampling and analysis of the containers conducted off-site by the generator or a third party. Data developed in this way will be considered acceptable as long as the analysis includes the parameters listed herein and are conducted in accordance with the methods specified in the RIS WAP. Additionally, the data set will be considered acceptable only if the containers are uniquely identified so that a specific analysis can be associated with a specific container. In cases where a representative sample of a complete batch can be taken prior to the waste being containerized, one fingerprint analysis will be acceptable for all drums from that batch. All off-site sampling will be witnessed by RIS personnel or an agent of RIS who will ensure the sampling is representative of the material. All waste material sampled under these procedures will be sealed or segregated after sampling in a manner which ensures that no additional material is added prior to shipment.

Off-site sampling as described above will be documented in the Operating Record. These sampling records will include the same information and documentation procedures collected during on-site sampling.

The fingerprint analysis parameters indicated on *Table C2-4 entitled "RIS Fingerprint Analysis Parameters and Test Methods"* were selected from the WPS. Selection was based on the parameter's ability to verify the original waste analysis.

The range of acceptable variations in the selected parameters has been determined by considering the facility's operational constraints. RIS determines the acceptable variations based on how RIS operates or processes waste, on the given test parameter and documented scientific accuracy and on regulatory constraints. The SOPs for fingerprint analysis are included in Appendix C-2. Records of all fingerprint analytical data including CIN, sample date, analysis date, and analytical parameter values, will be maintained in the Operating Record.

If no fingerprint discrepancies are discovered, the waste will be released for processing. If

a fingerprint discrepancy is discovered, then RIS will contact the customer for resolution of the discrepancy. If the fingerprint discrepancy cannot be resolved, the waste will be returned to the customer, or with customer approval the waste will be forwarded to another permitted Treatment, Storage, and Disposal Facility ("TSDF"). All discrepancy resolutions of Special Waste will be referred back to the SWRC before being released for processing. If necessary, as a result of a discrepancy, the WPS will be revised to properly describe each waste stream received or a new WPS may be created. If the technical staff determines that a discrepancy trend is evident, based on review of the customer file and lab history, permanent resolution of the problem will be established with the customer. Depending on the severity and frequency of the discrepancy trend, the remedy could range from a permanent modification of the waste profile to are an evaluation / re-classification of all of the customer's profiles. In severe cases, RIS management will talk to the customer's management staff, and if no improvement is noticed, RIS may stop receipt of the customer's waste. In addition to the technical staff's input, discrepancy trends can be identified by Operations and then the Discrepancy Team investigates possible remedies.

Visual Inspection. RIS will conduct visual inspection of waste to characterize incoming waste streams and to determine whether the waste received by the facility conforms to the WPS. Visual inspection of containers, bulk solid loads and tank trucks occurs during the sampling process (See Section C-2c – *Sampling Methods*). Containers are randomly chosen for inspection, sampling and assigned CINs.

The Receiving Department will compare a description of off-site generated waste to what is actually observed in the containers that are opened.

The inspection will be conducted to assure the waste substantially conforms with properties such as: physical state, which includes liquid, solid, semi-solid, and sludge; color; and confirmation of the components described in the WPS. The visual inspection will be conducted by RIS Receiving personnel, or an agent of RIS, and documented on the Physical Inspection form or its equivalent, which will be maintained in the Operating Record (See Exhibit D). RIS will visually inspect phase, color, and composition. The composition inspection is intended to evaluate physical components or physical

characteristics of the WPS, not chemical composition of the waste. Physical composition is inspected for solid wastes such as debris, rags, and concrete and may also be useful for multi-phase waste such as semi-solids and sludges. All waste streams, except "X" waste, will be inspected by the Receiving Department unless otherwise specified in the HIs.

Visual inspection of waste streams may be conducted at the customer/generator's site or at RIS. For inspections conducted at the customer's site, RIS will conduct 100% visual inspection of containers prior to shipment to RIS. Following this inspection, the containers will be sealed for shipment. Upon arrival at the facility, RIS will inspect the container seal to assure they have not been broken and that no tampering has occurred.

For inspections at RIS, RIS will conduct visual inspections on 100% of each inspectable WPS on its first shipment. Any waste is inspectable with the exception of an "X" waste. Once the 100% visual inspection passes, 10% visual inspection will be completed on subsequent shipments of said WPS. Generally, when 10% visual inspection occurs, each container that is visually inspected will also be sampled for fingerprint analysis. RIS will conduct 100% visual inspections for samples composited in accordance with laboratory procedure FP-020. If a visual discrepancy is discovered during the ten percent (10%) inspection, then all containers of the WPS will be required to be 100% visually inspected.

Visual inspection of Lab Pack containers requires each shipping container to be unpacked and to have the internal contents inventoried against the corresponding packing list. If any container content discrepancies are found, the receipt is declared physically discrepant, and the discrepancy is resolved between the generator and the technical staff. If an RIS agent performed the packaging of the Lab Pack containers off-site and the Lab Pack shipping containers received at RIS are still sealed by an un-tampered RIS designated tag, then the unpacking and inventory of the Lab Pack contents operation may be waived. This circumstance will be noted on the Physical Inspection Summary, which is maintained in the Operating Record. Visual inspection requirements for Loose Packs are discussed in *Section C-2e (1)(a)(iv)(B)*.

RIS will conduct 100% visual inspection on non-empty containers fed to the Side Door in each shipment of each WPS. In order to communicate the visual inspection requirements for a shipment of Side Door materials to the Receiving - CSF Operator, a sampling designation will identify the side door visual inspection requirements.

For [redacted] waste streams, if no visual inspection discrepancies are discovered, the waste will be released for processing. If a visual inspection discrepancy is discovered, then RIS will contact the customer for resolution of the discrepancy, and RIS will conduct a 100% visual inspection of the applicable WPS from the current shipment. Furthermore, RIS will require a 100% visual inspection of the affected WPS during the subsequent shipment before reverting to the 10% visual inspection program. If the visual inspection discrepancy cannot be resolved, the waste will be returned to the customer, or with customer approval, the waste will be forwarded to another permitted TSDF. All discrepancy resolutions of Special Waste will be referred back to the SWRC before being released for processing.

Table C2-4. RIS Fingerprint Analysis Parameters and Test Methods

Fingerprint Parameter	Rationale for Parameter	Acceptable Range	RIS Standard Operating Procedures	Reference Test Method[1, 2]
Flash Point (liquids only)	Determines ignitability for proper handling.	Wastes are classified as high, medium, and low flash point wastes based on the following criteria. The waste material is discrepant if test results indicate the need to change classification to a lower flash category. Classification — Flash Point Limits of Variations High — Greater than 200°F Medium — Greater than 140°F and less than 200°F Low — Less than 140°F	FP-002-04	ASTM D93-80, test methods for evaluating solid waste SW-846 method 1010B, Pensky-Martens Flash Tester Operator's Manual, test methods for evaluating solid waste SW-846 method 1020B, setaflash open cup method ASTM D4982, SW846 method 9095 determination of free liquids, ASTM D8175-18
pH (aqueous liquids only):	Determines corrosivity for storage purposes	The pH must be within two pH units to be acceptable, however, if the variation affects the regulatory classification, the variation would be discrepant.	FP-004-04	ASTM D4980; SW 846 9040 C and method 9045C
Total Chlorine content (Cl):	Determines demands on scrubber system and used to monitor Chlorine feed rate.	The total Chlorine content must not vary more than plus or minus 20 percent of the WPS value.	FP-007-05	ASTM D2361; ASTM D808-91; Parr Oxygen Bomb User Manual; SW 846 Method 9020, SW-846 Method 5050
Density:	Indicator of physical/chemical conformity	The density must not vary by more than plus or minus 20 percent.	FP-005-04	ASTM D5057-90
Reactive Cyanide	For determining proper storage, handling and compatibility.	The presence/absence must agree with the WPS.	FP-006-03	ASTM D5049-90 Method B and C; Cyantesmo test paper instructions-primary method, merckoquant cyanide test-alternate method
Reactive Sulfide	For determining proper storage, handling and compatibility.	The presence/absence must agree with the WPS.	FP-003-04	Spot Test Analysis, Jungreis, Ervin; John Wiley & Sons, 1985; ASTM D4978-95
BTU Value	Determines energy released in combustion process.	The BTU value must not vary more than plus or minus 20 percent of the WPS value.	FP-001-03	Parr Oxygen Bomb User ManualASTM D240-02; standard test method for gross calorific and ash value of waste method D5468-02 S
Viscosity (bulk liquids only)	Determines pumpability of waste to the incinerator. Parameter for bulk liquids to be incinerated at the RIS facility only.	If profiled as "pumpable" (<2,000 cps) and the value when tested is greater than 2,000 cps, the material will be discrepant. If profiled as a range crossing the pumpability threshold (ex., 1,000 - 3,000 cps) >20% deviation from WPS value is discrepant.	FP-008-04	Brookfield Viscometer Operating Manual; ASTM D2196-86 or ASTM D1545

[1] RIS may substitute stated method with a more appropriate or more current method prescribed by waste type or condition if necessary or if more appropriate methods are developed or established by EPA. RIS has cited SW-846 test methods whenever such method exists. For instances where SW-846 methods do not exist, RIS has cited industry recognized ASTM methods. Alternate methods have been noted only when the method is equivalent or better than the SW-846 test method. Alternative methods have been noted to enable the laboratory staff to accurately obtain data necessary to treat and store the waste.

[2] SOPs included in Appendix C-2

If necessary, as a result of a discrepancy, the WPS will be revised to properly describe each waste stream received or a new WPS may be created. If the technical staff determines that a discrepancy trend is evident, based on review of the customer file and lab history, permanent resolution of the problem will be established with the customer. Depending on the severity, and frequency of the discrepancy trend, the remedy could range from a permanent modification of the WPS to a re-evaluation/re-classification of all of the customer's profiles. In severe cases, RIS will deactivate the WPS, which results in termination of the receipt of the waste stream at RIS.

Miscellaneous Metals and PCB Analysis Terminology. The Rate of Generation ("ROG") listed on the WPS is a measure of the expected shipment rate of that waste to RIS. RIS will obtain the estimated generation rate through the WPS completion process and will exercise reasonable care and diligence to assure that the generation rate on each WPS is not less than the expected shipment rate to RIS.

"Initial generator" means the operator of a production or manufacturing process that produces waste. It does not include waste treatment, storage or disposal facilities, brokers or any party that consolidates wastes from several sources.

"Shipment" refers to each unique WPS/Shipper combination received at RIS.

Metals Analysis. During the fingerprint process, RIS gathers information to confirm Maximum Achievable Control Technology ("MACT") metals concentration. Specifically during RIS' confirmatory sampling process for inbound wastes, RIS samples for Arsenic, Beryllium, Cadmium, Chromium, Lead and Mercury, regardless of the rate at which the waste is generated. The frequency of metals sampling and analysis is based on the ROG listed on the WPS and as follows.

Metals sampling and analysis for High ROG Wastes. When the ROG listed on the WPS is greater than or equal to 4400 gallons per year, the WPS will be categorized as a "High ROG". RIS will conduct sampling for metals analysis for High ROG wastes on ten percent (10%) of the containers in the following shipments of a sampleable WPS:

1. The first shipment received at the facility.
2. Any shipment received from parties other than an initial generator that has not been sampled and analyzed for metals by RIS within 12 months prior to the date

of receipt, or any shipment received from the initial generator, that has not been sampled and analyzed for metals by RIS within 24 months prior to the date of receipt.

3. The first shipment received at the facility from parties other than the initial generator following the receipt of 50,000 gallons and each additional 50,000 gallons. The first shipment received at the facility from initial generators following the receipt of 50,000 gallons and each additional 100,000 gallons.
4. The first shipment following a discrepant metals analysis of that WPS.
5. Reduced frequency of sampling and analysis means that RIS need not conduct the sampling and analysis indicated in item 3 and 4 above. While using reduced frequency sampling and analysis, RIS must use no less than the arithmetic mean plus two standard deviations as the WPS metals concentrations. RIS will reduce the sampling and analysis frequency for metals under the following conditions.
   a. For wastes received from the initial generator, upon completion of three sampling and analysis events if the arithmetic mean values for all metals concentrations are less than the concentrations listed on the WPS, or otherwise, upon completion of ten sampling and analysis events.
   b. For wastes received by RIS from parties other than the initial generator, upon completion of ten sampling and analysis events if the arithmetic mean values for all metals concentrations are less than the concentrations listed on the WPS, or otherwise, upon completion of thirty sampling and analysis events.
   c. If a generator notifies RIS of a change in the waste generation process that increases the concentrations of metals in such waste, the reduced sampling and analysis frequency shall no longer apply until sufficient additional sampling and analysis events are conducted to re-qualify for reduced sampling.
   d. If the metals concentrations for any sampling and analysis event, conducted when reduced sampling is in effect, exceed the WPS values, the reduced sampling and analysis frequency shall no longer apply until sufficient additional sampling and analysis events are conducted to re-qualify for reduced sampling.
   e. RIS shall maintain documentation of all WPSs for which a reduced frequency of metals sampling and analysis has been established.

Metals sampling and analysis for Medium Rate of Generation Wastes. Medium ROG means a waste with:

- a generation rate that is less than 4,400 gallons per year and greater than or equal to 1,100 gallons per year of waste listed on the WPS, or
- a generation rate of less than 1,100 gallons per year of waste listed on the WPS and at least one metal concentration is listed on the WPS that exceeds the following sampling threshold.

Metal	**Sampling Threshold Concentration (PPM)**
Arsenic	12
Beryllium	25
Cadmium	25
Chromium	300
Lead	525
Mercury	75

RIS will conduct metals sampling and analysis for Medium ROG wastes on ten percent (10%) of the containers in the following shipments of a sampleable WPS:

1. Ten (10) % of the shipments received at the facility. If the WPS has been sampled and analyzed for metals by RIS within the previous 24 months, or for wastes received from the initial generator, sampled and analyzed for metals by RIS within the previous 36 months, no metals analysis shall be required on the current sample.
2. The first shipment following a discrepant metals analysis of that WPS.

Metals sampling and analysis for Low Rate of Generation Wastes. Low ROG means a waste with a rate of generation listed on the WPS of less than 1100 gallons per year. RIS will conduct metals sampling and analysis for Low ROG wastes on ten percent (10%) of the containers in the following shipments of a sampleable WPS:

1. One percent (1%) of the shipments received at the facility. If the WPS is received

from parties other than an initial generator and has been sampled and analyzed for metals by RIS within the previous 24 months, or for wastes received from the initial generator, within the previous 36 months, no metals analysis shall be required on the current sample.

2. The first shipment following a discrepant metals analysis of that WPS.

The test methods which may be used for the analysis are outlined in *Table C2-5 "RIS Metals and PCB Test Methods."* RIS' sampling methods are those represented or derived from methods found in Section C-2c, "*Sampling Methods*" and are appropriate for the particular waste stream being sampled. During off loading, RIS will randomly choose the containers for inspection/sampling and assign CINs. RIS will compare fingerprint results to the WPS. Metals analytical results exceeding the WPS range, as indicated in the following table, are considered discrepant.

Profiled Metal Concentration (Arsenic, Beryllium, Cadmium, Chromium, Lead and Mercury)	**Waste is Discrepant if the profiled range is exceeded by:**
0-500 ppm	100 ppm
>500 ppm	20%

If a metal analysis discrepancy is discovered in the waste as received compared to the waste identified on the WPS, the Discrepancy Report will be completed in order to document the identification and resolution of the discrepancy. If any waste fails the RIS metals analysis for any metal, the next shipment of said WPS will be tested for metals.

Each generator will be required to reevaluate his waste using data developed under OAC 3745-51 for each waste stream that is offered to RIS but has not been shipped to RIS in greater than 12 months of the last shipment. In order for the customer to continue shipping its waste to the RIS facility, the generator must re-certify the information on the original WPS. If the generator indicates the waste stream has changed, RIS will require the generator to modify and recertify the WPS. Furthermore, the generator is required to update the WPS whenever the process generating the waste changes or when the waste itself changes.

PCB Analysis. RIS will conduct PCB sampling and analysis on ten percent (10%) of the containers in the following shipments of a sampleable WPS:

1. The first shipment received at the facility, if the generator indicates on the WPS that the waste contains PCBs.
2. Any shipment received by RIS if the generator indicates on the WPS the waste contains PCBs and if the WPS has not been sampled and analyzed for PCBs by RIS within 12 months prior to the date of receipt.
3. The first shipment of all oily waste streams having a more logical possibility of containing PCBs.
4. Any shipment received by RIS if the waste stream has a more logical possibility of containing PCBs and if the WPS has not been sampled and analyzed for PCBs by RIS within 12 months prior to the date of receipt.
5. Three percent (3%) shipments received at the facility if the ROG listed on the WPS is greater than or equal to 4400 gallons per year.
6. One percent (1%) of shipments received at the facility if the ROG listed on the WPS is less than 4400 gallons per year.
7. The first shipment following a discrepant PCB analysis of that WPS.

The test methods which may be used for the analysis are outlined in Table C2-5 "RIS Metals and PCB Test Methods." RIS' sampling methods are those represented or derived from methods found in *Section C-2c, Sampling Methods* and are appropriate for the particular waste stream being sampled. During off loading, RIS will randomly choose the containers for inspection/sampling and assign CINs. If the WPS indicates no PCBs are present in the waste, then any PCB concentration will be considered discrepant and the discrepancy will be managed according to the WAP, *Section C-2e (1)(b)(ii) – Confirmatory Analysis Parameters and Frequency.* If the WPS indicates the PCB concentration is less than 50-ppm, only results greater than or equal to 50-ppm will be considered discrepant. Each generator will be required to reevaluate his waste using data developed under OAC 3745-51 for each waste stream that is offered to RIS but has not been shipped to RIS in greater than 12 months of the last shipment. In order for the customer to continue shipping its waste to RIS, the generator must re-certify the information on the original WPS. If the generator indicates that the waste stream has changed, RIS will require the generator to modify and recertify the WPS. Furthermore, the generator is required to update the WPS

whenever the process generating the waste changes or when the waste itself changes.

C-2e (1)(b)(ii)(B) Supplemental Analyses

The Supplemental Analyses are conducted at the discretion of the facility management and technical staff and are typically performed to further WPS confirmation. The results of the Supplemental Analyses provide facility management with an additional level of confidence concerning proper storage, processing, transfer or permit compliance. Additionally, these analyses consist of standard analytical methods identified in *Section C-2b, Test Methods*. The following is a partial list of the parameters which constitute Supplemental Analyses.

Ash Content - To estimate the amount of solids to be generated for disposal, to verify compliance with permitted feed limitations, and to determine the ash residue resulting from incineration.

Amenable Cyanide - Performed to indicate a waste's cyanide concentration that is amenable to decomposition from Chlorine.

Flammability Potential Screening - Performed to indicate the fire-producing potential of a waste. This test can be applied to all waste liquid, solids or semi-solids.

Free Liquids - Performed to determine if free liquids are present in containerized waste.

Liquid Waste Compatibility - Performed during receiving to determine whether liquid waste can be blended together during tank storage.

Metals Testing - RIS completes metals testing on the next shipment of a WPS after a discrepant analysis and at the direction of RIS' technical staff.

Oxidizer Screening - Performed in order to determine whether oxidizing agents or peroxides are present.

PCB Testing - RIS may conduct discretionary PCB testing:

1. On waste streams that have a more logical possibility of containing PCBs (such as oily wastes and wastes generated from processes containing PCBs).
2. On the next shipment of a WPS after a discrepant analysis. When a PCB discrepancy is discovered in the waste as received compared to the waste identified on the WPS, the Discrepancy Report will be completed to document the identification and resolution of the discrepancy. Additionally, if any waste fails (greater than or equal to 50-ppm of PCB) the RIS PCB analysis, the next

shipment of said WPS will be tested for PCB.

3. At the discretion of RIS' technical staff.
4. Whenever the PCB concentration indicated on the WPS, or the analytical PCB concentration is greater than 35 ppm.

Vapor Pressure - Performed to determine safe handling of the material.

Water Content - Performed to determine the percent water in a sample.

Fourier Transform Infrared (FTIR) Spectroscopy – Performed to determine organic identification screening.

Ludlum Model 19 Radiation Monitor – Performed to determine radioactivity.

Laser Induced Breakdown Spectrometer - Used to perform element composition evaluations.

Additionally, various spectrometry or thermal analysis may be conducted to further classify waste.

C-2e(1)(c) Sampling Exemptions - "Do Not Sample" Waste Streams

RIS has identified types of waste streams that will not be sampled upon arrival at the facility. The "Do Not Sample" wastes are broken into two categories, which are defined as follows:

C-2e(1)(c)(i) "X" Class Wastes

"X" Class Wastes are defined in *Section C-2e(1)(a)(ii).*

C-2e (1)(c)(ii) "V" Class Waste

"V" Class Waste is defined in *Section C-2e (1)(a)(iii).* Small containers in combination packaging (e.g., Lab Packs and Loose Packs) as defined in *Section C-2e (1)(a)(iv)* are considered "V" Class Waste, because they are visually inspected but not sampled for fingerprinting.

Table C2-5. RIS Metals and PCB Test Methods		
Constituent	**Rationale**	**Reference Test Method[1, 2]**
Arsenic	Identifies metal residues, which might restrict incinerability via particulate emissions or otherwise affect method of treatment or disposal and is used to monitor metals feed rate.	6010C, 6020A
Beryllium	Same as above	6010C, 6020A
Cadmium	Same as above	6010C, 6020A
Chromium	Same as above	6010C, 6020A
Lead	Same as above	6010C, 6020A
Mercury	Same as above	7470A, 7471A
PCBs	Indicates presence and concentration of PCBs in wastes.	PCB Analysis: 8082

[1] RIS may substitute stated method with a more appropriate or most current method prescribed by waste type or condition if necessary or if more appropriate methods are developed or established by EPA.

[2] Test methods for Evaluating Solid Waste (SW-846) US EPA, third edition unless otherwise noted, or most current version.

C-2e(1)(d) Processing/Operational Procedures

As soon as practical and no later than arrival on-site, all shipments get entered into RISs "tracking system," which is the process of entering into the computer the driver return shipping papers. For information about how RIS tracks each movement of hazardous waste at the facility refer to *Section D – Process Description, Section D-1 a (2)(a)(iii) Non-Bulk Container Receiving and Storage Procedures.* Once the shipment has been entered into the tracking system and the shipping papers have been signed, Receiving personnel will be notified that the load is ready to move to Operations. At that time, the appropriate dock personnel will identify the location (e.g., Process Dock, CSF, BSAs, OSB, WSBs, CSA, WMB, PDWSA, or GRSA) where the load is to be delivered. After verifying the shipping paperwork (e.g. manifest, Land Ban, and Bill of Lading) is complete, samples of waste will be collected, fingerprint analysis completed, and visual inspections conducted in accordance with this WAP. A WPS will be released for processing when the following has been completed:

- Land Ban forms have been verified;

- Waste codes have been validated;
- The manifest has been signed;
- The WPS has passed the fingerprint sampling and visual inspection (if required);
- Side Door feed streams have met Side Door visual inspection parameters;
- PCB and metals testing has been conducted (if applicable);
- Container monitoring has occurred for the benzene NESHAP (if applicable);
- Discrepancies have been resolved (if applicable); and
- Special handling requirements have been completed.

Once released for processing, waste streams will be included in the daily waste set up, placed in permitted storage, and incinerated in accordance with processing codes and HIs.

C-2e(1)(d)(i) Tanker Processing

After verifying the paperwork is complete, tankers will be transported to the appropriate dock and/or unloading area (e.g. process dock) where a sample of the material will be taken and visual inspection will be conducted, when applicable. If the fingerprint analysis confirms the acceptability of the shipment, depending on the type of waste material, the waste will either be stored in one of the WSBs, transferred to tanks or a yard tanker, or direct fed to the incinerator. For example, if the material is categorized as a "dock bulk" (bulk liquid), then the tanker remains at the process dock and the material is transferred to the tank farm storage tanks. Bulk liquid can also be pumped into dock tanks 73 and 74. Dock Tanks 70, 73 and 74 are treatment tanks. Tanks 73 and 74 are used to blend liquids from containers and tank trucks. If the fingerprint analysis does not confirm the acceptability of the shipment, the material remains in one of the WSBs, or on BSA #1 and the generator will be contacted to resolve the discrepancy. If the discrepancy cannot be resolved, the waste will be returned to the generator or forwarded to another permitted TSDF.

C-2e(1)(d)(ii) Container Processing

After verifying the paperwork is complete, containerized material will be transported to the

appropriate dock and/or unloading area (e.g., CSF). Upon arrival at the loading/unloading area the material will be off-loaded, labeled, bar coded and weighed. The materials requiring visual inspection will be inspected in accordance with *Section C-2e* and the materials requiring sampling will be sampled in accordance with *Section C-2c*. Samples will be taken, and visual inspection completed. After the samples are taken, the drums will remain in the CSF, on BSA #1 or on one of the WSBs until processed. If the fingerprint analysis does not confirm the acceptability of the shipment, the generator will be contacted to resolve the discrepancy. If the discrepancy cannot be resolved, the waste will be returned to the generator or forwarded to another permitted TSDF.

C-2e (1)(d)(iii) Bulk Solids

After verifying the paperwork is complete, bulk solid material will be transported to the appropriate dock and/or unloading area (e.g., process dock). Upon arrival at the loading/unloading area, the material will be sampled and visually inspected as described in *Section C-2c and C-2e*. If the material is accepted, depending on the type of waste material, it will either be transported to a repackaging area, typically on the east side of the incinerator, or to BSA #1, or on one of the WSBs, until processing. If the material is found to be discrepant, the material will be transported to one of the WSBs until resolution. If the discrepancy cannot be resolved, the material will be returned to the generator, or forwarded to another permitted TSDF.

C-2e (1)(d)(iv) Requirements for Transshipped Wastes

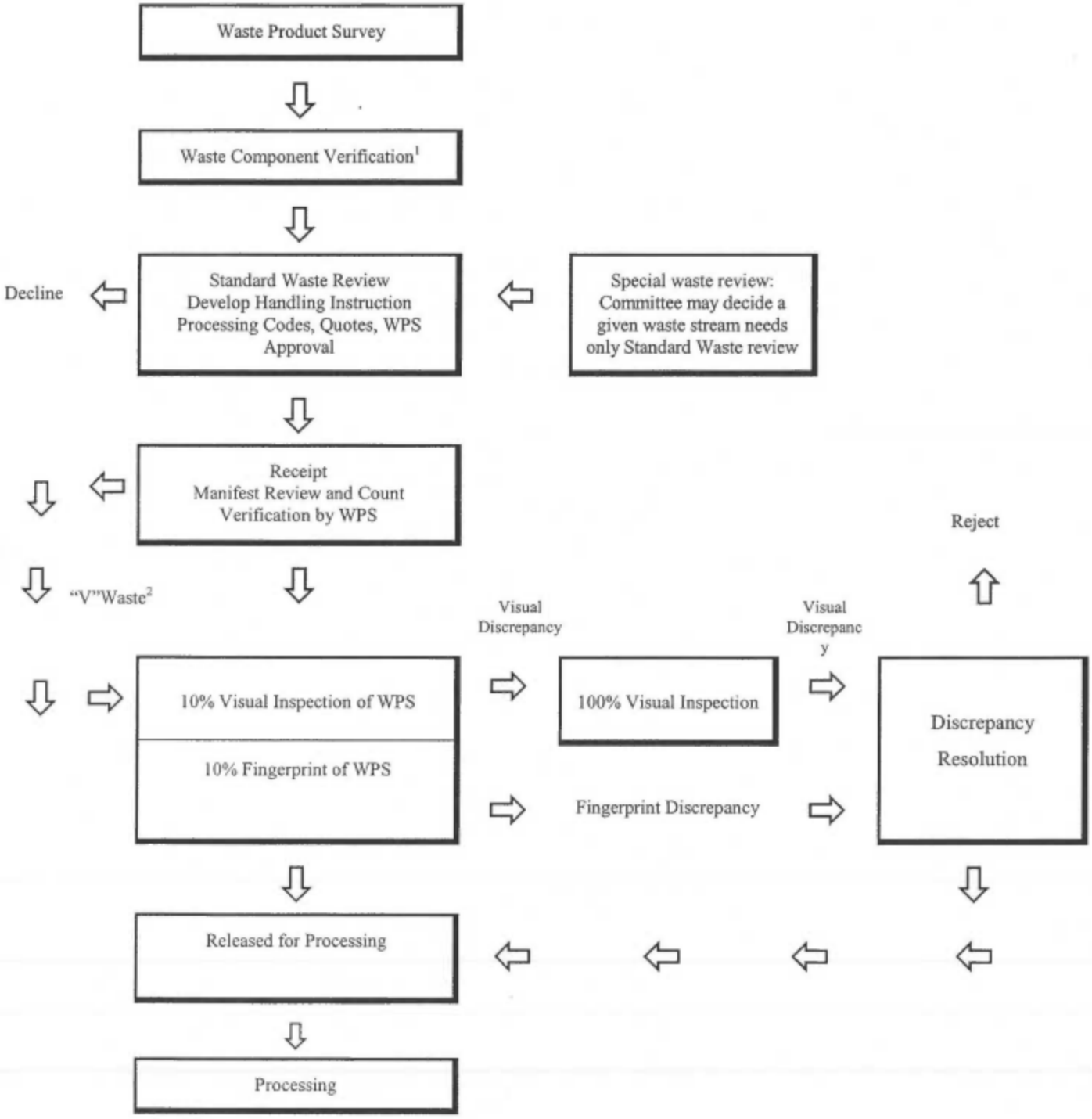
RIS may transship waste to other facilities for additional treatment and/or disposal. When RIS accepts waste with the intention of transshipping the waste, RIS will generally manage the waste as described in *Section C-2*. Specifically, RIS will conduct mandatory analyses on wastes intended for transshipment as indicated in *Table C2-4*, with the exception of viscosity and metals analysis.

Figure C2-1 - Standard Waste Approval and Acceptance Procedures - Logic Flow Diagram

Figure C2-1

Standard Waste Approval & Acceptance Procedures

Logic Flow Diagram

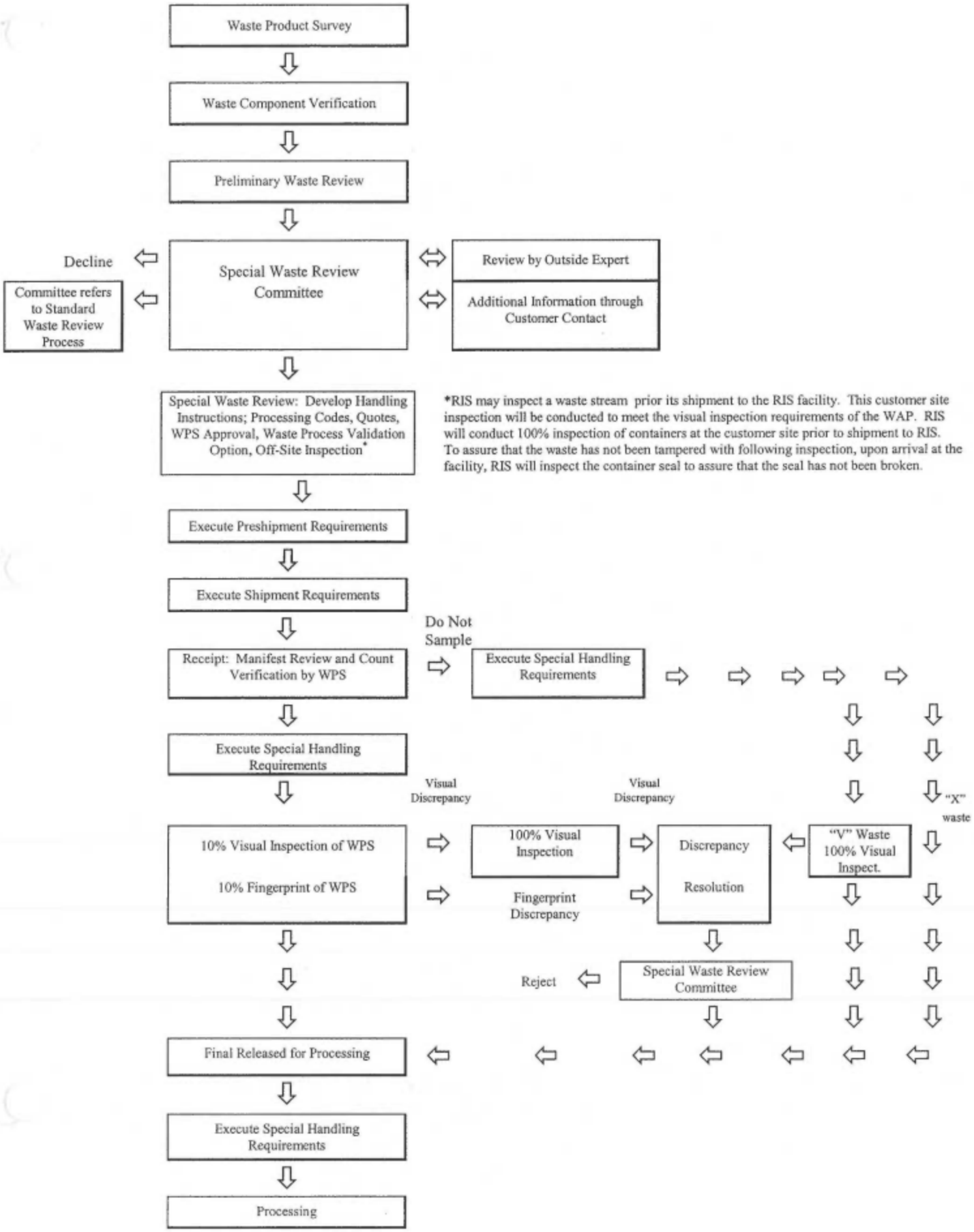


[1] New waste streams from a generator to be received at the facility for incineration that are classified as Standard Wastes will be subject to a performance-based WCV requirement. A minimum of three new standard waste streams from a generator will require WCV. Following successful profiling and WCV review of the new waste streams, RIS will evaluate the necessity for requiring additional WCV for new waste streams from the generator and consider future exemption from the requirement.

[2] Standard "V" Waste is visually inspected, but not fingerprint sampled.

Figure C2-2 - Special Waste Approval and Acceptance Procedures - Logic Flow Diagram

Figure C2-2 Special Waste Approval & Acceptance Procedures Logic Flow Diagram



C-2e(1)(e) Waste Approval and Acceptance Procedural Requirements - Flow Chart

The approval and acceptance requirements described in *Section C-2e (1)(a)* and *Section C-2e (1)(b), C-2e (1)(c),* and *C-2e (1)(d)* are illustrated on Figure C2-1 entitled *"Standard Waste Approval and Acceptance Procedures - Logic Flow Diagram*" and Figure C2-2 "*Special Waste Approval and Acceptance Procedures - Logic Flow Diagram.*"

C-2f Additional Requirements for Facilities Handling Ignitable, Reactive or Incompatible Waste [OAC 3745-54-13 (B)(6); 3745-54-17]

In addition to stringent pre-acceptance criteria, RIS has instituted several analytical procedures designed to provide information concerning a waste's ignitability, reactivity or incompatibility. Ignitability data will be obtained by using the appropriate ASTM procedures. Reactive wastes will be managed on site only under certain conditions as delineated in Table C1-1 "*Hazardous Waste which are Prohibited or Restricted at RIS.*" The WPS form requires the generator provide information concerning any waste's reactivity and/or its shock, heat and friction sensitivity. RIS may, at its discretion, check blended materials for physical incompatibility such as polymerization and reaction to water or air. RIS will evaluate the compatibility of materials based upon applicable feed locations. During compatibility consideration, RIS will observe gas evolution, temperature changes, and polymerization with stored wastes. All waste sampled in accordance with this WAP will be analyzed for reactive total cyanide and sulfide, and waste containing these constituents will be accepted on site only under controlled conditions. On July 12, 1985, EPA issued a memorandum titled "*Interim Thresholds for Toxic Gas Generation Reactivity.*" The memo indicates that wastes releasing more than 250-mg/Kg cyanide and 500-mg/Kg sulfide should be considered as reactive. These reactive cyanide and sulfide bearing wastes will not be mixed or stored with any wastes with which they are incompatible. To ensure this storage and mixture restriction is followed, waste sampled in accordance with this WAP will be fingerprint tested to determine the presence of total reactive cyanide and sulfide. The presence of reactive cyanides will be determined using test method FP-006 (See Appendix C-2) or an equivalent method.

Test method FP-006 is a semi-quantitative method for evaluating reactive cyanide. (See Appendix C-2). The presence of sulfides will initially be determined using test method

FP-003, a lead acetate spot test. The lead acetate spot test is a qualitative determination for the presence of reactive sulfide. As indicated in FP-003, if the lead acetate spot test method indicates the presence of sulfide, RIS then semi-quantifies the concentration of reactive sulfide using the color definition method in accordance with FP-003, see Appendix C-2. Additionally, RIS may choose to submit additional samples to an outside analytical laboratory to test materials with reactive sulfide concentrations near 500-ppm. If the fingerprint test for reactive cyanides or sulfides exceeds 250-ppm or 500-ppm respectively, the material is fed directly to the incinerator and not mixed with other wastes. Furthermore, all incoming waste must be assigned a reactivity group number ("RGN") as delineated in a report titled "Design and Development of a Hazardous Waste Reactivity Protocol," EPA 600/2-84-057, February, 1984. The following paragraph provides a detailed description of the RGN procedure.

RIS' operating procedures classify wastes based on their gross chemical composition with these classifications corresponding to reactivity groups shown in Table C2-6 entitled "*Reactivity Group Definitions*." Technical staff typically determine the appropriate RGN for material based upon data gathered from a variety of sources, including but not limited to: generator knowledge, generator supplied analytical data, literature review of the waste and its components, waste characterization presented from the WPS, and the hierarchy for CSF codes found in Appendix C-1, "*Compatibility Guidelines*."

In cases where potential incompatibility is indicated, the waste will be separated from other potentially incompatible materials. The guidelines RIS uses for managing incompatible waste at its facility are presented in Appendix C-1 "*Compatibility Guidelines*."

Table C2-6. Reactivity Group Definitions

Reactivity Group No.	Reactivity group name
1	Acids, mineral, nonoxidizing
2	Acids, mineral, oxidizing
3	Acids, organic
4	Alcohols and glycols
5	Aldehydes
6	Amides
7	Amines, aliphatic and aromatic
8	Azo compounds, diazo compounds, and hydrazines
9	Carbamates
10	Caustics
11	Cyanides
12	Dithiocarbomates
13	Esters
14	Esters
15	Fluorides, inorganic
16	Hydrocarbons, aromatic
17	Halogenated organics
18	Isocyanates
19	Ketones
20	Mercaptans and other organic sulfides
21	Metals, alkali and alkaline earth, elemental and alloys
22	Metals, other elemental and alloys in the form of powders, vapors, or sponges
23	Metals, other elemental and alloys as sheets, rods, moldings, drops, etc.
24	Metals and metal compounds, toxic
25	Nitrides
26	Nitriles
27	Nitro compounds
28	Hydrocarbons, aliphatic, unsaturated
29	Hydrocarbons, aliphatic, saturated
30	Peroxides and hydroperoxides, organics
31	Phenols and cresols
32	Organophosphates, phosphothioates, phosphodithioates
33	Sulfides, inorganic
34	Expoxides
101	Combustible and flammable materials, miscellaneous
102	Explosives
103	Polymerizable compounds
104	Oxidizing agents, strong
105	Reducing agents, strong
106	Water and mixtures containing water
107	Water reactive substances

C-3 Waste Analysis Requirements Pertaining to Land Disposal Restrictions

For each hazardous waste received for storage or treatment at the facility, RIS has determined, based on generator notification/certification, the applicable land disposal restrictions according to OAC Chapter 3745-270 regulations. As an exception, RIS is permitted to follow the Best Demonstrated Available Technology (BDAT) standards which were approved by USEPA in its June 13, 2011 direct final rule [76 FR 34147] for the following listed carbamate waste codes, as an acceptable means of satisfying the Land Disposal Restriction Universal Treatment Standard requirements for the land disposal of these waste streams.

K156	P190	P203	U373
K157	P191	P204	U387
K158	P192	P205	U389
K159	P194	U271	U394
K161	P196	U278	U395
P127	P197	U279	U404
P128	P198	U280	U409
P185	P199	U364	U410
P188	P201	U367	U411
P189	P202	U372	

Where generator knowledge is used to make this determination, all supporting documentation is kept in the Operating Record. At a minimum, RIS has considered the following:

- the numerical treatment standards on OAC 3745-270-40 and 3745-270-48;
- the wastes have been treated with applicable technology specified in OAC 3745-270-40 and described in OAC 3745-270-42;
- wastes that exhibit a characteristic are prohibited from land disposal unless they have been treated in accordance with the requirements of OAC 3745-270-09;
- wastes included in OAC 3745-270-30 through 3745-270-39 are prohibited from land disposal unless they have been treated in accordance with those rules;

- contaminated soils identified by OAC 3745-270-49 (A) are prohibited from land disposal unless treated according to the requirements of OAC 3745-270-48 or OAC 3745-270-49;
- treatment residuals from the treatment of contaminated soils are prohibited from land disposal unless treated in accordance with the provisions of OAC 37454-270-49 (E)(1) and (2);
- hazardous debris is prohibited from land disposal unless it has been treated to the standards in OAC-3745-270-45; and
- Universal Treatment Standards identified in OAC 3745-270-48C-3a Applicability of Treatment Standards [OAC 3745-270-40]

C-3a (1) Waste Characterization [OAC 3745-54-13(A)]

Wastes at the facility are categorized as either off-site generated waste to be treated, or RIS generated waste (e.g., residuals from the incineration process). RIS will maintain generator information or analytical data to determine if any RIS stored, treated, and generated hazardous waste is a restricted waste and whether it meets numerical treatment standards in accordance with OAC 3745-270-40 and OAC 3745-270-48. Analytical data will be generated in accordance with applicable test methods found in SW-846, Eighth Edition and analytical results completed in support of the LDR requirements will be retained in the Operating Record.

C-3a (1)(a) Waste Characterization: Off-Site Generated Waste

The generator of a waste shipped to the RIS facility provides a full waste characterization to RIS via the WPS and determines whether the waste is restricted from land disposal and if the waste meets the applicable treatment standards set forth in OAC 3745-270-48.

If a generator determines that he is managing a restricted waste under this part and determines that the waste can be land disposed without further treatment, with the first shipment of waste to the RIS facility, the waste must be accompanied by a notice and certification stating that the waste meets the applicable treatment standards. The notice/certification statement will include all information found in OAC 3745-270-07, Table 1, Column B. The certification must be signed by an authorized representative and

state the following:

> "I certify under penalty of law that I personally have examined and am familiar with the waste, through analysis and testing or through knowledge of the waste, to support this certification that the waste complies with the treatment standards specified in rules 3745-270-40 to 3745-270-49 of the Administrative Code. I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment."

If the generator determines that he is managing a restricted waste under OAC 3745-270-48 that does not meet the applicable treatment standards or exceeds the applicable prohibition levels, with the first shipment of waste the generator must submit a notice of treatment standards and any applicable prohibition levels. This notice must include:

- EPA Hazardous Waste Numbers;
- The constituents of concern for F001-F005, and F039, and Underlying Hazardous Constituents in Characteristic Wastes, unless the waste will be treated and monitored for all constituents. If all constituents will be treated and monitored, there is no need to put them all on the LDR notice.;
- The manifest number associated with the first shipment of waste;
- Waste analysis data, when available;
- Whether the waste is a non-wastewater or wastewater;
- Subcategory of the waste, if appropriate; and
- Contaminated soil constituent statements found in OAC 3745-270-07, Table 1, Row 8, if applicable.

C-3a (1)(b) Waste Characterization: On-Site Generated Waste

Residuals produced from the incineration of hazardous waste that are restricted from land disposal will be handled by RIS according to OAC 3745-270. Specifically, under OAC 3745-270, a treatment, storage or recycling facility receiving restricted waste for which standards have been set must periodically test the treatment residues in accordance with the facility's WAP to ensure the residues meet the specified treatment standards. As described in *Section C-1g (1), Waste in Miscellaneous Treatment Units,* RIS has a process for tracking "derived from" EPA waste codes for all residuals from its incineration process.

Waste codes associated with a waste stream are carried through to the ash, scrubber water and filter cake.

RIS will collect samples of its residuals as described in Appendix C-3 Sampling Plan and *Section C-2c (1) - Sampling Strategies and Equipment*, and will analyze the residuals of all restricted waste as described in *Section C-3c (3) - Analysis of Treatment Residues, Table C3-1(A and B) - Residual Analytical Parameters and Methods Summary*. The results of these analyses will be compared to the treatment standards established by the EPA to determine whether or not the residuals can be managed by a permitted land disposal facility. If they do not meet the treatment standards, the residuals will be re-processed at RIS or shipped off-site for further treatment / disposal. RIS will review the analytical results and determine the disposition of the treatment residue. If the analytical results meet the appropriate treatment standard, the treatment residue is then approved for shipment. Each shipment is accompanied with the appropriate documentation (i.e., manifest, LDR treatment certifications and notifications) which includes items identified in OAC 3745-270-07 Table 1 or Table 2, whichever is applicable.

RIS treats hazardous wastes in tanks for shipment offsite. After inbound wastes have been characterized and selected for blending, RIS completes compatibility testing (See *Section C – WAP, Appendix C-1 Compatibility Guidelines*; Exhibit J), and blends the selected waste. Per its tanker and tank sampling procedures for blended waste referenced in *Section C – WAP, Appendix C-3 – Sampling Plan*, RIS collects a representative sample of blended waste to accurately characterize waste sent to offsite facilities. At a minimum, listed waste codes from inbound inventory will apply to each outbound shipment. RIS will notify the facility receiving blended waste of the appropriate waste codes using appropriate documentation (i.e., manifest, LDR treatment certifications and notifications) at the time of shipment.

C-3b Prohibitions [OAC 3745-270-03 and OAC 3745-270-30 through 39]

C-3b (1) Dilution Prohibited As a Substitute for Treatment [OAC 3745-270-03]

RIS will not use dilution as a method to treat wastes and treatment residues that are restricted from land disposal except in the following circumstances. Wastes that are hazardous only because they exhibit a characteristic in treatment systems (including land based units): 1) which discharge to waters of the United states pursuant to a Clean Water Act (CWA) discharge permit, or 2) Wastes that are treated in CWA equivalent system, or 3) Wastes treated in pre-treatment systems as defined by section 307 of the CWA. UNLESS: a) The waste is a D003, reactive, cyanide wastewater or non-wastewater, or b) A method other than DEACT has been specified in OAC 2745-270-40 as a treatment standard.

C-3b (2) Wastes That Are Prohibited from Combustion

Combustion of the wastes listed in the Appendix to OAC 2745-270-03 is prohibited unless the waste meets the following criteria at the point of generation or after bonafide treatment:

a. The waste contains hazardous organic constituents or cyanide at levels exceeding the constituent specific treatment standard in OAC 3745-270-48, or
b. The waste consists of organic debris-like materials contaminated with an inorganic metal-bearing hazardous waste, or
c. The waste at the point of generation has reasonable heating value (such as greater than or equal to 5,000 Btu per pound), or
d. The waste is co-generated with wastes for which combustion is a required method of treatment, or
e. The waste is subject to federal and/or state requirement necessitating reduction of organics (including biological agents), or
f. The waste contains greater than 1% of total organic carbon.

C-3b (3) Dilution Prohibition for Lead Containing Wastes;

Adding iron filings or other metallic forms of iron to lead-containing hazardous wastes to achieve any LDR treatment standard is prohibited. This includes D008 wastes, all

characteristic wastes containing lead as an underlying constituent, and hazardous media containing any of the aforementioned lead-containing wastes.

C-3b (4) Waste Specific Prohibitions: Wood Preserving Wastes;

F032, F034, and F035 wood preserving wastes, soil and debris contaminated with F032, F034, and F035 wastes, and F032, F034 are prohibited from land disposal unless: (1) the wastes meet the treatment standards in OAC 3745-270 40 through 49, or (2) an exemption has been granted pursuant to OAC 3745-270-06, or (3) the wastes meet the applicable alternate treatment standard established pursuant to a petition granted under OAC 3745-270-44, or (4) a case-by-case extension has been granted pursuant to OAC 3745-270-05.

C-3b (5) Waste Specific Prohibitions: Dioxin-Containing Wastes

F020, F021, F022, F023, F026, F027 and F028 wastes are not managed at RIS.

C-3b (6) Waste Specific Prohibitions: Chlorinated Aliphatic Wastes

K174 and K175 wastes, soil and debris contaminated with these wastes are prohibited from land disposal. These wastes are not prohibited from land disposal if: (1) the wastes meet the treatment standards in OAC 3745-270 40 through 49, or (2) an exemption has been granted pursuant to OAC 3745-270-06, or (3) the wastes meet the applicable alternate treatment standard established pursuant to a petition granted under OAC 3745-270-44, or (4) hazardous debris has met the treatment standards in rule 3745-270-40 or alternative treatment standards in rule 3745-270-45, or (5) a case-by-case extension has been granted pursuant to OAC 3745-270-05.

Disposal of K175 wastes that have complied with all applicable treatment standards must also be macro encapsulated in accordance with the table in OAC rule 3745-270-40. The waste does not have to be macro encapsulated if it is placed in: (1) a permitted hazardous waste landfill containing only K175 wastes that meet all applicable treatment standards, or (2) A dedicated permitted hazardous waste landfill cell in which all other wastes being co-disposed are at pH 6.0.

C-3b (7) Waste Specific Prohibitions: Toxicity Characteristic Metal Wastes

This applies to the following wastes: (1) D004 to D0011 wastes, soil, or debris identified

as hazardous by TCLP, but not the extraction procedure; (2) waste, soil or debris from mineral processing operations identified as hazardous by OAC 3645-51; (3) slag from secondary lead smelting which exhibits the toxicity characteristic for one or more metals; and (4) newly identified characteristic wastes from elemental phosphorus processing are prohibited from land disposal.

The above wastes are not prohibited from land disposal if: (1) the wastes meet the applicable treatment standards of OAC 3745-270-40 to 49, or (2) an exemption has been granted under OAC 3745-270-06 or (3) the wastes meet the applicable alternate treatment standards established pursuant to a petition granted under OAC 3745-270-44, or (4) a case-by-case extension has been granted pursuant to OAC 3745-270-05.

C-3b (8) Waste Specific Prohibitions: Petroleum Refining Wastes

K169, K170, K171, and K172 hazardous wastes, soils and debris contaminated with these wastes are prohibited from land disposal. The above wastes are not prohibited from land disposal if: (1) the wastes meet the applicable treatment standards of OAC 3745-270-40 to 49, or (2) an exemption has been granted under OAC 3745-270-06, or (3) the wastes meet the standards pursuant to a petition granted under OAC 3745-270-44, or (4) the hazardous debris has met the treatment standards outlined in OAC 3735-270-40 or alternative treatment standards outlined in OAC 3735-270-45 (5) a case-by-case extension has been granted pursuant to OAC 3745-270-05.

C-3b (9) Waste Specific Prohibitions: Inorganic Chemical Wastes

K174 and K175 wastes, soil and debris contaminated with these wastes are prohibited from land disposal. These wastes are not prohibited from land disposal if: (1) the wastes meet the treatment standards in OAC 3745-270 40 through 49, or (2) an exemption has been granted pursuant to OAC 3745-270-06, or (3) the wastes meet the applicable alternate treatment standards established pursuant to a petition granted under OAC 3745-270-44, or (4) hazardous debris has met the treatment standards in rule 3745-270-40 or alternative treatment standards in rule 3745-270-45, or (5) a case-by-case extension has been granted

pursuant to OAC 3745-270-05.

C-3b (10) Waste Specific Prohibitions: Wastes with Ignitable and Corrosive Characteristics;

The following D001 wastes as specified in OAC 3745-51-21 (but not in the high TOC ignitable liquids subcategory), and D002 wastes as specified in OAC 3745-51-22 are prohibited from land disposal: (1) whose discharge is not regulated by the Clean Water Act (CWA), or (2) that inject in Class I deep wells regulated by the Safe Drinking Water Act (SDWA), or (3) or that are zero dischargers that engage in CWA-equivalent treatment before land disposal, or (4) that are managed in systems defined in 40 CFR 144.6(e) as Class V injection wells that do not engage in CWA-equivalent treatment before injection.

C-3b (11) Waste Specific Prohibitions: Organic Toxicity Wastes, Coke By-Product Wastes, and Chlorotoluene Production Wastes;

The following wastes are prohibited from land disposal: (1) K141 to K145 and K147 to K151, or (2) Debris contaminated with F037, F038, K107 to K112, K117, K118, K123 to K126, K131, K132, K136, U328, U353, U359, or (3) Soil and debris contaminated with D012 to D043, K141 to K145, and K147 to K151, or (4) D012 to D043 that are not radioactive, or are managed in systems whose discharges are not regulated by the CWA, or that are zero dischargers that do not engage in CWA-equivalent treatment (as defined in OAC 3745-270-38(A)(3)) before land disposal, or are injected in Class I deep wells regulated by SDWA.

The above wastes are not prohibited from land disposal if: (1) the wastes meet the applicable treatment standards of OAC 3745-270-40 to 49, or (2) an exemption has been granted under OAC 3745-270-06, or (3) the wastes meet the applicable alternate treatment standards established pursuant to a petition granted under OAC 3745-270-44, or (4) a case-by-case extension has been granted pursuant to OAC 3745-270-05.

C-3b (12) Waste Specific Prohibitions: Spent Aluminum Pot Liners, Reactive Wastes, and Carbamate Wastes.

The following wastes are prohibited from land disposal: (1) K156 to K159, K161, and soil

and debris contaminated with these wastes, or (2) P127, P128, P185, P 188 to P192, P194, P196 to P199, P201 to P205, U271, U278 to U280, U364, U367, U372, U373, U387, U389, U394, U395, U404, and U409 to U411, and soil and debris contaminated with these wastes, or (3) D003 wastes (except unexploded ordinance and other explosive devices which have been the subject of an emergency response) that are managed in systems whose discharges are not regulated by the CWA, or that are zero dischargers that engage in CWA-equivalent treatment before land disposal, or are injected in Class I deep wells regulated by SDWA, or (4) K088 wastes and soil and debris contaminated with K088 wastes.

These wastes are not prohibited from land disposal if: (1) the wastes meet the applicable treatment standards of OAC 3745-270-40 to 49, or (2) an exemption has been granted under OAC 3745-270-06, or (3) the wastes meet the applicable alternate treatment standards established pursuant to a petition granted under OAC 3745-270-44, or (4) a case-by-case extension has been granted pursuant to OAC 3745-270-05.

C-3c Sampling and Analytical Requirements for Treatment Residues [OAC 3745-270-07 (B)]

C-3c (1) Sampling and Analytical Procedures [Appendix to OAC 3745-270-07]

Sampling and analytical procedures followed in testing and treatment of RIS residues are found in *Sections C-2c* and *Section C-2b* respectively.

C-3c (2) Waste or Contaminated Soils with Treatment Standards Expressed as Concentrations in Waste, Treatment Standards Expressed as Concentration in the Waste Extract [OAC 3745-270-07(B)(1) or (2)]

RIS will identify and manage restricted waste from off-site generators as described in *Section C-3a (1) Waste Characterization.* In accordance with this WAP, RIS will assure the generator has properly profiled the restricted waste and has submitted the appropriate LDR forms.

RIS will test its residuals from the treatment process in accordance with *Section C-3c (3) - Analysis of Treatment Residues (below)* to assure that the treatment residues meet the applicable treatment standards.

C-3c (3) Analysis of Treatment Residues [OAC 3745-270-07(B)]

RIS generates residual waste streams, which are subsequently treated and/or disposed of according to federal and state regulation. The residual waste streams are identified, sampled and analyzed as follows.

Waste Stream	Frequency	Analysis Performed[1]
Incinerator Ash	Quarterly	Standards expressed as concentrations in an extract of waste Paint Filters Liquid Test (See Table C3-1A for methods
Incinerator Ash	Monthly	Abbreviated Organic Constituents[1]
Scrubber Water	Annually	Standards expressed as concentrations in the waste (See Table C3-1A for methods)
Scrubber Water	Three times per year[2]	Appendix IX List Constituents; (See Table C3-1B methods)
Filter Cake	Annually[2]	Standards expressed as concentrations in the waste (See Table C3-1A for methods)
Filter Cake	Three times per year[2]	Appendix IX List Constituents; (See Table C3-1B methods)

[1]RIS will complete monthly ash analysis for the following constituents: ethyl benzene, methyl ethyl ketone, 1,1,1-trichloroethane, toluene, xylene, phenol, and n-butyl alcohol. Additionally, RIS will evaluate monthly samples for any unsuccessful quarterly UTS constituents.
[2]Please refer to Appendix C-3 Sampling Plan for specific information pertaining to sampling schedule.

Although sampling can occur at any time within the quarter, RIS will typically sample before the fifth week of the quarter. In the event that a quarterly sampling event provides data that does not meet Land Disposal Restriction parameters, RIS will re-sample and re-analyze the residual container utilizing the same sampling plan and analytical method. The re-sample is intended to validate the existence of the data and remove any concern about erroneous analytical data due to external contamination. If the second sample is returned with data outside LDR parameters, RIS will either re-process the original residual or transport the residual off-site for additional assessment at a permitted facility. Following an unsuccessful quarterly sampling event, residuals will continue to be shipped off-site for additional assessment until a second residual container can be chosen and sampled. Additionally, RIS will add the failed LDR parameter to the next monthly sampling event (excluding dioxins/furans).

In the event that a monthly sampling event provides data that does not meet Land Disposal Restriction parameters, RIS will re-sample and re-analyze the residual container utilizing the same sampling plan and analytical method. The re-sample is intended to validate the data and remove any concern about erroneous analytical data due to external contamination. If the second sample is returned with data outside LDR parameters, RIS will either re-process the original residual or transport the residual off-site for additional assessment at another facility. Following an unsuccessful monthly sampling event, a daily residuals sampling event will continue for a maximum of three days and residuals will continue to be shipped off-site for additional assessment. Samples will be taken as indicated in *Section C-2c (1)(b)*. Sampling takes into account the variability of the waste and treatment process. Additional analysis is performed in the event that there is a change in the composition of the waste or the treatment process. Deviations from standard sampling methods will be noted in the Operating Record.

Table C3-1A. Residual Analytical Parameters and Methods Summary for Universal Treatment Standard List Constituents

As previously indicated RIS samples three residuals: incinerator ash, filter cake, and scrubber water. Analysis of the incinerator ash and filter cake is typically completed on an extract of the waste, whereas analysis of the scrubber water is typically completed on the waste itself.

Parameter	Analytical Method
pH (Electrometric)	EPA-600/4-79-020: 150.1
pH (non-aqueous)	9045A
Amenable Cyanide	9012A
Chlorinated Herbicides by Gas Chromatograph	8151A
Cyanide, Total	9012A
Dibenzodioxins and Dibenzofurans, HRGC, HRMS	8290
Dioxins / Furans HRGC / LRMS	8280
Fluoride (Potentiometric, Ion Selective Electrode)	EPA-600/4-79-020: 340.2
Inductively Coupled Plasma (ICP) Metals (As, Ag, Ba, Be, Cd, Cr, Pb, Ni, Se, Tl, Vn, Zn)	6010B, 6020
Mercury in Liquid Waste (Manual Cold Vapor)	7470A
Mercury in Solid Waste (Manual Cold Vapor)	7471A
Method for Determination of Water Content of Soil	D 2216-90
Non-halogenated Organics using GC/FID	8015B
Organochlorine Pesticides	8081A
Organo-phosphorous Compounds by GC	8141A
Paint Filter Test	9095
Pensky-Martens Method for Determining Ignitability	1010, 1030
Polychlorinated Biphenyls	8082
Semi-volatile Organic Compounds by GC/MS	8270C
Sulfide	EPA: 600/4-79-020: 376.1
Total Organic Halogens	9020A, 9020B
Volatile Organics by GC/MS	8260B

GC = Gas Chromatograph
MS = Mass Spectroscopy
HRGC = High Resolution Gas Chromatograph
HRMS = High Resolution Mass Spectroscopy
LRGC = Low Resolution Gas Chromatograph
LRMS = Low Resolution Mass Spectroscopy

Table C3-1B. Residual Analytical Parameters and Methods Summary for Appendix IX

As previously indicated RIS samples three residuals: incinerator ash, filter cake, and scrubber water. Analysis of the incinerator ash and filter cake is typically completed on an extract of the waste, whereas analysis of the scrubber water is typically completed on the waste itself.

Parameter	Analytical Method
pH (Electrometric)	EPA-600/4-79-020: 150.1
pH (non-aqueous)	9045A
Amenable Cyanide	9012A
Chlorinated Herbicides by Gas Chromatograph	8151A
Cyanide, Total	9012A
Dioxins / Furans HRGC / LRMS	8280
Inductively Coupled Plasma (ICP) Metals (As, Ag, Ba, Be, Cd, Cr, Pb, Ni, Se, Tl, Va, Zn)	6010B, 6020
Mercury in Liquid Waste (Manual Cold Vapor)	7470A
Mercury in Solid Waste (Manual Cold Vapor)	7471A
Method for Determination of Water Content of Soil	D 2216-90
Non-halogenated Organics using GC/FID	8015B
Organochlorine Pesticides	8081A
Polychlorinated Biphenyls	8082
Semi-volatile Organic Compounds by GC/MS	8270C
Sulfide	EPA: 600/4-79-020: 376.1
Volatile Organics by GC/MS	8260B

GC = Gas Chromatograph
MS = Mass Spectroscopy
HRGC = High Resolution Gas Chromatograph
LRMS = Low Resolution Mass Spectroscopy

C-3c (4) Wastes with Treatment Standards Expressed as Concentrations in the Waste or in the Waste Extract

C-3c (4)(i) Wastes with Treatment Standards Expressed as Concentrations in the Waste: OAC 3745-270-07 (B)(3)

For wastes with treatment standards expressed as concentrations in the waste, RIS has outside analytical laboratories provide data in accordance with *Section C-3d (3) Analysis of Treatment Residues* using designated SW-846 procedures for testing treatment residues to assure that the residues meet applicable treatment standards.

C-3c (4)(ii) Wastes with Treatment Standards Expressed as Concentrations in the Waste Extract [OAC 3745-270-07 (B)(1)]

For wastes with treatment standards expressed as concentration in the waste extract, RIS has outside analytical laboratories provide procedures for testing treatment residues using TCLP, to assure the treatment residues meet the applicable treatment standards.

C-3d Notification / Certification Requirements [OAC 3745-270-07]

C-3d (1) Retention of Generator Notices and Certifications

The LDR notification/certification documentation for incoming waste shipments will be reviewed and maintained at RIS as part of the Operating Record. A copy of all notifications, certifications, demonstrations, waste analysis data and other documentation produced pursuant to OAC 3745-270 will be retained on-site until closure of the facility.

C-3d (2) Notification and Certification Requirements for Treatment Residues shipped to land disposal facilities [OAC 3745-270-07 (B)(3) and (B)(4)]

A one-time notice will be sent with the initial shipment of waste for each waste stream to the land disposal facility. The notice will include the elements in Table 2 of OAC 3745-270-07.

The notice will include a one-time certification as per OAC 3745-270-07 (B)(4) signed by an authorized representative of the facility.

C-3d (3) Notification and Certification Requirements for Wastes with Organic Constituents [OAC 3745-270-07B (4)(c)]

For wastes with organic constituents having treatment standards expressed as concentration levels, if compliance with the treatment standards is based in whole or in part on the analytical detection limit, the certification statement shall contain the elements outlined in OAC 3745-270-07B (4)(c).

C-3d (4) Notification and Certification Requirements for Characteristic Wastes [3745-270-07B(4)(d) and (e)]

Does not apply to RIS.

C-3d (5) Notification and Certification for Wastes to be Further Managed: Off-Site Generated Waste (Incoming Waste)

All incoming waste shipments which are subject to the LDRs and have been treated, exempted, meet the variance requirements, or otherwise meet the appropriate treatment standard or prohibition without treatment must be accompanied by a form from the treater or generator, certifying that the waste meets the appropriate treatment standard, prohibition or variance and must include any applicable analytical data or references to such data or documentation in accordance with OAC 3745-270 (i.e., applicable items in Column C of Table 1 of OAC 3745-270-07).

The initial incoming waste shipment, which is subject to the LDRs of OAC 3745-270 and require treatment, must be accompanied by a form from the generator that notifies RIS and includes applicable items in Column A of Table 1 of OAC 3745-270-07.

A description of the RIS Notification and Certification Form for incoming waste shipments subject to treatment is included as Exhibit I to this WAP.

C-3d(5)(a) Additional Notification and Certification Requirements for Treatment Facilities (On-site Generated Wastes)

In accordance with OAC 3745-270, residual waste from the incineration process will be analyzed as described in *Section C-3c(3) Analysis of Treatment Residues,* to determine whether the waste meets the applicable LDR treatment standards contained in OAC 3745-270. All analytical results completed in support of the LDR requirements will be retained in the Operating Record.

All outgoing waste shipments (i.e., transship waste, facility generated waste, or treatment residues) which are subject to the LDRs of OAC 3745-270 will be accompanied by the appropriate notification and/or certification in compliance with the notification and certification requirements applicable to generators in OAC 3745-270-07, if the treatment residue will be further managed at a different TSDF. For other shipments of treatment residues, applicable information items in Table 2 of OAC 3745-270-07 will be provided to the TSDF. All waste sent off-site will comply with standards applicable to LDRs prior to placement in a land-based unit or will be further treated at a permitted facility prior to placement in a land-based unit. For wastes (intended for land disposal) with treatment standards expressed as concentrations in the waste extract or in the waste, RIS will submit a certification statement to the land disposal facility in accordance with OAC 3745-270-07.

Descriptions of the various notification and certification statements that accompany a shipment of waste off-site to be further managed at a TSDF is included as Exhibit I to this WAP. Applicable information from Table 1 of OAC 3745-270-07 will be provided to the TSDF.

C-3d (6) Notification and Certification Requirements for Land Disposal Facilities [OAC 3745-270-07(C)(1)]

RIS maintains notice and certifications submitted by generators and applicable TSDFs in the Operating Record.

C-3d (7) Notification and Certification Requirements for Facilities Treating Hazardous Debris [OAC-3745-270-07(D)]

RIS does not exclude its hazardous debris from the definition of hazardous waste as per OAC 3745-51-03. Records of all analysis, evaluations, inspections, and any data or information obtained by RIS pertaining to key operating parameters of the treatment unit will be kept in RIS' operating record. Certification statements specified in OAC 3745-270-07 (D)(3)€ will be kept in RIS' operating record.

C-3d (8) Notification and Certification Requirements for Facilities Treating Contaminated Soil [OAC-3745-270-07€]

If RIS receives notification from Ohio EPA that a contaminated soil no longer contains a listed hazardous waste, the facility will prepare a one-time documentation of the determination, including all supporting information, and maintain that documentation for a minimum of 3 years.

C-3d (9) Notification and Certification Requirements for Recyclable Materials Used in a Manner Constituting Disposal [OAC 3745-270-07 (B)(6)]

For wastes which are recyclable materials used in a manner constituting disposal as per OAC 3745-58-30, RIS will submit a notice and certification to the Director in accordance with OAC 3745-279-07 (B)(6).

C-3e Additional Requirements Pertaining to Storage of Restricted Wastes [OAC 3745-270-50]

In accordance with 3745-270-50, RIS will store restricted waste in tanks or containers solely

for the purpose of the accumulation of such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal.

C-3e (1) Restricted Wastes Stored in Containers [OAC 3745-270-50(A)(2)(a)]

All incoming containers are clearly marked and labeled upon arrival at the facility. All containers used for accumulation of RIS generated waste are clearly marked with the words hazardous waste, the WPS, the applicable hazard, and dated with the beginning accumulation date.

C-3e (2) Restricted Wastes Stored In Tanks [OAC 3745-270-50 (A)(2)(b)]

The contents of all tanks are fully documented in the Operating Log. Each waste received by the facility is tracked by its individual WPS number. When the waste is removed from the tank, either to be fed to the incinerator or transferred to another tank, the volume removed, and date is recorded in the Operating Record. Therefore, the contents of each tank, the quantity of hazardous waste received in each tank, and the date that waste accumulation or storage begins in each tank is contained in the Operating Record.

C-3e (3) Storage of Liquid PCB Wastes [OAC 3745-270-50(F)]

RIS does not store waste with a PCB concentration of greater than 50 ppm in any of the container storage areas. Therefore, RIS is exempt from the demonstration requirements outlined in OAC 3745-270-50(F).

C-3f Additional Requirements for Treatment Surface Impoundment Exemption [OAC 3745-270-04]

RIS does not receive wastes subject to a valid certification under OAC 3745-270-04.

C-3g Additional Requirements for Treatment Facilities [OAC 3745-54-13]

C-3g (1) Off-Site Facilities

RIS will identify and manage restricted waste from off-site generators as described in *Section C-3a (1) Waste Characterization*. In accordance with this WAP, RIS will assure that the generator has properly profiled the restricted waste and has submitted the appropriate LDR forms prior to treatment.

Exhibit A

Materials Service Agreement

Exhibit A
RIS Waste Materials Service Agreement

Purpose. RIS routinely enters into a variety of service agreements ("Agreements") with customers. The purpose of the Agreements is to document the relationship between RIS and its customers.

Description. All Agreements are similarly constructed and meet the following criteria. The Agreements are documents which establish warrantees and obligations between RIS and the Customer directly or RIS as a subcontractor. A Customer may include a generator, a waste handler, a waste broker, or other waste disposal entity. The following standard contract conditions are negotiable and may be authored by the Customer instead of by the disposal facility. However, the topics covered are similar. The following information is covered in a typical Agreement: date the Agreement is executed, name of companies entering into agreement, and a short list of assumptions such as, but not limited to:

- RIS is in the business of providing waste management;
- Customer is a _____ (generator, handler, or broker) of hazardous and/or non-hazardous materials, substances and containers;
- Customer will prepare, sample, analyze, characterize, collect, remediate, containerize, label, and arrange for the transportation, treatment and/or disposal of materials; and
- Customer hereby requests, and RIS hereby agrees to provide, waste management services for Customer.

The following additional information can also be included in the Agreement: definitions of contractual terminology; identification and delineation of Purchase Orders, WPS', and samples; a summary of the Waste Management Services to be performed; a summary of Non-Conforming Material resolution procedures; and a summary of each party's warranties. The Agreement may also outline information such as appropriate insurance requirements, indemnification clauses and compensation terms. The Agreement typically includes a termination clause as well as other miscellaneous contractual language such as:

- RIS shall perform as an independent contractor;
- This Agreement constitutes the entire agreement between the Parties;

- Which state laws shall govern the performance of this Agreement;
- Consent to subcontract and related obligations;
- Information that will maintain as confidential; and
- The Agreement is a corporate agreement covering any division, facility or other entity related to the customer.

Execution of the Agreement commences with the signature of both parties. Additional optional information may be incorporated in the Agreement such as: a specific company's safety policies, notice provisions, purchasing procedures, information system policies and government compliance flow down provisions.

Affected Waste Management Personnel. Corporate Risk personnel maintain the standard Waste Management Agreement. Agreement negotiations are directed to a contract administrator for review and management approval.

Exhibit B

Waste Product Survey Form Summary

Exhibit B
Waste Product Survey Form Description

Purpose. RIS has developed the WPS form as a data collection tool. The data gathered in the WAP is utilized to assist in the safe and efficient treatment of hazardous waste transported to RIS for disposal.

Description. The WPS has several sections including: WPS Number, Generator Information, General Waste Information, Shipping Containers, Waste Stream Chemical Composition, Source of Information, Specific Analysis of Waste, Physical Properties, Reactivity and Stability, EPA and US DOT Information, Land Disposal Restrictions, and Accountability. Table C2-1 "*WPS Information Rationale*" clearly outlines the information found in each of the aforementioned sections. Additionally, RIS publishes WPS instructions that further detail the information requested on the WPS. Should a customer need further assistance, technical staff are available for assistance in completion of the WPS.

Affected Waste Management Personnel. Technical staff are responsible for interfacing with the customer and the customer is responsible for gathering and compiling WPS data. Technical staff is also responsible for eventual data entry of WPS information into the RIS computer system.

Exhibit C

WPS Renewal Letter

Exhibit C:
A Description of the RIS WPS Renewal Letter

Purpose. If a customer offers a waste stream to RIS, but it has not been shipped to RIS in greater than 12 months, a renewal certification letter is sent to the customer. The purpose of the letter is to solicit information regarding any changes to the waste stream and capture a signature certifying that the waste continues to fall within the parameters listed on the WPS. If the customer initiates modifications, a member of the technical staff will evaluate the request for technical consistency and determine if the changes will make a significant change to the plan for management of the material. If the changes were significant, a new WPS and management plan will be developed.

Description. The WPS Renewal form, a standard business letter, is exchanged between RIS and the customer and includes the following information: RIS name, address and date, WPS number and description of the waste under consideration and if origination of the waste pertains to CERCLA cleanup. RIS includes an expiration date of the WPS and space for generator comments, as well as a certification statement requiring a generator name, signature, signatory title, address and date.

Affected Waste Management Personnel. RIS generates renewal letters for waste streams offered to RIS but have not been shipped to RIS in greater than 12 months. This is a function managed by the technical staff in conjunction with the customer. Data management is also the responsibility of the technical staff, and WPS renewal letters are found in the customer file.

Exhibit D

Physical Inspection Summary

Exhibit D:
A Description of the
RIS Physical Inspection Summary

Purpose. The Physical Inspection Summary is used to record, in hard copy or electronic format, the visual appearance of waste made by authorized receiving personnel. The RIS Visual Inspection Program relies heavily on the physical description of the waste as detailed on the Shipper/WPS Physical Inspection Summary.

Description. The Physical Inspection Summary is used for non-bulk containers and, at a minimum, includes the following information for each non-bulk shipment: Customer Name, Customer Identification Number, Shipment Number, WPS Number, a specific physical description or general appearance from the WPS and a color and physical state from the WPS. Also included in the Physical Inspection Summary are: the CIN, the Container Size, the Container type, the Waste Volume in percentage and the number of waste layers and an actual, detailed description of the container contents.

Bulk liquids and bulk solids visual inspections are also reported on the Physical Inspection Summary. Included for tankers & hoppers for each shipment received is the following information: Customer Name, Shipment Number, WPS Number and an actual detailed description of the waste including color and number of layers.

Waste Management Personnel Affected. The Receiving group is responsible for procurement and communication of this data.

Exhibit E

RIS Discrepancy Report

Exhibit E:
A Description of the RIS Discrepancy Report

Purpose. The purpose of the RIS Discrepancy Report, which exists in hard copy or electronic format, is to document the resolution of physical or fingerprint analysis discrepant (non-conforming) waste received by RIS.

Description. At a minimum, the Discrepancy Report contains the following information: nature of discrepancy and the resolution of discrepancy or an explanation of the discrepancy. The nature of the discrepancy section contains initial or introductory information that lists the known facts of the discrepant waste. This section indicates, at a minimum:

- the date and quantity of waste that was received at RIS,
- the WPS designated to describe the waste,
- the corresponding generator manifest document number on which the waste was received and
- the RIS assigned shipment number.

This section also describes types of discrepancy (ies) found and identifies the correlating parameters from the WPS.

The resolution of the discrepancy section describes the reason for the discrepancy; the agreed-upon resolution; and identifies the RIS and customer representatives, by name, involved in resolving the discrepancy.

Waste Management Personnel Affected. The Discrepancy Resolution Report is created and maintained by technical staff in conjunction with the laboratory personnel.

Exhibit F

Handling Instructions

Exhibit F:
A Description of RIS Handling Instructions

Purpose. The purpose of HIs is to provide routine, consistent and constant communication throughout the waste management process.

Description. At a minimum, the following information is contained in the HIs:

- the generator name and location the waste was generated from as well as the name of the waste stream according to the generator;
- waste identification information including the WPS number that RIS uses to identify the waste;
- any code the generator may employ internally to identify the waste; and
- the identification that the waste is RCRA regulated as Hazardous per OAC 3745-51.

HIs also incorporate waste hazard information such as the numeric-rating RIS employs to designate toxicity of the particular waste, pertinent information for the storage, handling and processing of the specified WPS and identification of RGNs associated with the WPS. Additionally, the HIs identify the destined process method for the containers of the WPS, and emphasizes high level toxicity material, special containerization needs, and safety / operational concerns.

Waste Management Personnel Affected. HIs follow the waste from the point of entry into the RIS facility throughout the disposal process.

Exhibit G

RIS Fingerprint Laboratory Sample Testing Information

Exhibit G:
A Description of RIS Sample Testing Information

Purpose. Sample control information serves as a permanent record and Chain-of-Custody for sampled material moved from sampling locations to the Fingerprint Laboratory. It illustrates what required tests are needed. It documents times and dates of completion during the various stages of the fingerprint approval process and serves as a short summary of a particular sample's testing history.

Description. All sample information can be found in the Operating Record. RIS maintains a RCRA Operating Record in compliance with OAC 3745-54-73. RIS' Ohio Hazardous Waste Installation and Operation RCRA Part B Permit authorizes RIS to maintain portions of the Operating Record that are more than three (3) years old at an off-site location and to collect, store and/or manage data required by its Permit or the Part B application in hard or electronic copy.

Sample information consists of information, which is divided into three main sections – Sampling, Analysis, and Release. Sample control information includes many of the following criteria.

Receiving personnel list CINs associated with the shipment. This information allows RIS to track the sample. The analyst also identifies which testing is needed. An analyst may request fingerprint analysis, PCB analysis, metals analysis, or other testing as necessary.

Sample information includes many of the following criteria: Customer name, Shipment number, WPS Number, CIN, receiving operator identity, and date and time the sample was taken. Once the sample has been identified, an analyst determines whether the sample satisfies the physical characteristics found on the WPS.

Analytical sample information also includes the name of the analyst who performed the testing, and whether the analyst accepted or rejected the sample. In addition, the Heat Value, typically in BTU, and pH are also recorded as sample information.

Release sample information provides the time and date the sample is released from the Fingerprint Laboratory. An authorized individual indicates when the fingerprint parameters have been completed, thus indicating the sample was either within specification or found to be discrepant.

Waste Management Personnel Affected. Sample information documents the interaction between laboratory and Receiving personnel as well as the end-result of the fingerprint process.

Exhibit H

RIS Fingerprint Laboratory Worksheet

Exhibit H:
A Description of RIS' Fingerprint Lab Results Log

Purpose. The Fingerprint Lab Results Log serves to document data generated by the RIS on-site lab. RIS completes fingerprint analysis on waste samples according to the sampling plan incorporated in this WAP.

Description. The RIS Fingerprint Lab Results Log is generated for each sample tested and contains at a minimum the following information.

- the shipment name or number;
- WPS number or profile designator;
- the drum number or other CIN;
- with tanker or hopper samples the hopper or tanker identification number should be used in lieu of the drum number; and
- a written description of the sample's appearance.

Once the testing has been completed, the analyst's initials and the date of testing are recorded. The Fingerprint Lab Results Log also records generic comments or notes and indicates necessary re-samples, which may be useful in processing the waste.

The Fingerprint Lab Results Log may also include results of supplemental analysis, specifically PCB analysis or metal analysis, as well as a list of analytical tests routinely performed. In addition, the logs also contain the test parameter name, results of the analytical test, units of test measure, and acceptance criteria for each test. At a minimum, the following parameters appear on the Results Log:

- pH;
- Oxidizer;
- Sulfide;
- Cyanide;
- Specific Gravity;
- Flash Point;
- Heat Value;
- Halogen Content; and
- Viscosity.

All pages of the Fingerprint Lab Results Log are bound and numbered with daily run counts. It is the duty of the analyst performing the sample testing to fill in the appropriate spaces on the form. In cases where a particular test is not applicable, the analyst shall write "NA" into the associated space. In cases where a certain test is not required, a single line will be drawn

through the space to indicate that the test was not needed. The sample logbooks are filed in the Operating Record once completed. At a minimum, the aforementioned information will be included in the Fingerprint Lab Results Log.

Waste Management Personnel Affected. The Fingerprint Lab Results Log prepared by RIS laboratory personnel documents the results of fingerprint parameters for specific samples.

Exhibit I

RIS Notification and Certification Form

Exhibit I: A Description of the RIS Land Ban Notification Certification Form

Purpose. The purpose of Land Ban Notification and Land Ban Certification is to identify hazardous wastes that are restricted from land disposal, define those limited circumstances under which an otherwise prohibited waste may continue to be land disposed, notify the appropriate parties about wastes that do not meet the applicable treatment standards of OAC 3745-270, and certify wastes that do meet the applicable treatment standards of OAC 3745-270.

Description. Each initial incoming waste shipment which is subject to the Land Disposal Restrictions and has been treated, exempted, meets the variance requirements, or otherwise meets the appropriate treatment standard or prohibition without treatment must be accompanied by a Land Ban Certification Form from the treater or generator, certifying the waste meets the appropriate treatment standard, prohibition or variance and must include any applicable analytical data or references to such data or documentation in accordance with Column C of Table 1 of OAC 3745-270-07.

The initial incoming waste shipment which is subject to the Land Disposal Restrictions and still requires treatment must be accompanied by a Land Ban Notification Form from the generator notifying the facility that the waste requires further treatment. Applicable items from Columns A of Table 1 in OAC 3745-270-07 that, at a minimum, must be included on the notification are:

- EPA Hazardous Waste Identification Numbers;
- Manifest Document Number of the first shipment;
- Notification that the waste is subject to land disposal restriction;
- The constituents of concern for F001-F005, and F039, and underlying hazardous constituents in characteristic wastes, unless the waste will be treated and monitored for all constituents (Note: If all constituents will be treated and monitored, there is no need to put them all on the land disposal restriction notice);
- The notice must include the applicable wastewater/non-wastewater category and subdivisions made within a waste code based on waste-specific criteria;
- Waste Analysis, when available; and

- Contaminated soil constituent statements found in OAC 3745-270-07, Table 1, Row 8, if applicable.

Items that, at a minimum, included on the certification are:

- EPA Hazardous Waste Identification Number;
- Manifest Document Number of the first shipment;
- Statement the waste is not prohibited from land disposal; and a
- Certification statement.

Waste Management Personnel Affected. The technical staff maintains the notification and certification forms for incoming wastes and manages the RIS residuals program notification forms.

Exhibit J

RIS Compatibility Test

Exhibit J: A Description of RIS' Compatibility Test Documentation Summary

Purpose. To describe the procedure for determining the compatibility of different wastes by mixing small quantities, observing, and reporting any reactions which may occur.

Description. Compatibility tests are performed on blended waste. Typically, RIS personnel refer to the HIs for specific handling information, then decide which container, or tank if applicable, will be used for processing the material. Once the vessel is chosen, a sample from the waste is extracted from the vessel (e.g., drum or tank). The sample is collected in a five-gallon pail. The sample is mixed with representative samples from the drums to be processed and allowed to settle for a short period of time. If the material does not react, the load is processed. If a reaction occurs, the material is kept for further evaluation and/or an alternative process method is used.

Compatibility testing on waste streams when dock blends are created is documented in the Compatibility Analysis Report. Included on the report is the following information:

- RIS Form number;
- Samples to be tested (CINs, tanker numbers and storage tank numbers);
- Shipment Number and WPS Number for each drum to be processed;
- Date of analysis and person completing form;
- The average initial temperature of the wastes to be dock processed;
- The final "mix" temperature of the waste to be dock processed;
- Comments regarding visible reactions, temperature changes and incompatibilities; and
- Conclusion: Compatible or Incompatible.

When Dock Processing for billing purposes only on non-pumpable drums, the information included in the Compatibility Report includes: Shipment number; WPS; Count; and Reason why. Blended waste dock processed with the intention of shipment offsite will be sampled prior to shipment. Specifically, a representative sample of blended waste will be analyzed for the same parameters outlined in Table C2-4 *RIS Fingerprint Analysis Parameters* and Test Methods per *Section C – WAP, Appendix C-2 Fingerprint SOPs* to accurately characterize the waste for shipment to offsite facilities.

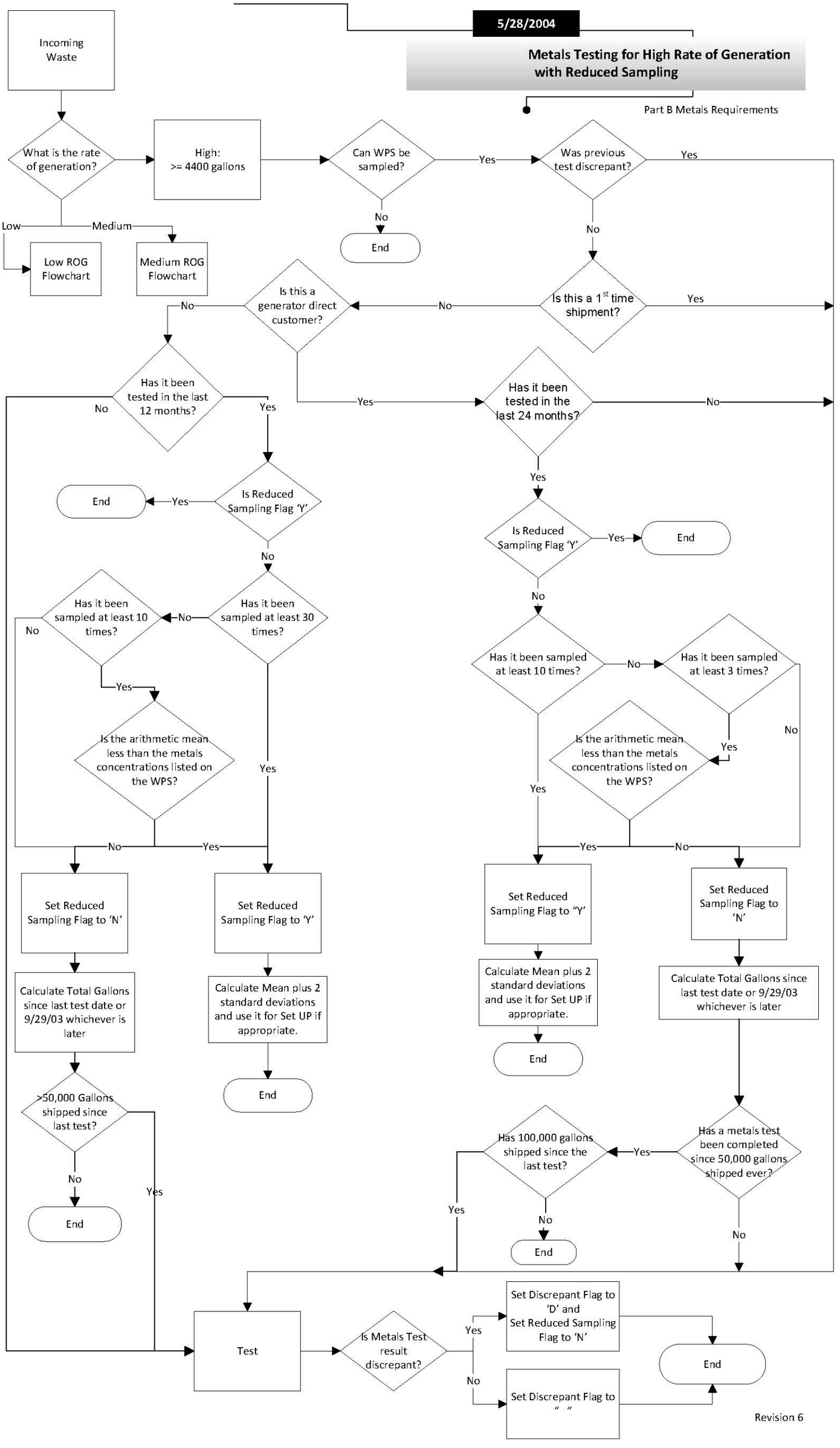
Waste Management Personnel Affected. RIS personnel perform compatibility testing and record this information in the Operating Record.

Exhibit K

RIS Metals and PCB Logic Flow Charts

Exhibit K:
RIS Metals and PCB Logic Flow Charts

The following flow charts represent general programming logic associated with RIS' metals and PCB sampling and analysis program. The computer software is proprietary, written in conjunction with Ohio EPA and maintained by RIS on its operating system.

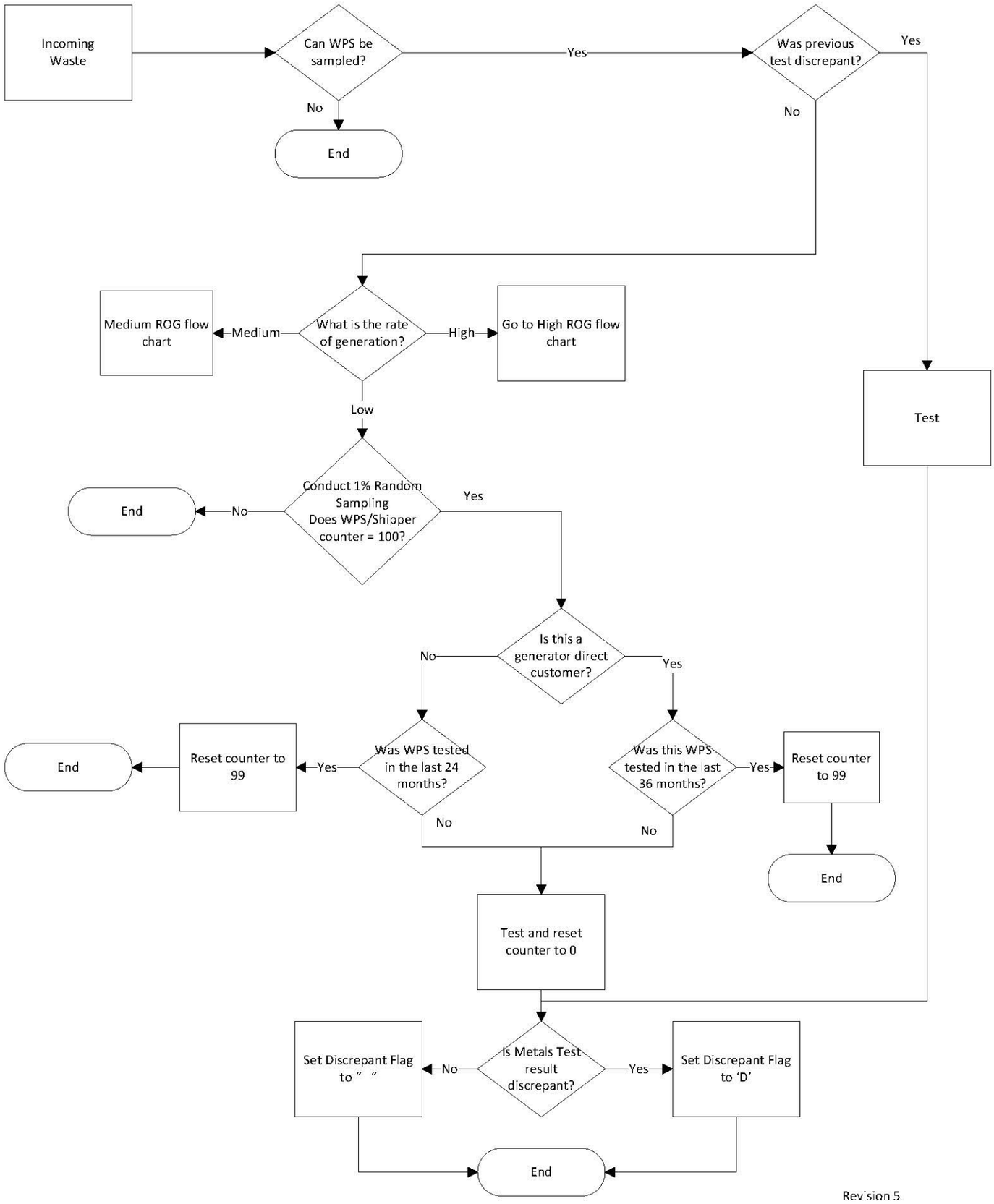

5/28/2004
Metals Testing for High Rate of Generation with Reduced Sampling
Part B Metals Requirements
Incoming Waste
What is the rate of generation?
High: >= 4400 gallons
Low
Medium
Low ROG Flowchart
Medium ROG Flowchart
Can WPS be sampled?
Yes
No
End
Was previous test discrepant?
Yes
No
Is this a 1st time shipment?
Yes
No
Is this a generator direct customer?
No
Yes
Has it been tested in the last 12 months?
No
Yes
End
Is Reduced Sampling Flag 'Y'
Yes
No
Has it been sampled at least 30 times?
Has it been sampled at least 10 times?
No
Yes
Is the arithmetic mean less than the metals concentrations listed on the WPS?
No
Yes
Set Reduced Sampling Flag to 'N'
Calculate Total Gallons since last test date or 9/29/03 whichever is later
>50,000 Gallons shipped since last test?
No
Yes
End
Set Reduced Sampling Flag to 'Y'
Calculate Mean plus 2 standard deviations and use it for Set UP if appropriate.
End
Has it been tested in the last 24 months?
Yes
No
Is Reduced Sampling Flag 'Y'
Yes
End
No
Has it been sampled at least 10 times?
No
Has it been sampled at least 3 times?
Yes
No
Is the arithmetic mean less than the metals concentrations listed on the WPS?
Yes
No
Set Reduced Sampling Flag to "Y'
Calculate Mean plus 2 standard deviations and use it for Set UP if appropriate.
End
Set Reduced Sampling Flag to 'N'
Calculate Total Gallons since last test date or 9/29/03 whichever is later
Has a metals test been completed since 50,000 gallons shipped ever?
Yes
No
Has 100,000 gallons shipped since the last test?
Yes
No
End
Test
Is Metals Test result discrepant?
Yes
No
Set Discrepant Flag to 'D' and Set Reduced Sampling Flag to 'N'
Set Discrepant Flag to " "
End
Revision 6

5/28/04

Metals Testing for Low Rate of Generation

Part B Metals Requirements

High: >= 4400 gallons
Medium: >= 1100 gallons and < 4400 gallons **or**
Medium: < 1100 gallons and WPS max > threshold
Low: < 1100 gallons and WPS max < threshold



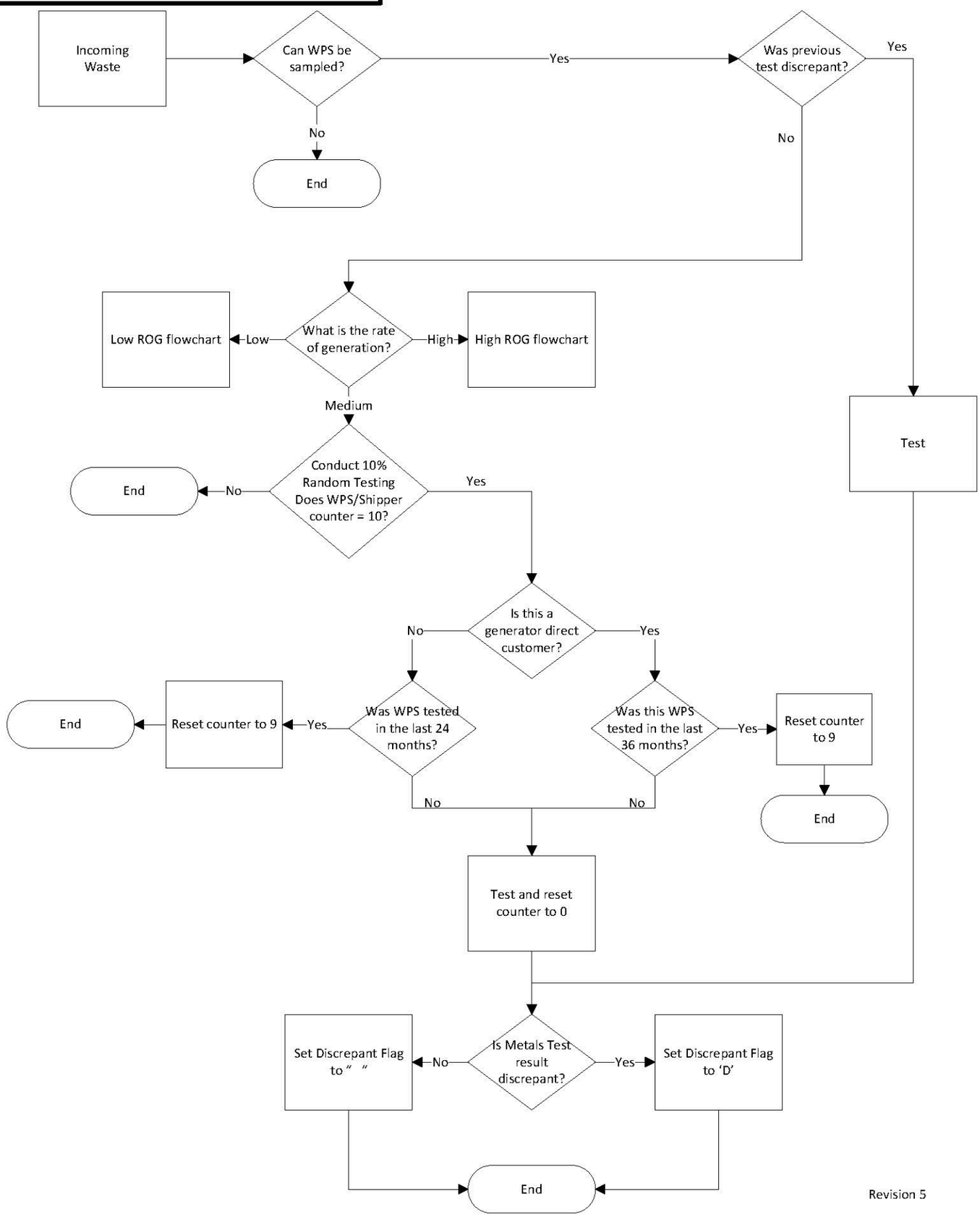
Revision 5

5/28/04

Metals Testing for Medium Rate of Generation

Part B Metals Requirements

High: >= 4400 gallons
Medium: >= 1100 gallons and < 4400 gallons **or**
Medium: < 1100 gallons and WPS max > threshold
Low: < 1100 gallons and WPS max < threshold



Revision 5

5/28/2004

PCB Testing Flow Chart

Part B Metals Requirements

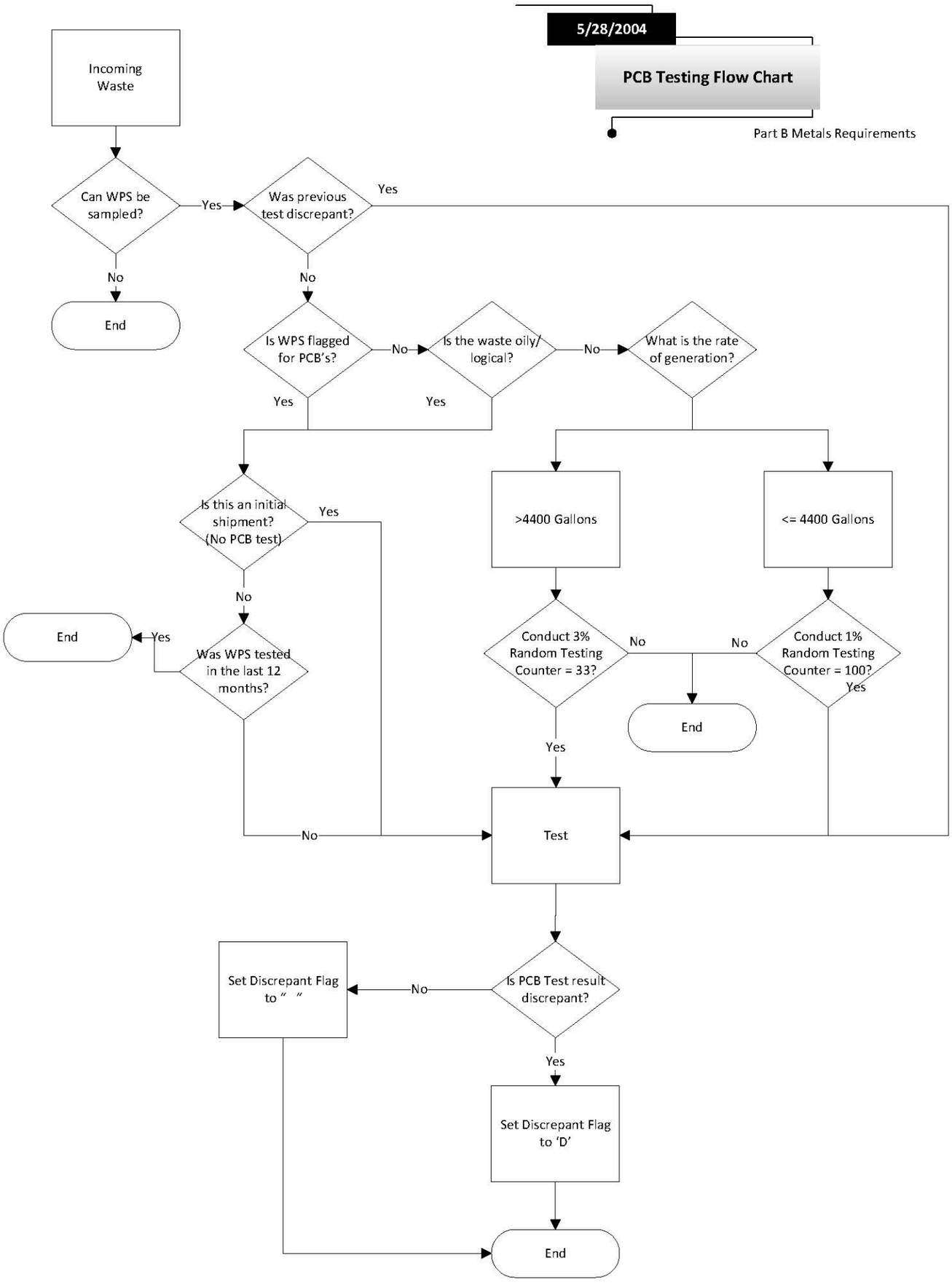


Exhibit L

Visual Inspection Worksheet

Exhibit L: A Description of The Visual Inspection Worksheet

Purpose. The purpose of the Visual Inspection Worksheet is to document the contents of inner containers associated with a Lab Pack or Loose Pack container. This information is reviewed to confirm that waste stream(s) received at RIS were the same as described on the applicable WPS(s).

Description. The Visual Inspection Work Sheet is used to record the WPS and CIN for each Lab Pack and Loose Pack, and it allows the RIS employee who is performing a visual inspection to document the inner contents of each container. A Visual Inspection Work Sheet includes, but is not limited to, the following information:

- Shipment, Customer, WPS and CIN numbers;
- Outer container sizes and types;
- Description of inner container contents, based on the labels accompanying each inner container; and
- The inspector's initials and visual inspection date.

Waste Management Personnel Affected. The RIS Visual Inspection Worksheet is to be used by trained RIS personnel who are unpacking Lab Packs and / or loose packs, to document the chemical contents of inner containers for confirmation against the applicable WPS(s). Completed Visual Inspection Worksheets and WPSs are retained by RIS in accordance with applicable regulatory requirements.

Appendix C-1

Compatibility Guidelines

Appendix C-1
Compatibility Guidelines

PUBLIC INFORMATION VERSION

Compatibility Guidelines

1.0 Introduction

Proper waste characterization is the most critical component in determining compatibility between wastes streams managed at the Ross Incineration Services, Inc. ("RIS") facility. RIS minimizes the possibility of uncontrolled reactions due to waste incompatibility through the proper identification of the chemical and physical properties of the wastes. Prior to storage or treatment of a waste, RIS evaluates the waste using at a minimum: the Waste Product Survey ("WPS"), Waste Component Verification ("WCV"), visual inspection and the fingerprint analysis. RIS then identifies any properties of the waste which could potentially initiate or support an undesired reaction with other waste if mixed. The information gleaned from the RIS waste acceptance system is used to determine the proper waste management practices. From this information RIS identifies if the waste must be segregated from other waste in order to avoid unwanted reactions. In certain cases, waste compatibility testing is conducted to identify waste incompatibilities. Compatibility testing is performed as appropriate and is dependent upon feed location, potential for blending waste, storage area of the waste [e.g., tanks, Container Storage Facility ("CSF"), Bulk Storage Areas ("BSAs"), Oxidizer Storage Building ("OSB"), etc.], container size and type, and quantity of waste received.

The Receiving Department is responsible for identifying potential incompatibilities between incoming wastes and wastes already in storage and for proposing the proper storage, processing, and management requirements for the waste.

The compatibility chart included in EPA 600/2-80-076 "*A Method for Determining the Compatibility of Hazardous Waste*" is consulted to determine the potential effects of mixing wastes with different reactivity groupings. In cases where potential incompatibility is indicated, the waste will be separated from other incompatible materials. Figure 1.0 "*Hazardous Waste Compatibility Chart*" is a copy of the referenced chart. RIS is extremely conservative during evaluation of incompatibilities. Consequently, compatibility evaluations may be completed at various points throughout the receiving process. Compatibility tests are done on conforming profiled materials which have already

been through the RIS fingerprint process and evaluated by the laboratory. During the compatibility tests, RIS takes extreme care not to blend energetic wastes and blends only limited quantities (e.g. 250-500 ml) of the waste.

2.0 Compatibility Guidelines for Waste Stored in Tanks

RIS recognizes the importance of determining the compatibility of the wastes with the tanks' design as well as with wastes stored in the tanks. Therefore, RIS begins compatibility evaluation of incoming waste during the pre-acceptance process. Please refer to Section C-2e (1)(a), "*Pre-acceptance Procedures*" for a description of RIS' extensive waste characterization practices. The technical staff reviews all pertinent waste data collected from the WPS, WCV, and literature review. This information is used to determine the compatibility of the waste with the tank's design before identifying an appropriate tank process code. RIS samples liquid streams in accordance with this Waste Analysis Plan ("WAP") visual inspection and fingerprint analysis during the receiving process. Samples are also taken after preparing blended shipments for shipment offsite. The visual inspection and fingerprint data confirm the waste characteristics. Fingerprint parameters indicate cyanide and sulfide reactivity to further assist Receiving personnel in compatibility assessment and waste classification. Special compatibility studies, the 5-gallon bucket test (See Exhibit J for a description of this form) and laboratory procedure FP-009-001 (See Appendix C-3), may be completed at the request of the Receiving Department when additional information may be warranted. A series of evaluations are completed at various points throughout the receiving process and the "5 gallon bucket" test is typically one step in the evaluation process. The laboratory compatibility study may be completed in lieu of the "5-gallon bucket" test and is usually requested when large quantities of waste are received at the facility. The laboratory compatibility test may also be requested when a waste mixture contains a component that by itself would not be considered for tank farm storage but the mixture does not exhibit the incompatible characteristics of the component.

The "5 gallon bucket" test is done on conforming profiled materials which have already been through the RIS fingerprint process and evaluated by the laboratory. During the "5-gallon bucket" test, RIS takes extreme care not to blend energetic wastes and blends only limited

quantities (e.g. 250-500 ml) of the waste. These compatibility studies look for the evolution of gas during blending; temperature change during blending; polymerization of the blended wastes; and spontaneous combustion. Again, liquids are classified as to their compatibility with the tanks used to store the waste and the tank process codes are verified. Finally, Production personnel authorize waste transfer to tank storage or for shipment offsite. All compatibility test results will be documented in the Operating Record.

Figure 1.0

Hazardous Waste Compatibility Chart

HAZARDOUS WASTE COMPATIBILITY CHART

Reactivity Group #	Reactivity Group Name
1	Acids, Mineral, Non-oxidizing
2	Acids, Mineral, Oxidizing
3	Acids, Organic
4	Alcholols and Glycols
5	Aldehydes
6	Amides
7	Amines, Aliphatic and Aromatic
8	Azo Compounds, Diazo Compounds and Hydrazines
9	Carbamates
10	Caustics
11	Cyanides
12	Dithiocarbamates
13	Esters
14	Ethers
15	Fluorides, Inorganic
16	Hydrocarbons, Aromatic
17	Halogenated Organics
18	Isocyanates
19	Ketones
20	Mercaptans and other Organic Sulfides
21	Metals, Alkali and Alkaline Earth, Elemental
22	Metals, Other Elemental & Alloys as Pwders, Vapors, or Sponges
23	Metals,Other Elemental & Alloys as Sheets,Rods,Drops,Moldings
24	Metals and Metal Compounds, Toxic
25	Nitrides
26	Nitriles
27	Nitro Compounds, Organic
28	Hydrocarbons, Aliphatic, Unsaturated
29	Hydrocarbons, Aliphatic, Saturated
30	Peroxides and Hydroperoxides, Organic
31	Phenols and Cresols
32	Organophosphates, Phosphothioates, Phosphodithioates
33	Sulfides, Inorganic
34	Epoxides
101	Combustible and Flammable Materials, Miscellaneous
102	Explosives
103	Polymerizable Compounds
104	Oxidizing Agents, Strong
105	Reducing Agents, Strong
106	Water and Mixtures Containing Water
107	Water Reactive Substances

EXTREMELY REACTIVE! DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL! EXTREMELY REACTIVE!

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 101 102 103 104 105 106 107

Reactivity Code	Consequences
H	Heat generation
F	Fire
G	Innochous and non-flammable gas generation
GT	Toxic gas generation
GF	Flammable gas generation
E	Explosion
P	Violent polymerization
S	Solubilization of toxic substances
U	May be hazardous but unknown

EXAMPLE:

H
F
GT

Heat generation, fire, and toxic gas generation

This form is an exact replica of the form identified below.

It was created for inter-company use only.

3/15/93 - Debbie Lewandowski - HWCOMP.XLS

EPA-600 2-80-076 April, 1980
A method of determining the compatibility of Hazardous Waste.

Muncipal Environmental Research Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, Ohio 45268

When reactive waste is received at the facility, it will be fed directly to the incinerator. Although RIS makes every attempt to isolate customers' waste, RIS can blend compatible wastes within a single tank. RIS will only blend wastes under appropriate conditions. Consequently, RIS may run a compatibility test on a waste stream to assure that it does not polymerize with waste previously found in the tank. Should the need arise to store a waste that is incompatible with the historical contents of a tank, RIS will empty the tank and thoroughly rinse and visually inspect the tank prior to introducing waste. RIS utilizes the Tank Farm Log to record potential incompatibilities.

Compatibility tests are performed on all dock system drum loads and on blended loads shipped offsite. Typically, the dock laborer refers to the Handling Instructions ("HIs") for specific handling information, then decides which dock tank will be used for processing the material. Once the tank is chosen, a sample from the dock tank is extracted. The sample is collected in a five-gallon pail from the tank. The sample is mixed with representative samples from the drums or bulk tanker shipment and allowed to settle for a short period of time. If the material does not react, the load is processed. If a reaction occurs, the material is kept for further evaluation and/or an alternative process method is used. The Standard Operating Procedure for the waste fingerprint compatibility test is included in Appendix C-3 as FP-009-001, and a description of the "5 gallon bucket" test is in Exhibit J.

Table 2.0 entitled "*Procedures and Precautions to Prevent Reactions of Incompatible Wastes in Tanks*" lists specific procedures and precautions taken by RIS to prevent reactions which 1) generate extreme heat or violent reactions; 2) produce uncontrolled toxic mists in sufficient quantities to threaten human health and the environment; 3) produce uncontrolled flammable fumes in sufficient quantities to pose a risk of fire or explosion; 4) damage the structural integrity of the device or facility; and 5) through like means, threaten human health or the environment.

3.0 Compatibility Guidelines for Waste Stored in Containers

3.1 Container Storage Facility

RIS does not commingle incompatible wastes in the container storage areas. RIS uses WPS

data to set storage classifications. Fingerprint data confirms conformity with WPS parameters and incompatibility tests are conducted as necessary. The Receiving Department assigns the appropriate storage location for the waste based on the WPS data. On occasion, RIS stores containerized waste throughout other areas of the CSF using containment systems other than inground sumps (e.g., containment pallets, berms, pans, etc.).

Table 2.0

Procedures and Precautions to Prevent Reactions of Incompatible Wastes in Tanks

- Providing procedural and safety training to operators handling the materials.
- Visually inspecting the tanks, valves, hoses, piping, and containment basins prior to any transfer operations.
- Exercising extreme care during filling operations.
- Ensuring that all couplings are secure.
- Ensuring that "no smoking" signs are posted and that ignition sources are confined to designated area.
- Nitrogen blanketing all tanks that store volatile materials.
- Conducting waste characterization analysis, See Section C-2e (1)(a), "*Pre-acceptance Procedures*" for details.
- Conducting fingerprint analysis to verify waste characterizations.

Bays are areas within the CSF where materials are stored using a five level racking system. Incompatible wastes are segregated in the CSF by placement in designated racking bays. See Section D for additional CSF storage information. The CSF has a 6-inch-high curb that separates the 18 storage areas (bays and racking bays) with separate sump areas. This will allow for the segregation of incompatible wastes should the need arise. Bar code labels on all containers include a hazard class code, which determines where the material is to be stored. The racks in the racking bays are equipped with signs designating the type of waste that can be stored in that particular row.

Each waste category is stored in these designated areas. For example, corrosives (acids/bases) are isolated from each other and from the bay where reactive sulfides and cyanides or high halogens are stored. Water reactives are dedicated to a single racking bay. RIS will store other compatible wastes in the bays or aisles designated for each waste type. For example, combustibles will be stored in the unused portions of the high halogen racking bay or the unused portions of the other bays.

RIS may use the available storage space in another compatible bay or racking bay. For example, if a large quantity of high halogen waste is received, RIS may designate additional racking bays as high halogen storage racking bays. Although RIS may alter the arrangement, RIS will comply with the overall principles and concepts pertaining to segregation of incompatibles. Additionally, RIS will store non-hazardous waste and materials for RIS use in accordance with the information contained in Appendix C-2 - *Compatibility Guidelines*, of this WAP. Further information regarding storage of containers can be referenced in Section D - *ProcessDescription,* Section D-1a (2) - *Detailed Description of the Container Storage Facility* of RIS State Part B Application.

A key indicating waste segregation is included as Figure 3.0 entitled "*Segregation of Incompatible Waste in the CSF.*" This key indicates the racking bay by letter and the waste type (hazard class) which can be stored in that racking bay. These procedures provide assurance that incompatible waste is properly segregated. Operators are trained in the CSF procedures and are knowledgeable in the following requirements regarding waste segregation.

- Corrosives cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.

- Combustibles/Flammables can be stored in any open space except with, or adjacent to oxidizers (most materials are combustible even though they are classified as something else.)
- Oxidizers must always remain segregated from other wastes.
- Water reactive wastes are stored in a segregated bay or racking bay. Additional measures to prevent water from contacting this waste may include installation of drip pans or barriers. Equivalent measures such as removing water from containment sumps may also be employed.

3.2 Bulk Storage Areas

RIS only stores hazardous waste without free liquids in the BSAs. RIS only accepts hazardous waste in containers which meet United States Department of Transportation ("US DOT") requirements. RIS only stores hazardous waste in the BSAs in containers made of, or lined with, materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored. This ensures the ability of the container to contain the waste is not impaired.

As part of RIS' waste segregation policy, incompatible wastes and materials will not be placed in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored in the BSAs, RIS will keep them physically separated from other wastes and materials by means of portable berms, bags of compatible absorbent materials, drip pans, bins or other devices.

Operators are trained in RIS storage procedures and are knowledgeable in the following waste segregation requirements:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.
- Combustibles containing water can not be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to, oxidizers.

RIS does not store oxidizers or water reactive wastes in the BSAs. In addition to RIS procedures and US DOT packaging requirements, RIS will assure compatibility of wastes with containers through daily inspections of the BSAs.

Figure 3.0

Segregation of Incompatible Waste in the CSF

KEY

Typical Segregation of Incompatible Wastes in CSF**

Row/Bay	Waste Type
A	Caustic Corrosives
B	Sulfides and Cyanides
C*	Sulfides and Cyanides
D	High Halogens
E	Water Reactives
F*	Water Reactives
G	Acidic Corrosives
H	Caustic Corrosives
I*	Combustibles/Flammables
J*	Combustibles/Flammables
K*	Combustibles/Flammables

*Combustible/Flammable wastes may be stored with wastes in any other row except with Oxidizers.

** Oxidizers are typically stored in the OSB or on BSA #2. When storing Oxidizers on BSA #2, RIS follows the guidelines specified in Section D-1b(1)(h). Reducers are typically stored in the WSBs.

Please note that RIS reserves the right to alter or expand the designated areas for incompatibles based on our inventory needs. For example, if RIS were storing waste, which exceeds the capacity of its designated row, we would find it necessary to use the available storage space in another compatible row.

3.3 Oxidizer Storage Building ("OSB")

Oxidizer waste stored in the OSB will be limited to NFPA Class 1 or Class 2 oxidizers. Organic peroxide waste stored in the OSB will be limited to NFPA Class 4 and Class 5 organic peroxides.

For compatibility purposes, RIS considers oxidizers and organic peroxides of the lower hazard classes to be compatible. Only containers made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, will be used so that the ability of the container to contain the waste is not impaired.

Other wastes and materials which are incompatible with oxidizers and organic peroxides will not be stored in the OSB. In addition, oxidizer and organic peroxide wastes which are incompatible with wood will not be stored on wooden pallets within the OSB. Overall, oxidizer and organic peroxide wastes will be physically separated from incompatible materials and stored in accordance with RIS handling instructions.

3.4 Waste Storage Bays ("WSB")

RIS only accepts hazardous waste in containers which meet US DOT requirements. RIS only stores hazardous waste on the WSBs in containers made of, or lined with, materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored. This ensures the ability of the container to contain the waste is not impaired.

As part of RIS' waste segregation policy, incompatible wastes and materials will not be placed in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored on the WSBs, RIS will keep them physically separated from other wastes and materials by means of portable berms, bags of compatible absorbent materials, drip pans or other devices.

Operators are trained in RIS storage procedures and are knowledgeable in the following waste segregation requirements:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.

- Combustibles containing water can not be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to, oxidizers.

RIS does not store oxidizers or water reactive wastes in the WSBs. In addition to RIS procedures and US DOT packaging requirements, RIS will assure compatibility of wastes with containers through daily inspections of the WSBs.

3.5 Container Storage Area ("CSA")

The CSA will only accept hazardous waste in containers meeting US DOT requirements. RIS will only store hazardous waste on CSA in containers made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

As part of RIS' waste segregation policy, incompatible wastes and materials are not placed in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored in the CSA, RIS will keep them physically separated from other wastes and materials by means of a dike, berm, wall or other device.

For stacked container storage in the CSA, RIS has implemented a container tracking system to identify and categorize classes of flammable and combustible liquids. The computerized program utilizes specific fields of the WPS such as the flashpoint, physical state and DOT classification, to categorize Class 1A, B and C flammable liquids. When a Class 1 flammable liquid is received and must be stored in the CSA, the container is stored in accordance with NFPA pile size restrictions for storage of flammable and combustible materials. The NFPA classification will be designated on the CIN label. Operators will visually confirm if a container is a restricted Class 1 material prior to storage in the CSA. Ideally, RIS will store these materials in racks rather than stacking them in piles in the CSA. However, in the event that containers holding Class 1 flammable materials must be stored in the CSA, RIS will adhere to the NFPA pile size and aisle space restrictions.

Additionally, operators are trained in all aspects of RIS storage procedures and are knowledgeable in the following requirements regarding waste segregation:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.
- Combustibles containing water cannot be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to oxidizers.

As part of RIS' waste segregation policy, waste streams are categorized into one of the following waste types: combustibles containing water, combustibles without water, flammables, water reactives, oxidizers, corrosives (high and low pH), sulfides and cyanides, and high halogens. Incompatible wastes are segregated and are in compliance with OAC 3745-55-77 regarding the segregation of incompatibles.

In addition to RIS and US DOT segregation and packaging requirements, RIS will assure compatibility of wastes with containers through daily inspections of the CSA. Regular inspections ensure that the containers are always managed and labeled properly, and that the containers are in good condition.

3.6 Waste Management Building ("WMB")

When waste is stored in the WMB, the hazardous waste will be in containers made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

As part of RIS' waste segregation policy, incompatible wastes and materials are not placed in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored in the WMB, RIS will keep them physically separated from other wastes and materials by means of a dike, berm, wall or other device.

RIS will not stack containers in the WMB. RIS has implemented a container tracking system to identify and categorize classes of flammable and combustible liquids. The computerized program utilizes specific fields of the WPS such as the flashpoint, physical state and DOT classification, to categorize Class 1A, B and C flammable liquids. When a Class 1 flammable

liquid is received and must be stored in the WMB, the container is stored in accordance with NFPA pile size restrictions for storage of flammable and combustible materials. The NFPA classification will be designated on the CIN label. Operators will visually confirm if a container is a restricted Class 1 material prior to storage in the WMB. In the event that containers holding Class 1 flammable materials must be stored in the WMB, RIS will adhere to the NFPA pile size and aisle space restrictions.

Additionally, operators are trained in all aspects of RIS storage procedures and are knowledgeable in the following requirements regarding waste segregation:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.
- Combustibles containing water cannot be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to oxidizers.

In addition to RIS procedures and US DOT packaging requirements, RIS assures compatibility of wastes with containers through daily inspections of the WMB. Regular inspections ensure that the containers are always managed and labeled properly, and that they are in good condition.

3.7 Process Dock West Storage Area ("PDWSA")

RIS only accepts hazardous waste in containers meeting US DOT requirements. RIS only stores hazardous waste on the PDWSA in containers made of or lined with materials which will not react with, and are otherwise compatible with the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

As part of RIS' waste segregation policy, incompatible wastes and materials are not placed in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored on the PDWSA, RIS will keep them physically separated from other wastes and materials by means of a dike, berm, wall or other device.

For stacked container storage on PDWSA, RIS has implemented a container tracking system to

identify and categorize classes of flammable and combustible liquids. The computerized program utilizes specific fields of the WPS such as the flashpoint, physical state and DOT classification, to categorize Class 1A, B and C flammable liquids. When a Class 1 flammable liquid is received and must be stored on the PDWSA, the container is stored in accordance with NFPA pile size restrictions for storage of flammable and combustible materials. The NFPA classification will be designated on the CIN label. Operators will visually confirm if a container is a restricted Class 1 material prior to storage on the PDWSA.

Additionally, operators are trained in all aspects of RIS storage procedures and are knowledgeable in the following requirements regarding waste segregation:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.
- Combustibles containing water cannot be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to oxidizers.

In addition to RIS procedures and US-DOT packaging requirements, RIS assures compatibility of wastes with containers through daily inspections of PDWSA. Regular inspections ensure that the containers are always managed and labeled properly, and that they are in good condition.

3.8 Guard Rail Storage Area ("GRSA")

RIS only accepts hazardous waste in containers meeting US DOT requirements. RIS only stores hazardous waste on the GRSA in containers made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

As part of RIS' waste segregation policy, incompatible wastes and materials are not placed in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored on GRSA, RIS will keep them physically separated from other wastes and materials by means of a dike, berm, wall or other device.

For stacked container storage on GRSA, RIS has implemented a container tracking system to identify and categorize classes of flammable and combustible liquids. The computerized program utilizes specific fields of the WPS such as the flashpoint, physical state and DOT classification, to categorize Class 1A, B and C flammable liquids. When a Class 1 flammable liquid is received and must be stored on the GRSA, the container is stored in accordance with NFPA pile size restrictions for storage of flammable and combustible materials. The NFPA classification will be designated on the CIN label. Operators will visually confirm if a container is a restricted Class 1 material prior to storage on the GRSA.

Additionally, operators are trained in all aspects of RIS storage procedures and are knowledgeable in the following requirements regarding waste segregation:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.
- Combustibles containing water cannot be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to oxidizers.

In addition to RIS procedures and US DOT packaging requirements, RIS assures compatibility of wastes with containers through daily inspections of GRSA. Regular inspections ensure that the containers are always managed and labeled properly, and that they are in good condition.

4.0 Compatibility Guidelines for Waste Handled at the Incinerator

RIS' incinerator is uniquely designed to allow, in most cases, the introduction of waste directly to the combustion chamber. Assuring compatibility of waste at the incinerator is necessary only at feed locations where waste can potentially commingle prior to complete combustion.

Procedures for assuring compatibility of wastes at these feed locations are discussed in the following sections. All other feed mechanisms to the

Therefore, compatibility of wastes need not be addressed for these feed systems.

4.1 Title Removed

The differentiation between each waste stream is based on heating value, pumpability, reactivity, toxicity, halogen content, compatibility with inventory, and quantity received.

RIS assesses the reactivity group number ("RGN") data for each WPS and compares them against a compatibility matrix. Any potential incompatibilities are flagged so the Receiving staff can segregate the WPSs appropriately. Compatibility of materials will be established by use of storage classifications (e.g., combustibles, flammables, etc.), past experience with the waste streams, and the use of a revised version of the hazardous waste compatibility chart (EPA-600-2-80-076) as provided in Figure 4.0 entitled "*Hazardous Waste Compatibility Chart, Side Door*."

Based on the revised compatibility chart, no wastes will be set up for processing at the same time which may result in an incompatibility consequence of explosion, violent polymerization, or an unknown but potentially hazardous reaction. For example, waste with a RGN 104 (strong oxidizing agents) will be separated from adjacent skids by a skid that either (1) contains contaminated metal/debris, or (2) contains wastes that are classified with compatible RGNs. Waste streams designated as RGN 107 (water reactive substances) will be separated from incompatible materials by an empty skid.

These waste streams will be identified and specific skid processing set up will be prescribed. In

Emergency situations include bulging drums, fuming or spraying drums, burning drums and drums which are beginning to react dangerously or generate heat.

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Figure 4.0

Hazardous Waste Compatibility Chart

PUBLIC INFORMATION VERSION
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HAZARDOUS WASTE COMPATIBILITY CHART

Reactivity Group #	Reactivity Group Name
1	Acids, Mineral, Non-oxidizing
2	Acids, Mineral, Oxidizing
3	Acids, Organic
4	Alcholols and Glycols
5	Aldehydes
6	Amides
7	Amines, Aliphatic and Aromatic
8	Azo Compounds, Diazo Compounds and Hydrazines
9	Carbamates
10	Caustics
11	Cyanides
12	Dithiocarbamates
13	Esters
14	Ethers
15	Fluorides, Inorganic
16	Hydrocarbons, Aromatic
17	Halogenated Organics
18	Isocyanates
19	Ketones
20	Mercaptans and other Organic Sulfides
21	Metals, Alkali and Alkaline Earth, Elemental
22	Metals, Other Elemental & Alloys as Pwders, Vapors, or Sponges
23	Metals,Other Elemental & Alloys as Sheets,Rods,Drops,Moldings
24	Metals and Metal Compounds, Toxic
25	Nitrides
26	Nitriles
27	Nitro Compounds, Organic
28	Hydrocarbons, Aliphatic, Unsaturated
29	Hydrocarbons, Aliphatic, Saturated
30	Peroxides and Hydroperoxides, Organic
31	Phenols and Cresols
32	Organophosphates, Phosphothioates, Phosphodithioates
33	Sulfides, Inorganic
34	Epoxides
101	Combustible and Flammable Materials, Miscellaneous
102	Explosives
103	Polymerizable Compounds
104	Oxidizing Agents, Strong
105	Reducing Agents, Strong
106	Water and Mixtures Containing Water
107	Water Reactive Substances

Reactivity	Consequences
E	Explosion
P	Violent polymerization
U	May be hazardous but unknown
F	Fire
N	Not permitted per Ross policy

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	101	102	103	104	105	106	107
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104			N	F	F	F	F	E	F		E	F	F	F		F	N	F	F	F	E	E	F		E	F	E	F	F	N	F	F	F	F	F	E	F	104	
105																	E										E			E						E	P	E	105	
106																																							106	
107	EXTREMELY REACTIVE! DO NOT MIX WITH ANY CHEMICAL OR WASTE MATERIAL! EXTREMELY REACTIVE! 107																																							

A:SDHWCMP3.XLS
Rev. 0, 5/27/98

In the event of an emergency , RIS will notify the Ohio EPA by certifying that the container of such wastes poses inordinate risk to human health or the environment by not processing the waste immediately. RIS shall submit to Ohio EPA a written certification signed by a responsible corporate official. This certification shall include: (1) the container identification number; (2) in the case where container deterioration requires the waste to be processed for safety reasons, a detailed physical description of the container; (3) the WPS number; (4) a detailed statement describing the hazard posed by not incinerating the waste; and (5) a certification that handling and incineration of the container and its contents can, and will, be done safely and in accordance with all relevant laws and permits.

4.2 Main Chamber Lance Direct Feed.

Based on the WPS and previous waste stream knowledge, RIS will assure compatibility between waste material being fed and waste material being fed from the direct feed containing any of the following elemental metals at concentrations greater than 1000-ppm.: Aluminum, Lithium, Magnesium, or Thallium. Specifically, the following materials are not considered elemental metals:

- metals that do not have an oxidation state of zero and are bound to other functional groups through ionic interactions such as lithium hydroxide, aluminum hydroxide, and magnesium chloride, etc.;
- metals that occur in dirt; talc; clay; vermiculite; and
- compounds like aluminum oxide, aluminum phosphate, aluminum alkoxides, lithium alkyls (n-butyl lithium); and any other compounds containing aluminum, lithium, magnesium, and thallium associated with any ligand (e.g., hydroxide, oxide, halides , or alkyl group).

4.3 Kiln Auger Shredder.

Based on the WPS and previous waste stream knowledge, RIS will assure compatibility of waste streams fed to the auger shredder. Waste streams to be fed to the auger shredder must meet the following guidelines so that these streams can be freely mixed in the auger shredder in the proper solids to liquids ratio:

5.0 Standard Operating Procedure - Waste Compatibility Test

The standard operating procedure for determining waste compatibility is described in Exhibit J. The purpose of the test is to determine the compatibility of different wastes by mixing small quantities and reporting any reactions, which may occur. The test is applicable to liquid wastes of various WPSs, which are to be mixed and processed on a larger scale at RIS or shipped offsite after blending. Receiving may request additional compatibility tests. All compatibility test results will be documented in the Operating Record.

Appendix C-2

Standard Operating Procedures (SOPs) for

Fingerprint Analysis

Appendix C-2

Standard Operating Procedures (SOPs) for

Fingerprint Analysis

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Appendix C-2
Standard Operating Procedures For Fingerprint Analysis

TABLE OF CONTENTS

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-001-003
Initial Date: 7/24/90

Title: BTU Analysis			
			Revised: 06-2020
Prepared by:	Approved by:	Date: 12-06-00	QA Approval:

1.0 PURPOSE

This procedure is to describe the means by which the heat content of a sample is determined.

2.0 APPLICATION

This procedure applies to any liquid or solid sample, which may be combusted in an oxygen bomb. This procedure is based primarily on the Parr Oxygen Bomb User Manual.

3.0 REFERENCES

Parr Oxygen Bomb User Manual

"Standard Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter", American Standard Testing Methods, Method D240-02, and Standard Test Method for Gross Calorific and Ash Value of Waste, Method D-5468-02 S.

4.0 ASSOCIATED SOPs

None

5.0 REAGENTS

5.1 2,2,4-Trimethylpentane (Isooctane) - Commercially purchased, reagent grade or equivalent

5.2 Benzoic acid - Commercially purchased, reagent grade or equivalent

5.3 Sodium carbonate solution, 50 g/L - Dissolve 50.0 g of sodium carbonate into approximately 800 mL of deionized water. Dilute to 1 liter in a volumetric flask. Store solution in a plastic bottle at room temperature. Prepare every 6 months or sooner.

6.0 EQUIPMENT

6.1 Parr 1620 Isoperibol Calorimeter or equivalent

6.2 Combustion capsules

6.3 Oxygen bomb

6.4 Top loader balance

6.5 Dispenser bottles – various capacity

6.6 Graduate cylinders: 10 ml

7.0 PROCEDURE

Note: For safety purposes, raw sample should not be exposed to the atmosphere unless it is contained in a ventilated hood. Steps 7.2 through and including step 7.5 should be conducted in a ventilated hood.

7.1 Fill a wash bottle with sodium carbonate solution. Wet the sides of the oxygen bomb until there is enough solution to cover the bottom of the bomb.

7.2 Place a combustion capsule on the balance in a hood and tare it. Place a portion of sample (between 0.2 and 0.8 g) into the capsule and record the weight to the nearest 0.01-g. Since varying matrices combust differently, below are sample weight guidelines which should be followed when weighing samples:

Matrix	**Sample Weight (g)**	**Iso-octane Weight (g)**
Waste liquid	0.60 - 0.80	0.10 - 0.30
Waste dirt or soil	0.30 - 0.50	0.20 - 0.40
Cloth	0.20 - 0.40	0.00 - 0.10
Plastic or polymer, paper	0.25 – 0.35	0.00 - 0.20
Powder	0.28 - 0.35	0.00 - 0.10
Metal*	0.20 - 0.50	0.00 - 0.10
Absorbent pads/fiber paint filter	0.15 – 0.20	0.00 – 0.10
Solvent moistened pads or filters	0.090 – 0.10	none

* **Use porcelain capsule**

Notes:

(1) The combined weight of the sample and iso-octane must never exceed 1.00 g.

(2) If a misfire continually results using the prescribed weight guidelines, decrease the sample weight and proportionally increase the iso-octane weight.

7.3 Place the capsule into the electrode loop hanging from the bomb top.

7.4 Lock a piece of fuse wire into the electrode on both sides. Adjust the fuse wire to ensure that it extends into the capsule making contact with the sample.

7.5 Place the bomb top into the body of the bomb and screw the bomb cap on securely.

Note: For accurate analyses, make sure that all bomb parts (bottom, top, and cap) are from the same bomb.

7.6 Place the oxygen connection onto the inlet valve of the bomb and press "O_2 Fill" on the calorimeter.

7.7 Check the water level of the calorimeter bucket. Fill the bucket with deionized water to the appropriate level.7.8 After the bomb has filled with oxygen (indicated by a popping sound and ending of the "O_2 Fill" light on the calorimeter), use the bomb hanger to lower the bomb into the calorimeter bucket. Check to make sure that the bomb is in the center of the calorimeter bucket.

7.9 Connect the electrode leads into the top of the calorimeter and close the calorimeter lid.

7.10 Press "Start", then enter the bomb number, sample identification number, sample weight, and iso-octane weight. The calorimeter will fire the sample automatically.

Note: Do not stand next to or in front of the calorimeter when the firing alarm sounds (rapid beeping). Injury could result if the firing of the sample is not contained within the bomb.

7.11 When the test is complete, the calorimeter will automatically calculate and display the result. Results are saved automatically to SD card. If there is a need to calculate the Btu/lb manually, use the following equation:

For samples **without** iso-octane added:

$$\text{Btu/lb} = \frac{[(W)(T)]}{\text{g sample}} \times 1.8$$

For samples **with** iso-octane added:

$$\text{Btu/lb} = \frac{[((W)(T) - E1) - 15]}{\text{g sample}} \times 1.8$$

where:

W = EE value (bomb constant)

T = Change in temperature

E1 = 10,682 cal/g * g iso-octane added
(calories produced by iso-octane)

Note: When new equipment, other than described in this procedure is used, follow procedures for instrument operation as described in owner's manual.

7.12 Discrepancy Determination

7.12.1 The actual result must be within ± 20% of the profiled range. If it is outside of these limits, a resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if re-analysis of a resample is warranted. A non-retested sample is automatically deemed discrepant and is reported to a Discrepancy Coordinator as discrepant.7.12.2 If re-analysis is warranted, a sample is re-tested. If the second result falls within ± 20% of the profiled range and within ± 4000 Btu/lb of the original result, the sample may be accepted based on the second result. If the reanalysis is different from the original result by more than ± 4000 Btu/lb or outside ± 20% of the profiled range, then a third analysis must be performed. If both results are outside of the ± 20% of the profiled range, the sample must be reported as being discrepant to a Discrepancy Coordinator.

8.0 QUALITY CONTROL

8.1 Bomb Calibration

Calibrate each bomb in use on a weekly basis and enter the EE values into the memory of each calorimeter. Document the EE values of each bomb calibrated into the QC logbook.

Note: The bomb bottom, top, and lid are standardized as one unit. Pieces must not be interchanged.

If need arises where the EE value must be calculated manually, use the equation below.

$$W = \frac{(H)\,(M)}{T}$$

where:

W = EE value (bomb constant)

H = Heat of combustion of benzoic acid in cal/g

T = Change of temperature

M = Weight of benzoic acid

8.2 LCS

8.2.1 Analyze a benzoic acid tablet or other standard material spiked with 0.10-g iso-octane on a 1 per 20-sample basis, or at a minimum of once daily per calorimeter.

8.2.2 Calculate the percent recovery by dividing the actual Btu/lb by the theoretical Btu/lb. Multiply this number by 100.

8.2.3 The percent recovery must be ± 10% of the theoretical value. If the result is outside this limit, check for instrument malfunction and recalibrate the bomb, if necessary.

8.2.4 Solvents of known BTU value can be substituted for benzoic acid. Recovery limits must meet the same criteria. Chlorobenzene = 12,000 BTU; Benzoic Acid = 11,373.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-002-004
Initial Date: 7/19/90

Title: Determination of Flashpoint			
			Revised: 03-2019
Prepared by:	Approved by:	Date: 12-06-00	QA Approval:

1.0 PURPOSE

This procedure is used to describe a method for determining the flashpoint of a sample.

2.0 APPLICATION

This method is applicable for any free-flowing liquid sample.

3.0 REFERENCES

ASTM 093-80 "Standard Method of Test for Flash Point"

"Pensky-Martens Closed-Cup Method for Determining Ignitability", Test Methods for Evaluating Solid Waste (SW-846), Method 1010A, September 1986

Pensky-Martens Flash Tester Operator's Manual

Setaflash Closed Tester Method, Test Methods for Evaluating Solid Waste (SW-846), Method 1020A

Setaflash Open Cup Method, ASTM D4982

4.0 ASSOCIATED SOPs

None

5.0 REAGENTS

Chlorobenzene, reagent grade or equivalent

6.0 EQUIPMENT

Pensky-Martens Flash Tester

Thermometer, 0°F - 205°F, 1 degree graduations

7.0 PROCEDURE

7.1 Prior to dispensing a sample into the flash tester cup, turn the exhaust hood on.

7.2 Fill the flash tester cup to the fill mark with sample. The fill mark is located inside the flash tester cup.

7.3 Place the flash tester cup into the heating mantle.

7.4 Place the stirrer and ignition apparatus on top of the flash tester cup and secure it to the apparatus. 7.5 Place the thermometer into the hole provided in the top of the tester apparatus so that the thermometer bulb is contacting the sample.

7.6 With a lit match in hand; turn on the gas flow slowly. Upon ignition, adjust the gas flow to allow for a small but steady flame.

7.7 Turn the top knob so that the shutter opens and the flame is lowered into the vapor space of the cup in 0.5 seconds. Leave in this lowered position for one second.

7.8 If the sample vapor ignites without heating (generally a flash of blue flame results) record the temperature and note that ignition occurred at the lowest testable temperature by writing LOW next to the temperature value in the results book. If the sample vapor does not ignite, proceed to 7.9.

7.9 Begin heating the sample with constant stirring.

7.10 Discontinue stirring and apply the ignition flame as described in 7.7 at intervals of 5°F until a flash occurs or the temperature reaches 200°F.

NOTES:

1. Certain samples with relatively low boiling points may cause the flame on the flashpoint apparatus to be extinguished due to the release of built up vapor pressure. In samples such as these, the temperature at which the flame was first extinguished should be noted and the test continued as long as continued heating does not cause the sample to boil over and out of the apparatus. If boil-over appears imminent, discontinue the analysis. If the test is discontinued without a flash occurring before 200 degrees Fahrenheit, notify a Discrepancy Coordinator by placing an "HI" notation in the AS400 flash column.

2. **IMPORTANT SAFETY NOTICES.** While performing the flashpoint analysis, the sample should be watched continually until a flash occurs or until 200 degrees Fahrenheit is achieved. After a flash occurs or the 200-degree endpoint is reached, dispose of the residual sample immediately in the lab hazardous waste bucket. Failure to monitor the sample continually or dispose of the sample promptly following the analysis may cause the sample to absorb additional heat from the heating mantle and spontaneously ignite causing a fire.

7.11 Record the lowest temperature at which the application of the flame ignited the sample vapors. If no flash occurred before the temperature reached 200°F, record the result as >200°F. A steady yellowish flame usually indicates an exceeded flash point.

7.12 Sample Acceptance

To be deemed acceptable, samples must flash within the profiled range. Below are three ranges that profiled flashpoints will fall.

Range, °F
0 - 140
140 - 200
>200

If one of these conditions is not met, proceed to 7.13.

7.13 Discrepancy Determination

7.13.1 A resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if re-analysis of a resample is warranted. A non-retested sample is automatically deemed discrepant and is reported to a Discrepancy Coordinator as discrepant.

7.13.2 If a re-analysis is warranted, a sample is re-tested. If the re-analysis falls within the ± 20% of the profiled value and within the acceptable range listed in 7.12, the sample is deemed acceptable.7.13.3 If the reanalysis results fail one of the criteria, contact a Discrepancy Coordinator with the discrepancy.7.13.4 A flashpoint greater than the profiled range is considered an insignificant discrepancy.

8.0 QUALITY CONTROL

8.1 Analyze an LCS (chlorobenzene) on a 1 per 20-sample basis. The flashpoint must be within ± 5°F of the true value.

8.2 A solvent of a known flash point can be substituted for chlorobenzene. Acceptance will be based on same criteria.

9.0 INTERFERENCES

False positives may occur if halogens are present. Halogens may be detected if a flash is smoky or green in color. If this occurs, continue heating sample and checking for flash up to the point where the sample flashes, boils, or the sample temperature rises to greater than 200°F.

10.0 REPORTING CLARIFICATION NOTES

10.1 "HI" is to mean highest temperature achieved and/or interference.

10.2 When reporting flashpoint, the actual flashpoint needs to be reported from ambient up to 200° F or up to the temperature that can safely be reached. There are only two types of situations that might prevent the lab from recording an actual flash temperature, they include: MATRIX interference like gumming up or anything that's flashing below room temperature.

10.3 Clarification on burning. In cases where a sample is truly burning (like a candle flame out of the cup holes) and no actual flash is observed, it's only due to the fact that the flashpoint has been exceeded. In these cases, the lab will make sure the test is started at a reasonable temperature, defined to be ambient lab temperature estimated to be 70° F. The lab will chill the cup and restart the test at a temperature below the expected flashpoint. Chilling the cup will be done with cold water. Samples that truly burn out of the cup holes at room temperature will be reported at 70° F.

10.4 Flash test that are interfered with via halo burning from high halogens or other extinguishing vapors or gumming up matrices. In these cases, if the lab has not observed a closed cup flash, and a green halo effect is interfering, or solidification is occurring, the lab will discontinue heating and confirm the presence of halogen. The documentation will note that no flash was seen at the highest temperature that was able to be achieved. To alert discrepancy coordinators and other i5 users of interferences that a reported temperature was the highest temperature achievable, use "HI."

Example of how a "HI" is to be used. A MeCl sample is run and a smoking halo is seen at 87° F, and the test is discontinued. In the i5, the lab will record it an 87, and in the column to the far right a HI will be recorded. This communicates to i5 users that the lab could not measure above the temperature because of an extinguishing halo forming or boil-over occurring. In this example, the lab will not just write 87, because it did not flash.Additionally, the lab will not write .87, because the test was not carried out that far. The lab will write "87 with an HI" alerting the end user to look at the comments section.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-003-004
Initial Date: 7/18/90

Title: Sulfide Spot Test		
		Revised: 06-2020
Prepared by:	Approved by:	Date: 12-06-00
QA Approval:		

1.0 PURPOSE

This method is used to describe the procedure for determining the presence of sulfide.

2.0 APPLICATION

This method is applicable to water, soil, sludge, oil, and other waste samples.

3.0 REFERENCES

Spot Test Analysis; Jungreis, Ervin; John Wiley & Sons, 1985

ASTM D4978-95

4.0 ASSOCIATED SOPs

None

5.0 REAGENTS

5.1 Hydrochloric acid, concentrated. Store in acid cabinet with secondary containment.

5.2 Alka-Seltzer Tablets

5.3 1 N Silver Nitrate solution, 1:5 Nitric Acid

6.0 EQUIPMENT

6.1 Beakers, 50 mL

6.2 Watchglasses

6.3 Lead acetate test paper, commercially purchased

6.4 Purge and Impinger apparatus

7.0 PROCEDURE

Note: All analyses for sulfide are performed in the hood with the exhaust on.

7.1 Analysis of Aqueous Samples

7.1.1 Pour approximately 10 mL of sample into a 50-mL beaker.

7.1.2 Attach a moistened (with reagent water) piece of lead acetate paper to a watchglass so that the test paper will extend into the 50-mL beaker when the watchglass is place on top of the beaker

7.1.3 Add 3 drops of concentrated HCl to the sample, place the watchglass with lead acetate paper onto the beaker, mix sample, and let stand for 1 to 2 minutes. The lead acetate paper will turn brown if sulfide is present. If sample is alkaline, additional acid may need to be added to acidify sample.

7.2 Analysis of Nonaqueous Samples

7.2.1 Make a slurry of approximately 5 g of sample and 5 mL of reagent water in a 50-mL beaker.

7.2.2 Continue as in Steps 7.1.2 and 7.1.3 for aqueous samples.

7.3 Determining approximate sulfide concentration when a positive is detected in step 7.1 or 7.2.

7.3.1 Set up the Purge/Impinge apparatus as shown in Figure 1. Fill the collection flask with 15 ml of 1 N Silver Nitrate solution. Ensure that all seals are tight and not leaking.

7.3.2 Weigh up to 0.25 grams of sample directly into the reaction flask. Dilute to the line (25ml) with DI water. Add a small squirt of methanol to aid in even dispersion of the sample in the reaction flask.

7.3.3 Simultaneously add a few drops of 1:5 Nitric Acid and one Carbonate/Citric Acid tablet (Alka-Seltzer) to the reaction flask. Immediately cap with the outlet stopper and allow generated gases to bubble through the collection solution. The effervescence will continue for a few minutes. Do not stop collection until bubble rate is less than 1 bubble per second in the collection flask.

7.3.4 Samples containing at least 50-PPM reactive sulfide content will cause the collection solution to turn a yellow-brown color. The intensity of the color will determine the relative sulfide content. If no apparent color is noticeable but the lead acetate paper was positive , enter result as 5-PPM sulfide.

7.3.5 If color is present, run a standard comparison using either a 100, 250 or 500-PPM sulfide standard following the same technique used for the sample. Pour reacted solutions into equal sized test tubes to visually compare and contrast color. Comparisons should be made as quickly as possible following reactions, as Silver Sulfide will begin to precipitate shortly after its formation.

7.3.6 Follow the guidelines for reporting a sulfide value, based on this procedure:

7.3.6.1 If the collected solution matches closely to a known standard, report that value, i.e.: 100, 250, or 500 PPM. If the sample value appears to match closely with the 500 PPM standard, but cannot be distinguished as being either higher or lower with any certainty, then an aliquot should be sent out for analysis to an outside lab. The outside lab should employ use of SW-846 Method 7.3.4.1 or equivalent for Reactive Sulfide determination.

7.3.6.2 If the solution is clearly darker (more colored) than the 500 PPM standard, report as > 500 PPM and then contact Customer Service.

7.3.6.3 If the solution is clearly less colored than the 500 PPM standard but darker that the 250 standard, report as 400 PPM.

7.3.6.4 If the solution is lighter than the 250 ppm but darker than the 100-PPM standard, report as 200 PPM.

7.3.7 If the solution is lighter than the 100-PPM solution, but still contains color, report as 50 PPM. Summary of Quantification

7.3.7.1 5 PPM = no color but lead acetate is positive

7.3.7.2 50 PPM = some color, but < 100 Standard

7.3.7.3 100 PPM = matches the 100 PPM Standard

7.3.7.4 200 PPM = > 100 PPM Standard but < 250 PPM Standard
7.3.7.5 250 PPM = matches 250 PPM Standard
7.3.7.6 400 PPM = > 250 PPM Standard but < 500 PPM Standard
7.3.7.7 500 PPM = matches 500 PPM Standard (requires method 7.3.4.1 to resolve)

7.3.7.8 500 PPM = > 500 PPM Standard (Discrepant)

7.4 Discrepancy Determination

7.4.1 If a sample result does not conform to the profile, a resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if re-analysis of a resample is warranted. A non-retested sample is automatically discrepant and reported to a Discrepancy Coordinator as discrepant.

7.4.2 If the resample does not conform to the profile, the discrepancy to is reported to a Discrepancy Coordinator.

7.4.3 If the resample agrees with the profile, the sample is accepted based on the second result.

8.0 QUALITY CONTROL

8.1 An LCS is analyzed on a 1 per 20-sample basis or at a minimum of once daily. The LCS is a low level standard prepared at a concentration of approximately 20-PPM. The standard is stored in a plastic bottle at room temperature and may be used up to one month unless it fails to give a positive reaction. If the standard degrades to a point where it does not provide a positive response, remake the standard.

9.0 STANDARDS – Use Na_2S 9 H_2O

9.1 250 ppm = 0.937 g/500 ml

9.2 500 ppm = 1.874 g / 500 ml

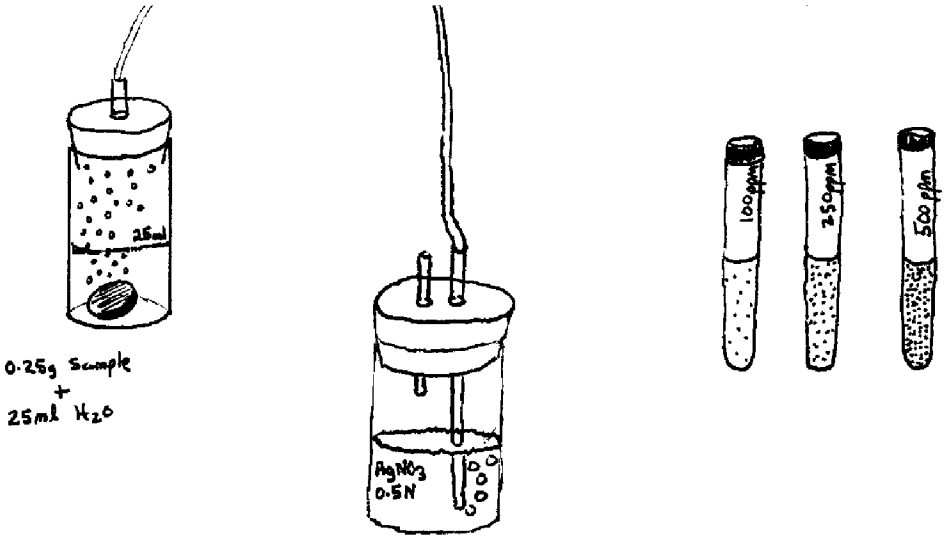
9.3 AgNO3 Solution

1 N = 175g/L
0.5N = 87.5 g/L

An alternate 0.5 N solution may be used, but with corresponding standards for comparison.

Figure 1

Purge / Impinge Apparatus



Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-004-004
Initial Date: 7/17/90

Title: pH Determination			
03-2019			Revision
Prepared by: Approval:	Approved by:	Date: 12-06-00	QA

1.0 PURPOSE

To describe the method for determining pH.

2.0 APPLICATION

This method is applicable for the determination of pH for aqueous waste samples (>20% water content).

3.0 REFERENCES

"pH Electrometric Measurement", Test Methods for Evaluation Solid Waste (SW-846), Method 9040C, Soil and Waste pH Method 9045C.

ASTM D 4980-89

4.0 ASSOCIATED SOPs

None

5.0 EQUIPMENT

5.1 pH Meter with combination electrode, temperature compensating

5.2 Disposable plastic beakers, 50 mL

6.0 REAGENTS

6.1 Reagent water

6.2 Certified pH buffers (2.00, 4.00, 7.00 and 10.00)

7.0 PROCEDURE

Note: All analysis for pH must be performed in a ventilation hood with the exhaust fan on.

7.1 pH Meter Calibration

7.1.1 Sample and calibration buffer must be at room temperature, or a temperature-compensating electrode employed.

7.1.2 Place the electrode in pH 4 buffer and press **CAL**.

7.1.3 Allow reading to stabilize. The meter will beep and flash "READY" once the reading is complete. If 4.01 is displayed, press **YES**. If any other reading is displayed, press **NO** and adjust the value to 4.01 using the up (↑) or down (↓) keys, then press **YES**.

7.1.4 Remove the electrode from the buffer solution, rinse, and place the electrode into the pH 10 buffer. Stir moderately. Allow the reading to stabilize. The meter will beep and flash "READY" once a reading is obtained. Press **YES** if 10.01 is displayed. If any other reading is displayed, adjust the value to 10.01 as in Section 7.1.3.

7.1.5 Remove the electrode from the solution. The % slope should be displayed automatically following the completion of the calibration. If the % slope is < 85%, recalibrate the meter. If repeated calibrations produce slopes of < 85%, change the electrode.

7.1.6 The owner's manual should be consulted for calibration procedures on all new instruments.

7.2 All liquid samples that have a profiled range for pH will be assumed to be aqueous (water content of > 20%).

7.3 For aqueous samples, place approximately 20-25 mL of sample in a clean 50-mL plastic beaker and immerse the tip of the pH probe into the sample. Allow the reading to stabilize and record the pH reading to the nearest one tenth.

7.4 When pH reading is unstable possibly due to solvent matrix in some samples, prepare sample by making solution 1 part sample to 9 parts DI water. Make pH determination on aqueous phase.

7.5 On soils use a 1:1 volume with water, stirred then measured.

Note: If the sample temperature differs by more than 2°C from the buffer solutions which are kept at room temperature, the measured sample pH must be corrected. Most pH meters provide a means for this correction.

8.0 DISCREPANCY DETERMINATION

8.1 If a sample result is outside of the profiled range, a resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if a re-analysis of a resample is warranted. A non-retested sample is automatically discrepant and reported to a Discrepancy Coordinator as discrepant.

8.2 The resample is discrepant if the resample also falls outside of the profiled range and the discrepancy is reported to a Discrepancy Coordinator.

8.3 Also, for customer waste stored in the tank farm, if a sample falls outside of the profiled range, but less than ± 2 pH units, **and** the test result for the sample is greater than 10.0 or less than 3.0, the sample is considered discrepant, for the tank farm.

9.0 QUALITY CONTROL

9.1 Check the pH meter daily using 4, 7, and pH 10 buffer solutions. If any are more than ± 0.2 pH units, use a fresh portion of buffer solution to recheck failed point.

9.2 Calibrate the pH meter daily using two buffers whenever the daily calibration check fails. If samples being read are acidic, buffers of 2.0, 4.0, and 7.0 should be used for calibration. Likewise, buffers of 12, 10, and 7 should be used for samples that are basic.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-005-004
Initial Date: 7/19/90

Title: Determination of Relative Density		
		Revised: 01-09-2015
Prepared by: QA Approval:	Approved by:	Date: 12-06-00

1.0 PURPOSE

To describe the procedure for determining the density of a sample.

2.0 APPLICATION

This procedure is applicable to both liquid and solid samples.

3.0 REFERENCES

ASTM D 5057-90

4.0 ASSOCIATED SOPs

None

5.0 REAGENTS

Deionized Waster

6.0 EQUIPMENT

6.1 Balance

6.2 Graduated beakers, 50 mL, disposable

7.0 PROCEDURE

Note: All analysis for density must be performed in a hood with the exhaust on.

7.1 Analysis of Liquids

7.1.1 Tare a graduated beaker on a balance.

7.1.2 Add a volume of sample to the beaker.

7.1.3 Record the weight and volume of the sample.

7.1.4 Calculate the density as follows:

density (g/mL) = Sample weight (g)/Sample volume (mL)

7.2 Analysis of Solids or Sludges

7.1.1 Measure 25 mL of deionized water into a 50 mL graduated beaker and tare on a balance.

7.1.2 Add enough sample to the beaker to displace 10 mL of water.

7.1.3 Record the weight and the observed displacement of the water.

7.1.4 Calculate the density using the following equation:

density (g/mL) = Sample weight (g)/Displacement volume (mL)

7.3 Discrepancy Determination

7.3.1 If a sample result falls more than ± 20% outside of the profiled range, a resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if re-analysis of a resample is warranted. A non-retested sample is automatically discrepant and reported to a Discrepancy Coordinator as discrepant.

7.3.2 If the resample result is also outside ± 20% of the profiled range **and** within 0.30 g/mL of the original result, the sample is considered discrepant and is reported to a Discrepancy Coordinator.

8.0 QUALITY CONTROL

8.1 The balance is checked daily with four standardized weights (0.5, 50., 20.0, and 100g). The 5.00-g weight must be within ± 0.05 g and the 100.0-g weight must be within ± 1.00 g or the balance must be recalibrated.

8.2 An LCS is analyzed daily using acetone. The density must be within ± 5% of the true value to continue analysis. If the control sample fails, check the volume mark to ensure the solvent was taken to the appropriate level and dislodge any air bubbles.

8.3 Other solvents of a known density can be substituted for acetone. Ross Incineration Services, Inc.

STANDARD OPERATING PROCEDURE

SOP No.: FP-006-003
Initial Date: 7/24/90

Title: Cyanide Spot Test			
			Revised: 11-21-22
Prepared by:	Approved by:	Date: 12-06-00	QA Approval:

1.0 PURPOSE

To describe the procedure used to determine the semi-quantitative amount of cyanide.

2.0 APPLICATION

This primary method is applicable to all waste samples. The detection limit is 5 PPM. The alternate method is applicable to transparent and translucent liquid wastes and solid wastes whose slurry is transparent or translucent. The detection limit for these samples is 1.0 PPM.

3.0 REFERENCES

3.1 ASTM D5049-90, Method B and C

3.2 Cyantesmo test paper instructions - primary method

3.3 Merckoquant Cyanide Test - alternate method

4.0 ASSOCIATED SOPs

None

5.0 EQUIPMENT/REAGENTS

5.1 Primary method

5.1.1 Cyantesmo test paper, commercially purchased – Fisher # 90604

5.1.2 Disposable plastic beakers; 50, 250 mL

5.1.3 Watch glasses

5.1.4 Concentrated sulfuric acid, commercially purchased. Store at room temperature in a secured cabinet.

5.1.5 Sodium Bicarbonate

5.2 Alternate method

5.2.1 Disposable plastic beakers, 50 mL

5.2.2 Cyanide Test Kit, Merck # 10044

6.0 PROCEDURE

Note: All cyanide analysis must be performed in a ventilation hood with the exhaust fan on.

6.1 Primary method:

6.1.1 Pour approximately 10 mL of liquid waste or approximately 10 g of solid waste mixed into a slurry with 10 mL deionized water into a 50-mL plastic beaker.

6.1.2 Moisten the end of a 1-2" piece of Cyantesmo test paper and stick to a watchglass so that it will hang into the headspace of the beaker.

6.1.3 Add 2 or 3 drops of concentrated sulfuric acid to the sample in the beaker and top with watchglass and test strip. More acid may be needed on alkaline samples.

6.1.4 Allow the sample react for at least 5 minutes and then observe the color of the test strip. If free CN is present, the middle of the test strip will turn blue. False hits may occur from volatile oxidizing or reducing agents. In these cases any existing HCN can be set free by sodium bicarbonate. Mix sample with the bicarbonate prior to acid addition.

6.1.5 If a positive reaction is obtained on the sample, place 1.0-g of sample in a 250-mL plastic disposable beaker and dilute to 50 g with deionized water. Take a 10-mL aliquot of this dilution and perform steps 6.1.2 through 6.1.4 above. If a positive reaction is obtained on the dilution, the sample contains at least 250 PPM of cyanide and should be entered as 250 PPM on the AS400.

6.2 Alternate method:

NOTE: The alternate method can be used to confirm questionable hits, or to more accurately determine quantitative levels.

6.2.1 Fill a beaker with 5ml of liquid sample, or water slurry of a solid sample.

6.2.2 Determine the pH value.

6.2.3 If the pH is >9, adjust slowly to between 6-7, using dilute sulfuric acid.

6.2.4 Add 1 level dosing spoon of reagent 1 and mix well.

6.2.5 Add 5 drops of reagent 2, and mix well.

6.2.6 Immediately immerse the reaction zone of the test strip in the solution for 30 seconds.

6.2.7 Shake off excess liquid from the strip and compare reaction zone with the color scale within 10 seconds.

6.2.8 If the result is saturated, do a 10X dilution. A positive hit after dilution indicates a cyanide content in excess of 300 PPM.

7.0 DISCREPANCY DETERMINATION

Samples profiled as positive at 250 PPM for cyanide (indicated by a Y on the sample profile screen) will pass regardless of the result of this test. If however a sample is profiled as negative at 250-ppm cyanide (indicated by an N on the sample profile screen) a positive result on a sample diluted 1 to 50 (as in Step 5 above) should be considered discrepant and a resample should be obtained. If the resample also tests positive when diluted 1 to 50, the sample is discrepant and customer service should be notified. If the resample is negative when diluted the sample may be accepted based on that result.

8.0 QUALITY CONTROL

Analyze a 5-ppm standard daily for use with the primary method. If the alternate method is used, a 5.0-ppm standard should also be analyzed daily using the alternate method. Whenever the LCS fails, prepare fresh control. If the test fails with the fresh control – discard test paper and/or reagents and use new or fresh reagents.

9.0 Stock and Standard Solutions

9.1 NaCN = 49 MW

9.1.1 For 100 ppm, Stock Solution 100/0.53 = 189 mg diluted to 1 Liter with DI Water

9.1.2 Dilute Stock by 20x to get 5 ppm.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-007-005
Initial Date: 7/31/90

Title: Total Chlorine Concentration			
			Revised: 12-6-22
Prepared by:	Approved by:	Date: 12-06-00	QA Approval:

1.0 PURPOSE

To describe a method for determining the total inorganic and organic chlorine concentration in a sample.

2.0 APPLICATION

This method is applicable to any liquid or solid sample, which can be combusted in an oxygen bomb.

3.0 REFERENCES

3.1 ASTM D2361

3.2 ASTM, D808-91

3.3 Parr Oxygen Bomb User Manual

3.4 SW-846, Method 9020

3.5 SW-846, Method 5050

4.0 ASSOCIATED SOPs

FP-001, BTU Analysis

5.0 EQUIPMENT

5.1 Parr 6200 Isoperibol Calorimeter (or equivalent)

5.2 Combustion capsules

5.3 Burets, 50 mL

5.4 Balance

5.5 Beakers, 50 and 100 mL

5.6 Stir plate and stir bars

5.7 Volumetric pipets, 10 and 50 mL

5.8 Volumetric flasks, 1 L, 500 mL, 250 mL

5.9 Disposable pipets

5.10 Dispensing bottle pipets, 2 ml – 10 ml capacity

6.0 REAGENTS/SOLUTIONS

6.1 Sodium carbonate (Na_2CO_3) solution, 50 g/L - Dissolve 50.0 g of Na_2CO_3 in 800 mL of deionized water. Dilute to one liter with deionized water using a volumetric flask. Store in a plastic bottle at room temperature. This solution is stable for six months.

6.2 Silver nitrate ($AgNO_3$) solution, (0.1000 N) Traceable pre-made purchased is recommended – for both accuracy and cost. Ricca 0.1N Assay 0.0999 -1.001 NIST SRM traceable. Record lot number in monthly QC book. Solution is stable for six months Alternately silver nitrate crystals may be desiccated and weighed to make a desired normality in water. Nitric acid may be added to aid in solubility.

6.3 Potassium thiocyanate (KSCN) solution - Dissolve 9.72 g of KSCN in 800 mL of deionized water. Dilute to one liter with deionized water using a volumetric flask. Standardize against 0.1000 N $AgNO_3$ as follows:

(1) Pipette 10 mL of 0.1000 N $AgNO_3$ into a 250-mL beaker using a 10.0-mL volumetric pipette. Dilute to 50 mL with deionized water.

(2) Add 1 mL of 10% $FeNH_4(SO_4)_2$ solution.

(3) Titrate with KSCN to a light red-brown endpoint.

(4) Repeat the above three steps two additional times and average the volumes obtained.

(5) Calculate the normality of the KSCN using the equation below,

$$N\ KSCN = \frac{(N\ AgNO_3) * (Volume\ AgNO_3, mL)}{(Average\ volume\ KSCN, mL)}$$

Store in a plastic bottle at room temperature. This solution is stable for six months.

6.4 Ferric ammonium sulfate ($FeNH_4(SO_4)_2$) solution, 10% - Dissolve 10.0 g of $FeNH_4(SO_4)_2$ 12 H_20 in 80 mL of deionized water. Add 2 mL of concentrated HNO_3 and dilute to 100 mL with deionized water using a volumetric flask. Store in an amber bottle at room temperature. This solution is stable for six months.

6.5 Methyl alcohol, commercially purchased

6.6 Nitric Acid, concentrated; commercially purchased

7.0 PROCEDURE FOR DETERMINING TOTAL ORGANIC CHLORINE CONTENT

7.1 Follow steps 7.1 through 7.11 of standard operating procedure FP-001 to prepare sample for analysis.

7.2 After the sample has been burned, thoroughly was the oxygen bomb with deionized water. Collect the washings in a 250-mL volumetric flask. Dilute to the mark with deionized water.

7.3 Transfer 50 mL of the sample washings into a 250-mL beaker.

Note: For samples which are highly colored or suspected to have a high chlorine content, take a 10 mL aliquot and dilute to 50 mL with deionized water. Proceed with step 7.4.

7.4 Using a burette, add an excess of $AgNO_3$ (about 3 to 6 mL) to the sample noting the exact volume added.

7.5 Add to the sample in the following order:

(1) 2 mL of 1:4 nitric acid

(2) 1 mL of 10% $FeNH_4(SO_4)_2$ solution (3) 2 mL of methyl alcohol.

7.6 Titrate with KSCN to a light red-brown endpoint while mixing on a stir plate.

7.7 Calculations

7.7.1 Total chlorine (mg/L) = $\frac{[(mL\ AgNO_3 * N\ AgNO_3) - (mL\ KSCN * N\ KSCN)] * 35{,}450}{mL\ sample\ (Titration\ Aliquot)}$

7.7.1.1 To calculate as iodine replace 35.45 with 126.9

7.7.1.2 To calculate as bromine, replace 35.45 with 79.9

7.7.2 Total chlorine (ug/g) = $\frac{[(mg/L\ total\ organic\ chlorine) * (total\ volume,\ L)]}{sample\ weight,\ g} \frac{1000\ ug}{mg}$

Note: The total chlorine titrated times "5" is used when a 50 mL aliquot is taken from 250 mL. If a 10mL aliquot is taken for the titration, the "5" is replaced by 25 to account for the dilution.

7.7.3 Percent total organic chlorine (%) = $\frac{ug/g\ total\ organic\ chlorine}{10{,}000}$

Note: Use the same equations above for calculating total inorganic chlorine content; however, perform the titration using the raw sample, not the sample combusted in the bomb calorimeter (See Section 8.0). To determine the total organic chlorine in a sample, subtract the inorganic results from the total organic chlorine results.

8.0 PROCEDURE FOR DETERMINING INORGANIC CHLORINE CONTENT

Note: This portion of the procedure is to be used at the discretion of RIS QA/QC. The following describes the procedure for determining inorganic chlorine in the sample. The organic chlorine is determined by subtracting the inorganic from the total chlorine.

8.1 Weigh 1.0 g of raw sample into a beaker. DO NOT COMBUST THE MATERIAL.

8.2 Transfer the sample to a 250-mL volumetric flask and dilute to the mark with deionized water.

8.3 Pipette 50 mL of sample into a 250-mL beaker.

Note: For samples which are highly colored or suspected to have a high chlorine content, take a 10 mL aliquot and dilute to 50 mL with deionized water. Proceed with step 8.4.

8.4 Proceed with Steps 7.4 through 7.7.

8.5 Calculation

Percent Organic Chlorine = Percent Total Chlorine – Percent Inorganic Chlorine

9.0 DISCREPANCY DETERMINATION

9.1 If the organic chlorine result falls outside ± 20% of the profiled range, a resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if re-analysis of a resample is required. A non-retested sample is automatically discrepant and reported to a Discrepancy Coordinator as discrepant.

9.2 If upon reanalysis, the sample result falls outside ± 20% of the profiled range but is within the reproducibility tolerance listed below, the sample is considered discrepant and must be reported to a Discrepancy Coordinator Reproducibility Tolerances:

(1) If the maximum test results for total organic chlorine are ≤ 26%, the total organic chlorine results must be within 4% of one another.

(2) If the maximum test results for total organic chlorine are > 26%, but ≤ 38%, the total organic chlorine results must be within 6% of each other.

(3) If the maximum test results for total organic chlorine are > 38%, but ≤ 50%, the total organic chlorine results must be within 8% of each other.

(4) If the maximum test results for total organic chlorine are > 50%, but ≤ 72%, the total organic chlorine results must be within 12% of each other.

Maximum Total Organic Chlorine Result Difference	Maximum Tolerance - Total %
26%	4%
38%	6%
50%	8%
72%	12%

If the resample falls outside ± 20% of the profiled range **AND FAILS** the reproducibility tolerances, perform a resample until consistent results are obtained.

10.0 QUALITY CONTROL

10.1 Each batch of KSCN is standardized checked after preparation.

10.2 An LCS is analyzed on a 1 per 20-sample basis, or at a minimum of at least once daily. Chlorobenzene is used as a spiking compound. The percent recovery must be within the range of (75 - 105)% of the theoretical value. If the LCS fails, re-standardize the KSCN solution and re-titrate the control. If the control fails, re-bomb and analyze a second LCS. If the LCS continues to fail, prepare all fresh reagents before analysis of 3rd LCS.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-008-004
Initial Date: 12/14/90

Title: Viscosity Determination		
		Revision Date: 06-2020
Prepared by: QA Approval:	Approved by:	Date: 12-06-00

1.0 PURPOSE

To describe the procedure used to determine the viscosity of liquid samples.

2.0 APPLICATION

This method is applicable for measuring liquid wastes whose viscosity is in the range of (80 - 36000) cps. The primary use of these data is to define whether a liquid is pumpable or not. If a sample is < 2000 cps, it is considered pumpable. At > 2000 cps, a sample is considered unpumpable.

3.0 REFERENCES

3.1 Brookfield Viscometer Operating Manual

3.2 "Standard Test Methods for Rheological Properties of Non-Newtonian Materials by Rotation (Brookfield) Viscometer", ASTM D 2196-86 (Reapproved 1991)

3.3 Gardner Tube Viscosity Measurement, Method ASTM D1545

4.0 ASSOCIATED SOPs

None

5.0 EQUIPMENT

Brookfield Viscometer, Model RVTD

6.0 STANDARDS/SOLUTIONS

Viscosity standards, commercially purchased. Store in original manufacturer's containers at room temperature. These standards are 100% silicone and are stable indefinitely; however, the manufacturer recommends replacing the standards annually if contamination is present.

7.0 PROCEDURE

Note: Samples containing solids cannot be measured accurately using this method and should not be tested.

All analysis for viscosity must be performed in a ventilation hood with the exhaust fan on.

7.1 Viscometer set-up

7.1.1 Ensure that the viscometer is securely mounted on its stand.

7.1.2 Turn the power switch ON

7.1.3 Check the bubble level located at the top of the viscometer and adjust it so the instrument is level.

7.1.4 Turn ON the motor switch and set the speed selector knob appropriately.

7.1.5 When the viscometer reading stabilizes, turn the ZERO adjustment knob to 0.0.

7.1.6 Turn the motor switch OFF. This places the viscometer in STAND BY mode.

7.2 Sample analysis – Visually compare the sample with the three lowest viscosity standards (25, 50, and 100 cps). Tilt the sample back and forth and observe which standard behaves most similar to the sample. Record the best match value in the viscosity section of the logbook. Record values as either: <25, 25, 50, 100, or >100 cps. If a sample appears visually >100 cps or if pulp-like solids are present. Then measurement using the Brookfield rotational viscometer must be employed. Samples >100 cps also require a viscosity QC log sheet to be filled out in addition to the fingerprint logbook.

7.2.1 Attach an appropriate spindle or UL Adapter to the viscometer.

Note: Spindle #2 is used for samples with low - apparent viscosity (like water). For more viscous samples, the higher numbered spindles (e.g., #6 and #7) are used. In either case, readings below 10.0 should be avoided. If the sample reads below 10.0 at all speeds tested, switch to a lower numbered spindle. If the sample reads below 10 at all speeds using spindle #2, the sample is well below 2,000 cps. You may then proceed as normal using the readings below 10.

7.2.2 Using the spindle approach, insert and center the spindle in the test material until the fluid level comes up to the immersion groove which is cut into the shaft of the spindle.

7.2.3 Turn the motor switch ON and allow the meter to stabilize. Each sample must be measured once at four different speed settings. Multiply the reading by the appropriate factor found by using the "factor finder" provided by Brookfield. Average the four readings and determine the apparent viscosity of the sample.

8.0 DISCREPANCY DETERMINATION

Samples are profiled as being < 2000 cps or falling between 2000 and 36000 cps. Below is a list of situations, which may occur. Perform the corrective action listed if such a situation does occur.

8.1 If the average test result falls outside the sample-profiled range, a resample may be obtained to confirm physical representation of the waste sampled and/or an initial measured value. Technical staff determines if re-analysis of a resample is warranted. A non-retested sample is automatically discrepant and reported to a Discrepancy Coordinator.

8.2 If the resample is outside of the profiled range **and** the resample result is < 20% RPD from the first result, the sample is considered discrepant and must be reported to a Discrepancy Coordinator.

The RPD is calculated using the following equation:

$$RPD = [(A1 - A2)/((A1+A2)/2)] * 100$$

where,
A1 = First sample result
A2 = Duplicate sample result

8.3 If the RPD between the original sample result and the resample value is ≥ 20%, a third sample must be requested. Results from the three tests should be conveyed to Customer Service..

9.0 QUALITY CONTROL

9.1 The viscometer is standardized using two different Silicon Oil viscosity standards. The viscosity of each standard must be within ± 10% of its true value in order to proceed with sample analysis. If the standards read outside of the acceptable range, check that the equipment is level and the spindle is not touching and is free of debris/not damaged and immersed in the standard to the appropriate level. If the instrument still reads outside of the acceptable range, use an alternate viscosity standard. If the viscometer continues to fail have appropriate repairs made.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-009-001
Initial Date: 06/17/96

Title: Waste Compatibility Test		
		Revision Date: 03-2019
Prepared by: QA Approval:	Approved by:	Date:

1.0 PURPOSE

To describe the procedure for determining the compatibility of different wastes by mixing small quantities, and observing and reporting any reactions which may occur.

2.0 APPLICATION

This procedure is applicable to liquid wastes of various Waste Product Surveys (WPSs) which are to be mixed and processed on a larger scale at the Ross Incineration Services, Inc. plant. Note that this procedure may not detect delayed or slow reactions.

3.0 REFERENCES

"Commingled Waste Compatibility", ASTM Standard D 5058 -Test Method A (modified), approved 1990

4.0 ASSOCIATED SOPs

None

5.0 EQUIPMENT

5.1 Disposable plastic beakers, 50 and 250 mL

5.2 Thermometer, 0 - 205°F

5.3 Transfer pipets, disposable

6.0 REAGENTS

None

7.0 PROCEDURE

CAUTION: This procedure must be performed in a ventilation hood with the exhaust fan on at all times. A physical barrier (e.g. the hood sash) should be placed between the analyst and the samples while adding and mixing is taking place.

7.1 The samples accompanied by a Compatibility Request/Analysis form (see Figure 1) which indicates the order in which the samples are to be mixed.

7.2 Measure the temperature of the samples and record as *Initial Temperature*. Small temperature variations (≤ 5°F) between samples may be ignored and the average sample temperature recorded. If samples have large temperature variations (> 5°F) or are > 80°F, allow them to come to room temperature before proceeding.

7.3 Place 20 mL of the first sample listed on the request form into a 250-mL plastic beaker. Pour 20 mL of the second sample into a 50-mL plastic beaker. Begin adding the second sample to the first dropwise using a disposable transfer pipette. If no obvious reaction occurs, slowly pour the remainder of the second sample into the first at a rate of approximately 1 mL/second.

7.4 Observe and record any reactions that occur during the addition of the second sample, e.g., production of mists, gasses, dust, layering, polymerization, precipitation, bubbling, etc. If at any point during the procedure, a reaction occurs, stop the procedure, record the reaction, and mark the wastes as incompatible, explaining the reaction and which WPSs caused it.

7.5 If no reaction occurs after adding all of the second sample to the first, begin mixing for 30 - 60 seconds. Again, observe and record any reactions during the mixing period. Measure the temperature of the mixture, noting any changes. Allow the sample to sit without agitation for an additional 30 - 60 seconds to observe any delayed reactions.

7.6 If no reaction occurs after §7.5, proceed to the next sample on the list, adding it to the mixture and observing and recording any reactions as in §7.3 to §7.5. Repeat the procedure for all remaining samples, making sure not to accumulate more than 200 mL in total volume.

7.7 After the last sample has been added and mixed, measure the temperature of the mixture and record as *Final Temperature*. Calculate and record any change. **If no observable reaction occurred during the entire process, the wastes are considered compatible**. Check the *Compatible* box on the Compatibility Request/Analysis form, releasing the waste to the dock for processing.

7.8 For materials destined for Bulk up fuels, following step 7.7 – let composite sit for 30 minutes, then record if any physical differences exist since final mix occurred.

REMINDER: If a reaction occurs at any point in the procedure, *STOP*. Identify the incompatible waste and the reaction observed on the Compatibility Request/Analysis form, and check the *Incompatible* box. Do not release the material to the dock. Operations may then request that the test be repeated without the reactive sample.

8.0 FIGURES
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COMPATIBILITY ANALYSIS

SAMPLES TO BE TESTED (list samples in the desired mixing order):

	Shipper Number	WPS Number
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

DATE OF ANALYSIS: _____ ANALYST: _____

INITIAL TEMPERATURE _____°F

FINAL TEMPERATURE _____°F

NET TEMPERATURE CHANGE _____°F

30 MINUTE OBSERVATION _____

COMMENTS (Note any visible reactions and where in the mixing sequence they occurred):

☐ **COMPATIBLE** ☐ **INCOMPATIBLE** (see above)

This section is for Dock Processing: (for billing purposes only)

Note why drums are non-pumpable:

Shipper: _____ WPS: _____ Count: _____

Reason why: _____

Shipper: _____ WPS: _____ Count: _____

Reason why: _____

Shipper: _____ WPS: _____ Count: _____

Reason why: _____

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-012-003
Initial Date: 12/04/90

Title: Determination of Ash Content			
			Revised: 12/7/2021
Prepared by:	Approved by:	Date: 01/11/01	QA Approval:

1.0 PURPOSE

1.1 To quantitatively determine the ash content of a sample.

2.0 APPLICATION

2.1 This method is applicable to all liquid and solid waste samples. Some samples may yield lower than expected ash content due to non retainable materials such as volatile metals.

3.0 REFERENCES

3.1 ASTM, D482-91, Method for Ash from Petroleum Products.

4.0 ASSOCIATED SOPs

None

5.0 EQUIPMENT and REAGENTS

5.1 Equipment

5.1.1 Analytical Balance

5.1.2 Dessicator

5.1.3 Disposable Pipettes

5.1.4 Fume Hood

5.1.5 Muffle Furnace

5.1.6 Porcelain Crucibles

5.1.7 Tongs

5.2 Reagents

5.2.1 Anhydrous Calcium Sulfate or Indicating Silica Gel. Bake the dessicant at 105 degrees C occasionally to keep it activated.

5.2.2 Clean silica-based sand

6.0 PROCEDURE FOR DETERMINING ASH CONTENT

6.1 Weighing

6.1.1 Weigh a clean, dried crucible on an analytical balance and record the weight to the nearest 0.1-mg.

6.1.2 Place approximately 2.0 grams of sample into the crucible and record the initial weight of the crucible and sample.

6.2 Ashing

6.2.1 Place the labeled crucibles into the furnace. Make sure the fume hood is on. Set the temperature control to –180 degrees C. Let the sample evaporate or gently burn off at this temperature. This may take a few hours. Alternatively, use the auto ramp feature built into the furnace.

6.2.2 Raise the muffle temperature to 750 $\pm$ 50 degrees C. Allow the samples to reach this temperature. This will take about90 minutes at a slow ramp. When desired temperature is reached, turn off the muffle but leave the door closed. Let samples cool to room temperature before desiccation.

6.2.3 When the furnace temperature has cooled to about 100 degrees C, open the furnace door if desired to aid in cooling. Allow cooling to at least 100 degrees C before adding crucibles to desiccator.

6.2.4 Place ashed sample crucibles into the dessicator. Allow the samples to completely cool and dry, preferably overnight. (Cooling samples will absorb moisture; the dessicator will alleviate this problem).

6.3 Weighing / Calculation

6.3.1 Weigh the dessicated crucible and sample, and record the final weight to the nearest 0.0001-gram.

6.3.2 Calculate % Ash as follows.

$$\frac{\text{Ashed Sample Wt}}{\text{Initial Sample Wt.}} \quad X\ 100$$

7.0 QUALITY CONTROL

7.1 One blank crucible with sand should be run through the entire ash process to demonstrate blank weight consistency.

7.2 Unstable weight readings may indicate that further ashing or dessicating may be needed.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No.: FP-020-007
Initial Date: 3/28/07

Title: Consolidation of TEI Fingerprint Samples		
		Revised: 06-2020
Prepared by:	Approved by:	Date: 03-28-07

1.0 PURPOSE

This procedure is to describe the means by which sampled TEI wastes can be composited for testing.

2.0 APPLICATION

This procedure applies to any sampleable TEI waste, which may be composited based on feed location requirements.

3.0 REFERENCES

RIS Fingerprint Laboratory Procedures

Sample Plan – Section C – Waste Analysis Plan, Appendix C-4 "Sampling Plan"

4.0 ASSOCIATED SOPs

All of RIS' Fingerprint Laboratory Procedures

Customer Service SOP for Compositing Guidelines

5.0 REAGENTS

None (See each Fingerprint Laboratory Procedure)

6.0 EQUIPMENT

None (See each Fingerprint Laboratory Procedure)

7.0 PROCEDURE

7.1 Prior to load receipt

7.1.1 Laboratory personnel will receive from a Customer Service Technical representative compositing recommendations based on the Waste Product Survey (WPS) information.

7.1.2 Typical information received from customer service includes Pickup Number, Shipper Number, inbound WPS Number, WPS Waste Name, Compositing Category, and Primary Constituents. This can be obtained from the AS-400 Maintenance / Sampling / TEI pickup screen.

7.1.3 Typical composite categories include:

A Non Regulated Solids

B Non Regulated Liquids

C Pharmaceutical Drugs

D Fuel Blending Oil Non Hazardous

E Hazardous Solids - non P-listed

F Paint Sludge

G Organic Acid

H Organic Basic

I Halogenated Flammable Liquids

J Mixed Solvents - High

K Mixed Solvents - Low BTU

L Flammable Aerosols

M Benzene / Water

N Flammable Corrosives

O Solvents Acids Halogens

P Chlorinated Solvents/Oil

Q Chemotherapy Debris non RCRA

R Flammable Corrosive Solids

Z Do Not Composite

7.1.4 Based on periodic review of the procedure, composite categories may be added, removed, subdivided, altered, or renamed.

7.2 Following Receipt of the Shipment

7.2.1 Once 100% visual inspection is completed the quantity of samples taken will be in accordance with RIS' Waste Analysis Plan (WAP), Appendix C-4 - Sampling Plan.

7.2.2 The samples are received in the fingerprint laboratory with appropriate pickup numbers listed on box.

7.2.3 The laboratory personnel will composite in accordance with the recommendations of customer service taking into account the physical characteristics of the sample (e.g., waste phase).

7.2.4 Laboratory personnel will composite samples from up to four truckloads for fingerprint analysis.

7.3 The lab supervisor has the discretion to determine the appropriate number of samples (up to 9 samples) to composite into a single representative sample.

7.4 A TEI Composite sheet filled out by the analyst must accompany each composite category for a particular pickup number. This sheet summarizes shipper/WPS/and CINs composited and whether or not the sample passes or is discrepant.

7.5 Fingerprint analysis will be conducted in accordance with the WAP.

7.6 The composite test results will be entered into the record associated with each WPS included in the composite.

7.7 Discrepancy

7.7.1 Discrepancies will be identified using the discrepancy programming.

7.7.2 If any WPS is discrepant, additional testing will be used to further isolate the discrepancy.

7.7.3 Repetitive testing of progressively smaller sample batches of a particular composite category may be used to isolate a discrepant WPS in a composite. If this can't be done, each WPS in the intended composite must be run separately.

7.7.4 Resolution of the discrepancy will be in accordance with the WAP.

8.0 QUALITY CONTROL

8.1 Audit the SOP on a routine basis.

RIS Fingerprint Laboratory
Standard Operating Procedure
Title: **Paint Filter Liquids Test**

Prepared By: B Schaft	Reviewed By:
	Date 11/2015

1.0 PURPOSE
To determine presence of free liquids in a waste sample.

2.0 APPLICATION
This SOP is applicable to wastes designated for storage in the bulk storage pad area.

3.0 REFERENCES
SW-846 Method 9095B Rev. 2 2004 Paint Filter Liquids Test

4.0 EQUIPMENT
- Ring stand to support wide-mouth funnel
- Catch vessel, i.e. graduate or narrow beaker placed under the funnel neck.
- Conical paint filter 60 mesh placed in funnel. Do not obstruct filter outflow.

5.0 PROCEDURE

5.1 Use a 100 gram or 100 ml uniform representative sample.

5.2 Place sample in the filter. Slight tapping may be used to settle sample.

5.3 To assure uniformity of material such as absorbent pads, you may need to cut sample into smaller pieces $\leq$ 1 cm. Light crushing of brittle materials less than 1 cm may be required.

5.4 Allow sample to drain for 5 minutes into the catch vessel.

5.5 If any portion of the test material collects in the vessel during the 5 minute period the material is deemed to contain free liquids

6.0 REPORTING
Report results for the paint filter test for solids with an N (N=Not Tested) or a T (T = Tested). Report results for the paint filter test for liquids with a P (P=passed, no liquid came through) or an F (F = failed, liquids came through).

7.0 QUALITY CONTROL
Perform a duplicate Paint filter test on a retained sample with Monthly QC.

Ross Incineration Services, Inc.
STANDARD OPERATING PROCEDURE

SOP No. FP-015-01
Initial Date 11/09/00

Title: Quality Assurance/Quality Control		
		Revised: 12-2-2022
Prepared by: BES	Approved by:	Date:

1.0 PURPOSE

Profile lab personnel perform daily QA/QC test to assure accuracy of the test performed and proper functioning of all Fingerprint related lab instrumentation.

2.0 APPLICATION

Applies to RIS on-site laboratory.

3.0 DESCRIPTION

These QC tests consist of analysis of known chemicals from manufacturers. For instance, BTU analysis will be performed on chlorobenzene liquid with an iso-octane accelerant added, specific gravity will be performed on de-ionized water, total halogen will be performed on the combusted BTU rinsate. These reagents have known values for their respective analyses and were selected because of their physical properties, which may reflect the physical properties of actual waste streams. A percent recovery is then calculated by dividing the calculated value by the true value and multiplying by 100. A 5% tolerance is acceptable with the three exceptions of total halogen in which a 70% to 105% is acceptable, BTU 10% acceptable and with viscosity in which a 10% tolerance is acceptable. Prepared cyanide and sulfide standards near the detection limits are analyzed to assure the performance of these qualitative analyses.

In addition to the QA/QC tests, instruments are calibrated at regular periodic intervals. The pH meter is checked daily using three different certified buffers, which are commercially purchased. If the meter records a value for any buffer greater than +/- 0.2 units from the true value, the meter will be re-calibrated until all three buffers read within +/- 0.2 units of their true value. The isoperibol calorimeters and the oxygen bombs used with them are calibrated weekly without regard to daily QC performance. The Brookfield viscometer is balanced and checked daily, if in use, using two silicone standards. To further assure adequate QA/QC, quarterly audit samples are prepared by the lab manager or by a contract analytical laboratory. Two of the quarterly audit samples are "blind samples" and are performed on a semi-annual basis. Blind samples are disguised as regular waste stream samples and processed by the analyst(s) on duty. On the non-blind audit samples, each analyst must perform all fingerprint parameters on his/her batch of samples. The lab manager and/or contract lab reviews the results and identifies any deficiencies that may exist. The lab manager enforces that any needed appropriate corrective measures are taken to alleviate any problem areas.

4.0 PROFILE LAB QC PROGRAM SUMMARY:

Daily QC include:	Hood balance calibration check pH meter calibration TH recovery check BTU value check Viscosity meter check pH meter check sheet Flash point apparatus check Sulfide determination check Cyanide determination check Specific gravity check
Weekly QC includes:	Mettler ME104 Balance calibration check The seven working bombs EE/Cal. Check Bromine and Iodine by XRF check Sodium and Fluorine ISE check
Monthly QC includes:	Bomb EE value calibration Sulfide purge method check Oxidizer indicator check Paint Filter check Silver Nitrate lot# record
Quarterly QC/QA samples:	PE samples for all parameters. Two of these audit samples will be blind run.
Other Instruments in the Lab:	FTIR, XRF are checked as needed and per manufacture recommendations. TOC is checked per run lot, per method guidelines.
Outside Laboratory:	Occasionally spike samples are sent to our outside contract laboratories. These spiked samples will involve analyte(s) that pertain to routine testing. Lab Manager reviews results are within method expectations. Outside labs are given an initial on-site audit as well as occasional reoccurring audits to ensure the contract lab functioning within expectations. Audit summaries are retained in the FP lab.
Documentation:	All QC collected data is recorded and retained in proper labeled binders or logbook.

Appendix C-3

Sampling Plan for

Ross Incineration Services, Inc.

Ross Incineration Services, Inc.

Appendix C-3

Sampling Plan

PUBLIC INFORMATION VERSION

Ross Incineration Services, Inc.

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Sampling Procedures [OAC 3745-54-13 (B)(3)]

Ross Incineration Services, Inc. ("RIS") receives a variety of wastes from off-site generators in bulk (receptacles housing 110 gallons or more, e.g., tank trucks, totes, and intermediate bulk containers - IBCs) and non-bulk containers (receptacles housing less than 110 gallons, e.g., drums, pails, buckets). Additionally, RIS manages waste which it generates onsite. These two types of wastes (off-site generated and on-site generated) vary widely in chemical and physical characteristics. This plan addresses sampling strategies, methods, equipment, Quality Assurance/Quality Control, and Health and Safety procedures for both off-site and on-site generated waste.

Analytical testing may be performed on these wastes due to regulatory requirements associated with waste treatment, the nature of these wastes, and the residuals they produce. RIS uses representative sampling and corresponding laboratory analysis to aid in the verification and determination of the physical and chemical characteristics of hazardous waste. Specific sampling methods used to obtain representative samples are dependent on the type of contaminants and the nature of the waste. This sampling plan presents the following information.

Section 1.0	Sampling Strategies
Section 2.0	Sampling Equipment
Section 3.0	Maintaining and Decontamination of Sampling Equipment
Section 4.0	Sample Preservation, Holding Times and Containers
Section 5.0	Sampling Quality Assurance / Quality Control Procedures
Section 6.0	Health and Safety Procedures

Representative samples are expected to exhibit the properties of the entire sample population. Therefore, RIS can attain its primary sampling objective, which is to collect accurate and precise samples that can be measured to confirm the chemical properties of the waste. Since the samples are sufficiently accurate and precise, they will be considered reliable estimates of the chemical properties of the waste. RIS generally completes confirmatory fingerprint analysis on representative samples of waste received from off-site facilities at the on-site laboratory, however, outside analytical laboratories may be utilized

at the discretion of facility management with input from the laboratory staff. Additionally, RIS typically submits representative samples to outside analytical laboratories of on-site generated treatment residues intended for additional treatment and/or disposal. The primary objective of any waste sampling effort is to obtain information that can be used to evaluate a waste. Furthermore, the specific sampling, analytical and data objective is to appropriately classify and treat hazardous waste within regulatory parameters promulgated by United States Environmental Protection Agency and Ohio Environmental Protection Agency (collectively referred to as "EPA"). In the event that the generator conducts sampling and analysis, RIS' Waste Product Survey ("WPS") specifies the use of sound sampling and analytical procedures. In general, the sampling methods are those represented herein and are based on the techniques listed in the following documents, or an equivalent:

1. Samples and Sampling Procedures for Hazardous Waste Streams, EPA 600/2-80-18.
2. 40 CFR 261 Appendix I/OAC 3745-51-20 Appendix I.
3. Test Methods for Evaluating Solid Wastes SW 846/ 8th edition.

Procedures or equipment may be updated or revised when new equipment or procedures are available. Appropriate safety and personal protection devices and procedures, as identified in the Handling Instructions ("HIs") found in WAP Exhibit F, will be followed at all times.

1.0 Sampling Strategies

The sampling strategy used to assure representative sampling of waste is discussed in the following paragraphs. Exceptions to the sampling methods, locations, and/or equipment described herein may occur at times, however, deviations from these methods will be noted in the Operating Record. The methods and equipment used for sampling the waste will vary with the form and consistency of the waste to be sampled. The methods and equipment used will be appropriately based on physical and chemical characteristics of the waste, the sampling method, and other waste specific factors.

Sampling strategies for off-site generated wastes are specified in Section 1.1 of this sampling plan, and sampling strategies for on-site generated residuals are specified in

Section 1.2 of this sampling plan. These sections identify the sampling approach, the sampling type, and number used to obtain representative samples of waste for analysis. Samples collected for fingerprint analysis, metals analysis, PCB analysis, and residuals analysis are collected in accordance with the following sampling strategies.

1.1 Sampling Strategies for Waste Received from Off-Site

Typical hazardous and non-hazardous waste received at RIS include: halogenated and non-halogenated spent solvents, paint wastes, off-specification commercial chemical products, consumer products, spill residues, and wastes generated by the following industries: paint and coatings, pharmaceutical, organic and inorganic chemical, adhesive, pesticide, petroleum refining, and the ink formulation industries. This list is not comprehensive, but represents most categories of waste handled at RIS.

1.1.1 Sampling Approach

Samples will be collected for fingerprint analysis, metals analysis, PCB analysis. As such, a prescribed method for obtaining representative samples to ensure valid analyses is essential. This sampling plan allows for sampling in a prescribed manner to assure representative sampling. RIS uses simple random sampling, a type of probability sampling, as a sampling strategy for off-site generated wastes. Simple random sampling relies on mathematical and statistical theories to allow for an evaluation of the effectiveness of sampling procedures. Simple random sampling enables RIS to treat a variety of container types and waste types the same. No preference is to be placed on one container size or shape versus another. No preference is to be placed on one waste type over another. Rather, containers are to be chosen randomly. For example, containers are to be off-loaded and randomly arranged into rows, and then every ninth container will be sampled, regardless of waste type or container type. Additionally, samples will be taken uniformly without regard to the analyses to be performed. Generally, the sampler will not even know what analyses are to be performed. Rather, the lab will determine which analyses needs to be conducted. It is RIS' intent that these representative samples will exhibit the average properties of the whole waste population. Techniques described to sample these wastes were developed in accordance with the EPA test methods for evaluating solid waste (SW-

846) Volume II: Field Manual, Physical/Chemical methods, "Sampling Plan" (Chapter 9) and other documents referenced in Section 1.0.

1.1.2 Sample Type and Number

RIS classifies waste received from off-site facilities according to Section C-2e, "*Additional Requirements for Waste Generated Off-Site.*" With the exception of "V" class wastes (Refer to Section C-2e (1)(a)(iii)), these wastes are sampled and fingerprint analyses are performed to confirm the profiled parameters. Grab samples are transported to the fingerprint laboratory and designated lab personnel will typically composite up to nine (9) grab samples (the Fingerprint Lab Supervisor/Lab Manager has the discretion to determine the appropriate number of samples to be composited) to obtain a single composite sample, which is representative of the entire sample population. Sample quantity and frequency are collected in accordance with *Section C-2d Frequency of Analysis* of this WAP. RIS conducts fingerprint analysis to verify the characterization of incoming waste streams and to determine whether the incoming waste received by the facility conforms to the WPS. The fingerprint analysis is typically conducted at RIS' on-site fingerprint laboratory, however, outside analytical laboratories may be utilized at the discretion of facility management with input from the laboratory staff.

1.2 Sampling Strategies for Waste Generated On-Site

Residuals routinely generated by RIS that require sampling and analysis include incinerator ash, filter cake (i.e., de-watered fly ash sludge) and scrubber water. Incinerator ash is a non-combustible material produced from the incineration of wastes in RIS' kiln and main chamber. It is a soil or glass like material that is quenched upon removal from the system and conveyed to containers for de-watering then transported off-site. Filter cake is a solid material produced from de-watering fly ash. Fly ash is a non-combustible particulate material contained in incinerator off-gases. The small fly ash particulate is removed from the incinerator off-gases by RIS' air pollution control system. Scrubber water is used in the air pollution control system to clean and cool incinerator off-gases. It contains small amounts of suspended fly ash that were not removed through the solids settling process. Spent scrubber water is removed from the closed loop system when the salt content of the water becomes elevated.

It is necessary to perform representative analyses on the residuals generated by RIS to

determine if the wastes meet treatment standards established by the Land Disposal Restriction ("LDR") regulations. Routine analyses of these residuals will be performed; therefore, a prescribed method for obtaining representative samples to ensure consistent analyses is essential. The regulations pertaining to the management of hazardous waste require representative samples of waste, which exhibit average properties of the whole waste, be collected. This sampling plan allows for sampling in a prescribed manner to assure representative sampling of RIS generated residuals. Compositing samples involves combining a number of grab samples from the same waste container. Since compositing yields a more representative (and consequently more accurate) sample, it is employed throughout this sampling plan.

RIS also blends waste for shipment off-site. Within its permitted treatment tanks, RIS blends hazardous wastes with a variety of physical and chemical characteristics before shipment off-site. In addition to considering the characteristics of the wastes from their evaluation as inbound waste, RIS extracts a representative sample from the chosen treatment tank after blending each shipment and analyzes it to accurately characterize the shipment.

1.2.1 Sampling Approach

RIS uses systematic random sampling, a type of probability sampling, as a sampling strategy for on-site generated residuals. Systematic random sampling has one significant advantage, it provides an increase in sampling precision since the samples are distributed more evenly over the population. Systematic random sampling also relies on mathematical and statistical theories to allow for an evaluation of the effectiveness of sampling procedures. The solids residual sampling program employs a combination of systematic random sampling and judgmental sampling to achieve the accuracy and appropriate precision required of the analyses of the chemical constituents. This sampling strategy will assure that representative samples of ash and filter cake are collected. In random sampling, every unit in the population has a theoretically equal chance of being sampled and analyzed. Techniques described to sample these residuals were developed in accordance with the EPA test methods for evaluating solid waste (SW-846) Volume II: Field Manual, Physical/Chemical methods, "*Sampling Plan*" (Chapter 9).

RIS has successfully analyzed its residual waste for decades. As such, significant volumes

of data exists. Typically, RIS soldi phased residuals meet organic LDR parameters. However, RIS sends its solid-phased residuals off-site for further treatment at a permitted Treatment, Sstorage, and Disposal Facility ("TSDF") due to residual's the metal concentrations. As such, the LDR that accompanies the residuals simply notifies the TSDF that RIS residuals do not meet land disposal restrictions. Furthermore, RIS' scrubber water residual is also presently sent off-site to a Clean Water Act facility for further treatment.

1.2.2 Sample Type and Number

RIS will conduct incinerator ash sampling quarterly for a comprehensive list of LDR parameters, which have been identified in Table 3 - *Residuals Analytical Parameters and Methods Summary*. Additionally, RIS will conduct a limited monthly analytical evaluation of ash residuals for target constituents more likely to be found in the residual ash based on typical feed streams. [See the Waste Analysis Plan ("WAP") Section C-3d, *Notification / Certification Requirements*]

If the quarterly analytical results indicate LDR parameters have been met, RIS will ship the residual ash off-site for disposal. In the event an incinerator ash quarterly sampling event provides data that does not meet LDR parameters, RIS will re-sample and re-analyze the residual utilizing the same sampling plan and analytical method. The re-sample is intended to validate the existing data and remove any concern about erroneous analysis (e.g., due to external contamination). If the second incinerator ash sample returns with data outside LDR parameters, RIS will re-package the residual for re-processing on-site or transport the residual off-site for additional assessment at another facility. Following an unsuccessful quarterly sampling event, residuals will be shipped off-site for additional assessment until a second residual container can be chosen and sampled. Additionally, RIS will add the failed LDR parameters to the next monthly sampling event's (excluding dioxins/furans) abbreviated list of constituents.

If the monthly analytical results indicate that LDR parameters have been met, RIS will ship the residual ash off-site for disposal. In the event a monthly sampling event provides data that does not meet LDR parameters, RIS will re-sample and re-analyze the residual container utilizing the same sampling plan and analytical method. The re-sample is intended to validate the existence of the data and remove any concern about erroneous analytical data due to external contamination. If the second sample is returned with data

outside LDR parameters, RIS will either re-process the original residual or transport the residual off-site for additional assessment at another facility. Following an unsuccessful monthly sampling event, a daily residuals sampling event will continue for a maximum of three days and residuals will continue to be shipped off-site for additional assessment until at least one residual sampling event provides analytical results within LDR parameters. Samples are taken as indicated in Section 1.1.2, and sampling takes into account the variability of the wastes and treatment process. Additional analysis is performed in the event that there is a change in the composition of the waste or the treatment process. Deviations from standard sampling methods will be noted in the Operating Record.

RIS will conduct filter cake sampling on a quarterly basis. RIS will sample and anlyze filter cake one (1) time per year for a comprehensive list of LDR parameters which have been identified in Table 3.A - *Residual Analytical Parameters and Methods Summary* for Universal Treatment Standards ("UTS") List Constituents. RIS will also sample and anzlye filter cake three (3) times per year for a comprehensive list of Appendix IX parameters which have been identified in Table 3.B – *Residual Analytical Parameters and Methods Summary* for Appendix IX List Constituents. If the quarterly analytical results indicate that LDR parameters have been met, RIS will ship the residual off-site for disposal. In the event the analytical results indicate LDR parameters have not been met, RIS may further treat the residual to meet treatment standards or seek an alternate off-site treatment technology.

RIS will conduct scrubber water sampling quarterly for a comprehensive list of LDR parameters which have been identified in Table 3 - *Residual Analytical Parameters and Methods Summary*. If the analytical results indicate LDR parameters have been met, RIS will ship the scrubber water off-site for disposal. In the event the analytical results indicate LDR parameters have not been met, RIS may further treat the residual to meet treatment standards or seek an off-site treatment technology.

Although RIS residuals sampling can occur at any time within the quarter, RIS typically samples before the fifth week of the quarter. Discrepancies from the procedures herein will be noted in the Operating Record.

1.2.3 Sampling for Blended Waste Intended for Offsite Shipment

RIS also blends hazardous waste on site in its treatment tanks for shipment off-site.

Following the sampling procedures outlined in this Appendix and Appendix C1, RIS collects a sample from its chosen treatment tank after blending is completed and analyzes for Flash Point, pH, Total Chlorine content, Density, Reactive Cyanide, Reactive Sulfide, and BTU Value per the parameters of Table C2-4, *RIS Fingerprint Analysis Parameters and Test Methods* per Section C – *WAP,* Appendix C-2 – *Fingerprint SOPs*. RIS samples each blended waste shipment to appropriately characterize the waste. RIS may choose to perform additional analyses, if warranted.

2.0 Sampling Equipment

2.1 Sampling Equipment for Waste Received from Off-Site

Samples are collected from randomly identified containers using an appropriate piece of equipment. Although procedures and equipment may be updated to reflect new equipment and procedures as new technology is employed, Table 1 entitled "*Sampling Equipment for Particular Waste Types*" delineates the sampling devices and circumstances under which the equipment may be used. Sampling equipment will be chosen based on the physical and chemical parameters of the sample.

2.2 Sampling Equipment for Waste Generated On-Site

Samples are collected from randomly identified containers using an appropriate piece of equipment. Although procedures and equipment may be updated to reflect new equipment and procedures as new technology is employed, Table 1 entitled "*Sampling Equipment for Particular Waste Types*" delineates the sampling devices and circumstances under which the equipment may be used. Sampling equipment will be chosen based on the physical and chemical parameters of the sample.

3.0 Maintaining and Decontamination of Sampling Equipment

RIS inspects its sampling equipment before sampling to ensure proper operation. Additionally, gross chemical contamination is removed from the equipment before reuse. Cleaning and decontamination procedures for sampling equipment begin with removal of all loose debris from the equipment, followed by a cleaning process which corresponds with the sample purpose. For example, RIS decontaminates equipment used to take fingerprint samples with appropriately less stringent standards than samples intended for VOC analysis. Additionally, RIS uses disposable sampling equipment whenever possible

to avoid cross-contamination. Should equipment maintenance be required, RIS will generally follow the equipment manufacturer's specifications.

3.1 Maintaining and Decontamination of Sampling Equipment Used for Waste Received from Off-Site

RIS inspects its sampling equipment before sampling to ensure proper operation. Since RIS typically uses disposable sampling equipment, and since RIS samples waste received from off-site facilities for fingerprint analysis, equipment decontamination is less essential. Therefore, cleaning and decontamination is generally limited to removal of all loose debris from the sampling equipment. RIS will either use disposable sampling equipment when sampling for metals and/or PCB analysis, and TCLP analysis; or RIS will appropriately decontaminate reusable sampling equipment used for sampling for metals analysis, PCBs analysis, and TCLP analysis.

3.2 Maintaining and Decontamination of Sampling Equipment Used for Waste Generated On-Site

Although disposable sampling equipment is used whenever possible, decontamination of field equipment is essential to avoid cross-contamination of residual samples. The following list of equipment is typically needed to adequately decontaminate sampling equipment: wire or nylon brush, decontamination reagents (de-ionized water, methyl alcohol, dilute hydrochloric acid), tap water, laboratory grade squirt bottles, aluminum foil, safety glasses, disposable gloves, and containers to store used rinseate.

Decontamination of sampling equipment will typically take place in the fingerprint laboratory. All waste is accumulated as laboratory waste and managed according to applicable waste management practices. Sampling equipment is decontaminated by first removing all gross residual debris from the equipment using the nylon or wire brush. Then, the equipment is rinsed with decontamination reagents in the following order: tap water, de-ionized water, dilute hydrochloric acid, de-ionized water, methyl alcohol, de-ionized water. Finally, the decontaminated equipment is air dried and wrapped in aluminum foil for field use.

4.0 Sample Preservation, Holding Times and Containers

Samples collected for fingerprint analysis, metals analysis, PCB analysis, and residuals

analysis are collected in accordance with this Sampling Plan and are properly preserved and stored in accordance with applicable SW-846 Methods. Appropriate containers, holding times and preservatives are typically provided by the laboratory in accordance with SW-846 procedures (or the equivalent) and are found in Table 2 - *Sample Containers, Preservatives and Holding Times.*

4.1 Sample Preservation, Holding Times and Containers for Wastes Received from Off-Site

Generally, sample preservation is not necessary (or not applicable due to the sample matrix) since sample analysis typically occurs within 72 hours. Samples are retained in the fingerprint laboratory sample cabinets in accordance with laboratory procedures (refer to WAP Appendix C-2, *Laboratory Procedures*). For fingerprint laboratory analysis, RIS typically uses eight (8) ounce glass sample containers with metal lids lined with an inert material.

Typically, a commercial (outside) laboratory will complete metals and PCB analysis for waste received from off-site facilities. Aliquots of the composited sample are placed in sample containers provided by the outside laboratory before sample collection. Designated fingerprint lab personnel will retrieve the sample containers, identify the amount of sample required for analysis, obtain a Chain-of-Custody form and fill the appropriate sample container. After taking the sample, it will be prepared for shipment off-site by: sealing the sample container and completing the Chain-of-Custody form.

4.2 Sample Preservation, Holding Times and Containers for Waste Generated On-Site

Typically, a commercial (outside) lab will analyze RIS' residual samples. The commercial lab will send containers (and preservatives), including a trip blank to be used for collecting samples. These containers will be received before sample collection. The individual assigned to obtain the field samples will retrieve these sample containers, identify the amount of sample required for the analysis, obtain a sample collection record and Chain-of-Custody form then proceed to the field. After taking the sample (s), the person taking the sample (s) will identify the necessary preservative (s) for each sample, and proceed with preserving the sample (s) before shipment to the commercial laboratory. Table 2 - *Sample Containers, Preservatives and Holding Times* contains a list of sample

preservation and containerization requirements. RIS may change laboratories (and therefore possibly containers) without modifying this document, as long as the change is to an equivalent laboratory or one with similar capabilities and RIS has performed an audit of said laboratory. Once the sample (s) has/have been collected by the designated personnel, preserved, and prepared for transportation to the outside laboratory, the sample (s) and Chain-of-Custody form are forwarded to the fingerprint laboratory.

5.0 Sampling Quality Assurance and Quality Control Procedures

Quality assurance is the process for ensuring that all data and the decisions based on these data are technically sound, statistically valid, and properly documented. Quality control procedures employed to document the accuracy and precision of sampling include:

1. The existence of a sampling plan to communicate sampling methods,
2. Laboratory protocols to assure uniformity of analytical methods (Refer to WAP Appendix C-2, *Laboratory Procedures*),
3. Standard Operating Procedures to assure the uniformity of sampling methods,
4. Sample testing documentation including a Chain-of-Custody, and
5. Training.

Additionally, a trip blank can be used to detect contamination or cross-contamination during handling and transportation. It may accompany sample containers to and from the field. The blank is to be used for volatile organic analysis ("VOA"), and is received already prepared from the commercial lab. The trip blank remains unopened in the field and throughout sample acquisition. It contains laboratory pure water (distilled, de-ionized, or reagent grade water) that is free of contaminants. As previously indicated, RIS uses trip blanks when collecting quarterly residuals samples. Since RIS routinely ships samples to outside commercial laboratories, shipment of samples to these laboratories will require proper labeling and shipping papers to remain in compliance with United States Department of Transportation ("DOT") regulations. Packages properly prepared by personnel trained in DOT regulation are shipped to their destination via standard overnight carriers or comparable couriers. Preservation of samples sent to the outside laboratory is performed before shipment.

RIS fingerprint lab personnel perform daily QA/QC tests to assure accuracy of the test

performed and proper functioning of all lab instrumentation. Typically, blank, duplicate, or split samples will not be collected for fingerprint samples. However, QA/QC tests are conducted in accordance with standard operating procedures maintained at the on-site fingerprint lab. The Fingerprint Lab Supervisor acts as the QA/QC coordinator and is responsible for assuring the procedures are maintained. All fingerprint lab analysts are trained to conduct all necessary fingerprint lab analyses. The on-site fingerprint lab is organized to facilitate the efficient gathering of data necessary to confirm that the physical and chemical properties of the waste received at the facility are consistent with the information provided on the WPS. The fingerprint laboratory is stocked with all of the equipment and supplies necessary to perform the fingerprint analysis described in this WAP. The fingerprint laboratory is equipped with a hood, stainless steel sink; safety shower with eyewash and floor mounted cabinets with counter tops.

Minimally, the fingerprint lab is stocked with an analytical balance, flash point apparatus, selective ion/pH meters, electrodes, muffle furnace, thermometers, safety cabinets (sample storage), first aid kits, bomb calorimeters, various reagents and solvents, viscometer and miscellaneous glassware. Appropriate Quality Control/Quality Assurance ("QC/QA") data is gathered according to applicable laboratory operating procedures. The RIS fingerprint laboratory supervisor is responsible for self-audit of the laboratory. The laboratory self-audit is a multi-phase process. Specifically, the Fingerprint lab supervisor/lab manager visually evaluates the technicians' technique at least quarterly. Additionally, laboratory personnel take written tests based on current lab procedures. Quarterly performance evaluation samples are submitted to the laboratory for analysis. Finally, an annual evaluation of operating procedures occurs and SOPs are updated as necessary.

Laboratory personnel follow written standard operating procedures, which were established to provide instructions on conducting the fingerprint analysis. The standard operating procedures (SOPs) typically include the purpose, scope and application, reference methods, the associated SOPs, equipment requirements, reagents to be used, a detailed systematic procedure, quality control procedures, and discrepancy determination. The SOPs used by the on-site fingerprint lab can be found in Appendix C-2 of this WAP. Records of sampling and analytical results are maintained in the Operating Record.

RIS has an environmental auditing process to assess the adequacy of vendors, including audits of commercial laboratories. This auditing process evaluates several pertinent factors associated with potential vendors including Quality Assurance programs and Quality Control procedures. These audits follow Standard Operating Procedures ("SOPs") as established by the Fingerprint Lab Supervisor/Lab Manager and/or QA/QC Supervisor, and the SOPs for contract lab auditing are maintained at the on-site fingerprint lab. Procedures for documenting deviations from the sampling QA/QC procedures are also specified in the SOPs. RIS' off-site contract laboratory (ies) adhere to Quality Assurance Plans, incorporated herein by reference.

5.1 Standard Operating Procedures

SOPs for off-site generated wastes are specified in Section 5.1.1 of this sampling plan while SOPs for on-site generated residuals are specified in Section 5.1.2 of this sampling plan.

5.1.1 Standard Operating Procedures for Waste Received from Off-Site

As previously indicated, RIS receives a variety of wastes from off-site generators in bulk and non-bulk containers. Bulk sample collection methods for off-site generated wastes are specified in Section 5.1.1.1 of this sampling plan, and non- bulk sample collection methods for off-site generated residuals are specified in Section 5.1.1.2 of this sampling plan.

5.1.1.1 Bulk Sample Collection Methods

Samples for fingerprint, metals, PCB and other analyses are collected from randomly identified IBCs, tanker trucks, and bulk solid loads. Representative samples collected from bulk liquid and solid loads are collected in accordance with the procedures identified herein. Safety equipment, material management procedures, and other special instructions for each specific waste are identified on the HIs for each waste.

Tanker Sampling. The primary purpose for tanker sampling is to provide a representative sample to the fingerprint lab for analysis. The sampler slowly inserts a COLIWASA sampling device into the tanker from the top manhole and allows the liquid to fill the tube. As the COLIWASA is withdrawn from the tanker, the outside of the tube is wiped down using an absorbent tanker pad. Then, the sampler will empty the material into the sample

jar and seal the jar. The sampler will place labels (including shipper #, WPS # and Tanker #) on the sample jar and complete applicable sample testing information. The samples will be transported to the fingerprint lab and the fingerprint lab will notify the operator when analysis is complete.

Bulk Solid Sampling. The primary purpose of sampling roll-off containers and/or dump trailers is to provide a representative sample to the fingerprint lab for analysis. If the container houses a variety of materials, a sufficient representation of what is in the container must be obtained. Although the sampler makes an effort to sample from a variety of locations (typically using a grid system) within the container, the primary importance is to obtain a representative sample. When sampling homogeneous materials, the sampler will fill an eight ounce sample container from at least one location. However, the number of locations and their relative position will vary based on the content of the container to be sampled. For instance, if the contents in the container are 70% dirt, 20% wood, and 10% plastic, then the sample will be approximately 70% dirt, 20% wood, and 10% plastic. In this example, the sampler would take from three locations, with 70% of the 8-ounce jar full of dirt, 20% of the 8-ounce jar full of wood and 10% of the 8-ounce jar full of plastic. After taking the sample, the sampler will place labels (including shipper #, WPS # and CIN) on the sample jar and complete applicable sample testing information. The sample will be transported to the fingerprint lab.

5.1.1.2 Non- Bulk Sample Collection Methods

The primary purpose of sampling containers is to provide a representative sample of the waste shipment to the fingerprint lab for analysis. If sampling drums, palletized-materials, gaylords or wranglers, the sampler will open the container in a staging area.. If the material is granular or soil-like, the sampler will scoop enough of the material to fill the sample jar. If the material is hard, the sampler will chip enough of the material to fill the sample jar. If the container houses a variety of materials a sufficient representation must be obtained, as described in Section 5.1.1.1. If the material is a liquid or semi-solid, the sampler will use a sampling tube to draw the sample, by slowly lowering the tube into the container. Once the tube is full, the sampler will use their thumb to seal the tube. The tube is then removed and the sample jar is filled. Other tools used for sampling are listed on Table 1 – "*Sampling Equipment for Particular Waste Types*." If the drum is filled with small but

full containers (e.g., vials, 2 oz. plastic jars), one example of each container type will be placed in the sample jar. In this instance, a sample bag or pail may also be used to collect the representative sample. The sampler will place labels (CIN) on the sample jar and complete applicable sample testing information.

5.1.2 Standard Operating Procedures for Waste Generated On-Site

One of the most common methods of selecting a random sample is to divide the population by an imaginary grid. RIS observes the grid method of sampling. When a solid residual sample is required, the sampler visually grids the container housing the residual. The sampler selects the grids from which samples are to be obtained based on the appearance and texture of the residual. RIS uses a combined random and judgmental sample collection system when obtaining solid residual samples. Whenever differences in color, appearance or texture are present, the sampler will obtain samples from these areas. Typically, a container will be divided into several (6 to 12) sections and the sampler will pull samples randomly from a minimum of three grid sections on each side of the container. The sample aliquot is obtained by inserting a sample scoop into the residual material. At least one sample from each side of the container will be obtained from a depth of 3 to 18 inches. The actual sample will be collected by inserting a sample scoop into the residual material at the center of several grids. The individual grab samples are placed into a stainless steel container and mixed, or composited into a single well-mixed sample from which the aliquot to be analyzed will be obtained. Aliquots will be selected from the composited sample located in the stainless steel container and will be used to fill the appropriate sample containers for analysis. Samples of ash and filter cake collected using this collection method will represent the entire sample population.

The individual assigned to sample acquisition performs the actual sampling and compositing. Designated personnel will decontaminate the sampling equipment. After donning appropriate protective equipment as dictated by the HIs, the sampler will retrieve the sample as indicated above. Once the sample containers have been filled, excess sample material will be returned to the residual container. Sample containers are closed and preserved as indicated by the laboratory. Paperwork including the sample labels, sample collection record and the Chain-of-Custody form are completed. The samples are placed in the cooler with ice and the cooler is returned to the fingerprint laboratory.

The collection method for scrubber water produces a well-mixed, homogenous representative grab sample from the Closed-Loop Scrubber System ("CLSS"). The sampler donns appropriate protective equipment as dictated by the HIs and decontaminates the sampling equipment. The sampler may use a variety of locations including but not limited to the clarifier Weir overflow, the Maintenance Storage Tank and the clarifier surge tank to obtain a sample from the closed loop system. Samples are collected by filling each sample container from one of the aforementioned locations. Excess sample material is returned to the CLSS, the sample containers are closed, and the samples are preserved as indicated by the laboratory. Paperwork including the sample labels, sample collection record and the Chain-of-Custody form are completed. The samples are placed in the cooler with ice and the cooler is returned to the fingerprint laboratory.

5.2 Sample Testing

Sample testing procedures for wastes received from off-site facilities are specified in Section 5.2.1 of the Sampling Plan, and sample testing procedures for on-site generated residuals are specified in Section 5.2.2 of the Sampling Plan. These sections identify the collection records and routine chain-of-custody procedures used to ensure the integrity of a sample from collection to data reporting.

5.2.1 Sample Testing Procedures for Waste Received from Off-site

After the sample material from a shipment has been collected, the Receiving agent obtains the sample and completes sample testing information specific to that WPS. Sample testing information is completed for each WPS and identifies the customer, shipper number and date, WPS number and CINs that were sampled, and the Receiving employee who sampled the material. After the sample and its associated sample testing information arrive at the fingerprint laboratory, the laboratory chemist performing the analysis accepts the receipt of the sample and then performs the analysis. The chemist records the results of each analysis on the Laboratory Logbook. If the results are within acceptable parameters, the shipment is accepted. A description of typical sample testing information and a Laboratory Logbook are included as Exhibit G and Exhibit H respectively to this WAP.

Sample testing information acts as chain-of-custody for the sample. It provides documentation that sampling was completed and aids RIS in documenting sample

acceptance and rejection. Both the Laboratory Logbook and sample testing information are maintained for each sample and are recorded in the Operating Record along with the computerized sample records.

5.2.2 Sample Testing Procedures for On-site Residuals

An essential part of ensuring the integrity of a sample from collection to data reporting is by documentation. Documentation of the history of the sample is referred to as "chain-of-custody." Chain-of-custody procedures are useful for routine testing of sample flow and facilitate tracing the possession and handling of samples from the time of collection through analysis and final disposal. The components of RIS' residual chain-of-custody process include the sample label, the sample collection record (SCR) and the Chain-of-Custody form. A sample is considered to be under a person's custody if it is:

1. In the designated personnel's possession,
2. In view of the designated personnel,
3. Secured by that person so no one can tamper with it, or
4. Secured by that person in an area restricted to authorized personnel.

Completion of a sample collection record and a Chain-of-Custody form is required for all residual samples. A description of the sample collection record and the Chain-of-Custody form is found in Attachment B - Description of RIS Residual Sample Testing Documents. All information must be filled out on the sample collection record by the person in control of the sample. The information to be completed on the Chain-of-Custody form includes: the sample location and description, date and time sample was collected, and the sample type (grab, composite, matrix). A label must be completed and placed on each sample container. It may also list the sample collector, date of collection, time of collection and place of collection. Once obtained, the sample is returned to the fingerprint laboratory along with the Chain-of-Custody form. The person preparing the sample will inspect the container for leaks and the label for completeness, then record the sample identification number on the sample collection record form and the sample container label. Discrepancies between the Chain-of-Custody form and the sample label will be resolved immediately. The Sample Collection Record and Chain-of-Custody form serve as the field notebook, (i.e., a record of the samples taken from the field). When the sample collector relinquishes the sample, he (she) signs off at the bottom of the Chain-of-Custody form. The samples are typically sent to the commercial laboratory within 24 hours. A copy of the Chain-of-Custody form is sent to the sample destination and will be attached to the

samples when shipped to the commercial laboratory. Following receipt of the samples at the commercial laboratory, the lab personnel will handle the Chain-of-Custody form as directed by their organization. A copy of the final Chain-of-Custody form will be sent to RIS with the analytical results.

5.3 Training for Personnel taking Samples

All designated sampling personnel have been trained in RIS Health and Safety Procedures in accordance with the RIS Training Plan. Please refer to RIS' Ohio RCRA Part B application Section H, *Personnel Training Plan*.

6.0 Health and Safety Protocols

All designated sampling personnel have been trained in RIS Health and Safety Procedures and at a minimum, personnel have been instructed in the proper use of safety equipment, such as protective clothing and respiratory equipment. Health and Safety protocols have been defined in the HIs (refer to Section C - Exhibit F: *Handling Instructions*) associated with off-site and on-site generated wastes. Typical health and safety protocols indicate when and where safety equipment is required. Additionally, safe areas where facilities are available for washing, drinking, and eating have been designated.

The following protective equipment is typically worn by the residuals sampler when handling incinerator ash, filter cake or scrubber water: air-purifying respirator with vapor/acid gas cartridges, chemically resistant apron, chemical resistant gloves, hard hat and safety glasses.

Table 1 - Sampling Equipment for Particular Waste Types*

Material Type	Sampling Method Reference	Recommended Sampling Equipment
Solid or rock-like material	ASTM D420-69, ASTM D1452-65 or SW-846, Chapter 9	Brass hammer, brass chisel, or other physical sampling devices
Containerized liquid material	SW-846, Chapter 9 or EPA 600/2-80-018	COLIWASA - between 4 and 8 foot in length Open Tube Sampler
Sludges and slurries	ASTM D140-70, EPA 600/2-80-018 or SW-846, Chapter 9	Scoops, dippers, or other scoop-like utensils
Plastics and fibers	ASTM D420-69 or SW-846, Chapter 9	Utility knife, scissors, tin snips
Paint filters, tubes	ASTM D420-69 or SW-846, Chapter 9	Wood saw, hack saw, or other cutting implements, Tin snips
Granular material and soil	ASTM D346-75 or SW-846, Chapter 9	Grain scoop, trowel, quick bucket opener, or other scoop-like utensils
Viscous materials (including liquids and slurries, too thick for tube sampling)	ASTM D140-70 or SW-846, Chapter 9	Tongue depressor, sample jar, dipper
Incinerator Ash	ASTM D2234-76 or SW-846, Chapter 9	Scoops, dippers, trowels

* The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials sampled. Samples collected using the sampling protocols listed in sections 2.1.1 and 2.2.2 for sampling waste with properties similar to the indicated materials, is considered to be representative of the waste.

Table 2 - Sample Containers, Preservatives and Holding Times

Parameter	Sample Container (Minimum Size)	Holding Time	Preservative
Acid Only	500 ml Glass * 1.0 liter Glass **	7 days to extraction 40 days after extraction	Cool 4ºC Dark
Antimony	100 ml Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Arsenic	100 ml Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Barium	100 ml. Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Beryllium	100 ml. Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Chromium VI	100 ml Glass* 500 ml Polypropylene **	24 hours	Cool 4ºC
Dissolved Mercury	38 days in glass 13 days in plastic	38 days in glass 13 days in plastic	Filter pH< 2 HNO_3 and/or Cool 4ºC
Hazardous Waste Corrosivity	* 1.0 liter Glass**	7 days	None
Hazardous Waste Ignitability	* 500 ml Glass	7 days	None
Hazardous Waste Toxicity	1.0 liter Glass *	7 days to extraction 40 days after extraction	None
Hazardous Waste Reactivity	100 ml Glass* 500 ml Polypropylene **	7 days	Cool 4ºC Dark
Hexavalent Chromium	100 ml Glass* 500 ml Polypropylene **	24 hours	Cool 4ºC
Hydrogen Ion	100 ml Glass* 60 ml Polypropylene **	Immediately	None
Lead	100 ml. Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Mercury Total	38 days in glass 13 days in plastic	38 days in glass 13 days in plastic	pH< 2 HNO_3 and/or Cool 4ºC
Total Recoverable Metals (Except Chromium and Mercury)	100 ml Glass* 500 ml Polypropylene **	6 months	pH< 2 HNO_3 and/or Cool 4ºC
Dissolved Metals (Except Chromium and Mercury)	100 ml Glass* 500 ml Polypropylene **	6 months	Filter on site pH< 2 HNO_3;Cool 4ºC

Parameter	Sample Container (Minimum Size)	Holding Time	Preservative
Suspended Metals (Except Chromium and Mercury)	100 ml Glass* 500 ml Polypropylene **	6 months	Filter on site pH< 2 HNO_3,Cool 4ºC
Total Metals (Except Chromium and Mercury)	100 ml Glass* 500 ml Polypropylene **	6 months	pH< 2 HNO_3 and/or Cool 4ºC
Metals TAL (23)	100 ml Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Metals RCRA (8)	100 ml Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Organochlorine Pesticides	500 ml Glass * 1.0 liter Glass **	14 days to extraction 40 days after extraction	Cool 4ºC
Paint Filter Liquid Test	500 ml glass		Cool 4ºC
PCB's	500 ml Glass * 1.0 liter Glass **	7 days to extraction 40 days after extraction	Cool 4ºC
pH	100 ml Glass* 60 ml Polypropylene **	7 days	None
Reactive Sulfide	100 ml Glass* 500 ml Polypropylene **	7 days	Cool 4ºC Dark
Reactive Cyanide	100 ml Glass* 500 ml Polypropylene **	7 days	Cool 4ºC Dark
Selenium	100 ml. Glass* 500 ml Polypropylene **	6 months	Cool 4ºC
Semi-Volatile Organic	500 ml Glass * 1.0 liter Glass **	7 days to extraction 40 days after extraction	0.008% $Na_2S_2O_3$ Cool 4ºC
TCLP Extraction	1.0 liter glass * 500 ml glass **	7 days to extraction 40 days after extraction	None
TCLP Sample	500 ml glass *	7 days to extraction 40 days after extraction	None
Total Mercury	38 days in glass 13 days in plastic	38 days in glass 13 days in plastic	pH< 2 HNO_3 and/or Cool 4ºC
Volatile Organics	100 ml Glass* 40 ml Vial** 60 ml vial *	14 days	4 drops HCl 0.008% $Na_2S_2O_3$ Cool 4ºC

* = Solid Waste Method (SW-846)
** = Water/Wastewater Method (EPA-600)
Solid samples are preserved by placing on ice.
Preservations listed are for liquid samples.

HCl = Hydrochloric Acid dilute 1:1
HNO_3 = Nitric Acid dilute 1:1
H_2SO_4 = Sulfuric Acid dilute 1:1
NaOH = Sodium Hydroxide dilute 1:1
$Na_2S_2O_3$ = Sodium Thiosulfate for dechlorination

Table 3. Residual Analytical Parameters and Methods Summary

As previously indicated RIS samples three residuals: incinerator ash, filter cake, and scrubber water. Analysis of the incinerator ash and filter cake is typically completed on an extract of the waste, whereas, analysis of the scrubber water is typically completed on the waste itself.

Parameter	Analytical Method
pH (Electrometric)	EPA-600/4-79-020: 150.1
pH (Non-aqueous)	9045A
Amenable Cyanide	9012
Chlorinated Herbicides by Gas Chromatograph	8151A
Cyanide, Total	9012A
Dibenzodioxins and Dibenzofurans, HRGC, HRMS	8290
Dioxins / Furans HRGC / LRMS	8280
Fluoride (Potentiometric, Ion Selective Electrode)	EPA-600/4-79-020: 340.2
Inductively Coupled Plasma (ICP) Metals (As, Ag, Ba, Be, Cd, Cr, Pb, Ni, Se, Tl, Va, Zn)	6010B, 6020
Mercury in Liquid Waste (Manual Cold Vapor)	7470A
Mercury in Solid Waste (Manual Cold Vapor)	7471A
Method for Determination of Water Content of Soil	D 2216-90
Non-halogenated Organics using GC/FID	8015B
Organochlorine Pesticides	8081A
Organo-phosphorous Compounds by GC	8141A
Paint Filter Test	9095
Pensky-Martens Method for Determining Ignitability	1010
Polychlorinated Biphenyls	8082
Semi-volatile Organic Compounds by GC/MS	8270C
Sulfide	EPA: 600/4-79-020: 376.1
Total Organic Halogens	9020A, 9020B
Volatile Organics by GC/MS	8260B

CG – Gas Chromatograph
MS = Mass Spectroscopy
HRGC = High Resolution Gas Chromatograph
HRMS = High Resolution Mass Spectroscopy
LRGC = Low Resolution Gas Chromatography
LRMS = Low Resolution Mass Spectroscop

Attachment A

Description of

RIS Residual

Sample Testing Documentation

RIS Residual Sample Testing Documentation

RIS residual sample testing paperwork documents the collection, management and requested analyses of samples. The sample testing documentation consists of two forms: the Sample Collection Record and the Chain-of-Custody form. Together the forms identify and track the collection, preservation and shipment of RIS residual samples.

The Sample Collection Record is an internal RIS document designed to identify the residual samples taken. The Sample Collection Record details the field conditions at the time of sampling and is retained in production support files. At a minimum, the following information must be included on the Sample Collection Record.

1. The date the sample was taken,
2. The time of day the sample was taken,
3. The name of the person taking the sample,
4. The RIS sample number,
5. The type of residual sampled,
6. The type of sample taken: grab or composite
7. The sampling location or container number
8. The sample description (color, odor, texture, etc.)
9. The environmental conditions under which the sample was taken, and
10. A space for comments or observations.

RIS typically uses the Chain-of-Custody form provided by the commercial laboratory. The Chain-of-Custody form provides an unbroken trail of sample accountability that ensures the physical security of samples and validity of the corresponding data. At a minimum the form must contain:

1. Project Name/Customer Name
2. Chain-of-Custody form number
3. Sample number or identification
4. Sample location, description, and matrix
5. Date and time collected
6. Sample type
7. Containers / Preservatives

8. Analysis requested
9. Hazard Identification
10. Special Instructions
11. Sample custody history (Relinquished by, date, time/Received by, date, time)

Ross Incineration Services, Inc.
RCRA Part B Application
Section D - Process Description
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PUBLIC INFORMATION VERSION

Ross Incineration Services, Inc.

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Section D

Process Information

The information provided in this section is submitted in accordance with the applicable requirements of the Ohio Administrative Code ("OAC") 3745-50-10, OAC 3745-50-44 , OAC 3745-51, OAC 3745-55-70 through OAC 3745-55-78, and OAC 3745-205-30 through OAC 3745-205-36. Other state and federal regulations addressed to complete this section are also referenced within each section.

This section discusses specific process information related to the generation, storage, and treatment of hazardous waste at the Ross Incineration Services, Inc. ("RIS") facility. RCRA-regulated units, for which RIS is seeking a State permit, include several container storage areas, 45 storage tanks, four treatment and storage tanks, an incinerator unit and two miscellaneous hazardous waste management units, a filter press unit and the barge. A RCRA permit is requested only for those units described in Table D1-1. Each of the following subparts describe each specific process for existing and proposed operations.

Additional hazardous waste management operations include: blending of waste, direct feeding or transfer of wastes from containers, transfer of bulk liquid wastes from over-the-road tankers to yard tankers, repackaging of wastes at the incinerator set up areas, repackaging of wastes at the Process Dock, Barge and other areas identified in this Section, set up of wastes in containers at the incinerator and other waste management activities including modification (e.g., adding sorbent, cutting, blending, rinsing, various disassembly) of waste streams to make them amenable to incineration.

Table D1-1
RCRA Units for which RIS is Seeking a State Part B Permit

Description	Permitted Capacity	Filter Press
Container Storage Facility* (702,350 gallons design capacity) Bulk Storage Area #1* (64,632 gallons design capacity) Bulk Storage Area #2* (80,790 gallons design capacity) Oxidizer Storage Building* (7,920 gallons design capacity) Waste Storage Bays #1* (121,180 gallons design capacity) Waste Storage Bays #2* (121,180 gallons design capacity) Waste Storage Bays #3* (80,000 gallons design capacity) Container Storage Area (33,000 gallon design capacity) Waste Management Building (7,500 gallon design capacity) Process Dock West Storage Area (42,000 gallon design capacity) Guard Rail Storage Area (137,500 gallon design capacity)	1,064,800 gallons	S01
Storage Tanks (Tanks 23-64, 67, 68, 70, 73, 74, 75, 79)	1,125,040 gallons	S02
Treatment Tanks (gallons per day) (Tanks 70, 73, 74 & 79)	122,000 gal/day	T01
Blending Treatment Tanks (gallons per day) (Tanks 70. 73, and 74)	72,000 gal/day	T01
Incinerator	26,057 lbs/hr; 105,120 tons/year	T03
Filter Press	111,000 gal/day	T04
Barge	400 tons /day**	T04

* = The hazardous waste container storage volume in each of the permitted container storage units will at no time exceed the unit's respective design storage capacity.
** = refers to throughput rather than capacity.

D-1 Containers

The container storage areas to be permitted under this application are the Container Storage Facility ("CSF"), the Bulk Storage Areas ("BSA") #1 and BSA #2, the Oxidizer Storage Building ("OSB"), the Waste Storage Bays ("WSB") #1, WSB #2, WSB #3, the Container Storage Area ("CSA") , the Waste Management Building ("WMB"), the Process Dock West Storage Area ("PDWSA"), and the Guard Rail Storage Area ("GRSA"). The location of these areas is shown in Figure D1-1 entitled "Active Facility Site Plan with Location of Hazardous Waste Management Units" (drawing D-90-019) in Exhibit A. OAC 3745-55-76 states that "Containers holding ignitable or reactive waste must be located at least 15

meters (50 feet) from the facility's property line." RIS' container storage areas are greater than 50 feet from RIS' property line.

D-1a Containers with Free Liquids

Containers with free liquids are stored in the CSF, the OSB, BSA #1, WSB #1, WSB #2, WSB #3 (together referred to as the WSBs), the CSA, the WMB, the PDWSA, and GRSA, along with containers without free liquids. Only containers without free liquids are stored in BSA #2.

D-1a(1) Description of Container Storage Areas

All containers accepted from off-site generators and stored in the CSF, on BSA #1, the WSBs, the CSA, the WMB, the PDWSA, and the GRSA must meet United States Department of Transportation ("US DOT") specifications contained in 49 CFR 178 which describes container standards and specifications. These specifications include various types of steel, plastic, composite drums and totes, as well as pails, buckets, fiber boxes, etc. All containers accepted from off-site generators are packaged, marked, and labeled by the generator in accordance with DOT Rule 172.101 Hazard Materials Table ("HMT") which contains packaging standards that ensures compatibility of the waste with the container. On occasion, trained RIS personnel assist the generator in marking and labeling DOT approved containers.

Containers of hazardous waste are transported to the container storage units, where they are inspected for leaks, corrosion, dents, and structural defects. RIS only stores hazardous waste in containers made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired. Unacceptable containers will be immediately repackaged into acceptable containers. Additionally, when necessary, a procedure is in place which allows RIS to address containers with tacky wastes, residues or other materials on the container exterior (e.g., bagging or overpacking the containers).

Prior to storage, hazardous waste containers (including roll offs) are labeled, the manifest checked / examined for differences between the quantity or type of waste designated on the manifest or shipping paper with the quantity or type of waste actually received, and

selected for fingerprint analysis as applicable per Section C – *Waste Analysis Plan.*

Table D1-2 provides examples of the types of containers received by RIS. Although RIS most commonly accepts wastes in the types of containers discussed in this section, RIS may also accept wastes from generators in any type of container which meets DOT specifications, is compatible with the waste stored in the container and is in good condition. New, used, and reconditioned containers are accepted for storage as long as each container meets the DOT specifications. Typically, waste is most often accepted in 5 gallon pails, 30, 55, and 85 gallon drums.

In addition to those containers listed on Table D1-2, RIS also receives and stores waste in bulk containers (i.e., roll-offs, tank trucks, tote tanks, etc.) of varying capacities.

Ross Generated Waste

Hazardous waste generated by RIS on-site may also be stored in the CSF, the BSAs, the OSB, the WSBs, the PDWSA, the GRSA, or designated 90-day accumulation areas. On-site generated waste will be stored in containers suitable and compatible with the wastes. All on-site generated waste containers will be stored in accordance with the requirements specified in OAC 3745-52-32 by having the accumulation start date marked and visible for inspection and each container containing hazardous waste clearly marked with the words "Hazardous Waste" and words identifying its hazard (e.g., toxic, flammable, etc.).

RIS assures compatibility of wastes with containers through daily inspections of the CSF, the BSAs, the OSB, the WSBs, the PDWSA, the GRSA, and the Barge. Compatibility determination procedures can be found Section C-1b of the Waste Analysis Plan, and Appendix C-2 - Compatibility Guidelines. Also, regular inspections ensure that the containers are always managed and labeled properly and that the containers are in good condition. In addition to inspections, RIS' container management (See Section D-1a(2) "Container Management Practices," under subheading "Special Handling for Containers") minimize the possibility of leaks due to accelerated corrosion and environmental conditions such as humidity, temperature, oxidation and ultraviolet degradation.

Table D1-2
Example Containers Utilized by RIS for Storage of Hazardous Waste

Container Description
Boxed carboys
Boxed glass carboys
Glass carboys in plywood drums
Polyethylene carboys in low carbon steel or other equally efficient metal crates
Glass carboys cushioned with expandable polystyrene in wooden wirebound box
Non-reusable molded polyethylene drum for use without overpack
Non-reusable glass carboy in non-reusable expanded polystyrene packaging
Reusable molded polyethylene container for use without overpack
Steel barrel or drum, removable head
Steel barrel or drum, non-removable head
Nickel barrel or drum, non-removable head
Monel drum, non-removable head
Lagged steel drums, non-removable head
Cylindrical steel overpack, straight sided, for inside plastic container
Metal Packaging
Aluminum drums
Steel drums, single trip container, removable head
Steel drums, single trip container, non-removable head
Phenolic foam insulated, metal overpack
Fire and shock resistant, phenolic foam insulated metal overpack
Steel drums with polyethylene liner
Cylindrical steel overpack, straight sided for inside plastic container, nonreusable containers
Plastic overpack container
Steel drum, non-reusable container, removable head
Steel drum, non-reusable container, open-headed not authorized
Metal kegs
Metal drums
Steel Pails
Gaylords
Metal and plastic totes

(Continued)

Table D1-2.
Example Containers Utilized by RIS for Storage of Hazardous Waste

Container Description
Metal cases, riveted or lock seams
Metal cases, welded or riveted
Metal trunks
Polystyrene cases, nonreusable containers
Fiberboard boxes, outer plies water resistant, 15-65 lbs capacity
Fiberboard boxes, outer plies water resistant, 30-65 lbs capacity
Fiberboard boxes, outer plies water resistant, 275 lb test double wall
Fiberboard boxes, outer plies water resistant, 180 lbs per 1000 sq. ft.
Fiberboard boxes, outer plies water resistant, 275 lb test
Fiberboard boxes, outer facings water resistant, gross weight less than 80 lb
Fiberboard boxes, non-reusable containers for inside plastic containers greater than 1-gal. capacity
Paper-faced expanded polystyrene board boxes, non-reusable containers
Fiberboard boxes, outer plies water - proofed, 300 lb test
Special cylindrical fiberboard box
Fiberboard boxes, outer plies waterproofed, 300 lb test weighing at least 250 lbs per 1000 sq. ft.
Fiber drum
Fiber drum overpack for inside plastic container
Mailing tubes
Lined cloth bags
Burlap bags, lined
Burlap bags, paper lined
Multiwall paper bags
Bags, cloth and paper lined
All plastic bags
Tankers
Roll-off boxes
Vac boxes

NOTE: RIS will comply with the revised applicable Performance Based Standards for container specifications in 49 CFR 178.

Chemical compounds such as mineral acids, azo compounds, diazo compounds, hydrazine compounds and halogenated organics cause unlined steel to corrode at accelerated rates. Therefore, when these types of wastes are received, they will be processed expeditiously.

D-1a(2) Container Management Practices OAC 3745-55-73, 3745-54-35

This section is divided into several subsections to explain RIS' receiving and storage procedures for bulk liquids (e.g. tankers, tote tanks), bulk solids, and containerized waste; the transportation of containers through the facility; and special handling utilized for containers. Detailed descriptions of the container storage areas begin in Section D-1a(4).

D-1a (2)(a) Storage and Receiving Procedures

Containerized waste is managed in a safe and cautious manner at the RIS facility. All employees undergo safety as well as hazardous waste training (see Section H - *Personnel Training Plan*) to ensure proper handling of containers. Specific procedures have been developed and are described herein.

Each waste shipment to the RIS facility is accompanied by shipping information, including bill-of-lading or manifest (depending on whether the shipment is hazardous or non-hazardous waste), land disposal restriction notifications and certifications where applicable. RIS adds additional information, such as handling instructions, and a process method which identifies options for managing the waste.

Containers arrive at the facility by truck and are received into the CSF, BSAs, OSB, WSBs, PDWSA, or GRSA in the types of containers previously described. All customers shipping waste to RIS are required to comply with the DOT hazardous materials transportation and packaging regulations (49 CFR 172). To ensure that the manifest is correct, containers on each load are counted and verified against the manifested amount. For verification of bulk wastes, the truck driver is directed to the weigh scales where the incoming weight is recorded and verified against the manifest amount. The truck driver is then required to enter the Giles Road office and notify RIS' receiving agent that he (she) has a load manifested to the RIS facility. The receiving agent verifies that the manifest has been properly executed by the generator and the transporter by checking the manifest against RIS' permitted list of waste codes and the Waste Product Survey ("WPS"). Any deviation

between the manifest and the WPS and/or RIS' permitted waste code list is flagged and the discrepancy must be resolved before additional steps are taken. The receiving agent notifies a Foreman of Receiving ("FR") or his representative that the shipment has arrived. The FR determines which dock and/or unloading area is appropriate for the wastes in question and directs the driver to move the vehicle to the designated parking or unloading area (e.g. CSF, Process Dock, etc.). At the unloading area, the shipment is inspected for manifest discrepancies (i.e., differences between the quantity or type of waste designated on the manifest or shipping paper with the quantity or type of waste RIS actually receives). All significant manifest discrepancies which have not been resolved within 15 days after receiving the waste, are submitted in reports to the Agency. When the shipping information verification is complete, visual inspection is conducted as required and the fingerprint analysis samples are collected and analyzed in accordance with the Waste Analysis Plan described in Section C-2e of this Application. In general, RIS' confirmatory process takes up to 96 hours. Once the initial confirmatory waste acceptance determination has been made, RIS moves the waste into a permitted storage location. At times, RIS receives waste that does not conform to the WPS and manages the nonconformance as a discrepancy. Discrepant material is staged on concrete at RIS, until further determinations regarding acceptance and the final disposition of the waste can be made. As such RIS appropriately excludes discrepant waste from the 96-hour clock.

D-1 a (2)(a)(i) Non-Bulk Container Receiving and Storage Procedures

After verification that the shipping information is complete, containerized material is transported, typically via box vans, to the container storage area where they are unloaded. "Staging activities" at a container storage location refers to initial drum handling activities in which offloaded waste containers are prepared for inspection, weighing, application of a Container Identification Number ("CIN" or "bar code') and labeling before storage and / or processing occurs. The CIN allows for container tracking throughout storage and treatment at RIS.

RIS may repackage material to an appropriate container should the necessity arise. Once off-loaded, containers are selected for visual inspection and fingerprint analysis in accordance with the inspection and sampling protocols described in Section C-2e ("Additional Requirements for Waste Generated Off-Site") of this Application. The

containers selected for analysis are sampled for analysis in accordance with Section C-2c "Sampling Methods" of this Application. If the shipping information review and fingerprint analysis do not confirm the acceptability of the shipment, the generator is contacted by a RIS Quality Assurance/Quality Control ("QA/QC") or customer service agent to resolve the apparent discrepancy. If the discrepancy cannot be resolved, the nonconforming containers are not accepted and the waste is returned to the generator. When necessary, manifest discrepancy reports are submitted to the agency if a significant discrepancy is not resolved within 15 days after receiving the waste. If the fingerprint analysis and visual inspection confirms the acceptability of the shipment, the waste will be stored, processed or shipped offsite to an appropriate location.

Container Bulk Up

RIS uses the following procedure for vacuuming or pumping liquid wastes from containers into the treatment and storage tank system. The Process Dock employee refers to the handling instructions for the written information which identifies the applicable handling and processing criteria for a specific waste stream. Appropriate personal protective equipment and emergency response procedures are also indicated in these instructions. (Please refer to Section C - Waste Analysis Plan, Exhibit F – Handling Instructions.) The Process Dock employee decides which Process Dock vacuum tank will be used for processing the material. Once the Process Dock vacuum tank is chosen, drums are transferred typically by powered industrial truck or flatbed to a secondarily contained area (for example southwest of Process Dock). Liquids in containers are vacuumed or pumped from one drum at a time using a wand. Compatibility determination procedures for wastes managed in tanks are provided in Section D-2a(2). Additional compatibility determination procedures can be found Section C-1b of the Waste Analysis Plan, and Appendix C-2 - Compatibility Guidelines. After the liquids have been vacuumed or pumped from the container, any containers that are not RCRA empty after the liquids have been removed by the dock vacuum or pumping system are covered and returned to CSF, the OSB, the BSAs, the WSBs, the CSA, the WMB, the PDWSA, or the GRSA for storage until they are processed through the incinerator. Empty containers are placed in vans or in other areas for future processing in the incinerator or for recycling. When the Process Dock vacuum tank is full or when the final drum for processing during a specified work period is completed, the contents of the Process Dock vacuum tanks are pumped to Tank Farms I, II

or III as appropriate, or to an awaiting tanker for direct feed to the incinerator, or for shipment offsite. Refer to subsection D-2a(2) for a detailed discussion of RIS' tank feed systems.

D-1 a (2)(a)(ii)Repackaging Waste

After verification that the shipping information is complete and sampling and visual inspections are conducted where required, waste material may be repackaged into alternate containers. Repackaging is typically performed on those wastes which are not amenable to storage in the existing tank farms (e.g., corrosives, highly malodorous compounds, incompatibles, etc.), wastes which are not immediately amenable to processing in the incinerator due to permit restrictions (e.g., weight, container size, compatibility, etc.), wastes with feed limitation restrictions (e.g., metals limits, halogen limits, etc.), and / or other process considerations (e.g., BTU content, refractory-attacking constituent concentrations, liquids content, etc.), or are required in preparation for offsite treatment and disposal at another treatment storage disposal facility ("TSDF").

The repackaging rooms and vapor pack control are located at the Process Dock. Repackaging is performed by operators who are thoroughly trained on repackaging procedures on how to make sound judgments based on changing circumstances. The operators are responsible for proper operation of all equipment. Handling instructions are reviewed prior to repackaging operations to assure that the proper safety equipment will be worn for repackaging the material.

Repackaging is also typically conducted at the following locations:

1. All concrete areas surrounding the incinerator.
2. The concrete pads either on the east or west of the Process Dock.
3. The concrete pad at the staging area in the CSF.
4. The concrete loading / unloading area by the closed loop scrubber water system.
5. The concrete loading / unloading area by and in the Caustic Building.
6. Within the Process Dock Building.
7. Within the BSAs, CSA, WSBs, WMB, PDWSA, or GRSA.

The above locations will be used for repackaging the type of material that does not need to be repackaged in the repackaging rooms. For instance, ash and soil which require heavy equipment usage, or phosphorus that requires a large area are typically repackaged in the locations indicated above. Materials that have vapor emissions of organics and malodorous compounds are repackaged in the repackaging rooms where vapor control exists.

RIS documents the activities associated with repackaging of drums and bulk solids in a RIS form, regardless of their location. This RIS form includes, but is not limited to: an account of the WPS; the personal protective equipment employed; criteria used for repackaging (i.e., BTU content, highly malodorous, etc.); description of the waste being repackaged, number and size of drums or containers to be repackaged; container weight and volume; number and size of containers generated after repackaging; location of repackaging activity; the date; weather conditions; and operator's name. This RIS form also provides the following specific information relevant to container tracking and production, the original container size, repackaging start and stop times, shipper numbers, WPS number, and CINs.

RIS performs inspections of repackaging areas and documents them to assure that protocols established in the above RIS form are followed, including use of proper personal protective equipment and compliance with established safety practices. Each inspector ensures that the repackaging activities are documented properly and initials the documentation for the specific repackaging activity he or she is witnessing. All repackaging documentation is collected and reviewed for completeness on a daily or per occurrence basis.

D-1 a (2)(a)(iii) Temporary Increase in Container Storage Capacity in Anticipation of the Performance Test

This section applies only to temporary increases in containerized hazardous waste storage capacity in anticipation of performing an incineration performance test or Hazardous Waste Combustor Maximum Achievable Control Technology ("HWC MACT") comprehensive performance test ("CPT"). RIS will provide a minimum of 60 days prior notice to Ohio EPA before temporarily increasing its containerized hazardous waste storage capacity in accordance with this section. In the event of an extension to its test, RIS will provide

additional notice of a continued temporary increase in container storage. RIS' containerized hazardous waste storage capacity may not be temporarily increased by more than 165,000 gallons (approximately 3,000 drum equivalents) in anticipation of performing an incineration performance test or CPT. The typical duration for the temporary storage increase is 270 days, based upon 180 days prior to the scheduled performance test date, plus another 90 days after the test to process any remaining wastes not used during the test or any pre-tests. The exact duration for the temporary storage increase will be determined based on the performance test date approved by Ohio EPA.

During the temporary storage increase time period, RIS may store hazardous waste on concrete around the CSF, the BSAs (#1, #2), the OSB, the CSA, the WSBs (#1, #2, #3), the WMB, the PDWSA, and the GRSA, and in semi-trailer vans onsite. RIS may store both "normal" wastes for incineration (i.e., "production" wastes) and performance test wastes in areas in which hazardous waste storage is not normally allowed, but for which temporary storage is requested. Such wastes may contain free liquids. However, no single container of free liquids will exceed the capacity of the applicable containment sumps.

During the months leading up to performance test execution, RIS will begin accumulating up to 3,000 drum equivalents of hazardous waste for the performance test and preliminary testing. Because it is not practical for RIS to store this large quantity of additional waste under its current permit, it plans to use other storage areas for such storage. RIS will store only those wastes (i.e., waste codes) for which it is currently permitted in these additional temporary storage areas.

RIS is currently permitted for storage of 1,064,800 gallons of containerized hazardous waste in the CSF, the BSAs (#1, #2), the OSB, the CSA, the WSBs (#1, #2, #3), the WMB, the PDWSA, and the GRSA. The storage bays within each of the WSBs, the CSA, the PDWSA, and the GRSA can be used for vans that are loaded in accordance with the US DOT segregation regulations; and in compliance with OAC 3745-55-77 regarding the segregation of incompatible materials. Containers may be stacked three levels high on pallets in each WSB bay, and two high on pallets in the CSA, the PDWSA, and the GRSA. As indicated above, RIS plans to temporarily store up to 165,000 gallons of hazardous waste (approximately 3000 drum equivalents) to accommodate the needs for the performance test. Under this temporary authorization, the total storage capacity of the

container storage areas would be 1,229,800 gallons. The additional materials would be stored in both the permitted areas of the CSF, the OSB, the BSAs, the WSBs, the CSA, the WMB, the PDWSA, and the GRSA and in van trailers onsite. Because the CSF was originally designed for significantly more storage than permitted, sufficient containment capacity is available to meet all the technical requirements for container storage in the permitted area. The storage of materials in the other storage areas would be accomplished by using temporary floor space areas on concrete with an adequate sump to contain the largest container or 10% of the total amount of liquid hazardous waste stored.

Containers will be stored on pallets, stacked to a maximum two pallets high. Each row of pallets will have an aisle space sufficient to allow inspection on both sides. Containers stored in these areas will be compatible with one another or will be separated by temporary dikes. No water reactive materials will be stored in the temporary floor space areas. RIS will comply with the general requirements for ignitable, reactive, or incompatible wastes in accordance with OAC 3745-54-17(b) and (c), as applicable.

RIS will store both production wastes and performance test wastes in the temporary floor space areas. By allowing production wastes to be stored in the temporary floor space areas, RIS will minimize the need to move containers around as the balance between production waste and performance test wastes change. RIS will not store more than the current design limit in the container storage areas under any circumstances.

Only wastes that do not contain free liquids and with a heating value of less than 5000 BTU/lb. will be stored in semi-trailer vans. If such storage occurs, RIS will inspect the vans daily to assure, among other items, that only wastes meeting the above specifications are in the vans. The location of containers in the vans will be tracked using RIS' existing waste tracking system.

Waste management practices (e.g. daily inspection, container condition maintenance, requirements to keep the container closed except when transferring waste, etc.) for the temporary storage locations will be the same as required by RIS' current permits. At least weekly, RIS will inspect the areas where containers are stored, looking for leaking

containers and for deterioration of containers and the containment system caused by corrosion or other factors as described in OAC 3745-55-73.

RIS requests this capacity increase be effective from time of approval to 90 days beyond execution of the CPT. This time will allow for any remaining waste accumulated but not used during the CPT to be processed. To ensure container integrity during this time, each container in storage for six months or more will, at a minimum, be inspected to document container condition every thirty days in accordance with the inspection plan provided in Section F-2b(1) of RIS' State RCRA Part B Permit Application. These inspections will be documented on the appropriate form provided in Appendix F-2 of RIS' Application and remedial action will be taken as necessary.

D-1 a (2)(b) Transportation of Containers through Facility

Non bulk containers of 220 gallons or less are typically moved off the truck and to the storage location by means of fork lifts. Bulk containers of greater than 220 gallons (such as roll-offs) are typically placed directly in the WSBs or the BSAs designed to accommodate this type of container. Containerized materials ready for incineration are loaded onto a flatbed trailer, box van, or equivalent vehicle and driven to the incinerator set up area. To minimize the potential for release, the containers are placed on pallets or cages prior to placement onto the flat bed. Should there be an extended interruption in the production schedule, (i.e., unplanned shut-down of the incinerator necessitating storage of the shift's projected production) the flat bed trailers are returned to the appropriate container storage area. If a single small container is required to be transported across the facility, it is transported via forklift with a specialized secondary containment box which can hold up to four 55-gallon drums, a tote, or a gaylord. Large containers are moved by trucks or other vehicles designed to transport containers.

D-1 a (2)(c) Special Handling for Containers

RIS operators are trained to ensure that containers are always kept closed except when adding or removing wastes. Special precautions for loading, unloading and storing containers minimizes the potential causes for ruptures or leakage. RIS operators perform daily inspections of the container storage areas, looking for leaking containers and for deterioration of containers and the containment system caused by corrosion or other factors.

For loading and unloading operations, special forklifts with containment boxes are used for transporting palletized drums. Placing the containers on pallets minimizes the contact that the container experiences with the machinery used to move the container thus minimizing the possibility of puncturing or damaging the container. RIS ensures the integrity of containers in accordance with its Container Inspection procedures presented in Subsection F-2b(1) of Section F - Procedures to Prevent Hazards, of this Application. Chemical compounds such as mineral acids, azo compounds, diazo compounds, hydrazine compounds and halogenated organics cause unlined steel to corrode at accelerated rates, therefore, when these types of wastes are received, they will be processed expeditiously.

Containers used for the storage of wastes (including flammable and combustible wastes) meet DOT standards, or are of suitable structural integrity for their intended purpose. RIS accepts flammable liquids in DOT acceptable containers. All waste containers received from generators are assumed to meet applicable DOT requirements since each generator certifies to such compliance when he (she) signs the manifest and US DOT enforces these regulations.

Tow motor trucks, including narrow aisle reach fork trucks which meet National Fire Protection Association ("NFPA") Type EE requirements, are used to move Class I liquids in the CSF. NFPA Class I (A, B, or C) flammable liquids are stored in rigid plastic or composite containers, regardless of volume, as long as such containers meet applicable DOT requirements. Adequate aisle space is maintained to allow for unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency. Detailed descriptions of the container storage areas are included in D-1a(4) through D-1b(1).

RIS takes precautions to minimize the possibility that unstable liquids are received at the facility. RIS requires that the generators of such liquids place an inhibitor in the waste to prevent polymerization, decomposition, etc. Liquids which may undergo condensation reactions, or become self-reactive under conditions of pressure or temperature are received on a seasonal basis to minimize the potential for such reactions from occurring.

D-1 a (2)(c)(i) Segregation Policy

As part of RIS' waste segregation policy, incompatible wastes and materials are not placed

in the same containers, and hazardous waste shall not be placed in an unwashed container that previously held an incompatible waste or material. In addition, if incompatible wastes are stored within the same container storage area, RIS will keep them physically separated from other wastes and materials by means of a dike, berm, wall or other device.

For stacked container storage, RIS has implemented a container tracking system to identify and categorize classes of flammable and combustible liquids. The computerized program utilizes specific fields of the WPS such as the flashpoint, physical state and DOT classification, to categorize Class 1A, B and C flammable liquids. Operators will visually confirm if a container is a restricted Class 1 material prior to placement in storage. Ideally, RIS will store restricted Class 1 in racks rather than stacking them in piles. However, in the event that containers holding Class 1 flammable materials must be stored in piles, RIS will adhere to the NFPA pile size and aisle space restrictions. The NFPA classification will be designated on the CIN label. Operators are trained in all aspects of RIS storage procedures and are knowledgeable in the following requirements regarding waste segregation:

- Corrosive wastes cannot be stored with or adjacent to sulfide/cyanide bearing wastes or high halogens.
- Combustibles containing water cannot be stored with water reactives.
- Combustible and flammable waste can be stored in any open space except with, or adjacent to oxidizers.
- Oxidizers must always remain segregated from other wastes and applicable NFPA isolation distances and pile size limitations must be maintained.
- Water reactive wastes are stored in a segregated area. Additional measures to prevent water from contacting this waste may be needed. Water reactive wastes will only be stored in areas where they are in containers suitable for storing water reactive waste outside (e.g., tankers).

In addition to RIS procedures and US-DOT packaging requirements, RIS assures compatibility of wastes with containers through daily inspections of container storage areas. Regular inspections ensure that the containers are always managed and labeled properly, and that they are in good condition.

D-1a(3) Secondary Containment System Design and Operation

Each container storage area is equipped with secondary containment with the capacity to

hold 10 percent of container volume for liquid waste, or volume of the largest container, whichever is greater. Detailed descriptions of the secondary containment systems for RIS' container storage areas are included with the description of each storage unit, below. The coatings in the containment sumps consist of a double layered epoxy (or equivalent).

D-1a(3)(a) Requirement for the Base or Liner to Contain Liquids

The bases of the secondary containment systems are free of cracks or gaps and constructed of concrete which is sufficiently compatible and impervious to all wastes and capable of containing any leaks, spills and accumulated precipitation until the collected material is detected and removed. All construction joints, as well as contraction and expansion joints are sealed. Containment area joints are constructed with waterstops. Detailed descriptions of the bases of container storage areas are included with the description of each storage unit, below.D-1a(3)(b) Containment System Drainage

Each container storage area for liquid hazardous waste is equipped with a concrete base and is sloped to a containment area or catchment basin. Containment systems are designed and operated to remove liquids resulting from leaks, spills, or precipitation. Detailed descriptions of the containment system drainage for the container storage areas are included with the description of each storage unit, below.

D-1a(3)(c) Containment System Capacity

Each container storage area is equipped with secondary containment with the capacity to hold 10 percent of container volume or volume of the largest container whichever is greater. Detailed descriptions of the containment system capacity for the container storage areas are included with the description of each storage unit, below.

D-1a(3)(d) Control of Run-on

The concrete and/or ground surrounding each container storage area are graded away from the unit to minimize run-on from precipitation. In addition, each unit has sufficient secondary containment to hold 10 percent of container volume, or volume of the largest container plus precipitation from a 100 year, 24-hour rain event (for areas not under roof). Detailed descriptions of the control of run-on for the container storage areas are included with the description of each storage unit, below.

D-1a(3)(e) Removal of Liquids from Containment System

Spilled, leaked, and accumulated wastes and wash waters will be removed from the sumps and containment systems in as timely a manner as is necessary to prevent overflow of the collection system. These wastes will be analyzed, as necessary, for flash point, corrosivity, toxicity characteristics, halogen content and ash content in accordance with the Waste Analysis Plan. Waste removed from the sumps will be managed as a hazardous waste by pumping it out of the sump and into drums or tanks for storage prior to incineration. Each collection basin, bay or sump is inspected daily for liquids that may have accumulated. Pumps and hoses, or a vacuum tanker will be used to remove accumulated liquids.

Occasionally, blowing precipitation is collected in the floor drains and sumps. During these events the water in these sumps is visually inspected to determine the proper management approach. Typically, water collected in these sumps is managed as rainwater, unless there has been a waste spill in the area, or there is visible evidence of waste residue in the rainwater. In the event that precipitation has contacted hazardous waste or waste residues, RIS will conduct laboratory analysis of the collected precipitation. If waste constituents are present, the precipitation will be pumped from the floor drain or sump and managed as a hazardous waste at the incinerator unit. If laboratory analysis determines that no waste constituents are present, the collected precipitation will be transferred to the facility rainwater pond which supplies makeup water to the incinerator air pollution control equipment.

D-1a(4) Detailed Description of Container Storage Facility ("CSF")

This section is being submitted to provide the permit writer with a more detailed understanding of the CSF operations. The location of the CSF is shown on Figure D1-1, entitled "Active Facility Site Plan with Location of Hazardous Waste Management Units" (drawing D-90-019) provided in Exhibit A." Figure D1-2, entitled "General Container Storage Facility - General Arrangement Plan," (drawing D-90-119) in Exhibit A, provides a plan view of the CSF design. Figure D1-3, entitled "Architectural, Container Storage Facility General Arrangement - Elevations" (drawing #D-90-923) in Exhibit A, provides elevation cross sections of the CSF.

The entire CSF is under roof. The roofed area and ramped setbacks (overhang) are

designed to minimize rainfall from entering the storage areas. The covered CSF has a total design storage capacity of 702,350 gallons (equivalent to 12,770 - 55-gallon drums). RIS tracks compliance with this capacity limitation in gallons only and not by number of containers.

The CSF allows for the storage of containerized wastes by utilizing racks. The physical arrangement consists of eleven drum racking bays that are approximately 20 feet wide by 150 feet long. Each racking bay contains two rows of structural storage racks. Drums and other containerized materials stored in these racks are palletized (e.g., four drums to a pallet). Pallets are then stored in individual cells within the structural racks. The rows are designed to be five levels high.

A minimum aisle space of five feet, as shown on Figure D1-2 (drawing D-90-119), is maintained for storage of all racked containers in the CSF. Adequate aisle space will be maintained in all other areas of the CSF to allow for unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency. The drums will be stored in racks no more than five high. See Section D, Exhibit A, Figure D1-3 (drawing D-90-923) for the maximum volume per row.

D-1a(4)(a) CSF - Compatibility Guidelines for Waste Stored in Containers OAC 3745-55-77

Eight of the eleven storage bays (Rows A thru H), which have individual segregated sumps, may contain ignitable wastes or wastes that are incompatible with the contents of other bays. The three remaining storage bays (Rows I thru K), which have a common set of sumps, contain wastes that are compatible with each other. CINs or bar code labels are on all containers in the CSF. The CIN specifies the type of material in each container which determines where each container can be stored in the CSF. The CIN contains a CSF description of the waste (e.g., combustible), which identifies to the operator the specific area of the CSF a material can be stored within. These hazard classes have been created by the Chemists using information provided on the WPS form (See Section C - Waste Analysis Plan, Exhibit B). The racks in the storage bays are equipped with signs designating the type of waste which can be stored in that particular row. The "Segregation of Incompatibles in the CSF" table in this section presents a key indicating waste segregation in the CSF. This key indicates the row by letter and the waste type (hazard

class) which will typically be stored in that row. If RIS receives an overflow of a specific waste type, the capability exists to re-designate areas within the CSF so that the waste can be properly stored within CSF compatibility guidelines. Incompatible wastes are routinely segregated from other wastes as part of the CSF compatibility guidelines described in this section. Proper current signs are in place on both ends of each east-west row of the CSF. As areas of the CSF are redesignated for different waste storage, the signs are modified accordingly. The redesignation of a storage area for different hazard class codes is communicated to the CSF operators by placing appropriate visible signs at the ends of each row where the designated codes for a rack can be easily observed. These procedures help to provide assurance that incompatible wastes are properly segregated.

The CSF is designed in accordance with good fire safety practices and applicable NFPA standards. Minimum segregation distances between incompatible wastes in the CSF are met through routine inspections, pre-designation of storage areas by waste characteristic, and compliance with RCRA storage procedures. Exhibit B contains further information regarding RIS' procedures to minimize fire and explosion hazards. Although RIS was granted specific variances to the Ohio Basic Building Code ("OBBC") (i.e. building height, floor area and fire suppression system), the CSF complies with applicable sections of the OBBC (Title 4101:2 of the Ohio Administrative Code) administered and regulated by the Ohio Department of Industrial Relations, Division of Factory and Building Inspection. With the exceptions of yard trucks, all equipment (lights, wiring, etc.), in the building meets NFPA Class I, Division II, OBBC Use Group H fire and electrical standards.

All non-RCRA related materials (e.g., pallets of unassembled cardboard boxes) in the CSF are kept segregated from other incompatible materials or wastes. RIS maintains only a "working stock" of these materials necessary for daily container storage operations in the CSF. RIS does not commingle incompatible wastes. Waste streams are categorized into one of the following waste types:

1. Combustibles / Flammables
2. Water Reactives
3. Oxidizers
4. Corrosives (high & low pH)

5. Sulfides and Cyanides
6. High Halogens

Each waste category is stored in designated areas. For example, corrosives are stored in a bay isolated from sulfides, cyanides, and high halogens. Water reactives are typically dedicated to a segregated bay. RIS will store other compatible wastes in the bays designated for each waste type. For example, combustibles will be stored in the unused portions of the high halogen bay or the unused portions of the other bays excluding the oxidizer bay. RIS may expand, contract or alter the designated compatible storage bays based on inventory needs and without notice to the Agency. For example, if a large quantity of high halogen wastes is received, RIS may designate additional bays as high halogen storage areas.

The CSF meets the secondary containment requirements as defined in OAC 3745-55-75, that is, free of cracks or gaps with sufficient containment capacity as discussed above in Section D-1a(3); and the base is sloped and is sufficiently impermeable as discussed in Section D-1a(3)(a).Each row in the CSF is equipped with a separate sump so that in the unlikely event of a spill, the wastes are contained and remain segregated.

Example Segregation of Incompatibles in CSF

Row	Example Waste Type
A	Caustic Corrosives
B	Sulfides and Cyanides
C	Sulfides and Cyanides
D	High Halogens
E	Water Reactives
F	Water Reactives
G	Acidic Corrosives
H	Caustic Corrosives
I*	Combustibles/Flammables
J*	Combustibles/Flammables
K*	Combustibles/Flammables

* Combustible/Flammable wastes may be stored with wastes in any other row except with Oxidizers.
** Oxidizers are typically stored in the OSB or on BSA #2. When storing Oxidizers on BSA #2, RIS follows the guidelines specified in Section D-1b(1)(h). Reducers are typically stored in the WSBs.

Please note that RIS may alter or expand the designated areas for incompatibles based on our inventory needs, if deemed necessary. For example, if RIS is storing a waste which exceeds the capacity of its designated row, RIS would find it necessary to use the available storage space in another compatible row.

D-1a(4)(b) CSF - Containment System Design and Operation OAC 3745-50-44(C)(1)(a)(i), 3745-50-44(C)(1)(c) & (d), 3745-55-75(A) & (D)

Exhibit A, Figure D1-2 entitled "General Container Storage Facility - General Arrangement Plan" (drawing D-90-119) and Figure D1-3 entitled "Architectural, Container Storage Facility General Arrangement - Elevations" (drawing D-90-923) provides the design and profile drawings of the existing CSF. Exhibit A, Figures D1-2 and D1-3 include the secondary containment systems of the CSF.

Rows A through H: Each container racking bay is separated by a six-inch curb. The floor of each racking bay is sloped towards a blind sump located at the end of each row. The floor is sloped one inch for every ten feet providing sufficient slope to direct liquids toward the sump in the unlikely event of a spill. The dimensions of the sump for each of the racking bays are 8 feet x 19 feet x 11 feet for a capacity of 12,507 gallons for each bay.

The total capacity of each racking bay is 61,600 gallons. As such, the blind sump at the end of each row has the capacity to contain approximately 20 percent of the waste stored in the racking bay:

Rows I through K: Container storage rows I through K have common containment sumps. The floor in all three of the racking bays is sloped towards the containment sumps. The floor is sloped one inch for every ten feet providing sufficient slope to direct liquids toward the sump in the unlikely event of a spill. The sump is made up of 10 smaller sumps that are 8 feet x 14 feet x 12 feet for a capacity of 10,054 gallons each. The 10 sumps have a combined volume of 100,540 gallons or 48 percent of the storage capacity in rows I through K.

There are two separate sump systems for the western end of the CSF, each with an approximate volume of 800 gallons, which can address spills from the west side of the CSF. Therefore, RIS may store up to 8000 gallons of hazardous waste in the western end of the CSF because the area meets the technical requirements for hazardous waste container storage. Exhibit A, Figure D1-2 entitled "General Container Storage Facility - General Arrangement Plan" (drawing D-90-119) and Figure D1-3 entitled "Architectural, Container Storage Facility General Arrangement - Elevations" (drawing D-90-923) include secondary containment systems of the western end of the CSF.

Additionally, RIS stores containerized waste in other areas of the CSF using other containment systems including but not limited to commercially available systems such as

1. The existing containment boxes, used for transporting palletized drums;
2. Containment pallets;
3. Containment berms; and / or
4. Containment pans.

These containment systems will be designed and operated as follows:

1. The containment system will be free of cracks or gaps and sufficiently impervious to contain leaks, spills until the collected material is detected and removed;
2. The containment system will be designed and operated to remove liquids

resulting from leaks, or spills, unless the containers are elevated to protect them from contact with accumulated liquids.

3. The containment system will have sufficient capacity to contain ten per cent (10%) of the total volume of containers or the volume of the largest container, whichever is greater. Containers that do not contain free liquids need not be considered in this determination.
4. Run-on into the containment system will be prevented by the CSF roof.
5. Spilled or leaked waste will be removed from the collection area in as timely a manner as is necessary to prevent overflow of the collection system.

D-1a(4)(c) CSF - Requirement for the Base or Liner to Contain Liquids: OAC 3745-55-75(B)(1)

The base that is provided to contain any spilled liquid consists of an 8-inch reinforced concrete slab over 10 inches of stabilized aggregate. Exhibit A, Figure D1-4 entitled "Civil Container Storage Facility Floor Slab Joint Plan" (drawing D-90-118) and Figure D1-5 entitled "Civil Container Storage Facility Standard Details"(drawing D-90-117) provide the details on the concrete containment for the CSF. The stabilized aggregate base used was Ohio Department of Transportation ("ODOT") Item 304. The existing clay subgrade was removed and replaced with 18 inches of No. 2 stone. The concrete slab is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. Typically concrete permeability is in the range of 1 x 10^{-9} cm/sec. To minimize shrinkage cracking the concrete design mix is as follows:

Compressive Strength:	4000 psi @ 28 days
Slump:	2-1/2 inches
Reinforcement:	Deformed welded wire fabric
Plasticizer:	Rheobuild 1000

This low slump concrete was specified to reduce the water/cement ratio and thereby reduce the chance of shrinkage cracks. Low slump concrete is difficult to place, so a water reducing plasticizer was used. This plasticizer increased the compressive strength to greater than the design specifications and allowed easier pouring of the concrete while keeping the water content to a minimum.

Deformed welded wire fabric was specified with bars at 16 inch centers. This wide spacing

allows placement of the concrete without the contractor stepping on the reinforcing, which bends the steel and often times displaces it in the slab and results in surface cracks.

The surface of the concrete was further densified through the use of Masterplate 200, a surface hardener by Master Builders. The purpose of this concrete additive is to provide a hard durable finish on the concrete surface. The hard finish is needed because of the forklift traffic that takes place in the facility. A second advantage obtained by the use of Masterplate 200 is that it densifies the top of the concrete and further decreases its permeability. RIS may install floor coatings in certain areas of the CSF to improve traction control, however, such coatings are intended to reduce safety hazards and not to decrease concrete permeability.

The areas on the floor in container storage rows I through K where the curbs from the old tanker storage bays were removed is coated with AS-250 (or its equivalent), a non-skid floor coating that is impervious to most chemicals. The AS-250 coating will be used to cover the areas on the floor where curbs have been removed and there is no Masterplate. The floor is sloped one inch for every ten feet providing sufficient slope to direct liquids toward the sump in the unlikely event of a spill. Historically, because RIS operators are working in the CSF on a 24 hour/day, 7 days/week basis, spills are cleaned up immediately upon detection.
The joints where footing piers penetrate the slab are also sealed in a similar fashion. The concrete floor is sloped 1 inch in 10 feet to provide for positive drainage to the collection system. The floor in all the storage areas of the CSF is curbed to provide containment of any spills.

The slab is subject to vehicular traffic and consequently is designed as rigid concrete pavement. The concrete and subbase thicknesses were determined by the use of standard engineering procedures for pavement design. These procedures and design methods are well established by the American Association of State Highway and Transportation Officials ("AASHTO") and the Portland Cement Association ("PCA") document entitled "Design and Control of Concrete Mixtures, Thirteenth Edition", pages 7-9. Thickness design considers the concrete flexural strength, subbase and subgrade strength, axle load, spacing, and frequency.

The CSF was designed by professional engineers employed by R.E. Warner and Associates. The building meets all OBBC requirements and is specifically designed to serve the storage practices described in this Application.D-1a(3)(d) CSF - Containment System Drainage: OAC 3745-50-44(C)(1)(a)(iii), 3745-55-75(B)(2).

Each storage bay is sloped one inch for each ten feet which is sufficient to direct any spilled or leaked material to the collection sumps located at the end of each storage bay. Each of the sumps is a blind sump that is manually pumped out in the event of a spill or leak. Exhibit A, Figure D1-2 entitled "General Container Storage Facility - General Arrangement Plan" (drawing D-90-119) shows that the entire CSF is under roof. The waste storage areas are sufficiently set back from the edge of the roof to minimize any precipitation which might reach the waste storage area.

D-1a(4)(e) CSF - Containment System Capacity: OAC 3745-50-44(C)(1)(a)(iii), 3745-55-75(B)(3)

The containment system capacity for each of the CSF sumps is discussed in section D-1a(4)(b) of this Application.

D-1a(4)(f) CSF - Control of Run-on: OAC 3745-50-44(C)(1)(a)(iv), 3745-55-75(B)(4)

The area surrounding the CSF is sloped away from the facility, therefore directing precipitation away from the storage areas. The CSF is under roof which minimizes the amount of precipitation that can reach the storage areas. Rainfall which is collected in the downspouts from the roof of the CSF is directed to the rainwater collection pond. The design of the CSF includes a precipitation collection system. The purpose of the system is to collect any precipitation which might be blown under the roof of the CSF by high winds. Figure D1-2 entitled "General Container Storage Facility - General Arrangement Plan" (drawing D-90-119) shows that the outer areas of the CSF are sloped towards the precipitation catch basins.

Figure B-2 entitled "General Site Plan - Underground Storm, Sanitary and Process Lines for Active Portion of Site" located in Section B (Facility Description) of this Application shows how the rainwater collected from the overhang is removed from the CSF. Rainwater which is blown under the roof is directed to a sump where it is accumulated. The collection

sump is connected to a second sump by a line containing a normally closed valve. The valve between the two sumps requires a special key or wrench to open. When precipitation accumulates in the collection sump, the water is visually inspected for signs of contamination such as a sheen on the water. If no evidence of contamination is visible and no records indicate a spill has taken place, the valve between the sumps will be opened and the water will gravity drain into the second sump. The second sump then gravity flows to the rainwater pond. The water from the rainwater pond is used as make up water to the incinerator air pollution control system.

In the unlikely event of a spill in the precipitation collection area, the double sump system will prevent waste from leaving the CSF. In the event of a spill, the precipitation collection system will be decontaminated prior to the release of any additional precipitation collected by the system to the rainwater pond. The material collected in the sump will be pumped out and treated in accordance with RCRA regulations.

D-1a(4)(g) CSF - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)(a)(v), 3745-55-75(B)(5)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(5) Detailed Description of the Oxidizer Storage Building

The Oxidizer Storage Building ("OSB") is a 21' x 80' pre-engineered steel building used to store containers of oxidizer and organic peroxide waste, in addition to the oxidizer waste storage in the CSF. The OSB has a sloped shed roof, and is designed to meet OBBC (H-3 hazardous use group). In addition, the OSB has been designed to conform to NFPA 430: *Code for the Storage of Liquid and Solid Oxidizers,* and NFPA 432: *Code for the Storage of Organic Peroxide Formulations.* The OSB is designed to hold 7,920 gallons (i.e., 144 fifty-five gallon drum equivalents). The location of the OSB is shown on the facility map provided in Exhibit A as Figure D1-1 entitled "Active Facility Site Plan With Location of Hazardous Waste Management Units" (Drawing #D-90-019).

The OSB is installed in an open area west of the CSF, and is located greater than 50 feet

from any other building or the property line. Two man-doors with panic bars and door closers are provided, and three fork truck entry ways face the CSF. Concrete pads are located outside each man-door, and a concrete ramp/apron is located outside of each fork truck entry way.

The OSB is utilized for the storage of oxidizer and organic peroxide wastes in DOT approved containers. Containers holding such wastes are unloaded / loaded at the OSB or transferred to or from the CSF. Should a container spill or leak occur during unloading / loading or transfer, RIS will utilize its existing emergency response procedures to collect, clean up and dispose of the released material. See RIS' Application, Section G – *Contingency Plan* for further information.

RIS stores oxidizer and organic peroxide waste in specified areas or clusters within the OSB as follows:

- No more than 20,000 pounds (approximately 50 drums) of waste will be stored in one contiguous storage cluster;
- Containers will not be double stacked, but they may be racked up to 8 feet high;
- There will be a separation of at least 8 feet between drum clusters;
- There will be a separation of at least 4 feet between a cluster and the OSB wall;
- A cluster will be no wider than 16 feet in the direction perpendicular to an access aisle;
- No material will be farther than 8 feet away from an access aisle;
- All electrical equipment located in the OSB will be rated Class I, Division 2; and
- Smoke alarms, manual alarm pull stations, and an audible alert signal (e.g., horn) are provided for the OSB.
-

D-1a(5) Detailed Description of the Oxidizer Storage Building

D-1a(5)(a) - Compatibility Guidelines for Waste Stored in Containers: OAC 3745-55-77

Oxidizer waste stored in the OSB is limited to NFPA Class 1 or Class 2 oxidizers. Organic peroxide waste stored in the OSB meets NFPA Class 4 and Class 5 definitions for organic peroxides. For compatibility purposes, RIS considers oxidizers and organic peroxides of the lower hazard classes to be compatible.

Other wastes and materials which are incompatible with oxidizers and organic peroxides are not stored in the OSB. In addition, oxidizer and organic peroxide wastes which are incompatible with wood will not be stored on wooden pallets within the OSB. Overall, oxidizer and organic peroxide wastes are physically separated from incompatible materials and stored in accordance with the appropriate handling instructions. In accordance with the *Special requirements for incompatible wastes* under OAC 3745-55-77, RIS follows its existing handling and storage procedures to ensure that:

- incompatible wastes, or incompatible wastes and materials are not placed in the same container; and
- hazardous waste are not placed in an unwashed container that previously held an incompatible wastes or material; and
- a storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers is physically separated from the other materials.

Three sets of container storage racks are provided in the OSB. The racks have a floor level and one beam level (i.e. two pallets high). The beam level has a "top-of-steel" elevation less than 5 feet above grade, and allows sufficient space clear for the pallets on the floor. The rack storage can only be used for 55-gallon drums or smaller containers. Overpacks and tall gaylords, as well as smaller containers, will be stored in the floor space in front of the racks.

In accordance with the *Special requirements for ignitable or reactive waste* under OAC 3745-55-76:

- Precautions are taken to prevent accidental ignition or reaction of ignitable or reactive waste. The waste is separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat.
- No smoking is allowed onsite at RIS. Open flames (e.g., welding) are confined to specially designated locations, or completed in accordance with "Hot Work" standard operating procedures.
- "No Smoking" signs are conspicuously placed outside the OSB.

- RIS handling and storage procedures are employed to ensure that precautions are taken to prevent reactions which:
  (1) Generate extreme heat or pressure, fire or explosions, or violent reactions;
  (2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
  (3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions; Damage the structural integrity of the device or facility;
  (4) Through other like means threaten human health or the environment.

D-1a(5)(b) OSB - Containment System Design and Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

The OSB slab is nominally 8" thick, steel reinforced concrete. A 2" concrete curb runs around the perimeter of the OSB, except for the fork truck entry ways where the concrete is ramped to the 2" elevation to allow for fork truck access. The OSB slab is separated into two containment areas by a 2 inch curb. Each section of the slab is sloped to a covered sump.

The total containment volume of the curbed floor area and sumps, minus the volume displaced by the maximum number of drums on the floor, provides a net containment capacity of approximately 1,626 gallons, which exceeds 10% of the volume of all containers or 100% of the volume of the largest container to be stored in the OSB, as is required under OAC 3745-55-75(B)(3). Figure D1-6 entitled "Oxidizer Storage Building" respectively, provide the details on the concrete containment for the OSB.

D-1a(5)(c) OSB - Requirement for the Base or Liner to Contain Liquids: OAC 3745-55-75(B)(1)

The base of the OSB consists of a 10-inch reinforced concrete slab over 10 inches of stabilized aggregate. The OSB meets the secondary containment requirements as defined in OAC 3745-55-75, that is, free of cracks or gaps with sufficient containment capacity as discussed above in Section D-1a(3); and the base is sloped and is sufficiently impermeable as discussed in Section D-1a(3)(a).

D-1a(5)(d) OSB - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

The OSB slab is separated into two containment areas by a 2 inch curb. Each section of the slab is sloped to a covered sump. The total containment volume of the OSB exceeds

10% of the volume of all containers or 100% of the volume of the largest container to be stored in the OSB, as is required under OAC 3745-55-75(B)(3).

D-1a(5)(e) OSB - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3).

The OSB is divided into 2 separate areas, each consisting of a sloped floor, sump, and a 2 inch curb around the perimeter. For calculation purposes, the volume of the sumps and floor slope have not been included as a conservative measure:

OSB	Area 1		Area 2	
Drums stored	48	drums	96	drums
Drum capacity	55	gallons	55	gallons
Area length	20.33	feet	20.33	feet
Area width	26.17	feet	52.83	feet
Curb height	2	inches	2	inches
Number of drums on floor	32	drums	64	drums
Drum diameter	24	inches	24	inches
Volume of floor area	88.68	cubic feet	179.05	cubic feet
Volume displaced by drums on floor	16.8	cubic feet	33.5	cubic feet
Containment volume	71.9	cubic feet	145.5	cubic feet
Net containment volume	538.0	gallons	1088.6	gallons
Waste storage capacity	2640	gallons	5280	gallons
Containment capacity	20%	of storage capacity	21%	of storage capacity

D-1a(5)(f) OSB – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

The OSB is a roofed and enclosed structure. Truck entry ways are ramped to prevent precipitation run-on from entering the OSB. Run-on from precipitation is not anticipated to be a concern.

D-1a(5)(g) OSB - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(6) Detailed Description of the Waste Storage Bays ("WSB")

Each of the WSBs has been designed to be a modern, well-engineered, hazardous waste storage operation. The WSBs allow for the storage of hazardous waste in roll-offs, vans, flatbeds, tankers and other containers of various sizes (see Table D1-2 for further example

containers). They are located outside, across from the southeast corner of the CSF (i.e., along the south guard rail). WSB #1 and #2 each include ten bays, made up of four bays with individual sumps for incompatible materials, and three sets of double bays with a common containment sump for each pair. WSB #3, located outside, directly north of the tank farms, is a single concrete storage bay constructed to drain to existing tank farm secondary containment.

The concrete storage bays of WSB #1 are 12 feet wide x 55 feet long and WSB #2 are 12 feet wide x 59.75 feet long, both are surrounded by 6-inch x 6-inch curbs on three sides with each bay sloping one inch for every ten feet providing sufficient slope to direct liquids toward the sump in the unlikely event of a spill. WSB #3 is approximately 100 feet wide x 120 feet long surrounded by 6-inch x 6-inch curbs on two sides. Drawing D-90-120, and D 90-121 depict WSB I and II. Drawing No. D-90-138 depicts the irregular dimensions of WSB III. The slope of the WSB #3 floor will be constructed to minimize overflow of liquids into the pipe trenches located immediately to the south and west side of the storage unit. The size of the troughs will be adequate to contain the maximum flow from 10% of the permitted volume of waste plus a 25-year, 24-hour rain event to ensure liquids will not overflow the troughs and spill over into the pipe trenches. The concrete will be constructed so the slope of the concrete on the southern and western borders of WSB #3 will direct liquids towards the troughs leading to the Tank Farms 1 and 2 secondary containment basins in the unlikely event of a spill.

The surrounding grounds of all three WSBs are graded to minimize run-on from precipitation in conjunction with the WSB design features. Standard RIS operating procedures minimize the potential for spills and further ensure the safety of employees.

Each of the WSBs are operated in compliance with RIS' Permit and applicable Federal and State regulations for hazardous waste storage facilities, including, but not limited to, the requirements for containers under OAC 3745-55-70 thru 78. Procedures are in place at RIS that safely direct all receiving, storage and waste management activities onsite. For example, existing procedures direct RIS employees to: track bulk loads, verify shipper discrepancy resolutions, sample van loads of waste materials, direct visual inspections of containerized waste, complete packaging and physical discrepancy notices, rack containers, inspect and safely operate the tow motors, and drain and pump rain water from

the containment sumps. The location of the WSBs are shown in Figure D1-1 of Section D, Exhibit A (drawing D-90-019).

D-1a(6)(a) WSB – Compatibility Guidelines for Waste Stored in Containers: OAC 3745-55-76, 3745-55-77

RIS may store compatible wastes in the WSBs designated for each waste type. For example, combustibles may be stored in the unused portions of the high halogen bay or unused portions of the other bays, excluding the oxidizer bay. If RIS stores a waste which exceeds the capacity of its designated bay, the available storage space in another compatible bay may be used instead. For example, if a large quantity of high halogen waste is received, RIS may designate additional bays as high halogen storage bays. The re-designation of a storage area for different hazard class codes is communicated to the WSB operators by placing appropriate visible signs where the designated codes can be easily observed. The container label specifies where materials can be stored in the WSBs. The label contains a classification description of the waste which indicates to the operator which area of the WSB a material is in or can be stored. Although RIS may alter the arrangement, it will comply with the overall principles and concepts pertaining to segregation of incompatibles. Concerning the bay closest to the fire hydrant along the south guard rail, RIS will either only store non-flammable or non-combustible material in that bay; or if flammable or combustible materials are stored in the bay closest to the fire hydrant, RIS will consider some type of fire barrier such as a fire wall or add another hydrant to the north of the Process Dock.

RIS will inspect all containers of waste in the WSBs daily, including those in van trailers; and either adequate aisle space will be provided for such inspections or vans will meet DOT segregation requirements. A reduced level of container inspection is allowed for containers whose contents are:

-In a solid physical state;	-Not an organic peroxide;	-Not highly volatile;
-Not an oxidizer;	-Not pyrophoric;	-Not highly odorous; or
	-Not highly reactive;	-That meets DOTs segregation requirements and are in compliance with OAC 3745-55-77 regarding the segregation of incompatibles.

The reduced level of inspection includes a daily external inspection of the van trailer to determine if any hazardous waste contents have spilled out, and a daily internal inspection by opening the van doors and inspecting the containers from the rear of the trailer. Containers will never be stored in van trailers for more than six months. Containers stored in van trailers for more than ninety days will be removed and inspected to document container condition at least once every ninety days in accordance with the inspection plan provided in Section F-2b(1) of RIS' State RCRA Part B Permit Application. These inspections will be documented on the appropriate form provided in Appendix F-2 of RIS' Application and remedial action will be taken as necessary. In addition, containers that are double stacked in van trailers will meet US DOT's stacking requirements, except for 5 gallon pails or small stackable containers such as boxes; and no container or containers, whether individual or stacked, can be more than 6 feet high.

D-1a(6)(b) WSB - Containment System Design and Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

D-1a(6)(c) WSB - Requirement for the Base or Liner to Contain Liquids: OAC 3745-55-75(B)(1)

D-1a(6)(d) WSB - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

D-1a(6)(e) WSB - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

Each WSB slab is nominally 10" thick, reinforced concrete. A 6" concrete curb runs around the perimeter of WSB #1 and #2 storage bays, except for the entry ways where the concrete is sloped to the containment sump which is covered by grating to allow truck access. Each WSB #1 and #2 slab is separated into seven containment areas. The slab within each WSB #1 and #2 bay is sloped to a covered sump. The total containment volume of each containment section is designed for 100% of the largest container (i.e., for WSB #1 7,000 or for WSB#2 7,700 gallons), plus a 25 year-24 hour rain event (for WSB #1 equivalent to 3.5 inches or ~1,500 gallons; and for WSB #2 equivalent to 4.1 inches or ~1,829 gallons). The WSB #3 slab is nominally 10" thick, steel reinforced concrete. A 6" concrete curb runs around the north and east sides of the storage bay. The remaining two sides allow for entry and exit. Specifically, the southern side of concrete is sloped to the tank farm containment basins and the western side is sloped to the tank farm pipe trench. The WSB #3 slab is a single area with the total containment volume designed for 10% of

the total waste stored (i.e., 80,000 gallons x 0.10 = 8,000 gallons), plus a 25 year 24-hour rain event (equivalent to 4.1 inches of rain or 13,700 square feet x 0.342'= 4685.4 ft3 x 7.48 gallons/ft3 = approximately 35,046.8 gallons) for total secondary containment volume needed of 43,046.8 gallons.

WSB #1 has four storage bays with individual containment sumps that are 8 feet x 12 feet x 11.8 feet deep with a containment volume of 8,500 gallons each. This collection capacity represents 100% of the largest container (i.e., 7,000 gallons), plus a 25 year-24 hour rain event (~1,500 gallons). WSB #1 has three double storage bays with a common sump for each pair are 4.7 feet x 24.5 feet x 11.8 feet deep with a containment volume of 10,000 gallons each. This collection capacity represents 100% of the largest container (i.e., 7,000 gallons), plus a 25 year-24 hour rain event (~3,000 gallons). As such, the WSB #1 collection sumps meet 10% of the volume of all containers or 100% of the volume of the largest container (whichever is greater) to be stored in the WSB plus run on, as is required under OAC 3745-55-75(B)(3).

WSB I	**Bay Design Capacity**	**Combined Sump Capacity**
4 Individual Containment Sump Storage Bays	48,472 gal./4 bays	34,000 gal
3 Double Storage Bays with Common Containment	72,708 gal./ 6 bays	30,000 gal
Total WSB #1	121,180 gal*	64,000 gal

*(121,180 gal.) ÷ (20 thirty cubic yard roll-off containers) = 6,059 gallons/thirty cubic yard roll-off container

Overall, the WSB #1 sumps have the capacity to contain ~53% of the maximum amount of waste to be stored: (64,000 gal. combined sump capacity) ÷ (121,180 gal. WSB design capacity) = ~53%.

WSB #2 has four storage bays with individual containment sumps that are 8 feet x 12.5 feet x 12 feet deep with a containment volume of 8,976 gallons each. This collection capacity represents 100% of the largest container (i.e., 7,000 gallons), plus a 25 year-24 hour rain event (~1,829 gallons). WSB #2 has three double storage bays with a common sump for each pair are 4.66 feet x 24.5 feet x 12.84 feet deep with a containment volume of 10,742 gallons each. This collection capacity represents 100% of the largest container

(i.e., 7,000 gallons), plus a 25 year-24 hour rain event (~3,734 gallons). As such, the WSB #2 collection sumps meet 10% of the volume of all containers or 100% of the volume of the largest container (whichever is greater) to be stored in the WSB plus run on, as is required under OAC 3745-55-75(B)(3).

WSB II	Bay Design Capacity	Combined Sump Capacity
4 Individual Containment Sump Storage Bays	48,472 gal./4 bays	35,904 gal
3 Double Storage Bays with Common Containment	72,708 gal./ 6 bays	32,226 gal
Total WSB #2	121,180 gal*	68,130 gal

*(121,180 gal.) ÷ (20 thirty cubic yard roll-off containers) = 6,059 gallons/thirty cubic yard roll-off container

Overall, the WSB #2 sumps have the capacity to contain ~56% of the maximum amount of waste to be stored: (68,130 gal. combined sump capacity) ÷ (121,180 gal. WSB design capacity) = ~56%.

WSB #3 has a single storage area that is approximately 100 feet x 120 feet with the total containment volume designed for 10% of the total waste stored (i.e., 80,000 gallons x 0.10 = 8,000 gallons, which is larger than any single container), plus a 25 year 24-hour rain event (~35,046.8 gallons), needing 43,046.8 gallons of containment capacity.

Because WSB #3 secondary containment is tied to Tank Farm I and II's (TFs) containment basins, a discussion of TFs containment needs are required. Each Tank Farm waste volume is 138,880 gallons. The total TFs containment volume is designed for 100% of the largest tank (i.e., 9,920 gallons x 2 =19,840), plus a 25 year 24-hour rain event (equivalent to 4.1 inches of rain or 3861 square feet x 0.34' - rain levels = 1320.46 ft^3 x 7.48 gallons/ft^3 x 2 tank farms= approximately 19,754.11 gallons of combined rainfall in the TFs). The total secondary containment volume needed for both tank farms is 39,594.7 gallons.

WSB III	Design Capacity	Rainfall	Waste Volumes	Total Containment Needed Capacity
WSB #3	80,000 gallons	35,046.8	8,000 gal.	43,046.8
Tank Farms	277,760 gallons (138,880 x 2)	19,754.7	19,840 gal.	39,594.1
			Total Containment	82,640.9

*Vans will store no more than 5000 gallons

The containment needed for the WSB #3 and the TFs equals 82,640.9 gallons. The

containment volume for Tank Farm I and II (TFs) combined is 157,153.8 (85,775.1 + 71,378.7) gallons. Construction activities including installation of the TF troughs will reduce the existing TF containment volume by approximately 43%, to 89,577.66 gallons. As such, there is an excess of 6,936.76 gallons of designed containment capacity. In summary, the combined WSB #3 and TFs collection basins meet 10% of the volume of all containers or 100% of the volume of the largest container (whichever is greater) to be stored in the combined units plus precipitation, as is required under OAC 3745-55-75(B)(3). Changes to the secondary containment calculations for the TFs will be certified by a professional engineer along with a detailed description of the troughs.

The WSB floors are sealed with an industrial grade water sealer only, as the floors are not considered part of the secondary containment system. The base of the WSBs consists of a 10-inch reinforced concrete slab over 10 inches of stabilized aggregate. Figures D1-7 entitled "Waste Storage Bays" and "WSB Details," (drawings D-90-138, D-90-120, D-90-121), provide the details on the concrete containment for the WSBs. The stabilized aggregate base used was ODOT Item 304 and #57 limestone. The existing subgrade will be evaluated and replaced with #57 limestone and #2 stone as needed. The concrete slab is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. To minimize shrinkage cracking the concrete design mix is as follows:

Compressive Strength:	6000 psi @ 28 days
Slump:	2-1/2 inches
Reinforcement (except sumps):	Tuf-Strand; 6LBS/CYD

This low slump concrete was specified to reduce the water/cement ratio and thereby reduce the chance of shrinkage cracks. Low slump concrete is difficult to place, so a water reducing plasticizer has been used. This plasticizer increases the compressive strength to greater than the design specifications and allows easier pouring of the concrete while keeping the water content to a minimum.

D-1a(6)(f) WSB – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

Run-on into all WSBs containment systems is minimized by the slope of the surrounding areas away from the WSB pads. The west and south sides of WSB #1 and #2 pads slope away from the WSBs. The west side of the WSB #3 pad borders the tank farm pipe trench,

and the south side of WSB #3 meets the tank farm containment basin. The WSBs (including the sumps) is inspected on a daily basis. As such, spilled or leaked waste and accumulated precipitation can be removed from the sumps in a timely manner to prevent overflow of the collection system. The sumps have manually operated discharge valves which can be opened (upon visual inspection) to drain uncontaminated storm water to the containment sump on the end of the WSBs, where it can then be pumped to the rain water ditch along the south side of the WSBs. Spills and leaks which enter the sumps are removed and managed as hazardous waste.

D-1a(6)(g) WSB - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(7) Detailed Description of Bulk Storage Area Number One (BSA #1)

BSA #1 has been designed to be a modern, well-engineered, hazardous waste storage operation. BSA #1 allows for the storage of hazardous waste in roll-offs, vans, flatbeds, tankers and other containers of various sizes (see Table D1-2 for further example containers). All employees working in BSA #1 are trained to safely manage containerized hazardous waste. BSA #1 is located outside, adjacent to the northeast corner of the CSF (i.e., north of the existing CSF staging area). BSA #1 has a concrete containment system which is constructed to drain to a coated spill catchment basin in the center of the containment. The surrounding grounds are graded to minimize run-on from precipitation. BSA #1 is open sided and without a roof, for maximum ventilation. Standard RIS operating procedures will minimize spills and further ensure the safety of employees.

The location of BSA #1 is shown on the facility map provided in Exhibit A as Figure D1-1 entitled "Active Facility Site Plan With Location of Hazardous Waste Management Units" (Drawing #D-90-019).

D-1a(7)(a) BSA #1 - Compatibility Guidelines for Waste Stored in Containers OAC 3745-55-77

Incompatible wastes are segregated during storage. Additional compatibility determination procedures can be found Section C-1b of the Waste Analysis Plan, and

Appendix C-2 - Compatibility Guidelines. D-1a(7)(b) BSA #1 - Containment System Design & Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

D-1a(7)(c) BSA #1 - Requirement for the Base/Liner to Contain Liquids: OAC 3745-55-75(B)(1)

D-1a(7)(d) BSA #1 - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

D-1a(7)(e) BSA #1 - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

The BSA #1 concrete containment system is 51 feet wide by 99 feet long (~5,049 square feet), by 10 inches thick. The concrete base for BSA #1 is constructed over stabilized aggregate. The dimensions of BSA #1 allows for the storage of up to 64,632 gallons of hazardous waste.

The total containment volume is designed for 10% of the total volume (6,463 gallons), which is more than the largest container (i.e., 6,000 gallons), plus a 25 year-24 hour rain event (equivalent to 4.17 inches or ~13,125 gallons). The concrete base is sloped 0.25 inches/foot to a pre-cast coated concrete catchment basin (capacity ~957 gallons) that is installed in the center of the containment system. The collection capacity of the concrete containment system is 19,588 gallons (957 gallon basin + 5,539 gallons on sloped concrete + 13,092 gallon coated sump). As such, the BSA #1 containment system collection capacity represents 10% of the total permitted storage (i.e., 6,463 gallons) or 100% of the volume of the largest container (whichever is greater) to be stored, as is required under OAC 3745-55-75(B)(3). Figure D1-8 entitled "BSA #1" provide the details on the concrete containment for the BSA.

BSA #1	Design Capacity	Combined Sump Capacity
51' x 99' Concrete Slab	64,632 gallons	19,588

Overall, BSA #1 has the capacity to contain ~30% of the maximum amount of waste to be stored: (19,588 gal. sump capacity) ÷ (64,632 gal. BSA #1 design capacity) = ~30%. Until secondary containment upgrade is complete, RIS will store containers without free liquids on BSA #1, and RIS will test for the presence of free liquids in the hazardous waste stored on BSA #1 by the Paint Filter Liquids Test (SW-846; Method 9095B), unless the waste is

identified as a "V" pharmaceutical waste (refer to Section C – *Waste Characteristics and Waste Analysis Plan*) or other appreciably* empty container.

The BSA floor is sealed with an industrial grade water sealer only, as the floors are only considered part of precipitation containment system. The base consists of a 10-inch reinforced concrete slab over 10 inches of stabilized aggregate ODOT Item 304 and #57 limestone. The concrete slab is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. To minimize shrinkage cracking the concrete design mix is as follows:

Compressive Strength:	6000 psi @ 28 days
Slump:	2-1/2 inches
Reinforcement (except sumps):	Tuf-Strand; 6LBS/CYD

This low slump concrete was specified to reduce the water/cement ratio and thereby reduce the chance of shrinkage cracks. Low slump concrete is difficult to place, so a water reducing plasticizer has been used. This plasticizer increases the compressive strength to greater than the design specifications and allows easier pouring of the concrete while keeping the water content to a minimum.

D-1a(7)(f) BSA #1 – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

Run-on into the BSA #1 containment system is minimized by sloping the concrete area to the north and east away from the BSA #1 pad. The west and south sides of the BSA #1 pad abut the CSF floor, which is under roof and has its own collection and containment system.

D-1a(7)(g) BSA #1 - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(8) Detailed Description of Container Storage Area ("CSA")

The CSA is designed to be a hazardous waste storage operation All employees working in the CSA are trained to safely manage containerized hazardous waste. The CSA is designed to be meet permitted container storage requirements for liquids and has a design capacity

to store 33,000 gallons of hazardous waste with drums double stacked on the floor in rows with proper aisle spacing. RIS has designed the CSA for containerized (see Table D1-2 for further example containers) hazardous waste. RIS will store hoppers, tankers, or containers of hazardous waste directly on the floor of the CSA. The CSA, located east of the stack, along old Surface Water Impoundment 7 ("SWI-7"), is a 75' x 150' free-standing structural steel building with 22' under eve. It has a steel 3/12 pitch roof on top of concrete pad with a 33,000-gallon design capacity. The CSA is concrete is sloped to a coated under floor pre-cast vault-like 3,300-gallon secondary containment structure. The surrounding grounds are graded to minimize run-on from precipitation. The CSA is close sided with roof ridge and under eve ventilation, two 16' x 16' powered garage doors and four man doors. Standard RIS operating procedures will minimize spills and further ensure the safety of employees.

The CSA concrete is sloped to direct liquids toward the secondary containment in the unlikely event of a spill. The concrete base is constructed over stabilized aggregate.

The concrete will be poured using the same concrete formulation used for RIS' WSBs. Specifically, the concrete permeability will be in the range of 1 x 10-9 cm/sec. To minimize shrinkage cracking the concrete design mix is as follows:

Compressive Strength:	4000 psi @ 28 days
Slump:	2 1/2 inches
Reinforcement:	Deformed welded wire fabric
Plasticizer:	Rheobuild 1000

Schematic drawings of the CSA are included in Section D – *Process Description,* Exhibit A - Drawings D-90-929.

D-1a(8)(a) CSA - Compatibility Guidelines for Waste Stored in Containers OAC 3745-55-77

The CSA is designed to be a hazardous waste storage operation, where RIS performs a variety of waste management activities. RIS may double stack containers in the CSA. Employees working in the CSA are trained to safely manage containerized hazardous waste. Incompatible wastes are segregated during storage. Additional compatibility determination procedures can be found Section C-1b of the Waste Analysis Plan, and Appendix C-2 - Compatibility Guidelines.

D-1a(8)(b) CSA - Containment System Design & Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

D-1a(8)(c) CSA - Requirement for the Base/Liner to Contain Liquids: OAC 3745-55-75(B)(1)

D-1a(8)(d) CSA - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

D-1a(8)(e) CSA - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

The CSA slab is nominally 10" thick, fiber reinforced concrete. The concrete pad will be sloped to the under floor pre-cast vault-like secondary containment. The CSA slab has a total containment volume designed for 10% of the total waste (i.e., 33,000 gallons x 0.10 = 3,300 gallons. The CSA is a free-standing structural steel building. CSA pad has been designed like the WSBs. Figure D1-9 entitled "Container Storage Area" provide the details for the CSA.

D-1a(8)(f) CSA – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

The CSA is under roof, and run-on into the CSA containment system is minimized by the slope of the areas around the unit which direct precipitation away from the CSA. The west, north and south sides of the CSA slope away from the CSA and have walls with side curbs.

D-1a(8)(g) CSA - Removal of Liquids from Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(9) Detailed Description of Waste Management Building ("WMB")

The WMB is designed to be a modern well-engineered, area for waste management. It is designed to be meet permitted container storage requirements for liquids and has a design capacity of 7,500 gallons of hazardous waste with containers on the floor in rows with proper aisle spacing.

The WMB is located approximately, twelve (12) feet west of the Closed Loop containment system near the cooling towers. The WMB is a 36' x 24' steel pole building placed on top

of a recently poured concrete bermed pad. The wall height is 14'. The overall height of the building is approximately 17'.

The WMB concrete is sloped to direct liquids toward the sump in the unlikely event of a spill. The floor of the WMB slopes to the northwest corner of the berm, with the berm measuring at least 8" in depth and 8" in width. The berm inside dimensions are 22.75' x 0.66' x 34.75'. The concrete base is constructed over stabilized aggregate.

The in ground sump, which is located on the west side of the building, measures 18" deep, 6" wide, and approximately 21.5' long (1.5' x 0.50' x 21.5'). The WMB will have two (2) ten (10) foot by ten (10) foot garage doors on its west side and two typical "man doors" one on the south side, and one on the east side of the building. The design capacity of WMB will allow for the storage of up to 7,500 gallons of waste.

The area surrounding the WMB is constructed of concrete and graded to minimize run-on from precipitation in conjunction with the WMB design features. Standard RIS operating procedures minimize the potential for spills and further ensure the safety of employees.

The approximate location of WMB is shown on Drawing D-90-019 found in Section D – Process Description, Exhibit A - Drawings.

WMB allows for the storage of hazardous waste in smaller quantities during waste management projects. RIS anticipates that waste will be stored in received equipment and containers.

D-1a(9)(a) WMB - Compatibility Guidelines for Waste Stored in Containers OAC 3745-55-77

The WMB is designed to be a waste management area, where RIS performs a variety of waste management activities including modification (e.g., adding sorbent, cutting, blending, rinsing, disassembly) of waste streams to make them amenable to incineration.

RIS will not stack containers in the WMB. Incompatible wastes are segregated during storage. Additional compatibility determination procedures can be found Section C-1b of

the Waste Analysis Plan, and Appendix C-2 - Compatibility Guidelines. Employees working in the WMB are trained to safely manage containerized hazardous waste.

D-1a(9)(b) WMB - Containment System Design & Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

D-1a(9)(c) WMB- Requirement for the Base/Liner to Contain Liquids: OAC 3745-55-75(B)(1)

D-1a(9)(d) WMB - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

D-1a(9)(e) WMB- Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

Since the WMB meets secondary containment requirements for liquids, RIS will use it:

- to temporarily store waste prior to specific waste management activities (i.e. cutting, disassembling, repackaging, etc.);
- to disassemble universal waste batteries;
- to modify (e.g., adding sorbent, cutting, blending, rinsing) waste streams to ensure the waste is amenable to incineration; and
- to repackage wastes.

The WMB slab is nominally 10" thick, steel reinforced concrete. At least an 8" concrete curb runs around all sides of the WMB. The WMB pad is sealed with an industrial grade water sealer. The WMB concrete has been designed like the WSBs.

The inground sump, which measures 18" deep, 6" wide, and approximately 21.5' long (1.5' x 0.50' x 21.5' x 7.481 conversion factor = 120.63 gallons) will provide slightly more than 120 gallons of containment. The WMB has three (North, East, and South) walls with side curbs. The west side of the building has garage doors, so that heavy equipment can access the building. While hazardous waste liquids are stored in the building, RIS will place a portable berm at least 6" in height along the western side of the building, meeting the requirements at OAC 3745-55-75.

Given the inside dimensions of the concrete berm, the berm provides (22.75' x 0.50' x 34.75' = 521.77 cubic feet area x 7.481 conversion factor = 2,957.10) slightly more than 2,900 gallons of secondary containment. Together, there is approximately 3,020 gallons

of secondary containment in the WMB. Figure D1-10 entitled "Waste Management Building" provide the details for the WMB (drawing D-03-930 and drawing D-03-931).

D-1a(9)(f) WMB – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

The west, north and south sides of the WMB slope away from the WMB, and the WMB has three (North, East, and South) walls with side curbs. The fourth side of the building has garage doors, so that heavy equipment can access the building. During heavy rains and while hazardous waste liquids are stored in the building, RIS will place a portable berm at least 6" in height along the western side of the building, meeting the requirements at OAC 3745-55-75.

D-1a(9)(g) WMB - Removal of Liquids from Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(10) Detailed Description of Process Dock West Storage Area ("PDWSA")

The PDWSA has been designed to be a modern, well-engineered, hazardous waste storage operation. The PDWSA will be used to store hazardous waste before and after receipt. Waste will be stored in mobile units; containerized waste without free liquids may also be stored on the PDWSA. The PDWSA is located adjacent to the existing western Process Dock waste management area north of the repack building. PDWSA has a concrete containment system which is constructed to drain through the operation of a 3" crane gate valve at the northeast corner after visual inspection. The area surrounding the PDWSA is constructed of concrete and graded to minimize run-on from precipitation in conjunction with the PDWSA design features. PDWSA is open sided and without a roof, for maximum ventilation. Standard RIS operating procedures will minimize spills and further ensure the safety of employees. All employees working in the PDWSA are trained to safely manage containerized hazardous waste.

The location of the PDWSA is shown on the facility map provided in Exhibit A as Figure D1-1 entitled "Active Facility Site Plan With Location of Hazardous Waste Management Units" (Drawing #D-90-019).

D-1a(10)(a) PDWSA - Compatibility Guidelines for Waste Stored in Containers OAC 3745-55-77

D-1a(10)(b) PDWSA - Containment System Design & Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

D-1a(10)(c) PDWSA - Requirement for the Base/Liner to Contain Liquids: OAC 3745-55-75(B)(1)

D-1a(10)(d) PDWSA - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

D-1a(10)(e) PDWSA - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

The PDWSA is a 58' x 58' concrete pad currently incorporated into the Process Dock hazardous waste management area, and is bordered on its northern and eastern sides by a 15" wide wall and the base is sloped to the area's northeast corner. The concrete base is a 10" thick slab. The design capacity of the PDWSA will allow for the storage of up to 42,000 gallons of waste (approximately 763 fifty-five-gallon drum equivalents).

The total containment volume is designed for at least 10% of the total volume (4,200 gallons), plus a 25 year-24 hour rain event (equivalent to 4.17 inches or ~8,745 gallons). Sloping of this corner and existing walls creates a containment volume of 15,456 gallons for liquids. As such, the PDWSA containment system collection capacity represents 10% of the total permitted storage plus a 25 year-24 hour rain event (i.e., 12,945 gallons) or 100% of the volume of the largest container (whichever is greater) to be stored, as is required under OAC 3745-55-75(B)(3). Figure D1-11 entitled "Process Dock West Storage Area" provide the details for the PDWSA.

PDWSA	Design Capacity	Combined Containment Capacity
58' x 58' Concrete Slab	42,000 gallons	15,456 gallons

The base that is provided to contain any spilled liquid consists of a 10-inch reinforced concrete slab over 10 inches of stabilized aggregate. The stabilized aggregate base used was ODOT Item #304 and #57 limestone. To minimize shrinkage/cracking, the concrete design mix is as follows:

Compressive Strength:	6000 psi @ 28 days
Slump:	2-1/2 inches
Reinforcement:	Tuf-Strand; 6LBS/CYD

This low slump concrete was specified to reduce the water/cement ratio and thereby reduce the chance of shrinkage cracks. Low slump concrete is difficult to place, so a water reducing plasticizer has been used. This plasticizer increases the compressive strength to greater than the design specifications and allows easier pouring of the concrete while keeping the water content to a minimum.

D-1a(10)(f) PDWSA – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

Run-on into PDWSA containment system is minimized by current elevations and the slope of the areas to the west and south, which direct precipitation away from the PDWSA. In addition, a concrete wall containing the area is located on the northern and eastern sides of the area.

D-1a(10)(g) PDWSA - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1a(11) Detailed Description of Guard Rail Storage Area ("GRSA")

The GRSA has been designed to be a modern, well-engineered, hazardous waste storage operation. The GRSA will be used to store hazardous waste before and after receipt, in mobile units. Containerized wastes without free liquids may also be stored at the GRSA. The GRSA is located adjacent to the driveway south of the Process Dock and north of the southern facility earthen dike. GRSA has a concrete containment system which is constructed to drain through the operation of a 3" crane gate valve at the southwest corner after visual inspection. Run-on into the GRSA containment is minimized by current elevations and the slope of the areas to the east, west and north, which directs precipitation away from the GRSA. The GRSA is open sided and without a roof, for maximum ventilation. Standard RIS operating procedures will minimize spills and further ensure the safety of employees.

The location of the GRSA is shown on the facility map provided in Exhibit A as Figure D1-1 entitled "Active Facility Site Plan With Location of Hazardous Waste Management Units" (Drawing #D-90-019). All employees working in GRSA are trained to safely manage containerized hazardous waste.

D-1a(11)(a) GRSA – Compatibility Guidelines for Waste Stored in Containers OAC 3745-55-77

D-1a(11)(b) GRSA - Containment System Design & Operation: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

D-1a(11)(c) GRSA - Requirement for the Base/Liner to Contain Liquids: OAC 3745-55-75(B)(1)

D-1a(11)(d) GRSA - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(B)(2)

D-1a(11)(e) GRSA - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(B)(3)

The GRSA is a 268' x 71' concrete pad that will be bordered on its southern and western sides by a 12" wide wall and the base is sloped to the area's southwest corner. The concrete base is a 10" thick slab. The design capacity of the GRSA will allow for the storage of up to 137,500 gallons of waste (approximately 2,500 fifty-five-gallon drum equivalents).

The total containment volume is designed for at least 10% of the total volume (13,750 gallons), plus a 25 year-24 hour rain event (equivalent to 4.17 inches or ~49,463 gallons). Sloping of this corner and existing walls creates a containment volume of 71,170 gallons for liquids. As such, the GRSA containment system collection capacity represents 10% of the total permitted storage plus a 25 year-24 hour rain event (i.e., 63,213 gallons) or 100% of the volume of the largest container (whichever is greater) to be stored, as is required under OAC 3745-55-75(B)(3). Figure D1-12 entitled "Guard Rail Storage Area" provide the details for the GRSA.

GRSA	Design Capacity	Combined Containment Capacity
71' x 268' Concrete Slab	137,500 gallons	71,170 gallons

The base that is provided to contain any spilled liquid consists of a 10-inch reinforced

concrete slab over 10 inches of stabilized aggregate. The stabilized aggregate base used was ODOT Item #304 and #57 limestone. The concrete slab is sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed. To minimize shrinkage cracking the concrete design mix is as follows:

Compressive Strength:	6000 psi @ 28 days
Slump:	2-1/2 inches
Reinforcement:	Tuf-Strand; 6LBS/CYD

This low slump concrete was specified to reduce the water/cement ratio and thereby reduce the chance of shrinkage cracks. Low slump concrete is difficult to place, so a water reducing plasticizer has been used. This plasticizer increases the compressive strength to greater than the design specifications and allows easier pouring of the concrete while keeping the water content to a minimum.

D-1a(11)(f) GRSA – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

Run-on into the GRSA containment system is minimized by current elevations and the slope of the areas to the east, west and north, which direct precipitation away from the GRSA. After construction, the area will be contained by walls located on the southern and western sides of the area.

D-1a(11)(g) GR–A - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)

Information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1b Containers Without Free Liquids

RIS stores containers with and without free liquids in the CSF, the OSB, BSA #1, WSBs, the CSA, the WMB, , the PDWSA, and the GRSA as previously described. RIS only stores containers without free liquids in Bulk Storage Area Number Two (BSA #2).

D-1b(1) Detailed Description of Bulk Storage Area Number Two ("BSA #2")

BSA #2 allows for the storage of hazardous waste without free liquids in roll-offs and other containers. RIS will test for the presence of free liquids in the hazardous waste stored on BSA #2 by the Paint Filter Liquids Test (SW-846; Method 9095B), unless the waste is a is identified as a "V" pharmaceutical waste (refer to Section C – *Waste Characteristics and Waste Analysis Plan*) or other appreciably* empty container. BSA #2 is located outside, adjacent to the northeast corner of the existing concrete area north of the incinerator ("North Pad"). BSA #2 has a concrete containment system which is constructed to drain

to a spill catchment basin in the center of the containment. The surrounding grounds are graded to minimize run-on from precipitation. BSA #2 is open sided and without a roof, for maximum ventilation. Standard RIS operating procedures will minimize spills and further ensure the safety of employees.

The location of BSA #2 is shown on the facility map provided in Exhibit A as Figure D1-1 entitled "Active Facility Site Plan With Location of Hazardous Waste Management Units" (Drawing #D-90-019).

All employees working in BSA #2 are trained to safely manage containerized hazardous waste.

D-1b(1)(a) BSA #2 - Compatibility Guidelines for Waste Stored in Containers.

Except as noted in D-1b(1)(h), RIS does not store oxidizers or water reactive wastes on BSA #2. In addition to RIS procedures and US-DOT packaging requirements, RIS assures compatibility of wastes with containers through daily inspections of BSA #2. Regular inspections ensure that the containers are always managed and labeled properly, and that they are in good condition.

D-1b(1)(b) BSA #2 - Containment System Design and Operation.

The dimensions of BSA #2 will allow for the storage of up to 80,790 gallons (i.e., the equivalent of 20 twenty cubic yard roll offs). Figure D1-13 entitled "Bulk Storage Area #2" provides the detail for BSA #2.

BSA #2 is designed to meet the containment requirements under OAC 3745-55-75(C):

(1) The storage area is sloped or otherwise designed and operated to drain and remove liquid resulting from precipitation. The concrete base is sloped 0.125 inches/foot slope to a pre-cast concrete catchment basin (capacity ~957 gallons) that is installed in the center of the containment system. The total collection capacity of the containment system is 9,407 gallons. Uncontaminated precipitation which accumulates in the containment system will be manually discharged to the rain water pond or the clarifier onsite, after inspection.

(2) The containers are elevated or are otherwise protected from contact with accumulated liquid. The large bulk containers stored in these areas (e.g., roll-offs, etc.) are elevated on wheels. Other containers are stored on pallets in these areas.
(3) F020, F021, F022, F023, F026, and F027 waste streams will not be stored in the BSAs. RIS is not permitted to receive these waste codes.

When BSA #2 is to be utilized for the storage of hazardous waste without free liquids, OAC 3745-55-75 (B) does not apply. However, RIS may store containerized waste with free liquids on BSA #2 with the use of an appropriate containment system including but not limited to commercially available systems such as

1. The existing containment boxes, used for transporting palletized drums;
2. Containment pallets;
3. Containment berms; and / or
4. Containment pans.

These containment systems will be designed and operated as follows:

1. The containment system is free of cracks or gaps and sufficiently impervious to contain leaks, spills and accumulated precipitation until the collected material is detected and removed;
2. The containment system is designed and operated to remove liquids resulting from leaks, or spills, or precipitation unless the containers are elevated to protect them from contact with accumulated liquids.
3. The containment system has sufficient capacity to contain ten per cent (10%) of the total volume of containers or the volume of the largest container, whichever is greater. Containers that do not contain free liquids need not be considered in this determination.
4. Run-on into the containment system is prevented unless the collection system has sufficient excess capacity in addition to that required by OAC 3745-55-75 (B)(3) to contain run-on which might enter the system.
5. Spilled or leaked waste is removed from the collection area in as timely a manner as is necessary to prevent overflow of the collection system.

D-1b(1)(c) BSA #2 – Requirement for Base or Liner to Contain Liquids: OAC 3745-55-75(C)

BSA #2 is to be utilized for the storage of hazardous waste without free liquids. As such, OAC 3745-55-75 (B), including the requirement for a base or liner to contain liquids, does not apply.

D-1b(1)(d) BSA #2 - Containment System Drainage: OAC 3745-50-44(C)(1), 3745-55-75(C)

The concrete base of BSA #2 is sloped (0.125 inches/foot slope) to a pre-cast concrete catchment basin (capacity ~957 gallons) that is installed in the center of the containment system. Uncontaminated precipitation which accumulates in the containment system will be manually discharged after inspection to either the rain water pond or the clarifier, for use as make-up water in the on-site Closed Loop Scrubber System.

D-1b(1)(e) BSA #2 - Containment System Capacity: OAC 3745-50-44(C)(1), 3745-55-75(C)

The containment system collection capacities for BSA #2 are discussed in section D-1b(1)(d) of this Application.

D-1b(1)(f) BSA #2 – Control of Run-on: OAC 3745-50-44(C)(1), 3745-55-75(B)(4)

Run-on into the BSA #2 containment system will be minimized by sloping the areas to the north and west away from the BSA #2 pad. In addition, the existing east wall of the North Pad extends to the east side of BSA #2 to further prevent stormwater run-on. The south side of the BSA #2 pad abuts the existing North Pad, which has its own collection and containment system.

D-1b(1)(g) BSA #2 - Removal of Liquids From Containment System: OAC 3745-50-44(C)(1)

Spilled or leaked waste and precipitation can accumulate in BSA #2's catchment basin. The catchment basin has a manually operated discharge valve that can be opened (upon visual inspection) to discharge uncontaminated stormwater to the rain water pond or clarifier onsite, after which it will be re-used as makeup water in the closed loop scrubber

system for RIS' incineration process. Spills and leaks which enter the catchment basins will be removed and managed as hazardous waste. Additional information pertaining to management of liquids from containment is found in D-1a(3) – Secondary Containment System Description and Operation.

D-1b(1)(h) BSA #2 - Additional Requirements for the Storage of Hazardous Waste Oxidizers

- RIS will be storing oxidizer waste without free liquids in specified areas or clusters within BSA #2 as follows:No more than 40,000 lbs of waste will be stored in one contiguous storage cluster;
- Containers may be stacked up to 8 feet high;
- There will be a separation of at least 4 feet between drum clusters or a separation equal to the cluster height, whichever is greater;
- There will be a separation of at least 12 feet between a cluster and the BSA #2 west perimeter;
- A cluster will be no wider than 16 feet in the direction perpendicular to an access aisle;
- No material will be farther than 8 feet away from an access aisle; and
- Combustible or incompatible materials will be at least 12 feet away from the oxidizers.

In accordance with the *Special requirements for ignitable or reactive waste* under OAC 3745-55-76:

- Precautions will be taken to prevent accidental ignition or reaction of ignitable or reactive waste;
- The waste will be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical) spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat;
- No smoking is allowed onsite at RIS. Open flames (e.g., welding) are confined to specially designated locations, or completed in accordance with "Hot Work" standard operating procedures.

- RIS will also employ its existing handling and storage procedures to insure that precautions are taken to prevent reactions which:
  (1) Generate extreme heat or pressure, fire or explosions, or violent reactions;
  (2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment;
  (3) Produce uncontrolled flammable fumes or gases in sufficient quantities to threaten human health or the environment;
  (4) Damage the structural integrity of the device of facility;
  (5) Through other like means threaten human health or the environment.

Oxidizer waste stored in BSA #2 will be limited to the NFPA Class 1 and Class 2 oxidizers without free liquids.

Other wastes and materials which are incompatible with oxidizers will be kept physically separated in BSA #2. Overall, oxidizer wastes will be physically separated from incompatible materials and stored in accordance with RIS handling instructions.

D-2 Tank Systems OAC 3745-50-44(C)(2)

Bulk Liquids Receiving Procedures

After verification that the shipping information is complete, bulk liquids are transported to the appropriate dock and/or unloading area (e.g., Process Dock) where visual inspection is conducted and a sample of the material is taken as required and in accordance with Section C - Waste Analysis Plan. If the shipping information review and fingerprint analysis confirm the acceptability of the shipment, depending on the type of waste material, the waste is either stored in the WSBs, vacuumed or pumped into the transfer tanks (Refer to Section D-2a(2)), transferred to a yard tanker, transferred for shipment offsite or direct fed to the incinerator. If the fingerprint analysis does not confirm the acceptability of the shipment, the material remains at the unloading area (e.g., in the CSF, BSA #1, WSBs, or Process Dock) and the generator is contacted to resolve the apparent discrepancy. If the discrepancy cannot be resolved, the waste is returned to the generator.

If the waste is to be transferred to a yard tanker, it is typically transferred after sampling and inspection. Certain waste streams which are routinely received and whose characteristics are consistent from shipment to shipment may be first transferred directly into a yard tanker upon receipt, and then inspected and sampled prior to processing. When

RIS intends to store waste that is different than wastes previously stored in the yard tanker, RIS will conduct compatibility testing as appropriate per the compatibility procedures outlined in Section C-1b - Waste in Tanks and Appendix C-2 - Compatibility Guidelines. Yard tankers are thoroughly rinsed prior to reuse, except on rare occasions when a yard tanker has been dedicated to receiving a specific, recurrent waste stream whose characteristics remain consistent from one shipment to the next. Wastewater rinsings are quantified and incinerated. Remaining tank heels are removed with waste solvent if necessary, and incinerated.

If the waste is to be shipped offsite after blending, it is typically transferred only after confirmatory samples have been completed per *Section C – Waste Characteristics and Waste Analysis Plan*. Once waste has been blended in RIS' treatment tanks and confirmatory samples are complete, RIS will ship the waste offsite with appropriate documentation (*See Section C – Waste Characteristics and Waste Analysis Plan*). Confirmatory samples may require RIS to re-blend waste for a variety of reasons. Should the blended waste not conform to expectation (e.g., customer data does not match RIS analytical, customer rejects blended load, etc.), RIS will re-blend in its treatment tanks. Another sample representative of the new blend will accompany the re-blended waste. RIS will maintain relevant information in its Operating Record.

Bulk liquid waste is classified into two categories, "transferable" and "non-transferable" based upon the material's physical and chemical characteristics per the WPS. The RIS WPS handling instructions for each bulk waste shipment identifies whether the waste is transferable. All waste which is classified as "transferable", is transferred using appropriate precautionary measures based upon material handling instructions (e.g., electrical grounding of the tanker) to minimize the potential for fire and explosion hazards. Wastes which are identified as "non-transferable", are directly fed to the incinerator and not transferred to yard tankers or bulk storage tanks.

Tankers which are to be stored on site are managed in the same manner as other containers in storage. If the waste in a tanker has not been released for processing or has not yet been

set up to be processed, the tanker will be stored in one of RIS' permitted storage areas (e.g., BSA#1, or the WSBs) in accordance with applicable RCRA container storage requirements.

Bulk Solids Receiving Procedures

After verification that the shipping information is complete, bulk solid material is transported to the appropriate dock and/or unloading area (e.g., Process Dock, BSAs) by an appropriate vehicle. Upon arrival at the appropriate dock and/or unloading area, visual inspection is conducted and a sample of the material is collected and analyzed as required and in accordance with Section C - Waste Analysis Plan. If the fingerprint analysis confirms acceptability of the shipment, depending on the type of waste material, it is either transported to a repackaging area, typically on the east side of the incinerator, or a container storage area (e.g., WSBs, BSA #1), until processed. If the material is found to be discrepant, the material is transported to an appropriate location (e.g. the WSBs, Process Dock) until resolution. If the discrepancy cannot be resolved, the material is returned to the generator.

D-2a Tank System Description OAC 3745-50-44(C)(2)

D-2a(1) Dimensions and Capacity of Each Tank OAC 3745-50-44(C)(2)(b)

A total of 49 hazardous waste tanks are included in this Permit. There are 45 storage tanks and four tanks that are both storage and treatment tanks. All tanks are aboveground tank systems. Table D2-1, entitled "Summary Description of 49 Hazardous Waste Tanks in this Permit Application" provides a summary description of all the tanks. Tables D2-2 through D2-8, entitled "Physical Characteristics of Tanks and Secondary Containment" provide the physical characteristics of each of the tanks. Exhibit A, Figure D1-1, entitled "Active Facility Site Plan with Location of Hazardous Waste Management Units" (drawing D-90-019) indicates the location of all the tanks.

Table D2-1

Summary Description of 49 Hazardous Waste Tanks In This Permit Application

Tank System Description: Type of Waste

Tank	Type of Service	Type of Waste
Tank Farms I – Tanks 23A, 24A, 25 – 36	Hazardous Waste Storage Tank	High BTU halogenated, flammable, and/or ignitable wastes
Tank Farm II – Tanks 37 A, 38 A, 39 - 50	Hazardous Waste Storage Tank	High or low BTU halogenated, flammable and/or ignitable wastes
Tank Farm III – Tanks 51A, 52 A, 53 – 57, 58A - 64A	Hazardous Waste Storage Tank	Low BTU halogenated, flammable, and/or ignitable wastes
Tank 70	Hazardous Waste Storage and Treatment Tank	High and/or low BTU halogenated, flammable and/or ignitable wastes
Tanks 67 and 68	Hazardous Waste Storage Tank	Fly ash sludge and scrubber water prior to filter pressing
Tanks 73 and 74	Hazardous Waste Storage and Treatment Tank – Vacuum Tanks	High and/or low BTU wastes, halogenated flammable and/or ignitable wastes
Tank 75	Hazardous Waste Storage Tank	Fly ash sludge, scrubber water, and/or sludge
Tank 79	Hazardous Waste Storage and Treatment Tank	Fly ash sludge, scrubber water, and/or sludge – generated on-site for on-site treatment only (discussed in detail as part of the Closed Loop Scrubber Water System in Section D-5 of this Permit Application)

Table D2-2

Physical Characteristics of Tanks and Secondary Containment for Tanks 23A and 24A

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.375 inch
Minimum design shell thickness	0.250 inch
Fabricated top thickness	0.375 inch
Minimum design top thickness	0.250 inch
Fabricated bottom thickness	0.375 inch
Minimum design bottom thickness	0.250 inch
Type of tank bottom	Conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	1 psig
Pressure Relief Valve Setting	Tanks are equipped with rupture disks that burst at (+/-) 2 psig. .
Operating pressure	1 psig MAWP
Maximum liquid level	22 ft
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes**
Month/Year of construction	May, 2021
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	85,775 x 0.57 = 48,892 gallons***
Coating	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

** Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

***The containment for Tank Farms I and II will be affected by the construction of WSB#3. During construction of WSB#3 a wall boring will reduce the containment capacity by 43%, effectively reducing the containment volume to 57% of its original design capacity.

Table D2-2a

Physical Characteristics of Tanks and Secondary Containment for Tanks 25 through 36

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	not applicable
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.25 inch
Minimum design shell thickness	0.119 inch (upper portion of shell)
	0.19 (shell bottom portion at leg attachment)
Fabricated top thickness	0.3125 inch
Minimum design top thickness	0.25 inch (tanks with agitators)*
	0.123 inch (tanks without agitators)
Fabricated bottom thickness	0.3125 inch
Minimum design bottom thickness	0.137 inch
Type of tank bottom	Conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	< 0.5 psig, emergency relief per UL 142 at < 2.5 psig
Pressure Relief Setting	Tanks are equipped with rupture disks that burst at (+/-) 2 psig.
Operating pressure	Less than 0.5 psig
Maximum liquid level	21 ft
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes**
Month/Year of construction	June, 1982
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	85,775 x 0.57 = 48,892 gallons***
Coating	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

* The agitator moment force for the tanks with agitators will not exceed 1,600 ft.-lbs., unless an engineered reinforcement pad is provided at the agitator nozzle in the top cone (then a moment force limit of 2,800 ft.-lbs. is acceptable). Unless RIS installs reinforcements, prior to use of the agitators, RIS will use electrical current entering the motor, measured in hertz, along with the manufacturers design data to determine the agitator maximum moment force to comply with the Ft-lb requirements listed above.
** Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.
***The containment for Tank Farms I and II will be affected by the construction of WSB#3. During construction of WSB#3 a wall boring will reduce the containment capacity by 43%, effectively reducing the containment volume to 57% of its original design capacity.

Table D2-3

Physical Characteristics of Tanks and Secondary Containment for Tanks 37A, and 38A

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.375 inch
Minimum design shell thickness	0.25 inch
Fabricated top thickness	0.375 inch
Minimum design top thickness	0.25 inch
Fabricated bottom thickness	0.375 inch
Minimum design bottom thickness	0.25 inch
Type of tank bottom	Conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	1 psig
Pressure Relief Setting	Tanks are equipped with rupture disks that burst at (+/-) 2 psig.
Operating pressure	1 psig MAWP
Maximum liquid level	22 feet
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	May, 2021
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	71,379 x 0.57 = 40,686 gallons**
Coating	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

**The containment for Tank Farms I and II will be affected by the construction of WSB#3. During construction of WSB#3 a wall boring will reduce the containment capacity by 43%, effectively reducing the containment volume to 57% of its original design capacity.

Table D2-3a

Physical Characteristics of Tanks and Secondary Containment for Tanks 39 through 50

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.375 inch
Minimum design shell thickness	0.25 inch
Fabricated top thickness	0.375 inch
Minimum design top thickness	0.25 inch
Fabricated bottom thickness	0.375 inch
Minimum design bottom thickness	0.25 inch
Type of tank bottom	Conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	atmospheric
Pressure Relief Setting	Tanks are equipped with rupture disks that burst at (+/-) 2 psig.
Operating pressure	Less than 0.5 psig
Maximum liquid level	21 feet
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	December, 1987
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	71,379 x 0.57 = 40,686 gallons**
Coating	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

**The containment for Tank Farms I and II will be affected by the construction of WSB#3. During construction of WSB#3 a wall boring will reduce the containment capacity by 43%, effectively reducing the containment volume to 57% of its original design capacity.

Table D2-4

Physical Characteristics of Tanks and Secondary Containment for Tanks 51A, 52A, 58A – 64A

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.375 inch
Minimum design shell thickness	0.25 inch
Fabricated top thickness	0.375 inch
Minimum design top thickness	0.25 inch
Fabricated bottom thickness	0.375 inch
Minimum design bottom thickness	0.25 inch
Type of tank bottom	Conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	1 psig
Pressure Relief Valve Setting	Tanks are equipped with rupture disks that busrt at (+/-) 2 psig.
Operating pressure	1 psig MAWP
Maximum liquid level	22 feet
Operating temperature	Tanks 51– 64 are insulated and have glycol heat tracing to prevent their contents from freezing during cold weather conditions.
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	51A, 52A - June, 2021; 58A-64A – May 2023
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	73,650 gallons
Coating	Dual layered epoxy coating system (Dudick 100 XT, or equivalent)

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

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Table D2-4a

Physical Characteristics of Tanks and Secondary Containment for Tanks 53 through 57

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.375 inch
Minimum design shell thickness	0.25 inch
Fabricated top thickness	0.375 inch
Minimum design top thickness	0.25 inch
Fabricated bottom thickness	0.375 inch
Minimum design bottom thickness	0.25 inch
Type of tank bottom	60^{o} conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	< 0.5 psig, emergency relief per UL 142 at < 2.5 psig
Pressure Relief Valve Setting	Tanks are equipped with rupture disks that burst at (+/-) 2 psig.
Operating pressure	Less than 0.5 psig
Maximum liquid level	21 feet
Operating temperature	Tanks 51– 64 are insulated and have glycol heat tracing to prevent their contents from freezing during cold weather conditions.
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	December, 1987
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	73,650 gallons
Coating	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

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Table D2-5

Physical Characteristics of Tanks and Secondary Containment for Tanks 67 and 68

Tank Design Data:	
Design basis	Portions of: ASME Pressure Vessel Code, Section VIII, Division 1; UL-142; Pressure Vessel Design Handbook (Van Nostrand Reinhold); Manual of Steel Construction (AISC).
Construction material	304 Stainless Steel
Lining material	None
Corrosion allowance	0.0625 inches
Design life	25 years
Capacity (nominal)	3,627 gallons/tank
Fabricated shell thickness	0.25 inch
Minimum shell thickness	0.1875 inch
Fabricated top thickness	0.25 inch
Minimum top thickness	0.1875 inch
Fabricated bottom thickness	0.25 inch
Minimum bottom thickness	0.1875 inch
Type of tank bottom	Dish
Diameter (nominal)	6 ft 4 inches
Height (nominal)	17 ft 0.4 inches (19 ft 8 inches from grade)
Design Pressure	Atmospheric
Operating pressure	Atmospheric
Maximum liquid level	16 ft. 0.4 inches
Operating temperature	Ambient
Month/Year of construction	January, 2009
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	22,493 gallons
Coating	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

Table D2-6
Physical Characteristics of Tank and Secondary Containment for Tank 70

Tank Design Data:	
Design standard	Designed to UL 142 where applicable.
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	10,000 gallons
Fabricated shell thickness	0.375 inch
Minimum shell thickness	0.250 inch
Fabricated top thickness	0.375 inch
Minimum top thickness	0.250 inch
Fabricated bottom thickness	0.375 inch
Minimum bottom thickness	0.250 inch
Type of tank bottom	60° Conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Design Pressure	< 0.5 psig, emergency relief per UL 142 at < 2.5 psig
Rupture Disc Setting	5 psig
Operating pressure	0-0.5 psig
Maximum liquid level	21.5 feet
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	December, 1987
Level indicator present	No
Secondary Containment System Data:	
Capacity	18,094 gallons
Coating	Dual layered epoxy coating system (Dudick 100 XT, or equivalent)

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

Table D2-7
Physical Characteristics of Tanks and Secondary Containment for Tanks 73 and 74

Tank Design Data:	
Design standard	ASME Section 8, Division 1*
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	7,500 gallons
Fabricated shell thickness	0.625 inch
Minimum shell thickness	0.5 inch
Fabricated top thickness	0.625 inch
Minimum top thickness	0.375 inch
Fabricated bottom thickness	0.625 inch
Minimum bottom thickness	0.375 inch
Type of tank bottom	Dish
Diameter (nominal)	10 feet
Height (nominal)	10.5 feet
Rupture disc setting	2 psig
Design Pressure	+15 psig / -15 psig
Operating pressure	0-29 inch Hg Vacuum
Maximum liquid level	10 feet
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	December, 1987
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	18,094 gallons
Coating	Dual layered epoxy coating system (Dudick 100 XT, or equivalent)

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

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Table D2-8

Physical Characteristics of Tank and Secondary Containment for Tank 75

Tank Design Data:	
Design standard	API 650
Construction material	Steel
Lining material	Vinyl Ester Glass Flake filled 80 mills minimum thickness or equivalent
Corrosion allowance	0.0 inch roof 0.1875 inch shell and bottom
Design life	20 years
Capacity (nominal)	617,000 gallons
Fabricated shell thickness (upper)	0.25 inch
Minimum shell thickness (upper)	0.0625 inch
Fabricated shell thickness (lower)	0.4375 inch
Minimum shell thickness (lower)	0.25 inch
Fabricated top thickness	0.25 inch
Minimum top thickness	0.25 inch
Fabricated bottom thickness	0.4375 inch
Minimum bottom thickness	0.25 inch
Type of tank bottom	Flat
Diameter (nominal)	50 feet
Height (nominal)	42 feet
Influent pump capacity	0-150 gpm
Effluent pump capacity	0-150 gpm
Design Pressure	Atmospheric
Operating pressure	Atmospheric
Maximum liquid level	42 feet
Operating temperature	Ambient
Month/Year of construction	September, 1988
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	671,984 gallons
Coating	Dual layered epoxy coating system (Dudick 100 XT, or equivalent)

D-2a(2) Description of Feed Systems, Safety Cut-Off, Bypass Systems and Pressure Controls

OAC 3745-50-44(C)(2)

Following are descriptions for the feed systems, safety cut-offs, bypass systems and pressure controls for each of the tank systems.

D-2a(2)(a) Tank Feed Systems

Tanks 70, 73 and 74 are part of RIS' Process Dock operations where liquid wastes are processed. Tanks 73 and 74 have agitators and may be operated as atmospheric tanks or vacuum tanks and are used to transfer liquids from containers and tanker trucks ("tankers"). Prior to entering the vacuum tanks, liquids flow through a basket strainer designed to remove large particulate matter and/or debris. A horizontal centrifugal (or equivalent) transfer pump ("transfer pump") and/or a thick liquids pump may be used to transfer thick liquids from the containers or tankers to Tanks 73 and 74. Waste can then be moved from Tanks 73 and 74 to: the tank farms, or an awaiting tanker, where it is fed to the incinerator for destruction, or to an external tank truck, where it would be transferred off-site for further treatment. The liquids collected in the vacuum tanks are then transferred via transfer pumps through a second basket strainer and then to the storage tanks (tanks 23 to 64) or to an awaiting tanker truck. When vacuuming, the vapors from Tanks 73 and 74 are vented directly to and captured by a vapor recovery system. A liquids pump may be used to transfer liquids from containers or tankers to Tank 70. Waste can be moved from Tank 70 to: the tank farms, or an awaiting tanker, where it is fed to the incinerator for destruction, or to an external tanker, where it would be transferred off-site for further treatment. RIS may also transfer waste from any tank farm storage tank back to the Process Dock where waste will be blended in Tanks 73 or 74 to achieve homogeneity of the incinerator feed or be transferred off-site for further treatment. RIS may choose to pressurize tankers containing viscous liquids with nitrogen to facilitate the transfer process. When a pressurized tanker becomes empty, the nitrogen in the tanker will vent from the tanker into Tank 73 or 74.

All electrical components within the vacuum and pumping systems are explosion proof. In addition, RIS employs fire safety procedures (including "hot work" permits, bonding, grounding, no smoking, etc.) for activities associated with the tanks. Tank and transfer vapors are vented to and captured by an on-site vapor recovery system. RIS has included

in Section D-2a (3) Figure D2-1, entitled "Tanks 70, 73 and 74 Piping & Instrumentation Diagram" (drawing B-01-001) to illustrate the above process description.

Tanks 23 through 64 are utilized for the storage of liquid wastes at RIS. Liquid wastes are typically vacuumed or pumped from tanker trucks or containers at the Process Dock as described above. RIS may also pump liquids directly from a tanker truck into the storage tanks (23 thru 64) from unloading stations located between the tank secondary containment walls. This unloading area is constructed of concrete, and potential spills would go into the tank farm pipe trench which has a containment capacity of 18,280 gallons. Liquids are pumped to the available tanks via the Process Dock transfer pumps. Tanks 23A, 24A, 25, 37A, 50A, 51A, 52, 53, 54, 62A and 64A are currently equipped with agitators which assist in blending and attaining homogeneity of the incinerator feed. Once in the tanks, liquids may be transferred back and forth between tanks to blend the liquids into appropriate mixtures for incineration or for shipment offsite. When determining bulk waste placement in the tank farm, RIS considers the availability of tank storage, and the compatibility of the material being added to a tank with wastes currently or previously stored in a tank. . If the characteristics of the waste material are within the limits and ranges specified in the Waste Analysis Plan, Section C-1b entitled "Waste in Tank Systems", then the waste material will be transferred to the tank farm storage tanks. In addition, compatibility tests (specified in Section C "Waste Analysis Plan" Exhibit J and Appendix C-3, FP-009 entitled "Waste Compatibility Test") are performed on all dock vacuum / pump system drum loads. The Process Dock employee refers to the handling instructions for specific handling information, then decides which dock tank will be used for processing the material. Once the dock tank is chosen, a sample from the dock tank is extracted. The sample is collected in a five gallon pail by bleeding off the vacuum pressure of the dock tank. The sample is then mixed with representative samples from the drums. Then the sample will typically settle for approximately fifteen to thirty minutes. If there is no reaction of the sample, the material is processed. (Section C - Exhibit J - RIS Compatibility Test and Appendix C-3, FP-009.) If there is a reaction of the sample material, the material is kept for further evaluation/observation and an alternate process method is used.

Although the contents of all storage tanks can be fed directly to the incinerator, RIS typically transfers liquid waste stored in the tank farms to designated feeding tanks that feed directly to the incinerator. These tanks are typically tanks 23A, 24A, 37A, 38A, 51A and 52A. Each tank farm is equipped with a horizontal centrifugal transfer pump and tank

farms I and II. These pumps are typically used to transfer liquid waste from one storage tank to another storage tank within the tank farms or from the tank farms to the incinerator for processing. Transfer pumps may also be used to transfer liquid waste from any tank in the tank farm to the feeding tanks. In addition, each tank farm is equipped with a basket strainer used to filter heavy particulate matter and/or debris from the liquid waste being transferred. RIS utilizes tanker unloading stations to transfer waste material from a tanker truck to a storage tank. High BTU waste stored in tanks 23A, 24A, 25-36 (Tank Farm I), low or high BTU waste stored in tanks 37A, 38A, 39-50 (Tank Farm II), and/or low BTU waste from tanks 51A, 52A, 53-57, 58A-64A (Tank Farm III) is transferred via gravity flow, transfer pump to the metering building where it is fed to the incinerator. RIS will not simultaneously place incompatible wastes in these tanks. The tanks will be emptied and thoroughly rinsed and visually inspected before wastes that are incompatible with the historical contents of the tanks are placed into them. Wastewater and other wastes generated during tank rinsing will be placed in an appropriate storage tank and incinerated. Ancillary piping associated with the tanks is also cleared by vacuuming or flushing with an appropriate solvent. Section D-2a(3) provides the Piping and Instrumentation Diagrams ("P&ID") and Process Flow Diagrams ("PFD") for the tank systems. RIS has included in Section D-2a(3) Figure D2-2, entitled "Tanks 23-64 P&ID" (drawing D-02-001) and Figure D2-3, entitled "Tanks 23-64 PFD" (drawing D-90-049) to illustrate the above described process flow and instrumentation.

The vapors purged from the Tank Farm and Process Dock tanks are processed in the vapor recovery system prior to being released to the atmosphere. The vapor recovery system consists of a carbon adsorption unit. The carbon adsorption unit achieves 95% removal efficiency for organics in the gas stream.

Tanks 67, 68 and 75 are used for processing residuals (scrubber water and fly ash sludge from the air pollution control equipment). Tanks 67 and 68 are the feed tanks for the filter press. Typically, sludge (ranging from thick to very dilute) is transferred from the closed loop scrubber water system or the maintenance storage tank to tanks 67 and 68. Residual liquids from the filter press unit will be recycled back to the clarifier, maintenance storage tank, or offsite disposal. RIS ships scrubber water blowdown off-site as needed to minimize the concentration of salts and other contaminants in the closed loop scrubber

water system. RIS has included Figure D2-4, entitled "Tanks 67 and 68 P&ID" (drawing-62-001) to illustrate this process flow and instrumentation.

Tank 75 (Maintenance Storage Tank) is a storage tank that is typically used whenever the clarifier is out of service for repairs and maintenance, or to store scrubber water prior to shipment off-site. Tank 75 stores scrubber water from the Closed Loop Scrubber Water System or fresh water from any on-site fresh water supply. Material from tank 75 is transferred via the maintenance storage tank blowdown pump to a tanker loading station for off-site disposal, or the surge tank, or the filter press feed tanks for further processing.

D-2a(2)(b) Safety Cutoffs, Bypass Systems and Pressure Controls for Each of the Tank Systems

Tanks 73 and 74 are equipped with high level alarms, rupture disks, and their common header had a conservation valve. When a high liquid level alarm is triggered in the tank farm, the transfer pumps are shut off to prevent further introduction of liquids into the tank. Tank 70 is equipped with a level transmitter mounted on the manhole at the top of tank 70. A local readout for the tank was mounted inside the process dock. Tank 70 is equipped with a rupture disc which ruptures and must be replaced if the pressure in the tank exceeds the disc's design pressure. Figure D2-1 entitled "Tanks 70, 73 and 74 Piping & Instrumentation Diagram" (drawing B-01-001) illustrates the monitoring systems described above.

Tanks 23A-64A are equipped with liquid level indicators for monitoring the level of liquid in each tank. Each tank is equipped with alarms to indicate when tanks are filled. When a high liquids level alarm is triggered, all transfer pumps are shut off. Each tank farm is equipped with a nitrogen blanketing system which minimizes the oxygen level in the tanks and consequently minimizes the possibility of fires in the tank. Each tank farm is a single system, with the headspace in all tanks connected by the nitrogen inlet and vent outlet manifolds. When a tank is removed from service, the tank is locked out, tagged out and line-breaking procedures are followed. The nitrogen and vent connections are isolated by blind flanges or “pancake blinds”. To return the tank to service, the tank is reassembled and blind flanges are removed. When an empty tank is returned to service, it may contain air. As the tank is filled, this air is displaced to the vent gas system. As the tank is emptied,

the headspace is purged with nitrogen. In addition, the nitrogen blanket significantly minimizes the possibility of fires in the tank.

Nitrogen will be utilized to agitate tanks in the tank farms when necessary and appropriate. Facility procedures are in place for clearing lines with compressed gases so that lines associated with the tank farm are purged with nitrogen only. This procedure prevents the potential for displacing the tank farm nitrogen blanket with air. Normally, nitrogen used to blow back lines or agitate tanks is introduced at a slow rate to allow the relief vent system (e.g., conservation vent system) to vent the unit. In most cases, direct feed tankers may also be pressurized with nitrogen. However, certain direct feed materials (e.g., monomers containing free-radical inhibitors) are more safely pressurized with compressed air. In a case like this, the handling instructions for the waste identify the special procedures that must be followed. Each tank is equipped with a rupture disk in case a sudden pressure increase is experienced in the tanks. Figure D2-2 "Tanks 23A-64A Piping & Instrumentation Diagrams" illustrate the above described monitoring systems.

Tanks 70, 73, and 74 are also equipped with a nitrogen blanketing system similar to the nitrogen blanketing system used in the Tank Farms, which minimizes the possibility of fire in the tanks. Tanks 70, 73, and 74 are considered a single system, with the headspace in all tanks connected by the nitrogen inlet and vent outlet manifolds.

Tanks 67 and 68 meet the overfill prevention control requirements under OAC 3745-55-94 by using level sensing devices. In addition, transfer operations in these tanks are continuously monitored by an operator to prevent overfilling. The bypass system for Tanks 67 and 68 is an overflow line which allows overflow to a sump. Routine, daily operator inspections of Tanks 67 and 68, and the sump ensures that overflow is prevented or contained. In addition, the floor of the Caustic Building serves as secondary containment and has sufficient capacity to hold a combined release from Tanks 67 and 68. The sump acts as a collection basin for the sludge feed tanks and filter press unit.

Tank 75 (Maintenance Storage Tank) is equipped with a liquid level indicator and a high level alarm to alert the operator when the tank is full. Tank 75 is within secondary containment in the unlikely event that it would overfill. Tanks 67, 68 and 75 do not contain organics and are vented to the atmosphere to prevent over pressurization. Figure D2-4 in Section D-2a(3) entitled "Tanks 67 & 68 Piping & Instrumentation Diagram" (drawing D-62-001) and Figure D2-5 in Section D-2a(3) entitled "Tank 75 Piping and Instrumentation

Diagram," (drawing D-61-001) illustrates the above described safety and monitoring systems.

In accordance with OAC 3745-55-95(A), RIS inspects it's overfill controls as outlined in Section F - *Procedures to Prevent Hazards* of this Application. (Refer to Appendix F-2 Inspection Forms).

D-2a(3) Diagram of Piping, Instrumentation, and Process .

Piping, instrumentation and process flow diagrams for the tank systems are provided as follows:

Tanks 70, 73 and 74	• Figure D2-1, entitled "Tanks 70, 73 and 74 P&ID" (#B-01-001)
Tanks 23 through 64	• Figure D2-2, entitled "Tanks 23-64 P&ID" (#D-02-001) • Figure D2-3, entitled "Tanks 23-64 PFD" (#D-90-049
Tanks 67 and 68	• Figure D2-4, entitled "Tanks 67 and 68 P&ID" (#D-62-001) •
Tank 75	• Figure D2-5, entitled "Tank 75 P&ID" (#B-61-001)

Also provided is Figure D2-6, entitled "P&ID symbols" (drawing D-90-020) for use with all P&IDs as a key for terminology.

D-2a(4) Ignitable, Reactive, and Incompatible Wastes in Tanks

RIS has designed the facility to minimize hazards associated with processing ignitable, reactive and incompatible wastes. RIS does not store any ignitable wastes within 50 feet of the property line in accordance with applicable environmental regulations.

As described in the Waste Analysis Plan, Section C-2f entitled "Additional Requirements for Facilities Handling Ignitable, Reactive or Incompatible Wastes," the reactivity guide number will be determined for each waste stream being managed. Whenever reactive (as defined under OAC 3745-51-23) or incompatible waste (as defined under OAC 3745-50-

10(A)(50)) is received at the facility, it will be fed directly to the incinerator without being commingled with other wastes. In addition, discussions and descriptions of "reactive" and "incompatible" are contained in Table C2-1 of the WAP; characteristics evaluated to classify wastes as "reactive" or "incompatible" are contained in Table C2-3, Exhibit J, and Appendix C-2 of the WAP; and utilization of the hazardous waste compatibility chart is discussed in Appendix C-2 of the WAP. If the waste cannot be immediately processed due to operational concerns (e.g. proper feed mix, etc.), RIS may keep it segregated and stored in a permitted hazardous waste storage tank until it can be incinerated. Should the need arise to store waste that is reactive or incompatible with the historical contents of the tank(s), RIS will empty, thoroughly rinse, and inspect the tank prior to introducing reactive or incompatible wastes. The method used to inspect the tank will be by visual inspection, prior to introducing ignitable, reactive or potentially incompatible wastes. The visual inspection criteria is, in part, dependent upon the material to be placed in the tank, and also considers what was previously contained in the unit.

The operating pressure and temperature for each tank storing ignitable, reactive or incompatible wastes is illustrated in Tables D2-2 through D2-8. In addition, Section D-2a(2), subheading "Safety Cut-Offs, Bypass Systems and Pressure Controls for Each of the Tank Systems" describes the safety and pressure control mechanism for the storage tanks. RIS minimizes ignition sources throughout the facility by the use of routine health and safety procedures (e.g. no smoking, use of spark-proof tools as appropriate, etc.) including RIS' hot work procedure. RIS employs a "hot work" permit system to assure that any work which might cause a spark and create a potential fire hazard is thoroughly reviewed and appropriate precautions are taken.

Only wastes that are compatible with the tanks and their ancillary equipment are placed into the tanks after proper evaluation by the Receiving Department. RIS isolates tank valves and utilizes tank log information and waste handling instructions to ensure that potential unintended flow of incompatible wastes does not occur from one tank to another. Incompatible wastes are not typically transferred nor stored in tanks. Should this unique situation occur, RIS would develop and implement procedures to prevent, assess, and properly manage the waste in tanks. Appendix C-2 "Compatibility Guidelines of the Waste Analysis Plan" contains additional information on management of incompatible wastes. Tanks 23A thru 64A, 70, 73 and 74 are the tanks utilized for the handling of ignitable

wastes. Precautions taken to protect these tanks from any material or conditions that may cause the waste to ignite include the following:

- Identification of incompatibles prior to placing waste into a tank
- Educating and training employees
- Posting "No Smoking" signs Using explosion-proof motors (Class 1, Div. 1, Group D), conduits, switches, and other electrical equipment (i.e. electrical design meets NFPA 30 and NEC codes)
- Operational procedures such as using spark-proof tools and requiring a hot work permit in the tank areas
- Grounding all tanks
- Use of a nitrogen blanketing system on tanks 23A thru 64A
- Installing a pressure relief system on each tank

D-2a(5) External Corrosion Protection OAC 3745-55-92(F), 3745-50-44(C)(2)(e)

All of the tanks and ancillary equipment are constructed aboveground and no metal components of the tank systems are in contact with the soil or water. The exterior of all tanks is painted thus providing protection from the environment.

D-2b Existing Tank Systems

D-2b(1) Assessment of Existing Tank System's Integrity OAC 3745-50-44(C)(2)(A) and OAC 3745-55-91(a).

OAC 3745-55-91 requires the following:

For each existing tank system that does not have secondary containment meeting the requirements of OAC 3745-55-93...the owner or operator must determine that the tank system is not leaking or is unfit for use.

RIS does not have any tank systems that were in place on the effective date of these regulations that did not have the appropriate secondary containment. Therefore, RIS was not required to provide the assessment certified by an independent, qualified, registered professional engineer for Tanks 25 through 36. However, since Tanks 25 through 36 had been in service for several years, RIS voluntarily conducted integrity testing of these tanks. Refer to Tables D2-2 and D2-5 for the year and month of installation for these tanks. In

addition, refer to the Part A Application Waste Code Listing for a complete list of the hazardous wastes RIS can store in the tank systems. RIS will not store characteristically corrosive wastes in any tanks. RIS has included the results of the tank integrity tests for tanks 25 through 36 in Appendix D-3 – "Tank Engineering Certifications."

D-2b(2) External Corrosion Protection OAC 3745-55-92(F), 3745-50-44(C)(2)(e)
RIS has instituted a two part program to ensure the integrity of all tanks is maintained. The first part entails pre-screening wastes for their corrosion rate. Refer to Section C-2 Waste Analysis Plan, specifically "Exhibit B - Waste Product Survey (WPS) form" of this Application which denotes that the corrosion rate is determined by the generator when completing the WPS form that accompanies the waste on-site. Wastes with a corrosion rate greater than 50 mills penetration per year (MPY is an abbreviation for mils per year throughout the Application, unless otherwise specified) will not be stored in the tanks. This material is direct fed to the incinerator system. Wastes with a corrosion rate between 30 and 50 MPY will be stored no longer than 30 days in the tanks. The second part is an in-situ monitoring program with corrosion coupons in the tanks. Appendix D-1, "Tank Corrosion Plan," contains the complete tank corrosion protection plan. RIS expects to lose some tank thickness due to material storage with varying corrosion rates. The amount of actual thickness lost is evaluated through the tank corrosion plan. The tank corrosion plan identifies the appropriate corrosion allowance for the tanks, and establishes procedures to be followed if the allowance is exceeded. Please refer to Section C-1b "Waste In Tank Systems" and the "Tank Corrosion Plan," Appendix D-1, RIS' procedures for evaluating tank corrosion. RIS does not store wastes having a corrosivity rating of >50 MPY in tanks.

D-2b(3) Description of Tank System Installation and Testing Plans and Procedures OAC 3745-55-92(A) through (F), 3745-50-44(C)(2)(f)
There are no future tanks being requested for storage or treatment at the facility at this time. Any future requests for new tanks will include a written assessment in accordance with OAC 3745-55-92(A) through (F).

D-2c New Tank System

D-2c(1) Assessment of New Tank System Integrity OAC 3745-55-92
The assessments for the new tanks (23A, 24A, 37A, 38A, 29 through 50, 51A, 52A, 53

through 57, 58A through 64A, 67, 68, 70, 73, 74, 75 and 79) are provided in Appendix D-3, "Engineering Certifications." Refer to the Tank Farm Structural calculations presented in Appendix D-4 "Structural Calculations" which demonstrate that the foundation, structural support and pressure control are adequately designed and that the tank system has sufficient strength and thickness to prevent failure caused by load pressure and weight of the tank system. These calculations demonstrate that the design standards by which the tanks and/or ancillary equipment are constructed ensure that the tanks' foundations will maintain the load of a full tank. In addition, refer to the Part A Application waste code listing for a complete list of hazardous wastes RIS can store in the tank systems. RIS will not store characteristically corrosive wastes in any tanks. Please refer to Table D2-3 through D2-6, and Table D5-3 for the installation dates of each tank.

D-2c(2) Description of Tank System Installation and Testing Plans and Procedures

OAC 3745-55-92(A) through (F), 3745-50-44(C)(2)(b)

RIS is not requesting any additional tank systems with this Application. In the future, should any new tank systems be requested, RIS will provide the certification of installation as required by OAC 3745-55-92 and 40 CFR 264.192. RIS has included the certification of installation for tanks 23A, 24A, 35-36, 37A, 38A, 39-50, 51A, 52A, 53-57, 58A-64A , 70, 73, 74, 75 and 79 in Appendix D-2 "Engineering Assessment" of this Application.

D-2c(3) Description of Feed Systems, Safety Cutoff, Bypass Systems and Pressure Controls OAC 3745-50-44 (C)(2)(e)

The description of feed systems, safety cutoff, bypass systems and pressure controls for all of RIS' tank systems is provided in section D-2a(2) of this Application. RIS is not requesting any new tank systems at this time. In the future, should RIS request additional new tank systems, this information will be provided in accordance with OAC 3745-50-44 (C)(2)(e).

D-2d Containment and Detection of Releases OAC 3745-50-44(C)(2)(g), 3745-55-93

D-2d(1) Plans and Description of the Design, Construction, and Operation of the Secondary Containment System OAC 3745-55-93(B) through (F), 3745-50-44(C)(2)(g)

D-2d(1)(a) Tank Age Determination OAC 3745-55-93(A)

The age of all tank systems is included in the physical description of tanks summarized in tables D2-2 through D2-8, entitled "Physical Characteristics of Tanks and Secondary Containment."

D-2d(1)(b) Requirements for Secondary Containment and Leak Detection OAC 3745-55-93(B) & (C), 3745-50-44(C)(2)(g)

All of the tanks have been provided with a secondary containment system constructed of a reinforced concrete liner and a reinforced concrete retaining wall around the perimeter, all with an impermeable coating. A liner external to the tank and sloped to drain and remove liquids resulting from leaks, spills or precipitation is used as the secondary containment device for all the tanks. The containment systems are designed, installed and operated to prevent any migration of wastes or accumulated liquid out of the system to soil, ground water or surface water at any time during the use of the tank system. The containment system is designed to provide for detection and collection of releases and accumulated liquids until the collected material is removed. This certification (found in Appendix D-2 entitled "Engineering Assessment") includes the following: the materials of construction used to construct or line the system are compatible with the wastes in the tank system; the system has sufficient strength and thickness to prevent failure caused by any of the following: pressure gradients (including static head and external hydrological forces), physical contact with the wastes, climatic conditions, stress of daily operation (including stresses from nearby vehicular traffic) and 80 mph wind loads.

The joints between the perimeter wall and the liner as well as the tank foundations and liner are constructed with 6" PVC waterstop and a sealed expansion joint (or equivalent). The wall and liner construction and expansion joints are designed in a similar fashion and are dowelled to provide shear transfer. The secondary containment systems and tank foundations are designed to have sufficient strength and thickness to provide the required support and to prevent failure due to settlement, compression or uplift, pressure gradients, physical contact with the waste to which they are exposed, climatic conditions and the

stress of daily operation. The structural analysis and design considered appropriate wind loads, snow loads, and earthquake loads. Based on the calculations by R.E. Warner presented in Appendix D-2, "Engineering Assessment," the foundations and secondary containment systems were engineered to account for expansion and contraction of the components. The soil structure interaction was evaluated based on a geotechnical report of soil conditions by David V. Lewin Corporation.

The structural calculations and other documentation for the secondary containment systems are provided in Appendix D-4, "Structural Calculations." The calculations for tanks 37A through 64A are typical for tanks 23A through 36A. All structural design, calculations and documentation was prepared using standard engineering procedures for secondary containment systems.

Designs are based upon loads and load combinations as set forth in the OBBC and the minimum design loads for buildings and structures as recommended by the American National Standards Institute ("ANSI") A58.1-1982.

The secondary containment systems are external to the tank(s) and are sloped as indicated on the drawings listed below and contain sumps which combined with daily inspections, provide a system for removing liquids resulting from leaks, spills, or precipitation within 24 hours of discovery or in a timely manner. The secondary containment system provides a means of leak detection through at least daily inspection of the secondary containment system for evidence of leaks. If a leak occurs, the liquids are collected, stored, and treated in accordance with applicable regulations. Precipitation removed from the sumps and containment areas is used as make-up water to the incinerator air pollution control equipment as follows.

D-2d (1)(b)(i) Tank Farm Area

Precipitation flows to the north end of each tank farm and is discharged to the pipe trench. Valves located between the tank farms and the pipe trench must be manually opened for the water to flow into the pipe trench. Inspections take place before water is released to the trench. Storm water which has been determined to be uncontaminated by visual inspection (e.g., examination for a sheen, discoloration, odor, presence of foreign objects,

etc.) is managed by pumping or gravity draining through a closed system to sump #9, from which it can be used as make-up water to the incinerator air pollution control equipment (via the closed loop scrubber system), or transferred to the rainwater pond on-site. Water in the pipe trench (which is sloped toward the east) that could be potentially contaminated with small quantities of hazardous waste is collected, containerized, and eventually processed in the incinerator. Removal of water from the pipe trench and inspections prior to removal are to be conducted and documented in accordance with RIS' "Draining Rain Water from the Tank Farms and Pipe Trench Policy and Procedure" which is maintained on-site at the facility.

D-2d (1)(b)(ii) Process Dock Area

Precipitation is collected in one sump in the secondary containment where it is transported via overhead piping to the pipe trench, and managed in the same manner as indicated in subsection D-2d(1)(b)(i).

D-2d (1)(b)(iii) Closed Loop Scrubber Water Area

Precipitation is collected in two sumps inside the closed loop containment area where it can be pumped out and added to the Closed Loop Scrubber Water System.

D-2d (1)(b)(iv) Filter Press Building

Precipitation is collected in one sump in the main floor area of the filter press building where it can be pumped to the filter press, clarifier or caustic feed tanks. The following figures provide the designs for each of the tanks secondary containment systems:

- Tanks 23A through 64A: Figure D2-7, entitled "Secondary Containment for Tanks 23-64" (drawing D-90-100)
- Tanks 67 and 68: Figure D2-8, entitled "Secondary Containment for Tanks 67 and 68" (drawing D-90-103)
- Tanks 70, 73 and 74: Figure D2-9, entitled "Secondary Containment for Tanks 70, 73 and 74" (drawing D-90-102)
- Tank 75: Figure D2-10, entitled "Secondary Containment for Closed Loop Scrubber including Tank 75" (drawing D-90-137)

The type of impermeable coating selected for each secondary containment system was selected to be compatible with and resistant to the wastes managed in that particular area. Cracks in the concrete are filled with an impervious sealant consistent with the

impermeable coating. The coating is a two coat epoxy system (or equivalent) to ensure durability. The impermeable coatings and sealants were applied in accordance with all manufacturer's specifications (see Appendix D-2 "Engineering Assessments" for the specific coatings data sheets).

D-2d(1)(c) Requirements for External Liner, Vault, Double-Walled Tank, or Equivalent OAC 3745-55-93(D) & (E), 3745-50-44(C)(2)(g)

All of the tanks have been provided with a secondary containment system constructed of a reinforced concrete liner external to the tanks and a reinforced concrete retaining wall around the perimeter. All containment systems have an impermeable coating. See Section D-2D(1)(B) for the Figures providing designs for each of the tanks secondary containment systems.

An impermeable coating has been placed over the concrete to make it impervious to the waste stored. Cracks and joints are filled with impervious sealants consistent with the coatings. The coating is a two coat epoxy system (or equivalent) to ensure durability.

Appendix D-4 "Structural Calculations" contains calculations to show that the secondary containment system for all tanks is designed to contain greater than 100 percent of the capacity of the largest tank within its boundary plus the run-on and precipitation from a 25 year 24 hour rainfall. The areas covered under Appendix D-4 "Structural Calculations" are as follows:

Area 1:	Tank Farm I - Tanks 23A, 24A, 25-36
Area 2:	Tank Farm II:- Tanks 37A, 38A, 39-50
Area 3:	Tank Farm III: Tanks 51A, 52A, 53-57, 58A-64A
Area 4:	Process Dock Pit - Tanks 70, 73 and 74
Area 5:	Pipe Trench
Area 6:	Metering Pump Building
Area 7:	Air Pollution Control Water Return Tank
Area 8A:	Caustic Building Main Floor - Tanks 67 and 68
Area 8B:	Caustic Building - Pump Pit
Area 9:	Cooling Tower - Clarifier Pit and Tank 75

D-2d(1)(d) Secondary Containment and Leak Detection Requirements for Ancillary Equipment OAC 3745-55-93(F), 3745-50-44(C)(2)(g)

All above ground piping is exempt from secondary containment requirements per OAC 3745-55-93(F), because the connections and joints are made of welded flanges. All above

ground piping is constructed with welded flanges and is inspected daily to detect leaks, cracks, corrosion or deterioration.

However, most of the above ground piping has common secondary containment with that of the tanks with the exception of piping between the Process Dock containment (Tanks 70, 73 and 74) and the storage tank containment (Tanks 23A through 64A) and piping between the closed loop scrubber water system containment and the incinerator containment. Additionally, the pipes, valves, etc. that run from the storage tanks (Tanks 23A through 64A) to the metering pump building at the incinerator have secondary containment provided by a pipe trench.

The pipe trench is a secondary containment system constructed of a reinforced concrete liner and reinforced concrete walls, all with an impermeable coating (See Appendix D-2 for a description of the impermeable coating). Pipes within the pipe trench are supported by structural steel members bolted to the trench walls. The pipe trench is covered with a 3-1/2" thick galvanized steel grating. The grating is sized to safely carry all anticipated vehicular traffic. The joints between the wall and the liner are constructed with 6" PVC waterstop and a sealed expansion joint (or equivalent). Wall and liner construction and expansion joints are designed in a similar fashion and are dowelled to provide shear transfer. Structural Calculations and included in Appendix D-4 "Structural Calculations."

The secondary containment system is designed to have sufficient strength and thickness to provide the required support and to prevent failure due to settlement, compression or uplift, pressure gradients, physical contact with the waste to which it is exposed, climatic conditions and the stress of daily operation. The structural analysis and design considered appropriate earthquake loads. The secondary containment system was engineered to account for expansion and contraction of the components. The soil structure interaction was evaluated based on a geotechnical report of soil conditions by David V. Lewin Corporation.

The structural calculations for the pipe trench secondary containment system are provided in Appendix D-4, "Structural Calculations" and were prepared using standard engineering procedures for pipe trench design. All structural design was based upon loads and load

combinations as set forth in the OBBC and the minimum design loads for building and structures as recommended by the ANSI A58.1-1982.

The pipe trench described above is sloped toward a low point drain valve which is normally closed. Because of the length of the trench, a lift pump is employed to ensure that liquid collected in all sections of the trench can be pumped to the sections where the drain valve is located. See Figure D2-11, entitled "Secondary Containment For Pipe Trench", drawing C-90-021. When water collects on the north end of the pipe trench, it flows south to the trench sump. The trench sump is used as a collection point for the lift pump. The lift pump lifts rainwater that collects in the pipe trench from the lower portion of the trench (north of the pump) to the upper portion of the trench (south of the pump). Uncontaminated water in the upper portion of the pipe trench, after visual inspection (e.g., examination for a sheen, discoloration, odor, presence of foreign objects, etc.), is allowed to flow (by pumping or gravity draining) through a closed system to sump #9, from which it can be used as make-up water to the incinerator air pollution control equipment, or transferred to the rainwater pond on site. Valves located between the tank farms and the pipe trench must be manually opened for the water to flow into the pipe trench. The pipe trench provides a means of leak detection through at least daily inspection of the pipe trench for evidence of leaks using the Tank Farm Daily Inspection Log. All such accumulated liquids will be removed from the secondary containment within 24 hours of discovery or in a timely manner. Precipitation removed from the pipe trench is used as make-up water to the incinerator air pollution control equipment unless the water in the pipe trench is potentially contaminated with small quantities of hazardous waste. In the event of suspected contamination, the water is collected, containerized, and eventually processed in the incinerator. If a leak occurs, the liquids are collected, stored, and treated in accordance with applicable regulations. See Figure D2-11, entitled "Secondary Containment For Pipe Trench" (drawing C-90-021) for the location and design details of the pipe trench, which includes direction of slope and location of trench pumps.

The type of impermeable coating selected for the pipe trench secondary containment system was selected to be compatible with and resistant to the wastes managed in those pipe lines. Cracks in the concrete are filled with an impervious sealant consistent with the impermeable coating. The coating is a two coat epoxy system (or equivalent) to ensure

durability. The impermeable coatings and sealants were applied in accordance with all manufacturers' specifications. See Appendix D-2 "Engineering Assessments"" for the coating safety data sheets. All other ancillary equipment associated with the tanks is contained within the secondary containment system of the tanks.

D-2e Controls and Practices To Prevent Spills and Overflows OAC 3745-55-94(B), 3745-50-44(C)(2)(i)

Refer to Section D-2a(4) for a detailed discussion of procedures to handle reactive or incompatible wastes. Refer to Section D-2a(2) for a detailed description of feed systems, safety cut-off, bypass systems and pressure controls utilized to prevent spills and overflows. RIS ensures that hazardous wastes or treatment reagents placed in a tank system will not cause any element of the system to rupture, leak, corrode, or otherwise fail. When determining bulk waste placement in the tank farm, RIS considers the availability of tank storage, and the compatibility of the material being added to a tank with wastes currently or previously stored in a tank (refer to subsection D-2a(2) under subheading "Tank Feed Systems" for further discussion). RIS does not store characteristically corrosive wastes in any tanks. Refer to the Part A Application waste code listing for a complete list of the hazardous wastes RIS can store in the tank systems. Additionally, detailed operating procedures and training for operators for all areas of the plant have been developed that specify the correct methods to be used for all aspects of the handling and transferring of wastes in the facility.

D-3 Waste Piles

RIS is not seeking a permit for waste piles.

D-4 Surface Impoundments

RIS is not requesting a permit for surface impoundments.

D-5 Incinerator

D-5a Justification for Exemption OAC 3745-50-44(C)(8)(a)

RIS is exempt from the requirements under OAC 3745-57-40 thru -47 per the exemption provided under OAC 3745-57-40(B).

D-5b Trial Burn OAC 3745-50-44(C)(8)(b)

RIS has successfully performed Trial Burns during 1982, 1988 and 1992. A Performance Test was performed on October 18th and 19th of 2000 to verify compliance with RCRA as specified under 40 CFR Part 264, Subpart O and OAC 3745-57-40 through -51. During this test, RIS successfully demonstrated compliance with the RCRA Subpart O performance standards and metals removal efficiencies similar to those demonstrated during the 1992 Trial Burn, while operating within established process targets. RIS currently complies with the National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors under 40 CFR Part 63, Subpart EEE in lieu of 40 CFR Part 264, Subpart O [OAC Rule 3745-57-40 thru -50], as allowed by 40 CFR 264.340 – *Applicability* [OAC 3745-57-40(B) and (C)].

D-5c Description of the Incinerator

RIS' incineration system consists of a rotary kiln attached to a large main chamber (secondary combustion chamber). The main chamber is a custom-designed and fabricated unit. Multiple waste feed lines feed liquid wastes into the main chamber and rotary kiln. Solid and containerized wastes are fed to the rotary kiln via four feed mechanisms and to the main chamber via two mechanisms. The maximum feed rate to the incineration system is 26,057 pounds per hour and 105,140 tons per year. This includes the weight of the containers.

The main chamber typically operates at over 2000 degrees Fahrenheit and the rotary kiln between 1700 degrees and 2400 degrees Fahrenheit. The operating conditions of the incinerator are measured by various temperature, pressure and flow indication and control devices. These aid in the operation of the incineration system and provide safety protection. Computerized controls monitor hundreds of process parameters. Part of the

computerized controls includes a waste feed cut off system which stops the feeding of hazardous waste if any operating parameters are outside the permitted range. Long combustion gas residence times, high temperature, and the counter current atomized liquid and gas exhaust flows ensure that 99.99% destruction removal efficiency ("DRE") is achieved.

D-5c (1) Material handling and feed systems for liquid and solid wastes

Typically, containerized material which is to be "set up", is held on flat-bed trucks or placed on the concrete containment areas immediately adjacent to the north, east, or south sides of the incinerator. "Set up" refers to a step after the transportation of drums from the CSF, BSAs, OSB or WSBs to the incinerator, during which the containers will be set up (prepared) for loading onto one of the feed mechanisms to the incinerator. Allowed goals for the set up and processing of waste in the outdoor area around the incinerator have been established at 48 hours during the weekdays and 72 hours on the weekends. Ohio EPA will be notified of all set up activities that exceed 48 hours on the weekdays, or 72 hours on the weekends. This notification may be made verbally and shall be accompanied by a description of the waste and an explanation of why it is on hold for processing. Wastes that have exceeded these goals are also identified by their assigned CIN. RIS personnel proactively monitor these tracking programs on an ongoing basis to prevent the exceedances of the established goals.

During the set-up of containerized wastes at the incinerator pad areas, the containers are placed on pallets or maintained on the flatbed trucks to keep them from potential contact with standing water. Containers being set up for incineration on the concrete pads surrounding the incinerator are actively processed and not stored for long periods of time. The containers themselves remain closed while in the set up area and the container and cover provide a sufficient barrier to prevent water from contacting any water reactive waste contents. Defective waste containers are overpacked, or wiped off and bagged in the CSF, BSAs, OSB, WSBs, CSA, WMB, PDWSA, or GRSA prior to set up at the incinerator.

Refrigerated van loads of material shall be set up on the concrete pad north of the incinerator. Upon receipt, RIS shall perform a visual inspection of 100% of the containers on the refrigerated van load, including weighing and labeling of containers in accordance with Section C - Waste Analysis Plan. Every six hours, an RIS associate shall inspect the

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van and record the van temperature and fuel levels of the refrigerant. It may take several days to process the refrigerated van load, during which the van will remain isolated on the pad north of the incineration area. Only containers that are to be immediately processed will be removed from the van, typically within an hour.

Heated van load of material shall be set up on the concrete pad north of the incinerator. Containers will be placed in the heated van after the container has been Released for Processing ("RFP"), (i.e., visual inspection completed, fingerprint completed, if applicable, van loads, including weighing and labeling of containers in accordance with Section C - Waste Analysis Plan). Every six hours, an RIS associate shall inspect the van and record the van temperature and van fuel levels. The van will remain isolated on the pad north of the incineration area. Only containers that are to be immediately processed will be removed from the van, typically within an hour.

D-5c (2) Main Chamber Solids Feed System

Solid/containerized wastes are placed on metal pallets ("skids") and are fed to the main chamber [redacted] Containers that are not empty after they have been [redacted] processed are either re-fed [redacted] or recycled through the rotary kiln for additional processing.

Containers are placed on metal pallets ("skids") in accordance with the compatibility procedures discussed in Section C - Waste Analysis Plan, Appendix C-2 and are fed to the main chamber [redacted]. RIS determines the size of the [redacted] skid based upon the size of the waste container intended for incineration. Skids are sized to hold [redacted] liquids (in metal containers that do not lose containment integrity during processing) and solids. Spacers are installed on the [redacted] skids allow materials underneath to vent to the main chamber,

relieve any pressure that may develop, and also address the confined space under the skids.

D-5c (3) Direct Feed of waste to the incinerator

"Direct feed" is the pumping of liquids directly from containers (including but not limited to drums, dumpsters, roll-off boxes, bulk cargo containers commonly known as "portable tanks" or "totes," "cargo tank trucks" or "tankers", and "tank railcars") into the incinerator through any of the main chamber or kiln lances, or the main chamber or kiln burners. Flow rates are monitored, controlled and recorded for each direct feed. Direct feed materials are not mixed with any other waste prior to being introduced into the incinerator. Any liquid waste may be direct fed, however, materials which pose a unique health hazard or compatibility issue (e.g., corrosive wastes not suitable for tank storage) are typically selected for direct feed.

Applying available waste data, RIS evaluates the compatibility of the potential direct feed waste, and verifies wastes are compatible with the feed mechanisms and materials of construction.

RIS has five (5) dedicated direct feed locations used to feed waste to the incinerator, four (4) of which are segregated from all other waste feeds, and therefore, for which no intermixing is possible. The feed location for a particular waste is determined based on the properties of the waste and compatibility of the waste with other wastes being fed, and compatibility with direct feed location materials of construction.

In addition to the tanker direct feed areas on the incineration pad and nearby drum direct feed pad, RIS can also direct feed waste from a remote tanker unloading station at the tank farms. Wastes can be unloaded directly to the incinerator through any of the three tank farm waste feed lines from a 25' x 45' concrete pad located between tank farms 2 and 3. This concrete pad has a concrete lined trench in the center approximately 30' long x 2.5' wide which acts as containment for the pad. The pad is sloped into the trench which is connected to the coated tank farm trench. Together, the trenches serve as containment for the concrete off-loading pad and the total containment capacity exceeds 18,280 gallons. A daily leak inspection program currently detects the accumulation of liquid in the containment system. In addition, RIS follows safe unloading procedures to minimize the

potential for an environmental release, including: the utilization of camlock connections on transfer hoses to assure a tight seal; visual inspection of each transfer operation; grounding of tankers; and use of tankers which are equipped with internal and external valves for emergency shut off capability.

D-5c (3)(a) Direct Feed of waste from tankers to the incinerator

RIS may accept any tanker which is DOT approved for its waste contents, regardless of capacity. As previously indicated, any liquid waste currently accepted by RIS can be potentially fed to the incinerator at any of the tanker direct feed locations, which is determined based on the properties and compatibility of each waste stream.

D-5c (3)(b) Direct Feed of waste from containers to the incinerator

Drum direct feed is the pumping of liquids directly from containers into the incinerator through one of the lances located in the main chamber or the kiln, or in the main chamber or kiln burners. Containers are moved to the drum direct feed location so the liquid waste can be pumped (directly fed) to the incinerator.

D-5c (3)(c) Direct Feed Pipe Trench

The west direct feed pipe trench has a minimum containment capacity of 6,600 gallons. It is sloped toward a low point drain sump at the north end. When water collects at the north end of the pipe trench it will collect in the low point sump. Uncontaminated water in the trench sump, after visual inspection (e.g., examination for sheen, discoloration, odor, presence of foreign objects, etc.) will be pumped to the Air Pollution Control Return Tank via overhead piping and used as make-up water to the incinerator air pollution control equipment. The west direct feed pipe trench provides a means of leak detection through at least daily inspection for evidence of leaks using the Daily Operating Log. All such accumulated liquids will be removed from the secondary containment within 24 hours of discovery. Precipitation removed from the west direct feed pipe trench is used as make-up water to the incinerator air pollution control equipment unless the water in the west direct feed pipe trench is potentially contaminated with small quantities of hazardous waste. In the event of suspected contamination, the water is collected, containerized and eventually processed in the incinerator. If a leak occurs, the liquids are collected, stored and treated in accordance with applicable regulations. See Figure D2-11, entitled "Secondary

Containment for Pipe Trench" (drawing C-90-021) for the location and design details of the west direct feed pipe trench. The type of impermeable coating selected for the west direct feed pipe trench secondary containment system was selected to be compatible with and resistant to the wastes managed in those pipe lines. Cracks in the concrete are filled with an impervious sealant consistent with the impermeable coating. The coating is a two coat epoxy system (or equivalent) to ensure durability. The impermeable coatings and sealants were applied in accordance with all manufacturers' specifications. See Appendix D-2, "Engineering Assessments."

D-5c (4) Ash Management

Ash is removed from the exit of the kiln. The ash exits the kiln and falls into a water bath which cools the ash before removal. The ash is removed from the water bath by a conveyor which allows the water to drain from the ash as the ash is removed from the incineration system. The ash is then sent to RIS' ash management system where residual moisture and scrap metal are removed from the ash prior to being containerized for transportation to final treatment/disposal. Metal that is separated from the ash is recycled. Ash is periodically removed from the main chamber during periods when the incinerator is shut down for routine maintenance. The main chamber bottom ash is removed from the incinerator and transported to a RIS approved facility offsite.

D-5c (5) Air Pollution Control System

The air pollution control system consists of a quench/cyclone chamber, a radial flow scrubber, a gas liquid contactor, two serially operated wet electrostatic precipitators ("WESP"), an induction fan, and a stack with a continuous emission monitoring ("CEM") system. This series of air pollution control equipment cools the flue gas as it removes the contaminants (particulate, acid gases, etc.) entrained in the flue gas.

The quench /cyclone consists of a refractory lined duct that exits the main chamber and contains a series of spray nozzles that inject scrubber water into the flue gas to cool it to the saturation temperature. The quench duct is sloped slightly down towards the cyclone section which is used to disengage water droplets, remove some very coarse particulate and provide some additional residence time for quenching. From the cyclone, the gas stream enters a radial flow scrubber ("RFS"), a high performance variable throat venturi. The flue gas enters the top of the RFS into a converging section and is directed through an

annular gap between the outlet of the converging section and a movable impact plate. A single spray nozzle in the converging section injects scrubber water into the flue gas. The movable impact plate is automatically adjusted to maintain a constant pressure drop under varying load conditions. The RFS is designed to remove most of the large particulate and approximately 90% of the HCl in the inlet flue gas. Next the Gas-Liquid Contactor ("GLC") further removes acid gases from the flue gas, cools the flue gas, and helps reduce the amount of mist entering downstream equipment. Two WESPs in series, follow the GLC and are intended to remove fine particulate, which normally include a high fraction of heavy metals, and water droplets. Each WESP consists of a large number of parallel tubes through which the flue gas flows downward. In the center of each tube is a high voltage electrode that imparts a charge to the particles and droplets in the flue gas. The charged particles are driven to the walls of the tubes by the electric field and are captured by a thin film of water. The water and particulate flow down the tubes and drain into the bottom of the WESP vessel. The induced draft fan is used to draw the flue gas through the system and maintain the combustion chambers under negative pressure. Continuous monitoring is conducted for indicators of incomplete combustion.

D-5c (6) Closed Loop Scrubber Water System

The scrubber water used in the air pollution control equipment is pumped to the closed loop scrubber water system. This water treatment system removes particulate, and cools and corrects the pH of the water. The particulate material settles out of the water in the clarifier as a sludge that is treated on-site in a plate and frame filter press. The water is recycled back to the air pollution control equipment for reuse. The spent scrubber water and the fly ash sludge removed from the closed loop system are transported to off-site facilities for proper treatment and disposal.

The closed loop scrubber water system is within a concrete secondary containment area that is lined with a coating to make it impervious to the wastes. The coated secondary containment basin has a containment volume of 671,984 gallons which is larger than any tank in the closed loop scrubber water system. This basin also serves as a secondary containment for the maintenance storage tank.

D-5c (6)(a) Surge Tank

The surge tank has a diameter of approximately 20 feet and a capacity of approximately 56,402 gallons. The surge tank consists of an above ground tank. The surge tank is used for the processing of blowdown from the closed-loop scrubber water system. Scrubber water and/or sludge is pumped from the clarifier, maintenance storage tank, or filter press to the surge tank. When necessary, RIS adds chemicals (reagents such as ferric chloride and lime) to the scrubber water in the surge tank to reduce the concentration of heavy metals in the scrubber water. The scrubber water is then either sent off-site from the surge tank or filtered through the filter press and sent off-site for disposal. If decreasing the concentration of heavy metals is not required, RIS will pump scrubber water directly from the surge tank or clarifier to tank trucks for shipment to off-site treatment and disposal facilities. RIS also places the scrubber water sludge into the surge tank prior to pumping it to the filter press for dewatering. The surge tank may also be used for storage of makeup water as needed.

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Table D5-3.

Physical Characteristics of Incinerator Tank No. 78 - Clarifier Tank*

Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Operating pressure	
Maximum liquid level	
Operating temperature (typical)	
NFPA Code 30 satisfied	
Containment basin capacity	
Two-layer waste impermeable coating on containment basin	
Year of construction	
Level indication	

* This unit is a process tank associated with the incinerator air pollution control equipment closed loop scrubber system.

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Table D5-3.

Physical Characteristics of Incinerator Tank Nos. 82A, 83A and 84A - Cooling Tower Basins*

Design standard	
Construction material	
Lining material (Internal)	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal, inside dimension)	
Height (nominal, inside dimension)	
Influent pump capacity (combined)	
Effluent pump capacity (combined)	
Operating pressure	
Maximum liquid level	
Operating temperature (typical)	
NFPA Code 30 satisfied	
Containment basin capacity	
Two-layer waste impermeable coating on containment basin	
Year of construction	
Level indication	

* These units are process tanks associated with the incinerator air pollution control equipment closed loop scrubber water system.

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Table D5-3.

Physical Characteristics of Incinerator Tanks No. 76 - APC Water Return Tank*

Construction material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated side wall shell thickness	
Minimum design side wall shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Operating pressure	
Maximum liquid level	
Operating temperature (typical)	
NFPA Code 30 satisfied	
Containment basin capacity	
Year of construction	
Level indication	

* This unit is a process tank associated with the incinerator air pollution control equipment closed loop scrubber system.

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Table D5-3.

Physical Characteristics of Incinerator Tanks No. 79 - Surge Tank

Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 satisfied	
Containment basin capacity	
Two-layer waste impermeable coating on containment basin	
Year of construction	
Level indication	

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Table D5-3.

Physical Characteristics of Incinerator Tanks No. 81 - Clarifier Pump Surge Tank*

Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Operating temperature (typical)	
NFPA Code 30 satisfied	
Containment basin capacity	
Two-layer waste impermeable coating On containment basin	
Year of construction	
Level indication	

* This unit is a process tank associated with the incinerator air pollution control equipment closed loop scrubber system.

D-6 Landfills

Ross Incineration Services, Inc. is not seeking a permit to operate a landfill.

D-7 Land Treatment

Ross Incineration Services, Inc. does not operate a land treatment system.

D-8 Miscellaneous Units

The information provided in this section is submitted in accordance with the applicable requirements of the Ohio Administrative Code ("OAC") 3745 55-90 through OAC 3745-55-. RIS is seeking a permit for two miscellaneous units. Details relevant to the filter press unit (Filter Press) are found in D-8a. Details relevant to the barge unit are found in D-8b.

D-8a The Filter Press, a Miscellaneous Unit

D-8a(1) Description of the Filter Press

As a part of the ongoing thermal treatment operations at RIS, scrubber water and scrubber water sludge are generated from the blow-down operations of the closed loop scrubber water system. Scrubber water blowdown is necessary to control the concentration of dissolved solids in the scrubber system. To minimize the volume of spent scrubber water sludge requiring off-site treatment and/or disposal, RIS utilizes a filter press to dewater sludges. A damp cake of compressed solids ("filter cake") is generated and removed to an off-site treatment and/or disposal facility. The liquid filtrate ("scrubber water") is recycled back to the closed loop scrubber water system, pumped to the maintenance storage tank, or shipped directly off-site for disposal.

The filter press is a recessed-plate unit utilizing 47.2-inch square plates. It contains two head plates and a maximum of 69 intermediate press plates with half-inch recesses. The filter press utilizes a hydraulic closure mechanism. Material is pumped from the surge tank, clarifier, cooling tower basins or the maintenance storage tank to the filter press feed tanks, 67 and 68. Blowdown is pumped from tanks 67 and 68 to the filter press.

Liquids separated during the operation of the filter press unit are collected within the filtrate receiver and then pumped back to the closed loop scrubber water system, maintenance storage tank, or shipped off-site. The filter cake is discharged into roll-off containers. The roll-off containers are fitted with weather proof tarps and appropriately labeled as hazardous waste. When the roll-off containers are

full, their contents are transferred into dump trailers, which are used to transport the filter cake to a RCRA-approved hazardous waste disposal facility.

Table D8-1, "Design Specifications for the Filter Press Unit," and Figure D2-4 Tanks 67 and 68 P&ID (provided in Section D-2) provide information on the design specifications and process flow of the filter press.

The filter press unit, which physically separates liquids from clarifier sludges, is located entirely within the filter press building, thereby preventing migration of wastes (clarifier sludge, filtrate, and filter cake) involved in the filter press operation into the environment. Any spills or leaks of the sludges or liquids will be entirely contained within the secondary containment of the filter press building. The secondary containment system is described in more detail in Section D-8a(2).

Table D8-1 Design Specifications for the Filter Press Unit

Unit Type:	Recessed Plate
Plate Size:	47.2" Square
Plate Detail:	2 polypropylene or equivalent Head Plates and a maximum of 69 Press Plates Constructed of Polypropylene or equivalent
Closure Mechanism:	Hydraulic
Dimensions:	Approximately 6.33 ft. x 4.58 ft. x 23.33 ft.
Capacity:	2.4 Cubic Yds/Batch
Filter Press Building Secondary Containment	
Containment Capacity:	22,493 Gallons
Two-Layer Waste - Impermeable Coating:	Dual layered epoxy coating system (Dudick 100 XT or equivalent)
	Dual layered epoxy coating system (Dudick 100 XT or equivalent)

D-8a(2) Waste Characterization

The sludge is typically characteristic for heavy metals. Toxicity characteristic leaching procedure ("TCLP") testing on the sludge for the eight RCRA metals (i.e., silver, arsenic, barium, cadmium, chromium, mercury, lead and selenium), indicates that it is typically characteristic for either barium, cadmium or lead. The waste (filter cake) produced in this process typically has a range of 20 to 60 percent by weight water and a range of 40 to 80 percent by weight fly ash. The filter cake is solid at ambient temperature and is discharged from the filter press into roll-off containers. The process

capacity of the filter press system is 111,000 gallons per day. The filter press typically processes 5,000 to 30,000 gallons of scrubber water sludge per day.

The filter press unit is contained within the filter press building, thereby preventing migration of wastes to the environment. The waste material is composed of solid particles of fly ash which result from the thermal treatment of wastes. The results of analytical testing for compliance with land ban treatment standards are evidence that hazardous organic constituents which are ignitable and/or explosive have been destroyed by incineration. The resultant waste material is an inert mixture primarily composed of silicon and metal oxides, and is compatible with the equipment used to manage it. In addition, the waste is a non-corrosive material having a moisture content ranging between 20 and 60 percent by weight. Given the high moisture content and characteristics of the waste material, the potential of the waste to react, evaporate or to contribute to any air emissions is unlikely. Roll-off containers are routinely filled within approximately eight hours working from bottom to top and are covered once full, in order to minimize moisture loss through evaporation. Moisture loss through evaporation while the hoppers are being filled is minimal under these conditions.

D-8a(3) Containment System

The filter press unit is provided with secondary containment within the filter press building and is designed to contain the contents of the hazardous waste units located inside the building (tanks 67, 68 and the filter press). Figure D2-8, "Secondary Containment for Filter Press Building including Tanks 67 and 68," (drawing C-90-103) which is found in Section D-2 of this application, shows the plan and section views of the secondary containment of the filter press.

As indicated in Section D-2d (Description of Secondary Containment) of this application, the secondary containment capacity available for Tanks 67, 68 and the filter press is 22,493 gallons. The largest hazardous waste unit in the building is 3,627 gallons (tanks 67 and 68 are 3,627 gallons each); therefore, the secondary containment has enough excess capacity to not only contain the single largest unit, but also to contain 100 percent of all units. Since this area is located completely within the filter press building, precipitation and run-on to the secondary containment is minimized. To further reduce the likelihood of contact of hazardous waste with the environment, the secondary containment has been sealed with two coats of an impermeable coating (see Table D8-1 and Appendix D-2. The joints between the perimeter wall and the liner for the main building are keyed and sealed (see Figure D2-8, drawing C-90-103). The secondary containment system is designed to have sufficient strength and

thickness to provide the required support and to prevent failure due to settlement, compression, uplift, pressure gradients, physical contact with the waste to which they are exposed, and the stress of daily operations as demonstrated by calculations made by R.E. Warner (See Appendix D-2, "Engineering Assessment").

The floor of the Filter Press Building was modified to include a steel plate. The purpose of the steel plate is to protect the area from damage caused by repeated roll-off container movement. Prior to securement of the steel plate, the condition of the secondary containment and corresponding coatings were verified by the Ohio EPA on-site inspector, as Ohio EPA agreed to inspect the area prior to steel plate placement in lieu of routine coating inspections.

D-8a(4) Prevention of Air Emissions

The filter press unit is a mechanical device which physically separates liquids from the sludges. Analytical testing has shown no other hazardous constituents are present in significant quantities. Since organic constituents are not detected in significant quantities in this waste, organic air emissions will not occur.

The only possible hazardous air emission originating from the filter press and associated equipment is particulate matter which may be contaminated with heavy metals. However, the sludge entering the filter press is consistently 70 percent or more water and the filter cake exiting the filter press has an average water content of 40 percent. Considering the high water content of the waste both before and after treatment in the filter press, air emissions of particulate matter are highly unlikely. Therefore, the operation of this unit is not expected to contribute to air emissions or affect the ambient air quality.

D-8a(5) Operating Standards

The filter press unit is operated by a fully trained filter press operator under the direction of a foreman or his representative. The operator(s) has undergone on-the-job and classroom training as described in Section H of this application to ensure safe and efficient operation of the filter press unit. Prior to operation of the filter press, the operator performs the following:

* Checks the air pressure on the regulator pump.
* Checks sludge level in Tanks 67 and 68.
* Ensures that all hoses are properly connected between the filter press and supply tanks.

Once the filter press has been checked by the operator, he then inspects each cloth to ensure that there are no folds or wrinkles. While the filter press is in operation, the operator continually checks for

leaks. The operator also continually checks both the filter cake and the filtrate for appropriate physical characteristics. The foreman is immediately notified of any unusual events or conditions. Each time the filter press is operated, the operator fills out a filter press production log. This log includes information concerning the time and duration of operation, the number of times the screens were cleaned, and any comments (e.g., unusual waste characteristics, unusual operating events). As discussed in Section D-8a(3), there is no likelihood of air emissions or production of toxic or explosive gases, aerosols or particulates from the filter press operation. The filter press receives wastewater and fly ash sludge particulates from the air pollution control system. Incinerator wastewater and fly ash sludge are not ignitable, explosive or capable of generating toxic gases. The solid particles which comprise fly ash sludge originate from wastes subjected to thermal treatment. The results of analytical testing on samples of wastewater and fly ash sludge for compliance with land ban treatment standards are evidence that hazardous organic constituents which are ignitable and/or explosive have been destroyed by incineration.

D-8a(6) Migration of Waste Constituents from the Filter Press

The filter press unit is contained within the filter press building, and therefore migration of wastes from the filter press unit and associated equipment to the environment will not occur. A coated secondary containment structure within the filter press building provides enough volume to contain 100 percent of the hazardous waste managed within this building. The operation of the filter press involves a cycle which includes the transfer of sludge into Tanks 67 and 68, pumping sludge from tanks 67 and 68 into the filter press and delivering filter cake from the press into roll-off containers. The potential from deposition or migration of hazardous constituents from the filter press unit is minimized by equipment design and operation. The filter press is designed to separate suspended solids from scrubber water by filtration and to keep the slurry enclosed within the filter press. Water is released from the filters into collection pans which transfer the water to piping that returns the water to the closed loop system. The filter press is mounted on a coated concrete secondary containment structure which is enclosed within a metal building. The deposition and migration of waste material is also minimized through the use of personal protective equipment which serves to prevent the transfer of waste material onto the operator. The type of personal protective equipment varies according to the activity being performed.

D-8a(7) Treatment Effectiveness of the Filter Press

The function of the filter press is to remove solids from the scrubber water sludge to minimize the volume of spent scrubber water sludge requiring off-site treatment and/or disposal. The sludge

entering the filter press is typically 70 percent water while the filter cake exiting the press has an average water content of 40 percent. The liquid filtrate is recycled back to the closed loop scrubber water system, surge tank, clarifier, maintenance storage tank, or shipped off site for disposal. The filter press is custom designed operating at specifications established by RIS. Although there are no operating specifications for this unit, samples of filter cake are collected in accordance with Section C- Waste Characteristics and Waste Analysis Plan to confirm that the filter press achieves the paint filter liquids test standards.

D-8b The Barge a Miscellaneous Unit

D-8b(1) Description of the Barge

The barge is a three-sided open top box used for the repackaging of hazardous waste from roll-offs, vacuum boxes (vac box), dump trailers, flatbeds, tankers and other vehicles. Although the barge was designed as a mobile unit, it is typically stationary.

The barge is not a waste storage unit. Rather, the barge allows for repackaging of hazardous and non-hazardous wastes. Furthermore, RIS uses the barge to repackage discrete quantities or batches of material intermittently. Material is typically dumped into the barge from over-the-road transport vehicles. Operators will immediately remove material from the barge using heavy equipment (e.g., excavator) to place the material into other containers, typically drums or totes, which are immediately labeled and closed. The person performing the unloading and loading operation do not leave the immediate vicinity of the barge. Barge activities are limited to:

- adding hazardous waste,
- removing hazardous waste, and
- cleaning or decontamination of the unit.

There is sufficient aisle space around the barge to allow for the unobstructed movement of personnel and fire protection equipment, and to facilitate spill clean ups and decontamination efforts in emergency situations.

The location of the Barge is shown on the facility map provided in Exhibit A as Figure D1-1 entitled "Active Facility Site Plan With Location of Hazardous Waste Management Units" (Drawing #D-90-019) and additional information on the design specifications of the Barge are found in Table D8-2 – Design Specifications for the Barge.

Table D8-2 Design Specifications for the Barge

Unit Type:	Three-Sided Open Top Box
Size:	20' Long X 14' Wide
Capacity / Volume	27.75 m^3
Detail:	The fourth side is a three-hinged door that opens alongside the side walls and has a ramp.
Floor:	The floor of the barge is constructed of ¾" plate steel. There is an extra half inch (1/2") thick piece of steel plate that stretches along the back floor of the barge.
Wall Dimensions:	Walls are 3'6" high, constructed of ½" steel plate with 1 3/8" holes every four feet along the top of each side of the barge that allow for the placement of tarp bows with an 18" rise.
Throughput:	400 tons/day

D-8b(2) Waste Characterization

The waste repackaged in the barge is bulk solid waste such as debris, soils, refinery sludges and remediation waste that carries a variety of characteristic and listed waste codes. For wastes to be received at RIS, a WPS must be created by the generator. During the WPS creation process a technical chemist makes processing decisions concerning the waste. One such process decision is whether the waste is a candidate for bulk repackaging. Wastes that may not be approved for repackaging include: wastes with high toxicity, odorous wastes, reactive wastes, liquid wastes, sludges with a viscosity less than 1500 centipoise, etc. Additionally, RIS will repackage P-listed wastes in the barge on a case-by-case basis. P-listed wastes more likely repackaged in the barge include: waste in small containers, pharma-type wastes (chemotherapy wastes), and remediation wastes with a carry through P-listing. When repackaging P-listed wastes, RIS will either triple rinse the barge immediately and manage the rinseate as a P-listed hazardous waste or line the barge with visqueen and dispose of the visqueen as a P-listed hazardous waste. Consideration is also given to the type and concentration of constituent in the waste.

The process throughput of the barge is 400 tons per day. The bulk repack operators could repack bulk waste 24 hours per day, 7 days per week, 52 weeks per year. Materials repackaged in the barge include bulk solids such as soils, debris, refinery sludges, remediation media, etc. Because the barge is used to process solids, the potential for migration of waste to the environment is extremely limited.

D-8b(3) Containment System

The barge is not used to manage liquid wastes. As such, there is no secondary containment provided for the barge. Rather, there are several sumps in the area. The barge is located north east of the incinerator on a large concrete pad, which was constructed to drain to a sump west of the barge. The concrete pad has a retaining wall behind the barge, built to direct rainfall and spills to area containment basins. During substantial precipitation events, precipitation collected in the area containment will be evaluated and released to the Maintenance Storage Tank ("MST") or Rainwater Pond, as is the current process. The surrounding grounds minimize run-on from precipitation in conjunction with the current concrete pad design features.

D-8b(4) Prevention of Air Emissions

The barge is used to repackage solids into smaller containers using heavy equipment. Subpart BB applies to equipment, such as pumps that encounter hazardous wastes having a VOC concentration 500 ppm or greater. The barge repackaging operations includes no such equipment. As such, Subpart BB does not apply to the barge.

Subpart CC and OAC 3745-205-86 apply to storage and treatment of waste in containers, tank systems, or surface impoundments. The barge is NOT a container, tank system, nor surface impoundment. Moreover, the barge is NOT used to store or treat hazardous waste. Consequently, Subpart CC or OAC 3745-205-86 do NOT apply to the barge.

Waste is constantly being added to or taken from the barge. Discrete quantities of material are intermittently added to and taken from the unit until completion of the repackaging process. The persons performing the operation never leave the immediate vicinity of the unit until the repacking process is complete at which point the barge is RCRA empty. All activities performed in the barge are either normal operations or cleaning.

RIS will gather the information necessary to manage the waste during the profiling process. Additionally, RIS recognizes that unit size and contaminant vapor pressure play pivotal roles in emissions. As such, RIS plans to conservatively use a contaminants pure component vapor pressure to evaluate potential emissions. If the pure component vapor pressure is greater than 76.6 kPa, RIS will not repackage in the barge.

In summary, based on the barge size, the physical state (solid) of the waste repackaged, and the type (e.g., soil, debris, and remediation media) and the vapor pressure of typical contaminants (e.g., paints, petroleum products, and other volatiles with vapor pressure less than 76.6 kPa), as discussed above, it is unlikely that significant organic air emissions will occur.

Any potential particulate emissions will be managed using best management practices including wetting the waste. The operation of the barge is not expected to contribute to significant particulate emissions.

Furthermore, RIS uses the barge to manage discrete quantities or batches of material. The barge repackaging occurs intermittently. Once waste is added to the barge, repackaging continues until all waste has been placed into drums or totes and the drums / totes have been closed and labeled. Repackaging operators never leave the immediate vicinity of the barge when conducting waste management activities and RIS does not store waste in the barge.

Since organic and particulate emissions are not detected in significant quantities in the solid waste that RIS repackages, the operation of the barge is not expected to contribute to air emissions or affect the ambient air quality.

D-8b(5) Operating Standards

The bulk repackaging process is operated by fully trained operators under the direction of a foreman or his representative. The operator(s) has undergone on-the-job and classroom training as described in Section H of this application to ensure safe and efficient operation of the barge. Procedures are in place that safely direct all repackaging waste management activities onsite. For example, existing procedures direct RIS employees to: track bulk loads, verify discrepancy resolutions, sample bulk loads of waste materials, direct visual inspections of bulk waste, complete repackaging and compliantly label, close and manage waste containers filled during repackaging of material, inspect and safely operate tow motors and heavy equipment, and drain / pump rain water from containment sumps.

The bulk repackaging process is manned by experienced well-trained operators. Operators are trained to ensure that roll-offs, dumps, etc., and all containers holding hazardous waste are kept closed except when it is necessary to add or remove waste. In addition, operators are trained to ensure that

repackaged containers holding hazardous waste are not opened or handled in a manner which may rupture the container or cause it to leak.

RIS performs daily inspections of the barge and barge area looking for leaks, to ensure the area is in good condition, and looking for accumulated precipitation. Typical heavy equipment used during bulk repackaging include: a backhoe, an excavator, powered industrial trucks, scales, and a straight truck.

Typically, a Repack Operations Summary Form (RIS-134) is provided to barge repack operators. The Repack Form (RIS-134) indicates: what type of containers (plastic totes or drums) the material will be repackaged into; if there are weight restrictions for the containers; and how much by weight can be put into each container. The straight truck weighs the roll-off and moves the roll-off to the area east of the incinerator. Empty containers are brought to the repack area, and the area is prepared for work. Specifically, appropriate labels and markings are added to the barge. When hazardous waste is in the barge, the barge is marked with the words "hazardous waste" and is marked or labeled with an indication of the content hazards (e.g., ignitable, corrosive, etc.). After placing visqueen on the ground, an area adjacent to the barge is designated as the "hot zone."

Handling instructions for the waste to be repackaged are reviewed to determine the Personal Protective Equipment needed to enter the hot zone. The backhoe operator moves the backhoe to the opposite end of the barge's swing gate. Once the barge is grounded, the roll-off is lined up to the barge. The gate on the roll-off back is opened and the roll-off tipped until waste dumps into the barge. Material is immediately removed from the barge and transferred into the empty containers. The containers receiving waste are labeled, closed, weighed, and moved to a storage location.

While the barge is in operation, operators continually check for leaks. The operator also continually checks the waste for appropriate physical characteristics. The foreman is immediately notified of any unusual events or conditions.

D-8b(6) Migration of Waste Constituents from the Barge

The barge, an outdoor unit, is used intermittently for the repackaging of bulk solid waste such as debris, soils, refinery sludges and remediation waste. Based on its size, the physical state (solid) of the waste repackaged, and the type and concentration of typical contaminants, it is unlikely that

emissions will occur. Typical barge contaminants are paints, petroleum products, and other volatiles that have pure component vapor pressures less than 76.6 kPa.

Migration of wastes from the barge and associated equipment to the environment does not occur because organic and particulate emissions are not detected in significant quantities in the solid waste that RIS repackages.

D-8b(7) Effectiveness of the Barge

The barge is vital to the efficient and compliant operation of the RIS facility. The barge function is to repackage bulk wastes. Given the tight restrictions placed on RIS by the Hazardous Waste Combustor Maximum Achievable Control Technology ("MACT") standards under 40 CFR 63, Subpart EEE, controlling charge size into the incinerator provides considerable environmental benefit. The MACT standards require that RIS closely monitor feed limits to assure emissions limits are met. To meet MACT emission limits, repackaging of waste, particularly repackaging of bulk solid waste streams is crucial. By closely controlling charge size through repackaging, RIS optimizes its feed mix avoiding waste feed cut off events associated with carbon monoxide ("CO"). With the right combination of liquids, solids and semi-solids, RIS assures compliance with the MACT standards while efficiently operating the incinerator.

D-8c Various Site Information

D-8c(1) Site Air Conditions

RIS is located within Lorain County, which is bordered by Cuyahoga, Medina, Ashland, and Huron Counties. The National Ambient Air Quality Standards ("NAAQS") attainment status for these counties is listed in Table D8-2, "NAAQS Status".

Figure B-7, entitled "Wind Rose 2002-2012" in Section B (Facility Description) of this application, presents an annual wind rose of meteorological data collected from the Hopkins International Airport Weather Station, located near Cleveland, Ohio. This airport is approximately 15 miles northeast of RIS' facility in Grafton, Ohio. Topography at the site is gently rolling, as shown in Figures B-3, entitled "Topographic Map" and B-4, entitled "Topographic Map of Surrounding Area" of Section B - Facility Description of the application. The surrounding land use is rural and agricultural.

Table D8-3 - NAAQS Status for Lorain, Cuyahoga, Medina, Ashland, and Huron Counties

Pollutant	Lorain	Cuyahoga	Medina	Ashland	Huron
Sulfur Dioxide	ATT	ATT	ATT	ATT	ATT
Nitrogen Oxides	ATT	ATT	ATT	ATT	ATT
Carbon Monoxide	ATT	ATT	ATT	ATT	ATT
Ozone (8-Hour)	Non Attainment[a]	Non Attainment[a]	Non Attainment[a]	ATT	ATT
Lead	ATT	ATT	ATT	ATT	ATT
Particulate	ATT	ATT	ATT	ATT	ATT

US EPA Green Book Ohio Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, Data current as of June 20, 2023; ATT = Attainment;

[a] Neither the filter press nor the Barge emit any of these regulated air compounds.

D-8c(2) Site Hydrogeologic Conditions

Please refer to Section B (Facility Description Figure B-3, entitled "Topographic Map " of this permit application for a topographic map of the facility.

The site and surrounding area are generally flat to gently rolling. Glacial deposits (till) and lacustrine deposits (lake clay) are generally 35 feet in total thickness, followed by Berea Sandstone and Bedford Shale. There are two water-bearing units at the site. The shallow unit (till zone of saturation) is 15 to 20 feet below the ground surface and the deeper bedrock Berea Aquifer is about 35 feet below ground surface. The Bedford Shale formation occurs below the Berea, about 60 feet below ground surface. Within the upper 35 feet, three principal subdivisions have been identified:

1) At the surface of the till deposit, a brown weathered silty clay loam soil is generally present which grades to a gray unweathered silty clay loam till;
2) A water bearing zone of unweathered gray silty to sandy clay loam till; and
3) A finely laminated gray unweathered clay, silty clay or clay loam lacustrine deposit (lake clay).

A preglacial valley runs through the east-central third of the RIS property about 150 feet below land surface. Below the lake clay deposit the preglacial valley is filled with gray clay loam and gray sandy clay loam tills with more gravelly deposits at the valley's deepest part. A generalized cross-section

and the geologic drilling logs used in its construction are provided as Figure D8-1(with attachments), entitled "Generalized Geologic Cross Section" (drawings 2.6-1 – 2.6-5) as supporting information.

Regional water quality studies have shown that the Berea aquifer has been degraded as a result of oil and gas production activities. Documentation of the groundwater quality problems is provided in the publication *"Groundwater Resources of Lorain County"* by Glenn W. Hartzell in 1980. Naturally occurring sulfur, other salts i.e. ionic compounds made up of positively charged ions such as Na(+) and negatively charged ions such as Cl(-) and SO_4^{-2} which are common as documented by RIS' historical and ongoing groundwater monitoring data), petroleum hydrocarbons and the contamination of the aquifer from oil and gas exploration all contribute to the poor quality of the Berea Aquifer. This condition makes the Berea Aquifer widely unacceptable for use as a public potable water supply.

The direction of ground water flow in the till zone of saturation can be described as complex or multi-directional and is influenced by topography and nearby water bodies (see Figure D8-2, entitled "Typical Ground Water Flow Diagram for the Till Zone of Saturation", drawing D-90-079 till). In contrast, the direction of ground water flow in the upper-most aquifer (Berea Aquifer) is westerly (See Figure D8-3, entitled "Typical Groundwater Flow Diagram for the Berea Aquifer", drawing D-90-079 berea). toward the Black River and away from receptors. The Black River is approximately two miles west of the facility.

D-8c(3) Site Precipitation

The filter press unit is completely contained within the filter press building which acts as secondary containment for the unit. The filter press secondary containment has enough excess capacity to not only contain the single largest unit, but also to contain 100 percent of all units. Since this area is located completely within the filter press building, precipitation and run on to the secondary containment is minimized. To further reduce the likelihood of contact of hazardous waste with the environment, the secondary containment has been sealed with two coats of an impermeable coating. The filter press building is further described in D-8a(3) Containment System.

The barge is located on and surrounded by concrete, which is capable of containing any solid material release. Additionally, the concrete slab is sufficiently sloped to direct accumulated precipitation to

existing sumps until the collected material is inspected and removed. Because RIS operators are working in the area on a 24 hour/day, 7 days/week, 52 weeks/year basis, precipitation is constantly monitored.

Run-on into the barge area is minimized by current elevations and the slope of the areas to the north and west which direct precipitation away from the barge area. The west side of the barge area directs precipitation to an existing sump. The south side of the barge area directs precipitation to a sump near the incinerator. The barge area is inspected daily when in use. As such, spilled waste and accumulated precipitation can be removed from the area immediately.

The barge is currently located outside. As such, RIS may repack in the barge during a variety of weather conditions. However, given the various weather conditions in Ohio, RIS believes it prudent to provide guidelines concerning when repacking will cease. RIS will cease outside barge operations when a rain event could result in run-off from the barge.

Accumulated precipitation is also removed from the catch basins in a timely manner to prevent overflow of the collection system. The basins have manually operated discharge valves which can be opened (upon visual inspection) to drain uncontaminated storm water to existing rainwater management systems, where storm water can be pumped to the rain water pond. The barge is further described in D-8b(3) Containment System.

D-8c(4) Site Groundwater Usage

The designated aquifer in the area, the Berea Sandstone Aquifer, was historically recognized as a drinking water source. The Berea Aquifer has largely been replaced by the use of rural water through the Rural Lorain County Water Authority ("RLCWA"). The source for the RLCWA is a system of intakes located on the south shore of Lake Erie. There are no known downgradient wells between the facility and the Black River; thus, there are no known potential receptors downgradient. The Black River is approximately two miles to the west.

D-8c(5) Site Surface Waters

There is a rainwater pond and a fresh water lake on the facility. Additionally, there are sumps or catch basins which collect run-off at low points on the facility. Dawley Ditch runs along the eastern boundary of the facility within 160 ft. of the filter press unit and Willow Creek runs somewhat parallel

to Giles Road, approximately 500 ft. south of the facility boundary. Please refer to Figure B-4, entitled "Topographic Map of Surrounding Area" in Section B (Facility Description) of this application. According to OAC 3745-1-07 AND OAC 3745-1-27, neither Dawley Ditch nor Willow Creek are identified for specific water quality criteria and therefore, have no use designations or associated water quality standards. All surface waters of the State of Ohio are required to meet the general water quality criteria described in OAC 3745-1-04 including general criteria for suspended solids, floating debris, nutrients and other materials resulting from human activity.

The entire active area of the facility is surrounded by a compacted clay dike with an elevation of 780 ft. MSL, which provides 100 percent containment capacity, thus mitigating the potential for waste contaminants to enter surface waters. The dike averages three feet in height and six to ten feet in width. The dike has a 3-to-1 slope and is covered with vegetation. The fourth (south) side of the facility is at an elevation of 782 ft. MSL, exceeding that of the dike.

D-8c (6) Area Land Use

The surrounding land use is rural and agricultural. Land use planning and regulations are administered by the Eaton Township of Lorain County, Ohio. Other zoning information is located in Section B (Facility Description) Figure B-3 entitled "Topographic Map of this application.

D-8c(7) Evaluation of Risk to Human Health and the Environment

The risk to human health and the environment through operation of the filter press, barge and associated equipment, as described herein, is minimized by the engineering and operational controls designed into the units.

Historically, RIS has done an excellent job of managing the potential risks posed by the filter press and barge. RIS uses strict compatibility guidelines, a comprehensive employee training program and effective operating procedures, to minimize risk to human health and the environment. Both Miscellaneous Units are designed and equipped with a sufficient number of fire extinguishers to control minor incidents. Also, containers, sumps, lighting and transportation equipment used during filter press and barge operations are inspected daily by RIS operators and Corporate Environmental,

Health and Safety ("EHS") Department personnel. A Contingency Plan is in place to protect human health and the environment in the event of a serious hazardous waste incident in any of RIS' waste management areas.

In summary, RIS believes that the Miscellaneous Units do not pose a risk to human health or the environment. Furthermore, the types of waste materials managed at the facility will not change, and the maximum throughput to the incinerator remains the same.

D-8c(8) Environmental Performance Standards For Miscellaneous Units

RIS recognizes that Subpart X units are required to meet environmental performance standards rather than technology standards. Although no existing emission standards apply to either the filter press or the barge, RIS operates both units in a manner protective of human health and the environment. Specifically, RIS manages the filter press and barge wastes in such a manner that the potential exposure to humans and the environment is extremely low.

Furthermore, the location, design, construction, operation, and maintenance of both miscellaneous units have been discussed in previous sections for the purpose of demonstrating relevant performance standards. RIS believes that both the filter press and the barge units meet pertinent performance standards.

Operator inhalation and dermal exposure to the waste is minimized through the use of personal protective equipment while operating the filter press and repackaging in the barge. For example, the operator may wear a face shield, full face respirator, latex or polycoated gloves and a polycoated tyvek apron.

D-8c(9) Monitoring, Analysis, Inspection, Response, Reporting And Corrective Action

The filter press unit operations are discussed in Section D-8a(4) under operating standards. The barge operations are discussed in Section D-8(4) under operating standards. RIS does not believe that monitoring requirements are necessary because organic and particulate emissions are not detected in significant quantities in the solid phased wastes that RIS filter presses or repackages.

In addition, the operator fills out production logs (e.g., filter press production logs and Repack Form)

and immediately notifies the foreman if there are any unusual events or conditions. A visual leak inspection is also performed for both units during operation.

RIS has performed quantitative evaluations of the environment surrounding the barge and within the filter press building relative to worker exposure to both potential airborne contaminants and noise. Based upon the monitoring results, hearing protection is not required for personnel while operating the filter press or while repackaging waste in the barge. For the analytes monitored (i.e., volatiles, pesticides, and various metals - arsenic, chromium, lead and selenium) air sample analytical results indicated very low concentrations of any contaminant in the air being monitored while the units were in operation. The analytical results for many contaminants were not detectable.

Additional discussion of inspection, monitoring, reporting and corrective action procedures applicable to each of the hazardous waste management units is presented in subsequent sections of this permit application. Please refer to Contingency Plan (Section G) and Procedures to Prevent Hazards (Section F).

D-9 RCRA Organic Air Emissions Standards

This section provides information required to be included in RIS' RCRA Part B Permit Renewal Application relevant to the applicable air emission standards in OAC 3745-205-30 through OAC 3745-205-36, OAC 3745-205-50 through OAC 3745-205-65, OAC 3745-205-80 through OAC 3745-205-90.

D-9a Process Unit Vents OAC 3745-205-30 through OAC 3745-205-36

Process Unit Vent regulations apply to process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, and air or steam stripping operations which manage hazardous waste with an organics concentration of $\geq$10 ppm by weight.

RIS does not operate any of these units, therefore OAC 3745-205-30 through OAC 3745-205-36 do not apply to the facility. As a result, information pertaining to OAC 3745-205-30 through OAC 3745-205-36 is not provided in this section.

D-9b Equipment Leaks OAC 3745-205-50 through OAC 3745-205-65

Equipment Leaks regulations apply air emissions from certain process equipment, such as pumps, valves, and flanges, which contain or contact hazardous waste streams with > 10 percent by weight total organics.

D-9b(1) Applicability

Wastes accepted at RIS are generally organic in nature or are aqueous solutions containing organics. RIS has conducted a survey of all process equipment used to manage wastes prior to incineration and has identified equipment which is subject to OAC 3745-205-50(A).

D-9b(2) Exemptions

RIS assumes no exemptions from the applicable requirements of OAC 3745-205-50(B).

D-9b(3) Equipment Leak Standards - Inspection Plan and Schedule OAC 3745-205-52.

This section provides information requested under OAC 3745-205-52 for sources of air emissions at RIS to which OAC 3745-205-52 applies. For each source of air emissions which OAC 3745-205-52 applies, the following information is provided:

1. Equipment Identification Number and Unit Identification - Each piece of equipment is assigned and tagged with a unique identification number. The equipment identification number and unit identification are recorded and maintained in RIS Operating Record.
2. Approximate Equipment Location - Each piece of equipment is described by an approximate location within the RIS facility. The approximate equipment location is recorded and maintained in RIS' Operating Record, and on the Facility Site Plan - VOC Source Locations provided in Exhibit A, Figure D9-1 (drawing D-90-091).
3. Equipment Type – Each piece of equipment is described by its type. The type of equipment is documented in RIS Operating Record.
4. Percent Organics in Equipment - Each piece of equipment subject to OAC 3745-205-

50 or comes in contact with material with a total organic concentration of > 10% by weight. All equipment is assumed to be in light liquid service and can potentially contain or come in contact with material that is 100% organic.

5. Waste Physical State - All pumps, piping, flanges and other connections and valves which are subject to OAC 3745-205-50 contain or come in contact with a material that is liquid/sludge like in its physical state.
6. Method of Compliance
   - All pumps shall comply with the weekly visual inspection and monthly leak detection and repair requirements found in OAC 3745-205-52.
   - All piping flanges and other connections shall comply with leak detection and repair requirements found in OAC 3745-205-55.
   - All valves shall comply with the monthly leak detection and repair requirements found in OAC 3745-205-56.
   - Documentation of compliance with the above requirements is demonstrated by the example monitoring logs provided in OAC 3745-205-64.

D-9b(4) Equipment Leak Standards - Inspection and Monitoring Program

This section provides information requested under OAC 3745-205-52 through OAC 3745-205-58 for sources of air emissions at RIS. It provides a general visual inspection and air emissions monitoring plan and schedule for each of the following sources:

1. Pumps [OAC 3745-205-52] - Pumps at the Process Dock, Tank Farms and Incinerator Metering Room manage material with total organic concentrations of greater than 10 percent by weight. Each piece of equipment is assigned and tagged with a unique identification number. The following pumps are regulated by OAC 3745-205-52:

- Process Dock (2): North Transfer Pump, South Transfer Pump
- Tank Farm #1 (2): Transfer Pump
- Tank Farm #2 (2): Transfer Pump, Bypass Fuel Pump
- Tank Farm #3 (1): Transfer Pump
- Drum Direct Feed (2): Feed Pumps

- Incinerator Metering Room (11):
  - PU-24-001 (Direct Feed),
  - PU-24-002 (Direct Feed),
  - PU-24-003 (Low BTU Fuel),
  - PU-24-004 (High BTU Fuel),
  - PU-24-005 (Low BTU Fuel),
  - PU-24-006 (Low BTU Fuel),
  - PU-24-007 (High BTU Fuel),
  - PU-24-008 (High BTU Fuel),
  - PU-24-009 (By-Pass Fuel Feed),
  - PU-24-010 (By-Pass Fuel Feed),
  - PU-24-013 (Direct Feed).

Each pump will be visually inspected once per week and monitored monthly using the methods specified in OAC 3745-205-63. The pumps will be visually inspected for any indication of leaks. Results of the visual inspection will be recorded in RIS Operating Record. A leak detection limit of 10,000 ppm above background will be used during monitoring.

All leaks will be repaired no later than 15 calendar days after the leak is detected, and a first attempt at repair will be made no later than 5 calendar days after the leak is detected unless a delay for repairs is necessary, in which case repairs will be made by the end of the next unit shutdown.

In accordance with OAC 3745-205-59, delay of repair for equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown.

Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.

In accordance with OAC 3745-205-59 delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system.

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

D-9c Piping, Flanges and Other Connections OAC 3745-205-58

Several piping flanges and other connections (e.g., connections, caps, covers strainers) at the Process Dock, Tank Farms, fuel and direct feed strainers, incinerator metering room, main chamber and kiln feed lines manage material with total organic concentrations of greater than 10 percent by weight. Each piece of equipment will be assigned and tagged with a unique identification number.

Each piping flange and other connection will be monitored using the procedures referenced in OAC 3745-205-63 within 5 days if evidence of a potential leak is found by visual, audible, olfactory or other means of detection. A leak detection limit of 10,000 ppm above background will be used during monitoring. Results of the VOE monitoring will be recorded and maintained in RIS Operating Record.

All leaks will be repaired no later than 15 days after the leak is detected by instrument monitoring, and a first attempt at repair will be made no later than 5 calendar days after the leak is detected unless a delay for repairs is necessary, in which case repairs will be made by the end of the next unit shutdown.

In accordance with OAC 3745-205-59, delay of repair for equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment will occur before the end of the next hazardous waste a management unit shutdown.

Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight in accordance with OAC 3745-205-58.

D-9d Valves [OAC 3745-205-58]

Several valves at the Process Dock, Tank Farms, incinerator metering room, fuel and direct feed

strainers, main chamber and kiln feed lines manage material with total organic concentrations of greater than 10 percent by weight. Each piece of equipment is assigned and tagged with a unique identification number.

Each valve will be monitored monthly using the methods specified in OAC 3745-205-63. A leak detection limit of 10,000 ppm above background will be used during monitoring. Results of the VOE monitoring will be recorded and maintained in RIS Operating Record. Any valve for which a leak is not detected for two successive months may be monitored the first month of each succeeding quarter until a leak is detected. If a leak is detected, monthly monitoring will resume until a leak is not detected for two successive months.

All leaks will be repaired no later than 15 calendar days after the leak is detected, and a first attempt at repair will be made no later than 5 calendar days after the leak is detected unless a delay for repairs is necessary, in which case repairs will be made by the end of the next unit shutdown. First attempts to repair include, but are not limited to, the following best practices where practicable: (1) tightening of bonnet bolts; (2) replacement of bonnet bolts, (3) tightening of packing gland nuts, and (4) injection of lubricant into lubricated packing.

In accordance with OAC 3745-205-58, delay of repair for equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. In such a case, repair of this equipment will occur before the end of the next hazardous waste a management unit shutdown.

Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the hazardous waste management unit and that does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight in accordance with OAC 3745-205-63.

In accordance with OAC 3745-205-59, delay of repair for valves will be allowed if:

(1) The owner or operator determines that emissions of purged material resulting from immediate repair are greater than emissions likely to result from repair delay.

(2) When repair procedures are affected, the purged material is collected and destroyed or recovered in an appropriate control device.

In accordance with OAC 3745-205-59, delay of valve repair beyond the first hazardous waste management unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the hazardous waste management unit shutdown, valve assembly supplies have been depleted and valve assembly supplies had been sufficiently stocked before the supplies were depleted . Delay of repair beyond the next period of hazardous waste management unit shutdown will not be allowed unless the next hazardous waste management unit shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

D-9e. Recordkeeping Requirements

A. In accordance with OAC 3745-205-64, the following information will be maintained in the facility operating record:

1. Equipment Identification Number and Unit Identification
2. The Equipment's Approximate Location
3. The Type of Equipment
4. Percent of Organics in Equipment (via waste product survey)
5. Waste Physical State (via waste product survey)
6. Method of Compliance

B. When each leak is detected, RIS will comply with the requirements set forth in OAC 3745-205-64(C).

C. When each leak is detected, in accordance with OAC 3745-205-64 (D) the following information will be recorded in an inspection log and/or work order system and be kept in the facility operating record:

1. The instrument and operator identification numbers and the equipment identification number.
2 The date evidence of a potential leak was found in accordance with OAC 3745-205-58.

3. The date the leak was detected and the dates of each attempt to repair the leak
4. Repair methods applied in each attempt to repair the leak
5. "above 10,000" if the maximum instrument reading measured by the methods specified in OAC 3745-205-63 (B) after each repair attempt is equal to or greater than 10,000 ppm.
6. "Repaired delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
7. Documentation supporting the delay or of repair of a valve in compliance with OAC 3745-205-59.
8. The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a hazardous waste management unit shutdown.
9. The expected date of successful repair of the leak if the leak is not repaired within 15 calendar days.
10. The date of successful repair of the leak.

D. In accordance with OAC 3745-205-64, the applicable design documentation, monitoring, operating and inspection information will be maintained in the facility operating record.

E. Information required by OAC 3745-205-64 pertaining to all equipment subject to the requirements will be recorded in a log that is kept in the facility operating record.

F. Records of the equipment leak information required by OAC 3745-205-64, including the operating information required by OAC 3745-205-64(D) will be kept in the operating log for a period of three (3) years in accordance with OAC 3745-205-64 (L).

D-9f Reporting Requirements

A. In accordance with OAC 3745-205-65, RIS will submit a semiannual report to the Regional Administrator, unless not required per . The Report shall include the following information:

1. The EPA identification number, name and address of the facility.
2. For each month during the semi-annual reporting period:

   (a) The equipment identification number of each valve for which a leak was not repaired as required in OAC 3745-205-57.

(b) The equipment identification number of each pump for which a leak was not repaired as required in OAC 3745-205-52.

(c) The equipment identification number of each compressor for which a leak was not repaired as required in OAC 3745-205-53.

3. Dates of hazardous waste management unit shutdowns that occurred within the semiannual reporting period.

4. For each month during the semi-annual reporting period, dates when the control device installed exceeded or operated outside of the design specifications as defined in OAC 3745-205-64 and as indicated by the controlled device monitoring required by OAC 3745-205-60 and was not corrected within 24 hours, the duration and cause of each exceedance, and any corrective measures taken.

B. If, during the semiannual reporting period, leaks from valves, pumps and compressors are repaired as required in OAC 3745-205-57, OAC 3745-205-52, and OAC 3745-205-53, respectively, and the control device does not exceed or operate outside of the design specifications as defined in OAC 3745-205-65(E) for more than 24 hours, a report to the Regional Administrator is not required.

D-9g Tanks, Surface Impoundments and Containers OAC 3745-205-80 through OAC 3745-205-90

OAC 3745-205-80 - OAC 3745-205-90 regulates air emissions from certain tanks, containers, and surface impoundments which manage hazardous wastes containing an average organic concentration of greater than or equal to 500 ppmw at the point of waste origination.

Surface impoundments formerly located at the RIS facility have not had hazardous waste added to them since October 6, 1996. All of the surface impoundments have subsequently been closed in accordance with applicable RCRA closure requirements. As such, there are no surface impoundments subject to OAC 3745-205-86 requirements.

Containers Standard (OAC 3745-205-86) - Inspection Plan and Schedule

A. Identification of Containers subject to Container Standards under OAC 3745-205

1. Container storage areas. Containers are stored in the following distinct container

storage areas at RIS:

a. Container Storage Facility (CSF)
b. Bulk Storage Area #1 (BSA #1)
c. Bulk Storage Area #2 (BSA #2)
d. Oxidizer Storage Building (OSB)
e. Waste Storage Bays #1 (WSB #1)
f. Waste Storage Bays #2 (WSB #2)
g. Waste Storage Bays #3 (WSB #3)
h. Container Storage Area (CSA)
i. Waste Management Building (WMB)
j. Process Dock West Storage Area (PDWSA)
k. Guard Rail Storage Area (GRSA)

1. Specific container storage areas subject to OAC 3745-205-86 requirements are listed in Table D9-1. Exhibit A, Figure D1-1 "Active Facility Site Plan with Location of Hazardous Waste Management Units" (drawing D-90-019) indicates the location of all the container storage areas.

2. Waste to be managed in containers. RIS manages hazardous and non-hazardous organic or inorganic, liquids, pumpable sludges, semi-solid or solid waste in containers. Containers subject to the OAC 3745-205-88 monitoring requirements will contain waste with a volatile organic concentration ("VOC") greater than or equal to 500 ppm.

3. Container capacity and service. The following containers could be stored in any of the above container storage areas at any given time as shown on Table D9-1:

Type A-1: Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.1m3 (approximately 26 gallons) and less than or equal to 0.46 m3 (approximately 119 gallons) (Level 1 control containers - U.S. D.O.T. approved).

Type A-2 Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.1m^3 and less than or equal to 0.46 m^3 (Level 1 control containers - containers equipped with a cover and closure device that form a continuous

barrier over the container openings such that when there are not visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover installed on the container [e.g., a lid on a drum or a suitably secured tarp on a roll-off box] or may be an integral part of the container structural design [e.g., a "portable tank" or bulk cargo container equipped with a screw-type cap]).

Type A-3 Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.1m^3 and less than or equal to 0.46 m^3 (Level 1 control containers - open top container in which an organic vapor suppressing barrier is placed on or over the hazardous waste in the container such that no hazardous waste is exposed to the atmosphere).

Type B-1: Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.46 m^3 that are not in light material service (Level 1 Control Containers - U.S. D.O.T. approved).

Type B-2: Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.46 m^3 that are not in light material service (Level 1 Control Containers equipped with a cover and closure device that form a continuous barrier over the container openings such that when there are not visible holes, gaps, or other open spaces into the interior of the container).

Type B-3 Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.46 m3 that are not in light material service (Level 1 Control Containers - open top container in which an organic vapor suppressing barrier is placed on or over the hazardous waste in the container such that no hazardous waste is exposed to the atmosphere). Type C-1: Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.46 m3 that are in light material service (Level 2 Control Containers - U.S. DOT approved.)

Type C-2: Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.46 m3 that are in light material service (Level 2 Control Containers -

containers that operate with no detectable organic emissions as defined in OAC 3745-205-81 and determined in accordance with OAC 3745-205-86).

Type C-3: Containers subject to OAC 3745-205-86 which have a design capacity greater than 0.46 m3 that are in light material service (Level 2 Control Containers - containers that have been demonstrated within the preceding 12 months to be vapor-tight by using 40 CFR Part 60, Appendix A, Method 27 in accordance with the procedure specified in OAC-3745-205-86.

Table D9-1

Summary of Hazardous Waste Management Units Subject to OAC 3745-205-86 - Containers

Hazardous Waste Management Unit Type and I.D. No.	Location of Hazardous Waste Management Unit	Capacity of Storage Unit[1]	EPA Hazardous Waste Code/ Brief Waste Descriptions	Avg. VOC concentration of Hazardous Waste	Container Type[3]	OAC 3745-205-86 Status/Control Option
Container Storage Facility (CSF)	See Drawing D-90-019	702,350 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
Bulk Storage Area #1 (BSA #1)	See Drawing D-90-019	64,632 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
Bulk Storage Area #2 (BSA #2)	See Drawing D-90-019	80,790 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
Oxidizer Storage Building (OSB)	See Drawing D-90-019	7,920 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
Waste Storage Bays (WSB #1)	See Drawing D-90-019	121,180 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
Waste Storage Bays (WSB #2)	See Drawing D-90-019	121,180 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
Waste Storage Bays (WSB #3)	See Drawing D-90-019	80,000 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
CSA	See Drawing D-90-019	33,000 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.
WMB	See Drawing D-90-019	7,500 gallons	All waste codes as described in Note 2. Hazardous or Non-Hazardous, liquids, pumpable sludges, semi-solids, or solids.	Greater than or equal to 500 ppmv	Types A - C	Subject to Container controls per OAC-3745-86.

1 Represents design storage capacity.
2 Waste codes Permitted under Ross' Federal RCRA Part B permit and/or Ohio Hazardous Waste Facility Board Installation or Operation Permit.
3 Container Types defined in Section V..A.3

D-9f(1) Inspection and Monitoring Program for Containers (applies to both Level 1 and Level 2 control containers - Container types A-C)

1. Visual Inspection Program (Container Types A-C)

If the hazardous waste is already in the container at the time RIS first accepts possession of the container at the facility and the container is not emptied within 24 hours after the container is accepted at the facility (i.e., does not meet the conditions of a RCRA empty container), the container, container cover and closure device(s) will be visually inspected for any visible cracks, holes, gaps, or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position. The visual inspection will be conducted on or before the date that the container is accepted at the facility (i.e., the date the container becomes subject to the OAC 3745-205-86 standards).

If a container used for hazardous waste management and subject to OAC 3745-205-86 standards remains at the facility for one (1) year or more, it will be visually inspected at least once every 12 months for visible cracks, holes, gaps or other open spaces into the interior of the container when the cover and closure devices are secured in the closed position.

When a defect is detected for the container, cover or closure device, first efforts at repair of the defect will occur not later than 24 hours after detection and repair will be completed as soon as possible but no later than 5 calendar days after detection. If repair of a defect cannot be completed within 5 calendar days, then the hazardous waste shall be removed from the container and the container will not be used to manage hazardous waste until the defect is repaired.

2. Container Monitoring Program

Waste determination procedures of OAC 3745-205-83 will be used to determine average volatile organic concentrations of hazardous waste. Results of this container monitoring will be recorded and maintained in RIS" Operating Record. An attempt to repair will be made as soon as practicable.

For Type C-3 containers received or in use at the facility, If the generator or transporter does not provide the appropriate documentation to demonstrate that the container has been

tested within the preceding 12 months for vapor tightness, RIS will conduct such testing or monitor emissions from the container using the procedures specified in 40 CFR Part 60 Appendix A, Method 21 upon acceptance of the container, or the container becoming subject to OAC 3745-205-86 requirements. For determining a container to be vapor tight using Method 27 of 40 CFR part 60 Appendix A, the procedures specified in OAC 3745-45-86(h) will be used.

C. Drum Material Transfer Procedures

For Level 2 containers, transfer of waste in or out of a container will be conducted in such a manner as to minimize exposure of the waste to the atmosphere, to the extent practical, considering the physical properties of the hazardous waste and good engineering and safety practices for handling flammable, ignitable, explosive, reactive, or other hazardous materials.

D. Handling Procedures and Operating Protocols for Containers.

Containers will remain closed and sealed except when it is necessary to uncover them for the purposes of adding or removing material, or other routine activities (e.g., inspecting or sampling, or to inspect, maintain, repair or replace the equipment inside the container) in accordance with OAC 3745-205-86.

Opening of a spring loaded, pressure vacuum relief valve, conservation vent, or similar type of pressure relief device which vents to the atmosphere is allowed during normal operations for the purpose of maintaining the internal pressure of the container in accordance with the container design specifications. Examples of normal operating conditions that may cause these devices to open are during those times when the internal pressure of the container exceeds the internal pressure operating range for the container as a result of loading operations or diurnal ambient temperature fluctuations.

Additionally, any other container safety devices may be opened at any time to avoid an unsafe condition.

Also, Ohio EPA the air regulation for tanks and containers are duplicative to hazardous air emission standards under the Clean Air Act ("CAA"). RIS currently maintains an Ohio Title V operating permit, which is comprehensive and includes a listing of all of the emission units and management requirements that apply to the permitted units. RIS' RCRA organic air emission standards for tanks and containers is redundant to RIS' Ohio Title V Permit.

Specific information pertaining to RIS compliance with large quantity generator air emission standards and hazardous waste treatment storage and disposal facility standards for process vents, equipment leaks, and tanks is maintained in RIS Operating Record.

D-9h Closed Vent Piping and Control Devices Standards OAC 3745-205-87 - Inspection Plan and Schedule

A. Identification of Units subject to the Closed Vent Piping and Control Device Standards of OAC 3745-205-87

1. Closed Vent System. Tanks at the Process Dock and Tanks Farms (23A, 24A, 25–36, 37A, 38A, 39-50, 51A, 52A, 53–57, 58A–64A, 70, 73 and 74) manage material with total organic concentrations of greater than or equal to 500 ppmw. Each tank is equipped with a permanent fixed roof and is vented through closed-vent piping to a control device (Tank Level 2 Controls - OAC 3745-205-84). The closed vent system is designed to be operated with no detectable emissions (<500 ppm above background, as measured by the methods specified in OAC 3745-205-63 which have joints, seams, or other connections that are permanently or semi-permanently sealed. Components of the closed vent system are identified on the Inspection and Monitoring Logs recorded and maintained in RIS' Operating Record.

2. Carbon Adsorption System. The carbon adsorption system consists of a carbon bed filled with activated carbon and a fan that provides dilution air to the carbon bed. Organic vapors from the storage tanks in tank farms 1, 2 and 3 and from the process

dock tanks are routed through the fan into the inlet of the carbon bed. The gases exiting the carbon bed are vented directly to the atmosphere. Upstream of the carbon bed, there is an existing two stage refrigerated condensation system. The carbon bed can be run with or without the condensers in operation. The condensers will normally be operated to maximize the bed life. When the carbon bed is off line for maintenance, no waste is transferred into the tank farms. The system is designed for off-site regeneration of the carbon. When the carbon is depleted, the bed is removed and replaced with a new bed of fresh carbon. The Design analysis for the carbon adsorption system is provided in Appendix D-5 Carbon Bed Design Analysis.

B. Inspection and Monitoring Program for Closed Vent System and Control Devices

1. Closed Vent System inspection and monitoring plan. The closed-vent system will be visually inspected and monitored using the methods specified in OAC 3745-205-34 initially and annually as required by OAC 3745-205-87. The closed-vent piping system will be visually inspected for defects such as cracks, holes, or gaps in ductwork or piping. A leak detection limit of 500 ppm above background will be used during monitoring.

All visible leaks or exceedances of equipment will be recorded and maintained in RIS Operating Record. At a minimum, the record will include the date the leak or exceedance was discovered, a notation of the observation made, and the date and nature of any repairs or other remedial action taken. Standard RIS maintenance practices are used to repair leaks (i.e., computerized work order tracking system).

System malfunctions will be corrected as soon as practicable and the system will be operated such that gases, vapors or fumes are not actively vented to the control device during planned maintenance of control device system malfunctions in accordance with OAV 3745-205-87.

All leaks will be repaired no later than 15 calendar days after the leak is detected, and a first attempt at repair will be made no later than 5 calendar days after the leak

is detected unless a delay of repairs is necessary, in which case repairs will be made by the end of the next unit shutdown.

2. Carbon Bed Inspection and Monitoring Plan. 40 CFR Part 60, Appendix A, Reference Method 21 will be used to measure the concentration level of organic compounds in the inlet and exhaust vent streams at the Carbon Bed.

   A portable instrument that meets the specifications and performance criteria of Reference Method 21 will be used for all monitoring. The instrument will be calibrated according to Reference Method 21 before testing is performed. The instrument will be calibrated with zero gas (air, less than 10 ppmv VOC) and a gas in air mixture approximately equal to the leak detection limit.

   As required by OAC 3745-205-87, the carbon bed will be inspected daily at an interval not greater than 20 percent of the time required to consume the total carbon working capacity, whichever is longer. Malfunctions, improper operation, or damage will be recorded and maintained in RIS' Operating Record. The total carbon working capacity of the carbon bed will vary depending on the organic vapor load placed on the unit.

   The carbon adsorption system, including replacement and removal, will follow the prescribed requirements of OAC 3745-205-87.

D-9i. Inspection and Monitoring Requirements

The Inspection and Monitoring Plan required by OAC 3745-205-88 for each unit subject to requirements of OAC 3745-205-84 through OAC 3745-205-87 is described in each of the subsections above.

The results of visual inspections and monitoring conducted in accordance with OAC 3745-205-86 for containers, tank and control devices will be recorded and maintained in RIS Operating Record.

D-9j Recordkeeping and Reporting Requirements

A. Recordkeeping Requirements

In accordance with OAC 3745-205-89, all records required by OAC 3745-205-89, as applicable and including Records for all visual inspections and monitoring, will be maintained in the facility operating record. All information required by OAC 3745-205-89 will be maintained in the operating record for a minimum of three (3) years. All records required by OAC 3745-205-89 will be maintained in the operating record for as long as the tank or container is not using air emission controls specified in OAC 3745-205-84 through OAC 3745-205-87 in accordance with OAC 3745-205-84.

B. Reporting Requirements

1. In accordance with OAC 3745-205-90, RIS will report to the Regional Administrator each occurrence with hazardous waste is managed in the tank in noncompliance with the conditions specified in OAC 3745-205-84. RIS will submit a written report within 15 calendar days of the time that it becomes aware of the occurrence. The written report shall contain:

    - the EPA identification number,
    - facility name and address,
    - a description of the noncompliance event and the cause,
    - the dates of noncompliance, and
    - the actions taken to correct the noncompliance and prevent reoccurrence of the noncompliance.

The report will be signed and dated by an authorized representative.

2. In accordance with OAC 3745-205-90, RIS will submit a semiannual written report to the Regional Administrator. The report will describe each occurrence during the previous 6-month period when the control device is operated continuously for 24

hours or longer in non-compliance with the applicable operating values defined in OAC 3745-205-35. The report will describe each occurrence during the previous 6-month period when a control device is operated continuously for 24 hours or longer in non-compliance with the applicable operating values defined in OAC 3745-205-35. The written report will include:

- the EPA identification number,
- facility name and address,
- an explanation why the control device could not be returned to compliance within 24 hours, and
- actions taken to correct the noncompliance.

The report will be signed by an authorized representative. In accordance with OAC 3745-205-90 this report is not required for a 6-month period during which all control devices are operated such that during no period of 24 hours or longer did a control device operate continuously in noncompliance with the applicable operating values.

Section D – Exhibit A

Figures

Section D
Exhibit A - Figures

Figure D1-1 "Active Facility Site Plan," Drawing D-90-019

Figure D1-2 "General Container Storage Facility - General Arrangement Plan," Drawing D-90-119

Figure D1-3 "Architectural, Container Storage Facility General Arrangement – Elevations," Drawing D-90-923

Figure D1-4 "Civil Container Storage Facility Floor Slab Joint Plan," Drawing D-90-118

Figure D1-5 "Civil Container Storage Facility Standard Details," Drawing D-90-117

Figure D1-6 "Oxidizer Storage Building" (no dwg#).

Figure D1-8 "Oxidizer Storage Building" (no dwg#).

Figure D1-8 "Waste Storage Bays" and "WSB Details," Drawing #D-90-138 1 & 2, D-90-120, D-90-121.

Figure D1-9 "Container Storage Area," Drawing D-90-929.

Figure D1-10 "Waste Management Building Drawings," D-90-930, D-90-931.

Figure D1-11 "Process Dock West Storage Area," No dwg#.

Figure D1-12 "Guard Rail Storage Area," No dwg#.

Figure D1-13 "Bulk Storage Area #2," No dwg #.

Figure D2-1 "Tanks 70, 73 and 74 Piping & Instrumentation Diagram," Drawing B-01-001.

Figure D2-2 "Tanks 23-64 P&ID," Drawing D-02-001.

Figure D2-3, "Tanks 23-64 PFD," Drawing D-90-049.

Figure D2-4, "Tanks 67 and 68 P&ID", Drawing-62-001.

Figure D2-5 "Tank 75 Piping and Instrumentation Diagram," Drawing B-61-001.

Figure D2-6 "P&ID symbols," Drawing D-90-020.

Figure D2-7 "Secondary Containment for Tanks 23-64," Drawing D-90-100.

Figure D2-8 "Secondary Containment for Tanks 67 and 68," Drawing D-90-103.

Figure D2-9 "Secondary Containment for Tanks 70, 73 and 74," Drawing D-90-102.

Figure D2-10 "Secondary Containment for Closed Loop Scrubber including Tank 75," Drawing D-90-137.

Figure D2-11 "Secondary Containment For Pipe Trench," Drawing C-90-021.

Figure D8-1 (with attachments), entitled "Generalized Geologic Cross Section" (drawings 2.6-1 – 2.6-5)

Figure D8-2 entitled "Typical Ground Water Flow Diagram for the Till Zone of Saturation", Drawing D-90-079 till

Figure D8-3 entitled "Typical Groundwater Flow Diagram for the Berea Aquifer", Drawing D-90-079 berea

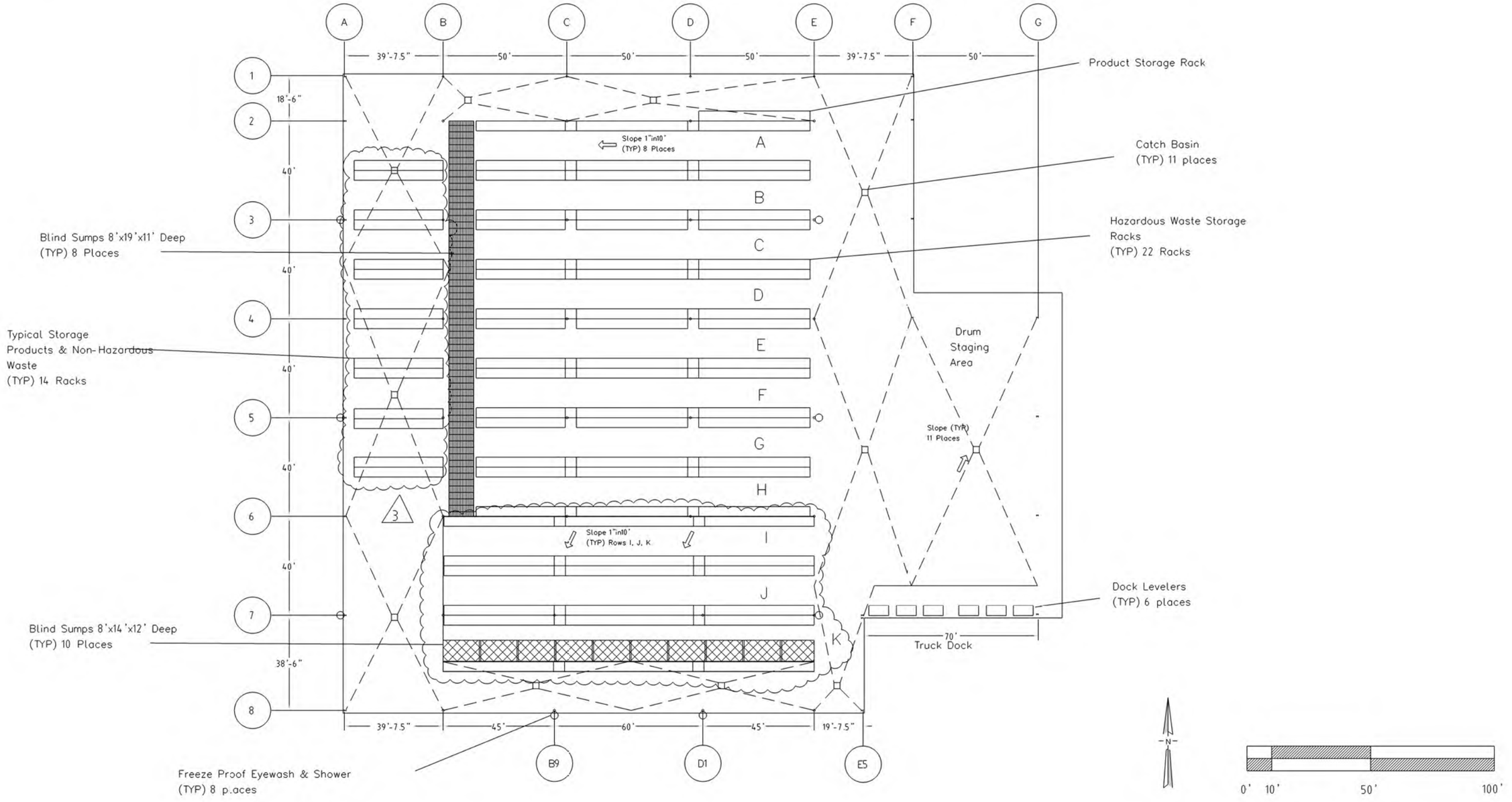
Figure D9-1 "VOC Source Locations," Drawing D-90-091

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

Figure D1-1 "Active Facility Site Plan," Drawing D-90-019

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

Figure D1-2 "General Container Storage Facility - General Arrangement Plan," Drawing D-90-119



APPROXIMATE SCALE:

CONTAINER STORAGE FACILITY [CSF]

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	Sect D Nod's	JF	11/94		
2	Add Cells In Rows	SK	09/11		
3	Mon-CAD, Add Row I, J, K	BB	03/14		
4					
5					
6					
7					
8					
9					
10					

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DRAWN BB DATE 3/28/14
CHECKED DATE
APPROVED DATE

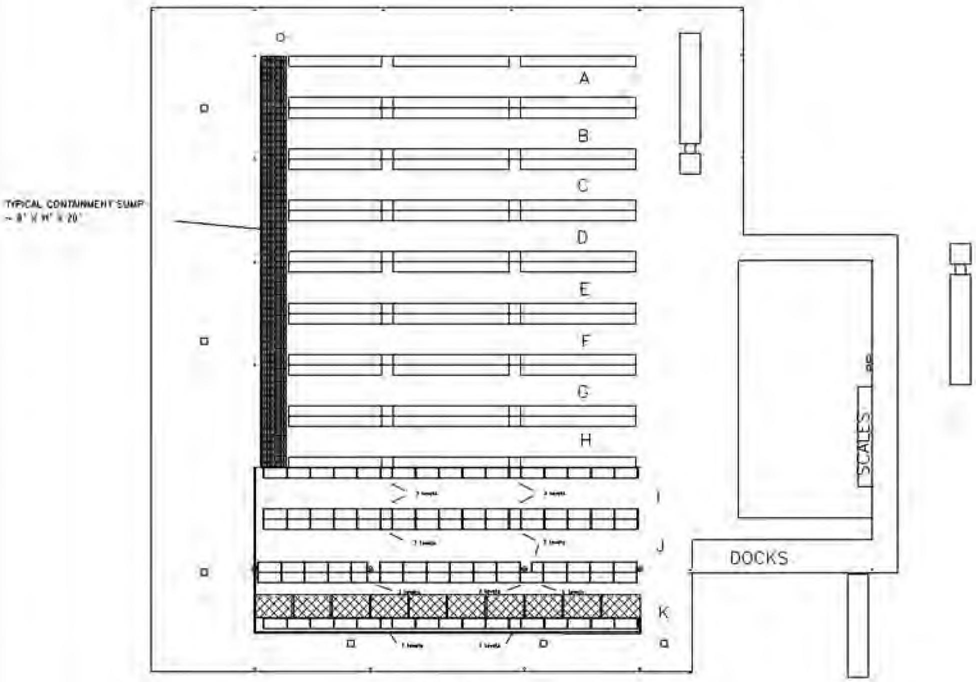
SUPERSEDES D-90-119r2
SUPERSEDED BY D-90-119r3
SCALE NOTED

36790 GILES ROAD
GRAFTON, OHIO 44044

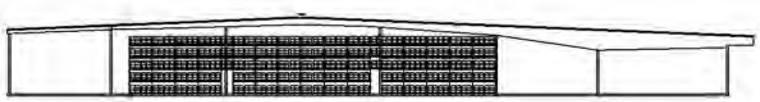
PROJECT NO.
PROJECT NAME
DWG. TITLE General Container Storage Facility
CORPORATION RIS
DWG. NO. D-90-119 REV. 3

Figure D1-3 "Architectural, Container Storage Facility General Arrangement – Elevations," Drawing D-90-923

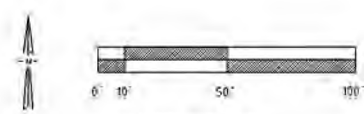
CONTAINER STORAGE FACILITY RACKING BAY DESIGN CAPACITIES



PLAN VIEW



ELEVATION VIEW LOOKING NORTH



APPROXIMATE SCALE

CONTAINER STORAGE FACILITY [CSF]

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	ADD RACKING CELLS IN ROWS	SK	9/30/11		
2	ADD ROWS I, J AND K	BB	3/28/14		
3	DETAIL TO ROWS I, J AND K	SK	4/30/15		
4					
5					
6					
7					
8					
9					
10					

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DRAWN 02/11	DATE JF	SUPERSEDES D-90-116
CHECKED	DATE	SUPERSEDED BY
APPROVED	DATE	SCALE NOTED

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.

PROJECT NAME

DWG. TITLE CSF

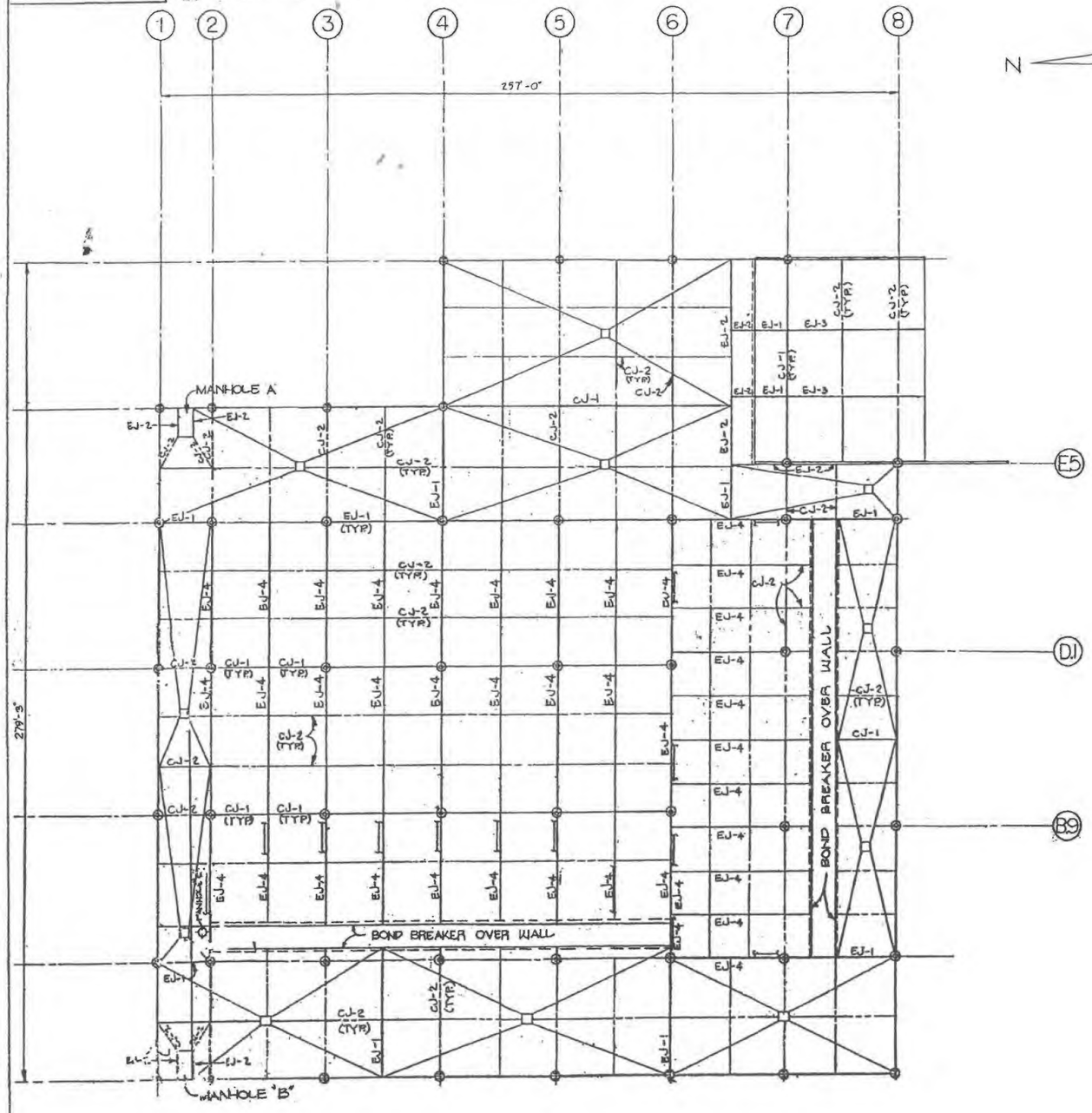
CORPORATION RIS

DWG. NO. D-90-923 REV. 3

Figure D1-4 "Civil Container Storage Facility Floor Slab Joint Plan",

Drawing D-90-118

DWG. NO. D-90-



FLOOR SLAB JOINT PLAN

NOTE:
FOR JOINT DETAILS SEE D-90-117

FIGURE D1-4

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APP'D	DATE
1	GENERAL REVISION	JF	[illegible]		
2					
3					
4					
5					
6					
7					
8					
9					
10					

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DRAWN JCG DATE 11-27-91
CHECKED WC DATE 12-11-91
APPROVED
ROSS, GILES & ASSOC. DAYTON, OHIO 1991

SUPERSEDES
SUPERSEDED BY
SCALE: 1" = 20'

PROJECT NO.
PROJECT NAME CONTAINER STORAGE FACILITY
DWG. TITLE CIVIL
CONTAINER STORAGE FACILITY
FLOOR SLAB JOINT PLAN
CORPORATION ROSS ENVIRONMENTAL SERVICES
DWG. NO. D-90-118 REV. 1

Figure D1-5 "Civil Container Storage Facility Standard Details",

Drawing D-90-117

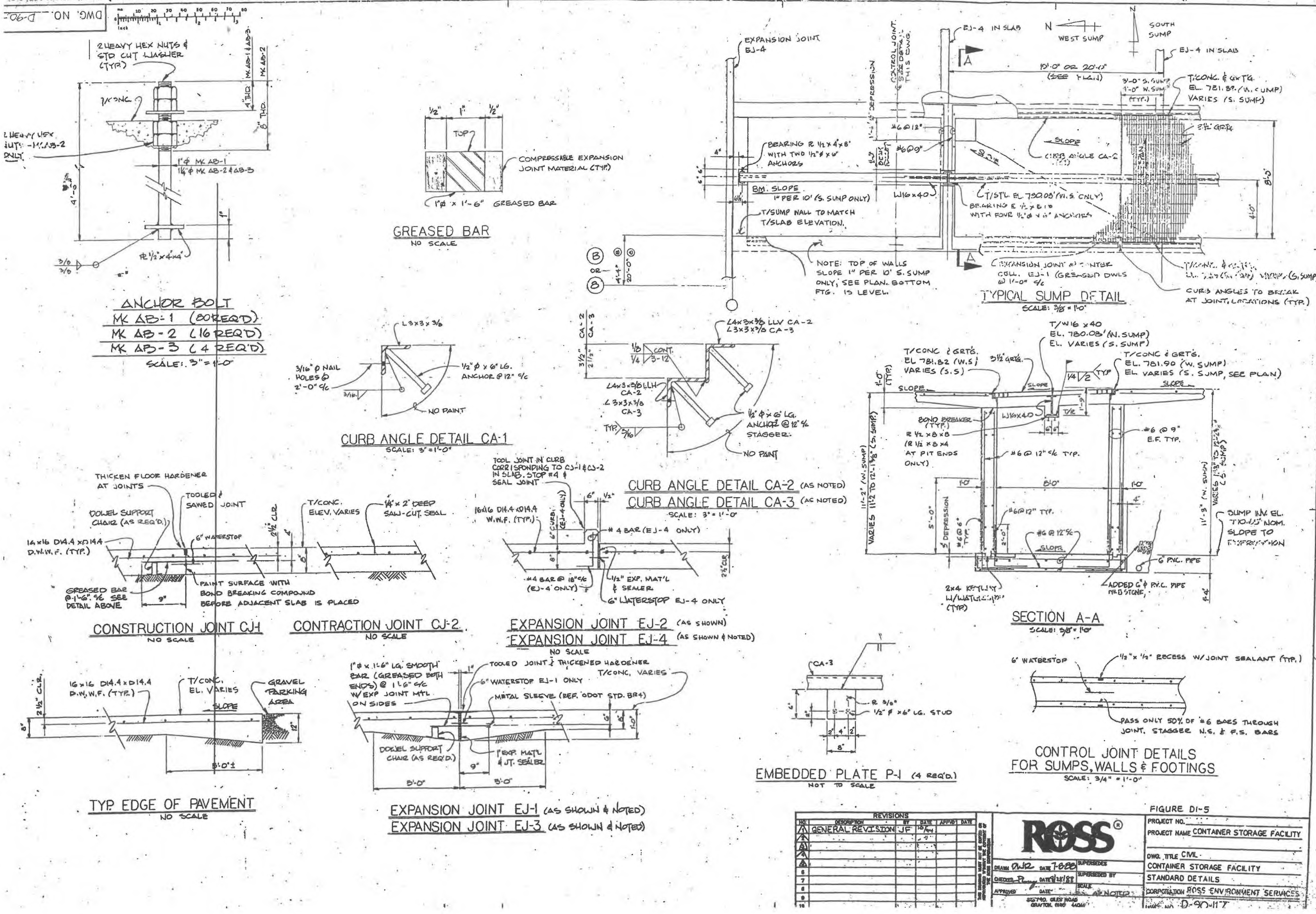

DWG. NO. D-90-
2 HEAVY HEX NUTS & STD CUT WASHER (TYP.)
T/CONC.
2 HEAVY HEX NUTS - MK AB-2 ONLY
1"φ MK AB-1
1¼"φ MK AB-2 & AB-3
R ½"x4"x4"
ANCHOR BOLT
MK AB-1 (80 REQ'D)
MK AB-2 (16 REQ'D)
MK AB-3 (4 REQ'D)
SCALE: 3"=1'-0"
TOP
COMPRESSABLE EXPANSION JOINT MATERIAL (TYP.)
1"φ x 1'-6" GREASED BAR
GREASED BAR
NO SCALE
EXPANSION JOINT EJ-4
CONTROL JOINT (SEE DETAIL THIS DWG.)
BEARING R ½x4"x8" WITH TWO ½"φ x 6" ANCHORS
BM. SLOPE 1" PER 10' (S. SUMP ONLY)
T/SUMP WALL TO MATCH T/SLAB ELEVATION.
W16x40
NOTE: TOP OF WALLS SLOPE 1" PER 10' S. SUMP ONLY, SEE PLAN. BOTTOM FTG. IS LEVEL.
EJ-4 IN SLAB
WEST SUMP
SOUTH SUMP
19'-0" OR 20'-0" (SEE PLAN)
T/CONC. & GRT'G. EL. 781.89 (W. SUMP) VARIES (S. SUMP)
SLOPE
CURB ANGLE CA-2
CURB ANGLES TO BREAK AT JOINT LOCATIONS (TYP.)
TYPICAL SUMP DETAIL
SCALE: 3/8" = 1'-0"
L3x3x3/8
3/16" φ NAIL HOLES @ 2'-0" c/c
½"φ x 6" LG. ANCHOR @ 12" c/c
NO PAINT
CURB ANGLE DETAIL CA-1
SCALE: 3"=1'-0"
L4x3x3/8 LLV CA-2
L3x3x3/8 CA-3
½"φ x 6" LG. ANCHOR @ 12" c/c STAGGER.
NO PAINT
CURB ANGLE DETAIL CA-2 (AS NOTED)
CURB ANGLE DETAIL CA-3 (AS NOTED)
SCALE: 3" = 1'-0"
T/W16 x40 EL. 780.08' (N. SUMP) EL. VARIES (S. SUMP)
T/CONC & GRT'G. EL 781.82 (W.S.) VARIES (S.S.)
T/CONC & GRT'G. EL. 781.90 (W. SUMP) EL VARIES (S. SUMP, SEE PLAN)
BOND BREAKER (TYP.)
#6 @ 9" E.F. TYP.
#6 @ 12" c/c TYP.
SUMP INV. EL. NOM. SLOPE TO
6" P.V.C. PIPE
ADDED 6"φ P.V.C. PIPE
SECTION A-A
SCALE: 3/8" = 1'-0"
THICKEN FLOOR HARDENER AT JOINTS
TOOLED & SAWED JOINT
DOWEL SUPPORT CHAIR (AS REQ'D.)
6" WATERSTOP
14x16 D14.4 x D14.4 D.W.W.F. (TYP.)
GREASED BAR @ 1'-6" c/c SEE DETAIL ABOVE
PAINT SURFACE WITH BOND BREAKING COMPOUND BEFORE ADJACENT SLAB IS PLACED
T/CONC. ELEV. VARIES
¼"x 2" DEEP SAW-CUT SEAL
CONSTRUCTION JOINT CJ-1
NO SCALE
CONTRACTION JOINT CJ-2
NO SCALE
TOOL JOINT IN CURB CORRESPONDING TO CJ-1 & CJ-2 IN SLAB. STOP #4 & SEAL JOINT
#4 BAR (EJ-4 ONLY)
#4 BAR @ 18" c/c (EJ-4 ONLY)
½" EXP. MAT'L & SEALER
6" WATERSTOP EJ-4 ONLY
EXPANSION JOINT EJ-2 (AS SHOWN)
EXPANSION JOINT EJ-4 (AS SHOWN & NOTED)
NO SCALE
16x16 D14.4 x D14.4 D.W.W.F. (TYP.)
T/CONC. EL. VARIES
GRAVEL PARKING AREA
SLOPE
TYP. EDGE OF PAVEMENT
NO SCALE
1"φ x 1'-6" LG. SMOOTH BAR (GREASED BOTH ENDS) @ 1'-6" c/c W/EXP JOINT MTL. ON SIDES
TOOLED JOINT & THICKENED HARDENER
6" WATERSTOP EJ-1 ONLY
METAL SLEEVE (REF. ODOT STD. BR4)
T/CONC, VARIES
DOWEL SUPPORT CHAIR (AS REQ'D.)
1" EXP. MAT'L & JT. SEALER
EXPANSION JOINT EJ-1 (AS SHOWN & NOTED)
EXPANSION JOINT EJ-3 (AS SHOWN & NOTED)
CA-3
R 3/8"
½"φ x 6" LG. STUD
EMBEDDED PLATE P-1 (4 REQ'D.)
NOT TO SCALE
6" WATERSTOP
½" x ½" RECESS W/ JOINT SEALANT (TYP.)
PASS ONLY 50% OF #6 BARS THROUGH JOINT. STAGGER N.S. & F.S. BARS
CONTROL JOINT DETAILS FOR SUMPS, WALLS & FOOTINGS
SCALE: 3/4" = 1'-0"
FIGURE D1-5
REVISIONS
GENERAL REVISION JF
ROSS
PROJECT NAME CONTAINER STORAGE FACILITY
DWG. TITLE CIVIL
CONTAINER STORAGE FACILITY
STANDARD DETAILS
CORPORATION ROSS ENVIRONMENT SERVICES
SCALE AS NOTED
D-90-117

Figure D1-6 "Oxidizer Storage Building" (no dwg#).

SKETCH #1

Oxidizer Building Plan View

2/20/08

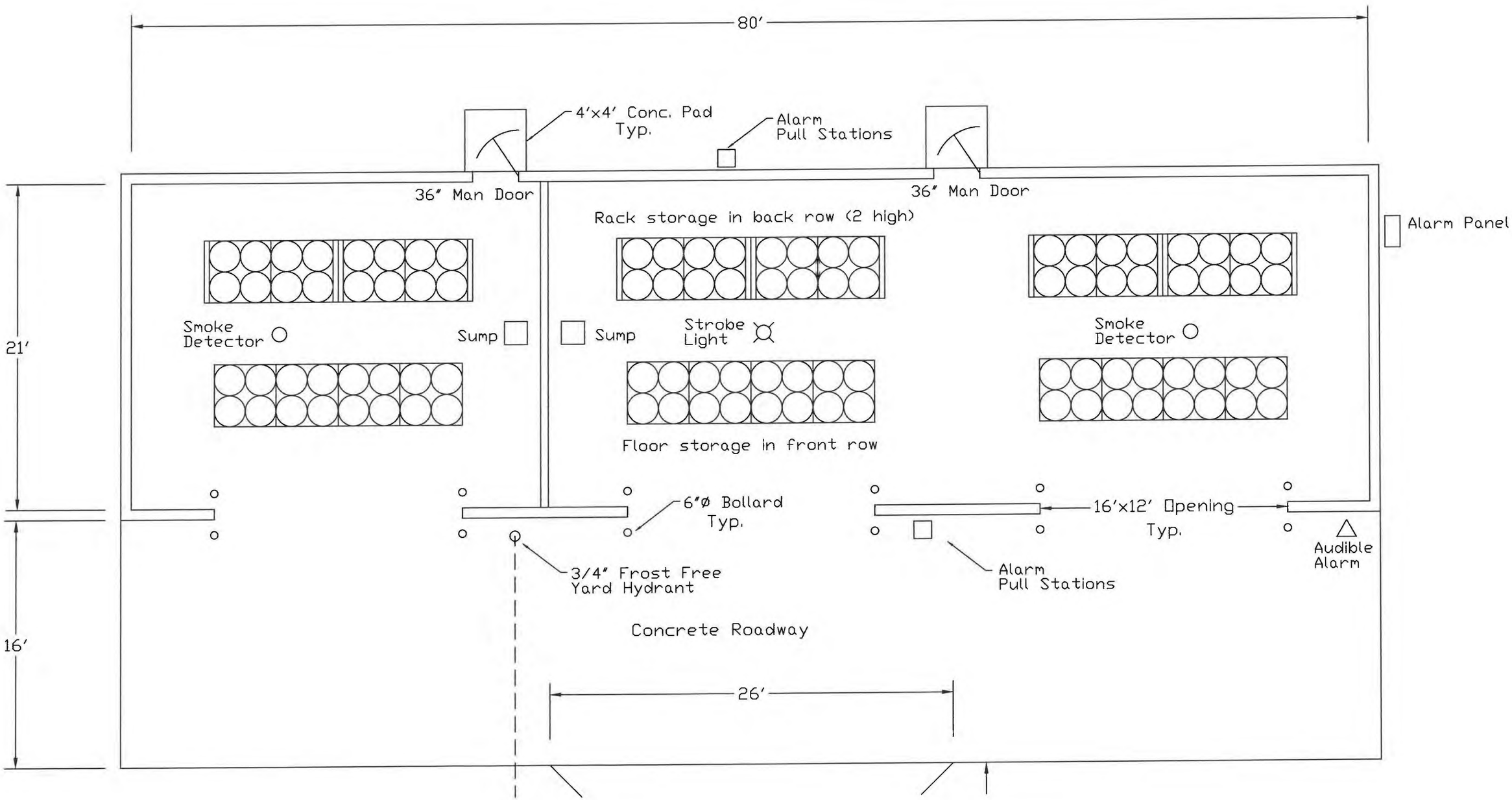


Figure D1-7 "Bulk Storage Area #1" (no dwg#).

Bulk Storage Area #1

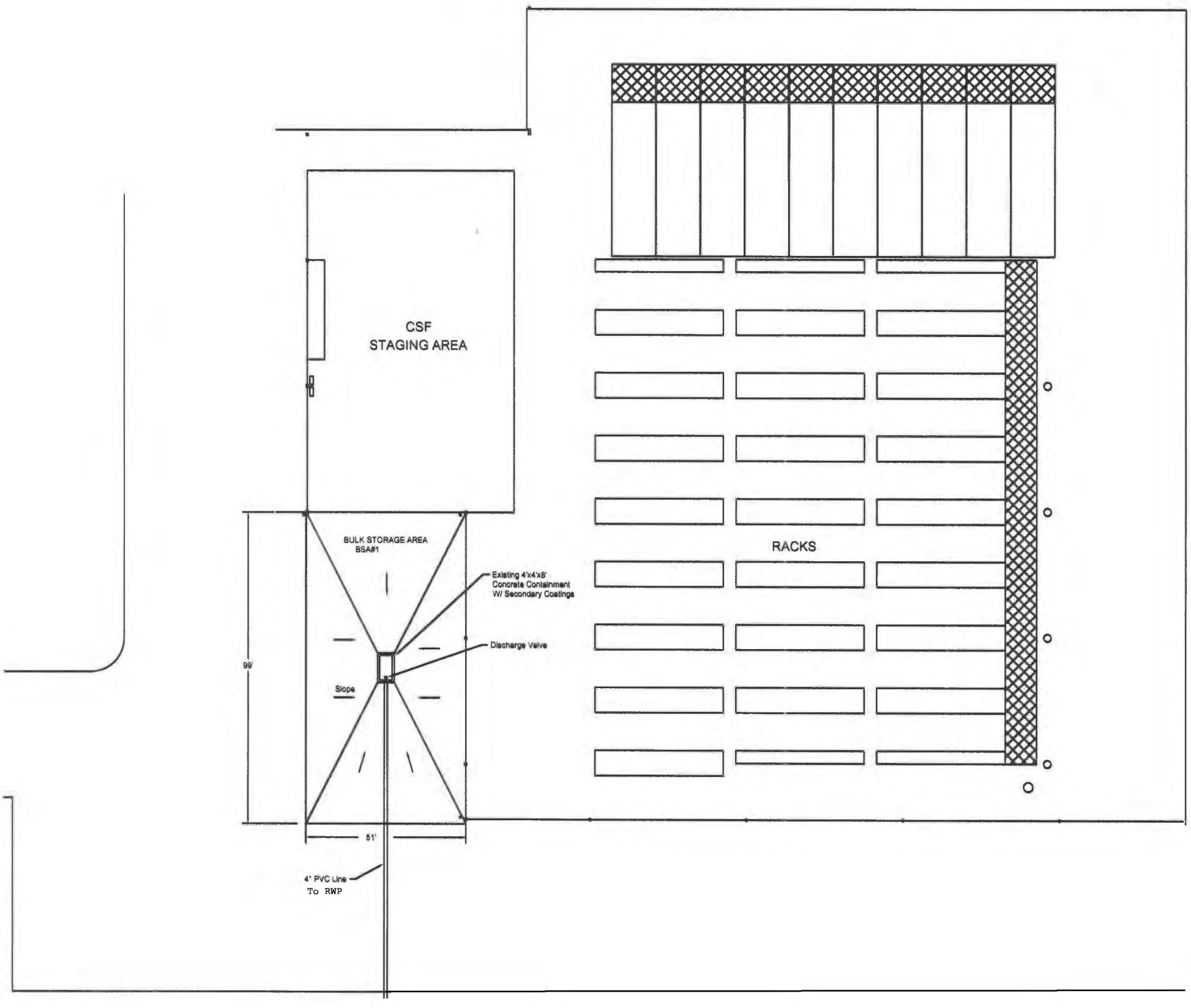


Figure D1-8 "Waste Storage Bays" and "WSB Details", Drawing #D-90-138 1 & 2, D-90-120, D-90-121.

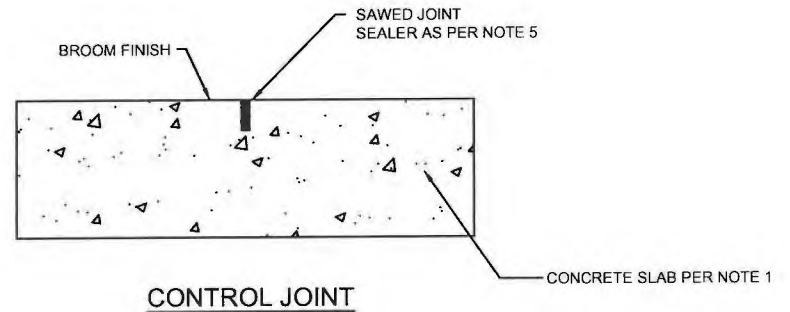
CONCRETE PAD LAYOUT

GENERAL NOTES:

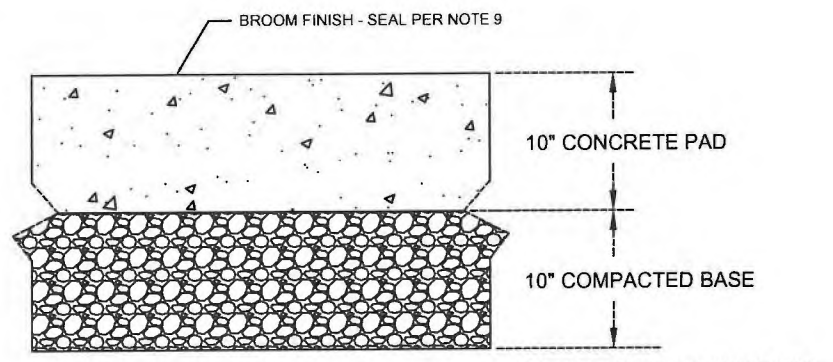
1. CONCRETE SHALL DEVELOP 6,000 PSI MINIMUM COMPRESSIVE STRENGTHS IN A 28 DAY PERIOD. THE ROSS STANDARD CONCRETE MIX DEFINED BELOW SHALL BE USED:

   ASTM C33–CONCRETE AGGREGATES
   ASTM 94–READY MIXED CONCRETE
   ASTM C260–AIR ENTRAINING ADMIXTURES FOR CONCRETE
   ASTM C39/C39M–05–COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMEN
   WATER: 278#/CYD
   TYPE 1 CEMENT: 611 LBS/CYD
   AIR ENTRAINMENT: MINIMUM 6% +1%/–0%
   EUCLID CHEMICAL EUCON MSA MICROSILICA: 50#/CYD
   #57 LIMESTONE 1,620#/CYD
   NATURAL SAND 1,245#/CYD
   EUCLID CHEMICAL EUCON 37 SUPER 106OZ.
   EUCLID CHEMICAL TUF–STRAND SF: 6LBS/CYD:

2. THE SUBGRADE IS TO BE 304, #57, #2 LIMESTONE AS NEEDED
3. WATER STOP MATERIAL – $\frac{3}{16}$" x 6" PVC RIBBED CENTERBULB BETWEEN POURS AND VANDEX EXPANSEAL B PLUS AROUND DRAIN PIPES OR EQUAL
4. EXPANSION JOINT FILLER – SEALTIGHT DECK–O–FOAM OR EQUAL
5. EXPANSION JOINT SEALER – TREMCO VULCHEM 45 OR EQUAL (STANDARD GRAY)
6. ALL REBAR IS TO BE EPOXY COATED PRODUCT.
7. APPLY PRODUCT MATERIALS IN ACCORDANCE WITH MANUFACTURES' RECOMMENDATIONS
8. ~~SUMP COATING – DUDICK PRIMER 67, RED IN COLOR & DUDICK PROTECTO COAT 100XT, MEDIUM GRAY IN COLOR – BY RIS OR OTHER.~~
9. CONCRETE SLAB COATING – EUCLID CHEMICAL SUPER DIAMOND CLEAR CONCRETE SEALER OR EQUAL



CONTROL JOINT
DETAIL 1



CONCRETE PAVEMENT
DETAIL 2

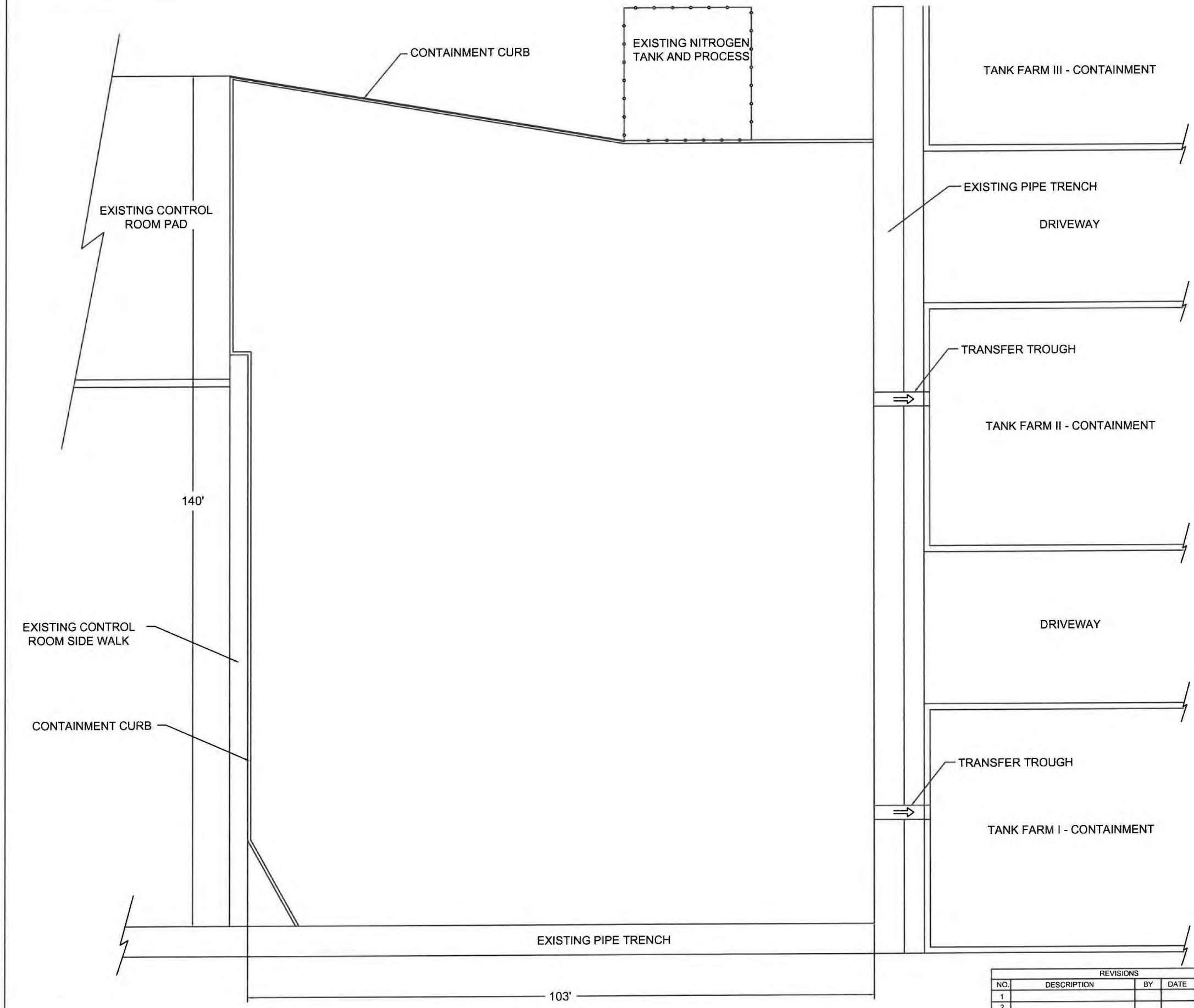
REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

ROSS®

DRAWN JF DATE 09/2019 | SUPERSEDES
CHECKED DATE | SUPERSEDED BY
APPROVED DATE | SCALE

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.
PROJECT NAME
DWG. TITLE WASTE STORAGE BAY III
CONCRETE PAD LAYOUT
SHEET 1 OF 2
CORPORATION RIS
DWG. NO. D-90-138 REV. 0



VAN LAYOUT

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
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2					
3					
4					
5					
6					
7					
8					
9					
10					

ROSS®

DRAWN JF DATE 09/2019

CHECKED DATE

APPROVED DATE

SUPERSEDES

SUPERSEDED BY

SCALE

36790 GILES ROAD
GRAFTON, OHIO 44044

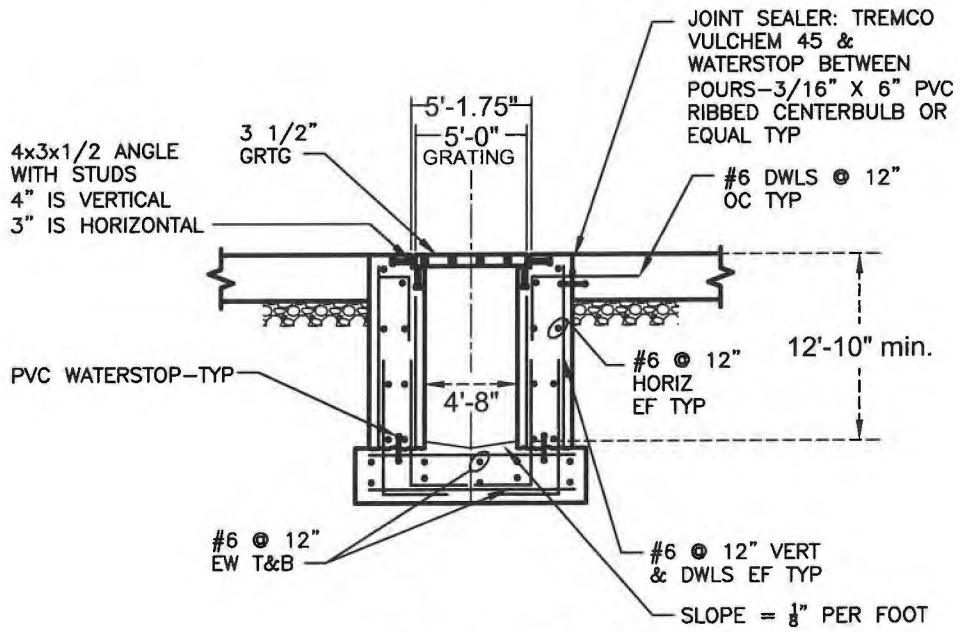
PROJECT NO.

PROJECT NAME

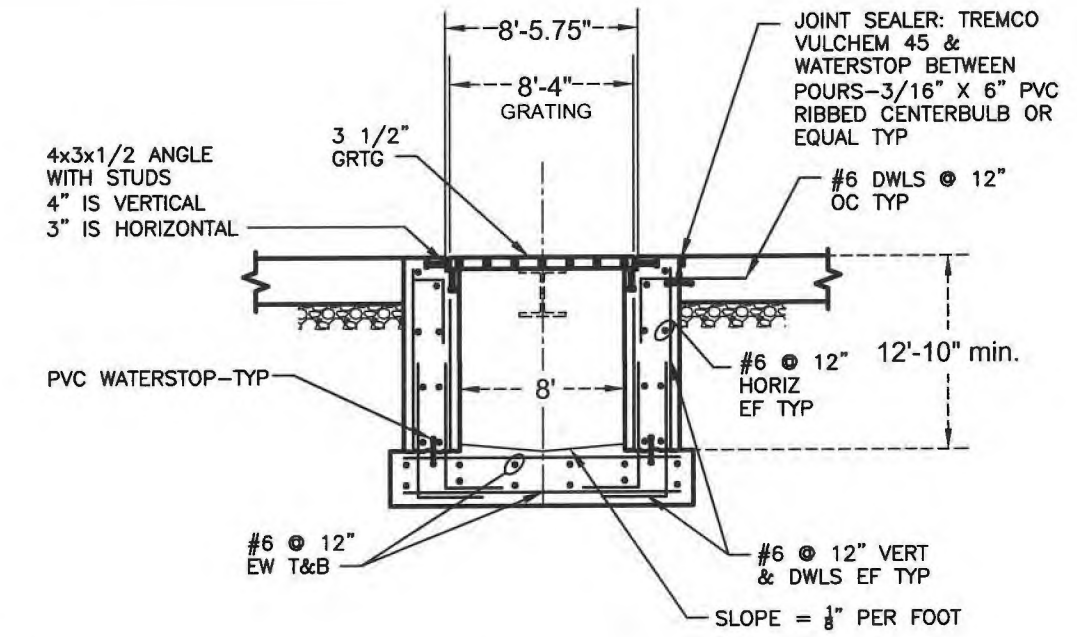
DWG. TITLE WASTE STORAGE BAY III
VAN LAYOUT
SHEET 2 OF 2

CORPORATION RIS

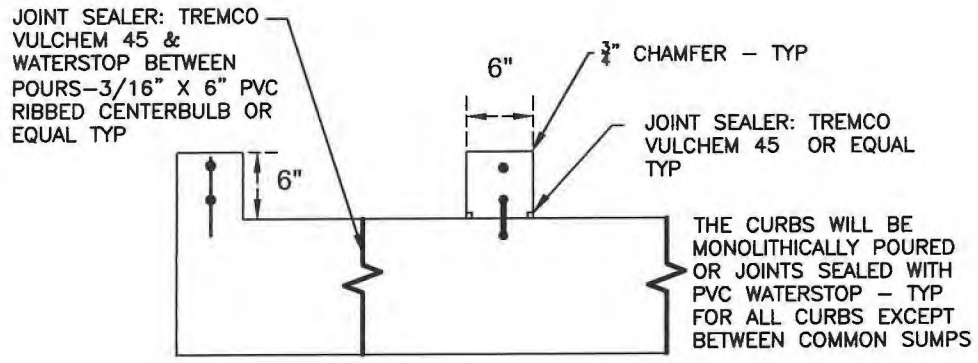
DWG. NO. D-90-138 REV. 0



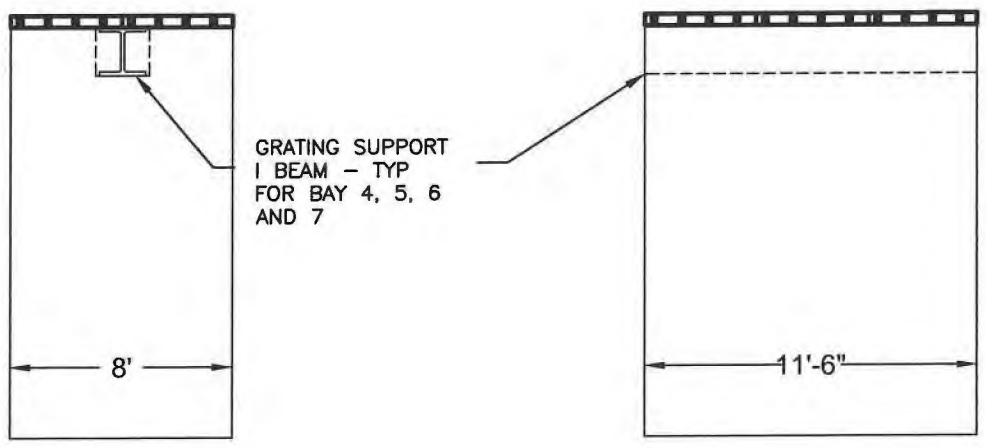
BAYS 1–3



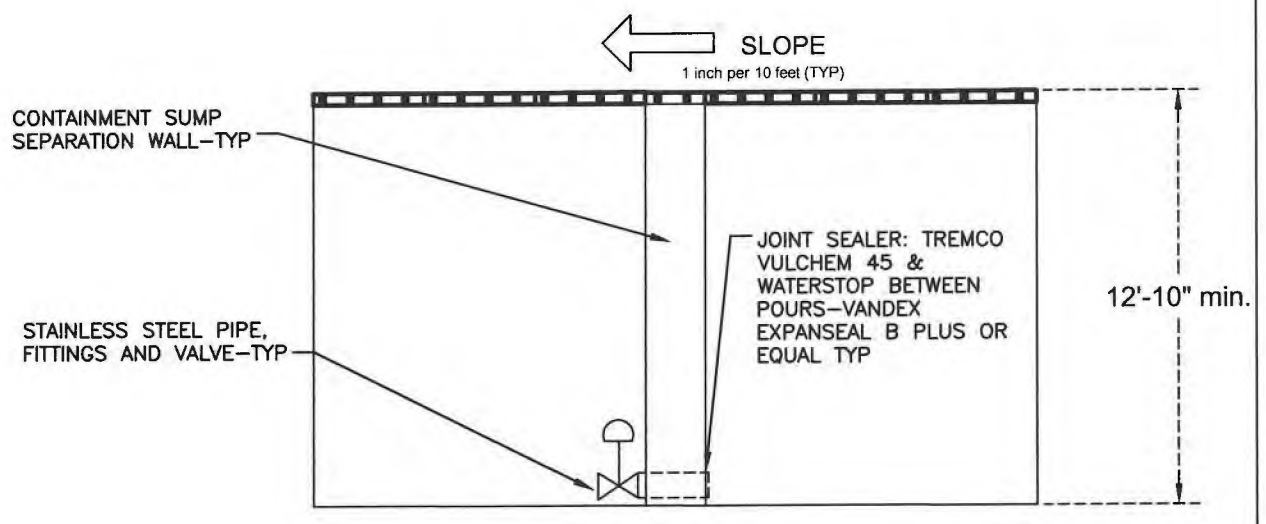
BAYS 4–7



CURB DETAIL



GRATING SUPPORT DETAL



SUMP VALVE DETAIL

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
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2	SUMP DIMS	JF	12/18		
3					
4					
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6					
7					
8					
9					
10					

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DRAWN BB DATE 4/14/14 | SUPERSEDES

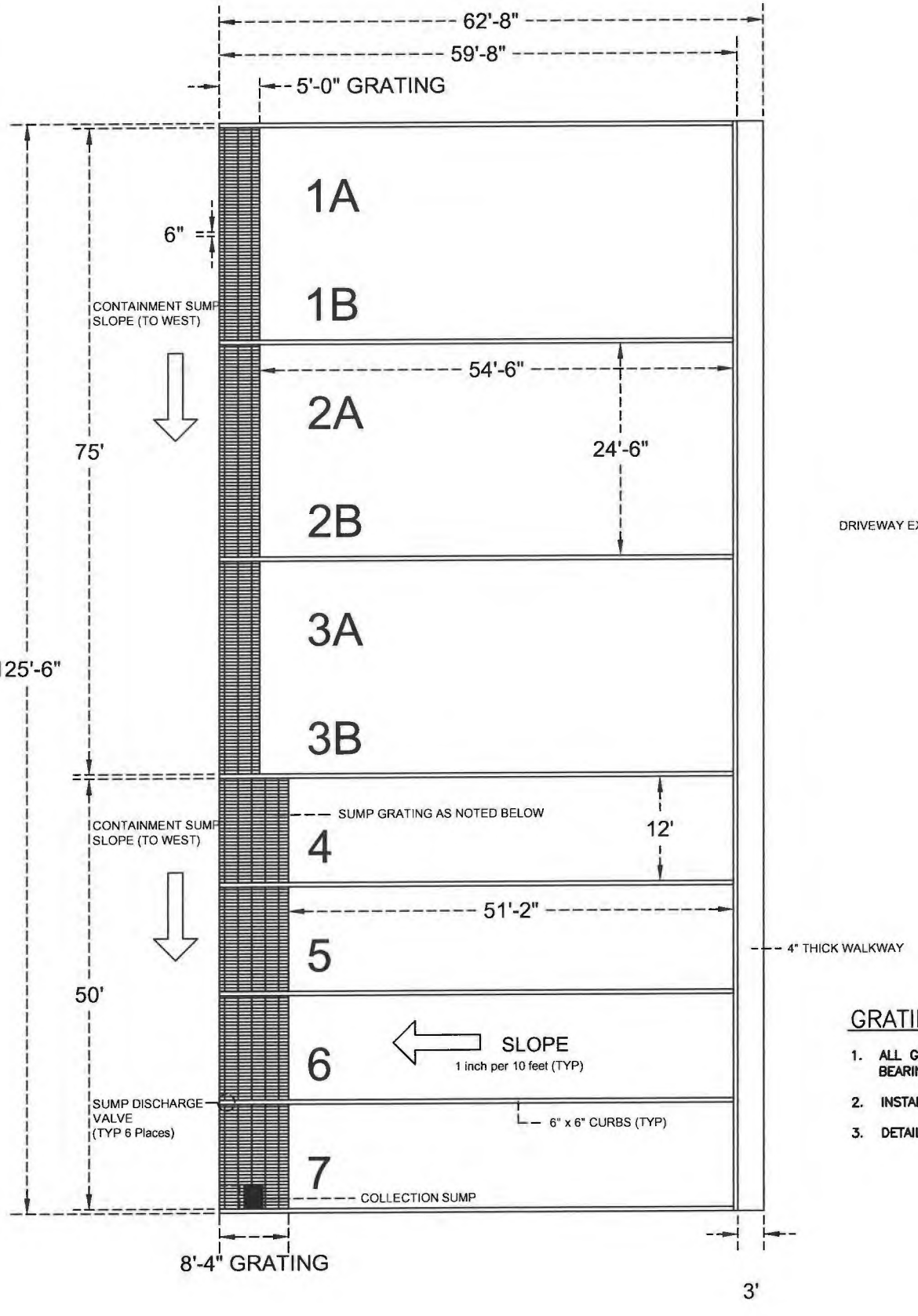
CHECKED DATE | SUPERSEDED BY

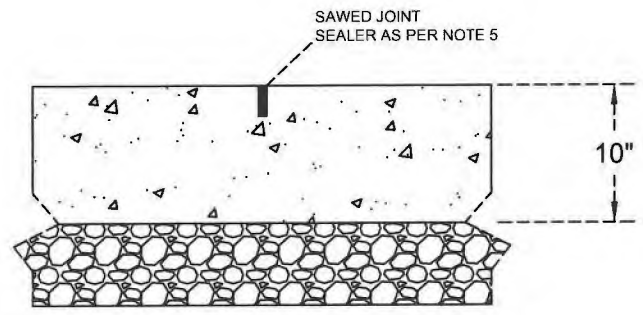
APPROVED DATE | SCALE

36790 GILES ROAD
GRAFTON, OHIO 44044

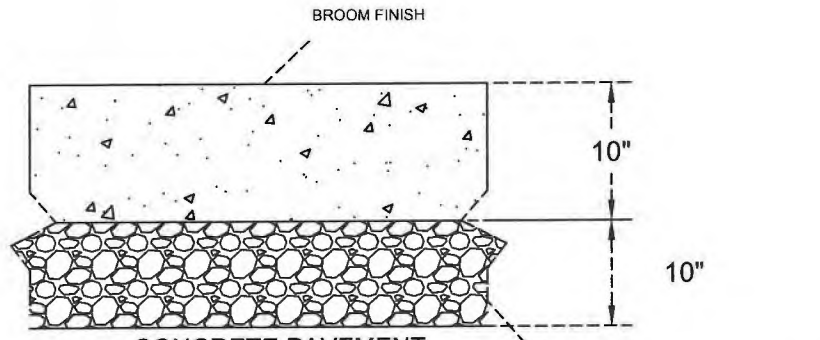
PROJECT NO.
PROJECT NAME
DWG. TITLE WSB II DETAILS
CORPORATION RIS
DWG. NO. D-03-121 REV. 2

Waste Storage Bay II (WSB-II)

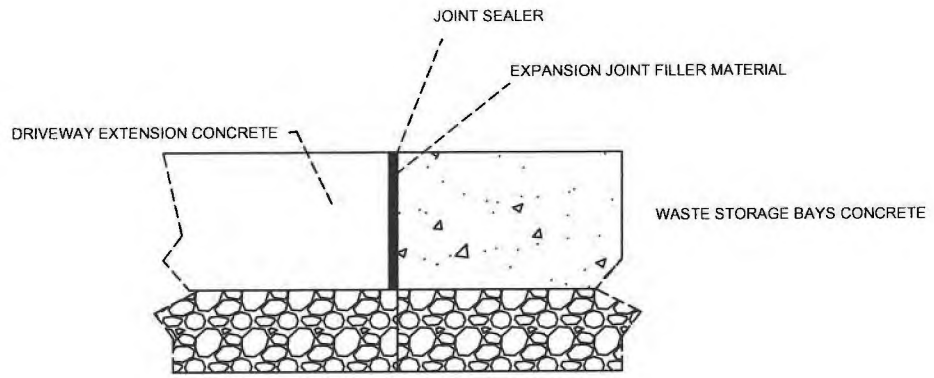




CONTROL JOINT
DETAIL 1



CONCRETE PAVEMENT
DETAIL 3



EXPANSION JOINT
DETAIL 2

GRATING:

1. ALL GRATING TO BE HEAVY DUTY WELDED STEEL W SERIES (19–W–4) BY OHIO GRATING, INC. OR APPROVED EQUAL. BEARING BARS TO BE 3 1/2" x 3/8" FOR ASHTO H–20 LOADING, PLAIN SURFACE, GALVANIZED FINISH. BY RIS OR OTHER.
2. INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. DETAILED SHOP DRAWINGS SHALL BE SUBMITTED TO THE OWNER "FOR REVIEW" PRIOR TO FABRICATION.

GENERAL NOTES:

1. CONCRETE SHALL DEVELOP 6,000 PSI MINIMUM COMPRESSIVE STRENGTHS IN A 28 DAY PERIOD. THE ROSS STANDARD CONCRETE MIX DEFINED BELOW SHALL BE USED:

   ASTM C33–CONCRETE AGGREGATES
   ASTM 94–READY MIXED CONCRETE
   ASTM C260–AIR ENTRAINING ADMIXTURES FOR CONCRETE
   ASTM C39/C39M–05–COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMEN
   WATER: 278#/CYD
   TYPE 1 CEMENT: 611 LBS/CYD
   AIR ENTRAINMENT: MINIMUM 6% +1%/–0%
   EUCLID CHEMICAL EUCON MSA MICROSILICA: 50#/CYD
   #57 LIMESTONE 1,620#/CYD
   NATURAL SAND 1,245#/CYD
   EUCLID CHEMICAL EUCON 37 SUPER 106OZ.
   EUCLID CHEMICAL TUF–STRAND SF: 6LBS/CYD: NO FIBER IN SUMP
2. THE SUBGRADE IS TO BE 304, #57, #2 LIMESTONE AS NEEDED
3. WATER STOP MATERIAL – $\frac{3}{16}$" x 6" PVC RIBBED CENTERBULB BETWEEN POURS AND VANDEX EXPANSEAL B PLUS AROUND DRAIN PIPES OR EQUAL
4. EXPANSION JOINT FILLER – SEALTIGHT DECK–O–FOAM OR EQUAL
5. EXPANSION JOINT SEALER – TREMCO VULCHEM 45 OR EQUAL
6. ALL REBAR IS TO BE EPOXY COATED.
7. APPLY PRODUCT MATERIALS IN ACCORDANCE WITH MANUFACTURES' RECOMMENDATIONS
8. CONTAINMENT SUMP COATING – DUDICK PRIMER 67, RED IN COLOR & DUDICK PROTECTO COAT 100XT, MEDIUM GRAY IN COLOR – BY RIS OR OTHER.
9. CONCRETE STORAGE BAY COATING – EUCLID CHEMICAL SUPER DIAMOND CLEAR CONCRETE SEALER OR EQUAL

N

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	WSB II - REVISIONS	JF	10/18		
2	ADD 50" TO EACH BAY LENGTH	JF	12/18		
3					
4					
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6					
7					
8					
9					
10					

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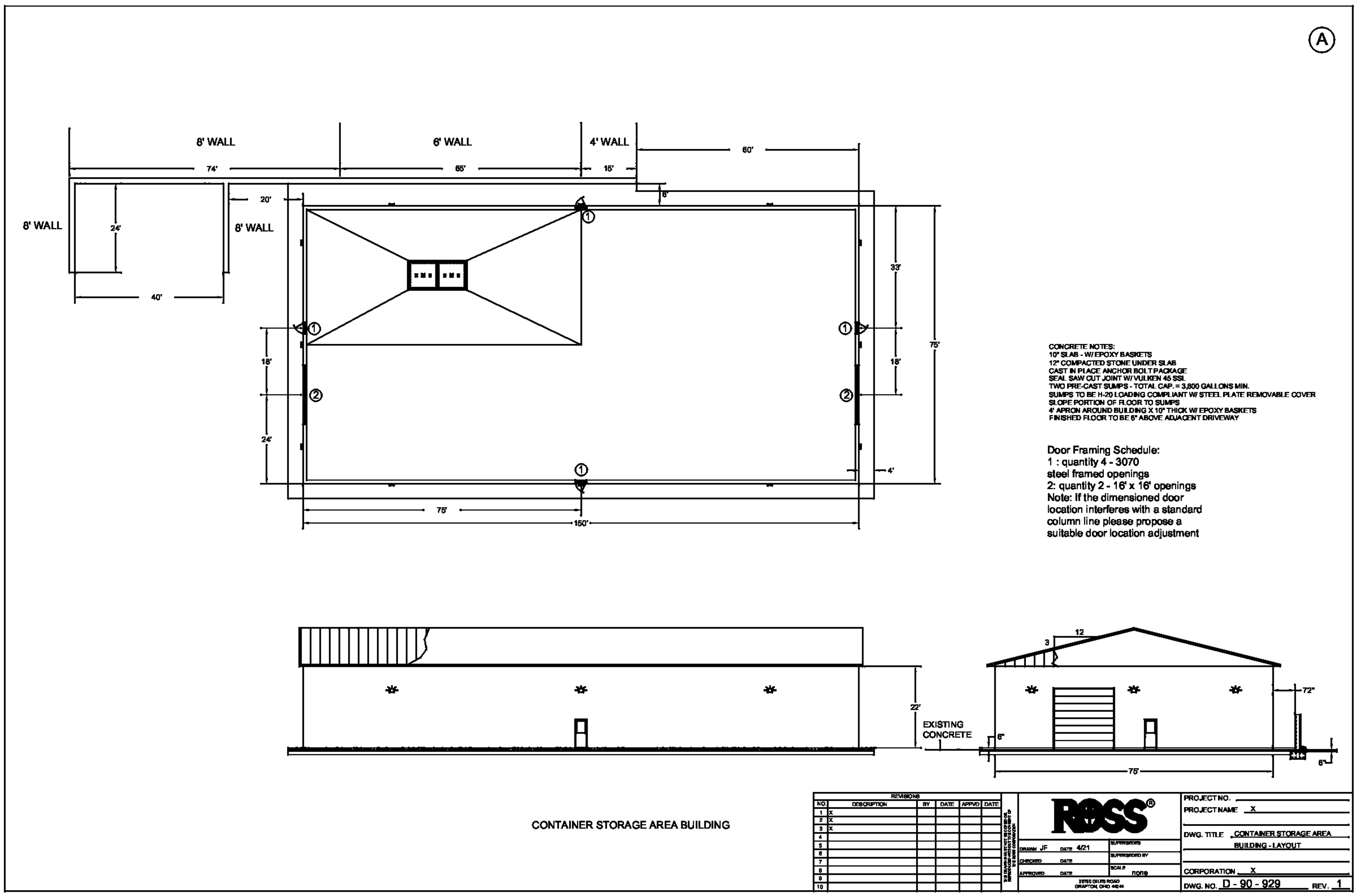
DRAWN BB DATE 4/14/14 | SUPERSEDES
CHECKED DATE | SUPERSEDED BY
APPROVED DATE | SCALE

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.
PROJECT NAME
DWG. TITLE Waste Storage Bay - II (WSB -II)
CORPORATION RIS
DWG. NO. D-03-120 REV. 2

Figure D1-9 "Container Storage Area", Drawing D-90-929.


A
8' WALL
6' WALL
4' WALL
74'
65'
15'
60'
20'
6'
24'
40'
8' WALL
8' WALL
33'
18'
75'
24'
18'
4'
75'
150'
22'
EXISTING
CONCRETE
6"
12
3
72"
75'
6"
CONCRETE NOTES:
10" SLAB - W/ EPOXY BASKETS
12" COMPACTED STONE UNDER SLAB
CAST IN PLACE ANCHOR BOLT PACKAGE
SEAL SAW CUT JOINT W/ VULKEN 45 SSL
TWO PRE-CAST SUMPS - TOTAL CAP. = 3,800 GALLONS MIN.
SUMPS TO BE H-20 LOADING COMPLIANT W/ STEEL PLATE REMOVABLE COVER
SLOPE PORTION OF FLOOR TO SUMPS
4' APRON AROUND BUILDING X 10" THICK W/ EPOXY BASKETS
FINISHED FLOOR TO BE 6" ABOVE ADJACENT DRIVEWAY
Door Framing Schedule:
1 : quantity 4 - 3070
steel framed openings
2: quantity 2 - 16' x 16' openings
Note: If the dimensioned door
location interferes with a standard
column line please propose a
suitable door location adjustment
CONTAINER STORAGE AREA BUILDING
REVISIONS
NO. DESCRIPTION BY DATE APPVD DATE
1 X
2 X
3 X
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ROSS®
DRAWN JF DATE 4/21
SUPERSEDES
CHECKED DATE
SUPERSEDED BY
APPROVED DATE
SCALE none
GRAFTON, OHIO 44044
PROJECT NO.
PROJECT NAME X
DWG. TITLE CONTAINER STORAGE AREA
BUILDING - LAYOUT
CORPORATION X
DWG. NO. D - 90 - 929
REV. 1

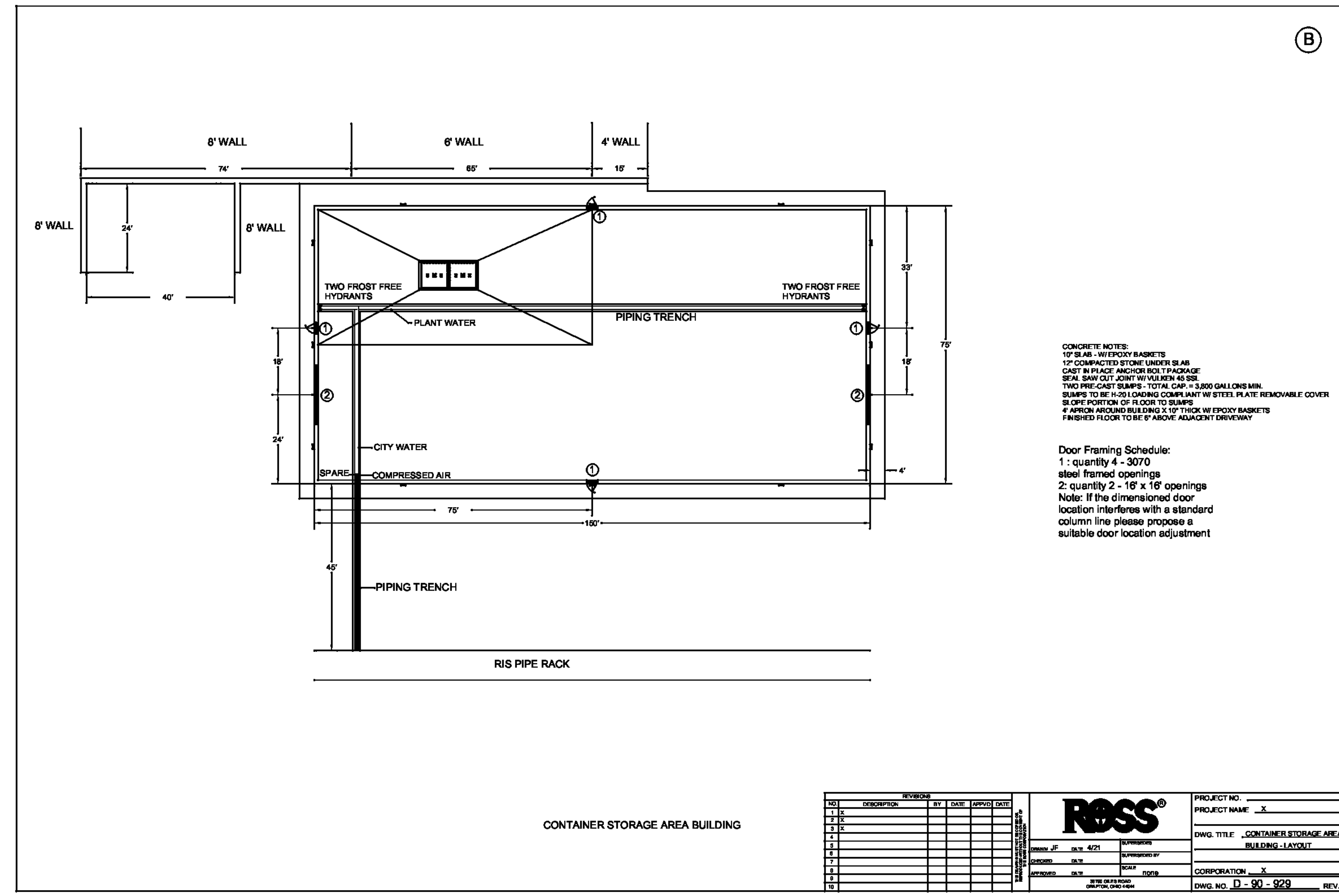
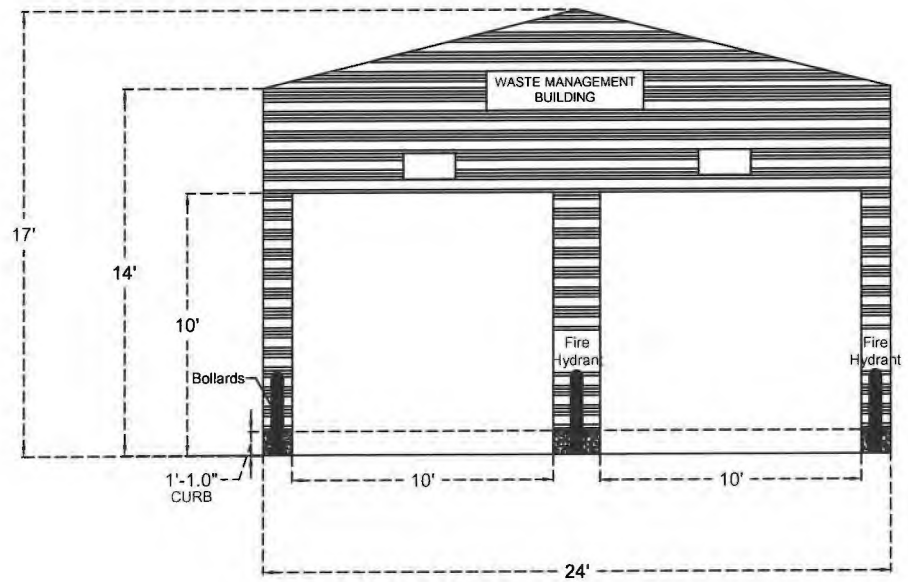

B
8' WALL
6' WALL
4' WALL
74'
65'
15'
24'
40'
8' WALL
8' WALL
33'
18'
75'
24'
18'
4'
75'
150'
TWO FROST FREE
HYDRANTS
PLANT WATER
PIPING TRENCH
TWO FROST FREE
HYDRANTS
CITY WATER
SPARE
COMPRESSED AIR
45'
PIPING TRENCH
RIS PIPE RACK
CONCRETE NOTES:
10" SLAB - W/ EPOXY BASKETS
12" COMPACTED STONE UNDER SLAB
CAST IN PLACE ANCHOR BOLT PACKAGE
SEAL SAW CUT JOINT W/ VULKEN 45 SSL
TWO PRE-CAST SUMPS - TOTAL CAP. = 3,800 GALLONS MIN.
SUMPS TO BE H-20 LOADING COMPLIANT W/ STEEL PLATE REMOVABLE COVER
SLOPE PORTION OF FLOOR TO SUMPS
4' APRON AROUND BUILDING X 10" THICK W/ EPOXY BASKETS
FINISHED FLOOR TO BE 6" ABOVE ADJACENT DRIVEWAY
Door Framing Schedule:
1 : quantity 4 - 3070
steel framed openings
2: quantity 2 - 16' x 16' openings
Note: If the dimensioned door
location interferes with a standard
column line please propose a
suitable door location adjustment
CONTAINER STORAGE AREA BUILDING
REVISIONS
ROSS®
PROJECT NO.
PROJECT NAME X
DWG. TITLE CONTAINER STORAGE AREA
BUILDING - LAYOUT
CORPORATION X
DWG. NO. D - 90 - 929
REV. 1

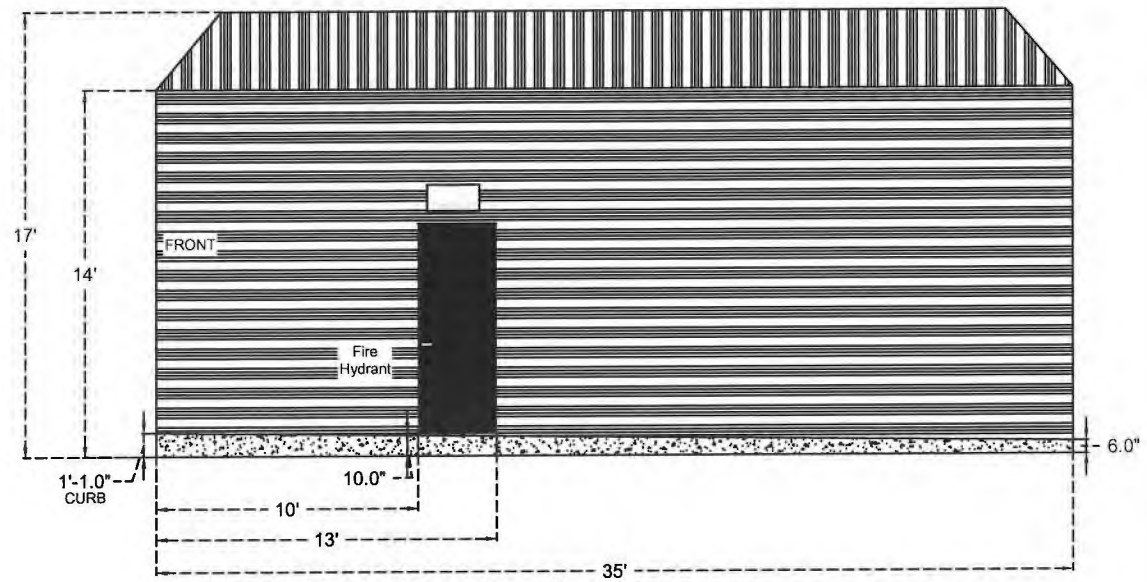
Figure D1-10 "Waste Management Building Drawings," Drawings D-90-930, D-90-931

Waste Management Building (WMB)

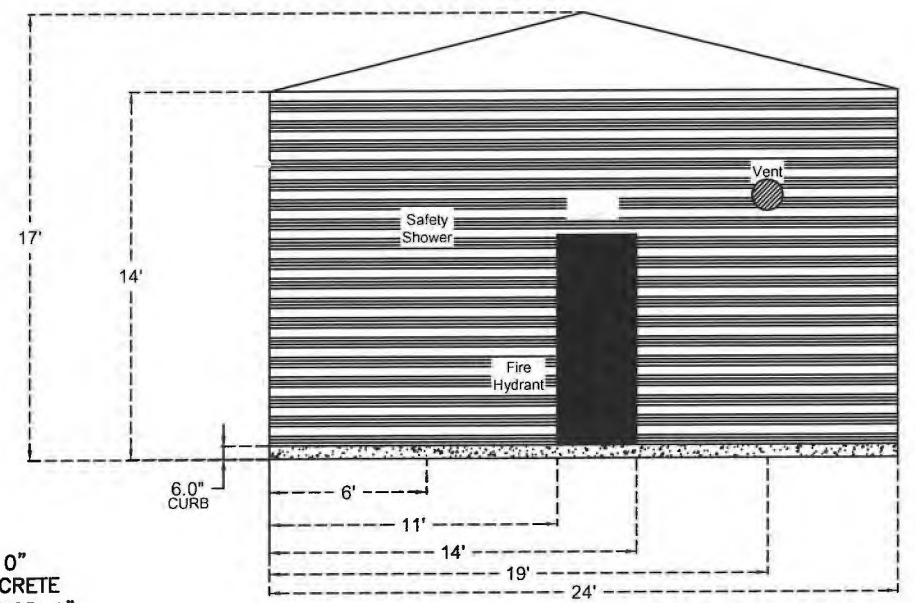
LOOKING EAST



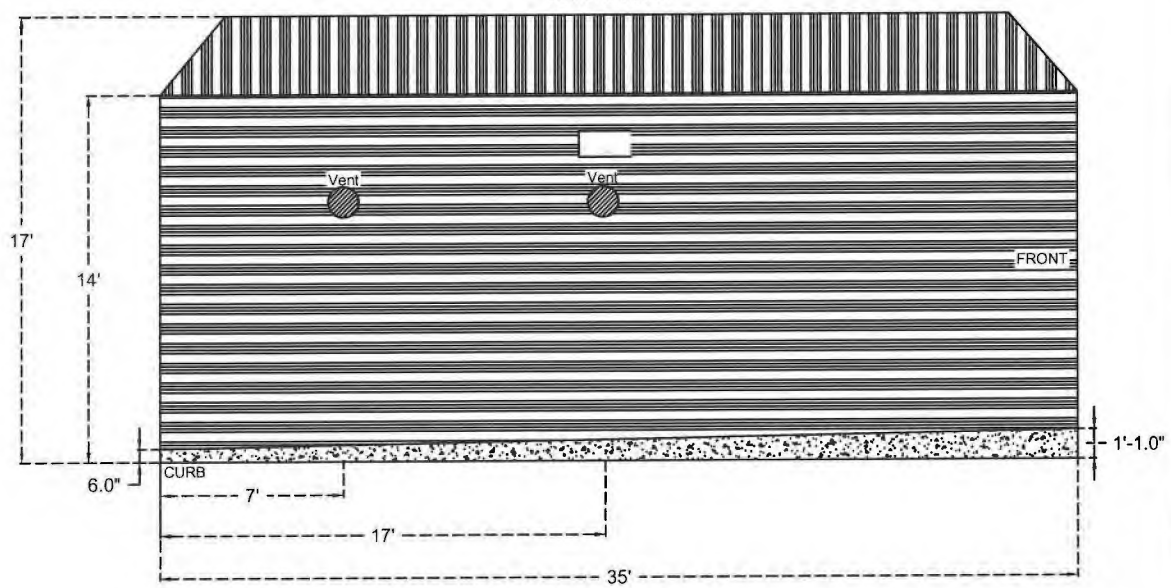
LOOKING NORTH

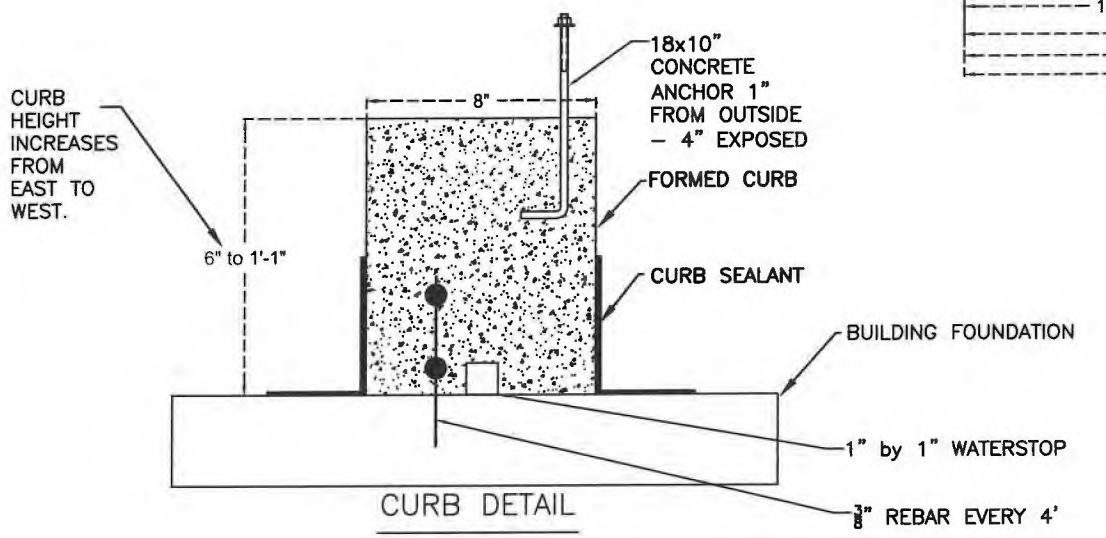


LOOKING WEST



LOOKING SOUTH





CURB DETAIL

CURB SEALANT:

1. CURBS GAPS FILLED WITH POLYURETHANE CONCRETE SEALANT TO PREVENT WATER SEEPAGE.

2. CURB SEALANT TO CONSIST OF (1) FULL COAT OF SHERWIN–WILLIAMS LOXON WATERPROOFING ACRYLIC TO CURBS AND (2") OUT FROM BOTTOM OF CURB FOR RUNOFF – BY OTHERS.

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1					
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DRAWN CNP DATE 4/27/2022 | SUPERSEDES

CHECKED DATE | SUPERSEDED BY

APPROVED DATE | SCALE

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO. CI21-146

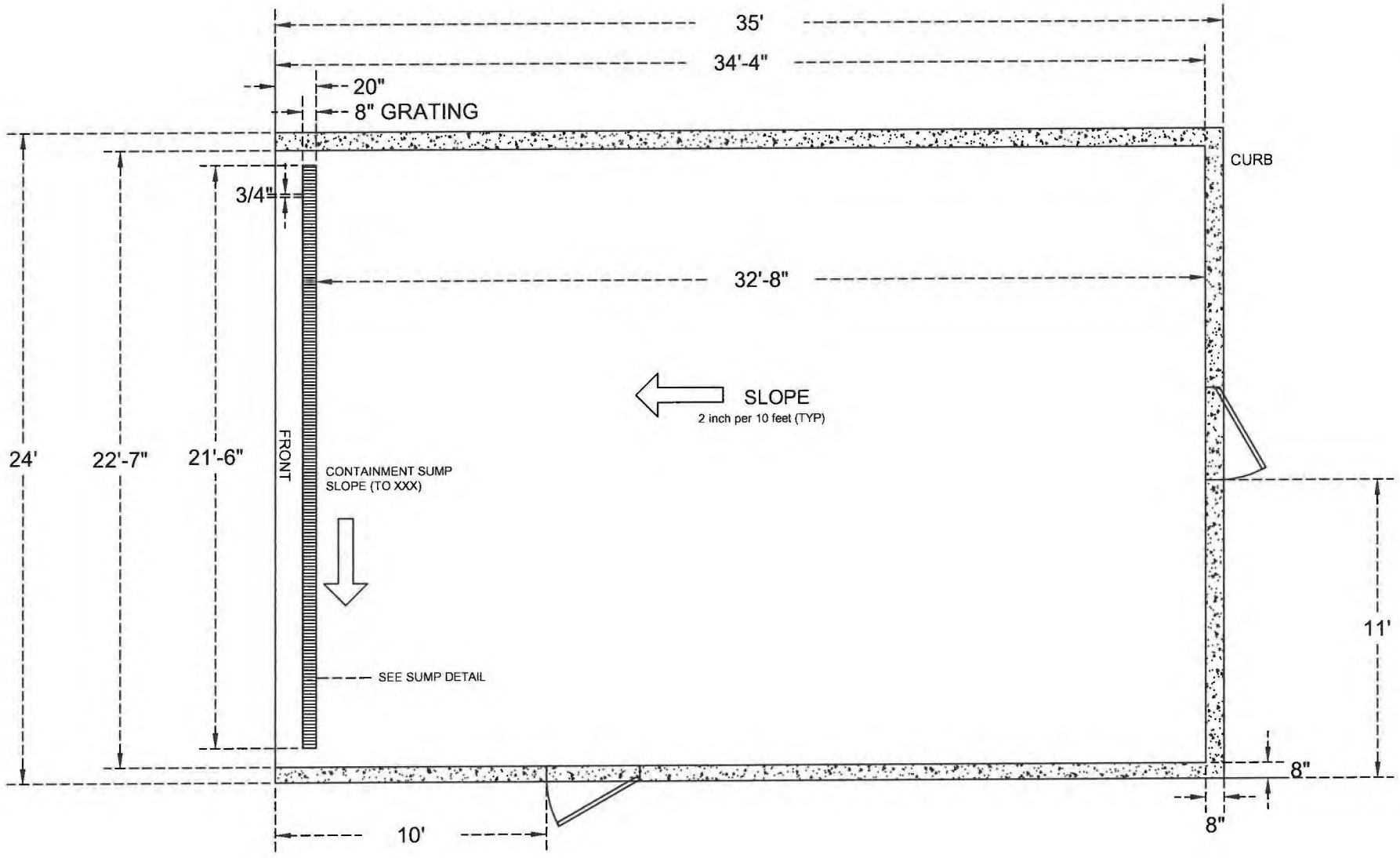
PROJECT NAME WASTE MANAGEMENT BLDG

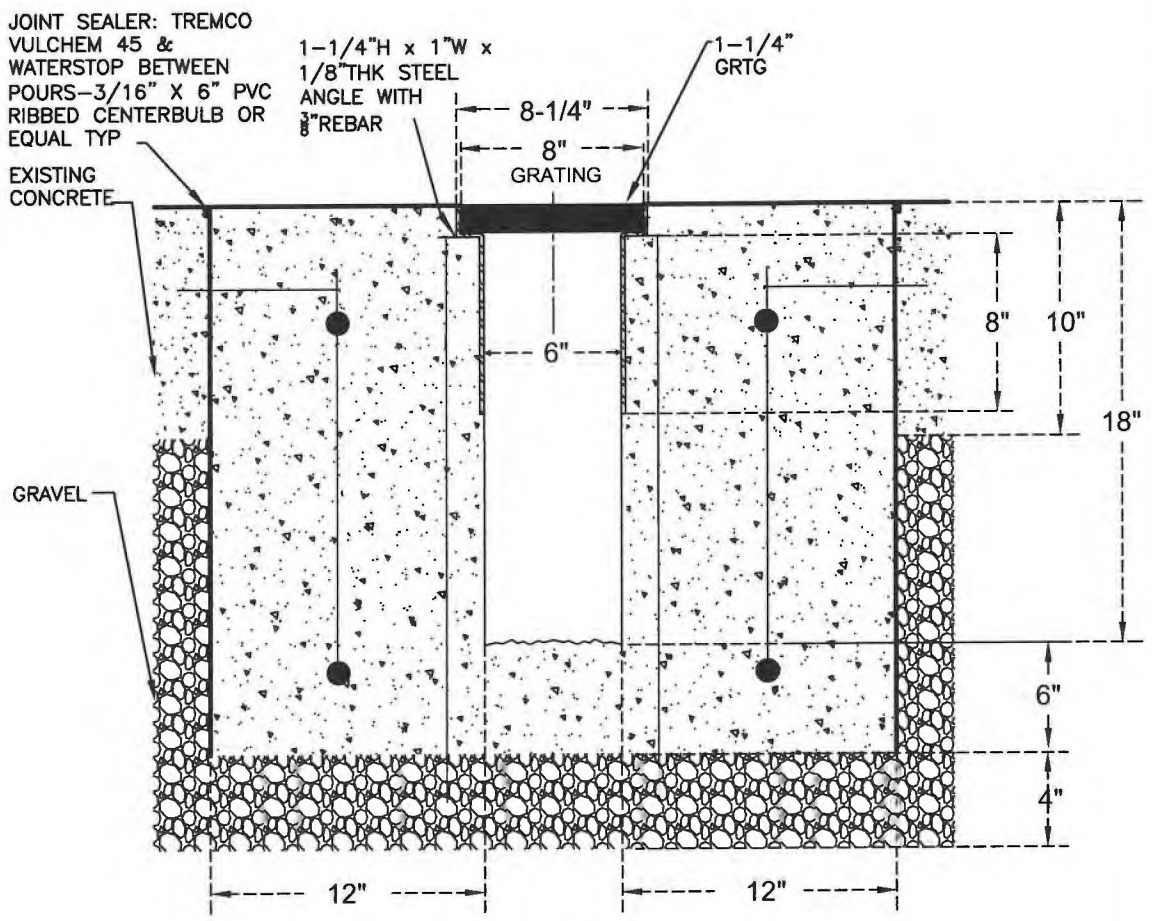
DWG. TITLE WASTE MANAGEMENT BLDG
BLDG DIMENSIONS AND CURB DETAILS

CORPORATION RIS

DWG. NO. D-90-931 REV. 0

Waste Management Building (WMB)





SUMP DETAIL

GRATING:

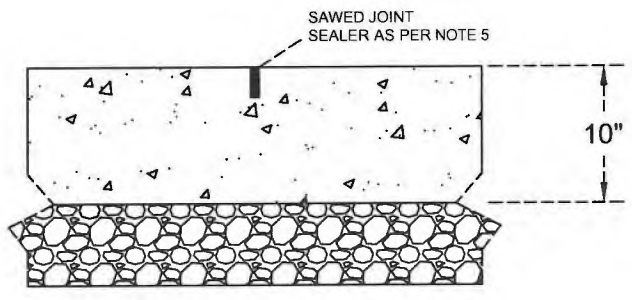
1. ALL GRATING TO BE HEAVY DUTY WELDED STEEL W SERIES (19–W–4) BY OHIO GRATING, INC. OR APPROVED EQUAL.
2. SUMP CONTAINS 11 PCS. OF GRATING AT 8"WIDE BY 23.6"LONG.

GENERAL NOTES:

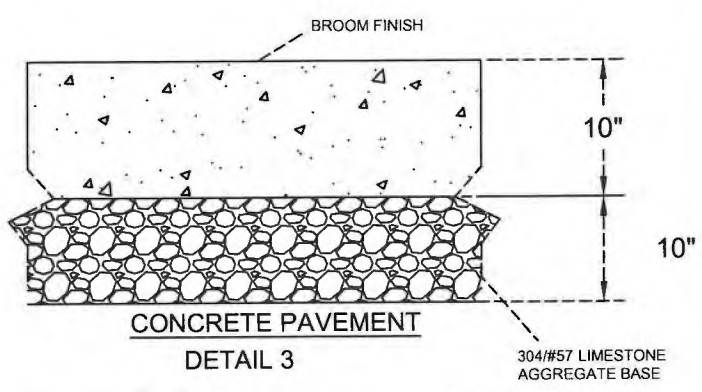
1. CONCRETE SHALL DEVELOP 6,000 PSI MINIMUM COMPRESSIVE STRENGTHS IN A 28 DAY PERIOD. THE ROSS STANDARD CONCRETE MIX DEFINED BELOW SHALL BE USED:

   ASTM C33–CONCRETE AGGREGATES
   ASTM 94–READY MIXED CONCRETE
   ASTM C260–AIR ENTRAINING ADMIXTURES FOR CONCRETE
   ASTM C39/C39M–05–COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMEN
   WATER: 278#/CYD
   TYPE 1 CEMENT: 611 LBS/CYD
   AIR ENTRAINMENT: MINIMUM 6% +1%/–0%
   EUCLID CHEMICAL EUCON MSA MICROSILICA: 50#/CYD
   #57 LIMESTONE 1,620#/CYD
   NATURAL SAND 1,245#/CYD
   EUCLID CHEMICAL EUCON 37 SUPER 106OZ.
   EUCLID CHEMICAL TUF–STRAND SF: 6LBS/CYD: NO FIBER IN SUMP

2. THE SUBGRADE IS TO BE 304, #57, #2 LIMESTONE AS NEEDED
3. WATER STOP MATERIAL – 3/16" x 6" PVC RIBBED CENTERBULB BETWEEN POURS AND VANDEX EXPANSEAL B PLUS AROUND DRAIN PIPES OR EQUAL
4. ALL REBAR IS TO BE EPOXY COATED.
5. APPLY PRODUCT MATERIALS IN ACCORDANCE WITH MANUFACTURES' RECOMMENDATIONS
6. CONTAINMENT SUMP COATING – DUDICK PRIMER 67, RED IN COLOR & DUDICK PROTECTO COAT 100XT, MEDIUM GRAY IN COLOR – BY OTHER.



CONTROL JOINT
DETAIL 1



CONCRETE PAVEMENT
DETAIL 3

REVISIONS					
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DRAWN CNP DATE 4/27/2022 SUPERSEDES
CHECKED DATE SUPERSEDED BY
APPROVED DATE SCALE

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO. CI21-146
PROJECT NAME WASTE MANAGEMENT BLDG
DWG. TITLE WASTE MANAGEMENT BLDG GRATING AND TRENCH DETAILS
CORPORATION RIS
DWG. NO. D-90-930 REV. 0

Figure D1-11 "Process Dock West Storage Area", No dwg#.

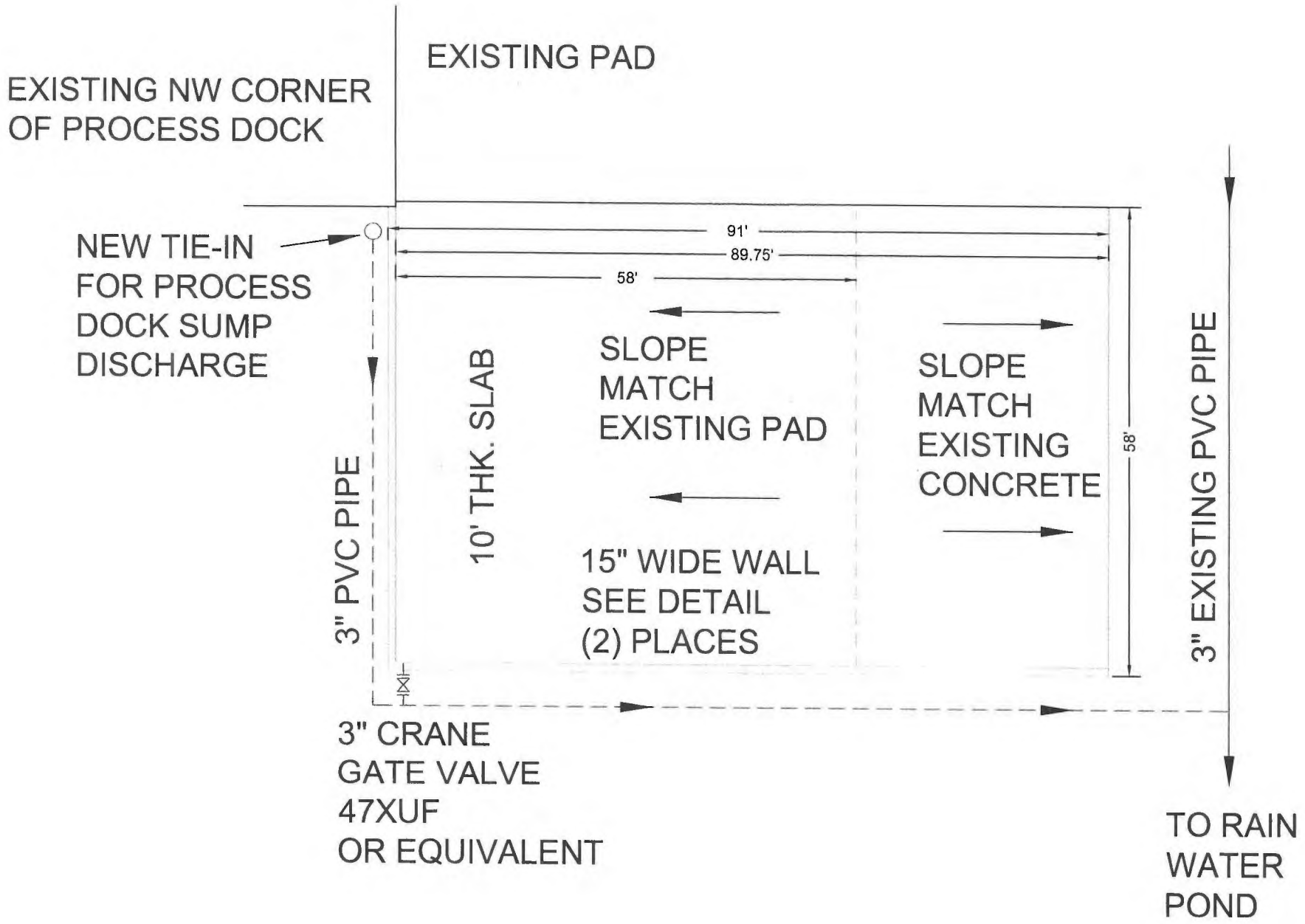

EXISTING PAD
EXISTING NW CORNER
OF PROCESS DOCK
N
NEW TIE-IN
FOR PROCESS
DOCK SUMP
DISCHARGE
91'
89.75'
58'
SLOPE
MATCH
EXISTING PAD
SLOPE
MATCH
EXISTING
CONCRETE
10' THK. SLAB
15" WIDE WALL
SEE DETAIL
(2) PLACES
58'
3" PVC PIPE
3" EXISTING PVC PIPE
3" CRANE
GATE VALVE
47XUF
OR EQUIVALENT
TO RAIN
WATER
POND

Figure D1-12 "Guard Rail Storage Area", No dwg#.

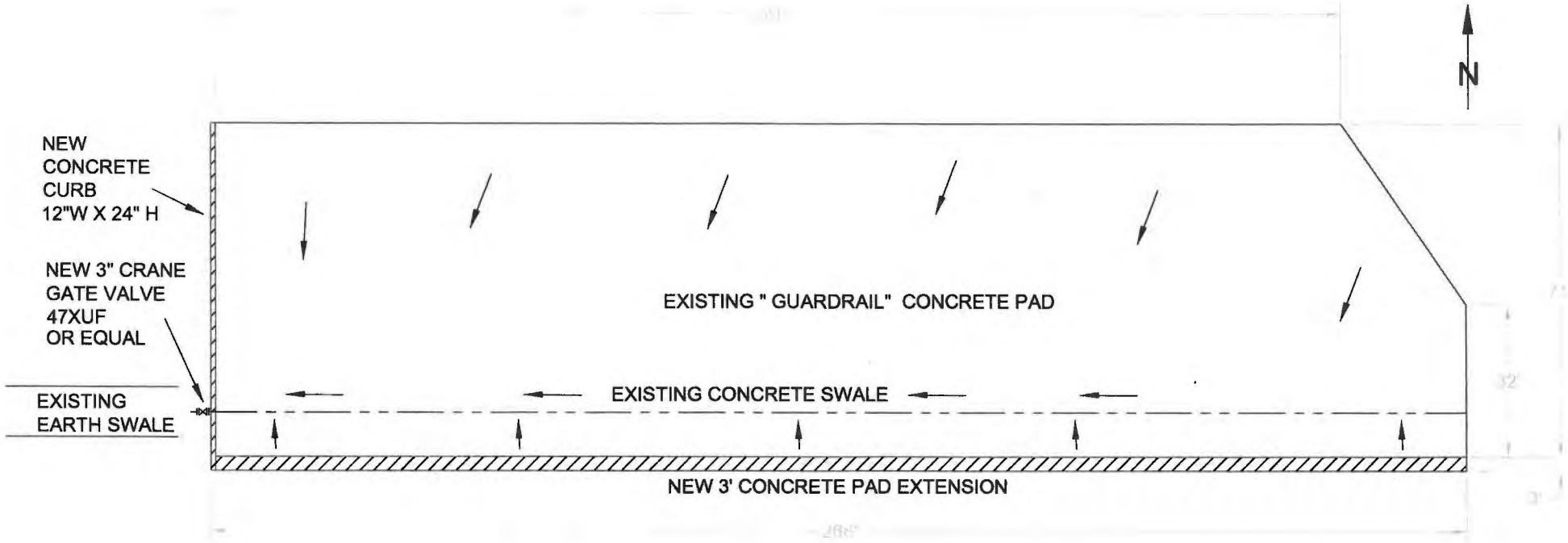
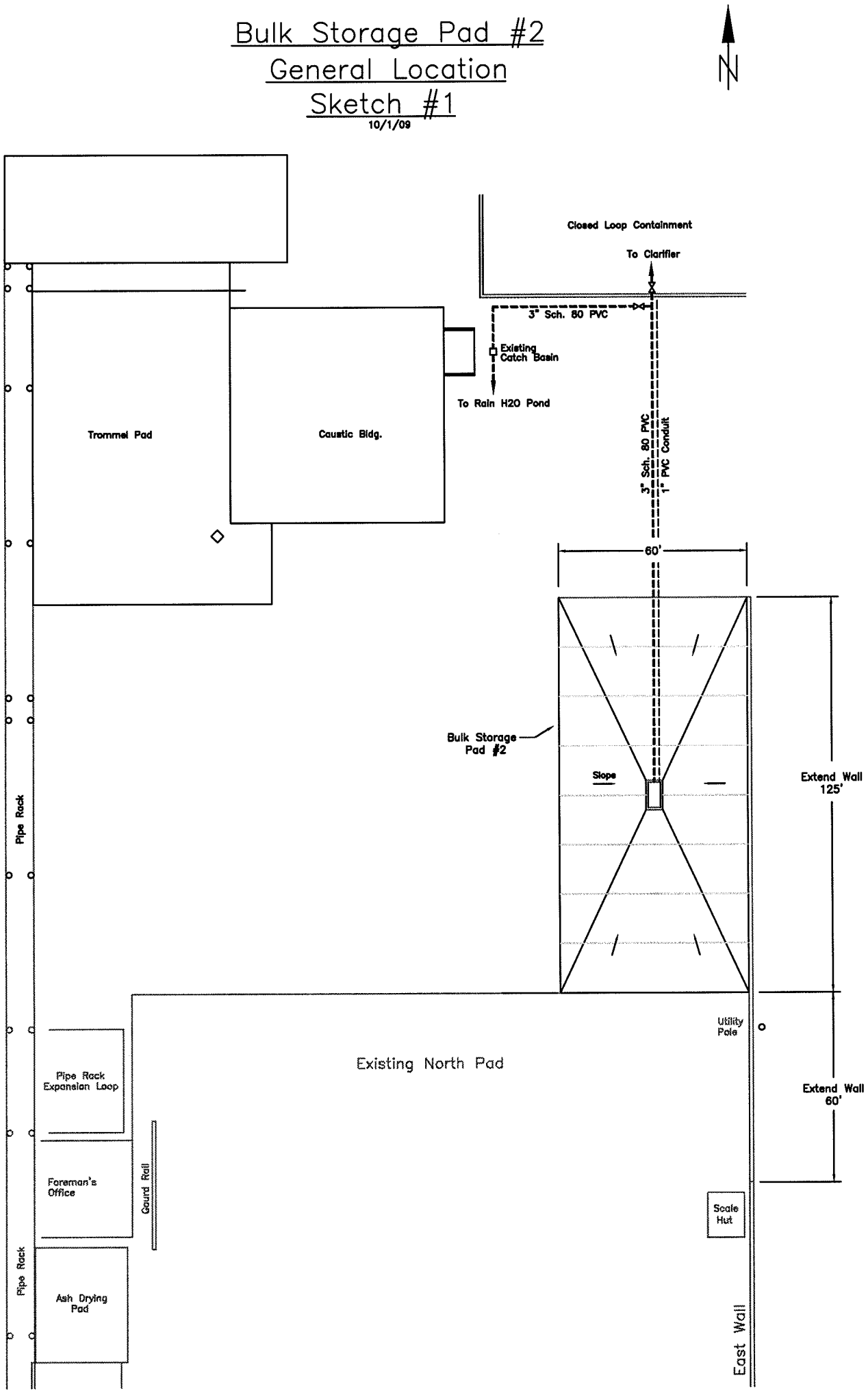

N
NEW
CONCRETE
CURB
12"W X 24" H
NEW 3" CRANE
GATE VALVE
47XUF
OR EQUAL
EXISTING
EARTH SWALE
EXISTING " GUARDRAIL" CONCRETE PAD
EXISTING CONCRETE SWALE
NEW 3' CONCRETE PAD EXTENSION

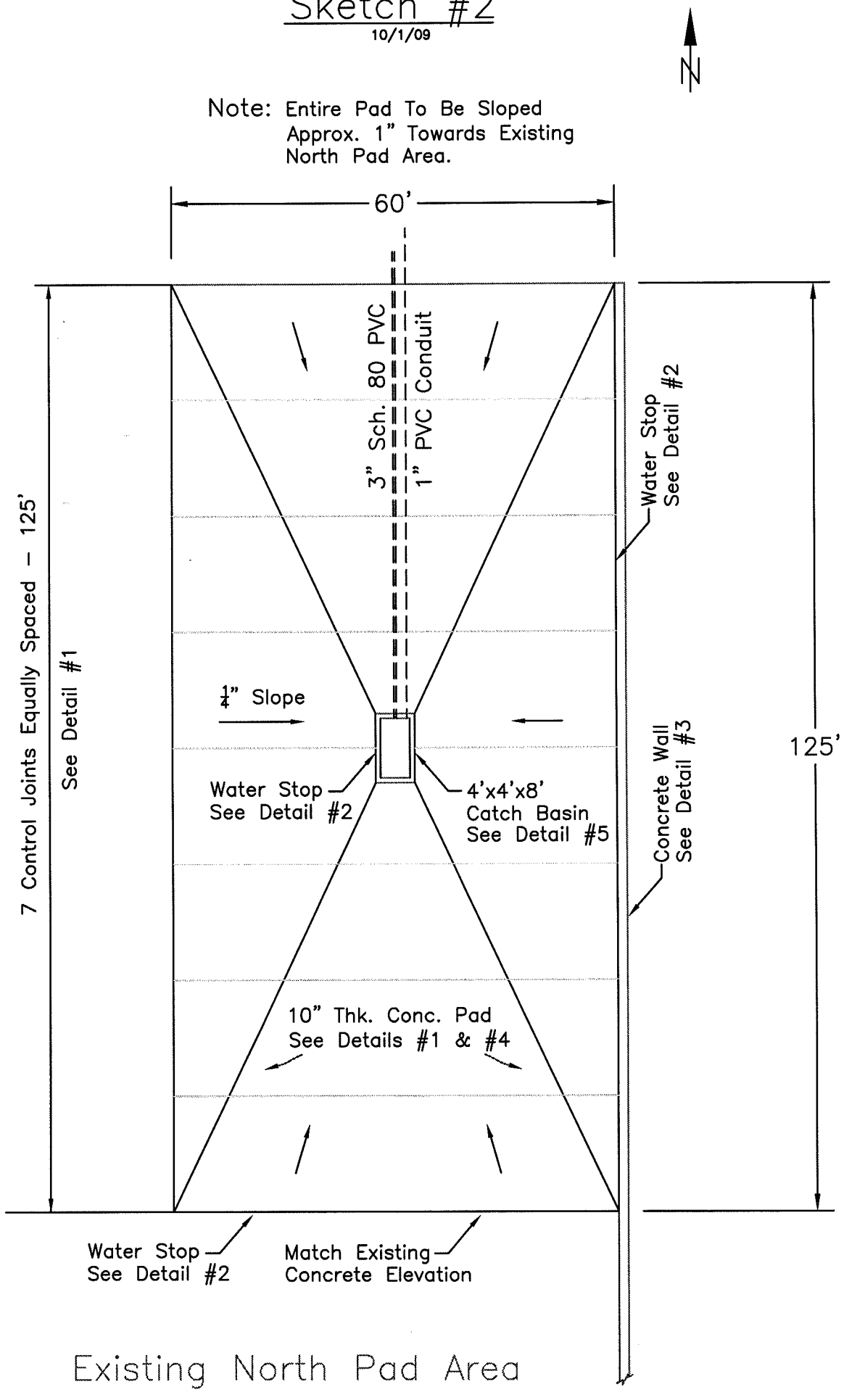
Figure D1-13 entitled "Bulk Storage Area #2" provides the detail for BSA #2. No dwg #.

Bulk Storage Pad #2
General Location
Sketch #1

10/1/09



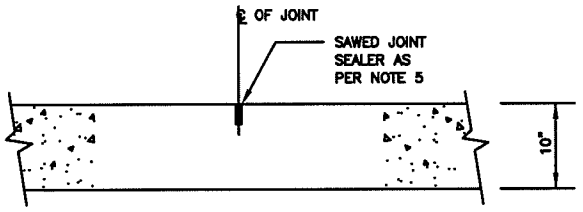
Bulk Storage Pad #2
Sketch #2
10/1/09



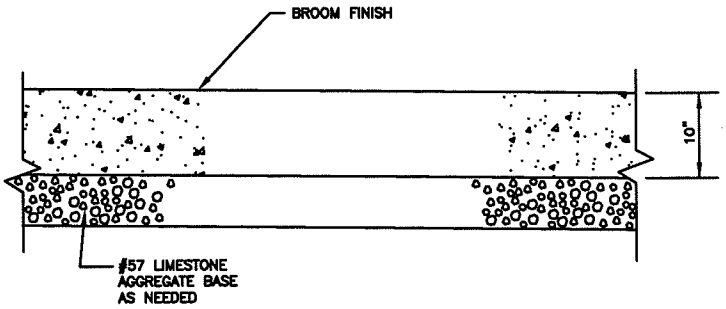
BULK STORAGE AREA #2
CONCRETE/ PIPING DETAILS

SKETCH #3

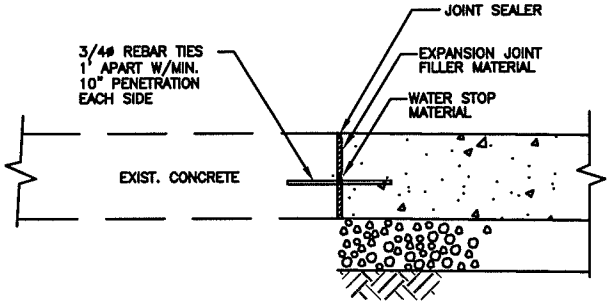
10/1/09



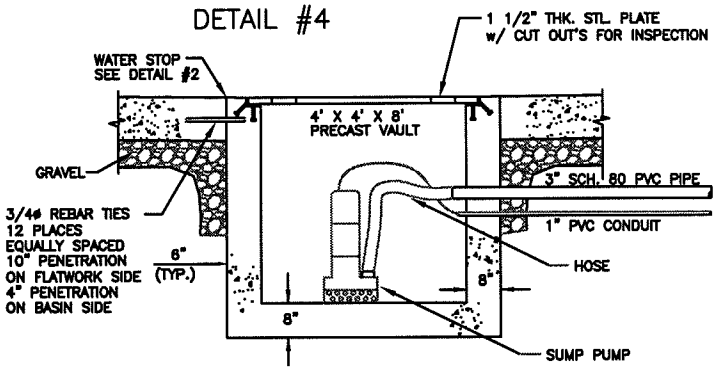
CONTROL JOINT
DETAIL #1



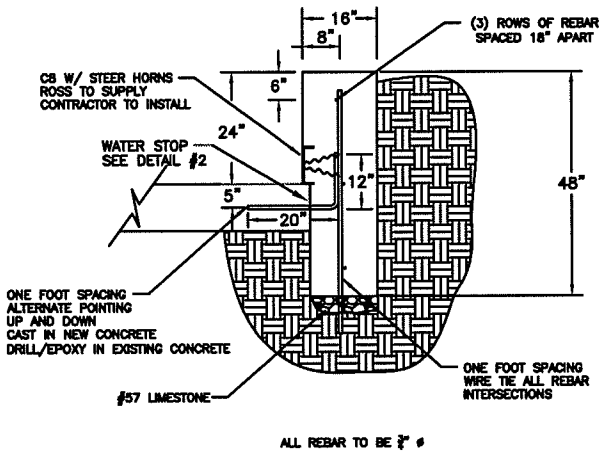
CONCRETE PAVEMENT
DETAIL #4



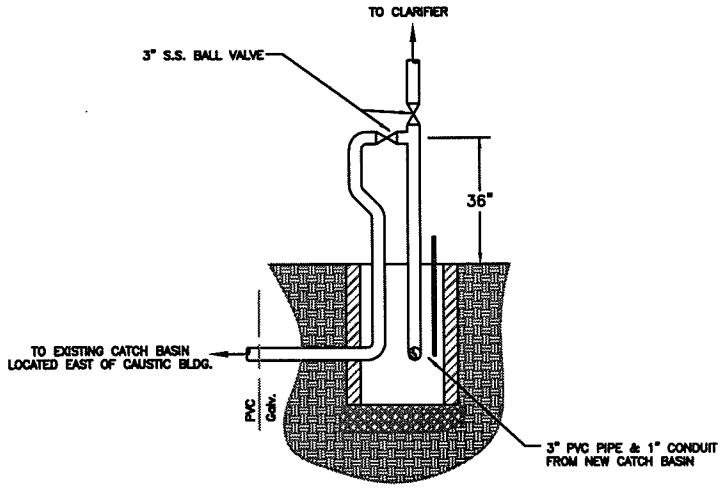
WATER STOP
DETAIL #2



CATCH BASIN
DETAIL #5



WALL CONSTRUCTION
DETAIL #3



PIPING @ CROCK (LOOKING NORTH)
DETAIL #6

GENERAL NOTES:

1. CONCRETE SPECIFICATION

   ASTM C33 – Concrete Aggregates
   ASTM 94 – Ready Mixed Concrete
   ASTM C260 – Air Entraining Admixtures for Concrete
   Water: 278#/cyd
   Type 1 Cement: 611 lbs/cyd
   Strength: 6000 PSI @ 28 Days
   Air Entrainment: minimum 6% +1%/–0%
   Microsilica: 50#/cyd
   #57 limestone 1,620#/cyd
   Natural Sand 1,245#/cyd
   Euclid Chemical Eucon 37 Super 106oz. or equal
   Euclid Chemical TUF–STRAND SF: 8#/cyd (no fibers in wall pour)

2. The subgrade is to be #57 limestone as needed

3. WATER STOP MATERIAL
   Vandex EXPASEAL B PLUS or equal

4. EXPANSION JOINT FILLER
   SEALTIGHT DECK–O–FOAM or equal

5. EXPANSION JOINT SEALER
   Tremco Vulchem 45 self leveling polyurethane sealant

6. Apply product materials in accordance with manufacturs' recommendations

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

Figure D2-1 "Tanks 70, 73 and 74 Piping & Instrumentation Diagram", Drawing B-01-001.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

PUBLIC INFORMATION VERSION
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Figure D2-2 "Tanks 23-64 P&ID", Drawing D-02-001.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

Figure D2-3, "Tanks 23-64 PFD," Drawing D-90-049.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

PUBLIC INFORMATION VERSION
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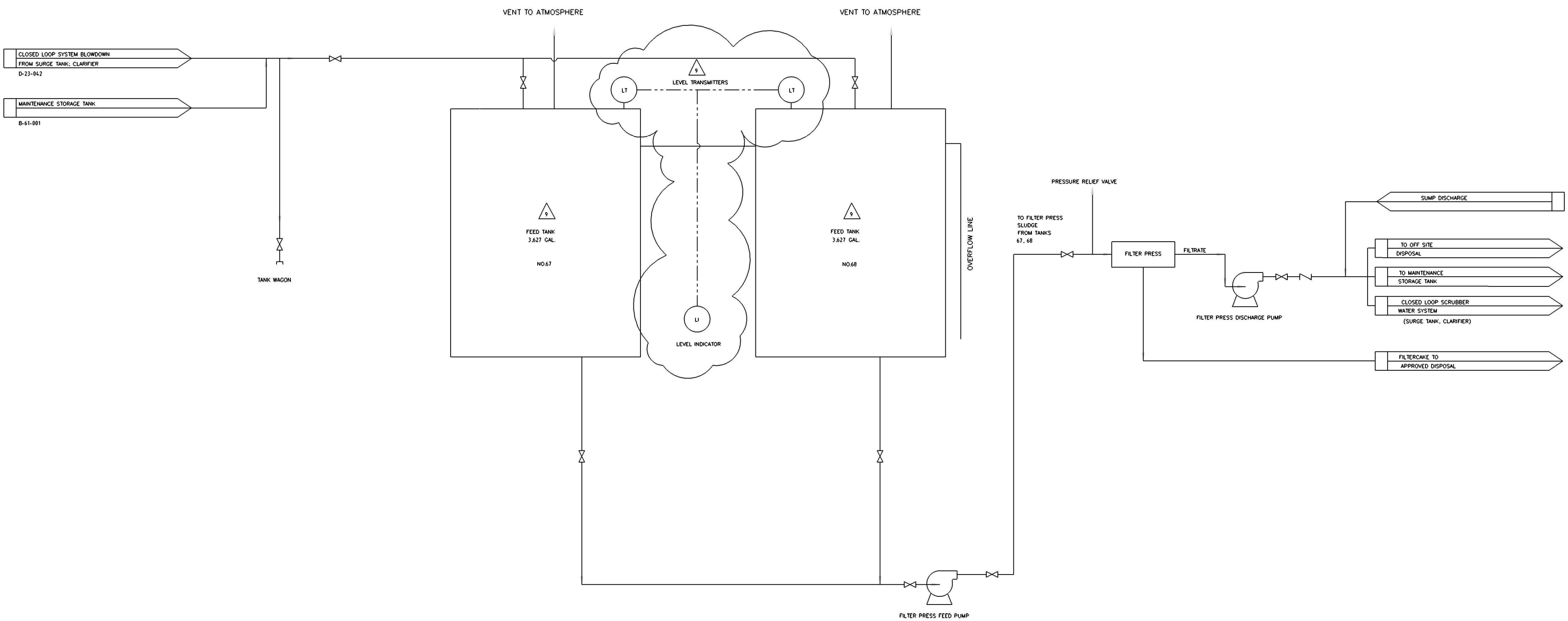
Figure D2-4, "Tanks 67 and 68 P&ID," Drawing-62-001.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.



CONFIDENTIAL

FIGURE D2 - 3
FIGURE D8-1

NOTE:

1) REFERENCE FIGURE D2 - 6 FOR ALL P & ID SYMBOLS

TANK NOS.67 AND 68
PROCESS AND INSTRUMENTATION
FLOW DIAGRAM

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	GEN. REV. RCRA PART 'B'	SHM	4/6/88		
2	AS-BUILT REV. RCRA PART "B"	MAR	11/17/88		
3	GENERAL REVISION	JF	9/15/92		
4	SCRUBBER WATER REVS.	JF	9/28/94		
5	SECT. D NOD'S	JF	11/15/94		
6	GEN. REVS. & FILTER PRESS	JF	2/98		
7	GENERAL REVISIONS	JF	4/01		
8	GENERAL REVISIONS	RZ	1/5/09		
9	GENERAL REVISIONS	SK	1/7/09		
10					

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PROJECT NO.
PROJECT NAME
DWG. TITLE TANKS 67 & 68 P & ID
CORPORATION
DWG. NO. B-62-001 REV. 9

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

Figure D2-5 "Tank 75 Piping and Instrumentation Diagram," Drawing B-61-001.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

Figure D2-6 "P&ID symbols," Drawing D-90-020.

PIPING SYMBOLS

- BALL VALVE
- GATE VALVE
- CONTROL VALVE (FAIL OPEN)
- CONTROL VALVE (FAIL CLOSED)
- MOTORIZED CONTROL VALVE
- CHECK VALVE
- RELIEF VALVE
- REDUCER
- RUPTURE DISC
- Y-TYPE STRAINER
- BLIND TEE
- LIQUID PROCESS LINE
- GAS PROCESS LINE OR FLUE GAS
- HOSE CONNECTION
- BUTTERFLY VALVE
- PLUG VALVE
- SELF CONTAINED PRESSURE REGULATOR VALVE
- PNEUMATIC SIGNAL
- FLEXIBLE CONNECTOR
- 3-WAY SOLENOID VALVE
- DAMPER
- KNIFE GATE DAMPER

EQUIPMENT SYMBOLS

- MOTOR
- HORIZONTAL CENTRIFUGAL PUMP
- VERTICAL CENTRIFUGAL PUMP
- PULLEYS
- FLOAT TYPE LEVEL GAUGE
- AGITATOR
- FILTER OR STRAINER
- THERMO FUSIBLE LINK
- SIGHT GLASS
- FLAME ARRESTER

EQUIPMENT NUMBERING

XX-XXX

- XXX — EQUIPMENT NUMBER IN SEQUENCE FOR THIS EQUIPMENT TYPE IN THE ENTIRE PLANT
- XX — EQUIPMENT CODE

SERVICE CODES

BF	BYPASS FUEL
HF	HIGH BTU FUEL
HL	HEATING LIQUID
LF	LOW BTU FUEL
NG	NITROGEN
PA	PLANT AIR
PW	POTABLE WATER
VG	VENT GAS

EQUIPMENT CODES

AG	AGITATOR
BO	BOILER
PU	PUMP
ST	STRAINER
TK	TANK
VC	VENT CONDENSER
IA	INSTRUMENT AIR

INSTRUMENTATION SYMBOLS

- COMPUTER FUNCTION
- FIELD MOUNTED INSTRUMENT ACCESSIBLE TO OPERATOR
- PANEL MOUNTED INSTRUMENT ACCESSIBLE TO OPERATOR
- INSTRUMENT NORMALLY INACCESSIBLE TO OPERATOR (I.E. BEHIND CONTROL PANEL)
- PILOT LIGHT
- INSTRUMENT IDENTIFICATION LETTERS (XXX)
- ELECTRIC CONTROL SIGNAL
- CAPILLARY TUBE
- FLOAT-OPERATED MECHANICAL SWITCH
- COMMON ALARMS

EPTI	EMERGENCY PROCESS TERMINATION INPUT
EPTO	EMERGENCY PROCESS TERMINATION OUTPUT
EFCI	EMERGENCY FUEL CUT-OFF INPUT
EFCO	EMERGENCY FUEL CUT-OFF OUTPUT
I/P	CURRENT TO PNEUMATIC TRANSDUCER
WFCO	WASTE FEED CUT-OFF
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED

INSTRUMENT IDENTIFICATION LETTERS

LETTER	LETTER MEANING AS: FIRST LETTER	MIDDLE LETTER	LAST LETTER OR LETTERS
A	ANALYSIS	ALARM	ALARM
C		CONTROL	CONTROLLER / CLOSED (1)
D		DIFFERENTIAL	
E	VOLTAGE		ELEMENT
F	FLOW		
G			GAGE
H	HAND		HIGH
I	CURRENT	INDICATOR	INDICATOR
K	TIME		
L	LEVEL		LOW
O			OPEN (2)
P	PRESSURE		
Q	QUANTITY	TOTALIZING	
R			RECORDER
S	SPEED	SWITCH/SENSING	SWITCH
T	TEMPERATURE		TRANSMITTER
V			VALVE
Y	STATUS		RELAY
Z	POSITION		

(1)

(2)

FIG. D2-6

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	GENERAL REVISION	JF	9/94		
2	TRIAL BURN PLAN REVS	JF	8/98		
3	TRIAL BURN REVS	JF	3/99		
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CHECKED DATE — SUPERSEDED BY

APPROVED DATE — SCALE NONE

3678 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.

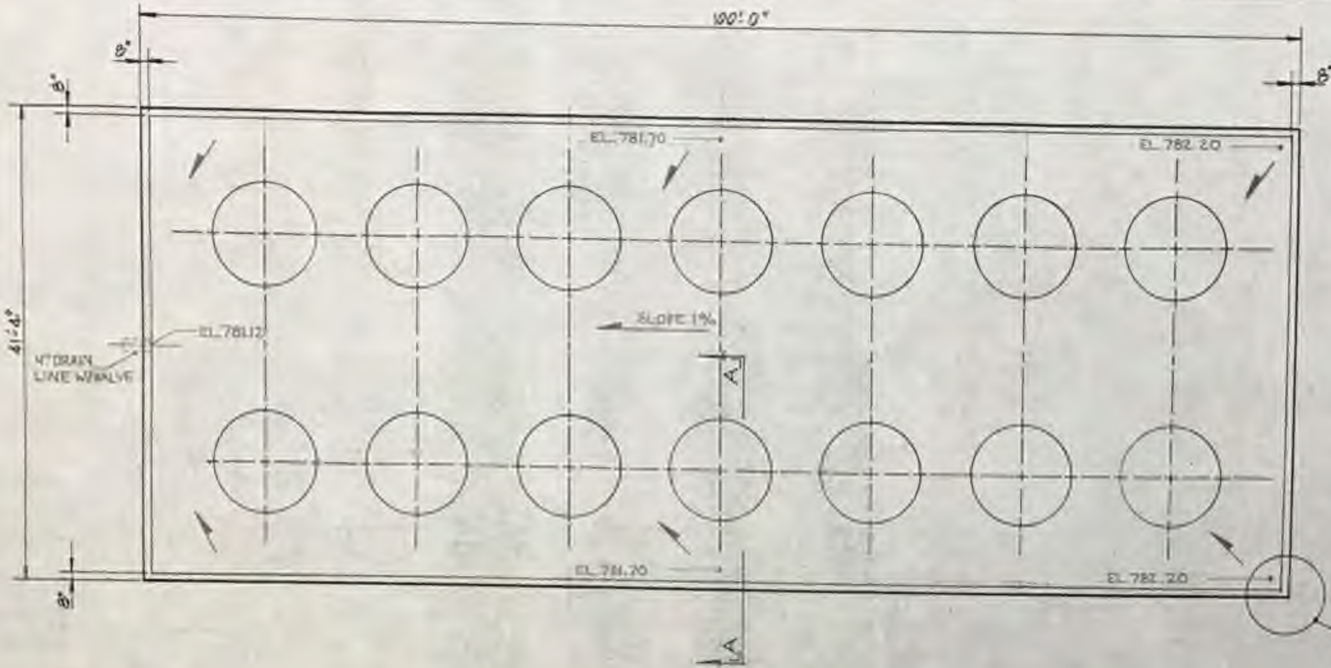
PROJECT NAME

DWG. TITLE P & ID SYMBOLS FOR TANKS

CORPORATION

DWG. NO. D-90-020 REV. 3

Figure D2-7 "Secondary Containment for Tanks 23-64," Drawing D-90-100.



PLAN VIEW - TYPICAL FOR TANK FARMS I, II & III

SCALE: 1/8" = 1'-0"

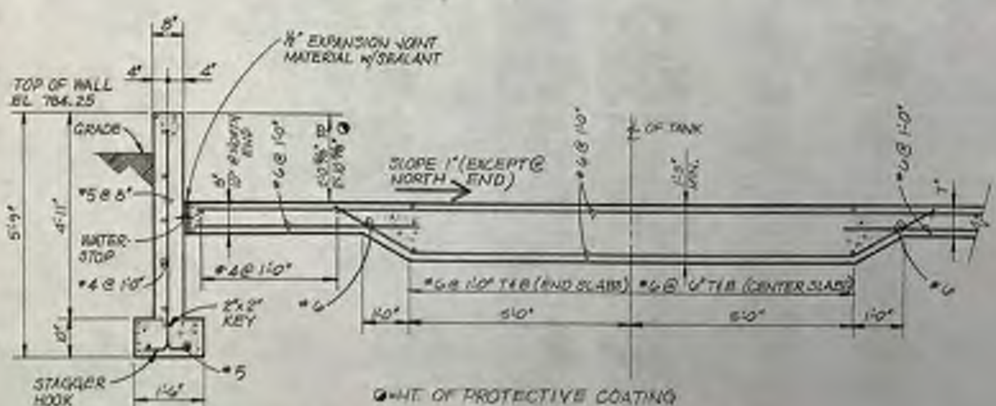
N

GENERAL NOTES

1.) TANK CAPACITY (EACH): 9,920 GALLONS
2.) PLAN VIEW, SECTION A-A & NOTES APPLY TO ALL (3) TANK FARMS
3.) SECONDARY CONTAINMENT:
PROTECTIVE COATING — BY CARBOLINE CO.:
▲ • PRIMER COAT – PHENOLINE 300 ORANGE
• FINISH COAT – PHENOLINE 300 FINISH

▲ = OR EQUIVALENT

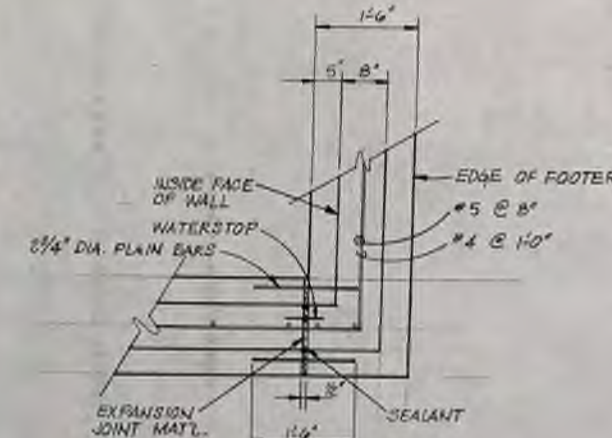
TANK FARM I – COATED CAPACITY OF TANKS 23 THRU 36 – 86,975 GALS.
TANK FARM II – COATED CAPACITY OF TANKS 37 THRU 50 – 75,950 GALS.
TANK FARM III – COATED CAPACITY OF TANKS 51 THRU 64 – 73,650 GALS.



● = HT. OF PROTECTIVE COATING

SECTION A-A

SCALE: 1/2" = 1'-0"



DETAIL - EXPANSION JOINT

NO SCALE

SECT. D FIGURE D2-7
SECT. I FIGURE II-6

REV.	DESCRIPTION	BY	DATE
1	GENERAL REVISION	DRD	3/18/
2	GENERAL REVISION	JF	9/84
3			
4			
5			

ROSS®

DRAWN P.R.O. DATE 1/16/
SCALE AS NOTED

PROJECT NO.
PROJECT NAME
DWG. TITLE SECONDARY CONTAINMENT FOR TANKS 23 THRU 64
CORPORATION R.I.S.I.
DWG. NO. C-90-100 REV. 2

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

Figure D2-8 "Secondary Containment for Tanks 67 and 68," Drawing D-90-103.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

Figure D2-9 "Secondary Containment for Tanks 70, 73 and 74,"

Drawing D-90-102.

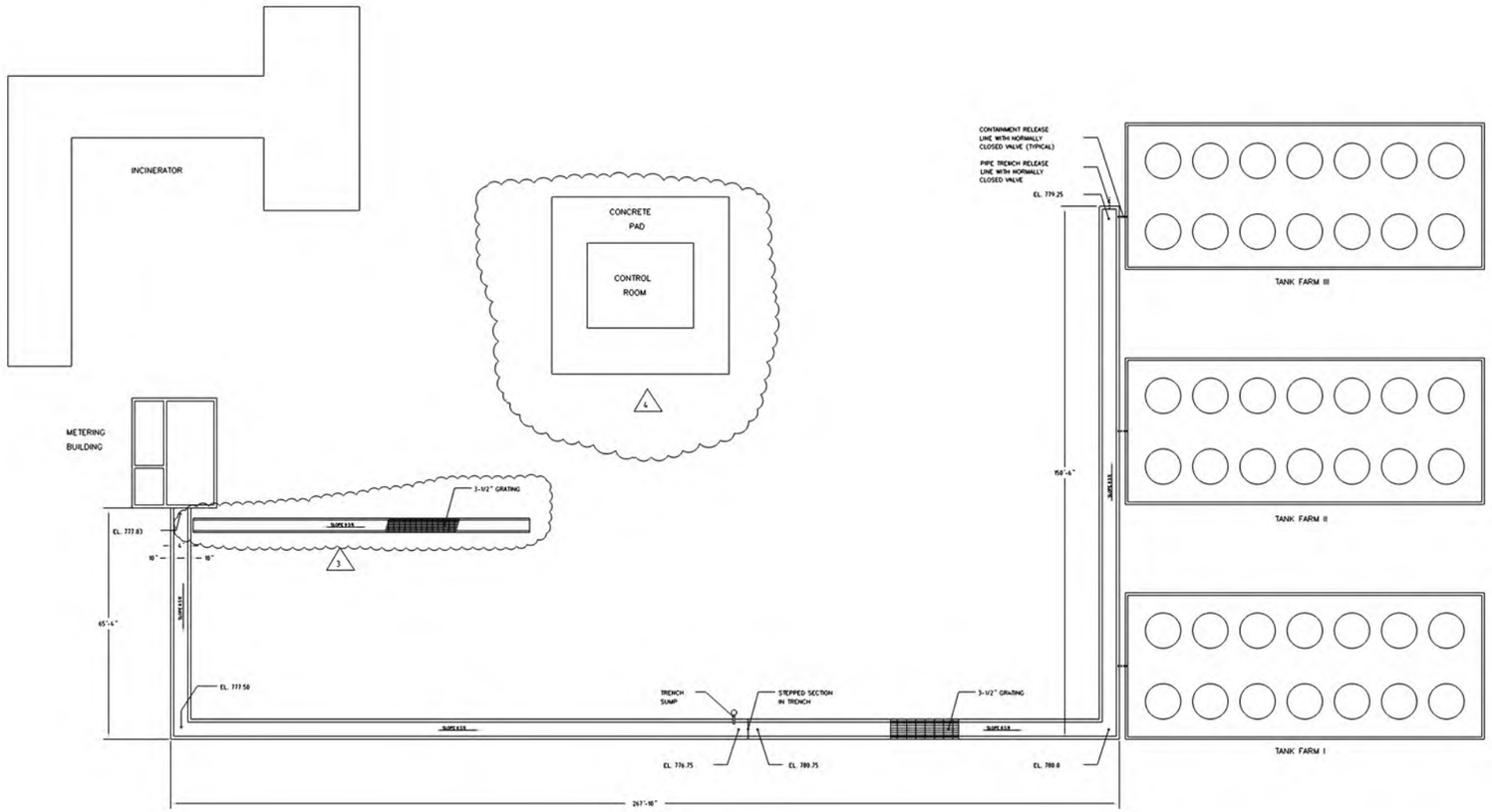
RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

PUBLIC INFORMATION VERSION
Confidential Information has been Removed from this Page

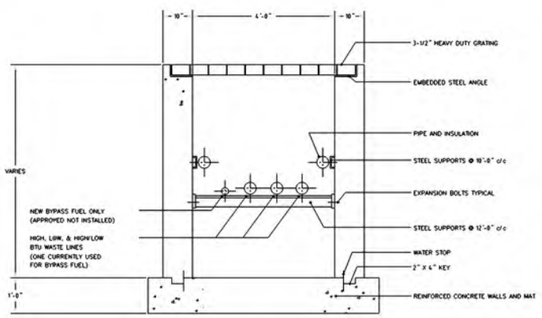
Figure D2-10 "Secondary Containment for Closed Loop Scrubber including Tank 75," Drawing D-90-137.

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its process equipment, treatment, and/or storage areas. For this reason, RIS has removed this drawing from the Public Information Version of the State Part B Application.

Figure D2-11 "Secondary Containment For Pipe Trench," Drawing C-90-021.



PIPE TRENCH DETAIL



TYPICAL TRENCH SECTION

SCALE: 10 X

FIGURE D2-11

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	REVISED TO CAD	JF	10/94		
2	PART B APPLICATION	JF	2/98		
3	DIRECT FEED UPGRADES	JF	09/12		
4	ADDED CONTROL ROOM	SK	2/15		
5					
6					
7					
8					
9					
10					

ROSS®

DRAWN JF DATE 10/94

CHECKED DATE

APPROVED DATE

SUPERSEDES

SUPERSEDED BY

SCALE 1" = 20'

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.

PROJECT NAME

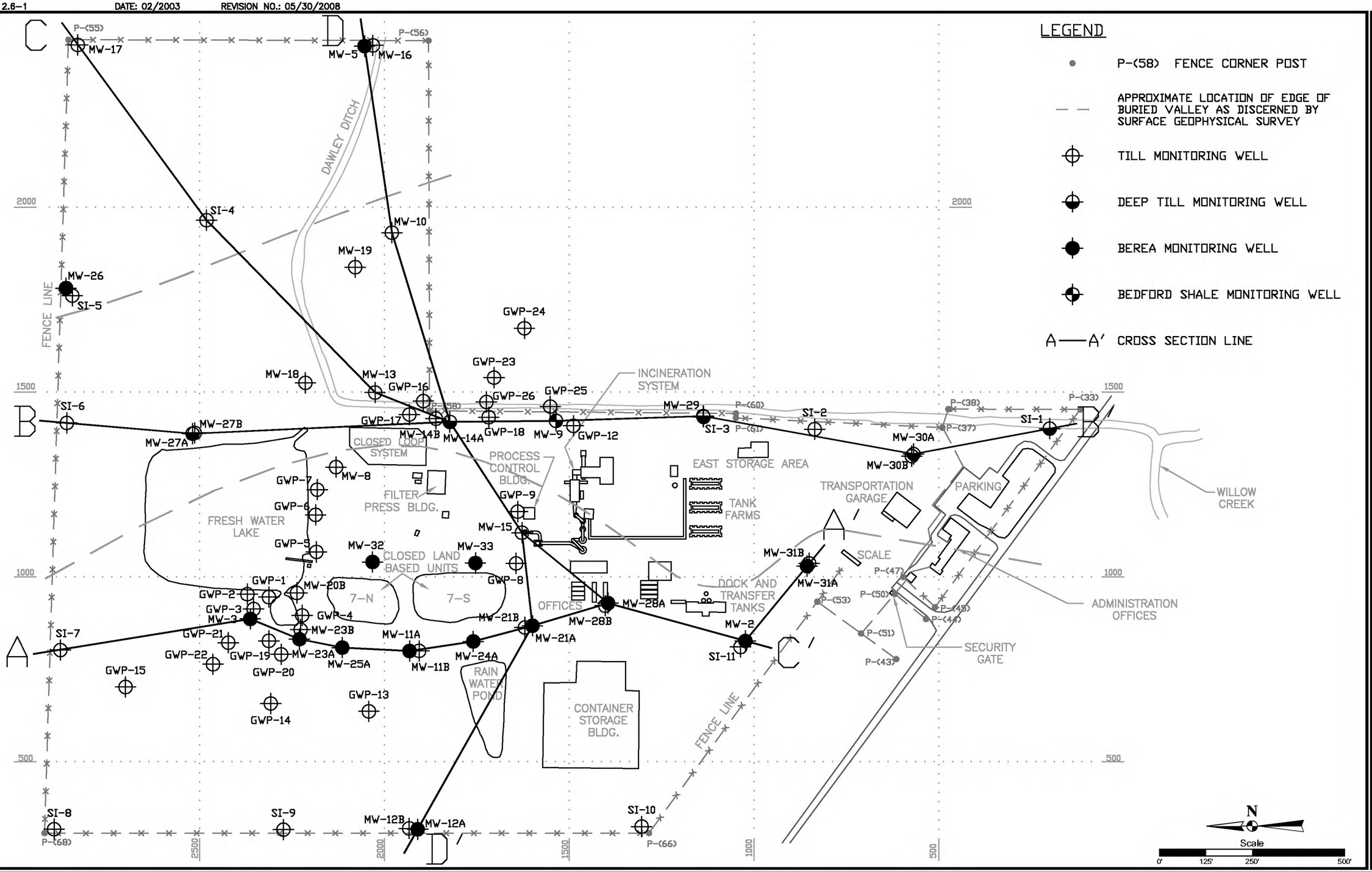
DWG. TITLE SECONDARY CONTAINMENT FOR PIPE TRENCH

CORPORATION

DWG. NO. C-90-021 REV. 4

Figure D8-1 (with attachments), entitled "Generalized Geologic Cross Section" (drawings 2.6-1 – 2.6-5)

DWG NAME: 2.6-1 DATE: 02/2003 REVISION NO.: 05/30/2008



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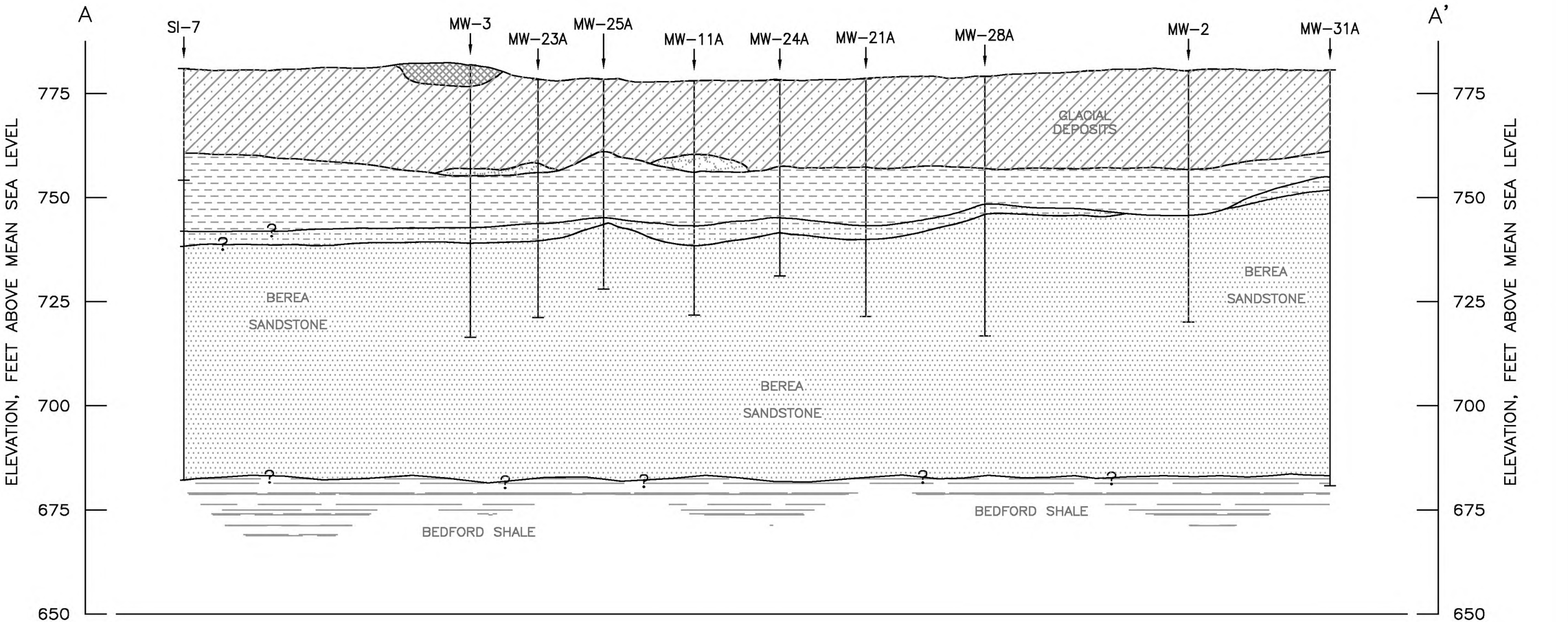
Cross Section Location Map,
Ross Incineration Services, Inc.,
Grafton, Ohio

Figure
2.6-1

DWG NAME: 2.6-2 DATE: 02/2003 REVISION NO.: 05/28/2008



SECTION A–A'

LEGEND

- SILT/SILTY CLAY
- CLAY/CLAYEY SILT
- SAND, SILTY SAND
- —?— CONTACT INFERRED
- RE–WORKED SOIL
- WEATHERED SANDSTONE
- SANDSTONE
- SHALE

Scale 0' 100' 200' 400'

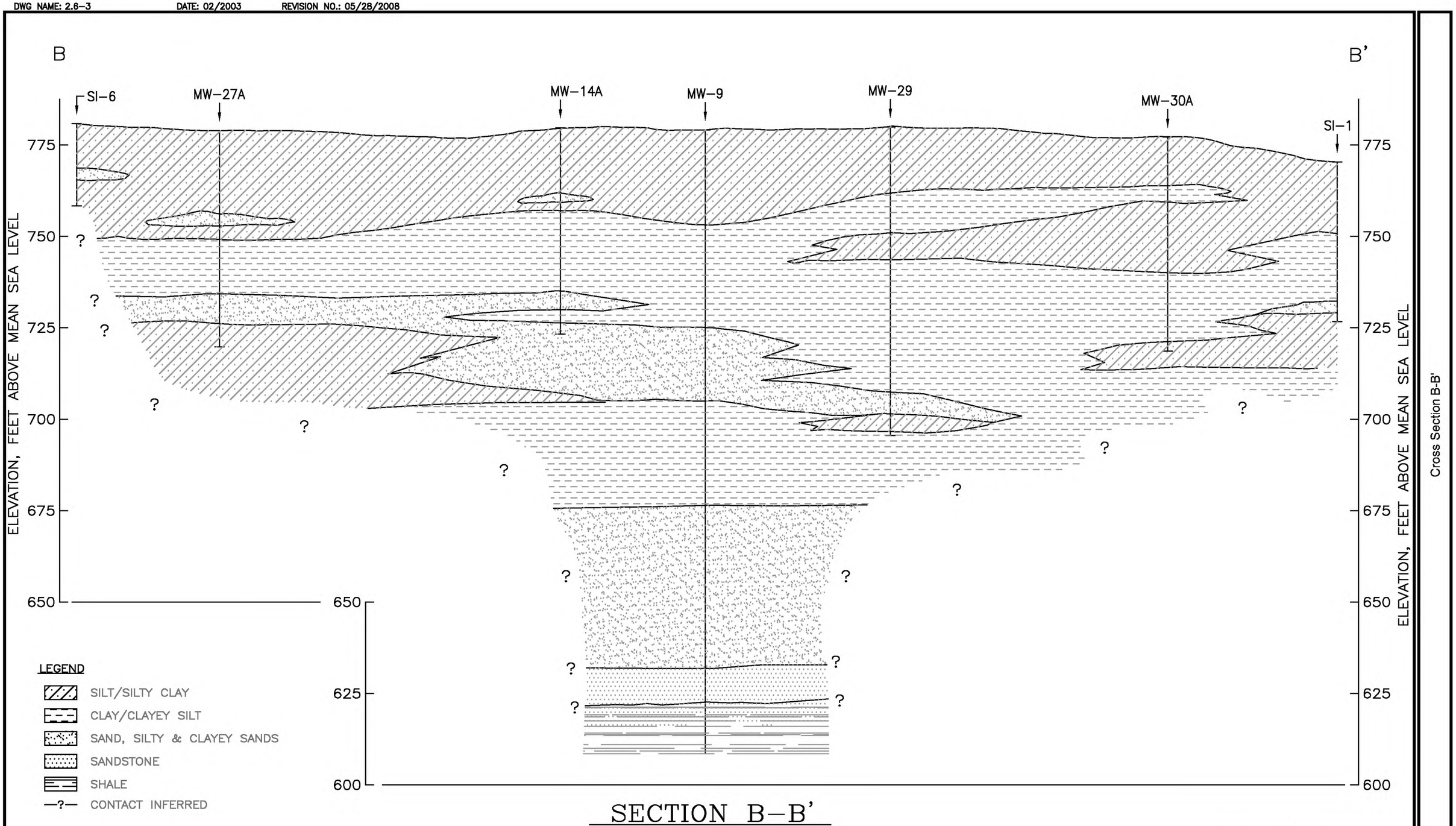
Cross Section A-A'

ROSS®

Cross Section A-A',
Ross Incineration Services, Inc.,
Grafton, Ohio

Figure
2.6-2

DWG NAME: 2.6-3 DATE: 02/2003 REVISION NO.: 05/28/2008



SECTION B–B'

Cross Section B-B'

ROSS®

Cross Section B-B',
Ross Incineration Services, Inc.,
Grafton, Ohio

Figure
2.6-3

DWG NAME: 2.6-4 DATE: 02/2003 REVISION NO.: 05/28/2008

C C'

MW-17 SI-4 DAWLEY DITCH SWI-6 MW-13 DAWLEY DITCH MW-14A MW-15 MW-28A MW-2

ELEVATION, FEET ABOVE MEAN SEA LEVEL

775 750 725 700 675 650 625

GLACIAL DEPOSITS

BEREA SANDSTONE

BEREA SANDSTONE

BEREA SANDSTONE

BEDFORD SHALE

BEDFORD SHALE

ELEVATION, FEET ABOVE MEAN SEA LEVEL

775 750 725 700 675 650 625

Cross Section C-C'

SECTION C–C'

LEGEND

- SILT/SILTY CLAY
- CLAY/CLAYEY SILT
- SAND, SILTY SAND
- WEATHERED SANDSTONE
- SANDSTONE
- SHALE
- —?— CONTACT INFERRED

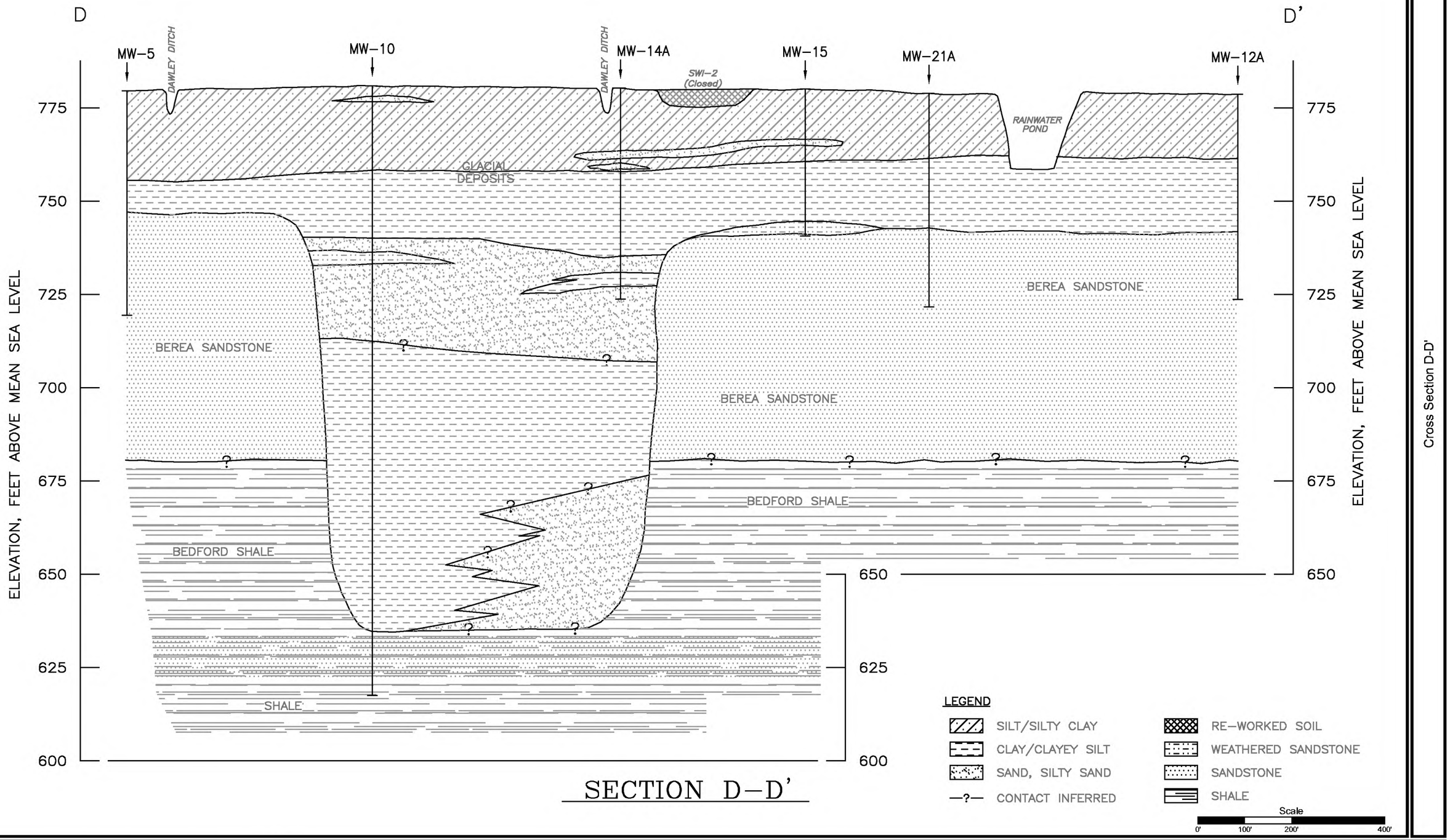
Scale 0' 100' 200' 400'

ROSS®

Cross Section C-C',
Ross Incineration Services, Inc.,
Grafton, Ohio

Figure
2.6-4

DWG NAME: 2.6-5 DATE: 02/2003 REVISION NO.: 05/28/2008



SECTION D-D'

Cross Section D-D'

ROSS®

Cross Section D-D',
Ross Incineration Services, Inc.,
Grafton, Ohio

Figure
2.6-5

Figure D8-2 entitled "Typical Ground Water Flow Diagram for the Till Zone of Saturation", Drawing D-90-079 till

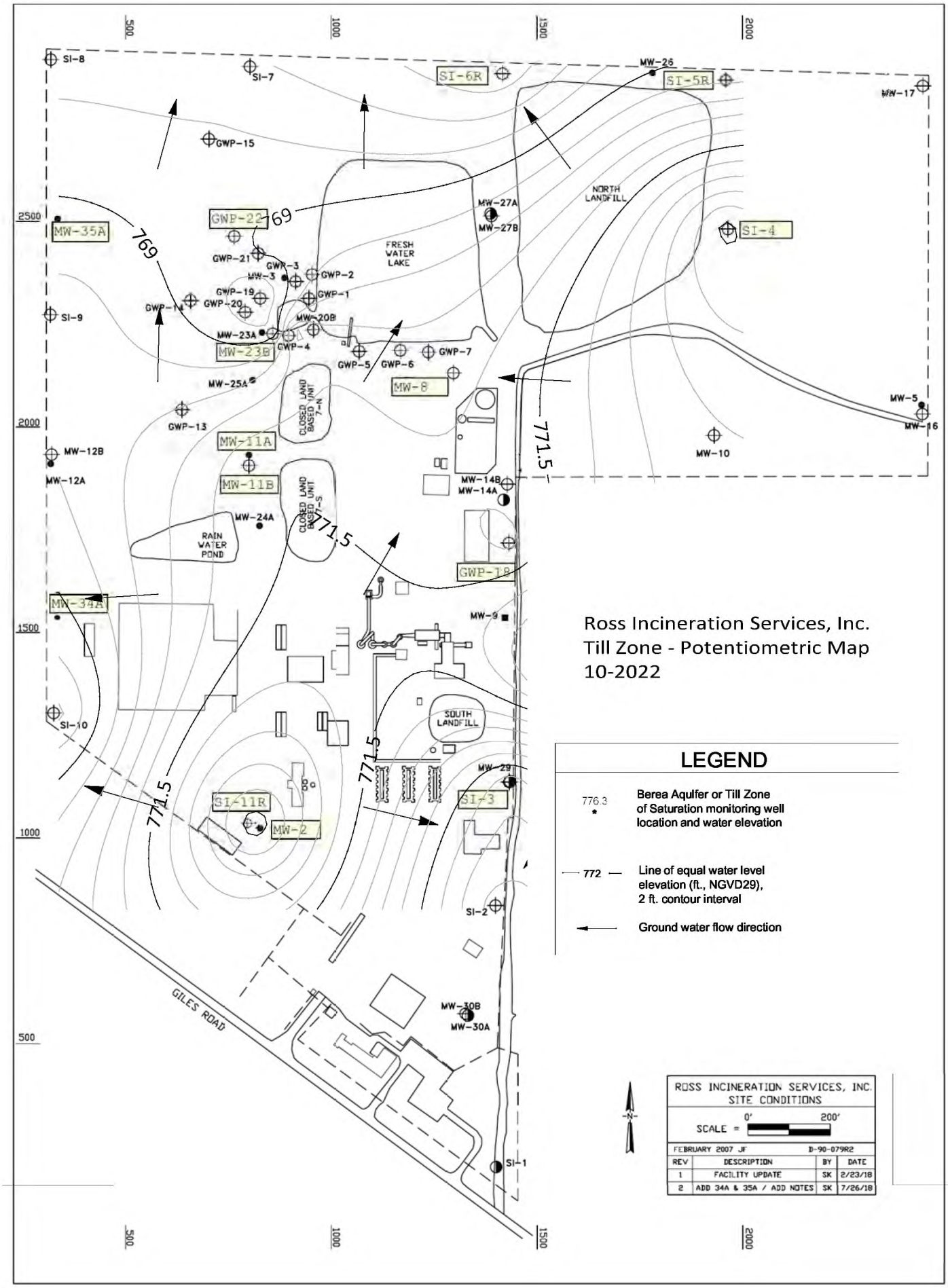
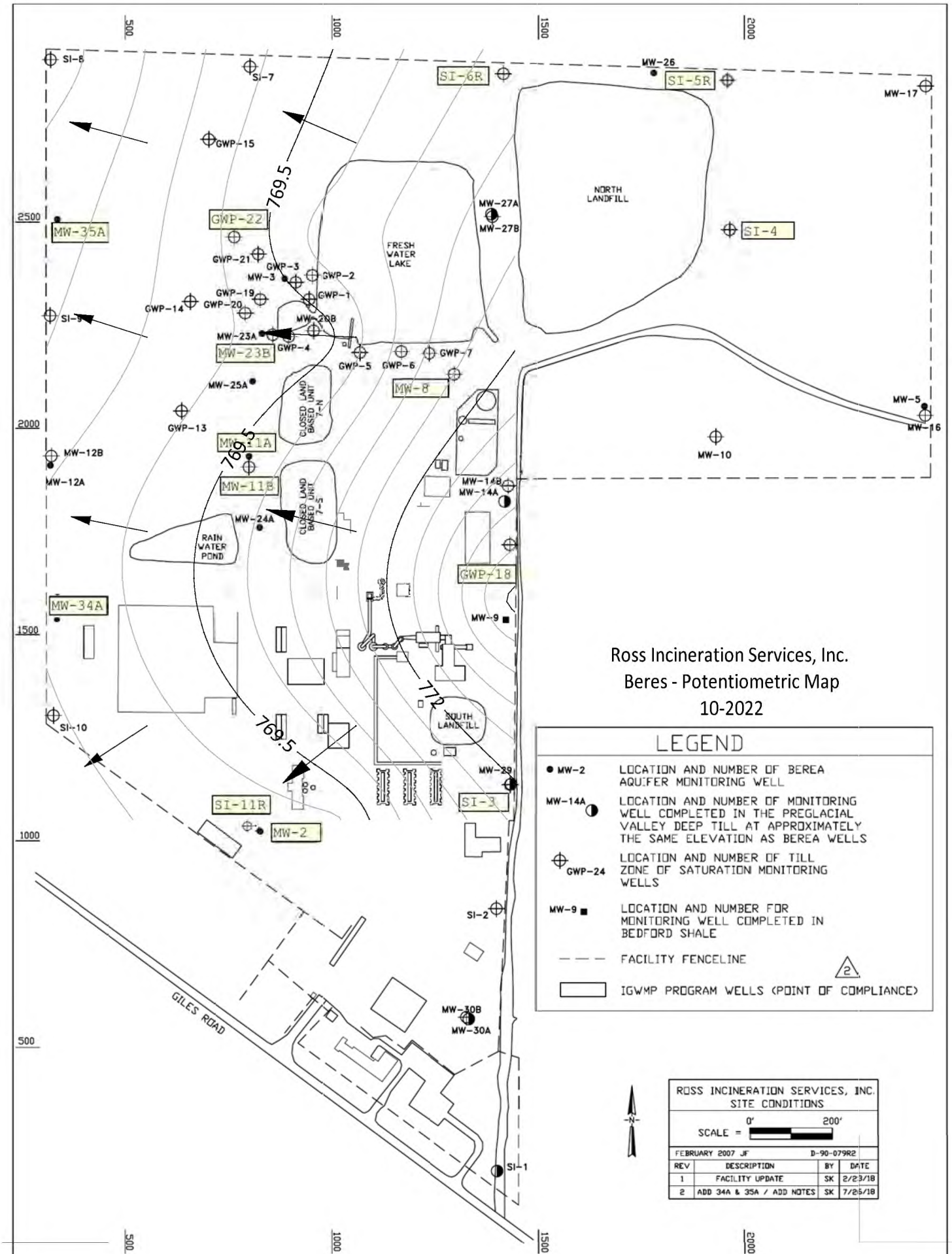

Ross Incineration Services, Inc.
Till Zone - Potentiometric Map
10-2022
LEGEND
776.3
Berea Aqulfer or Till Zone of Saturation monitoring well location and water elevation
772
Line of equal water level elevation (ft., NGVD29), 2 ft. contour interval
Ground water flow direction
769
771.5
SI-8
SI-7
SI-6R
SI-5R
MW-26
MW-17
GWP-15
MW-35A
GWP-22
GWP-21
GWP-3
MW-3
GWP-2
GWP-19
GWP-20
GWP-1
GWP-14
SI-9
MW-20B
MW-23A
MW-23B
GWP-4
GWP-5
GWP-6
GWP-7
MW-25A
MW-8
GWP-13
MW-11A
MW-11B
MW-12B
MW-12A
MW-24A
RAIN WATER POND
CLOSED LAND BASED UNIT 7-N
CLOSED LAND BASED UNIT 7-S
FRESH WATER LAKE
NORTH LANDFILL
MW-27A
MW-27B
SI-4
MW-5
MW-16
MW-10
MW-14B
MW-14A
GWP-18
MW-34A
MW-9
SOUTH LANDFILL
SI-10
SI-11R
MW-2
MW-29
SI-3
SI-2
SI-1
MW-30B
MW-30A
GILES ROAD
500
1000
1500
2000
2500
N
ROSS INCINERATION SERVICES, INC.
SITE CONDITIONS
SCALE = 0' 200'
FEBRUARY 2007 JF
D-90-079R2
REV | DESCRIPTION | BY | DATE
1 | FACILITY UPDATE | SK | 2/23/18
2 | ADD 34A & 35A / ADD NOTES | SK | 7/26/18

Figure D8-3 entitled "Typical Groundwater Flow Diagram for the Berea Aquifer", Drawing D-90-079 berea



Ross Incineration Services, Inc.
Beres - Potentiometric Map
10-2022

LEGEND

● MW-2	LOCATION AND NUMBER OF BEREA AQUIFER MONITORING WELL
MW-14A ◑	LOCATION AND NUMBER OF MONITORING WELL COMPLETED IN THE PREGLACIAL VALLEY DEEP TILL AT APPROXIMATELY THE SAME ELEVATION AS BEREA WELLS
⊕ GWP-24	LOCATION AND NUMBER OF TILL ZONE OF SATURATION MONITORING WELLS
MW-9 ■	LOCATION AND NUMBER FOR MONITORING WELL COMPLETED IN BEDFORD SHALE
– – –	FACILITY FENCELINE
△2	
▭	IGWMP PROGRAM WELLS (POINT OF COMPLIANCE)

N

ROSS INCINERATION SERVICES, INC.
SITE CONDITIONS

SCALE = 0' 200'

FEBRUARY 2007 JF D-90-079R2

REV	DESCRIPTION	BY	DATE
1	FACILITY UPDATE	SK	2/23/18
2	ADD 34A & 35A / ADD NOTES	SK	7/25/18

Figure D9-1 "VOC Source Locations," Drawing D-90-091

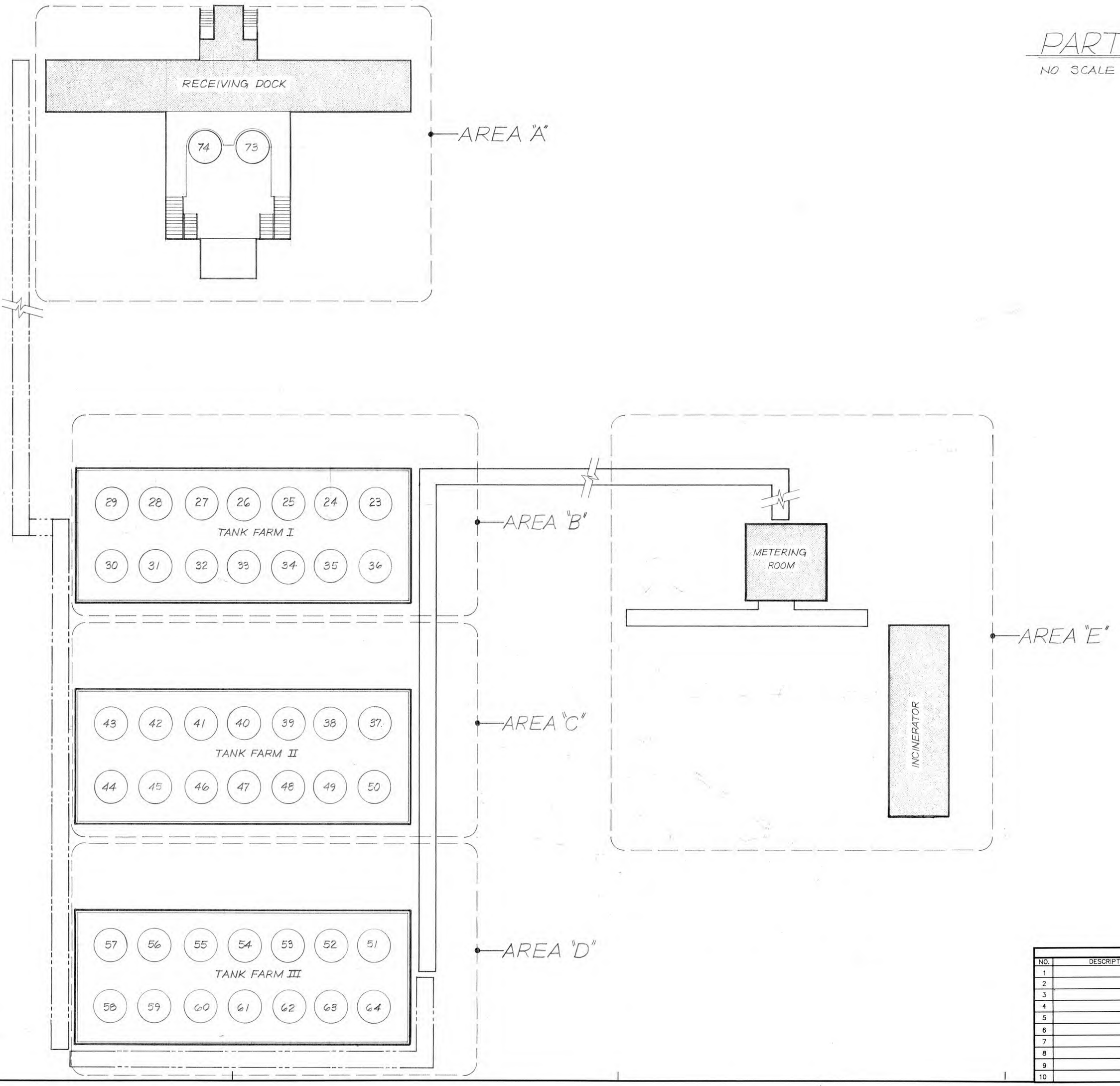
DWG. NO.

inch

N

PARTIAL SITE PLAN – V.O.C. SOURCE LOCATIONS

NO SCALE



AREA	UNIT	SOURCES
A-RECEIVING DOCK	TANKS 73 & 74	7401 - 7600
B-TANK FARM I	TANKS 23 - 36	6001 - 6200
C-TANK FARM II	TANKS 37 - 50	6201 - 6400
D-TANK FARM III	TANKS 51 - 64	6401 - 6600
E-INCINERATOR	INCINERATOR	8001 - 8700 : FEED LINES TO INCINERATOR

NOTES

1.) SOURCE IDENTIFICATION NUMBER RANGES MAY BE LARGER THAN NECESSARY FOR ACTUAL NUMBERS IN USE TO ACCOMODATE FUTURE SOURCES WHICH INCLUDE BOTH EQUIPMENT CHANGES AND ANTICIPATED PHASE II OF V.O.C.

2.) DO NOT SCALE DRAWING.

3.) THE PIPE RACK BETWEEN THE DOCK AND TANK FARMS IS INSULATED AND THEREFORE EXEMPT.

REVISIONS

NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

ROSS®

DRAWN DRO DATE 1/14/92 | SUPERSEDES

CHECKED DATE | SUPERSEDED BY

APPROVED DATE | SCALE NONE

394 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.

PROJECT NAME

DWG. TITLE V.O.C. SOURCE LOCATIONS

CORPORATION R.E.S.I., R.I.S.I.

DWG. NO. D-90-013 REV. 0

124327

Section D - Exhibit B

Design and Procedural Measures to Minimize Possibility of Fire and Explosion at the RIS Facility

Exhibit B
Design and Procedural Measures to Minimize Possibility of Fire and Explosion at the RIS Facility

Under Federal and State environmental regulations, RIS must adhere to certain design and procedural requirements that minimize the possibility of fire and explosions at the RIS facility and provide for an organized response, designed to minimize hazards to human health or the environment, in the unlikely event that a fire or explosion occurs. OAC 3745-54-31. Such provisions have been approved by the U.S. EPA and Ohio EPA and are strictly followed by RIS. The following design and procedural measures apply to the Container Storage Areas including: Container Storage Facility ("CSF"), Bulk Storage Areas ("BSAs"), Oxidizer Storage Building ("OSB"), Container Storage Area ("CSA"), Waste Storage Bays ("WSBs"), Waste Management Building ("WMB"), Process Dock Waste Storage Area ("PDWSA"), Guard Rail Storage Area ("GRSA") except where otherwise specifically noted:

1. **Location of Container Storage Areas.** RIS' Container Storage Areas are over 50 feet away from the facility fence line and other waste management units at the facility. OAC 3745-55-76. For most units this distance is much more than the 50 feet from the property line required by the National Fire Protection Act ("NFPA"). The distance between the CSF and most other waste management units also minimizes impact to these units in the event of an incident at the CSF.

2. **Emergency Alarm System.** Wherever a hazardous waste is handled, all RIS personnel involved have immediate access to an internal alarm or emergency communication device. OAC 3745-54-32 and OAC 3745-54-34.

3. **Coordination with Local Fire Department.** RIS has a coordination agreement with the Eaton Township Fire Department, who is familiar with the layout of the facility, properties of the wastes handled, locations at which facility personnel normal work, ingress, egress and possible evacuation routes. OAC 3745-54-37.

4. **Waste Analysis.** RIS strictly follows a waste analysis program which describes in detail the methods and procedures it will use to obtain chemical and physical

information on wastes to ensure proper storage thereof. OAC 3745-50-43.

5. **Waste Labeling.** Ignitable wastes and incompatible wastes are identified by appropriate labels and warning signs. Prior to storage, the seal and label of each container are carefully checked. OAC 3745-55-73.

6. **Container Handling.** RIS uses containers that are compatible with the wastes being stored therein and keeps containers closed during storage. OAC 3745-55-73. RIS only accepts hazardous wastes from generators in DOT approved containers. Other containers are of suitable structural integrity for their intended purpose.

7. **Daily Inspections.** RIS inspects the container storage areas daily for leaking containers and deterioration of containers and the containment system. OAC 3745-54-15 and OAC 3745-55-74. RIS immediately removes hazardous waste from leaking containers or containers that are not in good condition. OAC 3745-55-71.

8. **Segregation of Incompatibles.** Containers holding wastes which are incompatible with other stored materials are separated from them by means of a dike, berm, wall, sufficient aisle space, or other device and stored in a predesignated area of the Container Storage Areas. OAC 3745-55-77.

   RIS' CSF has 11 rack storage bays (i.e., 8 bays with individual segregated sumps, and 3 bays with a common set of sumps). Incompatible wastes are stored in separate bays, and never with incompatible containers that are in close proximity. Storage of containerized wastes is done in such a manner as to prevent drums from falling into adjacent bays. OAC 3745-55-77. Bays are separated by curbs and distance to ensure that incompatible reactions do not occur. OAC 3745-54-17. Incompatible wastes are not placed in the same container or in an unwashed container that previously held an incompatible waste or material. OAC 3745-55-172 and OAC 3745-55-77.

   RIS segregates incompatible wastes in the BSAs, OSB, WSBs, CSA, WMB, and PDWSA, GRSAin a manner consistent with the above procedures.

9. **Spark-Proof Tools.** RIS uses intrinsically safe and/or non-sparking equipment to sample, weigh and transport waste within the CSF. The lighting throughout the storage facility is also intrinsically safe. "No smoking," "no flame," and "no cutting" signs are conspicuously posted throughout the Facility. OAC 3745-54-17. RIS uses similar tools, signs, etc. where applicable, with regard to the management of hazardous waste in the BSAs, OSB, WSBs, CSA, WMB, and PDWSA, GRSA, wherever applicable.

10. **Rack Storage.** To assist in prevention and early detection and suppression of fires, drums are stored in racks no more than five rows high or stacked no more than three high. Minimum aisle space of five feet is maintained in the CSF, with a minimum aisle space of ten feet between double rows of racks. OAC 3745-54-35. Sufficient aisle space is also maintained in the BSAs, OSB, WSBs, CSA, WMB, PDWSA, and GRSA to allow for inspections and access by emergency personnel, if necessary.

11. **Personnel Training.** RIS has an extensive personnel training program, during which employees are instructed on the dangerous nature of hazardous wastes, the importance of maintaining compliance with EPA regulations, proper handling and storage procedures, and emergency procedures and contingency plans. OAC 3745-54-16. Such training includes classroom instruction, on the job training, and a competence evaluation. RIS also implements a training program for contractors working at the facility.

12. **Compliance with Ohio Basic Building Code.** Container Storage Areas comply with applicable sections of the Ohio Basic Building Code (Title 4101:2 of the Ohio Administrative Code). Building codes are administered and regulated by the Ohio Department of Commerce, Division of Industrial Compliance. With the exception of yard trucks, all equipment, lights, wiring, etc., in the building meet at least NFPA Class I, Division II, OBBC Group H fire and electrical standards. Fire and Explosion Proof features in the CSF include:

    (a) Lightning protection system mounted on roof. (Designed by an

independent engineering firm and comprised of commercially designed equipment meeting OBBC requirements and was installed in accordance with acceptable industrial practices.)

(b) Explosion proof light fixtures, terminal boxes and electrical fittings.

(c) Floor hardener that helps to reduce sparks that may be caused by metal impacting the concrete floor.

(d) Use of intrinsically safe lift trucks and material handling equipment.

(e) "No smoking," "no flame," and "no cutting" signs are conspicuously posted throughout the area.

(f) Minimum aisle space of five feet is maintained in the container storage area, with a minimum aisle space of ten feet between double rows of racks, which allows for proper segregation of materials, and unobstructed movement of personnel and equipment.

(g) Portable fire extinguishers are placed strategically throughout the CSF. (RIS received a variance from OBBC Fire Suppression System requirements.

The OSB is designed to meet OBBC (H-3 hazardous use group). BSA #1 is located outside, along the northeast corner of the CSF, within easy access to the CSF's existing emergency response and safety equipment. BSA #2, WSBs #1, #2, and #3, the CSA, WMB, PDWSA, and GRSA all have access to emergency response and safety equipment located within or near the units.

13. **Operating procedures** assure that minimum segregation distances are maintained in the container storage areas as applicable and required by good fire safety practices.

(a) RIS maintains only a "working stock" of combustible commodities (e.g., empty pallets and unassembled cardboard boxes) which are needed for daily container storage operations. These materials are kept segregated from combustible liquids stored in the CSF.

(b) Highly water reactive materials are stored in segregated racks, which have been dedicated for such storage.

(c) Oxidizers and other materials which are incompatible with wood are not stored on pallets within the CSF. Such materials are physically separated from incompatible materials and stored in accordance with the appropriate handling instructions. Safe segregation distances are maintained between pallets and all other wastes to minimize potential fire hazards.

Similar operating procedures are followed in the BSAs, OSB, WSBs, CSA, WMB, and PDWSA, GRSA, wherever applicable.

14. **Emergency Response Procedures.** RIS has established an emergency response and contingency plan, designed to minimize hazards to human health or the environment from fires and explosions. OAC 3745-54-50 et seq. RIS personnel have been trained to implement the plan in the event of fire, explosion, or release which could threaten human health or the environment. OAC 3745-54-16 and OAC 3745-54-52. Pertinent aspects of the plan, which has been submitted to the Eaton Township Fire Department, include the following:

(a) Emergency Response Team. An emergency response team, under the direction of the on-scene emergency coordinator, will respond to emergency situations. The team receives extensive training to protect themselves and other employees from health and safety hazards. OAC 3745-54-55 and OAC 3745-54-56.

(b) Immediate Response Activities. In the event of a fire or explosion, RIS personnel must activate the emergency alarm system, notify the emergency coordinator, procure fire extinguishers and attempt to control or extinguish the fire, notify all appropriate federal, state, and local emergency response agencies, notify the fire and sheriff departments, and, depending upon location, remove non-burning waste, close all feed lines to tanks and the incinerator, and evacuate all personnel in the vicinity not actively involved in fighting the fire. OAC 3745-54-56. Personnel, in such event, are required to report to designated rally points for accountability.

(c) In-House Fire Fighting. In the event of fire or explosion, RIS' emergency response team (at least two members of which will be at the facility during each of its shifts), specially trained to fight fires, will be deployed. Vehicular traffic and hazardous work in the area will cease. Until outside help arrives, the team is responsible for firefighting efforts; provided, however, that in no event will firefighting be done at the risk of injury to the persons involved. OAC 3745--54-56.

(d) Emergency Equipment. Items of emergency equipment kept readily available at the facility include a sand pile, fire blankets, many fire extinguishers, CO_2 horns, foam, telephones throughout the facility, and two-way radios. OAC 3745-54-32.

(e) Evacuation Plan. An evacuation plan is included as part of the emergency response and contingency plan. OAC 3745- 54-52(F). Upon the activation of the evacuation alarm, on-site personnel and visitors are evacuated to a safe assembly area.

Appendix D-1
Tank Corrosion Protection Plan

Ross Incineration Services, Inc .

Ross Incineration Services, Inc.
Tank Corrosion Protection Plan

1.0 INTRODUCTION

The following corrosion testing, corrosion monitoring, and tank inspection specifications have been written for Ross Incineration Services, Inc. ("RIS"), Grafton, Ohio to meet Ohio Administrative Code (OAC) 3745-54 and OAC 3745-55.

The subparts and sections covered in these specifications include:

Section 3745-54-13: General Waste Analysis, (A)(1), (B)(2) and (B)(4)
Section 3745-54-15: General Inspection Requirements, (B)(1) and (B)(4)
Section 3745-54-16: Personnel Training
Section 3745-54-17: General Requirements for Ignitable, Reactive or Incompatible Wastes, (b)(4) and (c)
Section 3745-55-91: Assessment of Existing Tank System' s Integrity
Section 3745-55-92: Design and Installation of New Tank Systems or Components, (A), (F) and (E)
Section 3745-55-94: General Operating Requirements, (A)

2.0 GENERAL BACKGROUND AND PROCEDURE BASIS

The hazardous waste storage tanks at RIS are constructed of carbon steel without additional internal corrosion protection (e.g. liners, coatings, cathodic protection, etc.) , with the exception of Tanks 67 and 68 which are constructed of stainless steel, and Tank 75 which is lined. Because of the limited corrosion resistance of carbon steel and the need to maximize both safety and tank systems useful life, a two-part corrosion screening and monitoring procedure has been devised.

All customer wastes intended for storage in carbon steel tank systems, will be subjected to testing to determine the general corrosion rate of SAE 1020 carbon steel in the particular waste. This information is contained on the Waste Product Survey for each waste stream accepted by RIS for treatment. Based on this information, wastes found to produce general corrosion rates greater than 50 mils (thousandths of an inch) per year will not be stored in the carbon steel tank systems. Those with general corrosion rates between 30 and 50 mils

per year will be stored for no longer than 30 days in the carbon steel tank systems.

In-situ corrosion monitoring of each individual steel storage tank will be conducted through the analysis of coupons in order to develop long term corrosion data and to form a basis for scheduling of external and internal inspections.

Both the waste screening and corrosion monitoring procedures have been designed to meet all the requirements specified in OAC 3745-54 and OAC 3745-55, relevant to proper use and management of hazardous waste storage systems with respect to the prevention and monitoring of corrosion damage.

3.0 PROCEDURES

3.1 General

The procedures in the following sections are presented as they relate to specific subparts and sections of the OAC 3745-54 and OAC 3745-55. Each procedure section will be identified by citation and will contain a description of the procedures required to meet the regulation.

3.2 OAC 3745-54 - General Facility Standards

3.2.1 OAC 3745-54-13 - General Waste Analysis, (A)(1), (B)(2) and (B)(4)

All wastes to be received for storage in steel tank systems must be tested, prior to storage, according to N.A.C.E. Method TM-01-69, "Standard Guide for Laboratory Immersion Corrosion Testing of Metals." The Waste Product Survey for each waste stream will contain data on corrosion testing as specified in these procedures. Waste streams received frequently from the same generator and which are of the same composition will be tested upon initial acceptance and then once every twelve (12) months. Any significant change in composition of the waste stream would require testing prior to storage.

3.2.2 OAC 3745-54-15 - General Inspection Requirements, (B)(1) and (B)(4)

The frequency and nature of detailed inspection procedures of steel tank systems are outlined in Section 5.0, Tank Monitoring Procedures. The frequency and extent of the inspection will be based on the cumulative corrosion rates obtained from the following tanks on a six (6) month basis (i.e., Tank No.'s 35, 36, 67, 68, 73 & 74), and from all

remaining tanks on a twelve (12) month basis.

3.2.3 OAC 3745-54-16 Personnel Training

If RIS provides in-house testing services according to N.A.C.E. modified method TM-01-69, as described in Section 4.0, the person overseeing the actual testing should be either a N.A.C.E. accredited corrosion specialist or have sufficient training, preferably by a N.A.C.E. accredited corrosion specialist, to fully understand the principles and corrosion phenomena encountered in corrosion testing.

3.2.4 OAC 3745-54-17 - General Requirements for Ignitable, Reactive or Incompatible Materials, (b)(4) and (c)

Incompatible wastes will not be stored in steel tank systems. Incompatible wastes will be identified using data from the Waste Product Survey of each waste stream handled at RIS.

3.3 OAC 3745-55 - Corrective Action, Closure and Post-Closure Requirements

3.3.1 OAC 3745-55-91 - Assessment of Existing Tank System's Integrity

As defined by this section, Tanks 25-36 are existing tanks. These twelve (12) tanks are within secondary containment meeting the requirements of OAC 3745-55-91, and therefore do not require integrity assessments. As discussed in paragraph 7.1 of the Tank Monitoring Procedure, tank wall thickness measurements of the twelve (12) existing tanks were recorded within the one-year requirement of the effective date of these regulations in order to define a starting wall thickness.

3.3.2 OAC 3745-55-91 - Design and Installation of New Tank Systems of Components, (A), (E) and (F)

All new storage tank systems are constructed of carbon steel (with the exception of Tanks 67 and 68 which are constructed of stainless steel) and are internally unprotected (e.g., no liner, coating, cathodic protection, etc.). Wastes to be stored in these tanks will be tested for corrosivity by N.A.C.E. modified method TM-01-69. Waste streams having general corrosion rates higher than 50 mils per year will not be stored in tanks constructed of unprotected carbon steel in order to meet the corrosion protection requirement of this section. Wastes having general corrosion rates between 30 and 50 mils per year will be

stored no longer than 30 days in carbon steel tank systems.

To further meet the requirements of assuring adequate corrosion protection, an in-situ corrosion monitoring procedure has been devised to monitor the corrosion rates of SAE 1020 carbon steel in the internal environment of each storage tank (or 304 stainless steel for Tanks 67 and 68). The procedure in Section 5, Tank Monitoring Procedure, describes the test coupon examination frequency, as well as the inspection procedures used to ensure adequate corrosion protection of the tank system. A statement of attestation regarding the recommended corrosion prevention methods is given in Section 8.0 of this document.

3.3.3 OAC 3745-55-94 - General Operating Requirements, (A)
In order to prevent damage of the tank systems due to storage of incompatible wastes and reagents, compatibility of waste streams will be determined using data provided on the Waste Product Survey for each waste stream.

3.3.4 OAC 3745-55-98 - Special Requirements for ignitable or reactive wastes and Hazardous Wastes and OAC 3745-55-99 - Special Requirements for incompatible wastes) F020, F021, F022, F023, F026, F027 and F028 hazardous wastes will not be stored in the carbon steel tank systems.

4.0 N.A.C.E MODIFIED METHOD TM-01-69.

4.1 Introduction

The N.A.C.E. Modified Method TM-01-69, "Standard Guide for Laboratory Immersion Corrosion Testing of Metals" is a test procedure designed to measure the corrosivity of aqueous and non-aqueous liquid wastes towards SAE 1020 carbon steel (or 304 stainless steel for Tanks 67 and 68). The modified method is based on a corrosion rate of 30 mils per year. This method will be used by RIS when doing corrosion testing on-site. The intent of the procedure is to determine the general corrosion rate of SAE 1020 carbon steel in liquid wastes intended for storage in unprotected carbon steel tank systems, or 304 stainless steel for Tanks 67 and 68.. Based upon the general corrosion rate determined by this method, a waste will be considered either acceptable or unacceptable for storage. Wastes producing a general corrosion rate of 50 mils per year or more will not be stored in unprotected carbon steel storage tank systems. Those with general corrosion rates between

30 and 50 mils per year will not be stored for longer than 30 days.

4.2 Summary of Method

This test method exposes SAE 1020 carbon steel coupons (or 304 stainless steel coupons for Tanks 67 and 68) to the liquid waste to be evaluated for a minimum of 72 hours at 110 degrees Fahrenheit. By measuring the weight loss per unit area of the coupons, a general corrosion rate in mils per year (thousandths of an inch per year) can be determined for SAE 1020 carbon steel (or 304 stainless steel) in a particular waste.

4.2.1 Qualifications of Persons or Firms Performing the Test

This test procedure should be performed by qualified testing firms having a N.A.C.E. Corrosion Specialist on its staff or by personnel with sufficient training, preferably by a N.A.C.E. Corrosion Specialist, to fully understand the principles and corrosion phenomena encountered in corrosion testing.

4.3 Interferences

In laboratory tests such as this one, corrosion of duplicate coupons is usually reproducible to within + or - 10%. However, large differences in corrosion rates may occasionally occur under conditions where the metal surfaces become passivated. Therefore, at least duplicate determinations of corrosion rates should be made.

4.4 Apparatus and Materials

A versatile and convenient apparatus should be used, consisting of a flask of suitable size (usually 1000 milliliters), a reflux condenser, a thermometer, a heating device (mantle, hot plate, or bath) and a specimen support system. A typical flask set up for this test is shown in Figure 1.

The supporting device and container should not be affected by or cause contamination of the waste under test.

The method of supporting the coupons will vary with the apparatus used for conducting the test but should be designed to insulate the coupons from any metallic equipment that might be used. Some common support materials include glass, fluorocarbon, or coated

metal. The shape and form of the coupon support should ensure free contact with the waste.

4.4.1 Test Coupons

A rectangular specimen of SAE 1020 steel (or 304 stainless steel) of the approximate dimension 1.5" x 1" x 1/16" is a convenient configuration for a coupon. The total surface area of the rectangular coupon is given by the following equation:

$A = (LxWx2) + (LxTx2) + (WxTx2)$

where L = length, W = width, T = thickness and A = surface area in square inches.

All coupons should be measured carefully to permit accurate calculations of the exposed areas. An area calculated to + or - 1% is usually adequate.

More uniform results may be expected if the mill scale is removed from the coupons prior to testing the corrosivity of the waste. This can be accomplished by chemical treatment (pickling), grinding, and wet or dry blasting. Final cleaning should be done with bleach free scouring powder, then acetone or methanol, and finally air-drying. After final cleaning, the coupons should be stored in a desiccator until used. The minimum ratio of volume of waste to area of metal coupon to be used in this test is about 125-ml/sq. in., based on two coupons exposed.

4.5 Reagents

Sodium Hydroxide (20%)
Zinc dust
Concentrated hydrochloric acid
Stannous chloride
Antimony Chloride

Figure 1

Typical Flask Setup Used to Conduct Simple Immersion Tests

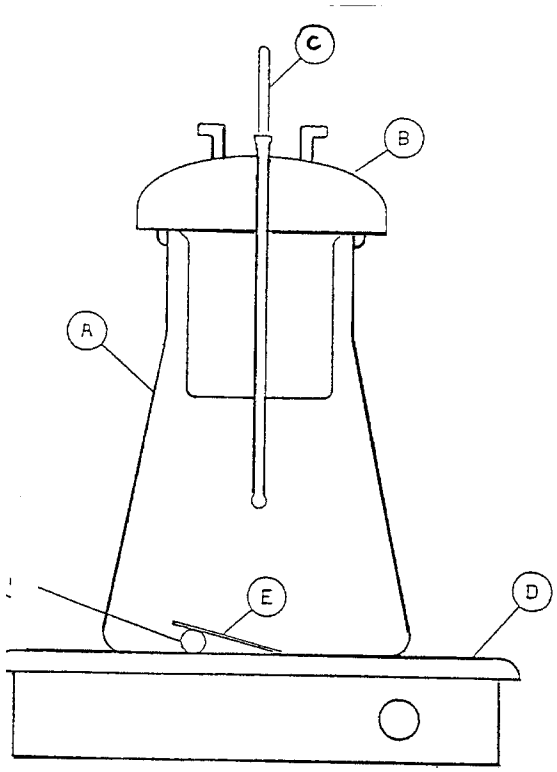
A - 1000 ml Large Mouth Flask

B - Finger Condenser

C - Thermometer

D - Hot Plate

E - Test Specimen



4.6 Waste Sample Collection

All waste samples should be collected using a sampling plan that addresses the ability to obtain representative samples.

4.7 Procedure

Assemble the test apparatus as described in Section 4.4 above. Fill the container with 800 mls of waste.

Place two supported pre-weighed and measured coupons in the flask and bring the test apparatus to test (110 degrees Fahrenheit).

After 72 hours at temperature, the coupons are removed from the test solution for cleaning and weighing.

4.7.1 Cleaning.

In order to accurately determine the amount of material lost to corrosion, the coupons have to be cleaned after immersion and prior to weighing. The cleaning procedure should remove all products of corrosion while removing a minimum of sound metal. Cleaning methods can be divided into three general categories mechanical, chemical and electrolytic.

4.7.2 Mechanical cleaning.

Mechanical cleaning includes scrubbing, scraping, brushing and ultrasonic procedures. Scrubbing with a bristle brush (toothbrush) and mild abrasive is the most popular method. The others are used in cases of heavy corrosion as a first step in removing heavily encrusted corrosion products prior to scrubbing. Care should be taken to avoid removing sound metal.

4.7.3 Chemical cleaning.

Chemical cleaning implies the removal of material from the surface of the coupon by dissolution in an appropriate solvent. Solvents such as acetone, dichloromethane, and alcohol are used to remove oil, grease or resinous material. Inhibited bases and acids are used to remove the products of corrosion. Solutions suitable for removing corrosion from

the steel coupon are:

Solution	Soaking Time	Temperature
20% NAOH + 200 g/L Zinc Dust	5 minutes	Boiling
Conc. HCl + 50 g/L $SnCl_2$ + 20 g/L $SbCl_3$	Until clean	Cold

Whatever treatment is employed to clean the coupons, its effect in removing sound metal should be determined using a blank (i.e. a coupon that has not been exposed to the waste). The blank should be cleaned along with the test coupons and its weight loss subtracted from that calculated for the test coupons.

4.7.4 Corrosion Rate Determination.

After corroded specimens have been cleaned and dried, they are re-weighed. The weight loss is employed as the principle measure of corrosion. Use of weight loss as a measure of corrosion requires making the assumption that all weight loss has been due to generalized corrosion and not localized pitting. In order to determine the corrosion rate for the purpose of this regulation, the following formula is used:

$$\text{Corrosion Rate (MPY)} = \frac{\text{weight-loss} \times 67.85}{\text{area} \times \text{time}}$$

Where weight loss is in milligrams, area in square inches, time in hours, and corrosion rate is in mils per year (MPY).

5.0 TANK MONITORING PROCEDURE

The waste storage facilities at RIS currently include 12 existing storage tanks (i.e., Tank Farm I, Tanks 25-36), and 37 new storage tanks (i.e., Tank Farms II & III, Tanks 23a, 24a, 67, 68, 70, 73, 74, 75 and 79). To meet the requirements of OAC 3745-54 and OAC 3745-55, the following storage tank system monitoring procedure will be followed.

5.1 New Tank Construction

New tanks were built with a nominal 1/8-inch (0.125 inch) corrosion allowance [except for Tanks 67 and 68 which were built with a nominal 1/16 inch (0.0625 inch) corrosion allowance], over and above the design minimum tank wall thickness needed for structural

integrity. This will allow for normal anticipated corrosion of the equipment.

5.2 Waste Compatibility

All hazardous wastes to be stored in tanks will be screened for corrosivity according to N.A.C.E. Method TM-01-69. Only wastes and/or reagents meeting the 50 mil or less per year general corrosion rate will be considered acceptable for storage in carbon steel tank systems.

5.3 In-line Corrosion Monitoring

Storage tanks will be continuously monitored for internal corrosion by placing test specimens in each tank. These specimens will be periodically removed for evaluation and will determine the need, extent and type of inspection required based upon the cumulative general corrosion rates observed.

5.3.1 Coupon Location

Three sets of test specimens will be placed in each tank as shown in Figure 2 (actual supporting structures may differ). These specimen locations will indicate the conditions at the top, middle, and bottom sections of each tank. In this way, different locations in the tank will be evaluated for possible differences in corrosiveness of the stored material.

5.3.2 Preparation and Number of Test Coupons

Two test specimens will be evaluated at each of the three locations. These specimens will be prepared for testing and evaluation after testing as described in N.A.C.E. Method TM-01-69 Section 4.7.

5.3.3 Coupon Evaluation Frequency

Test specimens will be removed from each tank for evaluation on an annual basis with the exception of tanks 35, 36, 67, 68, 70, 73 & 74. Test specimens will be removed from these tanks for evaluation at six (6) month intervals. New test specimens will be replaced at each test **location** when the previous specimens are removed.

5.3.4. Coupon Evaluation

Average general corrosion rates will be determined from the two test coupons at each location. This average general corrosion rate will be recorded for each test location for each tank. In this way a continuous log can be kept of the cumulative metal loss for each tank.

$$\text{Cumulative Loss (CL)} = \text{Previous CL} + \frac{\text{MPY x Test Period,-Months}}{\text{12 months/year}}$$

5.3.5 Wall Thickness Calculations

Using the cumulative loss from each tank location, the remaining wall thickness can be calculated by using the following equations:

Existing Tanks:

Remaining Wall Thickness at Tank Location = (Fabricated Thickness) - Cumulative Loss

New Tanks:

Remaining Wall Thickness at Tank Location = (Fabricated Thickness) - Cumulative Loss

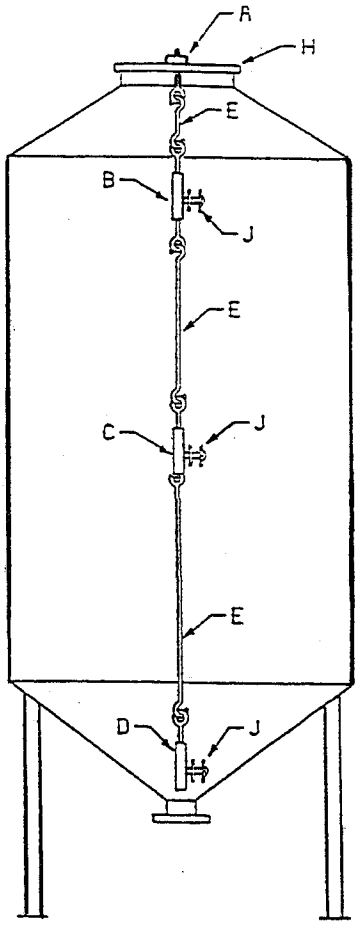
The remaining wall thickness will be used in determining a reasonable interval for detailed inspections.

Storage Tank - Corrosion Coupon

Installation Schematic

(Conceptual)

A S. S. Bolt
B S. S. Coupon Rack (Vapor Space)
C S. S. Coupon Rack (Mid-Section Submerged)
D S. S. Coupon Rack (Bottom Submerged)
E S. S. Cable
F S. S. Removable Cable Connector (6)
G C. S. Storage Tank
H Tank Manway Cover
J Corrosion Coupons



5.4 External Inspection by Ultrasonic Techniques (UT)

5.4.1 Inspection Frequency Based on Cumulative Loss

Any tank which has calculated cumulative loss of more than 0.125 inch (1/8 inch) as calculated in Section 5.3.5, will be thoroughly UT tested within six months. This UT inspection will verify if the actual wall thickness remaining is below the design minimum. If the UT testing indicates any location of the tank to have a wall thickness within + or - 0.010 inch of design minimum, the tank must be internally inspected within six months after UT testing according to Section 6.0 of these procedures.

5.4.2 Inspection Frequency Minimum

Each tank will be spot UT thickness tested at a minimum time interval of five (5) years. A minimum of thirty (30) thickness readings will be made on each tank. This will include ten (10) readings in the area of the tank top, ten in the middle section and ten in the bottom area. These spot wall thickness checks can then be compared to the wall thickness calculations as determined by the cumulative metal loss method, described in Section 5.3.5, for each location.

5.4.3 Adjustment Cumulative Wall Thickness Records

If all the spot UT wall thickness readings at a given location exceed the calculated remaining wall thickness by more than 0.015 inch, the lowest UT thickness reading will be used to calculate future remaining wall thickness.

If more than two UT readings indicate a wall thickness of 0.010 inch less than the calculated wall thickness at any location, as described in Section 5.3.5, the minimum UT reading will be used in future calculations of the remaining wall thickness.

5.4.4 Criteria for Internal Inspections

If the UT thickness readings indicate that the tank wall is below minimum design thickness, at any tested location, the tank must be internally inspected within one (1) year.

If the UT thickness testing does not indicate that any reading gives a remaining wall thickness less than design minimum + 0.015 inches, the tank will not require internal inspection. The minimum UT thickness reading obtained for each general location will be

used to calculate future remaining wall thickness.

5.4.5 Ultrasonic thickness testing results
Ultrasonic thickness testing results for existing and new tanks are to be submitted to the Ohio Environmental Protection Agency every five years after completion of the penta-ennial UT survey for incorporation into the RCRA Part B Permit Application.

6.0 INTERNAL TANK INSPECTION

6.1 Internal Inspection Frequency

Internal tank inspection will be conducted when indicated to be necessary under the criteria described in Section 5.4.1 which is based upon the results obtained from the in-line corrosion test specimens and verification by UT thickness test.

Each tank must be internally inspected every ten (10) years of service. In order to inspect all of the tanks prior to the ten-year maximum, inspections will have to be scheduled and performed in a time frame which will meet the ten-year requirement. Since all tanks can not be inspected at the same time interval, an inspection schedule based upon the corrosion monitoring results shall be used to determine the order in which tanks shall be inspected first.

Tanks with the lowest remaining wall thickness shall be inspected first. Tanks that may be experiencing significant localized corrosion (e.g., pitting), as reported in the corrosion monitoring and UT testing reports, shall also be given priority in inspection scheduling. The remaining wall thickness shall be obtained from the Tank Monitoring Cumulative Metal Loss data sheets described in Section 5.4.1 of the Tank Corrosion Protection Plan.

6.2 Tank Entry Procedure

Prior to an internal tank inspection, the tank must be emptied and made safe to enter as described in 29 CFR 1910.94 (d) (11) for occupational Safety and Health Administration requirements relating to entry of tanks for inspection.

6.3 Visual Inspection

A visual inspection will be made of the entire inside surface, including all welds and openings.

6.4 Dye Penetrant Testing

Spot dye penetrant testing will be done at welds to evaluate for any possible indications of cracking. Welds from the bottom cone area, top section, and other areas will be inspected by dye penetrant methods. If any indication of cracking is noted, all inside weld seams will be 100% dye penetrant inspected.

7.0 EXISTING TANKS BUILT BEFORE 1/1/87

7.1 Wall Thickness Determination

Since the remaining wall thickness of the existing tanks were not known, spot UT thickness testing was performed. These determined the wall thickness which will be used in the continuous monitoring of corrosion rates at each location in the tank. The average of the three (3) lowest readings from each section was used as the starting wall thickness in the cumulative loss determination.

7.2 Tank Monitoring

Once the starting wall thickness is determined for the older tanks, the monitoring program and intervals for tank inspections will be the same as that for new tanks described in Sections 5.3.3, 5.3.5, 5.4 and 6.0; however, the remaining wall thicknesses calculated for the existing tanks in Section 5.3.5, as well as UT thickness testing results will be compared directly to the allowable minimum thicknesses for these units as indicated in Tables D2-2, D2-2a, D2-3, D2-3a, D2-4, D2-4a, and D2-5 in Section D - Process Description of the Ohio RCRA Part B Permit Application.

8.0 STATEMENT OF ATTESTATION

Ultrasonic testing for 39 storage tanks was completed in March 2023. Seven (7) tanks replaced in 2023 were not evaluated. The evaluation was completed by Applied Corrosion Control, Inc. Mark Hoffman, AMPP Certified Corrosion Specialist, 3324 evaluated the

prepared report. Please refer to the Attachment A - Tank Corrosion Plan Data, Ultrasonic Thickness Testing Data for the recent Ultrasonic Testing Report, dated May 15, 2023.

Revision 0
August 2023

Attachment A
Tank Corrosion Plan Data:
Ultrasonic Thickness Testing Data

Ross Incineration Services, Inc .

May 15, 2023

Ryan Hoffman
Ross Incineration Services, Inc.
36790 Giles Rd.
Grafton, OH 44044

RE: Five Year 2023 Ultrasonic Testing Report – 39 Tanks

The following report presents the five (5) year ultrasonic testing (UT) data as required by the Tank Corrosion Protection Plan (The Plan). The purpose of this portion of the plan is to determine any gross differences between the Calculated Remaining Wall Thickness (CRWT) data and the measured tank wall thickness based on UT measurements for each tank. The CRWT is calculated from corrosion coupon data obtained during the monitoring periods since the last UT inspection.

The Plan specifies that thirty (30) UT measurements are to be obtained on each tank; 10 measurements from the top, middle, and bottom sections of each tank. The UT measurements are then compared to the latest Tank Monitoring Cumulative Metal Loss data sheets for each tank section. Adjustments to the CRWT are made if the UT measurements are found to be higher or lower than the CRWT, according to the following criteria.

1. If three (3) UT measurements for a specific section of a tank are 0.010 inches below the CRWT, an adjustment (AJ) shall be made to reduce the CRWT to the lowest UT measurement.

2. If all the UT measurements for a specific tank section are 0.015 inches above the CRWT, an AJ shall be made to increase the CRWT to the lowest UT measurement.

UT Measurements

The UT inspection of the 39 tanks (23A, 24A-36, 37A, 38A-50, 53-57, 67, 68 70, 73, 74 and 75) was completed the week of April 5th. Tanks 58 through 64 were not tested because they will be replaced this summer. Tanks 51A and 52A were not tested because they are newer insulated tanks and access ports had not been installed.

The UT measurements were obtained by ProTech Solutions, Hudson, Ohio personnel (Jesus Campos - LVL II) assisted by Ross Incineration Services, Inc. personnel (Ryan Hoffman). The UT instrument used in testing is an Olympus 38DL Plus capable of reading through painted metal surfaces. The calibration details and recorded UT measurements from the 39 tanks are presented in Section A – Ultrasonic Thickness Testing Report, which is attached to this report

Remaining Tank Wall Thickness Adjustment

The current (as of 5/8/2023) Calculated Wall Thickness Remaining (CWTR) data for each tank has been placed into the middle of each of the three tank sections for each tank listed in Section A. The UT wall thickness measurements obtained were compared to the CWTR for each tank section according to the two (2) adjustment rules listed above. If no adjustment was required, NC (signifying no change) was typed below the current CWTR value. If an adjustment was required, the new CWTR for that section was typed in next to the lowest reading followed by MW (signifying minimum wall).

REQUIRED ADJUSTMENTS

Twenty three (23) of the 39 tanks had one or more adjustments required. Table 1, shown below, lists the required wall thickness adjustments, current CWTRs, and new CWTRs for the adjusted tanks.

TABLE 1

TANKS WITH ADJUSTMENTS TO REMAINING WALL THICKNESS IN INCHES									
				Top	Middle	Bottom	Top	Middle	Bottm
	Adjustment	Adjustment	Adjustment	Current Remaining	Current Remaining	Current Remaining	New Remaining	New Remaining	New Remaining
TANK #	Top	Middle	Bottom	Wall Thickness	Wall Thickness	Wall Thickness	Wall Thickness	Wall Thickness	Wall Thickness
25	0.026			0.183	0.181	0.299	0.157		
27	0.034	0.023		0.190	0.209	0.287	0.156	0.186	
29	-0.018	-0.015		0.187	0.210	0.283	0.205	0.225	
30			0.013	0.147	0.181	0.302			0.289
31	0.060	0.020		0.188	0.197	0.290	0.128	0.177	
33	0.024			0.185	0.180	0.284	0.161		
34	0.019	0.024		0.198	0.205	0.296	0.179	0.181	
35	0.021			0.174	0.188	0.286	0.153		
36	0.012			0.134	0.175	0.287		0.163	
39		0.015		0.331	0.350	0.351		0.335	
43	0.042			0.340	0.348	0.362	0.298		
47	0.023	0.011		0.356	0.344	0.366	0.333	0.362	
48		-0.017	-0.024	0.299	0.343	0.343		0.360	0.366
49			-0.024	0.329	0.344	0.343			0.367
53	-0.035			0.311	0.359	0.353	0.346		
54		0.018		0.331	0.351	0.354		0.333	
55		0.033		0.328	0.355	0.328		0.322	
57	-0.029		0.035	0.311	0.351	0.368	0.339		0.333
67			0.074	0.240	0.241	0.318			0.244
68			0.074	0.241	0.241	0.317			0.243
70			0.053	0.343	0.343	0.351			0.298
73			0.050	0.568	0.571	0.600			0.550
74		0.021		0.565	0.595	0.581		0.574	

The required thickness adjustments for the twenty three tanks were entered into the cumulative remaining wall thickness database and is presented with new adjusted CWTR for these tanks in Section B of this report entitled Cumulative Remaining Wall Thicknesses for Adjusted Tanks.

UT TESTING SUMMARY

For the majority of the UT data reviewed, required adjustments were easily sighted and determined. However, in tanks 28, 29 and 30 certain UT data recorded in a number of sections of these tanks were found to be suspect; in that they were either all or almost all greater than the starting thickness of sheet material when new. In these sections, no adjustments were made due to the unusual data. It is likely that the overall paint thickness on these older tanks may have exceeded that ability of the UT instrument to negate the paint in some readings. Similar problems were encountered in the 2018 UT testing of the older tank farm #1.

The bottom CWTRs of the two stainless steel ash tanks 67 and 68 were adjusted during this UT testing cycle. There has not been any notable corrosion in these two tanks since they were placed into service. The higher bottom UT readings in the previous 2018 report were taken on the hemispherical head portion of the bottom and not the side walls. It is likely the current readings were of the bottom/lower side walls.

Tank 75 UT thickness readings, shown on the last page of Section A, have the lowest reading in each tank wall section marked with the word "Low" next to the reading. All readings are above the minimum required thickness.

Review of the adjusted CWTRs shown in Section B indicated that all remaining wall thicknesses of the adjusted tanks are greater than the minimum required wall thickness.

Submitted by:
Applied Corrosion Control, Inc.

Mark Hoffman
AMPP Certified Corrosion Specialist, 3324

SECTION A – ULTRASONIC THICKNESS TESTING REPORT

ULTRASONIC THICKNESS TESTING REPORT

JOB NUMBER: 23-103 **DATE: 4/5/2023**

CLIENT & JOB INFORMATION			
CLIENT NAME:	ROSS INCINERATION SERVICES	DATE:	4/5/2023
CONTACT:	RYAN HOFFMAN	PROCEDURE:	PQI-UT-400 REV 1
CLIENT P.O. #:		SPECIFICATION:	CLIENT SPEC.
PQS PO#		ACCEPTANCE:	CLIENT INFORMATIONAL
LOCATION:	TANK FARM	MATERIAL:	CARBON STEEL / STAINLESS STEEL
DESCRIPTION:	ULTRASONIC THICKNESS INSPECTION OF (39) WASTE / STORAGE TANKS.		
SURFACE CONDITION:	PAINTED/ SMOOTH	TEMPERATURE:	AMBIENT

EQUIPMENT: MFG: Olympus Model: 38 DL PLUS S/N: 14-8444503
Couplant: Sonotech Ultra Batch #: 22B034 Cal Due: 3/30/2024
Calibration Block Type: ASTM E317 Material: c/s - ss S/N: B354

TRANSDUCER(S):	Size:	S/N:	Frequency:	Angles:
	0.5	2007129	5 MHZ	0 degrees

TECHNIQUE:

☐ Immersion	☐ Longitudinal wave	☐ Surface wave	Presentation:	☒ A-scan	☐ B-scan
☒ Contact	☐ Shear wave	☒ Thickness Measure		☐ C-scan	☐ S-scan

Equip./Drawing #: 39 WASTE / STORAGE TANKS

Ultrasonic Examination performed on the above as follows:

An ultrasonic thickness inspection was performed on a total of 39 Waste – Storage Tanks. Two of which are Stainless Steel. The inspection consisted of ultrasonic thickness measurements on all accessible sides. The inspection was accessed by use of manlift and platforms.

Inspection Summary:

- UTT Instrument was calibrated for carbon steel for carbon tanks and calibrated for stainless steel for stainless steel tanks
- UTT Instrument was used in post echo mode for nonpainted tanks and echo to echo mode was used for painted tanks.
- 51A & 52A not inspected due to being insulated and no access to tank shell.
- 58A – 64A not inspected per client.
- Tanks inspected 23A, 24A, 25 – 36, 37A, 38A, 39 – 50, 53 – 57(INSULATED), 67 & 68(STAINLESS STEEL), 70, 73 - 75.
- Tanks 23A, 24A, 37A, 38A are newer tanks.
- See below for further information.

ProTech Solutions

ULTRASONIC THICKNESS TESTING REPORT

JOB NUMBER: 23-103 **DATE: 4/5/2023**

TANKS 23A, 24A		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.375	0.375	0.375
0.25	0.25	0.25

TANKS 25 - 36		
NOMINAL & MINIMAL		
TOP	0.3125	
WITH AGITATOR		0.25
W/O AGITATOR		0.123
SHELL	0.25	
UPPER SHELL		0.119
BOTTOM @ LEG		0.19
BOTTOM	0.3125	0.137

TANKS 37A, 38A		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.375	0.375	0.375
0.25	0.25	0.25

TANKS 39 - 50		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.375	0.375	0.375
0.25	0.25	0.25

TANKS 53, 57		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.375	0.375	0.375
0.25	0.25	0.25

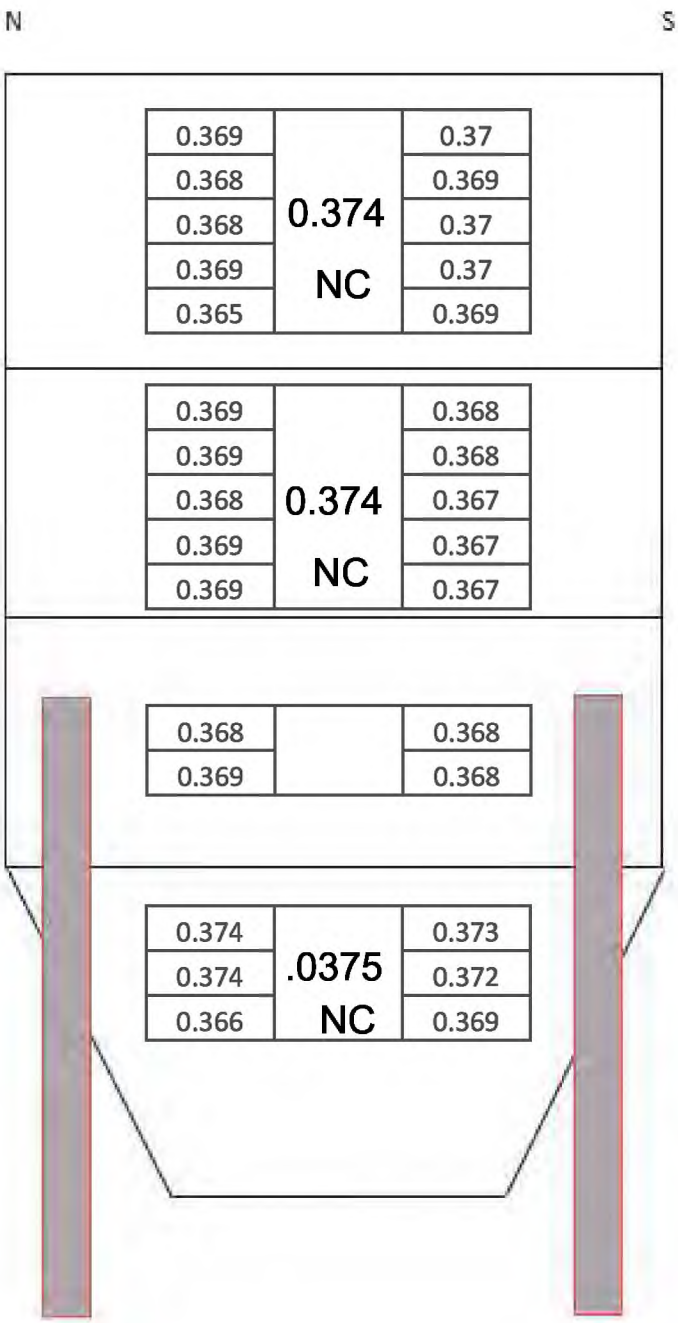
TANKS 67, 68 STAINLESS STEEL		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.25	0.25	0.25
0.1875	0.1875	0.1875

TANK 70		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.375	0.375	0.375
0.123	0.167	0.24

TANKS 73, 74		
NOMINAL & MINIMUM		
TOP	SHELL	BOTTOM
0.625	0.625	0.625
0.375	0.5	0.375

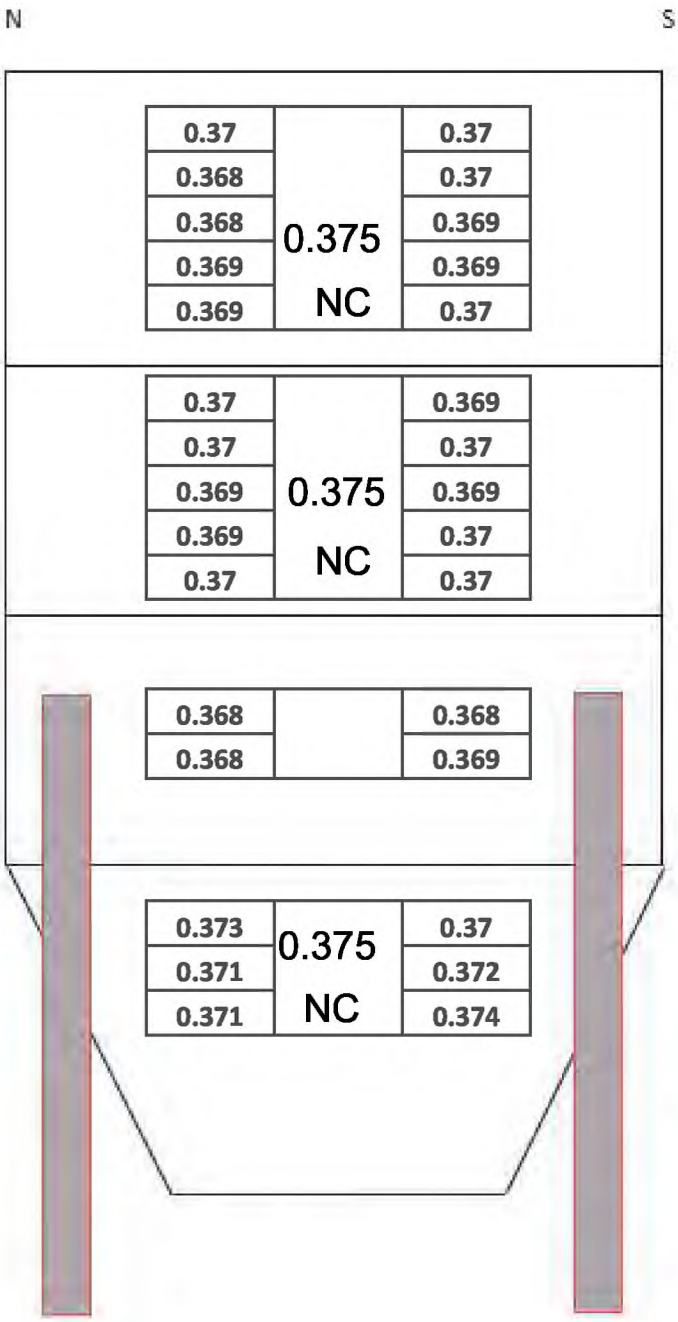
TANK 75		
NOMINAL & MINIMAL		
TOP	0.25	0.25
UPPER SHELL	0.25	0.0625
LOWER SHELL	0.4375	0.25
BOTTOM	0.4375	0.25

JOB NUMBER: 23-103 **DATE: 4/5/2023**



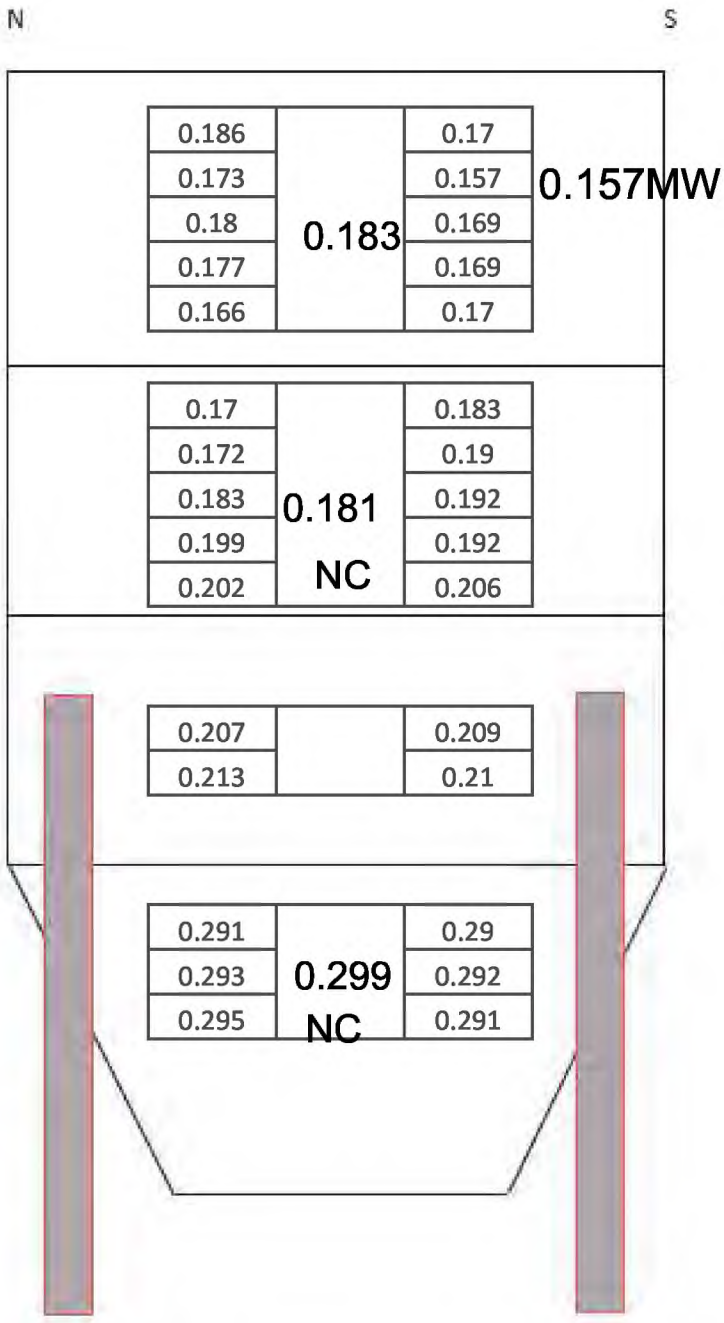
- **TANK #23A WITH AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



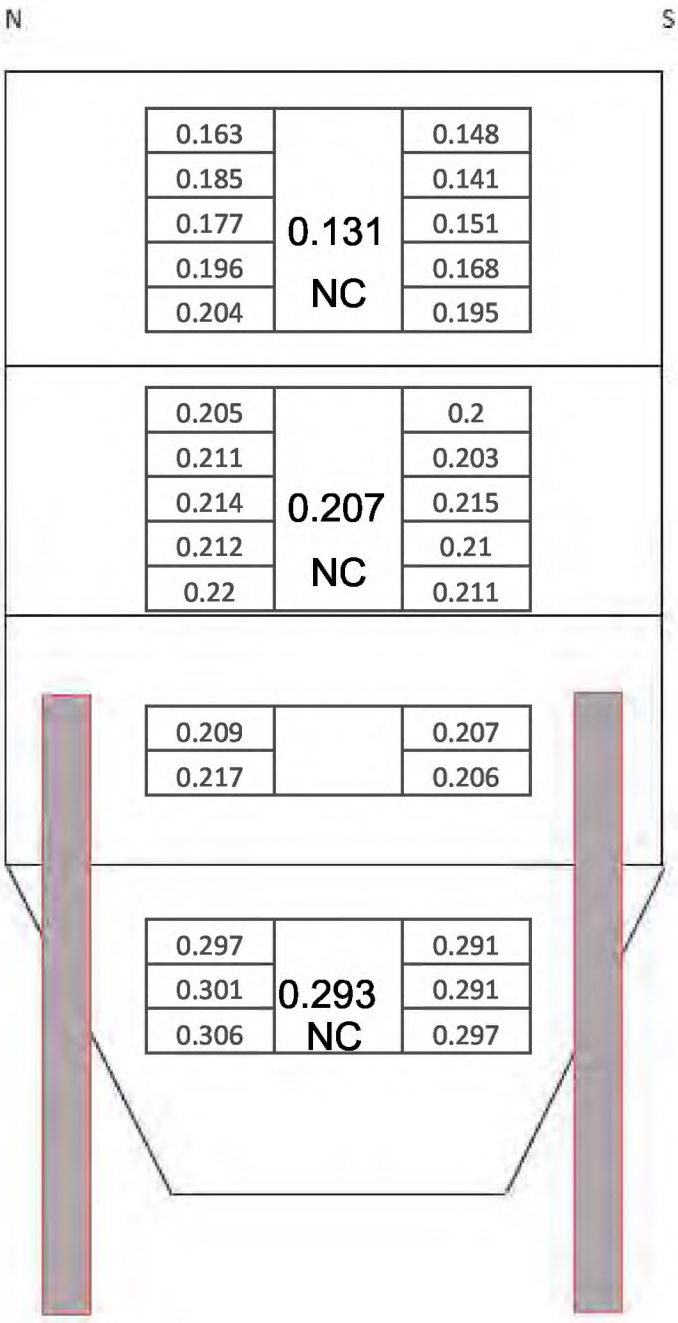
- **TANK #24A WITH AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



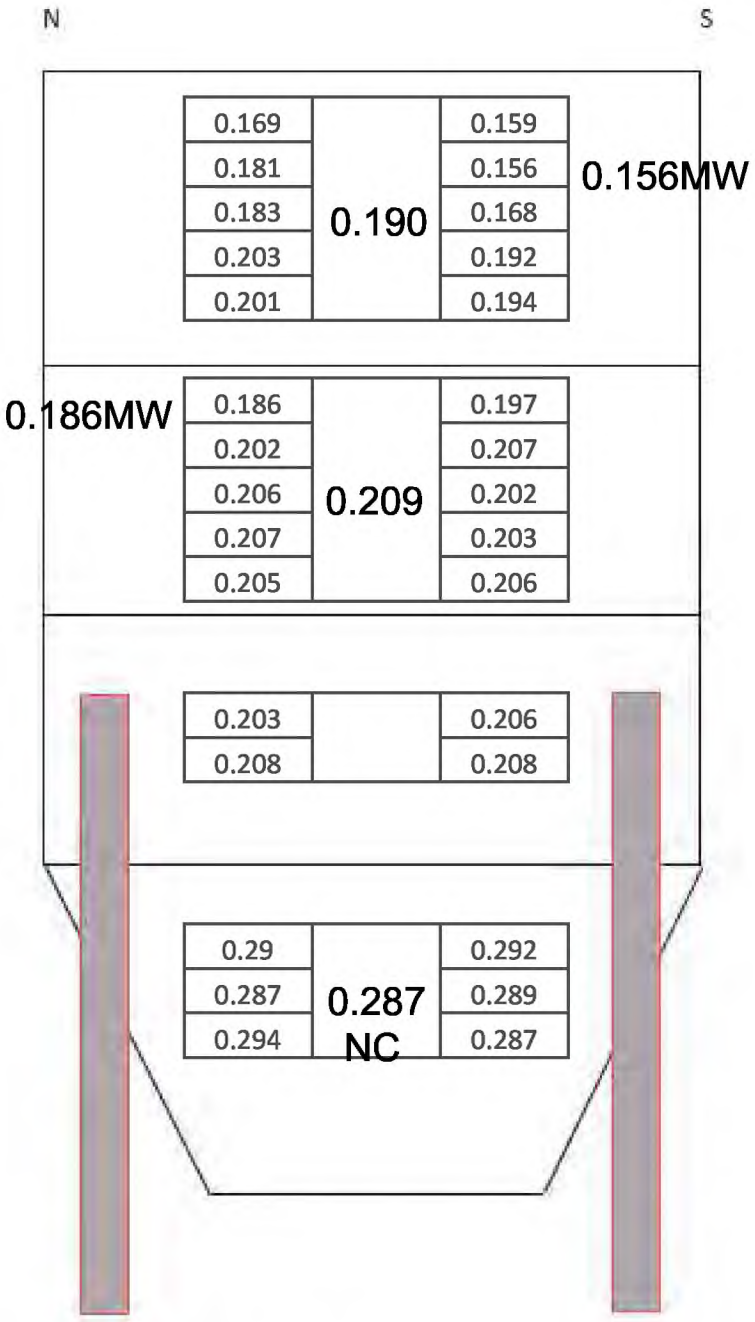
- **TANK #25 WITH AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



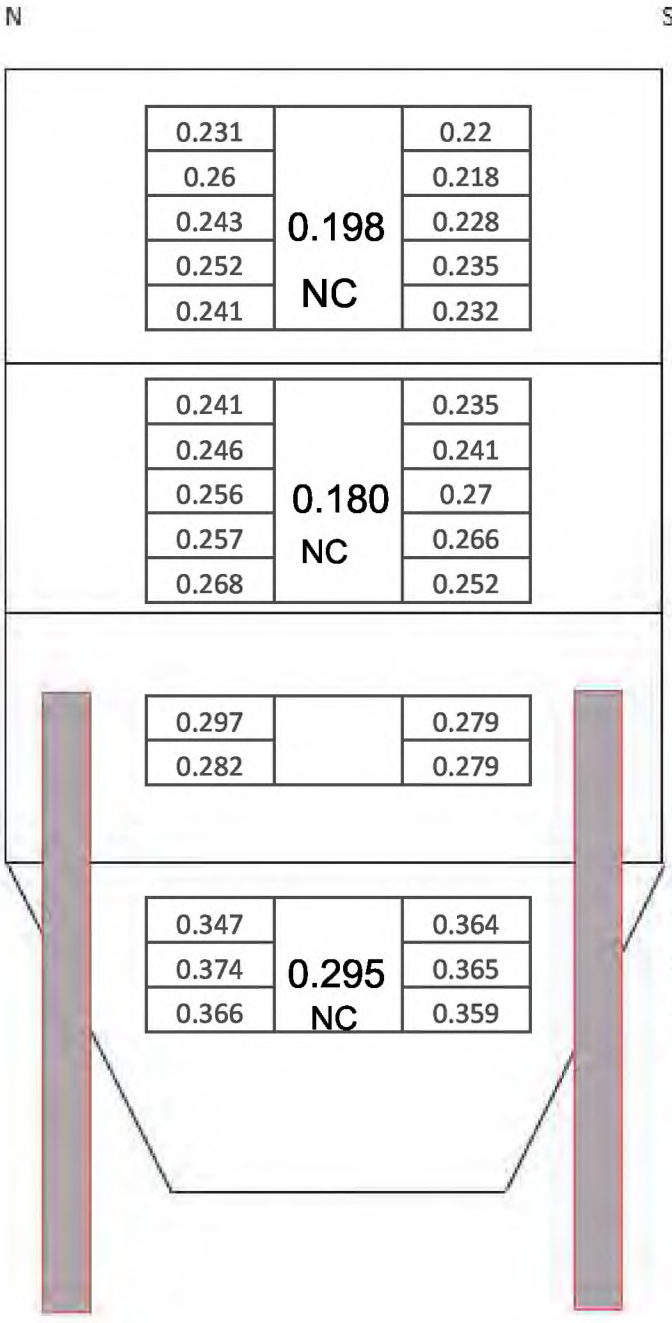
- **TANK #26 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



- **TANK #27 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**

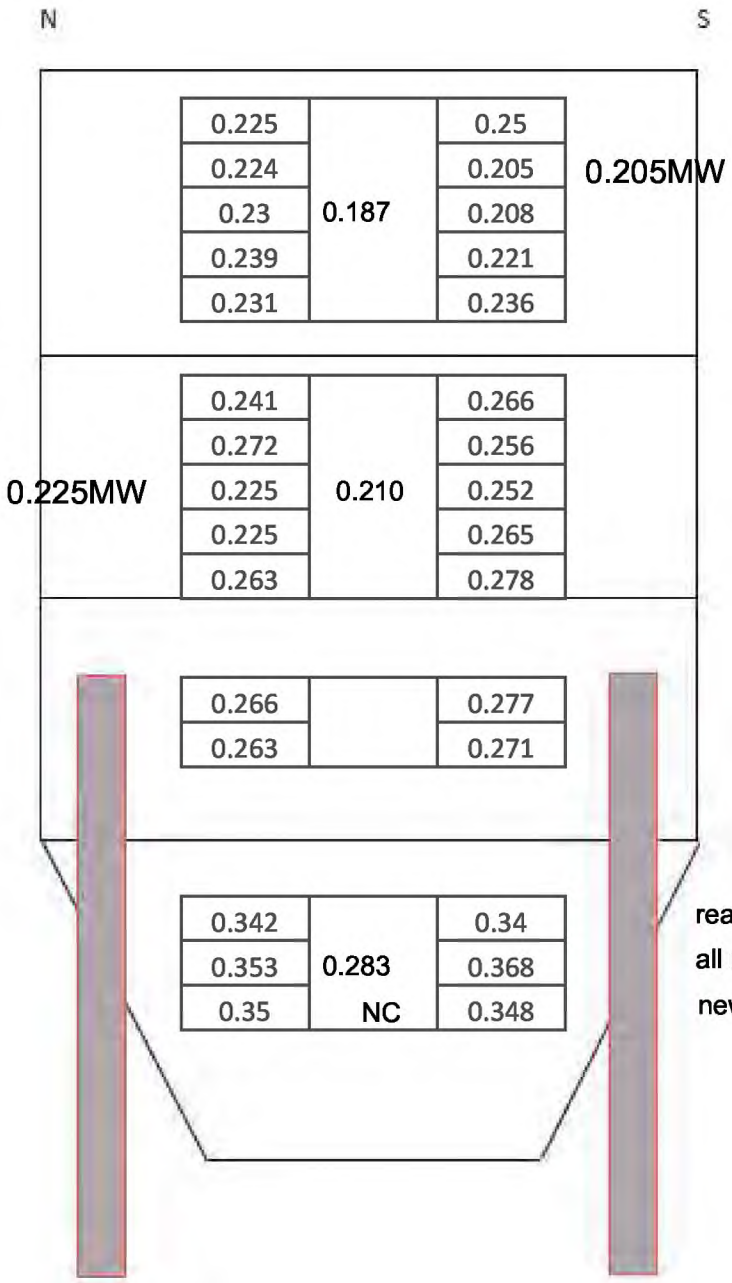


readings are suspect
some readings are more
than new - 0.25"

readings are suspect
readings are higher than
new - 0.3125"

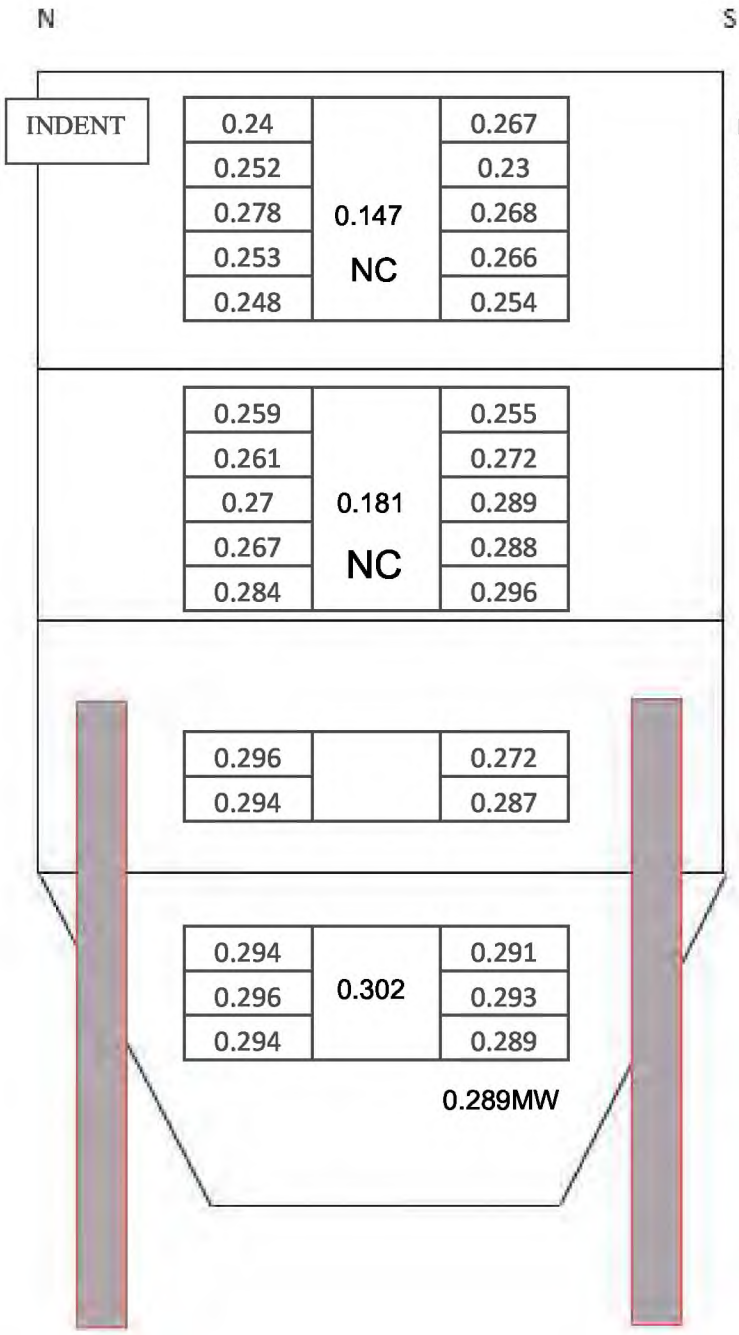
- **TANK #28 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



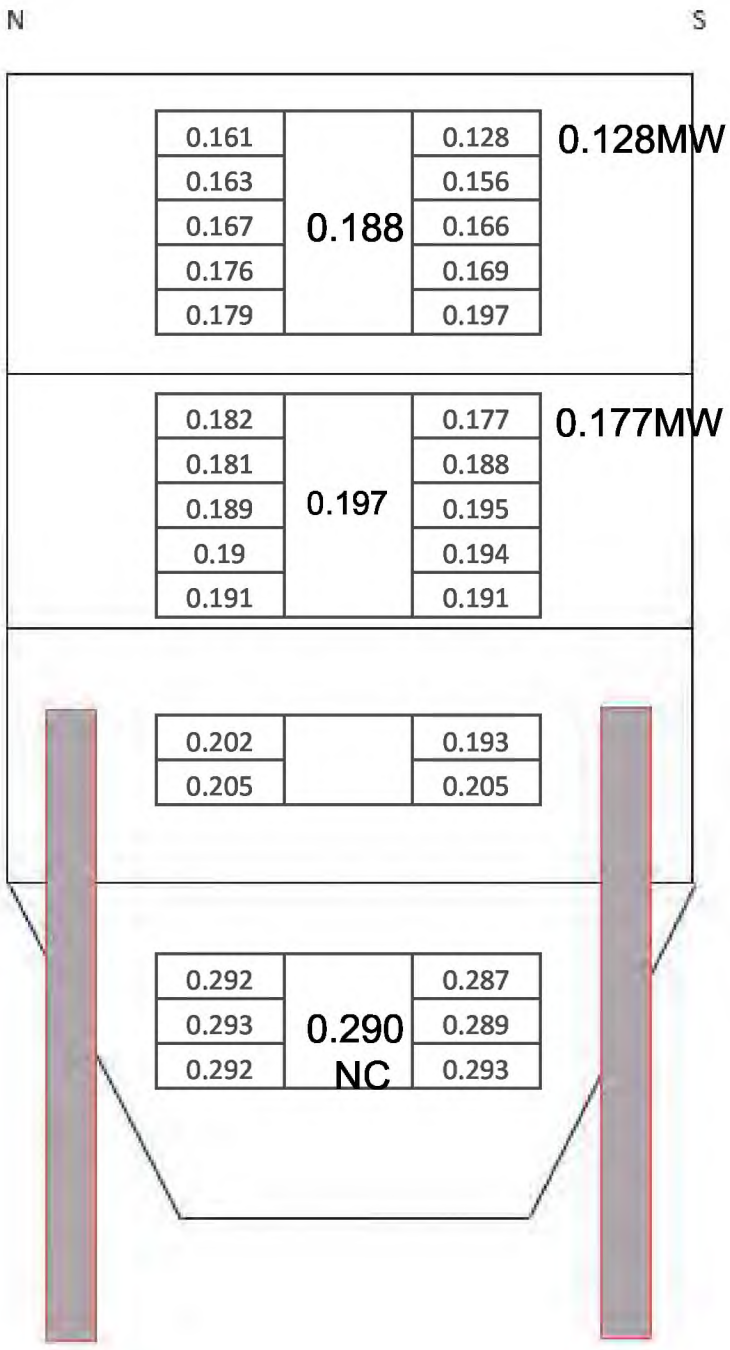
- **TANK #29 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



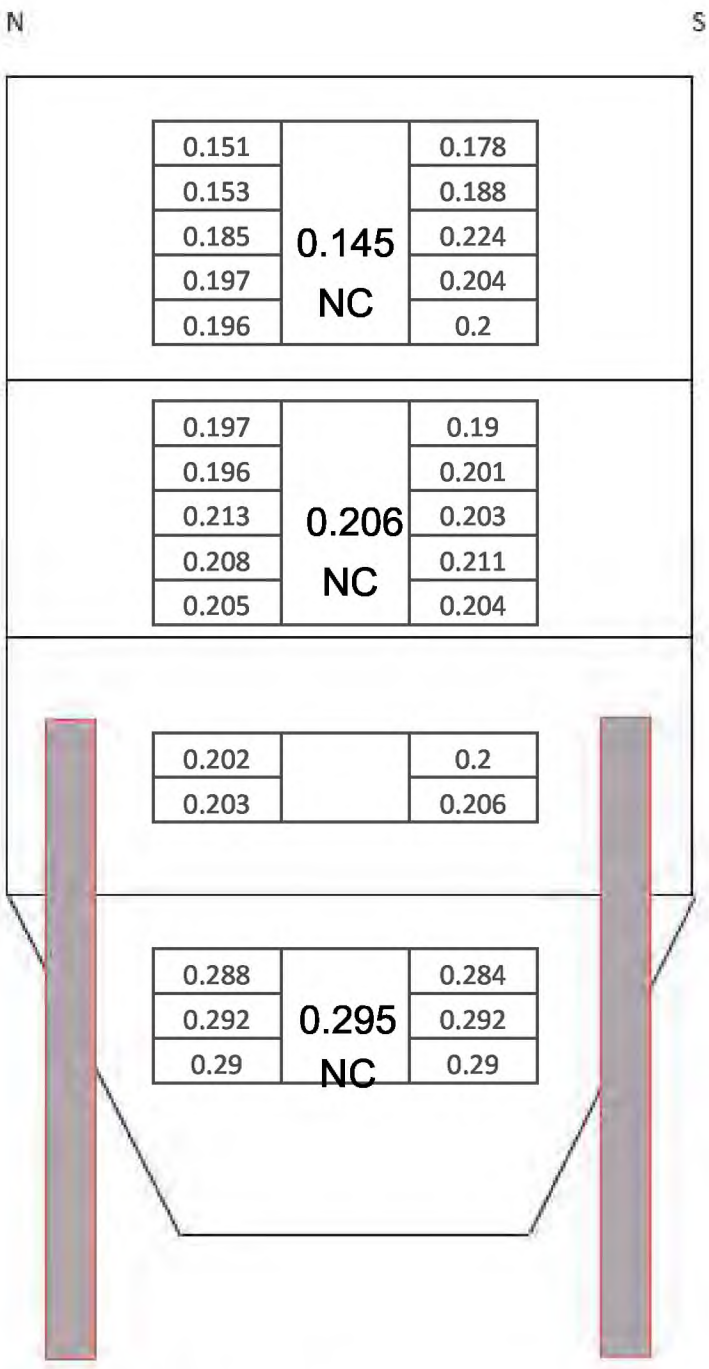
- **TANK #30 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



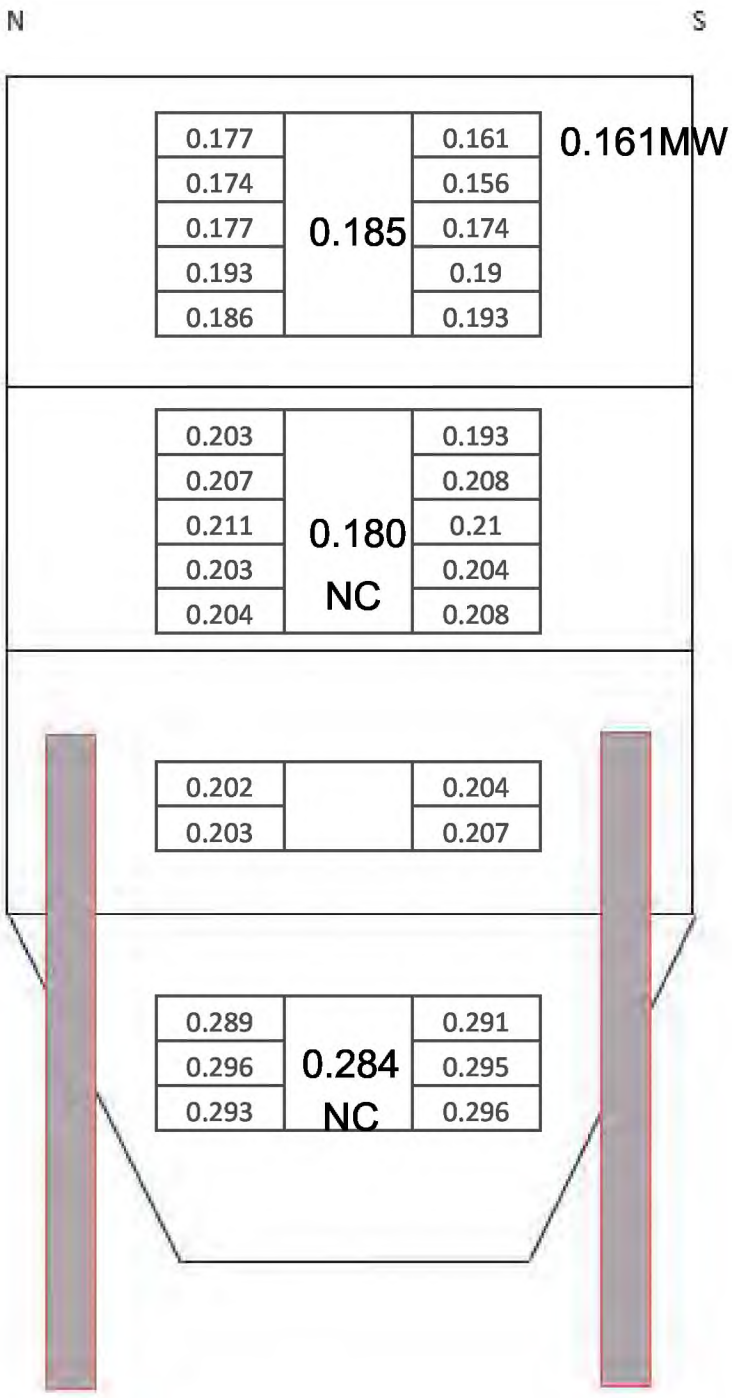
- **TANK #31 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



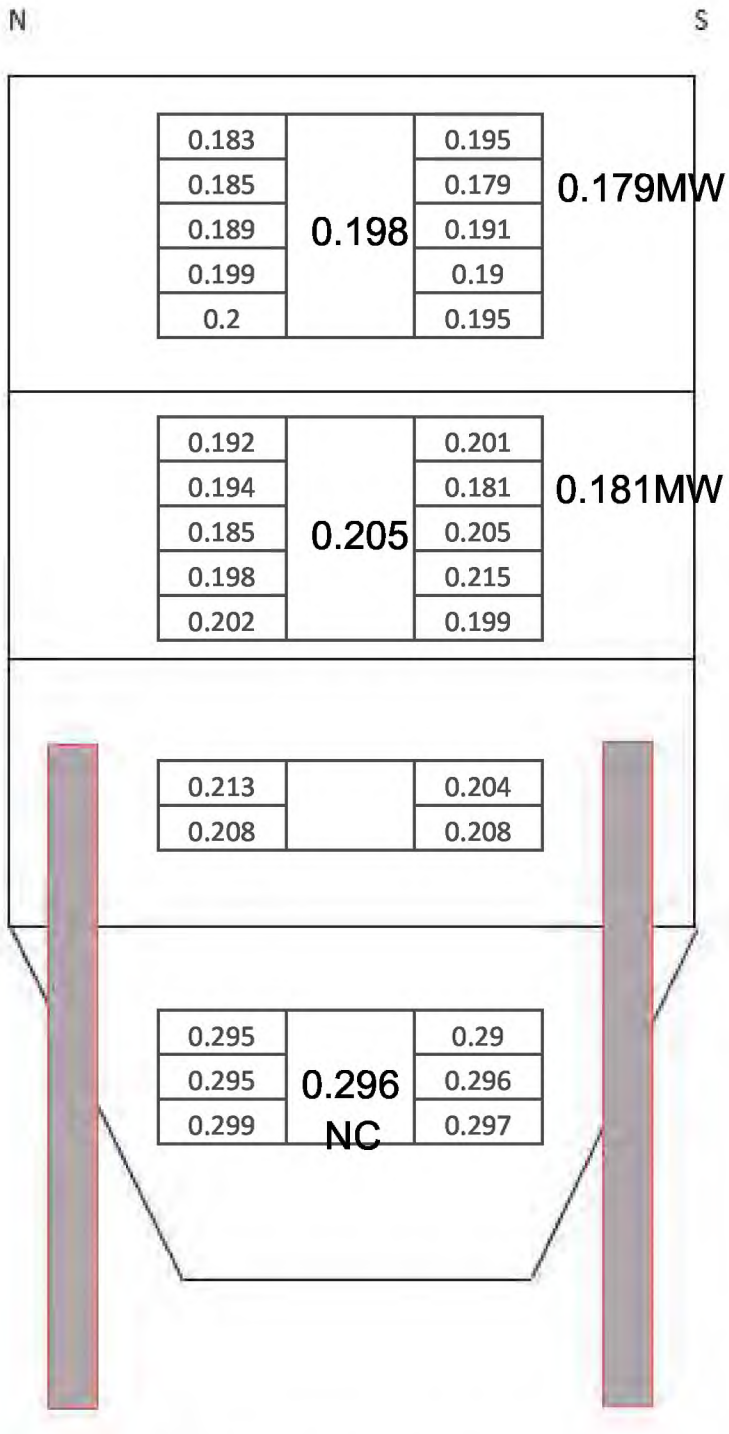
- **TANK #32 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



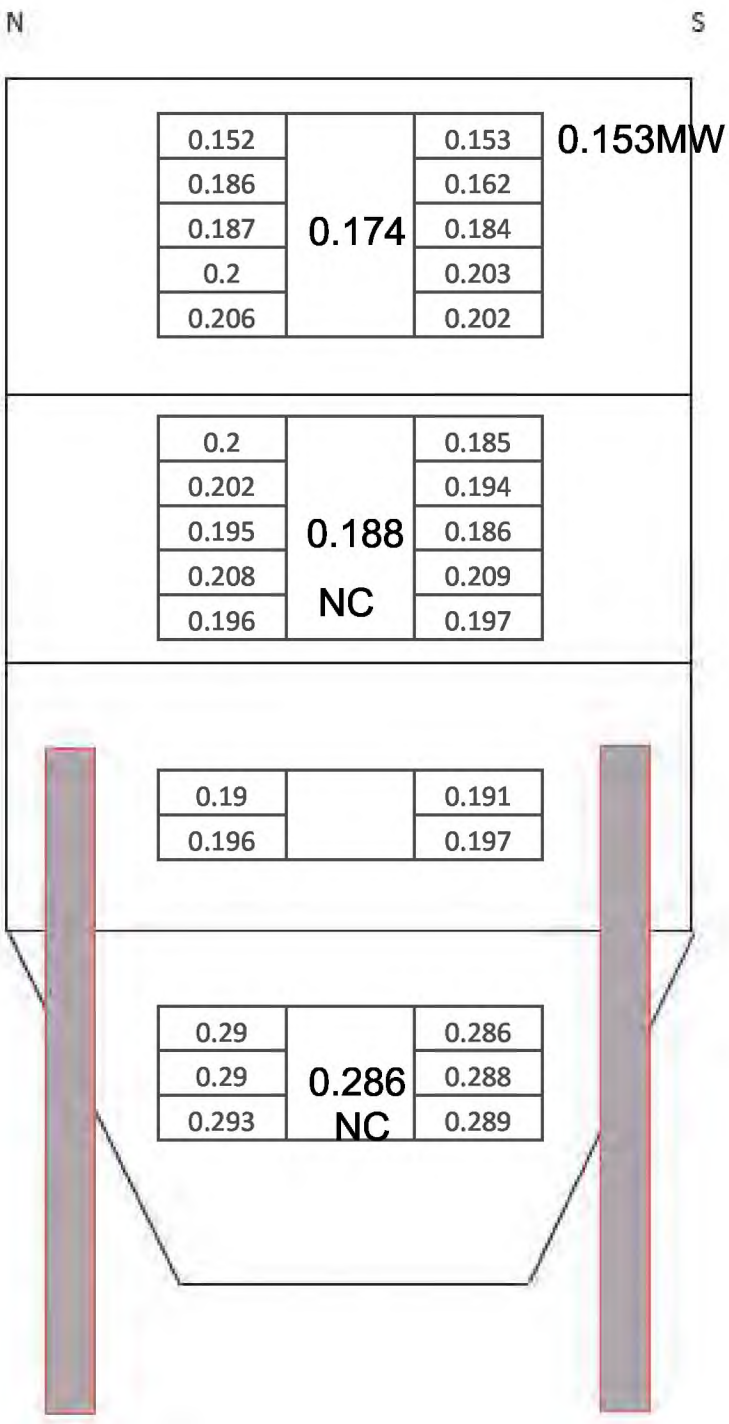
- **TANK #33 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



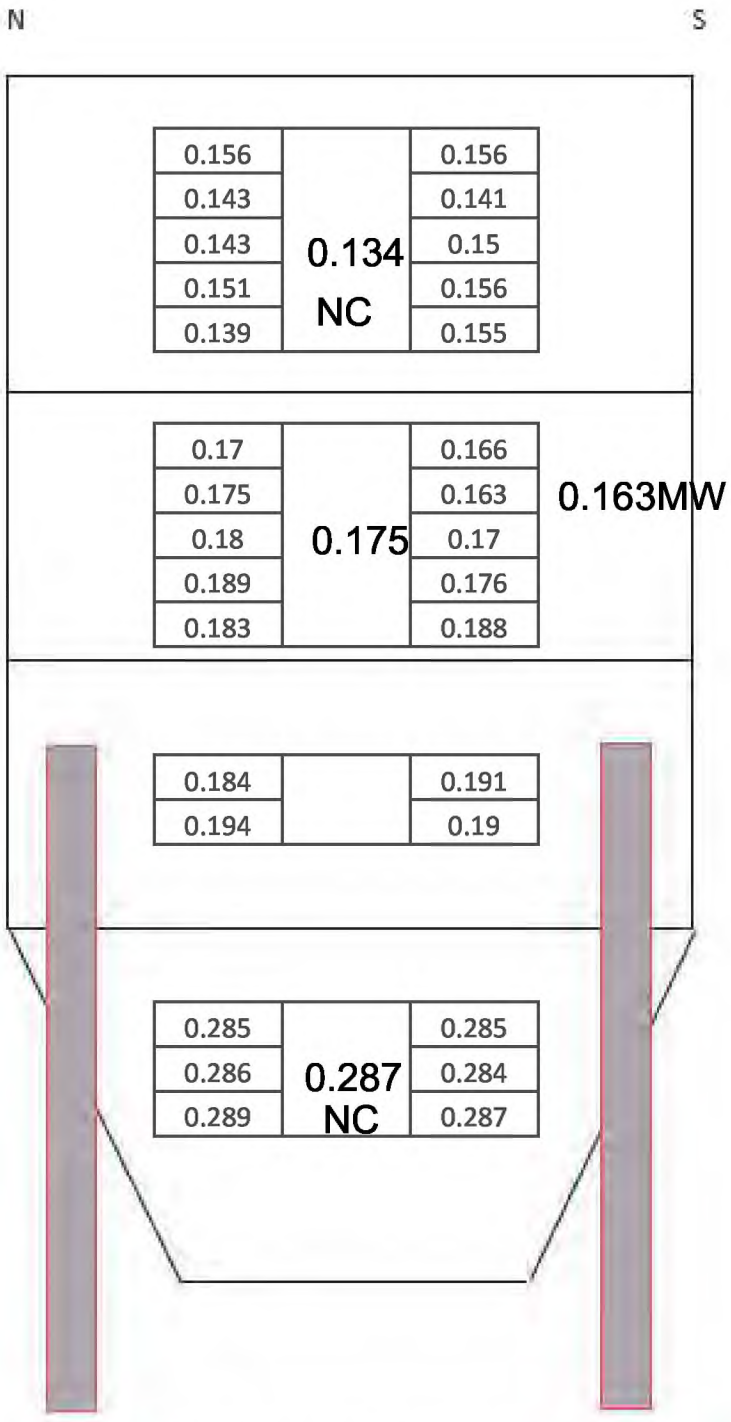
- **TANK #34 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



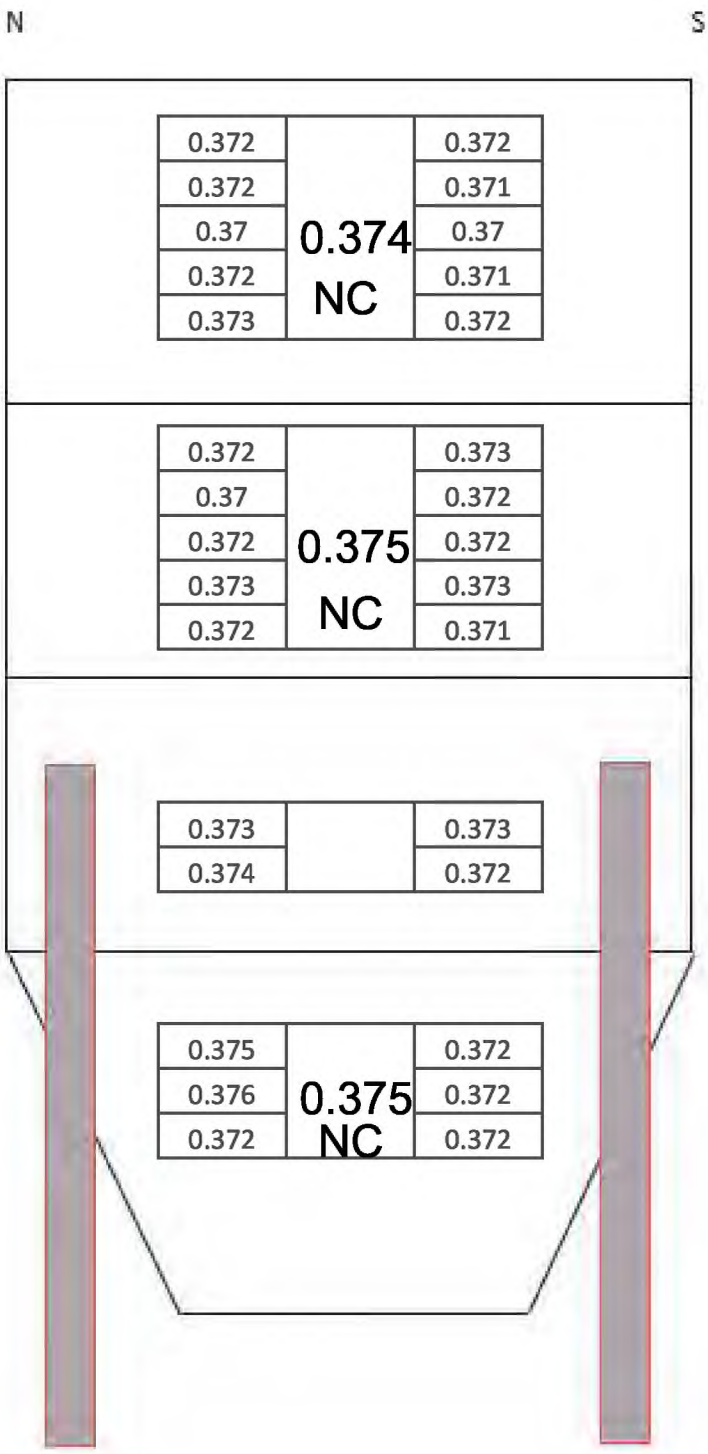
- **TANK #35 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



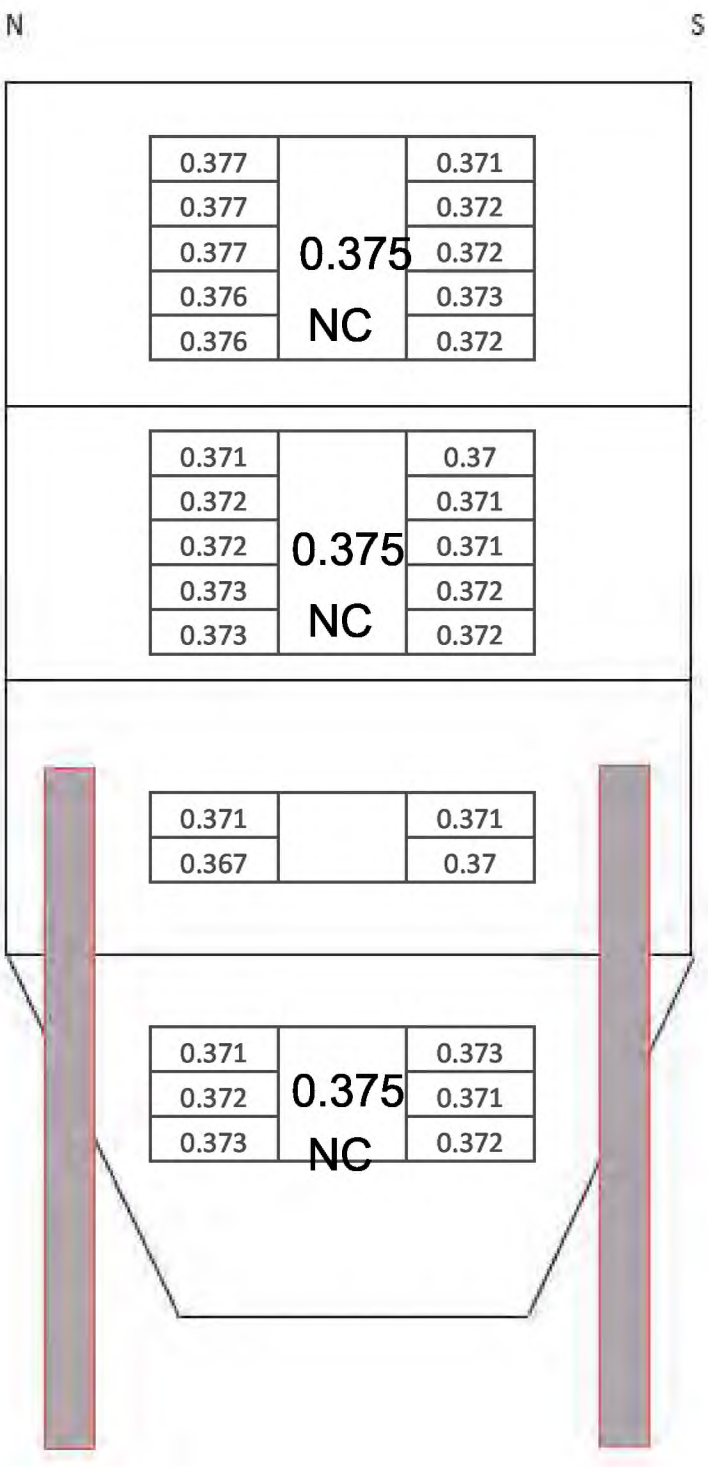
- **TANK #36 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



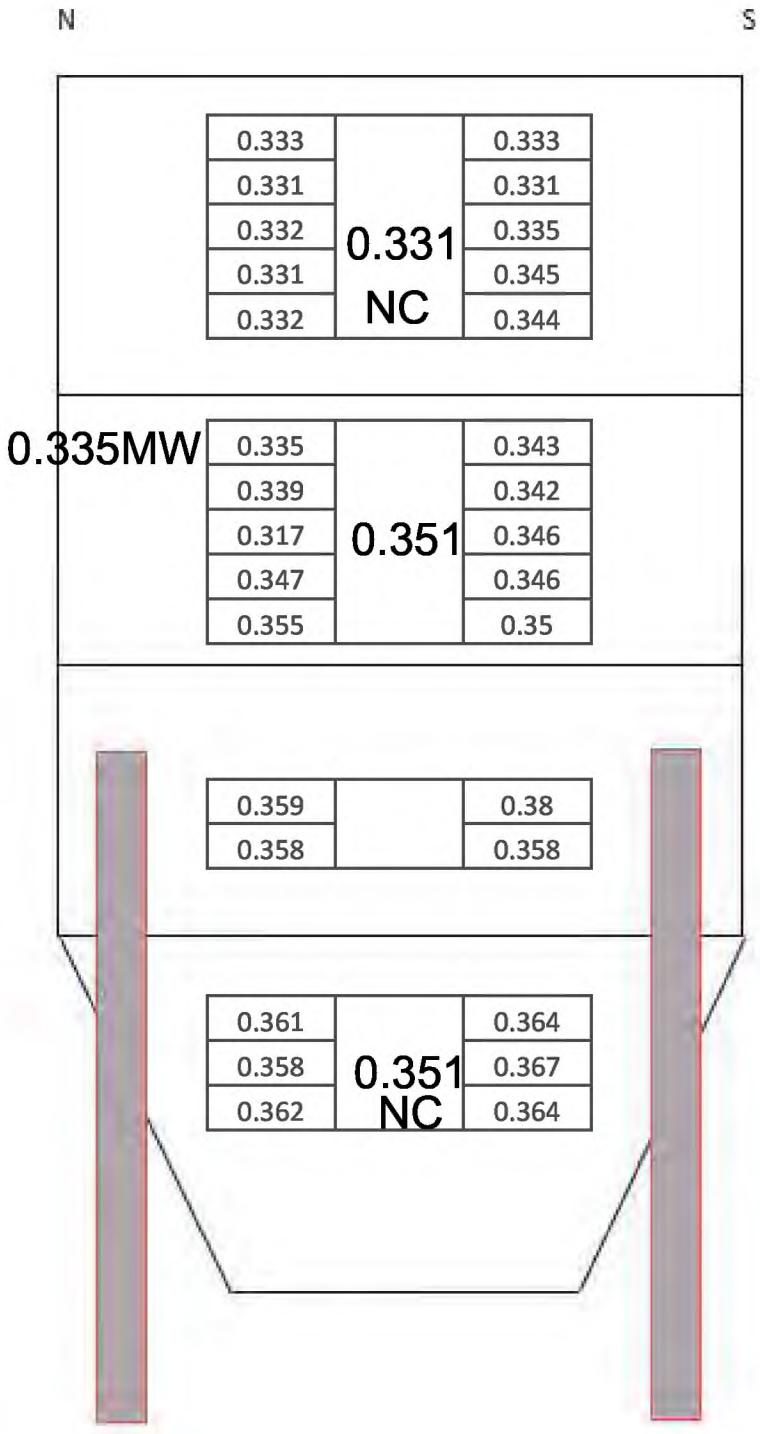
- **TANK #37A WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



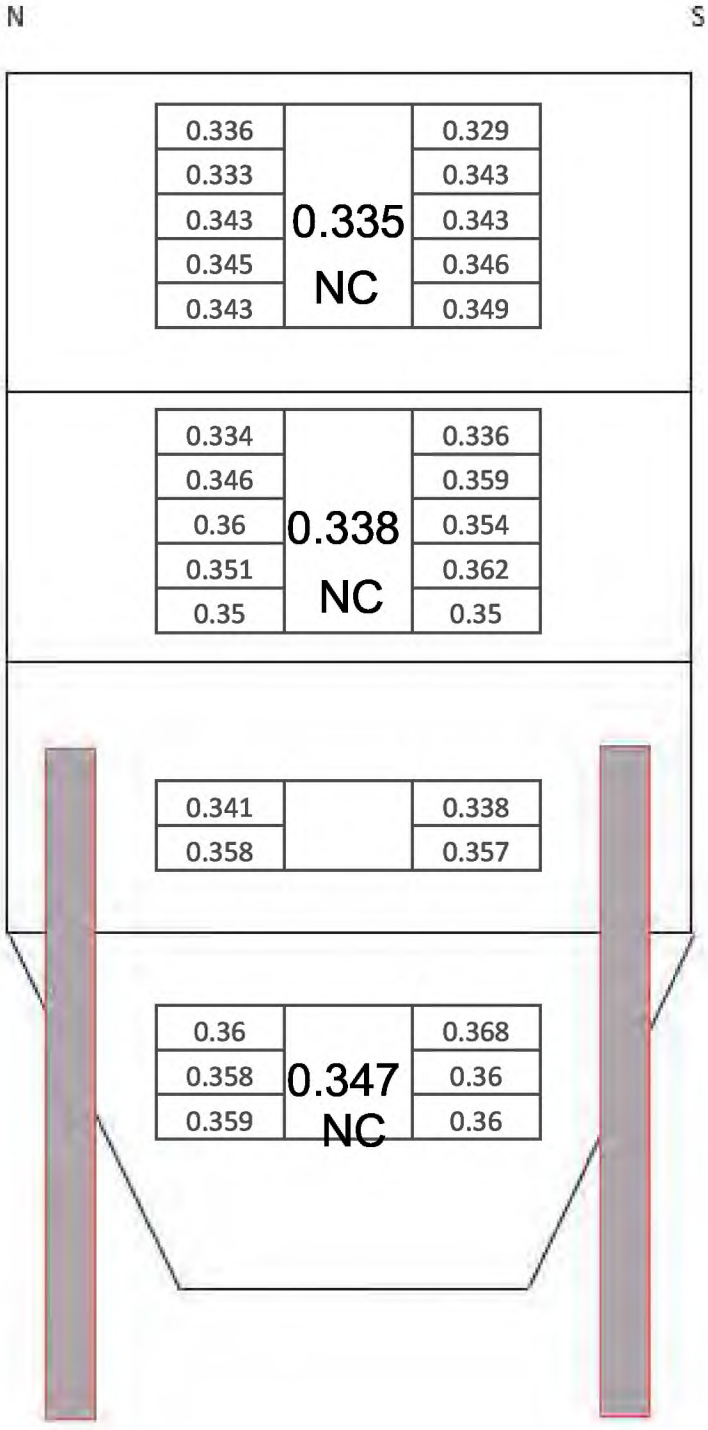
- **TANK #38A WITH AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



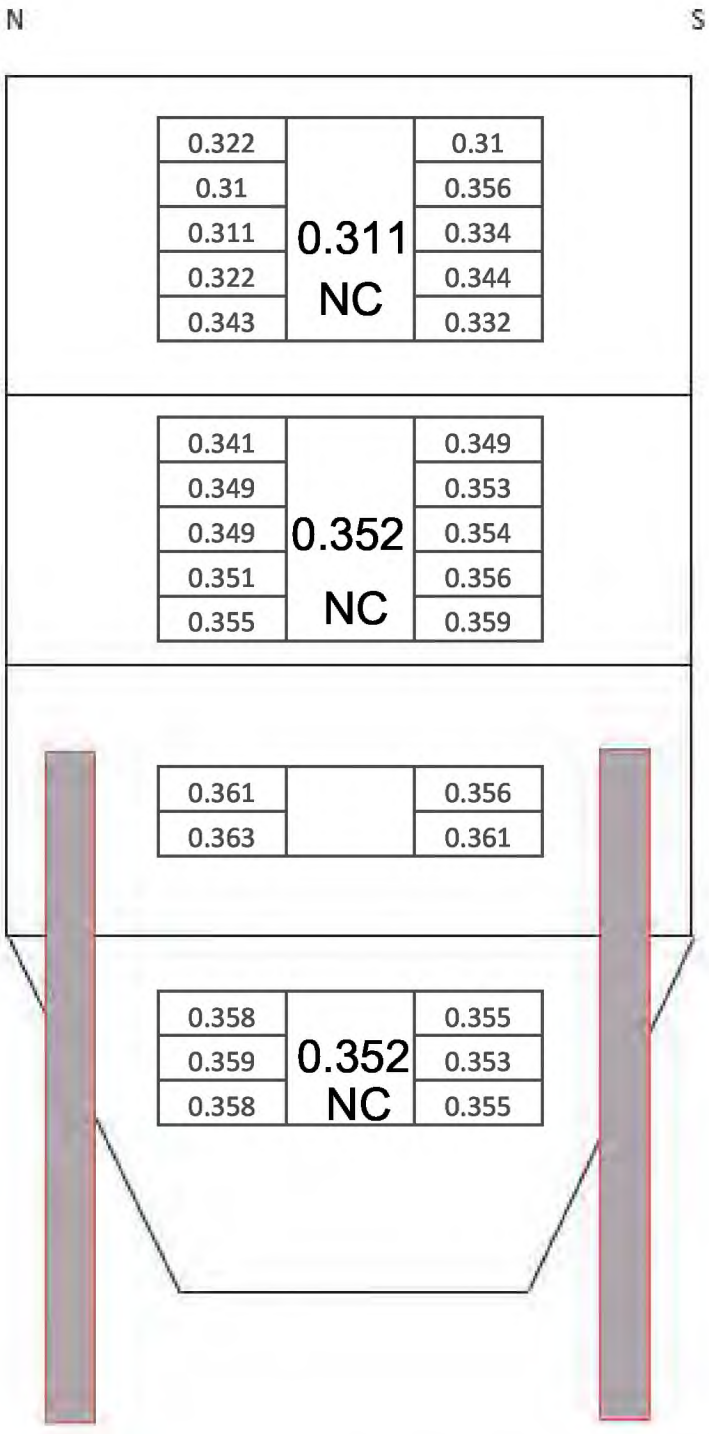
- **TANK #39 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



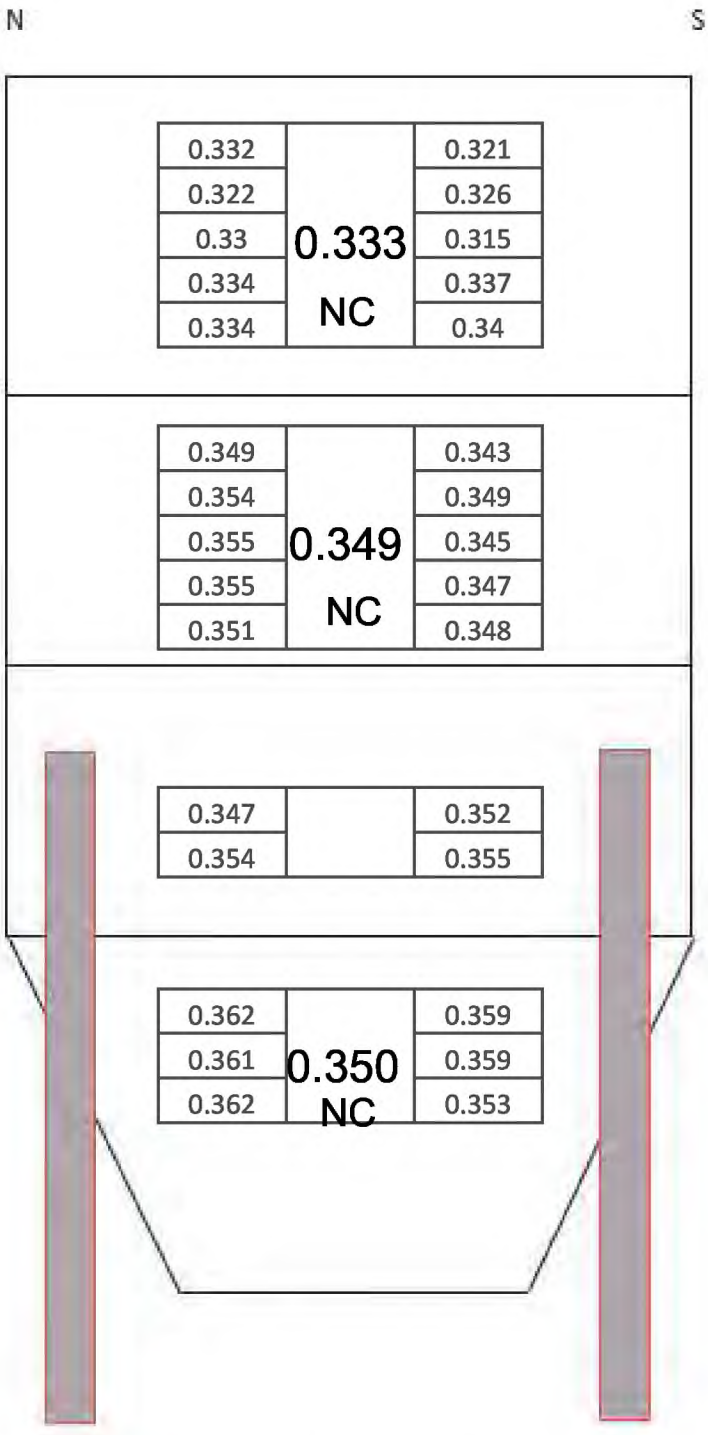
- **TANK #40 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



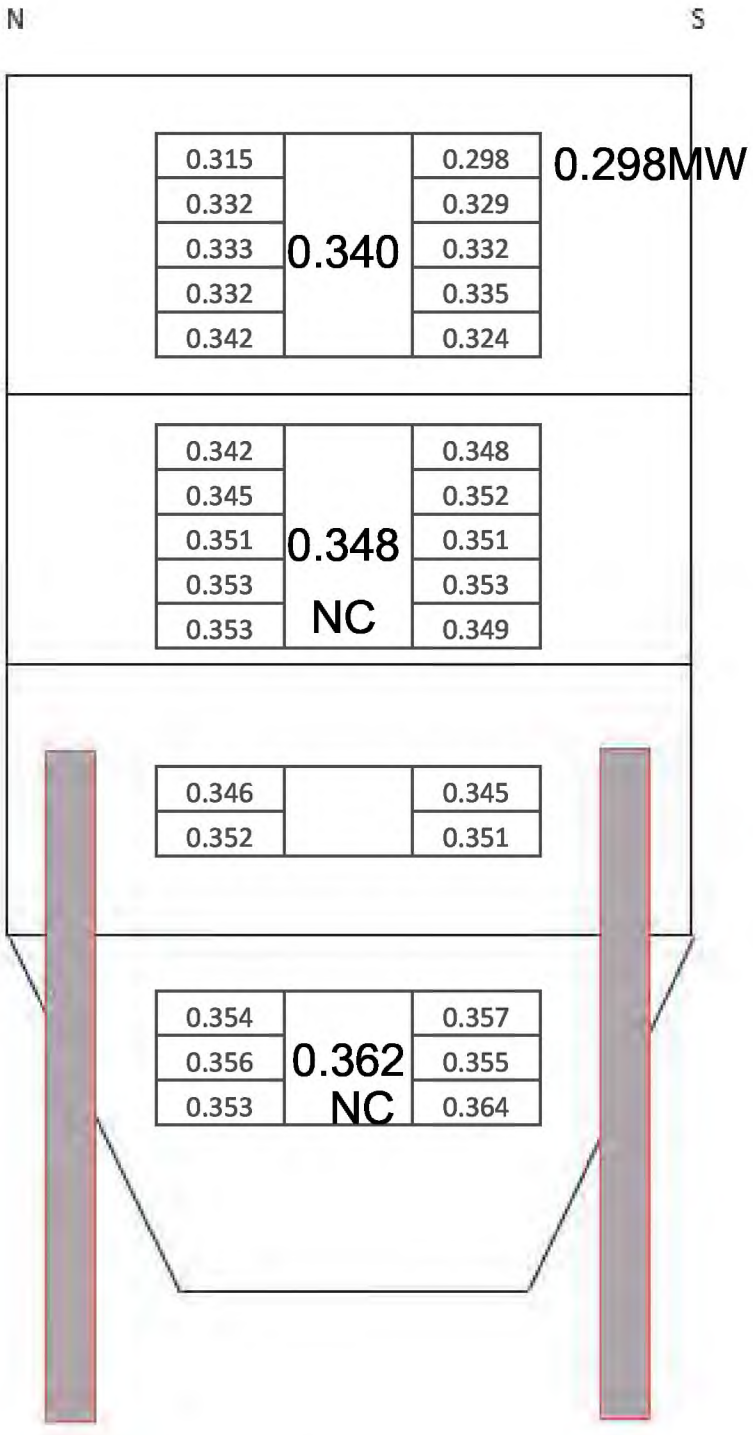
- **TANK #41 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



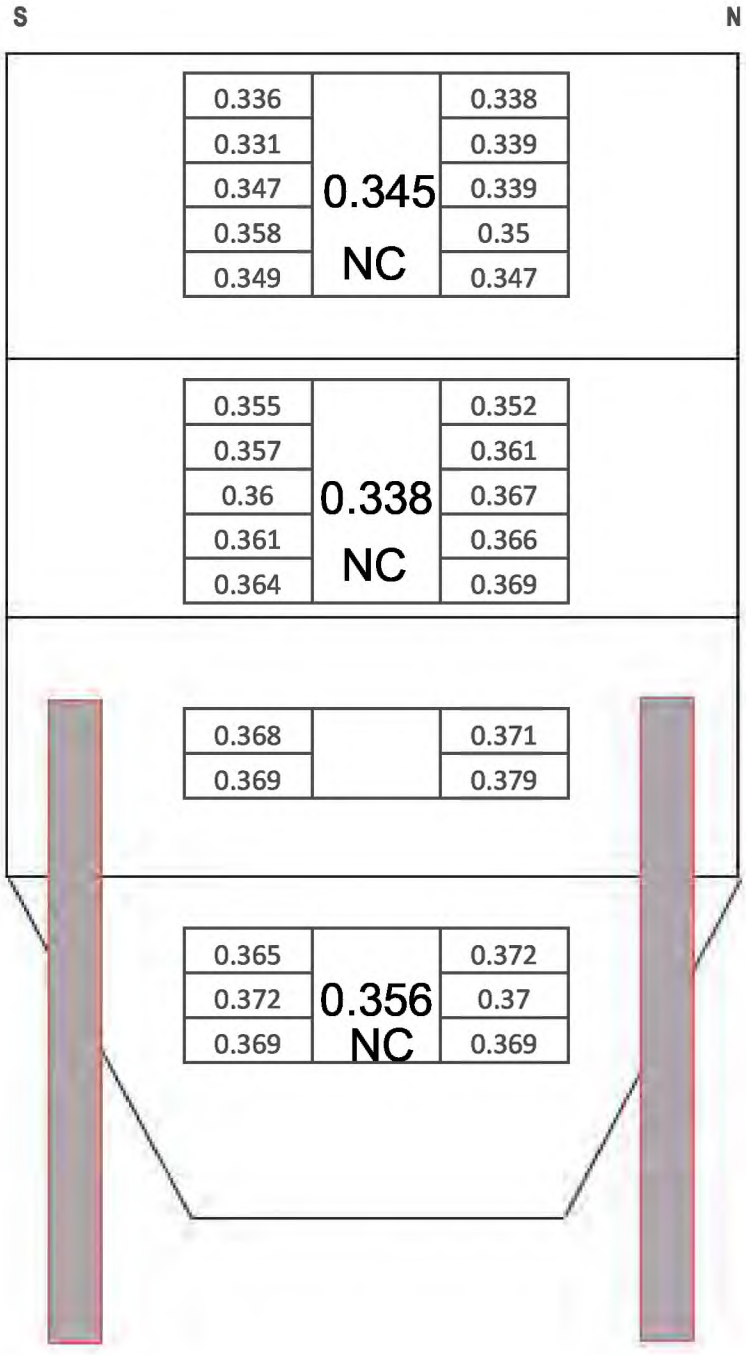
- **TANK #42 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



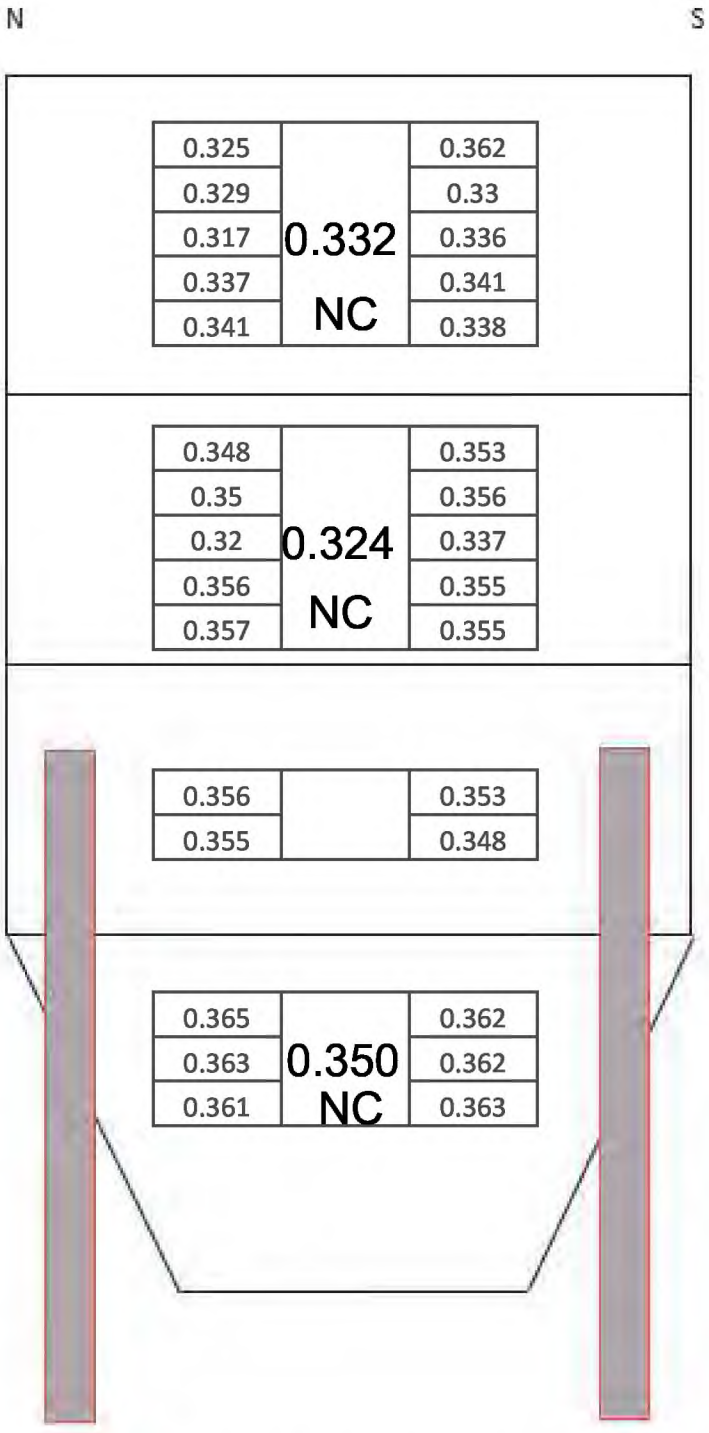
- **TANK #43 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



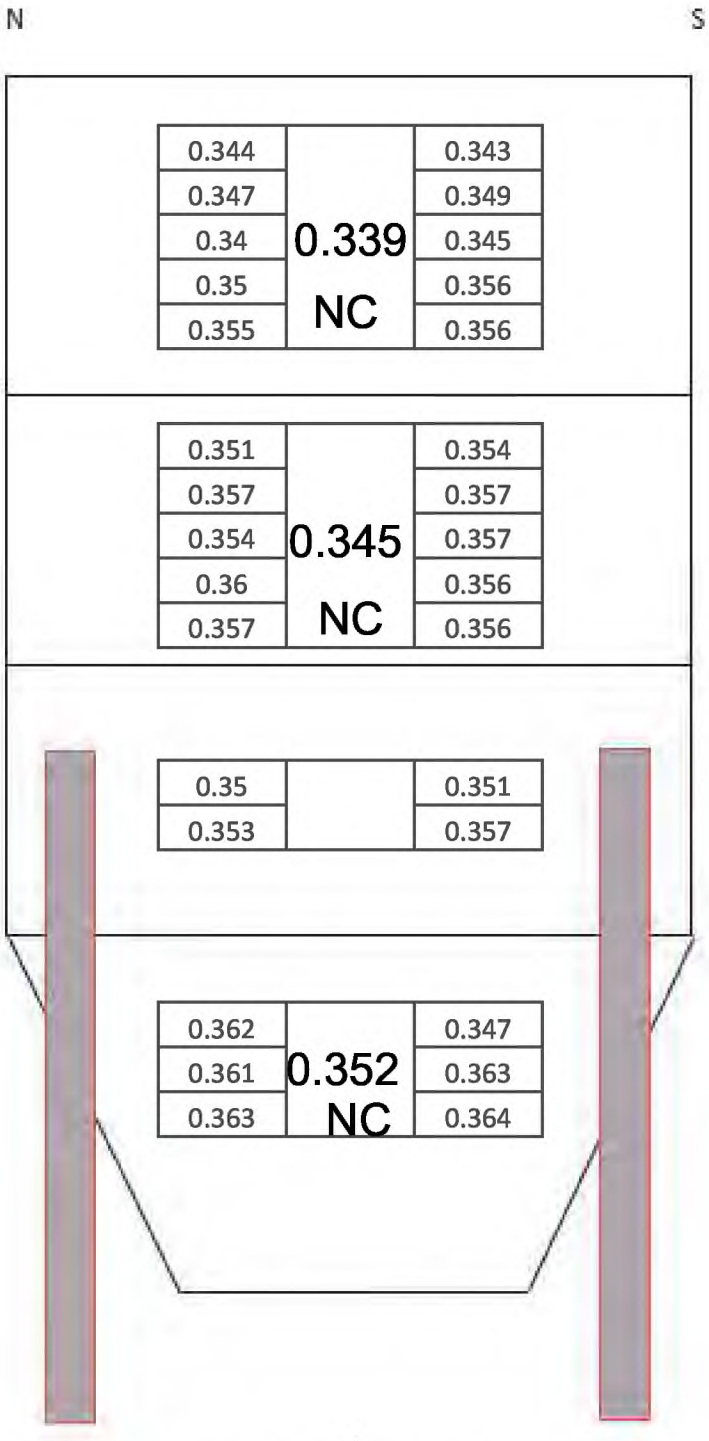
- **TANK #44 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



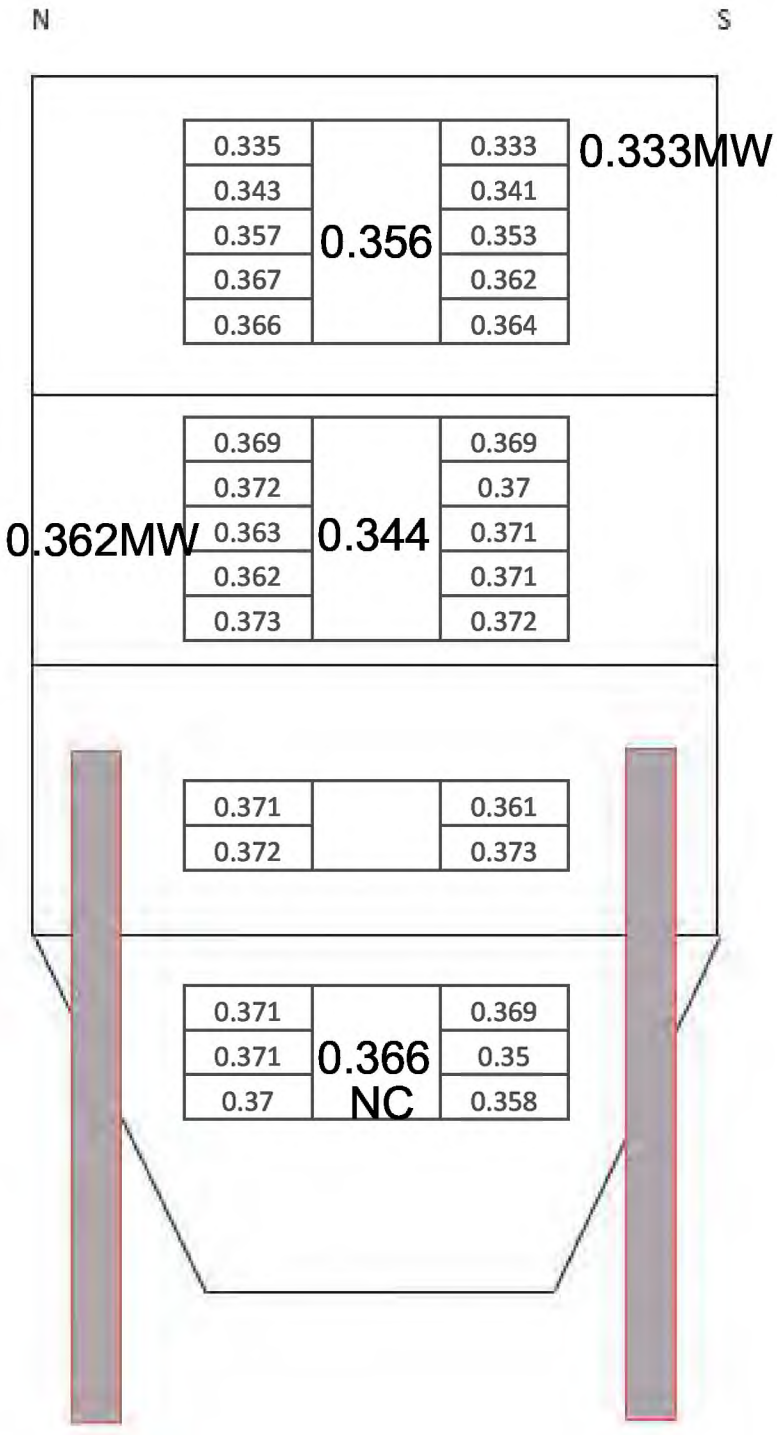
- **TANK #45 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



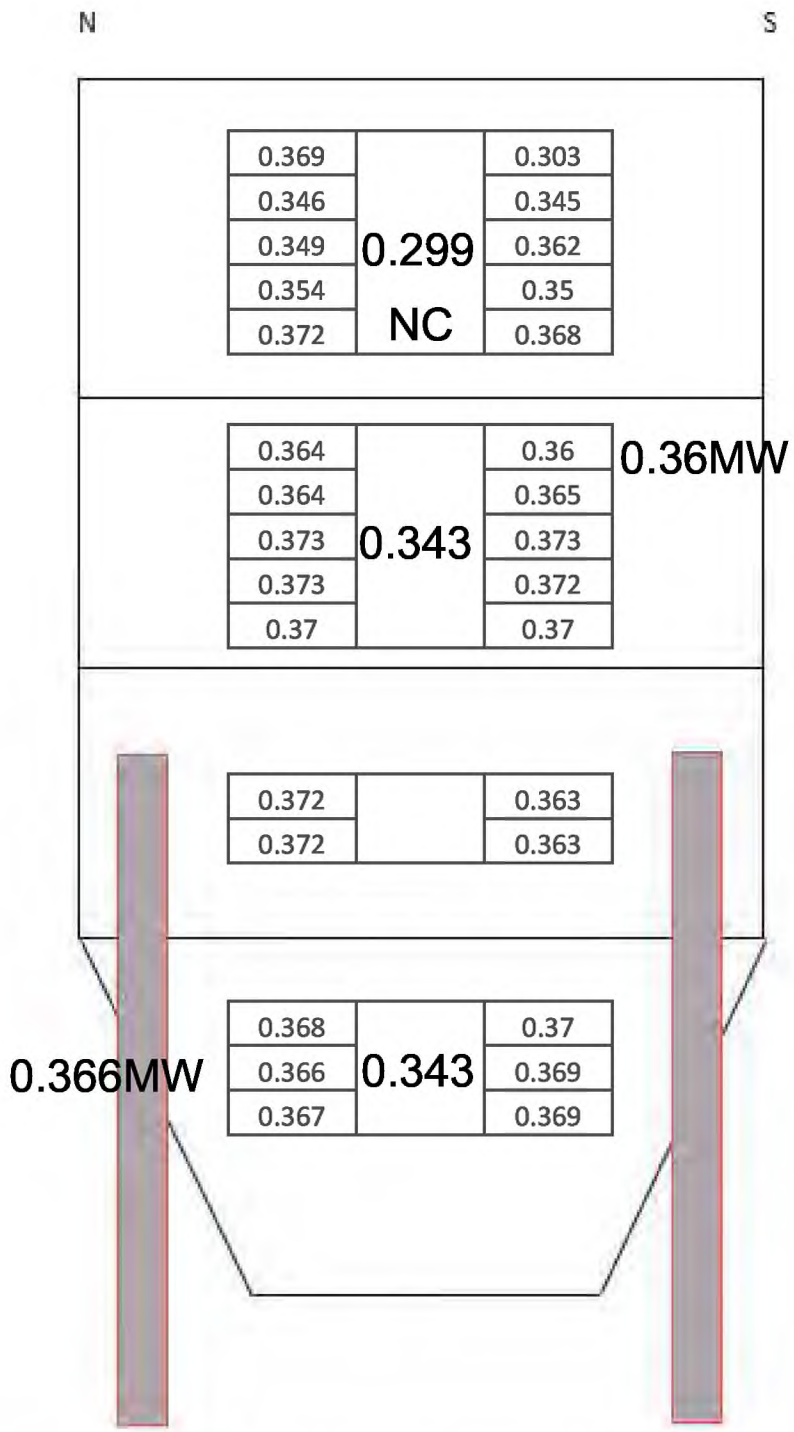
- **TANK #46 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



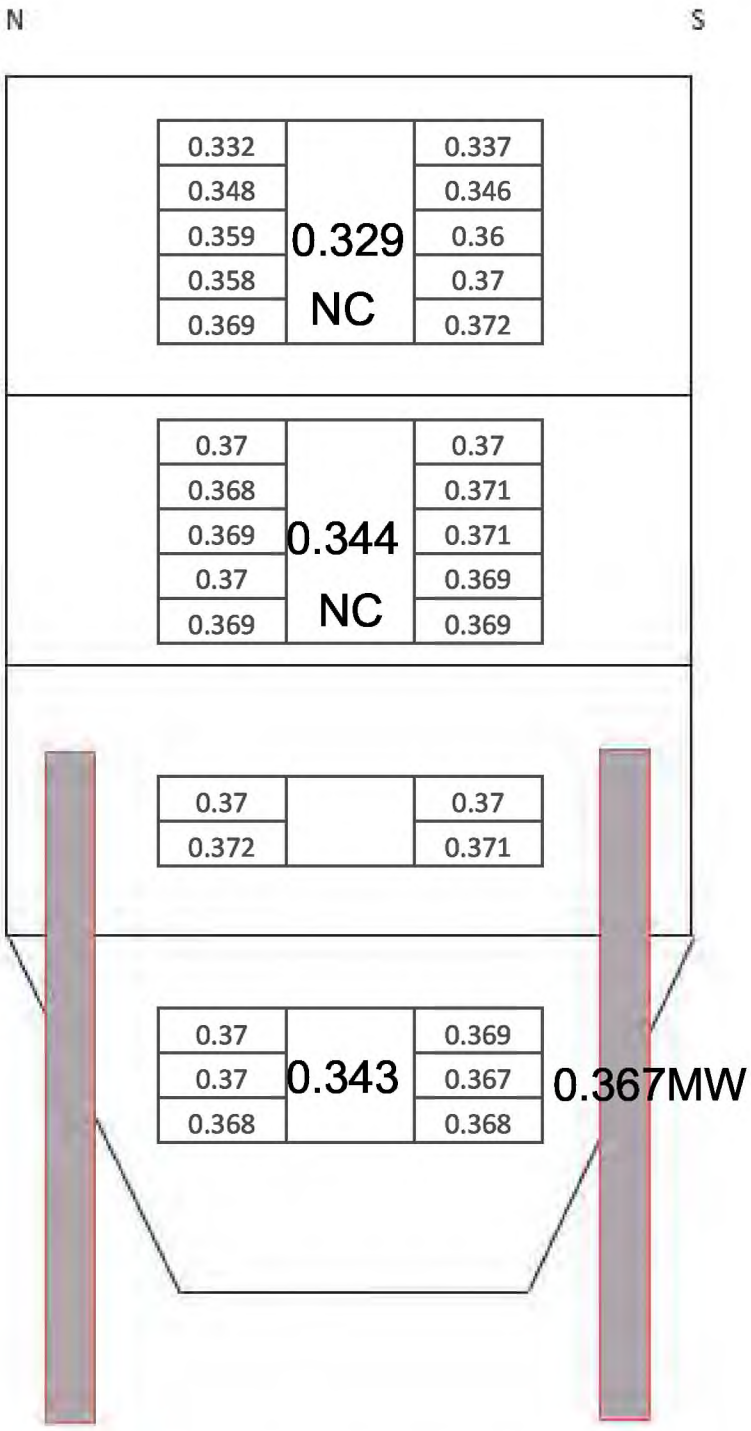
- **TANK #47 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



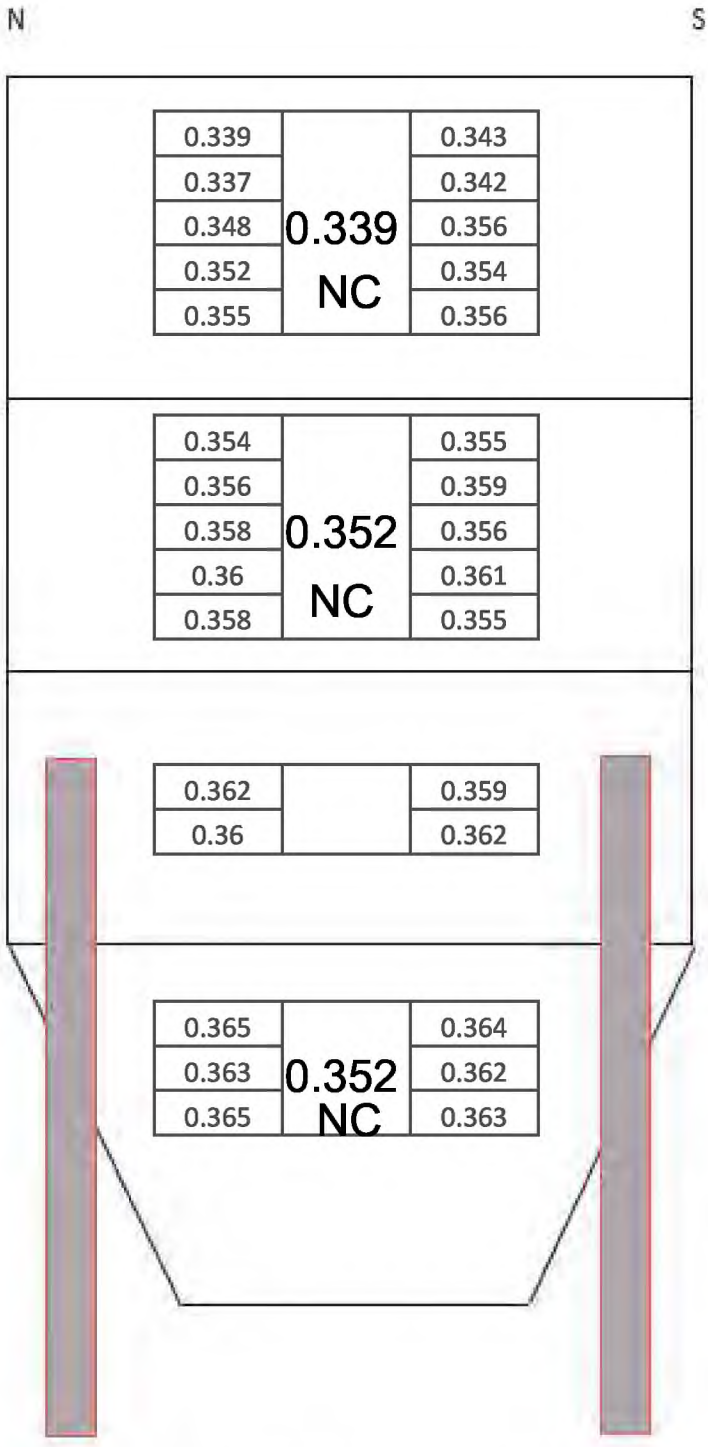
- **TANK #48 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



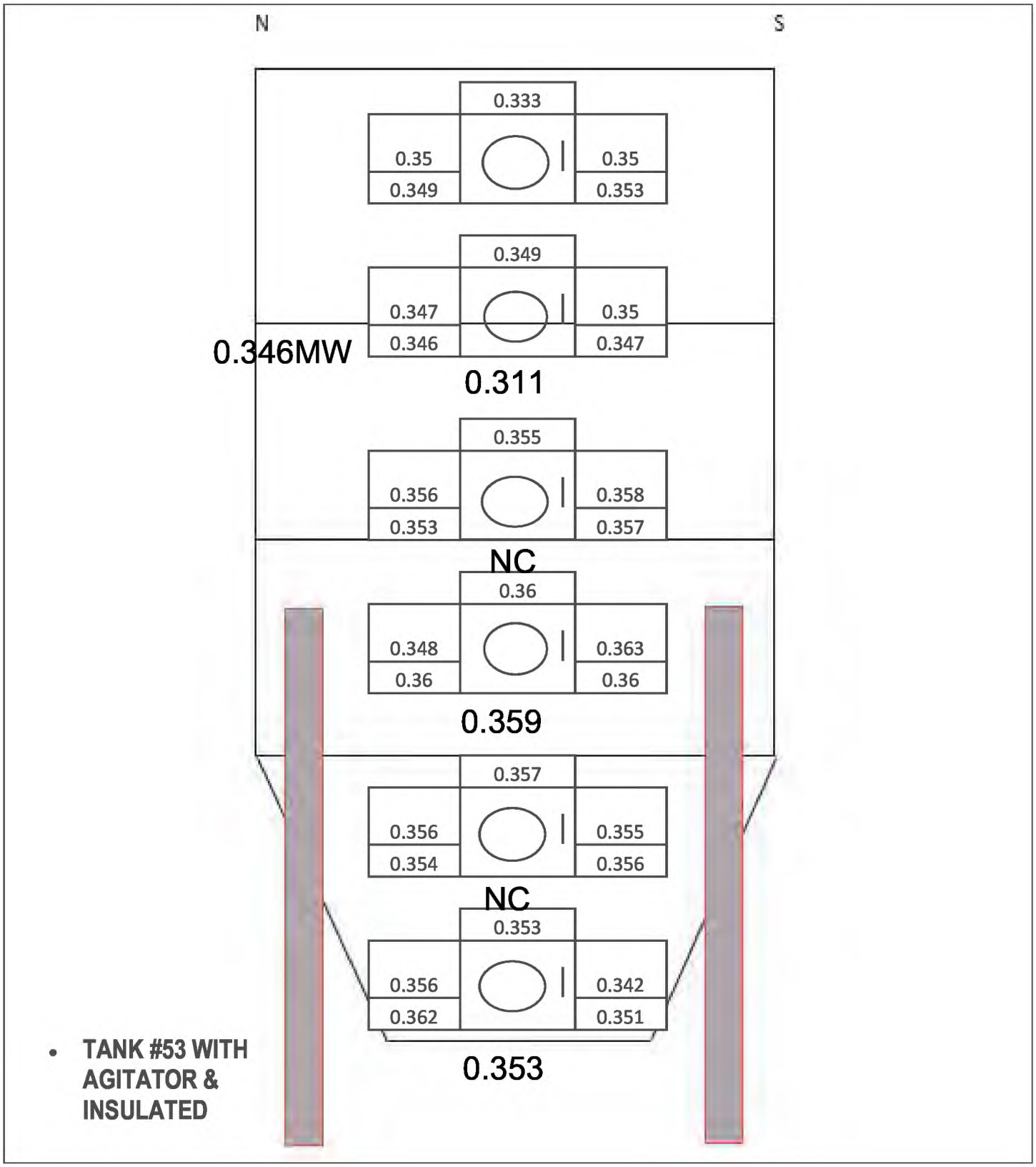
- **TANK #49 WITHOUT AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**

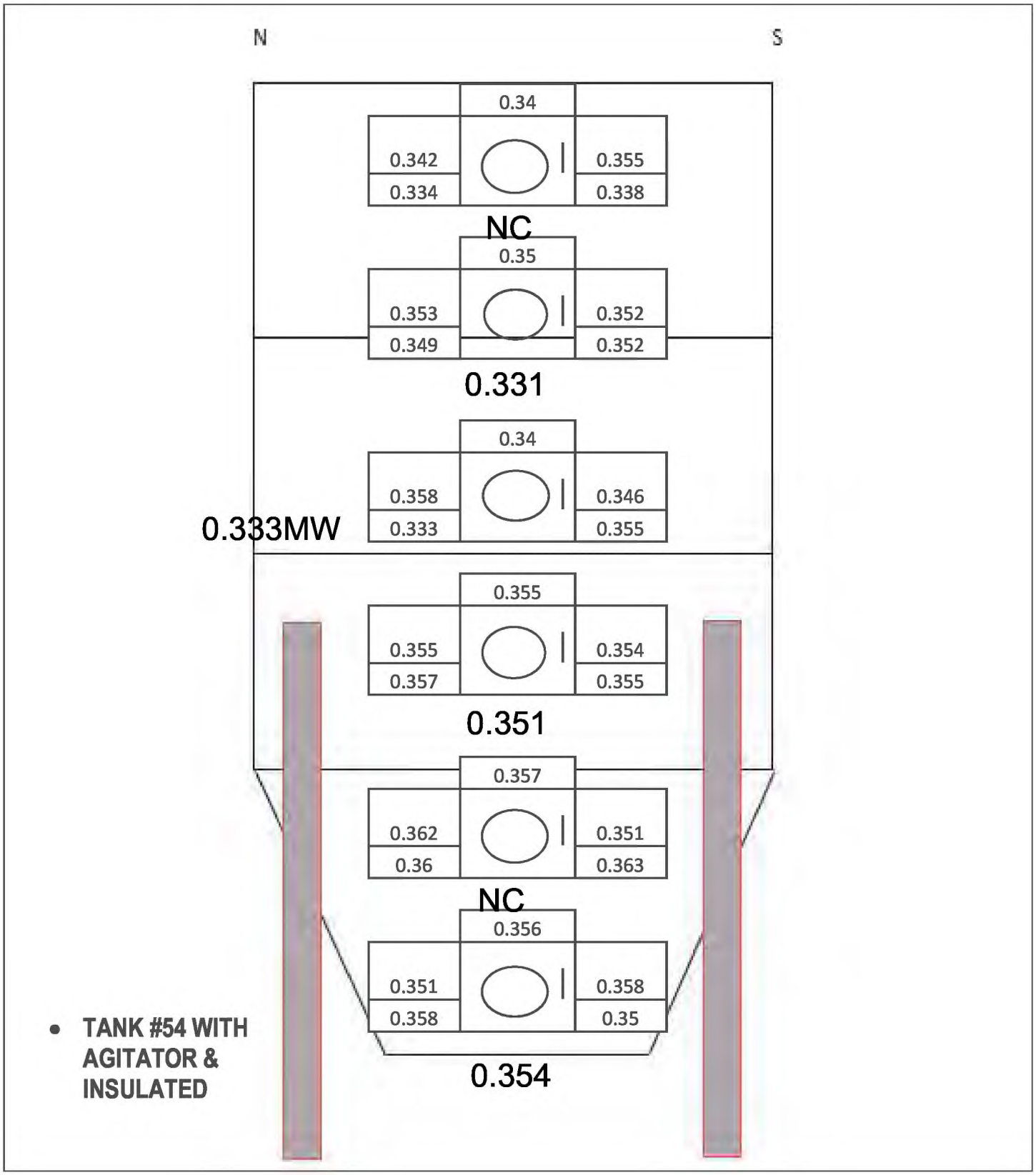


- **TANK #50 WITHOUT AGITATOR**

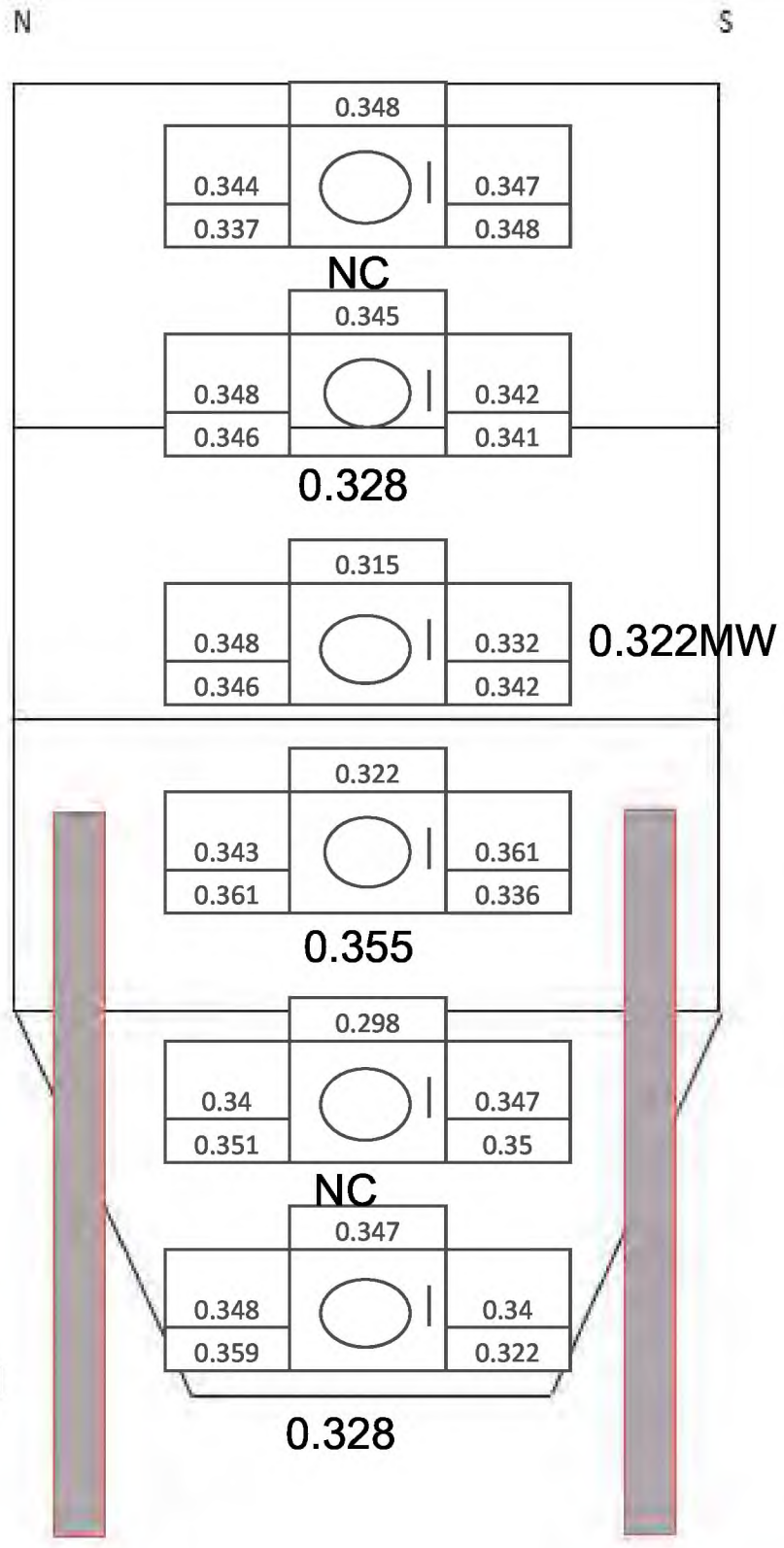
JOB NUMBER: 23-103 **DATE: 4/5/2023**



JOB NUMBER: 23-103 **DATE: 4/5/2023**

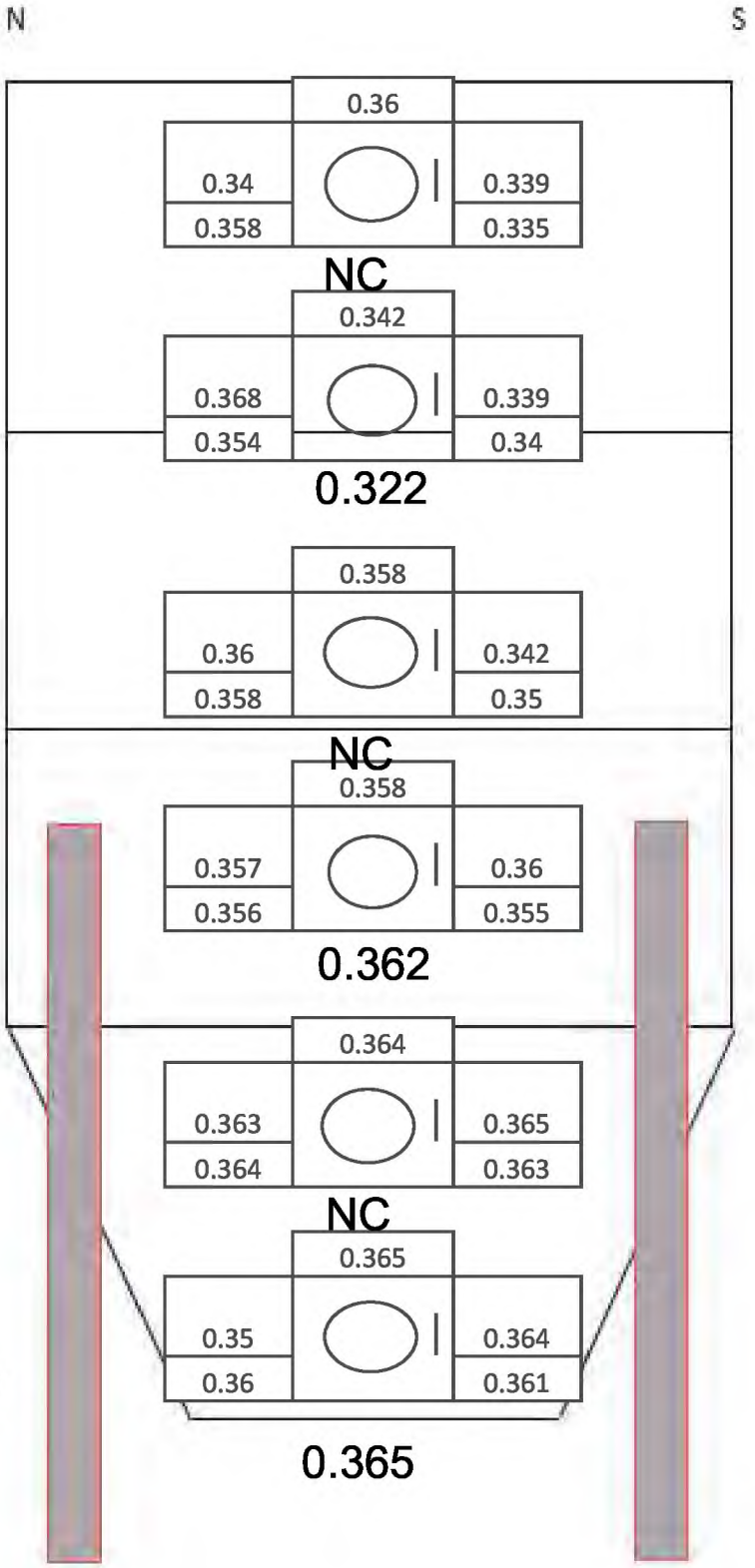


JOB NUMBER: 23-103 **DATE: 4/5/2023**



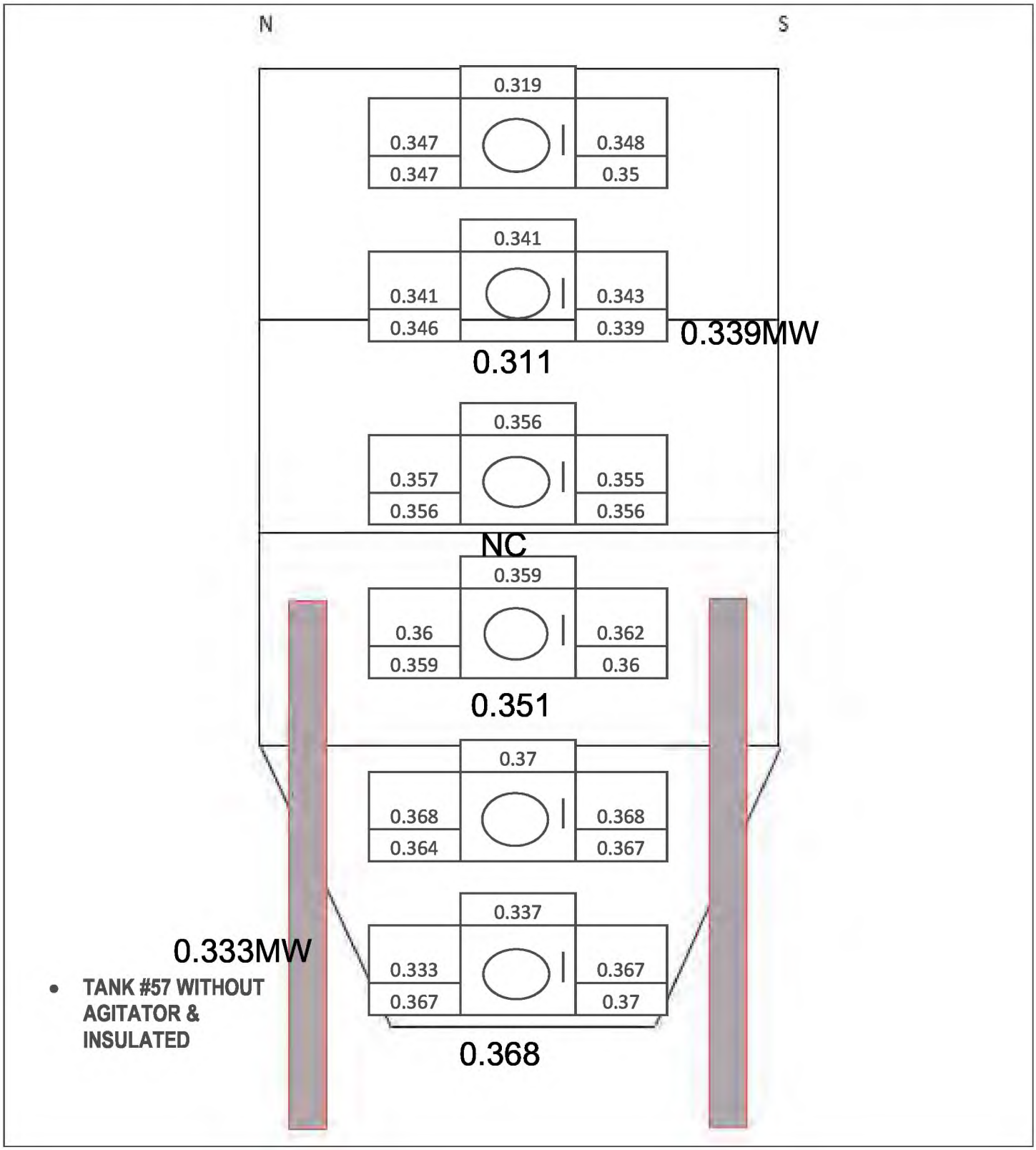
- **TANK #55 WITH AGITATOR & INSULATED**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



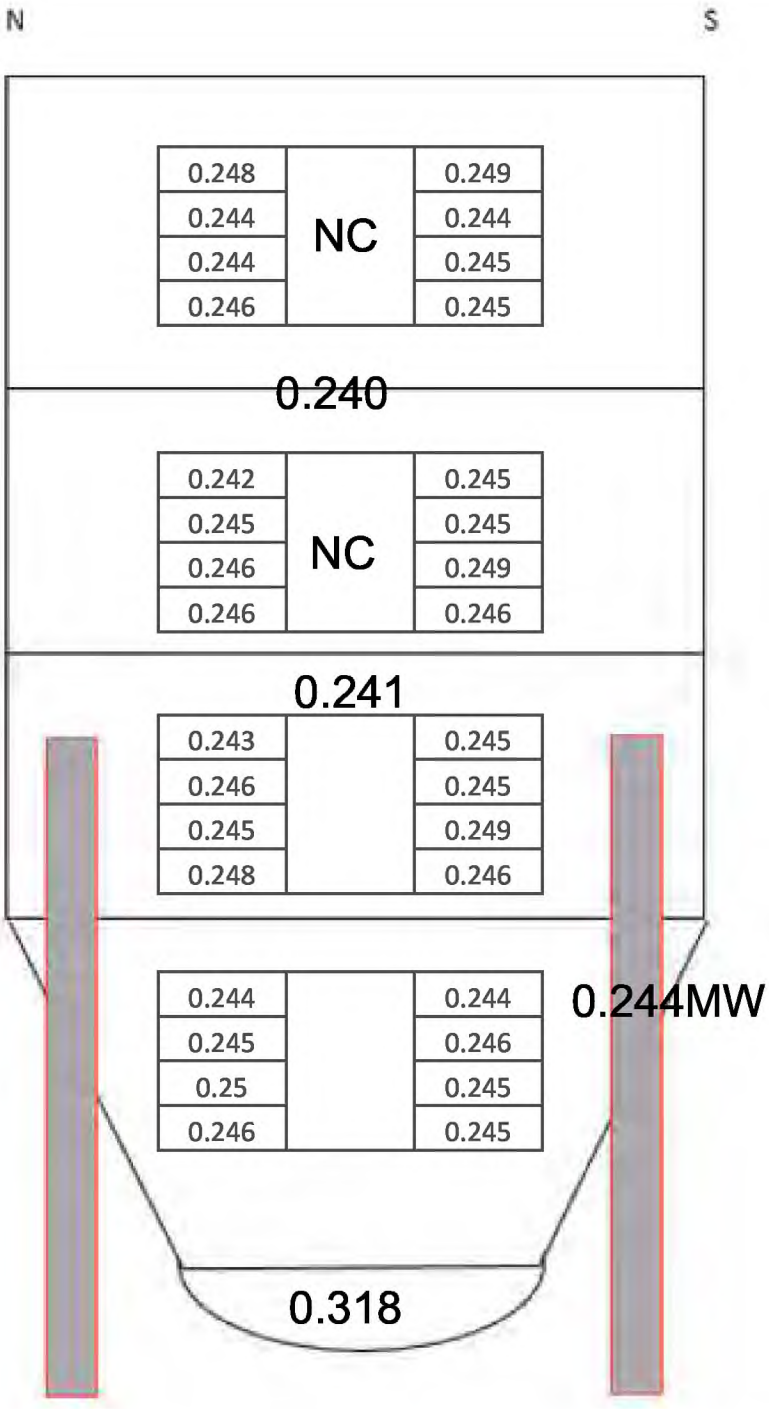
- **TANK #56 WITHOUT AGITATOR & INSULATED**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



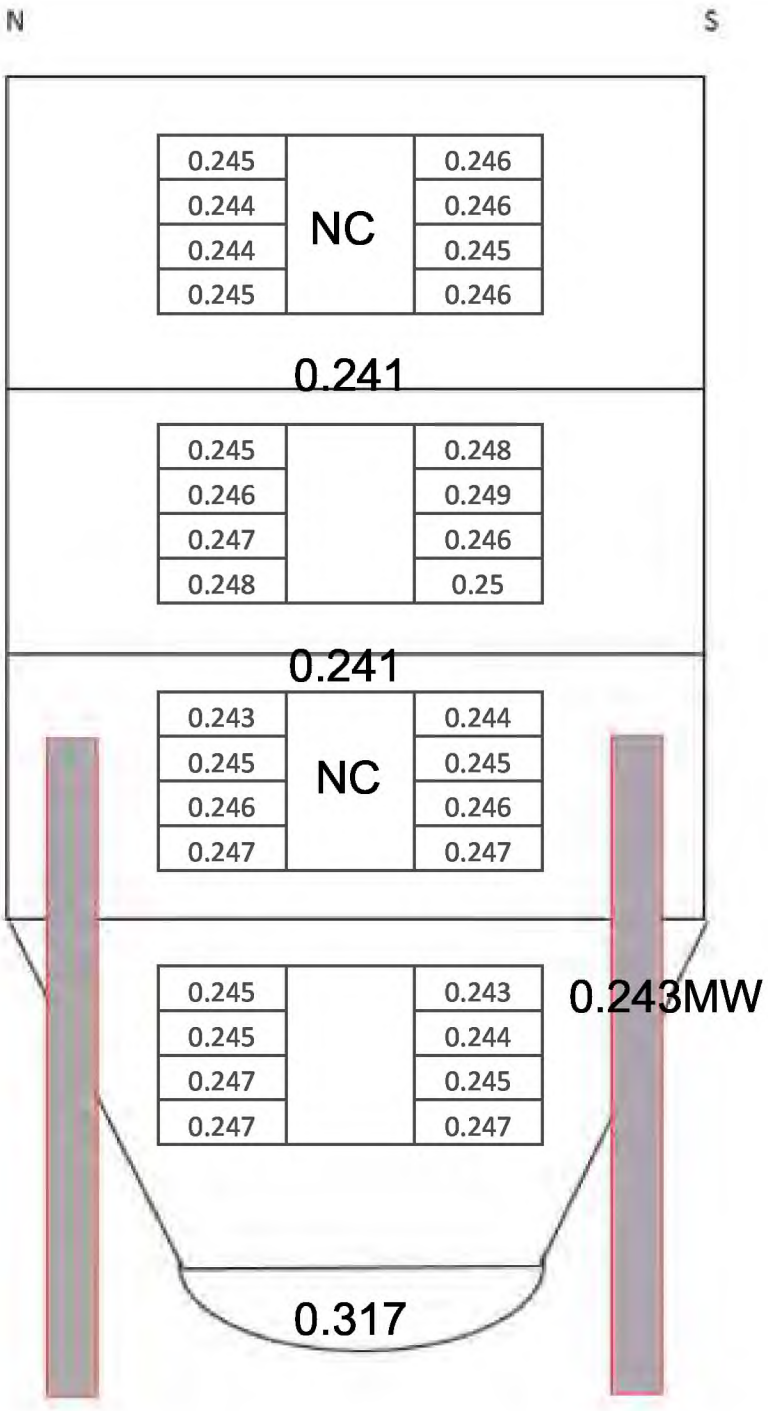
- **TANK #57 WITHOUT AGITATOR & INSULATED**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



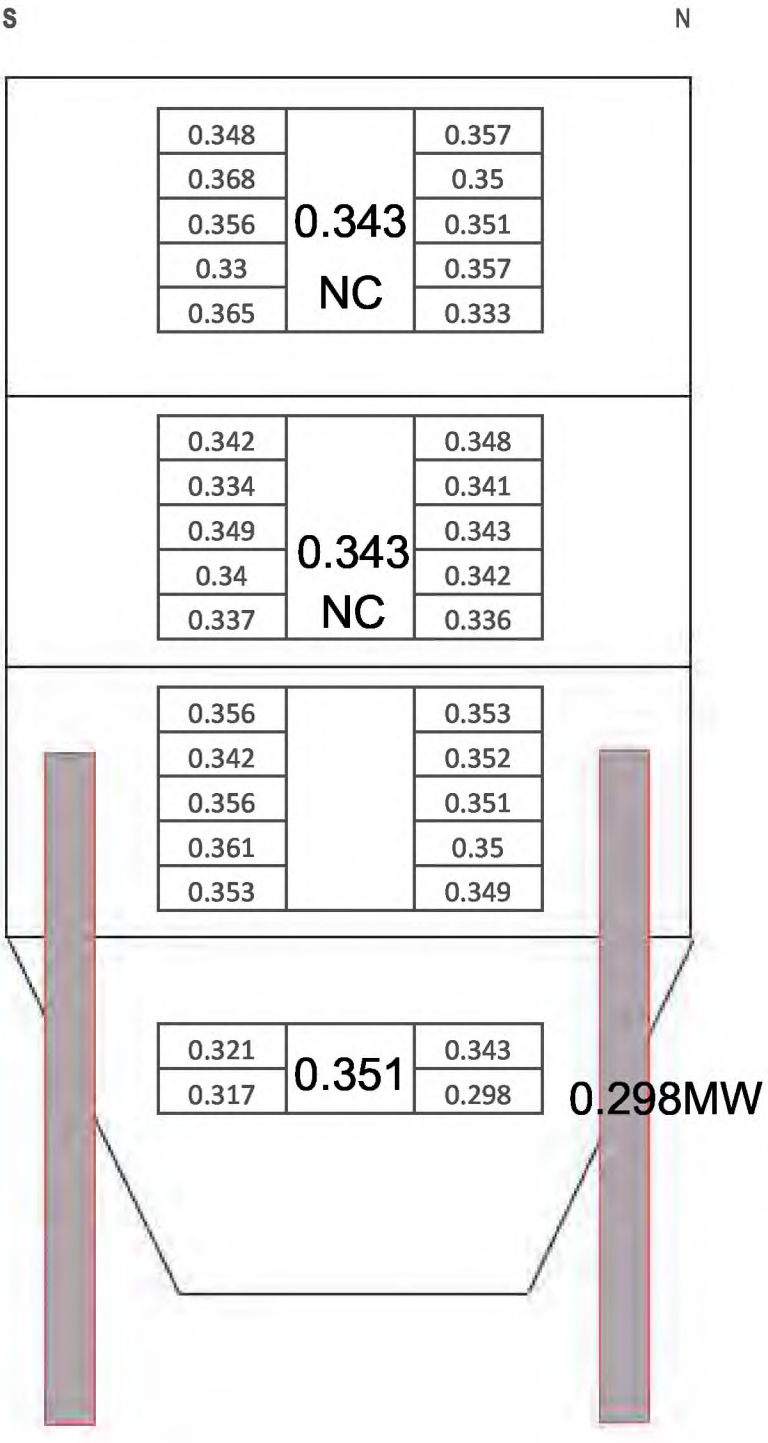
- **TANK #67 STAINLESS STEEL**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



- **TANK #68 STAINLESS STEEL**

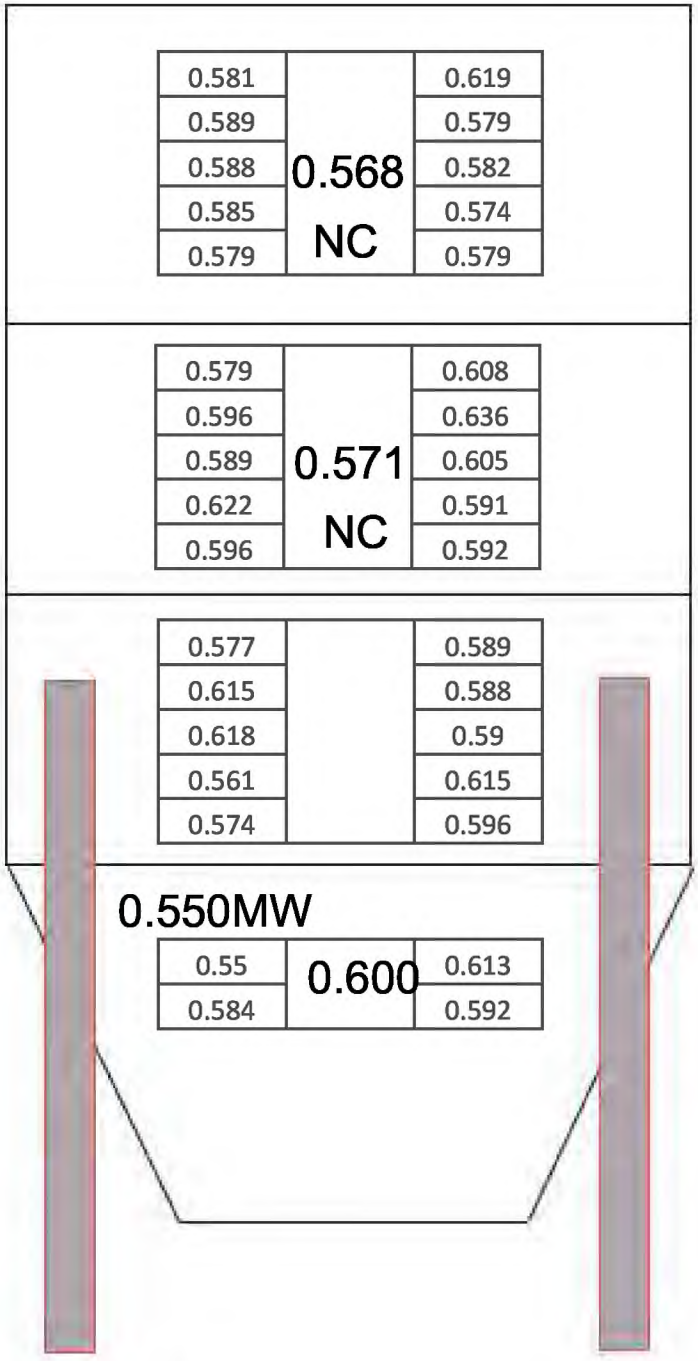
JOB NUMBER: 23-103 **DATE: 4/5/2023**



- **TANK # 70 WITHOUT AGITATOR**

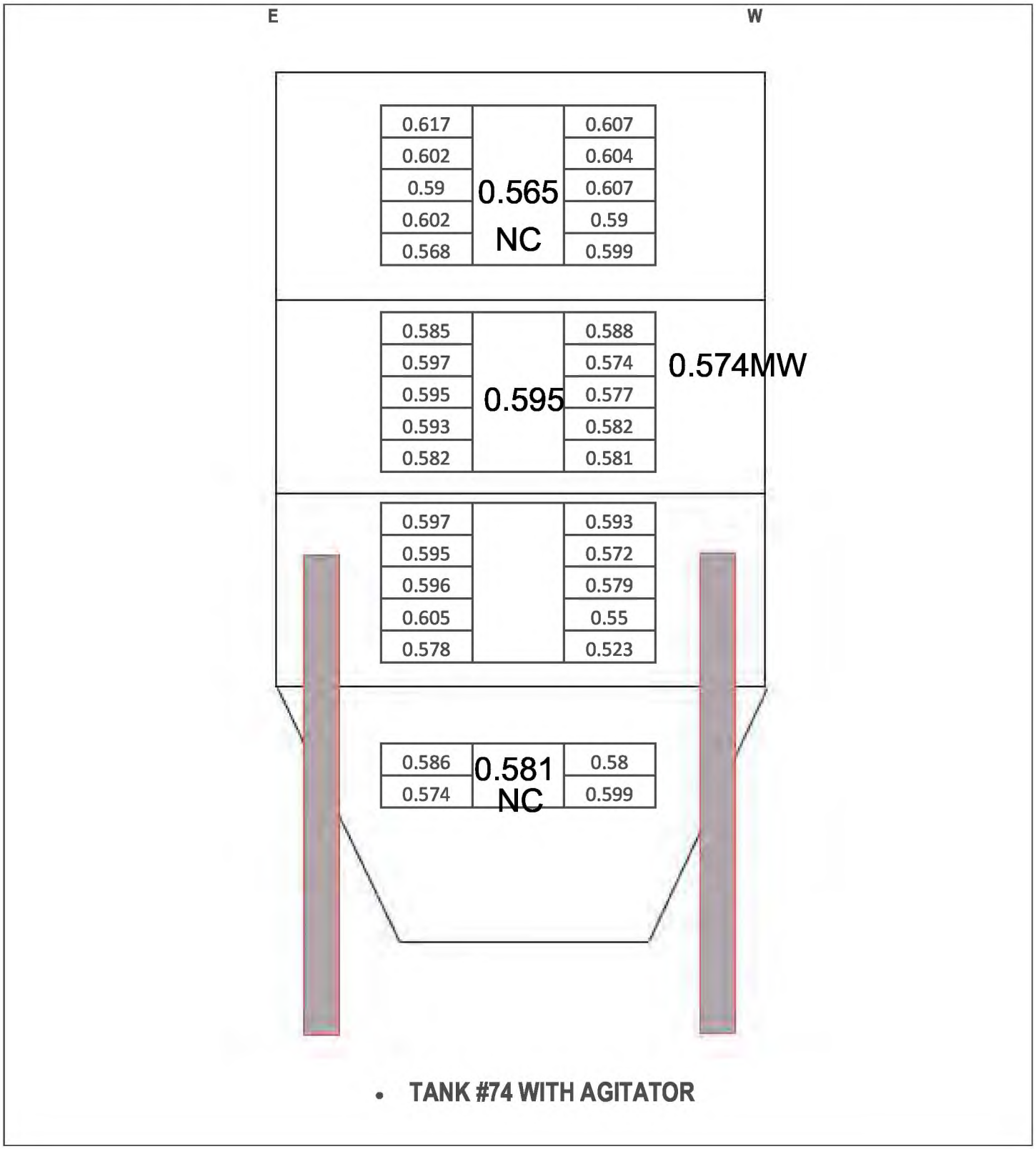
JOB NUMBER: 23-103 **DATE: 4/5/2023**

E W



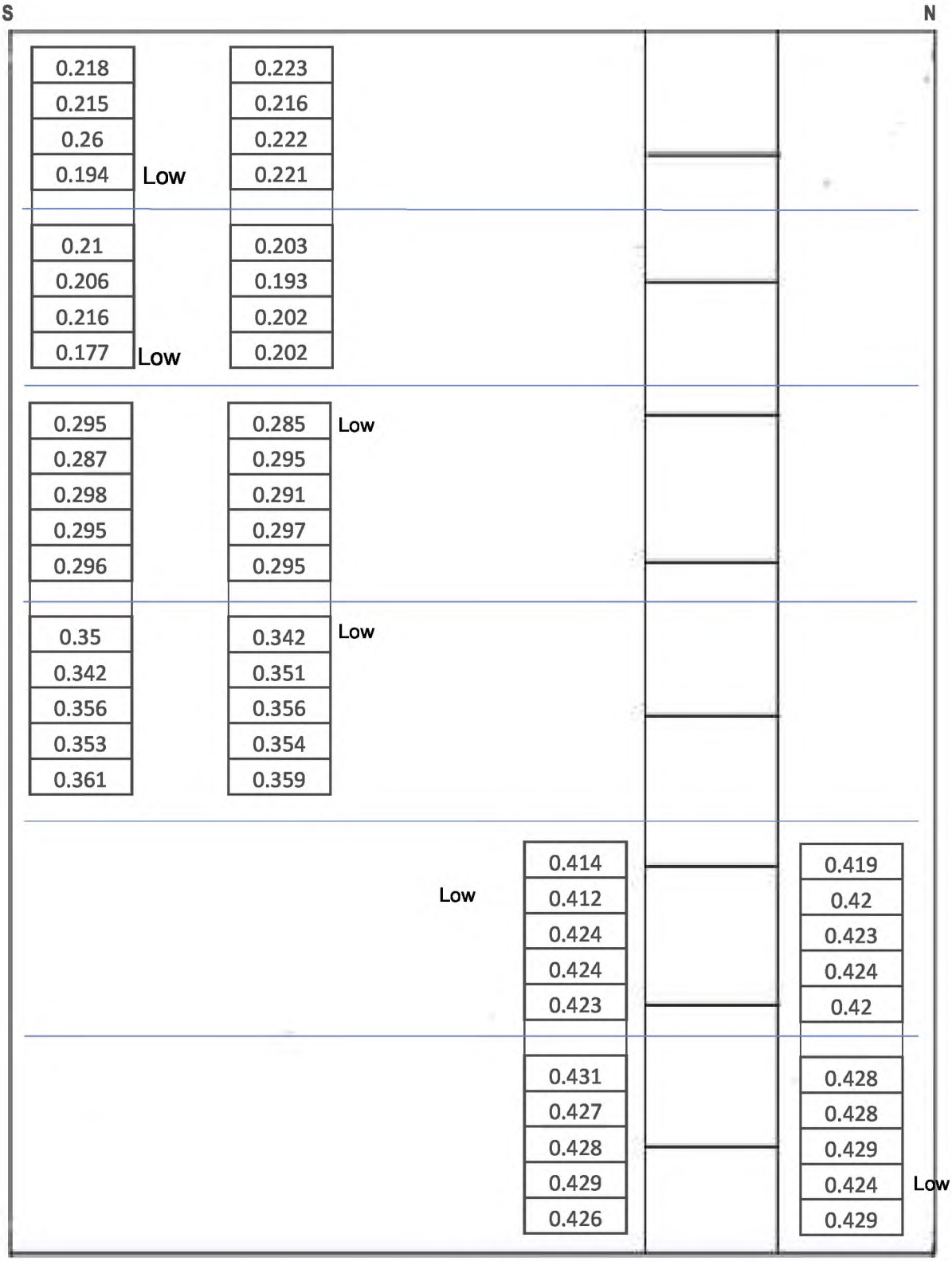
- **TANK # 73 WITH AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



- **TANK #74 WITH AGITATOR**

JOB NUMBER: 23-103 **DATE: 4/5/2023**



- **TANK #75**

SECTION B – CUMMULATIVE REMAINING WALL THICKNESS TANKS

25, 27, 29, 30, 31, 33, 34, 35, 36, 39, 43, 47, 48, 49, 53, 54, 57, 67, 68, 70, 73, 74

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 25

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2310	0.2420	0.3070

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
22	0.0007	0.0003	0.0000	11/22/2000	5/14/2001
AJ1	0.0220	0.0151	0.0082	9/15/2001	9/15/2001
23	0.0010	0.0006	0.0000	5/14/2001	5/11/2002
24	0.0014	0.0013	0.0000	5/11/2002	5/24/2003
25	0.0005	0.0010	0.0000	5/24/2003	4/24/2004
26	0.0013	0.0005	0.0000	4/24/2004	5/21/2005
27	0.0011	0.0009	0.0000	5/21/2005	5/20/2006
28	0.0007	0.0005	0.0000	5/20/2006	5/20/2007
29	0.0003	0.0002	0.0000	5/20/2007	5/11/2008
30	0.0042	0.0018	0.0000	5/11/2008	5/17/2009
31	0.0013	0.0015	0.0000	5/17/2009	5/23/2010
32	0.0017	0.0016	0.0000	5/23/2010	9/15/2011
33	0.0019	0.0018	0.0000	9/15/2011	11/18/2012
34	0.0006	0.0001	0.0000	11/18/2012	10/30/2013
35	0.0016	0.0004	0.0000	10/30/2013	10/30/2014
36	0.0030	0.0010	0.0000	10/30/2014	10/15/2015
37	0.0007	0.0004	0.0000	10/15/2015	10/16/2016
38	0.0007	0.0004	0.0000	10/16/2016	10/16/2017
AJ2	0.0000	0.0296	0.0000	8/27/2018	8/27/2018
39	0.0010	0.0004	0.0000	10/16/2017	10/15/2018
40	0.0008	0.0002	0.0000	10/15/2018	12/13/2019
41	0.0002	0.0005	0.0000	12/13/2019	11/6/2020
42	0.0005	0.0004	0.0000	11/6/2020	12/24/2021
43	0.0006	0.0002	0.0000	11/6/2021	10/28/2022
AJ3	0.0260	0.0000	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0738	0.0607	0.0082

CALCULATED WALL THICKNESS REMAINING:

0.1572	0.1813	0.2988

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 27

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2340	0.2430	0.3170

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0198	0.0159	0.0177	9/15/2000	9/15/2000
22	0.0003	0.0037	0.0000	11/22/2000	5/14/2001
23	0.0005	0.0008	0.0005	5/14/2001	5/11/2002
24	0.0021	0.0007	0.0005	5/11/2002	5/24/2003
25	0.0001	0.0001	0.0001	5/24/2003	4/24/2004
26	0.0014	0.0011	0.0013	4/24/2004	5/21/2005
27	0.0010	0.0007	0.0006	5/21/2005	5/20/2006
28	0.0012	0.0014	0.0016	5/20/2006	5/20/2007
29	0.0016	0.0007	0.0006	5/20/2007	5/11/2008
30	0.0024	0.0007	0.0005	5/11/2008	5/17/2009
31	0.0023	0.0010	0.0010	5/17/2009	5/23/2010
32	0.0018	0.0014	0.0010	5/23/2010	9/15/2011
33	0.0019	0.0012	0.0014	9/15/2011	11/18/2012
34	0.0020	0.0012	0.0005	11/18/2012	10/30/2013
35	0.0011	0.0005	0.0011	10/30/2013	10/30/2014
36	0.0005	0.0002	0.0001	10/30/2014	10/15/2015
37	0.0001	0.0002	0.0002	10/15/2015	10/16/2016
38	0.0001	0.0001	0.0001	10/16/2016	10/16/2017
39	0.0015	0.0007	0.0005	10/16/2017	10/15/2018
40	0.0003	0.0001	0.0001	10/15/2018	12/13/2019
41	0.0006	0.0003	0.0002	12/13/2019	11/6/2020
42	0.0006	0.0003	0.0002	11/6/2020	12/24/2021
43	0.0011	0.0009	0.0003	12/24/2021	10/28/2022
AJ2	0.0340	0.0230	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0783	0.0569	0.0301

CALCULATED WALL THICKNESS REMAINING:

0.1557	0.1861	0.2869

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 29

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2300	0.2370	0.3110

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
22	0.0002	0.0000	0.0002	11/22/2000	5/14/2001
AJ1	0.0141	0.0164	0.0180	9/15/2001	9/15/2001
23	0.0012	0.0006	0.0004	5/14/2001	5/11/2002
24	0.0010	0.0008	0.0006	5/11/2002	5/24/2003
25	0.0010	0.0016	0.0004	5/24/2003	4/24/2004
26	0.0008	0.0005	0.0005	4/24/2004	5/21/2005
27	0.0010	0.0005	0.0003	5/21/2005	5/20/2006
28	0.0008	0.0011	0.0012	5/20/2006	5/20/2007
29	0.0008	0.0000	0.0001	5/20/2007	5/11/2008
30	0.0019	0.0006	0.0006	5/11/2008	5/17/2009
31	0.0014	0.0004	0.0003	5/17/2009	5/23/2010
32	0.0004	0.0004	0.0003	5/23/2010	9/15/2011
33	0.0000	0.0007	0.0005	9/15/2011	11/18/2012
AJ2	0.0164	0.0000	0.0000	9/23/2013	9/23/2013
34	0.0000	0.0003	0.0006	11/18/2012	10/30/2013
35	0.0002	0.0002	0.0005	10/30/2013	10/30/2014
36	0.0004	0.0004	0.0007	10/30/2014	10/15/2015
37	0.0004	0.0006	0.0003	10/15/2015	10/16/2016
38	0.0003	0.0004	0.0005	10/16/2016	10/16/2017
39	0.0005	0.0005	0.0005	10/16/2017	10/15/2018
40	0.0001	0.0004	0.0002	10/15/2018	12/13/2019
41	0.0003	0.0001	0.0004	12/13/2019	11/6/2020
42	0.0001	0.0004	0.0004	11/6/2020	12/24/2021
43	0.0001	0.0004	0.0004	12/24/2021	10/28/2022
AJ3	-0.0180	-0.0150	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0254	0.0123	0.0279

CALCULATED WALL THICKNESS REMAINING:

0.2046	0.2247	0.2831

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 30

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2260	0.2420	0.3160

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
22	0.0000	0.0000	0.0000	11/22/2000	5/14/2001
AJ1	0.0125	0.0197	0.0005	9/15/2001	9/15/2001
23	0.0007	0.0005	0.0005	5/14/2001	5/11/2002
24	0.0006	0.0004	0.0007	5/11/2002	5/24/2003
25	0.0028	0.0013	0.0003	5/24/2003	4/24/2004
26	0.0013	0.0008	0.0004	4/24/2004	5/21/2005
27	0.0009	0.0012	0.0008	5/21/2005	5/20/2006
28	0.0002	0.0008	0.0012	5/20/2006	5/20/2007
29	0.0008	0.0002	0.0007	5/20/2007	5/11/2008
30	0.0013	0.0007	0.0009	5/11/2008	5/17/2009
31	0.0014	0.0008	0.0008	5/17/2009	5/23/2010
32	0.0003	0.0002	0.0002	5/23/2010	9/15/2011
33	0.0009	0.0008	0.0007	9/15/2011	11/18/2012
AJ2	0.0233	0.0000	0.0000	9/23/2013	9/23/2013
34	0.0013	0.0004	0.0013	11/18/2012	10/30/2013
35	0.0011	0.0004	0.0007	10/30/2013	10/30/2014
36	0.0007	0.0009	0.0008	10/30/2014	10/15/2015
37	0.0001	0.0003	0.0005	10/15/2015	10/16/2016
38	0.0002	0.0005	0.0008	10/16/2016	10/16/2017
AJ3	0.0276	0.0301	0.0000	8/27/2018	8/27/2018
39	0.0003	0.0002	0.0006	10/16/2017	10/15/2018
40	0.0002	0.0002	0.0004	10/15/2018	12/13/2019
41	0.0001	0.0002	0.0004	12/13/2019	11/6/2020
42	0.0003	0.0002	0.0006	11/6/2020	12/24/2021
43	0.0002	0.0002	0.0002	12/24/2021	10/28/2022
AJ4	0.0000	0.0000	0.0130	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0791	0.0610	0.0270

CALCULATED WALL THICKNESS REMAINING:

0.1469	0.1810	0.2890

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 31

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2230	0.2400	0.3200

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
22	0.0000	0.0001	0.0000	11/22/2000	5/14/2001
AJ1	0.0180	0.0153	0.0174	9/15/2001	9/15/2001
23	0.0012	0.0003	0.0006	5/14/2001	5/11/2002
24	0.0016	0.0012	0.0010	5/11/2002	5/24/2003
25	0.0004	0.0003	0.0003	5/24/2003	4/24/2004
26	0.0005	0.0008	0.0004	4/24/2004	5/21/2005
27	0.0011	0.0010	0.0013	5/21/2005	5/20/2006
28	0.0005	0.0007	0.0009	5/20/2006	5/20/2007
29	0.0021	0.0008	0.0005	5/20/2007	5/11/2008
30	0.0021	0.0008	0.0008	5/11/2008	5/17/2009
31	0.0013	0.0015	0.0005	5/17/2009	5/23/2010
32	0.0013	0.0007	0.0007	5/23/2010	9/15/2011
33	0.0002	0.0013	0.0005	9/15/2011	11/18/2012
AJ2	0.0000	0.0122	0.0000	9/23/2013	9/23/2013
34	0.0004	0.0016	0.0012	11/18/2012	10/30/2013
35	0.0003	0.0002	0.0002	10/30/2013	10/30/2014
36	0.0015	0.0009	0.0006	10/30/2014	10/15/2015
37	0.0002	0.0001	0.0001	10/15/2015	10/16/2016
38	0.0002	0.0005	0.0003	10/16/2016	10/16/2017
39	0.0000	0.0001	0.0001	10/16/2017	10/15/2018
40	0.0002	0.0008	0.0011	10/15/2018	12/13/2019
41	0.0004	0.0003	0.0002	12/13/2019	11/6/2020
42	0.0011	0.0011	0.0010	11/6/2020	12/24/2021
43	0.0000	0.0000	0.0006	12/24/2021	10/28/2022
AJ3	0.0600	0.0200	0.0000	5/15/203	5/15/2023

CUMULATIVE METAL LOSS:

0.0946	0.0626	0.0303

CALCULATED WALL THICKNESS REMAINING:

0.1284	0.1774	0.2897

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 33

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2240	0.2350	0.3110

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
22	0.0003	0.0007	0.0010	11/22/2000	5/14/2001
AJ1	0.0201	0.0165	0.0151	9/15/2001	9/15/2001
23	0.0014	0.0007	0.0008	5/14/2001	5/11/2002
24	0.0016	0.0007	0.0007	5/11/2002	5/24/2003
25	0.0010	0.0014	0.0009	5/24/2003	4/24/2004
26	0.0008	0.0011	0.0011	4/24/2004	5/21/2005
27	0.0011	0.0010	0.0009	5/21/2005	5/20/2006
28	0.0010	0.0006	0.0007	5/20/2006	5/20/2007
29	0.0010	0.0002	0.0001	5/20/2007	5/11/2008
30	0.0009	0.0007	0.0005	5/11/2008	5/17/2009
31	0.0009	0.0004	0.0005	5/17/2009	5/23/2010
32	0.0013	0.0002	0.0002	5/23/2010	9/15/2011
33	0.0025	0.0012	0.0007	9/15/2011	11/18/2012
34	0.0000	0.0006	0.0003	11/18/2012	10/30/2013
35	0.0006	0.0002	0.0002	10/30/2013	10/30/2014
36	0.0008	0.0002	0.0002	10/30/2014	10/15/2015
37	0.0003	0.0001	0.0002	10/15/2015	10/16/2016
38	0.0001	0.0007	0.0004	10/16/2016	10/16/2017
AJ2	0.0000	0.0248	0.0000	8/27/2018	8/27/2018
39	0.0006	0.0003	0.0002	10/16/2017	10/15/2018
40	0.0007	0.0009	0.0005	10/15/2018	12/13/2019
41	0.0005	0.0005	0.0003	12/13/2019	11/6/2020
42	0.0009	0.0009	0.0012	11/6/2020	12/24/2021
43	0.0003	0.0007	0.0003	12/24/2021	10/28/2022
AJ3	0.0240	0.0000	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0627	0.0553	0.0270

CALCULATED WALL THICKNESS REMAINING:

0.1613	0.1797	0.2840

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 34

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2280	0.2410	0.3120

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0010	0.0002	0.0000	11/24/2000	5/15/2001
AJ1	0.0148	0.0186	0.0000	9/15/2001	9/15/2001
22	0.0025	0.0028	0.0000	5/15/2001	10/16/2001
23	0.0009	0.0010	0.0013	10/16/2001	5/11/2002
24	0.0010	0.0013	0.0012	5/11/2002	5/24/2003
25	0.0005	0.0006	0.0006	5/24/2003	4/24/2004
26	0.0002	0.0011	0.0008	4/24/2004	5/21/2005
27	0.0006	0.0012	0.0007	5/21/2005	5/20/2006
28	0.0003	0.0004	0.0005	5/20/2006	5/20/2007
29	0.0002	0.0000	0.0001	5/20/2007	5/11/2008
30	0.0009	0.0009	0.0006	5/11/2008	5/17/2009
31	0.0001	0.0000	0.0005	5/17/2009	5/23/2010
32	0.0011	0.0011	0.0006	5/23/2010	9/15/2011
33	0.0005	0.0012	0.0007	9/15/2011	11/18/2012
34	0.0007	0.0008	0.0000	11/18/2012	10/30/2013
35	0.0003	0.0004	0.0007	10/30/2013	10/30/2014
36	0.0007	0.0012	0.0005	10/30/2014	10/15/2015
37	0.0002	0.0001	0.0001	10/15/2015	10/16/2016
38	0.0008	0.0010	0.0010	10/16/2016	10/16/2017
39	0.0010	0.0005	0.0005	10/16/2017	10/15/2018
40	0.0005	0.0002	0.0043	10/15/2018	12/12/2019
41	0.0005	0.0003	0.0003	12/13/2019	11/6/2020
43	0.0003	0.0002	0.0002	12/24/2021	10/28/2021
42	0.0005	0.0006	0.0004	11/6/2020	12/24/2021
AJ2	0.0190	0.0240	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0491	0.0597	0.0156

CALCULATED WALL THICKNESS REMAINING:

0.1789	0.1813	0.2964

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 35

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2330	0.2330	0.3130

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0459	0.0321	0.0085	5/17/2009	5/17/2009
39	0.0004	0.0003	0.0004	5/17/2009	11/28/2009
40	0.0011	0.0005	0.0004	11/28/2009	5/23/2010
41	0.0006	0.0007	0.0007	5/23/2010	12/2/2010
42	0.0001	0.0003	0.0003	12/2/2010	9/15/2011
43	0.0000	0.0000	0.0001	9/15/2011	5/23/2012
44	0.0000	0.0006	0.0003	5/23/2012	11/18/2012
45	0.0000	0.0000	0.0000	11/18/2012	7/13/2013
46	0.0004	0.0008	0.0008	7/13/2013	10/30/2013
47	0.0000	0.0001	0.0001	10/30/2013	4/17/2014
48	0.0001	0.0003	0.0003	4/17/2014	10/30/2014
49	0.0002	0.0003	0.0004	10/30/2014	4/29/2015
50	0.0012	0.0009	0.0009	4/29/2015	10/15/2015
51	0.0001	0.0000	0.0001	10/15/2015	4/26/2016
52	0.0002	0.0003	0.0002	4/26/2016	10/16/2016
53	0.0000	0.0000	0.0000	10/16/2016	4/21/2017
54	0.0005	0.0007	0.0003	4/21/2017	10/16/2017
55	0.0002	0.0004	0.0005	10/16/2017	4/21/2018
56	0.0013	0.0004	0.0005	4/21/2018	10/15/2018
57	0.0002	0.0009	0.0010	10/15/2018	4/17/2019
58	0.0012	0.0010	0.0019	4/17/2019	12/13/2019
59	0.0005	0.0005	0.0008	12/13/2019	5/18/2020
60	0.0005	0.0006	0.0015	5/18/2020	11/6/2020
60	0.0004	0.0005	0.0009	11/6/2020	4/13/2021
62	0.0014	0.0012	0.0025	4/13/2021	12/24/2021
63	0.0004	0.0003	0.0014	12/24/2021	6/16/2022
64	0.0005	0.0007	0.0009	6/16/2022	10/28/2022
65	0.0012	0.0004	0.0009	10/28/2022	4/14/2023
AJ2	0.0210	0.0000	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0796	0.0448	0.0266

CALCULATED WALL THICKNESS REMAINING:

0.1534	0.1882	0.2864

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 36

In-Service Date 7/1/1983 Monitoring Start Date 7/24/1987

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2060	0.2160	0.3100

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0223	0.0090	0.0098	5/17/2009	5/17/2009
39	0.0003	0.0007	0.0005	5/17/2009	11/28/2009
40	0.0004	0.0009	0.0003	11/28/2009	5/23/2010
41	0.0003	0.0009	0.0004	5/23/2010	12/2/2010
42	0.0001	0.0006	0.0008	12/2/2010	9/15/2011
43	0.0003	0.0003	0.0001	9/15/2011	5/23/2012
44	0.0003	0.0013	0.0009	5/23/2012	11/18/2012
45	0.0007	0.0008	0.0009	11/18/2012	7/13/2013
AJ2	0.0393	0.0000	0.0000	9/23/2013	9/23/2013
46	0.0000	0.0011	0.0007	7/13/2013	10/30/2013
47	0.0000	0.0000	0.0000	10/30/2013	4/17/2014
48	0.0001	0.0005	0.0005	4/17/2014	10/30/2014
49	0.0000	0.0002	0.0002	10/30/2014	4/29/2015
50	0.0023	0.0011	0.0007	4/29/2015	10/15/2015
51	0.0001	0.0000	0.0000	10/15/2015	4/26/2016
52	0.0004	0.0001	0.0004	4/26/2016	10/16/2016
53	0.0000	0.0000	0.0003	10/16/2016	4/21/2017
54	0.0001	0.0002	0.0001	4/21/2017	10/16/2017
55	0.0001	0.0002	0.0002	10/16/2017	4/21/2018
AJ3	0.0000	0.0191	0.0000	8/27/2018	8/27/2018
56	0.0002	0.0001	0.0001	4/21/2018	10/15/2018
57	0.0001	0.0002	0.0006	10/15/2018	4/17/2019
58	0.0009	0.0011	0.0014	4/17/2019	12/13/2019
59	0.0004	0.0004	0.0006	12/13/2019	5/18/2020
60	0.0004	0.0005	0.0007	5/18/2020	11/6/2020
60	0.0002	0.0002	0.0011	11/6/2020	4/13/2021
62	0.0017	0.0005	0.0005	4/13/2021	12/24/2021
63	0.0005	0.0003	0.0003	12/24/2021	6/16/2022
64	0.0003	0.0002	0.0005	6/16/2022	10/28/2022
65	0.0005	0.0002	0.0003	10/28/2022	4/14/2023
AJ4	0.0120	0.0000	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0843	0.0407	0.0229

CALCULATED WALL THICKNESS REMAINING:

0.1217	0.1753	0.2871

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 39

In-Service Date 1/1/1988 Monitoring Start Date 3/15/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0002	0.0000	0.0000	11/24/2000	5/15/2001
AJ1	0.0227	0.0128	0.0147	9/15/2001	9/15/2001
22	0.0013	0.0010	0.0005	5/15/2001	5/12/2002
23	0.0008	0.0001	0.0006	5/15/2002	4/12/2003
24	0.0004	0.0018	0.0008	4/12/2003	4/24/2004
25	0.0009	0.0006	0.0006	4/24/2004	5/8/2005
26	0.0010	0.0004	0.0006	5/8/2005	5/21/2006
27	0.0019	0.0004	0.0004	5/21/2006	5/20/2007
28	0.0006	0.0002	0.0004	5/20/2007	5/11/2008
29	0.0013	0.0008	0.0006	5/11/2008	5/12/2009
30	0.0016	0.0003	0.0003	5/12/2009	5/20/2010
31	0.0014	0.0004	0.0004	5/20/2010	9/15/2011
32	0.0010	0.0005	0.0011	9/15/2011	11/18/2012
33	0.0012	0.0003	0.0002	11/18/2012	10/16/2013
34	0.0005	0.0002	0.0003	10/16/2013	10/30/2014
35	0.0005	0.0001	0.0001	10/30/2014	10/15/2015
36	0.0012	0.0011	0.0002	10/15/2015	10/16/2016
37	0.0008	0.0005	0.0004	10/16/2016	10/16/2017
38	0.0010	0.0005	0.0003	10/16/2017	10/15/2018
39	0.0001	0.0001	0.0000	10/15/2018	12/13/2019
40	0.0008	0.0006	0.0002	12/13/2019	11/6/2020
41	0.0008	0.0006	0.0005	11/6/2020	12/24/2021
42	0.0023	0.0016	0.0006	12/24/2021	10/28/2022
AJ2	0.0000	0.0150	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0443	0.0399	0.0238

CALCULATED WALL THICKNESS REMAINING:

0.3307	0.3351	0.3512

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 43

In-Service Date 1/1/1988 Monitoring Start Date 3/15/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0002	0.0002	0.0000	11/24/2000	5/15/2001
AJ1	0.0142	0.0142	0.0021	9/15/2001	9/15/2001
22	0.0013	0.0017	0.0003	5/15/2001	5/12/2002
23	0.0013	0.0004	0.0002	5/12/2002	4/12/2003
24	0.0003	0.0007	0.0007	4/12/2003	4/24/2004
25	0.0007	0.0003	0.0002	4/24/2004	5/8/2005
26	0.0018	0.0006	0.0022	5/8/2005	5/21/2006
27	0.0014	0.0011	0.0004	5/21/2006	5/20/2007
28	0.0011	0.0010	0.0009	5/20/2007	5/11/2008
29	0.0019	0.0004	0.0003	5/11/2008	5/12/2009
30	0.0004	0.0007	0.0005	5/12/2009	5/20/2010
31	0.0008	0.0005	0.0003	5/20/2010	9/15/2011
32	0.0007	0.0003	0.0003	9/15/2011	11/18/2012
33	0.0013	0.0003	0.0007	11/18/2012	10/16/2013
34	0.0028	0.0015	0.0009	10/16/2013	10/30/2014
35	0.0007	0.0004	0.0003	10/30/2014	10/15/2015
36	0.0006	0.0004	0.0004	10/15/2015	10/16/2016
37	0.0005	0.0011	0.0011	10/16/2016	10/16/2017
38	0.0011	0.0003	0.0004	10/16/2017	10/15/2018
39	0.0003	0.0002	0.0001	10/15/2018	12/31/2019
40	0.0005	0.0001	0.0001	12/13/2019	11/6/2020
41	0.0006	0.0005	0.0006	11/6/2020	12/24/2021
42	0.0002	0.0001	0.0002	12/24/2021	10/28/2022
AJ2	0.0420	0.0000	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0767	0.0270	0.0132

CALCULATED WALL THICKNESS REMAINING:

0.2983	0.3480	0.3618

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 47

In-Service Date 1/1/1988 Monitoring Start Date 3/15/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0002	0.0001	0.0000	11/24/2000	5/15/2001
AJ1	0.0142	0.0058	0.0075	9/15/2001	9/15/2001
22	0.0013	0.0001	0.0000	5/15/2001	5/12/2002
23	0.0001	0.0000	0.0000	5/12/2002	4/12/2003
24	0.0000	0.0000	0.0000	4/12/2003	4/24/2004
25	0.0002	0.0000	0.0000	4/24/2004	5/8/2005
26	0.0000	0.0000	0.0000	5/8/2005	5/21/2006
27	0.0002	0.0002	0.0002	5/21/2006	5/20/2007
28	0.0009	0.0001	0.0001	5/20/2007	5/11/2008
29	0.0001	0.0001	0.0001	5/11/2008	5/12/2009
30	0.0000	0.0001	0.0000	5/12/2009	5/20/2010
31	0.0006	0.0001	0.0001	5/20/2010	9/15/2011
32	0.0000	0.0000	0.0000	9/15/2011	11/18/2012
33	0.0000	0.0000	0.0000	11/18/2012	10/16/2013
34	0.0000	0.0005	0.0002	10/16/2013	10/30/2014
35	0.0000	0.0000	0.0000	10/30/2014	10/15/2015
36	0.0001	0.0001	0.0001	10/15/2015	10/16/2016
37	0.0001	0.0001	0.0000	10/16/2016	10/16/2017
AJ2	0.0000	0.0237	0.0000	8/27/2018	8/27/2018
38	0.0003	0.0001	0.0001	10/16/2017	10/15/2018
39	0.0001	0.0001	0.0001	10/15/2018	12/13/2019
40	0.0001	0.0000	0.0001	12/13/2019	11/6/2020
41	0.0002	0.0001	0.0000	11/6/2020	12/24/2021
42	0.0000	0.0000	0.0000	12/24/2021	10/28/2022
AJ3	0.0230	0.0110	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0417	0.0423	0.0086

CALCULATED WALL THICKNESS REMAINING:

0.3333	0.3327	0.3664

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 48

In-Service Date 1/1/1988 Monitoring Start Date 3/15/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0001	0.0000	0.0001	11/24/2000	5/15/2001
AJ1	0.0081	0.0037	0.0036	9/15/2001	9/15/2001
22	0.0013	0.0005	0.0001	5/15/2001	5/12/2002
23	0.0001	0.0000	0.0000	5/12/2002	4/12/2003
24	0.0000	0.0000	0.0000	4/12/2003	4/24/2004
25	0.0000	0.0000	0.0000	4/24/2004	5/8/2005
26	0.0000	0.0000	0.0001	5/8/2005	5/21/2006
27	0.0003	0.0001	0.0002	5/21/2006	5/20/2007
28	0.0021	0.0003	0.0002	5/20/2007	5/11/2008
29	0.0004	0.0005	0.0004	5/11/2008	5/12/2009
30	0.0003	0.0003	0.0001	5/12/2009	5/20/2010
31	0.0001	0.0002	0.0002	5/20/2010	9/15/2011
32	0.0004	0.0007	0.0003	9/15/2011	11/18/2012
33	0.0001	0.0001	0.0001	11/18/2012	10/16/2013
34	0.0005	0.0003	0.0000	10/16/2013	10/30/2014
35	0.0000	0.0001	0.0001	10/30/2014	10/15/2015
36	0.0001	0.0001	0.0001	10/15/2015	10/16/2016
37	0.0000	0.0001	0.0001	10/16/2016	10/16/2017
AJ2	0.0620	0.0250	0.0263	8/27/2018	8/27/2018
38	0.0001	0.0001	0.0001	10/16/2017	10/15/2018
39	0.0001	0.0001	0.0002	10/15/2018	12/13/2019
40	0.0000	0.0001	0.0001	12/13/2019	11/6/2020
41	0.0000	0.0000	0.0000	11/6/2020	12/24/2021
42	0.0000	0.0001	0.0001	12/24/2021	10/28/2022
AJ3	0.0000	-0.0170	-0.0240	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0761	0.0154	0.0085

CALCULATED WALL THICKNESS REMAINING:

0.2989	0.3596	0.3665

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 49

In-Service Date 1/1/1988 Monitoring Start Date 3/15/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0000	0.0000	0.0000	11/24/2000	5/15/2001
AJ1	0.0110	0.0025	0.0038	9/15/2001	9/15/2001
22	0.0016	0.0002	0.0001	5/15/2001	5/12/2002
23	0.0000	0.0001	0.0001	5/12/2002	4/12/2003
24	0.0000	0.0000	0.0000	4/12/2003	4/24/2004
25	0.0000	0.0002	0.0000	4/24/2004	5/8/2005
26	0.0000	0.0004	0.0004	5/8/2005	5/21/2006
27	0.0003	0.0007	0.0003	5/21/2006	5/20/2007
28	0.0020	0.0005	0.0003	5/20/2007	5/11/2008
29	0.0004	0.0004	0.0004	5/11/2008	5/12/2009
30	0.0000	0.0004	0.0004	5/12/2009	5/20/2010
31	0.0004	0.0002	0.0002	5/20/2010	9/15/2011
32	0.0002	0.0002	0.0002	9/15/2011	11/18/2012
AJ2	0.0121	0.0000	0.0000	9/24/2013	9/24/2013
33	0.0000	0.0000	0.0001	11/18/2013	10/16/2014
34	0.0001	0.0000	0.0001	10/16/2014	10/30/2014
35	0.0000	0.0001	0.0001	10/30/2014	10/15/2015
36	0.0001	0.0002	0.0001	10/15/2015	10/16/2016
37	0.0000	0.0001	0.0001	10/16/2016	10/16/2017
AJ3	0.0168	0.0240	0.0250	8/27/2018	8/27/2018
38	0.0003	0.0001	0.0001	10/16/2017	10/15/2018
39	0.0002	0.0002	0.0002	10/15/2018	12/13/2019
40	0.0005	0.0000	0.0003	12/13/2019	11/6/2020
41	0.0001	0.0000	0.0000	11/6/2020	12/24/2021
42	0.0001	0.0001	0.0001	12/24/2021	10/28/2022
AJ4	0.0000	0.0000	-0.0240	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0462	0.0306	0.0084

CALCULATED WALL THICKNESS REMAINING:

0.3288	0.3444	0.3666

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 53

In-Service Date 1/1/1988 Monitoring Start Date 3/16/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0010	0.0000	0.0007	11/25/2000	5/18/2001
AJ1	0.0053	0.0000	0.0087	9/15/2001	9/15/2001
22	0.0086	0.0000	0.0000	5/18/2001	5/12/2002
23	0.0013	0.0000	0.0000	5/12/2002	4/12/2003
24	0.0015	0.0009	0.0000	4/12/2003	4/25/2004
25	0.0019	0.0007	0.0000	4/25/2004	5/8/2005
26	0.0049	0.0006	0.0000	5/8/2005	5/21/2006
27	0.0023	0.0021	0.0000	5/21/2006	5/20/2007
28	0.0022	0.0010	0.0000	5/20/2007	5/11/2008
29	0.0026	0.0004	0.0000	5/11/2008	5/9/2009
30	0.0024	0.0004	0.0000	5/9/2009	5/19/2010
31	0.0028	0.0014	0.0000	5/19/2010	9/15/2011
32	0.0023	0.0008	0.0000	9/15/2011	11/18/2012
33	0.0025	0.0006	0.0000	11/18/2012	10/16/2013
34	0.0015	0.0004	0.0000	10/16/2013	10/30/2014
35	0.0022	0.0005	0.0000	10/30/2014	10/15/2015
36	0.0028	0.0009	0.0000	10/15/2016	10/16/2016
37	0.0010	0.0006	0.0000	10/16/2016	10/16/2017
AJ2	0.0000	0.0000	0.0116	8/27/2018	8/27/2018
38	0.0042	0.0014	0.0000	10/16/2017	10/15/2018
39	0.0035	0.0002	0.0000	10/15/2018	12/13/2019
40	0.0020	0.0008	0.0000	12/13/2019	11/6/2020
41	0.0043	0.0008	0.0000	11/6/2020	12/24/2021
42	0.0005	0.0012	0.0011	12/24/2021	10/28/2022
AJ3	-0.0350	0.0000	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0286	0.0157	0.0221

CALCULATED WALL THICKNESS REMAINING:

0.3464	0.3593	0.3529

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 54

In-Service Date 1/1/1988 Monitoring Start Date 3/16/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0160	0.0000	0.0064	5/18/2008	5/18/2008
29	0.0040	0.0044	0.0000	5/10/2008	5/9/2009
30	0.0015	0.0006	0.0000	5/9/2009	5/19/2010
31	0.0008	0.0002	0.0000	5/19/2010	9/15/2011
32	0.0013	0.0003	0.0000	9/15/2011	11/18/2012
AJ2	0.0000	0.0115	0.0000	9/24/2013	9/24/2013
33	0.0003	0.0015	0.0000	11/18/2012	10/16/2013
34	0.0003	0.0002	0.0000	10/16/2013	10/30/2014
35	0.0018	0.0004	0.0000	10/30/2014	10/15/2015
36	0.0020	0.0007	0.0000	10/15/2015	10/16/2016
37	0.0022	0.0005	0.0000	10/16/2016	10/16/2017
AJ3	0.0000	0.0000	0.0146	8/27/2018	8/27/2018
38	0.0029	0.0006	0.0000	10/16/2017	10/15/2018
39	0.0025	0.0009	0.0000	10/15/2018	12/13/2019
40	0.0034	0.0004	0.0000	12/13/2019	11/6/2020
41	0.0024	0.0012	0.0000	11/6/2020	12/24/2021
42	0.0022	0.0005	0.0000	12/24/2021	10/28/2022
AJ4	0.0000	0.0180	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0436	0.0419	0.0210

CALCULATED WALL THICKNESS REMAINING:

0.3314	0.3331	0.3540

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 55

In-Service Date 1/1/1988 Monitoring Start Date 3/16/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0000	0.0001	0.0000	11/25/2000	5/18/2001
AJ1	0.0000	0.0096	0.0000	9/15/2001	9/15/2001
22	0.0093	0.0004	0.0000	5/18/2001	5/12/2002
23	0.0000	0.0005	0.0000	5/12/2002	4/12/2003
24	0.0000	0.0007	0.0000	4/12/2003	4/25/2004
25	0.0000	0.0002	0.0000	4/25/2004	5/8/2005
26	0.0056	0.0013	0.0000	5/8/2008	5/21/2006
27	0.0000	0.0003	0.0000	5/21/2006	5/20/2007
28	0.0001	0.0009	0.0000	5/20/2007	5/11/2008
29	0.0036	0.0004	0.0003	5/11/2008	5/9/2009
30	0.0027	0.0005	0.0005	5/9/2009	5/19/2010
31	0.0028	0.0012	0.0018	5/19/2010	9/15/2011
32	0.0019	0.0002	0.0001	9/15/2011	11/18/2012
AJ2	0.0000	0.0000	0.0403	9/24/2013	9/24/2013
33	0.0023	0.0003	0.0004	11/18/2012	10/16/2013
34	0.0012	0.0005	0.0004	10/16/2013	10/30/2014
35	0.0014	0.0002	0.0001	10/30/2014	10/15/2015
36	0.0023	0.0004	0.0003	10/15/2015	10/16/2016
37	0.0035	0.0003	0.0005	10/16/2016	10/16/2017
38	0.0011	0.0003	0.0002	10/16/2017	10/15/2018
39	0.0018	0.0004	0.0005	10/15/2018	12/13/2019
40	0.0012	0.0004	0.0003	12/13/2019	11/6/2020
41	0.0044	0.0007	0.0005	11/6/2020	12/24/2021
42	0.0014	0.0003	0.0008	12/24/2021	10/28/2022
AJ3	0.0000	0.0330	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0466	0.0531	0.0470

CALCULATED WALL THICKNESS REMAINING:

0.3284	0.3219	0.3280

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 57

In-Service Date 1/1/1988 Monitoring Start Date 3/16/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
21	0.0001	0.0001	0.0000	11/25/2000	5/18/2001
AJ1	0.0000	0.0084	0.0000	9/15/2001	9/15/2001
22	0.0000	0.0028	0.0000	5/18/2001	5/12/2002
23	0.0012	0.0004	0.0000	5/12/2002	4/12/2003
24	0.0008	0.0009	0.0000	4/12/2003	4/24/2004
AJ2	0.0153	0.0000	0.0000	4/25/2004	4/25/2004
25	0.0014	0.0009	0.0000	4/24/2004	5/8/2005
26	0.0050	0.0010	0.0000	5/8/2005	5/21/2006
27	0.0022	0.0003	0.0000	5/21/2006	5/20/2007
28	0.0036	0.0008	0.0000	5/20/2007	5/11/2008
29	0.0025	0.0003	0.0002	5/11/2008	5/9/2009
30	0.0026	0.0005	0.0005	5/9/2009	5/19/2010
31	0.0045	0.0023	0.0017	5/19/2010	9/15/2011
32	0.0029	0.0004	0.0003	9/15/2011	11/18/2012
33	0.0005	0.0003	0.0004	11/18/2012	10/16/2013
34	0.0005	0.0008	0.0001	10/16/2013	10/30/2014
35	0.0025	0.0004	0.0003	10/30/2014	10/15/2015
36	0.0025	0.0012	0.0012	10/15/2015	10/16/2016
37	0.0029	0.0001	0.0001	10/16/2016	10/16/2017
38	0.0031	0.0004	0.0004	10/16/2017	10/15/2018
39	0.0032	0.0006	0.0007	10/15/2018	12/13/2019
40	0.0013	0.0005	0.0003	12/13/2019	11/6/2020
41	0.0045	0.0002	0.0004	11/6/2020	12/24/2021
42	0.0014	0.0002	0.0002	12/24/2021	10/28/2022
AJ3	-0.0290	0.0000	0.0350	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0355	0.0238	0.0418

CALCULATED WALL THICKNESS REMAINING:

0.3395	0.3512	0.3332

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 67

In-Service Date 6/1/2005 Monitoring Start Date 5/12/2009

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2400	0.2410	0.3180

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
37	0.0000	0.0000	0.0000	5/12/2009	11/28/2009
38	0.0000	0.0000	0.0000	7/13/2013	10/30/2013
39	0.0000	0.0000	0.0000	10/30/2013	4/17/2014
40	0.0000	0.0000	0.0000	4/17/2014	10/30/2014
41	0.0000	0.0000	0.0000	10/30/2014	4/14/2015
42	0.0000	0.0000	0.0000	4/14/2015	10/15/2015
43	0.0000	0.0000	0.0000	10/15/2015	4/26/2016
44	0.0000	0.0001	0.0000	4/26/2016	10/16/2016
45	0.0000	0.0000	0.0000	10/16/2016	4/21/2017
46	0.0000	0.0000	0.0000	4/16/2017	10/16/2017
47	0.0000	0.0000	0.0000	10/16/2017	4/21/2018
48	0.0000	0.0000	0.0000	4/21/2018	10/15/2018
49	0.0000	0.0000	0.0000	10/15/2018	4/17/2019
50	0.0000	0.0000	0.0000	4/17/2019	12/13/2019
51	0.0000	0.0000	0.0000	12/13/2019	5/18/2020
52	0.0000	0.0000	0.0000	5/18/2020	11/6/2020
53	0.0000	0.0000	0.0000	11/6/2020	4/13/2021
54	0.0000	0.0000	0.0000	4/13/2021	12/24/2021
55	0.0000	0.0000	0.0000	12/24/2021	6/16/2022
56	0.0000	0.0000	0.0000	6/16/2022	10/28/2022
57	0.0000	0.0000	0.0000	10/28/2022	4/14/2023
AJ1	0.0000	0.0000	0.0740	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0000	0.0001	0.0740

CALCULATED WALL THICKNESS REMAINING:

0.2400	0.2409	0.2440

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 68

In-Service Date 6/1/2005 Monitoring Start Date 5/12/2009

STARTING WALL THICKNESSES

Top	Middl	Botto
0.2410	0.2410	0.3170

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
37	0.0000	0.0000	0.0000	5/12/2009	11/28/2009
38	0.0000	0.0000	0.0000	7/13/2013	10/30/2013
39	0.0000	0.0000	0.0000	10/30/2013	4/17/2014
40	0.0000	0.0000	0.0000	4/17/2014	10/30/2014
41	0.0000	0.0000	0.0000	10/30/2014	4/14/2015
42	0.0000	0.0000	0.0000	4/14/2015	10/15/2015
43	0.0000	0.0000	0.0000	10/15/2015	4/26/2016
44	0.0000	0.0000	0.0000	4/26/2016	10/16/2016
45	0.0000	0.0000	0.0000	10/16/2016	4/21/2017
46	0.0000	0.0000	0.0000	4/21/2017	10/16/2017
47	0.0000	0.0000	0.0000	10/16/2017	4/21/2018
48	0.0000	0.0002	0.0000	4/21/2018	10/15/2018
49	0.0000	0.0000	0.0000	10/15/2018	4/17/2019
50	0.0000	0.0000	0.0000	4/17/2019	12/13/2019
51	0.0000	0.0000	0.0000	12/13/2019	5/18/2020
52	0.0000	0.0000	0.0000	5/18/2020	11/6/2020
53	0.0000	0.0000	0.0000	11/6/2020	4/13/2021
54	0.0000	0.0000	0.0000	4/13/2021	12/24/2021
55	0.0000	0.0000	0.0000	12/24/2021	6/16/2022
56	0.0000	0.0000	0.0000	6/16/2022	10/28/2022
57	0.0000	0.0000	0.0000	10/28/2022	4/14/2023
AJ1	0.0000	0.0000	0.0740	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0000	0.0002	0.0740

CALCULATED WALL THICKNESS REMAINING:

0.2410	0.2408	0.2430

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 70

In-Service Date 1/1/1988 Monitoring Start Date 3/16/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.3750	0.3750	0.3750

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0307	0.0305	0.0229	5/17/2009	5/17/2009
37	0.0001	0.0001	0.0001	5/17/2009	11/28/2009
38	0.0002	0.0003	0.0001	4/17/2014	10/30/2014
39	0.0000	0.0000	0.0000	10/30/2014	4/29/2015
40	0.0001	0.0001	0.0001	4/29/2015	10/15/2015
41	0.0000	0.0000	0.0000	10/15/2015	4/26/2016
42	0.0002	0.0002	0.0002	4/26/2016	10/16/2016
43	0.0001	0.0001	0.0001	10/16/2016	4/21/2017
44	0.0000	0.0001	0.0001	4/21/2017	10/16/2017
45	0.0001	0.0001	0.0001	10/16/2017	4/21/2018
46	0.0000	0.0000	0.0000	4/21/2018	10/15/2018
47	0.0001	0.0001	0.0001	10/15/2018	4/17/2019
48	0.0000	0.0000	0.0000	4/17/2019	12/13/2019
49	0.0000	0.0000	0.0000	12/13/2019	5/18/2020
50	0.0000	0.0000	0.0000	5/18/2020	11/6/2020
51	0.0000	0.0000	0.0000	11/6/2020	4/13/2021
52	0.0000	0.0000	0.0000	4/13/2021	12/24/2021
53	0.0000	0.0000	0.0000	12/24/2021	6/16/2022
54	0.0000	0.0000	0.0000	6/16/2022	10/28/2022
55	0.0000	0.0000	0.0000	10/28/2022	4/14/2023
AJ2	0.0000	0.0000	0.0530	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0316	0.0316	0.0768

CALCULATED WALL THICKNESS REMAINING:

0.3434	0.3434	0.2982

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 73

In-Service Date 1/1/1988 Monitoring Start Date 10/24/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.6160	0.6190	0.6540

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0245	0.0076	0.0280	5/17/2009	5/17/2009
37	0.0024	0.0015	0.0000	5/17/2009	11/28/2009
38	0.0020	0.0006	0.0000	11/28/2009	5/23/2010
39	0.0006	0.0005	0.0000	5/23/2010	12/2/2010
40	0.0019	0.0007	0.0000	12/2/2010	9/15/2011
41	0.0011	0.0005	0.0000	9/15/2011	5/23/2012
42	0.0000	0.0000	0.0000	5/23/2012	11/18/2012
43	0.0022	0.0013	0.0000	11/18/2012	7/13/2013
AJ2	-0.0157	0.0173	0.0260	9/24/2013	9/24/2013
44	0.0006	0.0001	0.0000	7/13/2013	10/16/2013
45	0.0001	0.0003	0.0000	10/16/2013	4/17/2014
46	0.0022	0.0005	0.0000	4/17/2014	10/30/2014
47	0.0007	0.0003	0.0000	10/30/2014	4/29/2015
48	0.0016	0.0002	0.0000	4/29/2015	10/15/2015
49	0.0003	0.0003	0.0000	10/15/2015	4/26/2016
50	0.0009	0.0025	0.0000	4/26/2016	10/16/2016
51	0.0003	0.0002	0.0000	10/16/2016	4/21/2017
52	0.0024	0.0003	0.0000	4/21/2017	10/16/2017
53	0.0018	0.0002	0.0000	10/16/2017	4/21/2018
54	0.0026	0.0001	0.0000	4/21/2018	10/15/2018
55	0.0002	0.0014	0.0000	10/15/2018	4/17/2019
56	0.0000	0.0000	0.0000	4/17/2019	12/13/2019
57	0.0048	0.0027	0.0000	4/17/2019	5/18/2020
58	0.0017	0.0004	0.0000	5/18/2020	11/6/2020
59	0.0001	0.0011	0.0000	11/6/2020	4/13/2021
60	0.0019	0.0054	0.0000	4/13/2021	12/24/2021
61	0.0011	0.0009		12/24/2021	6/16/2022
62	0.0038	0.0006	0.0000	6/16/2022	10/28/2022
63	0.0019	0.0006		10/28/2022	4/14/2023
AJ3	0.0000	0.0000	0.0500	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0480	0.0481	0.1040

CALCULATED WALL THICKNESS REMAINING:

0.5680	0.5709	0.5500

TANK MONITORING
CUMULATIVE METAL LOSS DATA

Tank Number 74

In-Service Date 1/1/1988 Monitoring Start Date 10/24/1988

STARTING WALL THICKNESSES

Top	Middl	Botto
0.6120	0.6170	0.6070

PERIOD METAL LOSS DATA:

PERIOD	TOP LOSS	MIDDLE LOSS	BOTTOM LOSS	START DATE	END DATE
AJ1	0.0046	0.0009	0.0000	5/17/2009	5/17/2009
37	0.0015	0.0019	0.0000	5/17/2009	11/28/2009
38	0.0020	0.0010	0.0000	11/28/2009	5/23/2010
39	0.0018	0.0009	0.0000	5/23/2010	12/2/2010
40	0.0039	0.0012	0.0000	12/2/2010	9/15/2011
41	0.0011	0.0004	0.0000	9/15/2011	5/23/2012
42	0.0000	0.0000	0.0000	5/23/2012	11/18/2012
43	0.0029	0.0017	0.0000	11/18/2012	7/13/2013
AJ2	0.0000	0.0000	0.0260	7/13/2013	9/24/2013
44	0.0009	0.0010	0.0000	9/24/2013	10/16/2013
45	0.0003	0.0003	0.0000	10/16/2013	4/17/2014
46	0.0016	0.0007	0.0000	4/17/2014	10/30/2014
47	0.0003	0.0002	0.0000	10/30/2014	4/29/2015
48	0.0016	0.0002	0.0000	4/29/2015	10/15/2015
49	0.0007	0.0001	0.0000	10/15/2015	4/26/2016
50	0.0009	0.0010	0.0000	4/26/2016	10/16/2016
51	0.0004	0.0005	0.0000	10/16/2016	4/21/2017
52	0.0020	0.0017	0.0000	4/21/2017	10/21/2017
53	0.0004	0.0003	0.0000	10/16/2017	4/21/2018
54	0.0008	0.0010	0.0000	4/21/2018	10/15/2018
55	0.0027	0.0009	0.0000	10/15/2018	4/17/2019
56	0.0000	0.0000	0.0000	4/17/2019	12/13/2019
57	0.0076	0.0028	0.0000	4/17/2019	5/18/2020
58	0.0024	0.0003	0.0000	5/18/2020	11/6/2020
59	0.0005	0.0003	0.0000	11/6/2020	4/13/2021
60	0.0035	0.0008	0.0000	4/13/2021	12/24/2021
61	0.0005	0.0003		12/24/2021	6/16/2022
62	0.0015	0.0017	0.0000	6/16/2022	10/28/2022
63	0.0003	0.0001		10/28/2022	4/14/2023
AJ3	0.0000	0.0210	0.0000	5/15/2023	5/15/2023

CUMULATIVE METAL LOSS:

0.0467	0.0432	0.0260

CALCULATED WALL THICKNESS REMAINING:

0.5653	0.5738	0.5810

Appendix D-2
Engineering Assessment of Secondary Containment Coating

Ross Incineration Services, Inc .

Appendix D-2
Engineering Assessment of Secondary Containment Coating

Table of Contents

ROSS INCINERATION SERVICES, INC.

394 GILES ROAD

GRAFTON, OHIO 44044

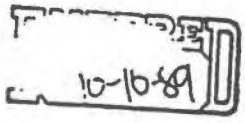
ENGINEERING ASSESSMENT OF SECONDARY CONTAINMENT COATING

September 21, 1989

Submitted By:

HOLK Environmental Services, Inc.
7777 Wall Street
Valley View, Ohio 44125

Phone: (216) 524-0888
Fax: (216) 524-2090



1.0 INTRODUCTION

ROSS Incineration Services, Inc. (hereinafter ROSS) is a commercial hazardous waste treatment and storage facility (TSDF). As such, ROSS is subject to regulations promulgated under the authority of the Resource Conservation and Recovery Act of 1976 and its subsequent amendments.

Title 40, Code of Federal Regulations, Part 264, Subpart J (Cited 40 CFR 264, Subpart J) and Ohio Administrative Code 3745-55-90 et seq, define the requirements for owners and operators of TSD facilities that use tank systems for storing and treating hazardous waste.

In order to prevent a release to the environment from any of the tanks, the regulations require secondary containment in the form of an "external liner" system be provided. The "external liner" system must be:

a. Designed or operated to contain 100 percent of the volume of the largest tank within its boundary (40 CFR 264.193(e)(1)(i) and 40 CFR 265.193(e)(1)(i));

b. Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 25-year, 24-hour rainfall event (40 CFR 264.193(e)(1)(ii) and 40 CFR 265.193(e)(1)(ii));

c. Constructed with chemical-resistant water stops in place at all joints (if any) (40 CFR 264.193(e)(2)(iii) and 40 CFR 265.193(e)(2)(iii) as provided in 53 FR 34084, Item 5);

d. Provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete (40 CFR 264.193(e)(2)(iv) and 40 CFR 265.193(e)(2)(iv) as provided in 53 FR 34084, Item 5).

In order to satisfy the above requirements, ROSS selected to coat the interior of the existing concrete containment surfaces with an impermeable coating. The coatings were selected to provide chemical resistance, weathering resistance and abrasion resistance.

Primer coatings selected were bright orange and bright red with final coatings of light gray or dark gray, respectively. The colors selected allow for easy detection of a breakdown in the integrity of the coating by visual inspection.

Routine visual inspections of the coated containment areas are conducted by ROSS personnel in compliance with the terms of this facilities' RCRA/TSDF Permit.

2.0 DESCRIPTION OF SECONDARY CONTAINMENT STRUCTURES

For the purposes of this report, the following is a list of the secondary containment areas that have been coated in order to prevent migration of hazardous chemicals into the soil. Hereinafter, the areas will be designated by number:

Area Designations		
Area 1	Tank Farm #1	TANKS 23 - 36
Area 2	Tank Farm #2	TANKS 37 - 50
Area 3	Tank Farm #3	TANKS 51 - 64
Area 4	Dock Pit	TANKS 70, 73 & 74
Area 5	Pipe Trench	
Area 6	Metering Pump Building	
Area 7	Quench/ Scrubber Water Return	
Area 8A	Caustic Building - Main Floor - TANKS 67 & 68	
Area 8B	Caustic Building - Pump Pit	
Area 9	Cooling Tower - Clarifier Pit - TANK 75	

The detailed information on each area is contained in Figure 1. The calculation data sheets are attached as Appendix 1.

The walls for all secondary containment areas (except the Caustic Building) extend above grade to prevent surface run-on during a severe rainfall event. The Caustic Building (Area 8) has a ramp-down entrance to an eight (8) foot door on the east side. However, outside grade at this point slopes away from the ramp and, therefore, minimizes the amount of surface water run-on which could enter the building. Further, there is a four (4) foot diameter x four (4) foot deep sump (380 gallons) in the area which will collect and transfer any run-on to storage.

The seams and joints the concrete walls of the secondary containment areas are caulked with a chemical resistant, flexible material to allow for expansion and contraction of the structure and, at the same time, maintain the integrity of the structure's impermeability. The coating was applied to overlap the edge of the seam-caulk to allow for expansion and contraction without stressing the coating material.

2.1 Area 1 - Tank Farm #1

Fourteen (14) tanks of 9, 920 gallons each are located within a coated, concrete containment of dimensions 100'-0" x 39'-11" x 3' - 0" (nominal depth). The net coated volume of the containment is 86,675 gallons.

Figure 1 - AREA DATA SHEET

Area	Net Contained Volume (Gallons)[1]	Stored Liquid Volume (Gallons)		Rainfall 24 yr / 24 hr (Gallons)[2]	Surface Preparation[3]	Coating[4]
		Largest	Total			
1	85,775[5]	9,920	138,880	8,750	S.B	Ca300
2	71,379[5]	9,920	138,880	8,750	S.B	Ca300
3	73,650	9,920	138,880	8,710	S.B	Ca300
4	18,100	10,000	28,800	2,700	S.B	Ca300
5	14,070	50	200	4,170	S.B	Ch798
6	1,000	NEGL.	NEGL.	N/A	A.E.	Ch798
7	17,920	14,540	14,540	2,060	S.B	Ch798
8A	32,030	14,400	53,200	N/A	S.B	Ca300
8B	11,940	NEGL.	NEGL.	N/A	S.B	Ch798
9	677,780	617,000	1,229,200	27,270	S.B	Ca300

1. The net contained volume was determined by calculating the gross volume of the coated structure minus the volume displacement of obstructions within the structure.
2. 24 year, 24 hour rainfall at 3.5"
3. S.B. Sandblast; A.E. Acid Etch
4. Ca300 = Carboline 300; Ch798 = Chesteron 798/855; Detailed information on material contained in Section 4.0 below.
5. Net Contained Volume Adjusted in 2020.

This volume is more than adequate to contain the volume of the largest tank and a 25 year/ 24 hour rainfall event:

	1988 Volumes	2020 Volumes
Largest Tank	9,920 Gallons	9,920 Gallons
Rainfall Event	8,750 Gallons	9,877 Gallons
Total	18,670 Gallons	19,797 Gallons

This area was prepared by sandblasting and coated with the Carboline 300 Series material (See Section 4.0 below)

2.2 Area 2 - Tank Farm #2

Fourteen (14) tanks of 9,920 gallons each are located within a coated, concrete pit with dimensions 100'-2" x 40'-0" x 2'-7" (nominal depth).

The net coated volume of the containment is 77,325 gallons. This volume is more than adequate to contain the volume of the largest tank and the 25 year/ 24 hour rainfall:

	1988 Volumes	2020 Volumes
Largest Tank	9,920 Gallons	9,920 Gallons
Rainfall Event	8,750 Gallons	9,877 Gallons
Total	18,670 Gallons	19,797 Gallons

This area was prepared by sandblasting and coated with the Carboline 300 Series material (See Section 4.0 below).

In 2020-2021, RIS constructed WSB #3, which is located just north of the Tank Farms. Due to proximity to the TFs and the excess secondary containment capacity of the TFs, RIS tied WSB #3's secondary containment to Tank Farm 1 and 2's (TFs) containment basins. The total containment volume needed for TF 1 and 2 is 100% of the largest tank (i.e., 9,920 gallons x 2 = 27,776), plus a 25 year 24-hour rain event (equivalent to 4.1 inches of rain or 3861 square feet x 0.34' rain levels = 1320.46 ft^3 x 7.48 gallons/ft^3 = approximately 9,877 gallons of rainfall per tank farm for a combined rainfall in both TFs of 19,754.11 gallons). The total secondary containment volume needed for both tank farms is 39,594.7 gallons. The WSB #3 construction reduced the secondary containment for Tank Farms 1 and 2 by approximately 43% to 89,577.66 gallons. Refer to Section D – *Process Description* D-1a(5)(e) for more details.

2. 3 Area 3 - Tank Farm #3

Fourteen (14) tanks of 9,920 gallons each are located within a coated, concrete pit with dimensions 100'-3" x 40'-0" x 2'-6" (nominal depth).

The net coated volume of the containment is 73,650 gallons. This volume is more than adequate to contain the volume of the largest tank and the 25 year/ 24 hour rainfall:

Largest Tank	9,920 Gallons
Rainfall Event	8,710 Gallons
Total	18,630 Gallons

This area was prepared by sandblasting and coated with the Carboline 300 Series material (See Section 4.0 below).

2.4 Area 4 - Dock Pit

Three (3) tanks of 10,000, 9,400 and 9,400 gallons, respectively, are located within this concrete containment of dimensions 37'-6" x 33'-0" x 5'-0" deep. The coating was applied to 2'-0" nominal height giving a net coated volume of 18, 100 gallons.

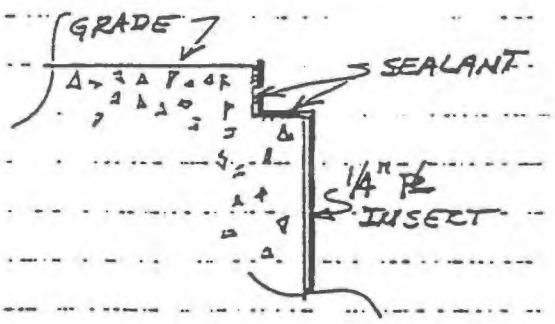
This volume is more than adequate to contain the volume of the largest tank and a 25 year/24 hour rainfall event:

Largest Tank	10,000	Gallons
Rainfall Event	2,700	Gallons
Total	12,700	Gallons

This area was prepared by sandblasting and coated with the Carboline 300 Series material (See Section 4.0 below).

The sump in this secondary containment area was lined with a 1/4" plate carbon steel box, painted to prevent corrosion. The top edge was formed as an angle with a sealant applied where both webs of the angle matched with the concrete lip of the sump. This construction was typical for all metal sump inserts.

See the sketch below:



2.5 Area 5 - Pipe Trench

The pipe trench was installed in a manner whereby the pipes which connect the tank farm with the metering pump house are exposed within the trench and covered with grating allowing for the daily, visual inspection of the system. All flanges and joints are welded.

For the foregoing reasons, it is the opinion of ROSS that, pursuant to 40 CFR 264.193(f)(1)&(2), the pipe trench system is excepted from the requirements for secondary containment as defined at 40 CFR 264.193(b)&(c).

Notwithstanding this interpretation, ROSS has voluntarily chosen to install this piping system within a coated, concrete trench containment in order to provide maximum protection to human health and the environment.

A combination of up to six (6) pipes are located in the coated concrete pipe trench which connects the three (3) tank farms with the transfer pumps in the metering pump house. Four (4) pipes are 3" dia. and two (2) are 2" dia. The entire trench was coated giving a net coated volume of 18,280 gallons.

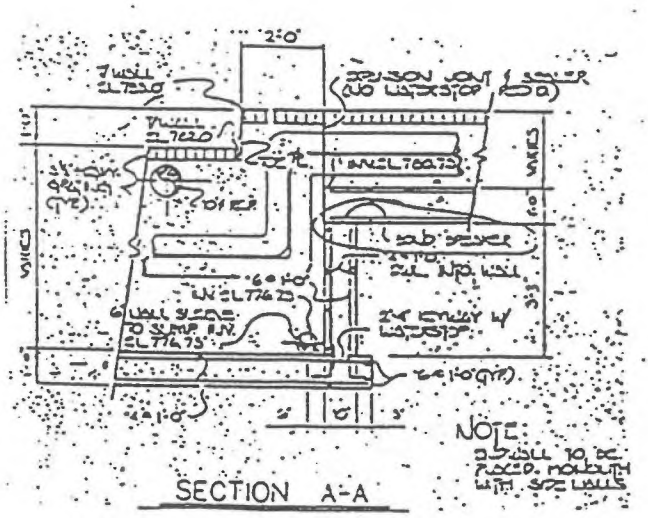
This volume is more than adequate to contain the volume of the longest, largest full pipe and a 25 year/24 hour rainfall event:

Largest Pipe	-	45	Gallons
Rainfall Event	-	4,170	Gallons
Total		4,215	Gallons

This area was prepared by sandblasting and coated with the Chesterton 798/855 coating.

NOTE: At this writing, the coating system is not complete because of a groundwater leak at the seam below the floor of the upper trench with the wall of the lower trench.

See the sketch below:



The groundwater keeps this seam area moist which interfered with the coating application. ROSS is currently addressing this problem to relieve the hydraulic pressure in order to dry, seal and coat this seam.

2.6 Area 6 - Metering Pump Building

This building only contains metering transfer pumps with accessory piping. The dimensions are 28' x 11'-3" and was coated to a nominal height of 0'-8" giving a net coated volume of 1,000 gallons.

The potential volume of spilled liquid is negligible and there is no rainfall event because it is a building.

The coated volume is more than adequate to contain the volume of a potential spill.

This area was prepared by acid etch and coated with the Chesterton 798/855 material (See Section 4.0 below).

The sump in this secondary containment area was lined with a 1/4" plate carbon steel box, painted to prevent corrosion. For details on the installation see Section 2.4 above.

2.7 Area 7 - Quench/Scrubber Water Return

One (1) tank of 14,540 gallons is located within the concrete containment of dimensions 34'-0" x 27'-9" x 8'-0" deep. The coating was applied to 2'-6" nominal height giving a net coated volume of 17,920 gallons. The liquid volume in the tank to the level of 2'-6" is included in the net volume.

This volume is adequate to contain the volume of the tank and a 25 year/24 hour rainfall event:

Largest Tank	14,540	Gallons
Rainfall Event	2,060	Gallons
Total	16,600	Gallons

This area was prepared by sandblasting and coated with the Chesterton 798/855 material (See Section 4.0 below).

The sump in this secondary containment area was lined with a 1/4" plate, carbon steel box, painted to protect corrosion. For details on the installation, see Section 2.5 above.

2.8 Area 8 - Caustic Building

For the purposes of this report, the Caustic Building has been considered as two (2) secondary containment areas. The Main Building (Designated Area A) and the Pump Pit (Designated Area B).

2.8.1 Main Building

Three (3) tanks of 14,400 gallons each and two (2) tanks of 5,000 gallons each, respectively are located within this concrete containment of 50' x 50' x 2' nominal coated height giving a net coated volume of 32,030 gallons.

This coated volume is more than adequate to contain the volume of the largest tank. There is no rainfall event because it is a building.

2.8.2 Pump Pit

This area contains seven (7) pumps on pedestals. The dimensions are 14' x 50' x 2'-3" nominal coated height giving a net coated volume of 11,940 gallons. The potential volume of spilled liquid is negligible and there is no rainfall event because it is a building.

This coated volume is more than adequate to contain the volume of a potential spill.

2.8.3 General

Area 8A was prepared by sandblasting and coated with the Carboline 300 Series material. Area 8B was prepared by sandblasting and coated with the Chesterton 798/855 material.

Each area contains a concrete sump coated with the same material as the floor and walls.

2.9 Area 9 - Cooling Tower/Clarifier Pit

Tanks of the following capacities are located in this irregular shaped coated, concrete containment area of 19,500 square feet x 4'-10" high:

Maintenance Storage Tank	617,000	Gallons
Clarifier	531,380	
Surge Tank	68,160	
Clarifier Surge Tank	12,660	
Cooling Tower	NEGL.	
TOTAL	1,229,200	Gallons

The net coated volume is 679,215 gallons. This volume is more than adequate to contain the volume of the largest tank and a 25 year/24 hour rainfall event:

Largest Tank	-	617,000	Gallons
Rainfall Event	-	27,270	Gallons
Total		644,270	Gallons

This area was prepared by sandblasting and coated with the Carboline 300 Series material.

There are two (2) sumps within this secondary containment area which are concrete and coated in the same manner as the rest of the area.

3.0 TYPE OF WASTE STORED/TREATED

The containment areas were coated for chemical resistance and impermeability to all waste types processed by ROSS. The process operation is dynamic in nature, therefore, no identification of waste type(s) stored in a specific area is practical. In addition, the quench/scrubber water return and cooling tower/clarifier pit areas essentially contain water but are considered hazardous because of their association with the incineration process.

The list of waste types (by EPA waste code) accepted by ROSS is given in Appendix 2. This listing of wastes includes all characteristic wastes, listed waste solvents and off-specification virgin chemical products.

4.0 COATING MATERIALS SPECIFICATION

ROSS selected two (2) separate materials for the coating of the existing concrete containment areas. These two (2) different materials were selected for specific areas based upon bonding characteristics to the concrete surface coated. Carboline's Phenoline 300 Finish was utilized where the surface to be coated could be dried to a free moisture content of less than 10% after surface preparation. Chesterton 798 Primer/855 Abrasion Control Liquid was applied to surfaces which could not be dried completely after surface preparations to satisfy the application requirements of the Phenoline 300 Coating. The specific areas to which each material was applied is given in Figure 1 above.

Manufacturers specifications for each material are given in Appendix 3. The Carboline Phenoline 300 Coating is a two (2) part modified phenolic epoxy. The applied coating dries to a hard surface finish that is resistant to a wide range of chemicals including acids, alkalies, solvents, salts and combinations of these chemicals. Application of this material is relatively easy with commercial air and/or airless spray equipment.

The Chesterton 798/855 coating material is a two (2) part polymer quartz base coating. The coating has excellent adhesion to prepared concrete surfaces. The polymer quartz base allows a chemical bond to concrete, even with high concrete moisture contents. However, the physical application of the material is made more difficult due to the fact that the material has a 100% solids content.

Both the Chesterton and Phenoline materials provide essentially equivalent chemical resistance. Both materials will be impermeable to the chemical stored within the containment areas for the duration of time necessary to detect a primary containment failure. Further, both are abrasive resistant to normal pedestrian traffic as required within the secondary containment areas.

5.0 CERTIFICATION

5.1 Scope

The following "Scope of Certification" results using the best information available from personal observations during the preparation of the surface and application of the coating; personal observation of the affected areas after the coating; discussions with representatives of ROSS; discussions (on-site) with representatives of the applications company and discussions (on-site) with representatives of the Chesterton Company.

5.1.1 A review of the published technical data and discussions with representatives of the selected coating systems indicate that these systems should perform for the purpose intended (See Section 4.0 above).

5.1.2 The characteristics of the hazardous waste that will have to be contained in the secondary containment area during a spill event are listed in Appendix 2. Both suppliers were informed of these chemicals and selected a coating system that would withstand penetration by these chemicals for the duration of the spill clean-up (See Section 3.0 above).

5.1.3 The coating protection selected to render the concrete liner, secondary containment areas impervious to the chemicals that would occur during a spill event are:

Carboline Phenoline, 300 Finish, and Chesterton 798 Primer/855 Abrasion Control Liquid (See Section 4.0 above).

5.1.4 On September 11, 1989, a final visual inspection of the coating was made on all the concrete liner, secondary containment areas. Observations made during previous inspections had been addressed and corrected.

The coating was free of cracks, punctures, scratches and chips. Care was taken to maintain the integrity of the flexible joints at the seams in the concrete structures while maintaining the integrity of the coating. Brightly colored primer was incorporated for the purposes of rapid detection of cracks or imperfections in the grey final coat. No primer was evident at the final visual inspection indicating the coating was, in fact, free of cracks, punctures, scratches and chips.

The entire coating system appeared to be in order, applied well and fit for the purpose intended with two (2) exceptions:

1) The sump in the pump pit in the caustic building (Area 8B) was not coated because of repair required to the concrete walls.

   Subsequently, the certifying engineer has been notified that the concrete walls have been repaired and the sump coated with the Chesterton 798/855 coating system (See Section 2.8 above).

2) The joint between the floor of the upper pipe trench and the top of the lower pipe trench wall is weeping groundwater into the trench, which inhibits the proper adhesion and curing of the Chesterton 798/855 coating system.

   At this writing, the condition has not changed. ROSS Engineering is currently reviewing the problem in order to effect a solution that will eliminate the weeping and allow the proper coating application conditions without introducing a different potential pathway for subsoil contamination (See Section 2.5 above).

5.2 Certification

The undersigned is a registered Professional Engineer in the State of Ohio, and is authorized to practice the profession of Engineering Pursuant to Ohio R.C. Section 4733.02 (Registration).

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Thomas D. Kmiec, P.E.
E-45025

AREA 1 – TANK FARM #1

COATED DIMENSIONS:	100'-0" x 39'-11" x 3'-0" (Nominal Depth)*	
TOTAL DIMENSIONS:	same	
COATED VOLUME:	Gross	87,490 Gallons
	Pedestals & Posts	- 1,715 Gallons
	Net Contained Volume	85,775Gallons
VOLUMEN OF LIQUIDS:	Total 14 Tanks	138,880 Gallons
	Largest Tank	9,920 Gallons
RAINFALL EVENT – 25 YR / 24 HR:	8,750 Gallons (Used 3.5")	
COATING:	Carboline 300	
SUMP PIT:	None	

*Dimensions were checked, and net volume adjusted in 2020.

In 2020-21, the containment for Tank Farms I and II were affected by the construction of WSB#3. During construction of WSB#3 a wall boring reduced the containment capacity by 43%occured, effectively reducing the containment volume to 57% of its original design capacity.

AREA 2 – TANK FARM #2

COATED DIMENSIONS:	100'-2" x 40'-0" x 2'-7" (Nominal Depth)*	
TOTAL DIMENSIONS:	same	
COATED VOLUME:	Gross	72,754 Gallons
	Pedestals & Posts	- 1,375 Gallons
	Net Contained Volume	71,379* Gallons
VOLUME OF LIQUIDS:	Total 14 Tanks	138,880 Gallons
	Largest Tank	9,920 Gallons
RAINFALL EVENT – 25 YR / 24 HR:	8,750 Gallons (Used 3.5")	
COATING:	Carboline 300	
SUMP PIT:	None	

*Dimensions were checked, and net volume adjusted in 2020.

In 2020-21, the containment for Tank Farms I and II were affected by the construction of WSB#3. During construction of WSB#3 a wall boring reduced the containment capacity by 43%occured, effectively reducing the containment volume to 57% of its original design capacity.

AREA 3 - TANK FARM #3

COATED DIMENSIONS: 100'-3" x 40'-0" x 2'-6" (Nominal Depth)

TOTAL DIMENSIONS: same

COATED VOLUME:	Gross	75,000	Gallons
	Pedastals & Posts	- 1,350	Gallons
	Net Contained Volume	73,650	Gallons

VOLUME OF LIQUID:	Total 14 Tanks	138,880	Gallons
	Largest Tank	9,920	Gallons

RAINFALL EVENT - 25 yr/24 hr: 8,710 Gallons

COATING: Carboline 300

SUMP PIT: None

AREA 4 - DOCK PIT

COATED DIMENSIONS: 37'-6" x 33'-0" x 2'-0" (Nominal Height)

TOTAL DIMENSIONS: same

COATED VOLUME:	Gross	18,500	Gallons
	Pedastals & Posts	- 400	Gallons
	Net Contained Volume	18,100	Gallons

VOLUME OF LIQUID:	Total 3 Tanks	28,800	Gallons
	Largest Tank	10,000	Gallons

RAINFALL EVENT - 25 yr/24 hr: 2,700 Gallons

COATING: Carboline 300

SUMP PIT: Metal Lined - 1/4" Plate, Painted
22" x 22" x 13" Deep
27 Gallons

AREA 5 - PIPE TRENCH

COATED DIMENSIONS: 4' x 478' x 2' (Nominal Depth)

TOTAL DIMENSIONS: same

COATED VOLUME:	Gross	18,280	Gallons
	Pipes & Insulation	- 4,210	Gallons
	Net Contained Volume	14,070	Gallons

VOLUME OF LIQUID:	2 Pipes @ 2" Dia.	25	Gallons
	4 Pipes @ 3" Dia.	175	Gallons
	Total Volume	200	Gallons

RAINFALL EVENT - 25 yr/24 hr: 4,170 Gallons

COATING: Chesterton #798 Series

SUMP PIT: None

AREA 6 - METERING PUMP BUILDING

COATED DIMENSIONS: 28'-0" x 11'-3" x 0'-8" High

TOTAL DIMENSIONS: 28'-0" x 11'-3" x Building Height

COATED VOLUME:	Gross	1,000 Gallons
	Pump Bases	- NEGL.
	Net	1,000 Gallons

VOLUME OF LIQUID: Negligible

RAINFALL EVENT - 25 yr/24 hr: Not Applicable

COATING: Chesterton #798 Series

SUMP PIT: Metal Lined - 1/4" Plate, Painted
23" x 23" x 27" Deep
60 Gallons

AREA 7 - QUENCH/SCRUBBER WATER RETURN

COATED DIMENSIONS: 34'-0" x 27'-9" x 2'-6" (Nominal Height)

TOTAL DIMENSIONS: 34'-0" x 27'-9" x 8'-0"

COATED VOLUME:	Gross		17,650	Gallons
	Sump	+	290	
	Post	-	20	
			17,920	Gallons

VOLUME OF LIQUID: 14,540 Gallons

RAINFALL EVENT - 25 yr/24 hr: 2,060 Gallons

COATING: Chesterton #798 Series

SUMP PIT: Metal Lined - 1/4" Plate, Painted
37" x 37" x 49" Deep
290 Gallons

AREA 8 - CAUSTIC BUILDING

COATED DIMENSIONS: (A) Main Building - 50' x 50' x 2' (Nominal Height)
(B) Pump Pit - 14' x 50' x 2'-3" (Nominal Height)

TOTAL DIMENSIONS: Building 50' x 64' x Building Height

COATED VOLUME:	(A) Main Building	Gross		37,400	Gallons
		Sump	+	380	
		(3) Caustic Tanks	-	5,080	
		(2) Process Tanks	-	670	
		Net Volume		32,030	Gallons
	(B) Pump Pit	Gross		11,780	Gallons
		Sump	+	560	
		(7) Pump Platforms	-	400	
		Net Volume		11,940	Gallons

VOLUME OF LIQUIDS:

(A) Main Building - (3) Caustic Tanks, 14,400 Gallons (Each)
(2) Process Tanks, 5,000 Gallons (Each)
Total 53,200 Gallons

(B) Pump Pit - Negligible

RAINFALL EVENT - 25 yr/24 hr: Not Applicable

COATING: 8A - Carboline 300
8B - Chesterton #798 Series

SUMP PIT: (A) Main Building - 4' Dia. x 4' Deep
Coated Concrete
380 Gallons

(B) Pump Pit - 4' Dia. x 6' Deep
Coated Concrete
560 Gallons

AREA 9 - COOLING TOWER/CLARIFIER PIT

COATED DIMENSIONS: 19,500 sq.ft. (Various) x 4'-10" Depth

TOTAL DIMENSIONS: same

COATED VOLUME:	Gross		702,300	Gallons
	Sump 1	+	625	
	Sump 2	+	810	
	Main Storage Tank	-	16,350	
	Clarifier Support	-	900	
	Cooling Tower Pad	-	990	
	Surge Tank	-	2,850	
	Cooling Towers	-	NEGL.	
	Clarifier Pump Surge Tank	-	3,430	
	Net Volume		679,215	Gallons

VOLUME OF LIQUID:	Main Storage Tank	617,000	Gallons
	Clarifier	531,380	
	Cooling Towers	NEGL.	
	Surge Tank	68,160	
	Clarifier Pump Surge Tank	12,660	
	Total Volume	1,229,200	Gallons

RAINFALL EVENT - 25 yr/24 hr: 27,270 Gallons

COATING: Carboline 300

SUMP PIT: (1) 5' Dia. x 4'-3" Deep
Coated Concrete
625 Gallons

(2) 5' Dia. x 5'-3" Deep
Coated Concrete
810 Gallons

Appendix 2

List of Wastes Accepted by Ross Incineration Services, Inc.

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D(1))
	1	D	0	0	1	49955	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	D	0	0	2	6810	T	S	0	1	S	0	2	T	0	1	T03 T04
	3	D	0	0	3	1240	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	D	0	0	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04
	5	D	0	0	5	38	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	D	0	0	6	1550	T	S	0	1	S	0	2	T	0	1	T03 T04
	7	D	0	0	7	3920	T	S	0	1	S	0	2	T	0	1	T03 T04
	8	D	0	0	8	3410	T	S	0	1	S	0	2	T	0	1	T03 T04
	9	D	0	0	9	520	T	S	0	1	S	0	2	T	0	1	T03 T04
1	0	D	0	1	0	310	T	S	0	1	S	0	2	T	0	1	T03 T04
1	1	D	0	1	1	38	T	S	0	1	S	0	2	T	0	1	T03 T04
1	2	D	0	1	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	3	D	0	1	3	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	4	D	0	1	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	5	D	0	1	5	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	D	0	1	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	7	D	0	1	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	8	D	0	1	8	1036	T	S	0	1	S	0	2	T	0	1	T03 T04
1	9	D	0	1	9	68	T	S	0	1	S	0	2	T	0	1	T03 T04
2	0	D	0	2	0	88	T	S	0	1	S	0	2	T	0	1	T03 T04
2	1	D	0	2	1	211	T	S	0	1	S	0	2	T	0	1	T03 T04
2	2	D	0	2	2	84	T	S	0	1	S	0	2	T	0	1	T03 T04
2	3	D	0	2	3	125	T	S	0	1	S	0	2	T	0	1	T03 T04
2	4	D	0	2	4	125	T	S	0	1	S	0	2	T	0	1	T03 T04
2	5	D	0	2	5	125	T	S	0	1	S	0	2	T	0	1	T03 T04
2	6	D	0	2	6	125	T	S	0	1	S	0	2	T	0	1	T03 T04
2	7	D	0	2	7	25	T	S	0	1	S	0	2	T	0	1	T03 T04
2	8	D	0	2	8	22	T	S	0	1	S	0	2	T	0	1	T03 T04
2	9	D	0	2	9	43	T	S	0	1	S	0	2	T	0	1	T03 T04
3	0	D	0	3	0	561	T	S	0	1	S	0	2	T	0	1	T03 T04
3	1	D	0	3	1	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	2	D	0	3	2	25	T	S	0	1	S	0	2	T	0	1	T03 T04
3	3	D	0	3	3	22	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	D	0	3	4	22	T	S	0	1	S	0	2	T	0	1	T03 T04
3	5	D	0	3	5	616	T	S	0	1	S	0	2	T	0	1	T03 T04
3	6	D	0	3	6	999	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

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9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

umber		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	7	D	0	3	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	8	D	0	3	8	469	T	S	0	1	S	0	2	T	0	1	T03 T04
3	9	D	0	3	9	99	T	S	0	1	S	0	2	T	0	1	T03 T04
4	0	D	0	4	0	121	T	S	0	1	S	0	2	T	0	1	T03 T04
4	1	D	0	4	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	2	D	0	4	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	3	D	0	4	3	43	T	S	0	1	S	0	2	T	0	1	T03 T04
4	4	F	0	0	1	2060	T	S	0	1	S	0	2	T	0	1	T03 T04
4	5	F	0	0	2	2170	T	S	0	1	S	0	2	T	0	1	T03 T04
4	6	F	0	0	3	12600	T	S	0	1	S	0	2	T	0	1	T03 T04
4	7	F	0	0	4	31	T	S	0	1	S	0	2	T	0	1	T03 T04
4	8	F	0	0	5	18880	T	S	0	1	S	0	2	T	0	1	T03 T04
4	9	F	0	0	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04
5	0	F	0	0	7	12	T	S	0	1	S	0	2	T	0	1	T03 T04
5	1	F	0	0	8	12	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	F	0	0	9	12	T	S	0	1	S	0	2	T	0	1	T03 T04
	3	F	0	1	0	12	T	S	0	1	S	0	2	T	0	1	T03 T04
5	4	F	0	1	1	12	T	S	0	1	S	0	2	T	0	1	T03 T04
5	5	F	0	1	2	7	T	S	0	1	S	0	2	T	0	1	T03 T04
5	6	F	0	1	9	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
5	7	F	0	2	4	12	T	S	0	1	S	0	2	T	0	1	T03 T04
5	8	F	0	2	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	9	F	0	2	7	10000	T	S	0	1	S	0	2	T	0	1	T03 T04
6	0	F	0	3	2	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
6	1	F	0	3	4	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
6	2	F	0	3	5	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
6	3	F	0	3	7	240	T	S	0	1	S	0	2	T	0	1	T03 T04
6	4	F	0	3	8	240	T	S	0	1	S	0	2	T	0	1	T03 T04
6	5	F	0	3	9	500	T	S	0	1	S	0	2	T	0	1	T03 T04
6	6	K	0	0	1	31	T	S	0	1	S	0	2	T	0	1	T03 T04
6	7	K	0	0	2	38	T	S	0	1	S	0	2	T	0	1	T03 T04
6	8	K	0	0	3	38	T	S	0	1	S	0	2	T	0	1	T03 T04
[illegible]	9	K	0	0	4	38	T	S	0	1	S	0	2	T	0	1	T03 T04
	0	K	0	0	5	38	T	S	0	1	S	0	2	T	0	1	T03 T04
7	1	K	0	0	6	38	T	S	0	1	S	0	2	T	0	1	T03 T04
7	2	K	0	0	7	7	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

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								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
7	3	K	0	0	8	38	T	S	0	1	S	0	2	T	0	1	T03 T04
7	4	K	0	0	9	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
7	5	K	0	1	0	10	T	S	0	1	S	0	2	T	0	1	T03 T04
7	6	K	0	1	1	7	T	S	0	1	S	0	2	T	0	1	T03 T04
7	7	K	0	1	3	7	T	S	0	1	S	0	2	T	0	1	T03 T04
7	8	K	0	1	4	7	T	S	0	1	S	0	2	T	0	1	T03 T04
7	9	K	0	1	5	12	T	S	0	1	S	0	2	T	0	1	T03 T04
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8	1	K	0	1	7	7	T	S	0	1	S	0	2	T	0	1	T03 T04
8	2	K	0	1	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	3	K	0	1	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	4	K	0	2	0	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	5	K	0	2	1	38	T	S	0	1	S	0	2	T	0	1	T03 T04
8	6	K	0	2	2	31	T	S	0	1	S	0	2	T	0	1	T03 T04
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	8	K	0	2	4	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
	9	K	0	2	5	234	T	S	0	1	S	0	2	T	0	1	T03 T04
9	0	K	0	2	6	27	T	S	0	1	S	0	2	T	0	1	T03 T04
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9	3	K	0	2	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04
9	4	K	0	3	0	12	T	S	0	1	S	0	2	T	0	1	T03 T04
9	5	K	0	3	1	12	T	S	0	1	S	0	2	T	0	1	T03 T04
9	6	K	0	3	2	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
9	7	K	0	3	3	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
9	8	K	0	3	4	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
9	9	K	0	3	5	31	T	S	0	1	S	0	2	T	0	1	T03 T04
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0	1	K	0	3	7	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
0	2	K	0	3	8	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
0	3	K	0	3	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04
0	4	K	0	4	0	10	T	S	0	1	S	0	2	T	0	1	T03 T04
0	5	K	0	4	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	K	0	4	2	12	T	S	0	1	S	0	2	T	0	1	T03 T04
0	7	K	0	4	3	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
0	8	K	0	4	4	1000	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

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								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
0	9	K	0	4	5	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
1	0	K	0	4	6	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
1	1	K	0	4	7	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
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1	8	K	0	6	1	7	T	S	0	1	S	0	2	T	0	1	T03 T04
1	9	K	0	6	2	38	T	S	0	1	S	0	2	T	0	1	T03 T04
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2	1	K	0	7	1	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
2	2	K	0	7	3	10	T	S	0	1	S	0	2	T	0	1	T03 T04
2	3	K	0	8	3	234	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	K	0	8	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	5	K	0	8	5	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
2	6	K	0	8	6	420	T	S	0	1	S	0	2	T	0	1	T03 T04
2	7	K	0	8	7	49	T	S	0	1	S	0	2	T	0	1	T03 T04
2	8	K	0	8	8	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
2	9	K	0	9	3	9	T	S	0	1	S	0	2	T	0	1	T03 T04
3	0	K	0	9	4	9	T	S	0	1	S	0	2	T	0	1	T03 T04
3	1	K	0	9	5	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	2	K	0	9	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	3	K	0	9	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	4	K	0	9	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	5	K	0	9	9	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
3	6	K	1	0	0	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
3	7	K	1	0	1	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	8	K	1	0	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	9	K	1	0	3	11	T	S	0	1	S	0	2	T	0	1	T03 T04
4	0	K	1	0	4	234	T	S	0	1	S	0	2	T	0	1	T03 T04
4	1	K	1	0	5	31	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	K	1	0	6	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
4	3	K	1	0	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	4	K	1	0	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

umber		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
4	5	K	1	0	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	6	K	1	1	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	7	K	1	1	1	234	T	S	0	1	S	0	2	T	0	1	T03 T04
4	8	K	1	1	2	11	T	S	0	1	S	0	2	T	0	1	T03 T04
4	9	K	1	1	3	11	T	S	0	1	S	0	2	T	0	1	T03 T04
5	0	K	1	1	4	11	T	S	0	1	S	0	2	T	0	1	T03 T04
5	1	K	1	1	5	11	T	S	0	1	S	0	2	T	0	1	T03 T04
5	2	K	1	1	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04
5	3	K	1	1	7	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
5	4	K	1	1	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
5	5	K	1	2	3	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
5	6	K	1	2	4	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
5	7	K	1	2	5	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
5	8	K	1	2	6	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
5	9	K	1	3	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	0	K	1	3	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	1	K	1	3	6	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
6	2	K	1	4	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	3	K	1	4	2	300	T	S	0	1	S	0	2	T	0	1	T03 T04
6	4	K	1	4	3	150	T	S	0	1	S	0	2	T	0	1	T03 T04
6	5	K	1	4	4	30	T	S	0	1	S	0	2	T	0	1	T03 T04
6	6	K	1	4	5	20	T	S	0	1	S	0	2	T	0	1	T03 T04
6	7	K	1	4	7	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	8	K	1	4	8	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	9	K	1	4	9	220	T	S	0	1	S	0	2	T	0	1	T03 T04
7	0	K	1	5	0	40	T	S	0	1	S	0	2	T	0	1	T03 T04
7	1	K	1	5	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	2	K	1	5	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	3	K	1	5	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	4	K	1	5	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	5	K	1	5	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	6	K	1	6	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	7	K	1	6	9	1100	T	S	0	1	S	0	2	T	0	1	T03 T04
	8	K	1	7	0	800	T	S	0	1	S	0	2	T	0	1	T03 T04
7	9	K	1	7	1	850	T	S	0	1	S	0	2	T	0	1	T03 T04
8	0	K	1	7	2	1850	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES (1) PROCESS CODES (Enter Code)									D. PROCESSES (2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
8	1	K	1	7	4	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
8	2	K	1	7	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	3	K	1	7	6	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
8	4	K	1	7	7	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
8	5	K	1	7	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	6	K	1	8	1	1000	T	S	0	1	S	0	2	T	0	1	T03 T04
8	7	P	0	0	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
8	8	P	0	0	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
8	9	P	0	0	3	27	T	S	0	1	S	0	2	T	0	1	T03 T04
9	0	P	0	0	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	1	P	0	0	5	43	T	S	0	1	S	0	2	T	0	1	T03 T04
9	2	P	0	0	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	3	P	0	0	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	4	P	0	0	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	5	P	0	0	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	P	0	1	0	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	7	P	0	1	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	8	P	0	1	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	9	P	0	1	3	12	T	S	0	1	S	0	2	T	0	1	T03 T04
0	0	P	0	1	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
0	1	P	0	1	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	2	P	0	1	6	278	T	S	0	1	S	0	2	T	0	1	T03 T04
0	3	P	0	1	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	4	P	0	1	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
0	5	P	0	2	0	5	T	S	0	1	S	0	2	T	0	1	T03 T04
0	6	P	0	2	1	12	T	S	0	1	S	0	2	T	0	1	T03 T04
0	7	P	0	2	2	620	T	S	0	1	S	0	2	T	0	1	T03 T04
0	8	P	0	2	3	27	T	S	0	1	S	0	2	T	0	1	T03 T04
0	9	P	0	2	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	0	P	0	2	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	1	P	0	2	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	2	P	0	2	8	12	T	S	0	1	S	0	2	T	0	1	T03 T04
1	3	P	0	2	9	12	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	P	0	3	0	12	T	S	0	1	S	0	2	T	0	1	T03 T04
1	5	P	0	3	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	6	P	0	3	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
1	7	P	0	3	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	8	P	0	3	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	9	P	0	3	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
2	0	P	0	3	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	1	P	0	3	9	5	T	S	0	1	S	0	2	T	0	1	T03 T04
2	2	P	0	4	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	3	P	0	4	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	4	P	0	4	2	49	T	S	0	1	S	0	2	T	0	1	T03 T04
2	5	P	0	4	3	5	T	S	0	1	S	0	2	T	0	1	T03 T04
2	6	P	0	4	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
2	7	P	0	4	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	8	P	0	4	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	9	P	0	4	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	0	P	0	4	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	1	P	0	4	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	P	0	5	0	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	3	P	0	5	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	4	P	0	5	4	11	T	S	0	1	S	0	2	T	0	1	T03 T04
3	5	P	0	5	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	6	P	0	5	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	7	P	0	5	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	8	P	0	5	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04
3	9	P	0	6	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	0	P	0	6	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	1	P	0	6	3	12	T	S	0	1	S	0	2	T	0	1	T03 T04
4	2	P	0	6	4	7	T	S	0	1	S	0	2	T	0	1	T03 T04
4	3	P	0	6	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	4	P	0	6	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	5	P	0	6	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	6	P	0	6	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	7	P	0	6	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	8	P	0	7	0	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	9	P	0	7	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	0	P	0	7	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	1	P	0	7	3	38	T	S	0	1	S	0	2	T	0	1	T03 T04
5	2	P	0	7	4	12	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

umber		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
5	3	P	0	7	5	49	T	S	0	1	S	0	2	T	0	1	T03 T04
5	4	P	0	7	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	5	P	0	7	7	234	T	S	0	1	S	0	2	T	0	1	T03 T04
5	6	P	0	7	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	7	P	0	8	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	8	P	0	8	2	11	T	S	0	1	S	0	2	T	0	1	T03 T04
5	9	P	0	8	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
6	0	P	0	8	5	5	T	S	0	1	S	0	2	T	0	1	T03 T04
6	1	P	0	8	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
6	2	P	0	8	8	18	T	S	0	1	S	0	2	T	0	1	T03 T04
6	3	P	0	8	9	40	T	S	0	1	S	0	2	T	0	1	T03 T04
6	4	P	0	9	2	38	T	S	0	1	S	0	2	T	0	1	T03 T04
6	5	P	0	9	3	5	T	S	0	1	S	0	2	T	0	1	T03 T04
6	6	P	0	9	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
6	7	P	0	9	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	8	P	0	9	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	9	P	0	9	8	12	T	S	0	1	S	0	2	T	0	1	T03 T04
7	0	P	0	9	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	1	P	1	0	1	7	T	S	0	1	S	0	2	T	0	1	T03 T04
7	2	P	1	0	2	43	T	S	0	1	S	0	2	T	0	1	T03 T04
7	3	P	1	0	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	4	P	1	0	4	12	T	S	0	1	S	0	2	T	0	1	T03 T04
7	5	P	1	0	5	5	T	S	0	1	S	0	2	T	0	1	T03 T04
7	6	P	1	0	6	100	T	S	0	1	S	0	2	T	0	1	T03 T04
7	7	P	1	0	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
7	8	P	1	0	9	5	T	S	0	1	S	0	2	T	0	1	T03 T04
7	9	P	1	1	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	0	P	1	1	1	5	T	S	0	1	S	0	2	T	0	1	T03 T04
8	1	P	1	1	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	2	P	1	1	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	3	P	1	1	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	4	P	1	1	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	5	P	1	1	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	P	1	1	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	7	P	1	1	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	8	P	1	2	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)*

ı	umber	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
8	9	P	1	2	1	12	T	S	0	1	S	0	2	T	0	1	T03 T04
9	0	P	1	2	2	38	T	S	0	1	S	0	2	T	0	1	T03 T04
9	1	P	1	2	3	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	2	P	1	2	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	3	P	1	2	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	4	P	1	8	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	5	P	1	8	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	6	P	1	8	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	7	P	1	9	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	8	P	1	9	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	9	P	1	9	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	0	P	1	9	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	1	P	1	9	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	2	P	1	9	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	3	P	1	9	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	P	1	9	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	5	P	2	0	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	6	P	2	0	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	7	P	2	0	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	8	P	2	0	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	9	P	2	0	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	0	U	0	0	1	27	T	S	0	1	S	0	2	T	0	1	T03 T04
1	1	U	0	0	2	100	T	S	0	1	S	0	2	T	0	1	T03 T04
1	2	U	0	0	3	7	T	S	0	1	S	0	2	T	0	1	T03 T04
1	3	U	0	0	4	73	T	S	0	1	S	0	2	T	0	1	T03 T04
1	4	U	0	0	5	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	5	U	0	0	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04
1	6	U	0	0	7	11	T	S	0	1	S	0	2	T	0	1	T03 T04
1	7	U	0	0	8	18	T	S	0	1	S	0	2	T	0	1	T03 T04
1	8	U	0	0	9	720	T	S	0	1	S	0	2	T	0	1	T03 T04
1	9	U	0	1	0	11	T	S	0	1	S	0	2	T	0	1	T03 T04
2	0	U	0	1	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	1	U	0	1	2	11	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	U	0	1	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	3	U	0	1	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	4	U	0	1	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

umber		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
2	5	U	0	1	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	6	U	0	1	8	49	T	S	0	1	S	0	2	T	0	1	T03 T04
2	7	U	0	1	9	49	T	S	0	1	S	0	2	T	0	1	T03 T04
2	8	U	0	2	0	5	T	S	0	1	S	0	2	T	0	1	T03 T04
2	9	U	0	2	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04
3	0	U	0	2	2	49	T	S	0	1	S	0	2	T	0	1	T03 T04
3	1	U	0	2	3	12	T	S	0	1	S	0	2	T	0	1	T03 T04
3	2	U	0	2	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	3	U	0	2	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	4	U	0	2	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	5	U	0	2	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	6	U	0	2	8	18	T	S	0	1	S	0	2	T	0	1	T03 T04
3	7	U	0	2	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	8	U	0	3	0	278	T	S	0	1	S	0	2	T	0	1	T03 T04
3	9	U	0	3	1	310	T	S	0	1	S	0	2	T	0	1	T03 T04
	0	U	0	3	2	38	T	S	0	1	S	0	2	T	0	1	T03 T04
	1	U	0	3	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	2	U	0	3	4	310	T	S	0	1	S	0	2	T	0	1	T03 T04
4	3	U	0	3	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	4	U	0	3	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	5	U	0	3	7	12	T	S	0	1	S	0	2	T	0	1	T03 T04
4	6	U	0	3	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	7	U	0	3	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	8	U	0	4	1	7	T	S	0	1	S	0	2	T	0	1	T03 T04
4	9	U	0	4	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	0	U	0	4	3	10	T	S	0	1	S	0	2	T	0	1	T03 T04
5	1	U	0	4	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04
5	2	U	0	4	5	10	T	S	0	1	S	0	2	T	0	1	T03 T04
5	3	U	0	4	6	278	T	S	0	1	S	0	2	T	0	1	T03 T04
5	4	U	0	4	7	12	T	S	0	1	S	0	2	T	0	1	T03 T04
5	5	U	0	4	8	31	T	S	0	1	S	0	2	T	0	1	T03 T04
5	6	U	0	4	9	5	T	S	0	1	S	0	2	T	0	1	T03 T04
5	7	U	0	5	0	49	T	S	0	1	S	0	2	T	0	1	T03 T04
	8	U	0	5	1	49	T	S	0	1	S	0	2	T	0	1	T03 T04
	9	U	0	5	2	31	T	S	0	1	S	0	2	T	0	1	T03 T04
6	0	U	0	5	3	27	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
6	1	U	0	5	5	49	T	S	0	1	S	0	2	T	0	1	T03 T04
6	2	U	0	5	6	1140	T	S	0	1	S	0	2	T	0	1	T03 T04
6	3	U	0	5	7	73	T	S	0	1	S	0	2	T	0	1	T03 T04
6	4	U	0	5	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
6	5	U	0	5	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
6	6	U	0	6	0	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	7	U	0	6	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	8	U	0	6	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
6	9	U	0	6	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	0	U	0	6	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	1	U	0	6	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	2	U	0	6	7	10	T	S	0	1	S	0	2	T	0	1	T03 T04
7	3	U	0	6	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
7	4	U	0	6	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04
7	5	U	0	7	0	12	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	U	0	7	1	12	T	S	0	1	S	0	2	T	0	1	T03 T04
	7	U	0	7	2	12	T	S	0	1	S	0	2	T	0	1	T03 T04
7	8	U	0	7	3	5	T	S	0	1	S	0	2	T	0	1	T03 T04
7	9	U	0	7	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	0	U	0	7	5	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	1	U	0	7	6	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	2	U	0	7	7	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	3	U	0	7	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	4	U	0	7	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	5	U	0	8	0	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	6	U	0	8	1	13	T	S	0	1	S	0	2	T	0	1	T03 T04
8	7	U	0	8	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	8	U	0	8	3	10	T	S	0	1	S	0	2	T	0	1	T03 T04
8	9	U	0	8	4	10	T	S	0	1	S	0	2	T	0	1	T03 T04
9	0	U	0	8	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	1	U	0	8	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	2	U	0	8	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	3	U	0	8	8	18	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	U	0	8	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	5	U	0	9	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	6	U	0	9	1	11	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

Line Number		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
9	7	U	0	9	2	11	T	S	0	1	S	0	2	T	0	1	T03 T04
9	8	U	0	9	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	9	U	0	9	4	49	T	S	0	1	S	0	2	T	0	1	T03 T04
0	0	U	0	9	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	1	U	0	9	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
0	2	U	0	9	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	3	U	0	9	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
0	4	U	0	9	9	5	T	S	0	1	S	0	2	T	0	1	T03 T04
0	5	U	1	0	1	31	T	S	0	1	S	0	2	T	0	1	T03 T04
0	6	U	1	0	2	18	T	S	0	1	S	0	2	T	0	1	T03 T04
0	7	U	1	0	3	15	T	S	0	1	S	0	2	T	0	1	T03 T04
0	8	U	1	0	5	234	T	S	0	1	S	0	2	T	0	1	T03 T04
0	9	U	1	0	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	0	U	1	0	7	18	T	S	0	1	S	0	2	T	0	1	T03 T04
1	1	U	1	0	8	100	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	U	1	0	9	5	T	S	0	1	S	0	2	T	0	1	T03 T04
	3	U	1	1	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	4	U	1	1	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	5	U	1	1	2	18	T	S	0	1	S	0	2	T	0	1	T03 T04
1	6	U	1	1	3	210	T	S	0	1	S	0	2	T	0	1	T03 T04
1	7	U	1	1	4	18	T	S	0	1	S	0	2	T	0	1	T03 T04
1	8	U	1	1	5	7	T	S	0	1	S	0	2	T	0	1	T03 T04
1	9	U	1	1	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	0	U	1	1	7	277	T	S	0	1	S	0	2	T	0	1	T03 T04
2	1	U	1	1	8	18	T	S	0	1	S	0	2	T	0	1	T03 T04
2	2	U	1	1	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	3	U	1	2	0	12	T	S	0	1	S	0	2	T	0	1	T03 T04
2	4	U	1	2	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	5	U	1	2	2	27	T	S	0	1	S	0	2	T	0	1	T03 T04
2	6	U	1	2	3	310	T	S	0	1	S	0	2	T	0	1	T03 T04
2	7	U	1	2	4	278	T	S	0	1	S	0	2	T	0	1	T03 T04
2	8	U	1	2	5	278	T	S	0	1	S	0	2	T	0	1	T03 T04
2	9	U	1	2	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	0	U	1	2	7	12	T	S	0	1	S	0	2	T	0	1	T03 T04
	1	U	1	2	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	2	U	1	2	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

umber		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
3	3	U	1	3	0	12	T	S	0	1	S	0	2	T	0	1	T03 T04
3	4	U	1	3	1	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	5	U	1	3	2	31	T	S	0	1	S	0	2	T	0	1	T03 T04
3	6	U	1	3	3	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	7	U	1	3	4	1763	T	S	0	1	S	0	2	T	0	1	T03 T04
3	8	U	1	3	5	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	9	U	1	3	6	5	T	S	0	1	S	0	2	T	0	1	T03 T04
4	0	U	1	3	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	1	U	1	3	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
4	2	U	1	4	0	43	T	S	0	1	S	0	2	T	0	1	T03 T04
4	3	U	1	4	1	49	T	S	0	1	S	0	2	T	0	1	T03 T04
4	4	U	1	4	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	5	U	1	4	4	38	T	S	0	1	S	0	2	T	0	1	T03 T04
4	6	U	1	4	5	38	T	S	0	1	S	0	2	T	0	1	T03 T04
4	7	U	1	4	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	8	U	1	4	7	9	T	S	0	1	S	0	2	T	0	1	T03 T04
	9	U	1	4	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
5	0	U	1	4	9	7	T	S	0	1	S	0	2	T	0	1	T03 T04
5	1	U	1	5	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	2	U	1	5	1	38	T	S	0	1	S	0	2	T	0	1	T03 T04
5	3	U	1	5	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	4	U	1	5	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	5	U	1	5	4	43	T	S	0	1	S	0	2	T	0	1	T03 T04
5	6	U	1	5	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	7	U	1	5	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	8	U	1	5	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
5	9	U	1	5	9	73	T	S	0	1	S	0	2	T	0	1	T03 T04
6	0	U	1	6	0	620	T	S	0	1	S	0	2	T	0	1	T03 T04
6	1	U	1	6	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	2	U	1	6	2	100	T	S	0	1	S	0	2	T	0	1	T03 T04
6	3	U	1	6	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
6	4	U	1	6	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
6	5	U	1	6	5	49	T	S	0	1	S	0	2	T	0	1	T03 T04
	6	U	1	6	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
6	7	U	1	6	7	11	T	S	0	1	S	0	2	T	0	1	T03 T04
6	8	U	1	6	8	11	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

L	umber	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
6	9	U	1	6	9	234	T	S	0	1	S	0	2	T	0	1	T03 T04
7	0	U	1	7	0	234	T	S	0	1	S	0	2	T	0	1	T03 T04
7	1	U	1	7	1	234	T	S	0	1	S	0	2	T	0	1	T03 T04
7	2	U	1	7	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	3	U	1	7	3	8	T	S	0	1	S	0	2	T	0	1	T03 T04
7	4	U	1	7	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	5	U	1	7	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	6	U	1	7	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
7	7	U	1	7	8	8	T	S	0	1	S	0	2	T	0	1	T03 T04
7	8	U	1	7	9	8	T	S	0	1	S	0	2	T	0	1	T03 T04
7	9	U	1	8	0	8	T	S	0	1	S	0	2	T	0	1	T03 T04
8	0	U	1	8	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	1	U	1	8	2	27	T	S	0	1	S	0	2	T	0	1	T03 T04
8	2	U	1	8	3	12	T	S	0	1	S	0	2	T	0	1	T03 T04
8	3	U	1	8	4	10	T	S	0	1	S	0	2	T	0	1	T03 T04
	4	U	1	8	5	234	T	S	0	1	S	0	2	T	0	1	T03 T04
	5	U	1	8	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
8	6	U	1	8	7	11	T	S	0	1	S	0	2	T	0	1	T03 T04
8	7	U	1	8	8	49	T	S	0	1	S	0	2	T	0	1	T03 T04
8	8	U	1	8	9	100	T	S	0	1	S	0	2	T	0	1	T03 T04
8	9	U	1	9	0	9	T	S	0	1	S	0	2	T	0	1	T03 T04
9	0	U	1	9	1	100	T	S	0	1	S	0	2	T	0	1	T03 T04
9	1	U	1	9	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	2	U	1	9	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
9	3	U	1	9	4	11	T	S	0	1	S	0	2	T	0	1	T03 T04
9	4	U	1	9	6	49	T	S	0	1	S	0	2	T	0	1	T03 T04
9	5	U	1	9	7	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	6	U	2	0	0	18	T	S	0	1	S	0	2	T	0	1	T03 T04
9	7	U	2	0	1	49	T	S	0	1	S	0	2	T	0	1	T03 T04
9	8	U	2	0	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
9	9	U	2	0	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
0	0	U	2	0	4	38	T	S	0	1	S	0	2	T	0	1	T03 T04
0	1	U	2	0	5	38	T	S	0	1	S	0	2	T	0	1	T03 T04
	2	U	2	0	6	8	T	S	0	1	S	0	2	T	0	1	T03 T04
0	3	U	2	0	7	12	T	S	0	1	S	0	2	T	0	1	T03 T04
0	4	U	2	0	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 | OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes *(Continued. Use additional sheet(s) as necessary: number pages as 5a, etc.)*

L	umber	A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES								
								(1) PROCESS CODES (Enter Code)								(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
0	5	U	2	0	9	10	T	S	0	1	S	0	2	T	0	1	T03 T04
0	6	U	2	1	0	10	T	S	0	1	S	0	2	T	0	1	T03 T04
0	7	U	2	1	1	10	T	S	0	1	S	0	2	T	0	1	T03 T04
0	8	U	2	1	3	278	T	S	0	1	S	0	2	T	0	1	T03 T04
0	9	U	2	1	4	100	T	S	0	1	S	0	2	T	0	1	T03 T04
1	0	U	2	1	5	38	T	S	0	1	S	0	2	T	0	1	T03 T04
1	1	U	2	1	6	38	T	S	0	1	S	0	2	T	0	1	T03 T04
1	2	U	2	1	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
1	3	U	2	1	8	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	4	U	2	1	9	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	5	U	2	2	0	49	T	S	0	1	S	0	2	T	0	1	T03 T04
1	6	U	2	2	1	510	T	S	0	1	S	0	2	T	0	1	T03 T04
1	7	U	2	2	2	5	T	S	0	1	S	0	2	T	0	1	T03 T04
1	8	U	2	2	3	7	T	S	0	1	S	0	2	T	0	1	T03 T04
1	9	U	2	2	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	0	U	2	2	6	310	T	S	0	1	S	0	2	T	0	1	T03 T04
	1	U	2	2	7	210	T	S	0	1	S	0	2	T	0	1	T03 T04
2	2	U	2	2	8	10	T	S	0	1	S	0	2	T	0	1	T03 T04
2	3	U	2	3	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	4	U	2	3	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	5	U	2	3	6	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	6	U	2	3	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
2	7	U	2	3	8	18	T	S	0	1	S	0	2	T	0	1	T03 T04
2	8	U	2	3	9	49	T	S	0	1	S	0	2	T	0	1	T03 T04
2	9	U	2	4	0	100	T	S	0	1	S	0	2	T	0	1	T03 T04
3	0	U	2	4	3	10	T	S	0	1	S	0	2	T	0	1	T03 T04
3	1	U	2	4	4	5	T	S	0	1	S	0	2	T	0	1	T03 T04
3	2	U	2	4	6	12	T	S	0	1	S	0	2	T	0	1	T03 T04
3	3	U	2	4	7	12	T	S	0	1	S	0	2	T	0	1	T03 T04
3	4	U	2	4	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	5	U	2	4	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	6	U	2	7	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04
3	7	U	2	7	8	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	8	U	2	7	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
	9	U	2	8	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	0	U	3	2	8	11	T	S	0	1	S	0	2	T	0	1	T03 T04

EPA ID Number | O | H | D | 0 | 4 | 8 | 4 | 1 | 5 | 6 | 6 | 5 |

OMB#: 2050-0024; Expires 12/31/2014

9. Description of Hazardous Wastes ***(Continued. Use additional sheet(s) as necessary; number pages as 5a, etc.)***

umber		A. EPA Hazardous Waste No. (Enter code)				B. Estimated Annual Qty of Waste	C. Unit of Measure (Enter code)	D. PROCESSES									
								(1) PROCESS CODES (Enter Code)									(2) PROCESS DESCRIPTION (If code is not entered in 9.D.1)
4	1	U	3	5	3	11	T	S	0	1	S	0	2	T	0	1	T03 T04
4	2	U	3	5	9	278	T	S	0	1	S	0	2	T	0	1	T03 T04
4	3	U	3	6	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	4	U	3	6	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	5	U	3	7	2	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	6	U	3	7	3	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	7	U	3	8	7	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	8	U	3	8	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
4	9	U	3	9	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	0	U	3	9	5	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	1	U	4	0	4	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	2	U	4	0	9	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	3	U	4	1	0	50	T	S	0	1	S	0	2	T	0	1	T03 T04
5	4	U	4	1	1	50	T	S	0	1	S	0	2	T	0	1	T03 T04

APPENDIX 3

COATING MATERIAL MANUFACTURER's SPECIFICATIONS

SEALING TECHNOLOGY CO.
2071 MIDWAY DRIVE • P.O. BOX 363 • TWINSBURG, OHIO 44087
PHONE (216) 425-3313

May 2, 1989

Application for 798 Primer and 855 Abrasion Control Liquid

1.0 Purpose & Scope

1.1 This information is a procedural guide for the following products:

1.1.1 Chesterton 798 Primer
1.1.2 Chesterton 855 Abrasion Control Liquid

1.2 This specification governs the application procedures regarding products above. The extent of compliance with the application specifications depends upon the severity of the exposure.

2.0 Surface Preparation

2.1 Surface Preparation of Concrete & Masonry

2.2.1 Concrete Curing

Concrete & Masonary surfaces must be cured at least 30 days.

Curing agents, if used, must be removed prior to surface coatings. See Coating Removal/Section 2.2.2.2

2.2.2 The following methods of Surface Preparation may be used to prepare concrete walls and floors in order to remove surface contaminants, and to provide a surface profile.

2.2.2.1 Sweeping to remove dirt, dust laitence, or loose foreign materials.

2.2.2.2 Coating Removal, if applicable, is accomplished by Dry Abrasive Blast SP5, or Slurry Blast - if no curing membranes or old coatings exist, procede to Chemical Treatment.

2.2.3.3 Chemical Treatment
Acid Etch - Acid Etch / in order to remove laitenance or other surface materials - and to provide an adequate surface profile. Acid Etching will be followed by water rinse.

2,2,3,4 Mechanical
Should Acid Etching not be possible,

surface can be abrasive blasted to remove laitenance and provide a profile.

2.2.4 Prime surfaces with Chesterton 798 Base Conditioner @ a rate of 160 sq.ft. per gallon.

Primer can be applied to damp concrete, but should be applied when there is no free standing water.

2.2.4.1 Mixing of Primer - 1 gallon cans

Primer is 2 component mix, A & B - using a low speed mixer for 3-5 minutes. There is no induction time.

Pot life may be extended with addition of Xylene to be supplied by contractor.

2.2.5 Cure Data 798 Primer
Primer Pot Life or Working Time

1 gallon with 10% Xylene	1 Hour @ 77°
Set Time @ 77°F	45minutes/1-1/2 hours
Cure Time @ 77°F	3 - 4 hours

** See attached table for Spray Information

2.2.6 Top Coating w/855 Abrasion Control Liquid.

Once primer has set, the surfaces can be Top Coated with 855 Abrasion Control Liquid.

2.2.6.1 Top Coat is a 2 component system. A & B Components must be completely mixed, using a low speed, high torque drill motor agitator.

Mix material for 3-5 minutes, or until uniform.

2.2.6.2 Application

855 Abrasion Control Liquid can be applied by brush, roller squeeze, or spray.

Thinning

Viscosity of material can be adjusted with Xylene supplied by the contractor, but no more than 1 pt. per gallon.

A.W. CHESTERTON PRODUCT SPECIFICATION

NR. 798 POLYMER QUARTZ BASE CONDITIONER

Induction Period:

None

Temperature Resistance: 200°F
Viscosity @ 70°F. (KU) 87 ± 5
Gloss: (60° Meter) 6 ± 5
Color: (Standard) Clear

APPLICATION DATA:

Application Procedure: See Part A
Wet Film Thickness: (Mils) .010
Dry Film Thickness: (Mils) .010
Temperature Range: (°F) 50-120°F
Minimum Surface Preparation (SSPC): Sand Blast, Slurry Blast, Chemical (Acid) Etching

APPLICATION METHODS: (72°F)

Air Spray:	Nozzle Size	0.055 - 0.073
	Pressure - PSIG	40-60
	Viscosity (KU)	72 ± 3
Airless Spray:	Nozzle Size	0.015 - 0.019
	Pressure	2500
	Viscosity (KU)	87 ± 3

Brush or Roller Viscosity: (KU) 85 ± 3
Recommended Thinner: Nr. 299 or MEK, Xylene

WH#46/589

A.W. CHESTERTON PRODUCT SPECIFICATION

NR. 855 ABRASION CONTROL LIQUID TOP COAT SEALER

Induction Period:

None

Temperature Resistance: 200°F
Viscosity @ 70°F. (KU) 82 ± 5
Gloss: (60° Meter) 95 ± 5
Color: (Standard) Gray

APPLICATION DATA:

Application Procedure: See Part A
Wet Film Thickness: (Mils) .010
Dry Film Thickness: (Mils) .010
Temperature Range: (°F) 50-120°F
Minimum Surface Preparation (SSPC): Surface must be primed with #795 Polymer Quartz Base Conditioner

APPLICATION METHODS: (72°F)

Air Spray:	Nozzle Size	0.055
	Pressure - PSIG	40-60
	Viscosity (KU)	72 ± 3
Airless Spray:	Nozzle Size	0.011 - 0.017
	Pressure	2500
	Viscosity (KU)	82 ± 5

Brush or Roller Viscosity: (KU) 75 ± 3
Recommended Thinner: Nr. 299 or MEK, Xylene

WM#48/589

METAL REPAIR SYSTEM - PRODUCT PROFILE
855 ABRASION CONTROL LIQUID

V. PHYSICAL/MECHANICAL PROPERTIES:

			855
A.	Compressive Strength (ASTM D965)	psi.	12000
		kg./sq.cm.	844
B.	Flexural Strength (ASTM D790)	psi.	11500
		kg./sq.cm.	809
C.	Tensile Shear Adhesion (ASTM D1002)		
	Copper		2280 psi.
	Brass		2250 psi.
	Aluminum		1850 psi.
	Steel		2600 psi.
D.	Dielectric Strength (ASTM D150)		225 volts
E.	Rockwell Hardness (ASTM D785 R-Scale)		R102
F.	Shore D Durometer Hardness (ASTM D2240)		85
G.	Shrinkage		.001 in./in.
H.	Taber Wear (Federal Test Method 6192) CS-17 Abraser Wheels, 1000 gram load 5000 cycles		
	Weight Loss (mg/1000 cycles)		15
	Volume Loss (cu.mm./1000 cycles)		8.5
I.	Cathodic Disbondment (ASTM G8)		Pass 60 days
J.	Vapor Transmission (ASTME-96 Method B)		1.392 Grains/Hr./ft.^{2}
K.	Elongation (ASTM D1737)		70%
L.	Elcometer Adhesion (ASTM D4541)		>2000 psi.
M.	Conforms to Mil 24176 SH		

CHESTERTON®

Revision 4
January, 1995

MATERIAL SAFETY DATA SHEET

A. W. CHESTERTON COMPANY
Middlesex Industrial Park/Route 93, Stoneham, MA 02180

Emergency Telephone No. 617-438-7000 (Day)
617-438-7013 (Night)

Section I

Date of Prep. December 15, 1988

MSDS No. 192A-2

Product Name: 855 Abrasion Control Liquid Part A Black, Gray

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard

HEALTH	1
FLAMMABILITY	1
REACTIVITY	1
Personal Protection	*

* = See Section VIII - Special Protection Information

General Use and Precautionary Information
Chesterton's Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS

Ingredients/Synonyms	CAS No.	% Wt.	OSHA PEL	ACGIH TLV	Vapor Pressure
Bisphenol A Diglycidyl Ether Resin	25068-38-6	30-35	- -	- -	**

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS

None				X Material named contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Section III - PHYSICAL DATA

Initial Boiling Point N/A

Percent Volatile (by volume) <1

Vapor Density (Air = 1) >1

Evaporation Rate (Ether = 1) <1

Weight Per Gallon 13.74 lbs. (1.65 kg/l)

Section IV - FIRE AND EXPLOSION DATA

Flash Point 249°C (480°F) Closed Cup

LEL Not Determined

DOT Shipping Name Nonhazardous
DOT Hazard Class Not Restricted
DOT UN/NA # N/A

Extinguishing Media Carbon Dioxide, dry chemical, foam or water fog.

Unusual Fire and Explosion Hazards Thermal decomposition can form aldehydes, acids or other toxic fumes.

Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

Product Name: ESS Abrasion Control Liquid Part A
Black, Gray

Date: December 15, 1988

Section V — REACTIVITY DATA

Stability State

Hazardous Decomposition Products Carbon Monoxide, aldehydes, acids and other toxic fumes.

Hazardous Polymerization

☐ *May Occur* ☒ *Will Not Occur*

Conditions to Avoid None

Materials to Avoid Strong mineral acids, strong oxidizers like liquid Chlorine and concentrated Oxygen.

Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use Skin and eye contact. Personnel with pre-existing allergies may be aggravated by exposure.

Acute Effects Moderate eye and skin irritant. May cause skin sensitization as evidenced by rashes or hives.

Chronic Effects Although the significance is unknown, Bisphenol A Diglycidyl Ether resin has been shown to be mutagenic in some microbial tests but has failed to show mutagenicity in others. Chromosomal aberrations were observed in cultured rat liver cells.

Emergency and First Aid Procedures

Inhalation N/A

Eye/Skin Contact Remove contaminated clothing. Wash skin with soap and water. Flush eyes for at least 15 minutes with large quantities of water. Consult physician if irritation persists.

Ingestion Do not induce vomiting. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to Be Taken In Case Material Is Spilled or Released
Avoid skin contact. Scoop up and transfer to a suitable container for disposal.

Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations.

Section VIII — SPECIAL PRCTECTION INFORMATION

Respiratory Protection Not needed.

Ventilation No special requirements.

Protective Gloves Chemical resistant gloves (e.g., Neoprene).

Eye Protection Safety goggles.

Other Impervious clothing as necessary to prevent skin contact.

Section IX — SPECIAL PRECAUTIONS

Precautions In Handling and Storing Store in cool, dry area.

Other Precautions Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

CHESTERTON®

MATERIAL SAFETY DATA SHEET

A. W. CHESTERTON COMPANY
Middlesex Industrial Park/Route 93, Stoneham, MA 02180

Emergency Telephone No. 617-438-7000 (Day)
617-438-7013 (Night)

Section I

Date of Prep. December 15, 1992

MSDS No. 1923-2

Product Name: 255 Abrasion Control Liquid Part B

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS)

4 = Severe Hazard
3 = Serious Hazard
2 = Moderate Hazard
1 = Slight Hazard
0 = Minimal Hazard

HEALTH	3
FLAMMABILITY	1
REACTIVITY	1
Personal Protection	*

* See Section VIII - Special Protection Information

General Use and Precautionary Information

Chesterton® Metal Repair System: Repair damage caused by impact, abrasion, erosion or corrosion; rebuild worn areas; fill holes and cracks; provide abrasion resistant surfaces. The safety and health hazards are detailed for Part A and Part B; separately. The final cured product is considered nonhazardous. Upon machining, it can only be categorized as a nuisance dust.

Section II - HAZARDOUS INGREDIENTS

Ingredients/Synonyms	[illegible]	CAS No.	% Wt.	[illegible]	[illegible]	Vapor Pressure
Nonyl Phenol		25154-52-3	>5	-	-	-
Benzyl Alcohol		100-51-6	<45	-	-	-
1-Piperazineethanamine SYN: 1-(2-Aminoethyl) piperazine		140-31-8	>5	-	-	-

Section IIA - OTHER INGREDIENTS on the EPA LIST OF TOXIC CHEMICALS

None				X Material named contains or is a toxic chemical(s), subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Section III - PHYSICAL DATA

Initial Boiling Point N/A *Percent Volatile (by volume)* < 1.0

Vapor Density >1 (Air = 1) *Evaporation Rate* <1 (Ether = 1) *Weight Per Gallon* 8.5-8.6 lbs. (1.03 kg/l)

Section IV - FIRE AND EXPLOSION DATA

Flash Point 93°C (200°F) Closed Cup *LEL* Not Determined

DOT Shipping Name Corrosive Liquid, n.o.s.
DOT Hazard Class Corrosive
DOT UN/NA # UN1760

Extinguishing Media Carbon Dioxide, dry chemical or foam.

Unusual Fire and Explosion Hazards Thermal decomposition can form Carbon Monoxide, Nitrogen Oxides and other toxic fumes.

Special Fire Fighting Procedures Cool exposed containers with water. Recommend Firefighters wear self-contained breathing apparatus.

Product Name: 855 Abrasion Control Liquid Part B — **Date:** December 15, 1988

Section V — REACTIVITY DATA

Stability Stable

Hazardous Decomposition Products Carbon Monoxide, Carbon Dioxide, NOx and other toxic fumes.

Hazardous Polymerization

☐ *May Occur* ☒ *Will Not Occur*

Conditions to Avoid Open flames and red hot surfaces.

Materials to Avoid Strong mineral acids, strong oxidizers like liquid Chlorine and concentrated Oxygen.

Section VI — HEALTH HAZARD DATA

Primary Route of Exposure Under Normal Use Inhalation, skin and eye contact.

Acute Effects Direct contact will cause burns to skin, eyes, and mucous membranes. High vapor concentrations can cause severe eye and respiratory tract irritation.

Chronic Effects Prolonged or repeated contact may cause asthma, skin sensitization and other allergic reactions.

As per 29 CFR 1910.1200 (Hazard Communication), there are NO carcinogens in this product as listed in the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC) or the Occupational Health and Safety Administration (OSHA).

Emergency and First Aid Procedures

Inhalation Remove to fresh air. If not breathing, administer artificial respiration. Contact physician.

Eye/Skin Contact Flood area with water while removing contaminated clothing. Wash clothing before reuse. Flush eyes for at least 30 minutes with large amounts of water. Consult physician.

Ingestion If conscious, do not induce vomiting; drink milk, water or vinegar. Contact physician immediately.

Section VII — SPILL OR RELEASE PROCEDURES

Steps to be Taken In Case Material Is Spilled or Released
Evacuate area. Provide adequate ventilation. Avoid skin contact. Scoop up and transfer to a suitable container for disposal.

Waste Disposal Method Landfill sealed containers in an approved area. Check local, state and federal regulations.

Section VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection Not normally needed. If necessary, utilize an approved air supplied respirator.

Ventilation No special requirements. If necessary, provide adequate ventilation.

Protective Gloves Chemical resistant gloves (e.g., natural rubber or PVC).

Eye Protection Safety goggles.

Other Impervious clothing as necessary to prevent skin contact.

Section IX — SPECIAL PRECAUTIONS

Precautions in Handling and Storing Store in cool, dry area.

Other Precautions Remove contaminated clothing immediately. Wash clothing before reuse. Contaminated leather including shoes cannot be decontaminated so they should be discarded.

product data sheet

carboline

PHENOLINE® 300 FINISH

CARBOLINE COMPANY • 1401 S. HANLEY ROAD • ST. LOUIS, MO. 63144 • 314-644-1000

SELECTION DATA

GENERIC TYPE: Modified phenolic. Part A and Part B mixed prior to application.

GENERAL PROPERTIES: A high build, high solids material having a long established record of successful applications in severe chemical exposures. Hard, tough film has excellent abrasion resistance. Withstands continuous temperatures up to 200°F (93°C). Resistant to a wide range of acids, alkalies, solvents, salts and combinations of these corrosives, both in immersion and heavy duty maintenance.

RECOMMENDED USES: Primarily used as part of a tank lining or floor coating system for severe chemical resistance.

NOT RECOMMENDED FOR: Immersion or splash and spillage of hot or concentrated oxidizing acids.

CHEMICAL RESISTANCE GUIDE: (Consult Carboline representative for specific recommendations).

Exposure	Immersion	Splash and Spillage
Acids	Very Good	Excellent
Alkalies	Very Good	Excellent
Solvents	Very Good	Excellent
Salt	Excellent	Excellent
Water	Excellent	Excellent

TEMPERATURE RESISTANCE: (non-immersion)
Continuous: 200°F (93°C)
Non-continuous. 250°F (121°C)

Immersion temperature resistance depends on exposure, but should not exceed 180°F (82°C).

Metal tanks must be insulated when operating temperatures exceed 140°F (60°C).

ABRASION RESISTANCE: Excellent.

SUBSTRATES: Can be used over suitably primed steel, concrete, aluminum and others as recommended. Accepted primers are normally PHENOLINE® 300 Orange or CARBOLINE® 195 Surfacer.

TOPCOAT REQUIRED: Normally none.

COMPATIBILITY WITH OTHER COATINGS: May be applied over modified phenolics or others as recommended. 600

SPECIFICATION DATA

THEORETICAL SOLIDS CONTENT OF MIXED MATERIAL:

	By Volume
PHENOLINE 300 Finish	78% ± 2%

RECOMMENDED DRY FILM THICKNESS PER COAT: 8 mils (200 microns)

THEORETICAL COVERAGE PER MIXED KIT*:
(1.25 gals.)
1564 mil sq. ft. (31.2 m^2 /l at 25 microns)
195 sq. ft. at 8 mils (3.9 m^2 /l at 200 microns)

*NOTE: Material losses during mixing and application will vary and must be taken into consideration when estimating job requirements.

SHELF LIFE: 24 months minimum.

COLORS: Available in a variety of colors. Consult your local Sales Representative or Carboline Customer Service for availability.

GLOSS: Semi-Gloss.

ORDERING INFORMATION

Prices may be obtained from Carboline sales representative or main office.

APPROXIMATE SHIPPING WEIGHT:

	1.25's	6.25's
PHENOLINE 300 Finish	18 lbs. (8.2 kg)	83 lbs. (37.7 kg)
PHENOLINE Thinner	9 lbs. (4.1 kg)	45 lbs. (20.4 kg)

FLASH POINT: (Pensky-Martens Closed Cup)

PHENOLINE 300 Finish Part A	77°F (25°C)
PHENOLINE 300 Part B	54°F (12°C)
PHENOLINE THINNER	77°F (25°C)

Oct. 84 Replaces Aug. 82

APPLICATION INSTRUCTIONS

300 Finish

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

600

SURFACE PREPARATION: Remove any oil or greaase from surface to be coated with clean rags soaked in CARBOLINE Thinner #2 or toluol in accordance with SSPC-SP 1-82.

Steel: Apply over clean, dry recommended primer.

Concrete: Apply over clean, dry recommended primer or surfacer as recommended.

MIXING: Mix separately, then combine and mix in the following proportions:

	1.25 Gal. Kit	6.25 Gal. Kit
PHENOLINE 300 Finish Part A	1 Gal. Can	1-5 Gal. Can
PHENOLINE 300 Part B	1 Qt. Can	1-5 Qt. Can

Thin up to 25% by volume with PHENOLINE Thinner.

NOTE: Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

POT LIFE: One hour at 75°F (24°C) and less at higher temperatures. Pot life ends when coating loses body and begins to sag.

APPLICATION TEMPERATURES:

	Material	Surfaces
Normal	65-85°F (18-29°C)	60-85°F (16-29°C)
Minimum	55°F (13°C)	50°F (10°C)
Maximum	90°F (32°C)	120°F (49°C)

	Ambient	Humidity
Normal	60-85°F (16-29°C)	30-70%
Minimum	50°F(10°C)	0%
Maximum	120°F (40°C)	85%

Special thinning and application techniques may be required above or below normal conditions.

Do not apply when the surface temperature is less than 5°F (2°C) above dew point.

SPRAY: Use sufficient air volume for correct operation of equipment.

Use a 50% overlap with each pass of the gun. On-irregular surfaces, coat the edges first, making an extra pass later.

NOTE: The following equipment has been found suitable; however, equivalent equipment may be substituted.

Conventional: Use 1/2" minimum I.D. material hose. Hold gun approximately 12-14 inches from the surface and at a right angle to the surface.

Mfr. & Gun	Fluid Tip	Air Cap
Binks #18 or #62	63C	63 PB
DeVilbiss P-MBC or JGA	FF	704
	approx. .052" I.D.	

*Airless: Use 3/8" minimum I.D. material hose. Hold gun approximately 18-20 inches from the surface and at a right angle to the surface.

Mfr. & Gun	Pump
DeVilbiss JGB or JGN	QFA-514 or QFA-519
Graco 205-591	President 30:1 or Bulldog 30:1
Binks Model 700	85-18 29:1 or 88-36 37:1

*Teflon packings are recommended and are available from pump manufacturer.

Use a .017-.019" tip with 2200 psi.

BRUSH: Brush out well using full strokes. Avoid rebrushing.

DRYING TIMES:

	Minimum	Maximum
Between coats	24 hours at 50°F (10°C)	4 days
	18 hours at 60°F (16°C)	3 days
	12 hours at 75°F (24°C)	2 days
	6 hours at 90°F (32°C)	1 day

If maximum drying time between coats is exceeded, special surface preparation will be required.

Final cure:	Immersion	Dry
50°F (10°C)	28 days	4 days
60°F (16°C)	14 days	3 days
75°F (24°C)	7 days	2 days
90°F (32°C)	5 days	1 day

NOTE: Excessive film thickness or poor ventilating conditions require longer dry times, and in extreme cases may cause premature failure. Excessive humidity or condensation on the surface during curing may result in a surface haze or blush; any haze or blush should be removed by water washing before recoating.

VENTILATION & SAFETY: When used as a tank lining, thorough air circulation must be present during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to proper ventilation, fresh air respirators or fresh air hoods must be used by all application personnel. Where flammable solvents exist, explosion-proof lighting equipment must be used. Hypersensitive persons should wear clean protective clothing, gloves and/or protective cream on face, hands and all exposed areas.

CLEAN UP: Use CARBOLINE Thinner #2 or ketone solvent.

STORAGE CONDITIONS: (store indoors)
Temperature: 45-110°F (7-43°C) Humidity: 0-100%

CAUTION: CONTAINS FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS WORKMEN MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKMEN SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NONSPARKING SHOES.

1401 SOUTH HANLEY ROAD carboline ST. LOUIS, MO. 63144 • 314-644-1000

product data sheet

carboline

PHENOLINE® 300 ORANGE

SELECTION DATA

GENERIC TYPE: Modified phenolic. Part A, Part B and Special Mica Filler mixed prior to application.

GENERAL PROPERTIES: A heavy-duty primer with excellent bond to most surfaces including steel and concrete. Special Mica Filler is always added to give maximum bond strength. Outstanding resistance to severe chemicals, alkalies, salts and solvents (except immersion in strong oxidizing acids). Excellent resistance to sub-film corrosion.

RECOMMENDED USES: PHENOLINE 300 Orange is used as a primer for Phenoline topcoats in heavy duty splash and spillage service, for lining of tanks and protection of floors.

NOT RECOMMENDED FOR: Lining steel tanks where the temperature exceeds 180°F (82°C) or where heating-cooling cycles occur. Not recommended for immersion service in strong oxidizing acids.

CHEMICAL RESISTANCE GUIDE: (with proper topcoat)

Exposure	Immersion
Acids	Very Good
Alkalies	Excellent
Solvents	Very Good
Salt	Excellent
Water	Excellent

TEMPERATURE RESISTANCE: (Non-immersion)
Continuous: 200°F (93°C)

FLEXIBILITY: Poor WEATHERING: Good (chalks)

ABRASION RESISTANCE: Excellent

SUBSTRATES: Apply to properly prepared concrete, steel, stainless steel, aluminum or other surfaces as recommended.

TOPCOAT REQUIRED: May be topcoated with modified phenolics, catalyzed epoxies or others as recommended. Usual topcoats are PHENOLINE 300 Finish, PHENOLINE 300 Floor Finish, PHENOLINE 302 or others.

COMPATIBILITY WITH OTHER COATINGS: Apply directly to substrate. Use as a primer only.

SPECIFICATION DATA

600

THEORETICAL SOLIDS CONTENT OF MIXED MATERIAL:

	By Volume
PHENOLINE 300 Orange with Mica Filler	82% ± 2%

RECOMMENDED DRY FILM THICKNESS PER COAT: 8 mils (200 microns).

THEORETICAL COVERAGE PER MIXED KIT*: (2.75 Gals. including Mica Filler)
3617 mil sq. ft. (32.8 sq. m/l at 25 microns)
452 sq. ft. at 8 mils (4.1 sq. m/l at 200 microns)

*NOTE: Material losses during mixing and application will vary and must be taken into consideration when estimating job requirements.

SHELF LIFE: 12 months minimum.

COLORS: Orange only.

GLOSS: Medium

ORDERING INFORMATION

Prices may be obtained from Carboline sales representative or main office.

APPROXIMATE SHIPPING WEIGHT:

	2.5 Gal. Kit
PHENOLINE 300 Orange	50 lbs. (22.7 kg)
PHENOLINE Thinner	9 lbs. in 1's (4.1 kg) 45 lbs. in 5's (20.4 kg)

FLASH POINT: (Pensky-Martens Closed Cup)

PHENOLINE 300 Orange Part A	77°F (25°C)
PHENOLINE 300 Part B	54°F (12°C)
Special Mica Filler	Over 200°F (93°C)
PHENOLINE Thinner	77°F (25°C)

July 84 Replaces April 83

APPLICATION INSTRUCTIONS

300 Series

These instructions are not intended to show product recommendations for specific service. They are issued as an aid in determining correct surface preparation, mixing instructions, and application procedure. It is assumed that the proper product recommendations have been made. These instructions should be followed closely to obtain the maximum service from the materials.

SURFACE PREPARATION: Remove any oil or grease from surface to be coated with clean rags soaked in Carboline Thinner #2 or toluol in accordance with SSPC-SP 1-82.

STEEL: For immersion service, dry abrasive blast to a White Metal finish in accordance with SSPC-SP 5 to a degree of cleanliness in accordance with NACE #1 to obtain a 2 to 3 mil (50-75 micron) blast profile. Weld slag must be removed and welds ground to a rounded contour.

For non-immersion service, dry abrasive blast to a Commercial Finish in accordance with SSPC-SP 6 to a degree of cleanliness in accordance with NACE #3 to obtain a 2-3 mil (50-75 micron) blast profile.

CONCRETE: Remove fins and other protrusions by stoning, sanding or grinding. Concrete must be cured at least 28 days at 70°F (21°C) and 50% R.H. or equivalent time. Remove form oils, incompatible curing agents and hardeners by abrasive blasting.

Immersion Service — Abrasive blast to open all voids and obtain a surface similar to medium grit sandpaper (horizontal surfaces may be acid etched). Blow or vacuum off sand and dust. Extremely rough concrete surfaces may require CARBOLINE 195 Surfacer prior to application of PHENOLINE 300 Orange.

Non-Immersion Service — Horizontal surfaces must be acid etched or abrasive blasted to remove laitance. For other surfaces blow off with compressed air to remove dust.

MIXING: Power mix Part A and Part B separately, then combine and mix in the following proportions:

	2.5 Gal. Kit
PHENOLINE 300 Orange Part A	Two-1 Gal. cans
PHENOLINE 300 Part B	1/2 Gal.
Special Mica Filler (6-1/2 lbs.)	1 Gal.

Thin up to 30% by volume with PHENOLINE Thinner.

NOTE: Use of thinners other than those supplied or approved by Carboline may adversely affect product performance and void product warranty, whether express or implied.

POT LIFE: One hour at 75°F (24°C) and less at higher temperatures. Pot life ends when coating loses body and begins to sag.

APPLICATION TEMPERATURES:

	Material	Surfaces
Normal	65-85°F (18-29°C)	65-85°F (18-29°C)
Minimum	60°F (16°C)	60°F (16°C)
Maximum	85°F (29°C)	100°F (38°C)
	Ambient	**Humidity**
Normal	65-85°F (18-29°C)	30-70%
Minimum	50°F (10°C)	0%
Maximum	110°F (43°C)	85%

Do not apply when the surface temperature is less than 5°F (2°C) above the dew point.

Special thinning and application techniques may be required above or below normal conditions.

SPRAY: Use sufficient air volume for correct operation of equipment.

Use a 50% overlap with each pass of the gun. On irregular surfaces, coat the edges first, making an extra pass later.

NOTE: The following equipment has been found suitable, however, equivalent equipment may be substituted.

Conventional: Use 1/2" minimum I.D. material hose. Hold gun approximately 12-14 inches from the surface and at a right angle to the surface.

Mfr. & Gun	Fluid Tip	Air Cap
Binks #18 or #62	67	67 PB
DeVilbiss P-MBC or JGA	D approx. .086" I.D.	64

Airless*: Use 3/8" minimum I.D. material hose. Hold gun approximately 18-20 inches from the surface and at a right angle to the surface.

*NOTE: This material contains abrasive fillers which will abrade tips and possibly cause wear to other airless equipment parts with prolonged use.

Mfr. & Gun	Pump**
DeVilbiss JGN-502	QFA 519 32:1
Graco 205-591	Bulldog 30:1
Binks Model 700	88-36 37:1

**Teflon packings are recommended and are available from pump manufacturer. Use a .023-.027" tip with 2200 psi.

BRUSH: Use short bristled brush and work material into all corners and crevices.

DRYING TIMES:

Between coats:	Minimum	Maximum*
60°F (16°C)	36 hours	14 days
75°F (24°C)	18 hours	7 days
90°F (32°C)	12 hours	3 days

NOTE: Before topcoating, scrub surface with bristle brushes and clean water. Allow to dry thoroughly before topcoating.

*IF MAXIMUM DRYING TIME BETWEEN COATS IS EXCEEDED, PRIMER MUST BE THOROUGHLY CLEANED WITH CARBOLINE SURFACE PREPARATION #1 PRIOR TO TOPCOATING.

NOTE: When used as a tank lining, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to proper ventilation, fresh air respirators or fresh air hoods must be used by all application personnel. Where flammable solvents exist, explosion-proof lighting equipment must be used. Hypersensitive persons should wear clean protective clothing, gloves and/or protective cream on face, hands and all exposed areas.

CLEAN UP: Use CARBOLINE Thinner #2 or xylol.

STORAGE CONDITIONS:
Temperature: 40-110°F (4-43°C) Humidity: 0-100%

CAUTION: CONTAINS FLAMMABLE SOLVENTS. KEEP AWAY FROM SPARKS AND OPEN FLAMES. IN CONFINED AREAS WORKMEN MUST WEAR FRESH AIRLINE RESPIRATORS. HYPERSENSITIVE PERSONS SHOULD WEAR GLOVES OR USE PROTECTIVE CREAM. ALL ELECTRIC EQUIPMENT AND INSTALLATIONS SHOULD BE MADE AND GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. IN AREAS WHERE EXPLOSION HAZARDS EXIST, WORKMEN SHOULD BE REQUIRED TO USE NONFERROUS TOOLS AND TO WEAR CONDUCTIVE AND NONSPARKING SHOES.

CHESTERTON. POLYMER COMPOSITES

TECHNICAL PRODUCTS DIVISION

FORMERLY 798

791 RESURFACING COMPOSITE

DESCRIPTION

A quartz reinforced composite designed to resurface and restore concrete surfaces, to protect new concrete, and to repair concrete damaged by chemical and physical abuse. 791 has excellent resistance to a broad spectrum of chemicals that are destructive to concrete. It is a screedable overlayment which can be used at a thickness as low as 6mm (1/4 inch). Its consistency is ideal for horizontal applications, and can be worked with minimal effort. 791 closes easily with a trowel, sealing the surface to prevent chemical attack on the substrate by permeation.

The product produces a dense, fine textured surface. Non-shrinking. No solvents, 100% Solids. Color: Light gray

791 Resurfacing Composite is generally used to repair and upgrade concrete surfaces or as a replacement for acid resistant tiles, epoxy mortars, fiberglass, and other overlayments. It is formulated to be compatible with the thermal coefficient of expansion and contraction of concrete. 791 has the unusual ability to bond to damp surfaces.

COMPOSITION - Polymer/Quartz Composite

Matrix - A two component, moisture insensitive, compounded epoxy resin; reacted with a modified aliphatic amine curing agent.

Reinforcement - A proprietary blend of quartz reinforcement which is pretreated with a polymer coupling agent. Dense packing of the reinforcement achieves a thermal coefficient of expansion close to that of concrete.

SUGGESTED USES

- Acid and Alkali Spill Areas
- Bottling Lines
- Equipment Bedding
- Pump Bases/Grouting
- Waste Water Treatment
- Bleaching Areas
- Concrete Tanks/Sumps
- Food Processing Plants
- Trenches/Drains

BENEFITS

- Fine textured sealed surface produces a tough, durable,chemical resistant, low maintenance overlayment.
- Compatible thermal coefficient of expansion provides long-term resistance to disbondment. Suitable for steam cleaning and other types of thermal shock.
- Hydrophobic primer provides outstanding adhesion to damp concrete, a unique feature for concrete coatings.
- User friendly, consistency makes installation and finishing fast and easy with hand tools or power equipment.
- Stronger than standard concrete, tough resin structure resists mechanical impact.

CHEMICAL RESISTANCE

Tested at 21°C (70°F). Samples cured 10 days at 25°C (77°F), post curing will improve chemical resistance. Refer to Application Manual.

1 = Continuous long term immersion
2 = Short term/intermittent immersion
3 = Splash and spills with immediate clean up, vapors
4 = Not recommended for direct contact

	Acids		Other Compounds	
10%	Acetic	1	Acetone	3
20%	Acetic	3	Benzene	2
50%	Acetic	4	Bunker C	1
10%	Hydrochloric	1	2-Butoxyethanol	2
20%	Hydrochloric	2	Carbon Tetrachloride	1
37%	Hydrochloric	3	Chloroform	3
10%	Nitric	2	Deionized Water	1
20%	Nitric	2	Dibutyl Phthalate	1
69%	Nitric	4	Diesel Fuel	1
10%	Phosphoric	1	Ethyl Acetate	2
30%	Phosphoric	2	Formaldehyde	1
85%	Phosphoric	3	Hexane	1
10%	Sulfuric	1	Isopropanol	1
70%	Sulfuric	2	Methanol	2
98%	Sulfuric	3	Methyl Ethyl Ketone	2
	Alkalies & Bleaches		Methylene Chloride	3
28%	Ammonium Hydroxide	1	Mineral Spirits	1
20%	Potassium Hydroxide	2	Perchloroethylene	2
45%	Potassium Hydroxide	1	Salt Water	1
6%	Sodium Hypochlorite	1	Sewage	1
50%	Sodium Hydroxide	1	Toluene	2
			1,1,1 Trichloroethane	1

TECHNICAL DATA

Cured Density		2.0 g/cc	125 lb/cu.ft.
Volumetric Density		500 cc/kg	13.8 cu.in./lb
Compressive strength	(ASTM C-579)	843 kg/cm²	11,990 psi
Flexural Strength	(ASTM C-580)	280 kg/cm²	3,982 psi
Tensile Strength	(ASTM C-307)	107 kg/cm²	1,518 psi
Flexural Modulus of Elasticity	(ASTM C-580)	1.23×10^5 kg/cm²	1.75×10^6 psi
Bond Strength: Excellent - 100% Concrete Failure		>28 kg/cm²	>400 psi
Linear Coefficient of Thermal Expansion	(ASTM C-531)	2.2×10^{-5} cm/cm/°C	1.1×10^{-5} in/in/°F
Composite Shore D Durometer Hardness	(ASTM D-2240)	>90	
Thermal Compatibility to Concrete	(ASTM C-884)	Passes	
Water Absorption	(ASTM C-413)	0.08%	
Linear Shrinkage	(ASTM C-531)	.009%	
Abrasion Resistance (H-18 Wheel)	(ASTM D-4060)	0.206 grams maximum weight loss	
Maximum Temperature	Continuous	66°C	150°F
(Dependent on service)	Intermittent Immersion	93°C	200°F

SURFACE PREPARATION

Proper surface preparation is important to the long term performance of this system. For detailed information on surface preparation and application please refer to Chesterton's Application Instructions.

Generally the concrete must be cured for a minimum of 28 days. Remove all grease, oils, and grime by washing with an emulsifying alkaline waterbase cleaner such as Chesterton* 801 Industrial & Marine Solvent. All surface contaminants including old coatings, chemical salts, dust, loose concrete, and the laitence layer must be removed. This is best accomplished by water blasting, Blastrac™*, scabbler, scarifying, or dry abrasive blasting. If mechanical roughening is not possible, acid etch with Chesterton 346 Descaler & Chemical Cleaner followed by water rinsing. The resulting surface should be rough, porous and free of standing water; dampness is acceptable.

797 PRIMER: MIXING AND APPLICATION

Each unit contains a two component primer (797 Polymer Concrete Primer) which is packaged to the proper mix ratio. Add Primer Part B to Primer Part A and mix thoroughly; the properly mixed primer should be clear not cloudy. Apply by brush, roller, squeegee or spray to the prepared concrete. This primer coat should be a uniform light wet coat at a thickness of 75-100 microns (3-5 mils). Do not prime more surface area than can be top coated within 4 hours.

WORKING TIME - Minutes

	10°C 50°F	16°C 60°F	25°C 77°F	32°C 90°F
797 Primer	65	40	30	18
791 Top Coat	2 hr	70	50	35

The chart defines working life from when mixing begins.

791 TOP COAT: MIXING AND APPLICATION

To facilitate mixing and application, all material temperatures should be between 21°-32°C (70°-90°F) prior to mixing. 791 Resurfacing Composite should be applied shortly after application of the primer. The primer must be wet prior to applying 791, this is normally 4 hours. Otherwise the area must be reprimed.

791 should be applied at a minimum thickness of 6 mm (1/4 inch). Minimum application temperature is 10°C (50°F), although application will be easier at 25°C (77°F).

Premix Part A to disperse pigments. Thoroughly mix Top Coat Part A and Part B in a suitable pail, using a low speed mixer. Next, transfer the blended resins to a mortar mixer and gradually add in the Quartz reinforcement Part C. Total mixing time should be 2-3 minutes.

After mixing, using screed guides and rigid bar, or screed box, not exceeding 1.2 m (4 ft) wide, apply a minimum of 6 mm (1/4 in) and finish using steel trowels. Large areas may be power troweled to achieve the required flatness and finish. Remove all trowel marks and unevenness before the end of "Working Time", see chart below. All seams and cold joints should run parallel with traffic patterns.

PACKAGING AND COVERAGE

Material is available in an industrial unit covering 20.9 m^2 at 6 mm (225 ft^2 at 1/4 inch). All components are premeasured and preweighed. The industrial unit can easily be proportioned into four smaller units if desired.

Each unit contains a two component primer "797 Polymer Concrete Primer" and the three component "791 Resurfacing Composite Top Coat". The top coat consists of 791 Top Coat Part A (the resin) and 791 Top Coat Part B (the curing agent) and 791 Top Coat C (the quartz reinforcement). Also included are application instructions, a brush, and a mixing tool for the primer.

This unit includes multiple containers of each component, to allow for mixing of a partial unit. Each contains 8 bags of the quartz reinforcement and 4 each of the other four components: The 797 Primer A, 797 Primer B, 791 Top Coat A, and 791 Top Coat B.

CURING SCHEDULE

	10°C (50°F)	16°C (60°F)	25°C (77°F)	32°C (90°F)
Foot Traffic	16 hrs	9 hrs	6 hrs	4.5 hrs
Light Load	24 hrs	19 hrs	11 hrs	8.5 hrs
Full Load	72 hrs	42 hrs	24 hrs	19 hrs
Full Chemical	19 days	13 days	7 days	5 days

Cure times are based on a thickness of 6mm (1/4 inch) . Thicker films will cure more rapidly.

CLEAN UP

Use Chesterton 261 Safety Solvent Cleaner or other commercial solvents (Acetone, Xylene, Alcohol, Methyl Ethyl Ketone) to clean tools immediately after use. Once cured, the material would have to be abraded off.

STORAGE

Recommended storage temperature is between 10°C (50°F) and 32°C (90°F). Excursions beyond this range which may occur during shipping, are acceptable. The shelf life is two years in unopened containers.

SAFETY

Before using any products, review the appropriate Material Safety Data Sheet (MSDS) or Safety Sheet for your area.

*Wheelabrator Corporation Trademark.

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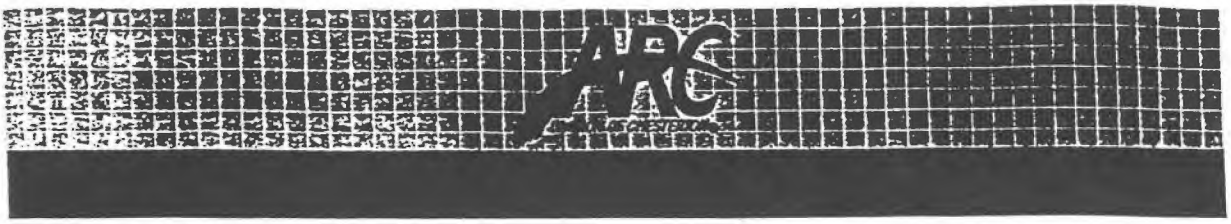


PRODUCT DATA SHEET

Description

An advanced ceramic composite formulated to protect equipment from aggressive chemical attack, corrosion, and erosion. The product is a low viscosity composite that is easily applied by brush or roller.
The ARC 855 may be applied at a minimum thickness of 250 microns (10 mils) per coat. Non-shrinking. 100% Solids. Colors are black and gray.
ARC 855 may be used alone, or in conjunction with other ARC composites. This two-coat system provides extended wear and predictable preventative maintenance. The cured ceramic composite provides outstanding chemical and abrasion resistance with a high gloss finish.

Composition - Polymer/Ceramic Composite

Matrix - A two component, modified epoxy resin structure reacted with an aliphatic curing agent.
Reinforcement - A proprietary blend of ceramics, selected to achieve a smooth, brush applied, wear resistant surface.

Suggested Uses

- Fans & Housings
- Heat Exchangers
- Hoppers
- Hydro Pulpers
- Pump Casings
- Sand Filter Vessels
- Structural Steel
- Tanks and Vessels
- Volutes
- Wet Scrubbers
- Valves
- Coal Hoppers and Feeders
- Waterboxes
- Cooling Water Pumps
- Wear Plates
- Coal Screens
- Impellers
- Condensers
- Vacuum Pumps
- Pitted Tanks and Pipes
- Pulp Dewatering Screws

Benefits

- High gloss surface reduces drag, improves flow and pump efficiency.
- Tough resin structure resists thermal-mechanical shock.
- Outstanding adhesion insures reliable performance with no undercutting or under film corrosion.
- Labor and downtime costs are reduced due to ease of application. No heat curing required.
- Performs well under fluctuating chemical environments.

Packaging

Material is available in three package sizes: 250 g, 1 kg and 4,5 kg. Each package contains premeasured containers (Part A and Part B). A mixing tool, a brush and application instructions are also included.

Chemical Resistance

Tested at 21°C (70°F). Samples cured 5 days at 25°C (77°F), post curing will improve chemical resistance.

1 = Continuous long term immersion
2 = Short term/intermittent immersion
3 = Splash and spills with immediate cleanup, vapors
4 = Not recommended for direct contact

Acids		***Other Compounds***	
10% Hydrochloric	1	Bunker C	1
20% Hydrochloric	2	Diesel Fuel	1
37% Hydrochloric	3	Isopropyl Alcohol	1
10% Sulfuric	1	Kerosene	1
20% Sulfuric	2	Naphtha	1
5% Nitric	1	Salt Water	1
10% Nitric	2	Sewage	1
5% Phosphoric	1	Xylene	1
20% Phosphoric	2	Toluene	1
Alkalies & Bleaches			
28% Ammonium Hydroxide	1		
10% Potassium Hydroxide	1		
50% Potassium Hydroxide	1		
10% Sodium Hydroxide	1		
50% Sodium Hydroxide	1		
6% Sodium Hypochlorite	1		

Technical Data

Cured Density	----------	1,6 g/cc	100 lb/ cu./ft.
Volumetric Density	----------	625 cc/kg	17.3 cu. in./lb.
Compressive Strength	(ASTM D-695)	844 kg/cm^2	12,000 psi
Flexural Strength	(ASTM D-790)	562 kg/cm^2	8,000 psi
Tensile Strength	(ASTM D-638)	240 kg/cm^2	3,420 psi
Linear Coefficient of Thermal Expansion	(ASTM C-531)	4,61 x 10^{-5} cm/cm/°C	2.56 x 10^{-5} in/in/°F
Cathodic Disbondment	(ASTM G-8)	Passes 60 days	
Composite Rockwell Hardness	(ASTM D-785)	R105	
Composite Shore D Durometer Hardness	(ASTM D-2240)	85	
Salt fog - scored panels	(ASTM B-117)	No rust > 10,000 hours	
Vertical Sag Resistance, at 21°C (70°F) and 0,50 mm (.020")		No sag	
USDA Authorized			
Maximum Temperature (Dependent on service)	Wet Service Dry Service	65°C 120°C	149°F 248°F

Surface Preparation

Proper surface preparation is critical to the long term performance of this product. The exact requirements vary with the severity of the application, expected service life, and initial substrate conditions.

Optimum preparation will provide a surface thoroughly cleaned of all contaminants and roughened to an angular profile between 75 and 125 microns (3 to 5 mils). This is normally achieved by initial cleaning, abrasive blasting to a cleanliness of White Metal (SA 3/SSPC - SP5) or Near-White Metal (SA 2 1/2/SSPC - SP10), followed by rinsing with an organic solvent which evaporates leaving no film residue.

Mixing

To facilitate mixing and application, material temperature should be between 21° - 32°C (70° - 90°F). Each kit is packaged to the proper mix ratio. If further proportioning is required, they should be divided according to the mix ratios:

Mix Ratio	By Weight
A:B	6.8:1

Pour the entire contents of Part B into Part A and mix at low speed with a variable speed drill or the supplied mixing tool for three to five minutes. Thoroughly scrape the sides and bottom of the container to completely mix both components. Transfer a small portion of this mix back to Part B container and scrape side and bottom. Then transfer back to Part A container.

Working Time - Minutes

	16°C 60°F	25°C 77°F	32°C 90°F
250 g	70	50	30
1 kg	70	40	25
4,5 kg	70	35	20

The chart above defines the practical working time of ARC 855, starting from when mixing begins.

Application

ARC 855 can be applied at a minimum thickness of 250 microns (10 mils). Normal application thicknesses range from 375 - 750 microns (15 - 30 mils) per coat. When used alone, ARC 855 should always be applied in two coats. Minimum application temperature is 10°C (50°F).
Using a paint brush or roller, completely wet out the surface. Then apply the composite material to desired thickness.

If required, ARC 855 can be machined using a carbide tool prior to reaching "Light Load," as described below.
Otherwise use a diamond cutting tool or post grind.

In certain applications requiring additional support, it may be advantageous to impregnate nylon mesh into the composite while still wet.

The material may be used in combination with any of the ARC Polymer Composites either as a base coat or as a top coat.
If the composite has cured to the point of "Light Load" described below, the surface should be roughened and rinsed with an organic solvent prior to top coating. Prior to curing to "Light Load" no surface preparation is required provided that the surface has not been contaminated.

Coverage

Based on a 0,8 mm (1/32") thickness:
250 g kit will cover 0,20 m^2 (2.11 ft^2)
1 kg kit will cover 0,78 m^2 (8.45 ft^2)
4,5 kg kit will cover 3,53 m^2 (38.05 ft^2)

To calculate the kilograms required for a given application use the appropriate formula below:
1,6 x Area (m^2) x Average Thickness (mm) = kg or
3.8 x Area (ft^2) x Average Thickness (inches) = kg

Curing Schedule

	16°C 60°F	25°C 77°F	32°C 90°F
Tack Free	12 hrs	8 hrs	4 hrs
Light Load	28 hrs	24 hrs	18 hrs
Full Load	62 hrs	48 hrs	38 hrs
Full Chemical	96 hrs	72 hrs	58 hrs

Full chemical properties can be achieved rapidly by force curing. To force cure, first allow the material to become tack free, then heat to 70°C (158°F) for 4 hours.

Clean Up

Use commercial solvents (Acetone, Xylene, Alcohol, Methyl Ethyl Ketone) to clean tools immediately after use. Once cured, the material would have to be abraded off.

Storage

Store between 10°C (50°F) and 32°C (90°F). Excursions beyond this range which may occur during shipping, are acceptable. The shelf life is two years in unopened containers.

Safety

Before using any products, review the appropriate Material Safety Data Sheet (MSDS) or Safety Sheet for your area.
Follow standard confined space entry and work procedures, if appropriate.

ARC DIVISION OF CHESTERTON™
225 FALLON ROAD, MIDDLESEX INDUSTRIAL PARK
STONEHAM, MASSACHUSETTS 02180-9101 USA
TEL: (617) 438-7000 TELEX: 94-9417 – FAX: (617) 438-2930
CABLE: CHESTERTON STONEHAM, MASS.

Sealing Technology
2071 Midway Drive
Twinsburg, Ohio 44087
216 - 425 - 3313

FORM NO. E77064 REV. 1/93 PRINTED IN USA 2/93

R.E. WARNER & ASSOCIATES

GEMINI TOWERS II • 2001 CROCKER ROAD
WESTLAKE, OHIO 44145 • TELEPHONE 216/835-9400 • FAX 216/835-9474

April 26, 1989

CERTIFICATION OF CONSTRUCTION

Container Storage Facility

I, Clarence D. Watkins, being an indepedent, qualified, registered, professional engineer, do hereby attest that the Container Storage Facility constructed at 394 Giles Road, Grafton, Ohio at the site of Ross Incineration Services, Inc. has been constructed in accordance with the design drawings prepared by the engineer R. E. Warner & Associates.

The design of the Container Storage Facility is such as to provide a covered secondary containment area for the storage of drums and rolling stock containing hazardous and nonhazardous waste. The design of the Container Storage Facility will minimize the run-on of rain water and promote the collection and segregation of any spills or leaks that may occur on the concrete membrane of the floor slab.

The concept of preventing run-on rainfall and collection and containment of spills and leaks of stored materials has been faithfully implemented during construction. A full time inspector has been on-site during the construction phase of the foundations, sub-base and secondary containment membrane.

I performed an inspection on March 30, 1989 of specific areas of the Container Storage Facility. No cracks in the concrete membranes were observed. The construction details for sealing construction joints was complete. The valved segregation sumps were in place and operational. The valving between the contaminated and non-contaminated sump compartments was found leak free.

Based on observation during construction and the above inspection only two items remain to be completed. Both of these items are located within column row area B-C and 1-2. These two items are:

1. A sealed manhole cover for manhole "C".

2. Installation and operation of the subsurface drainage sump pump.

The subsurface drainage sump pump is located in manhole "C".

Except for these two items, I do attest that the secondary containment system for the Container Storage Facility is free of cracks and gaps.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Clarence D. Watkins P.E.

Clarence D. Watkins
Registered Professional Engineer
State of Ohio
Registration No. E-046956

R.E. WARNER & ASSOCIATES

GEMINI TOWERS II • 2001 CROCKER ROAD
WESTLAKE, OHIO 44145 • TELEPHONE 216/835-9400 • FAX 216/835-9474

June 5, 1989

Addendum To
CERTIFICATION OF CONSTRUCTION
CONTAINER STORAGE FACILITY
Original Certification Letter
Dated April 26, 1989
Ross Incineration Services, Inc.
Grafton, Ohio 44044

I, Clarence D. Watkins, being an independent qualified registered professional engineer, do hereby attest that:

1. The sub-surface drainage sump pump was installed and operable.

2. A sealed manhole cover was installed at manhole "C".

These items were inspected by me on the above date.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Clarence D. Watkins
Registered Professional Engineer
State of Ohio
Registration No. E-046956

ENGINEERING ASSESSMENT OF UPGRADE SECONDARY CONTAINMENT FOR TANK NOS. 67 & 68

R. E. WARNER JOB NO. 13901

Prepared for:

ROSS INCINCERATION SERVICES, INC
GRAFTON, OHIO

REV. 0

MARCH 11, 2002

Prepared by:
R. E. WARNER & ASSOCIATES, INC.
THREE KING JAMES PARK, SUITE 300
24600 CENTER RIDGE ROAD
WESTLAKE, OHIO 44145
TEL: (440) 835-9400 FAX: (440) 835-9474
E-MAIL: mailroom@rewarner.com
WEBSITE: www.rewarner.com

Table of Contents

1.0 INTRODUCTION

As part of planned upgrades of the Caustic Building, Ross Incineration Services, Inc. ("RIS") has made modifications to the building's secondary containment system, eliminating the pump pit at the west end of the building. For purposes of this certification, the upgraded floor of the Caustic Building is now considered to be one secondary containment area – Area 8. The former separate areas, Areas 8A – main floor, and 8B – pump pit, no longer exist.

RIS is a commercial hazardous waste storage and treatment facility. As such, RIS is subject to regulations promulgated under the authority of the Resource Conservation and Recovery Act of 1976 ("RCRA"), and its subsequent amendments.

Title 40, Code of Federal Regulations ("CFR"), Part 264, Subpart J and Ohio Administrative Code ("OAC") 3745-55-90 et. seq., define the requirements for owners and operators of treatment, storage and disposal facilities that use tank systems for storing and treating hazardous waste.

In order to prevent a release to the environment from any of the tanks, the regulations require secondary containment in the form of an "external liner" system be provided. The "external liner" system must be:

a. Designed or operated to contain 100 percent of the volume of the largest tank within its boundary [40 CFR 264.193(e)(1)(i)];

b. Designed or operated to prevent run-on or infiltration of precipitation into the secondary containment system unless the collection system has sufficient excess capacity to contain run-on or infiltration. Such additional capacity must be sufficient to contain precipitation from a 25 year, 24 hour rainfall event [40 CFR 264.193(e)(1)(ii)];

c. Constructed with chemical resistant water stops in place at all joints, if any [40 CFR 264.193(e)(2)(iii)]; and

d. Provided with an impermeable interior coating or lining that is compatible with the stored waste and that will prevent migration of waste into the concrete [40 CFR 264.193(e)(2)(iv)].

As further outlined in this report, the modifications to the Caustic Building secondary containment appear to have been made in accordance with these requirements, including the installation of a coating system.

2.0 DESCRIPTION OF UPGRADED SECONDARY CONTAINMENT STRUCTURE

Modifications made to the existing containment system consisted of filling in the abandon sump pit area with compacted structural fill and capping the area with a 10" reinforced concrete slab. The resulting containment area is as generally shown on RIS drawing C-90-103, Rev. 3.

Detailed information on Area No. 8 is contained in Figure 1. Calculation data sheets pertaining to Area No. 8 are provided within Attachment 1.

The revised Caustic Building containment area enclosed within the building is approximately 48.67 ft. x 63 ft. in plan, surrounded by a dike wall. A ramp down entrance to an eight (8) foot door on the east side provides truck access into the building. Grade surrounding the building and ramp is sloped away from the building such that only the small amount of rainwater falling directly onto the ramp could enter the containment system.

The depth of containment is considered to be the depth from the top of the ramp down to top of floor, which is 14" (1.167'). A four (4) foot diameter x four (4) foot deep sump, also in the area, collects and transfers any run-on to storage for process.

Located within this concrete containment area are three (3) raw material, caustic solution tanks of 14,400 gallons each and two (2) hazardous waste sludge tanks of 5,000 gallons each (Tanks 67 and 68),. As outlined in Attachment 1, the net total volume of the coated containment area is 23,000 gallons, which includes the sump. This coated volume is more than adequate to contain the volume of the largest hazardous waste tank. As outlined in the attached calculations, the ramp containment volume, and consequently the rainwater contained therein, is negligible and not considered as part of the total containment.

3.0 TYPE OF WASTE STORED / TREATED

The containment area was coated for chemical resistance and impermeability to those waste types stored in Tank Nos. 67 & 68. A description of the clarifier sludge waste contained in these tanks is provided in Attachment 2.

4.0 COATING MATERIALS

RIS selected a protective, two-part Carboline material application – Phenoline 379, for the coating of the upgraded concrete containment area within the Caustic Building. This material was selected based upon bonding characteristics to the concrete surface being coated, and compatibility to the hazardous waste being stored in Tank Nos. 67 & 68 as defined in Attachment 2. The applied two-part coating dries to a hard surface finish that is resistant to acids, alkalies, solvents, salts and combinations of these chemicals. Further, the coating system is abrasive resistant to normal pedestrian traffic as required within the secondary containment area.

The upgraded area was prepared by sandblasting, and then coated with the two-part, Carboline Phenoline 379 coating system. A bright orange (or equivalent) primer coating color was selected, with the final coating being gray to allow for easy detection of a breakdown in the integrity of the coating by visual inspection.

The seams and joints in the concrete walls of the secondary containment areas are caulked with a chemical resistant, flexible material to allow for expansion and contraction of the structure, and, at the same time, maintain the integrity of the structure's impermeability. The coating was applied to overlap the edge of the seam-caulk to allow for expansion and contraction without stressing the coating material.

Manufacturer's product literature on the Carboline coatings, pavement (floor) joint sealant, and hydrophilic rubber waterstops are provided in Attachment 3.

5.0 CERTIFICATION

5.1 Scope

The following "Scope of Certification" results for the new containment slab utilizes the best information available from personal observations made and discussions with representatives of RIS and Ross Environmental Services, Inc.

5.1.1 A review of the published technical data and discussions with RIS personnel indicate that the coating system should perform for the purpose intended (See Section 4.0 above.)

5.1.2 The characteristics of the hazardous waste that will have to be contained in the secondary containment area during a spill event are listed in Attachment 2. The coating supplier was informed of these chemicals, and subsequently selected a coatings system that would withstand penetration for the duration of a spill clean up. The coating protection system selected to render the concrete liner, secondary containment area impervious to the chemicals that would occur during a spill event is: Carboline Phenoline 379 (orange – primary coat), (gray – finish coat).

5.1.3 The coating in the new area was free of cracks, punctures, scratches and chips. No primer was evident at the final visual inspection indicating that the coating was free of cracks, punctures, scratches and chips.

5.1.4 The coating system appeared to be in order, applied well and fit for the purpose intended.

6.0 CERTIFICATION STATEMENT

The undersigned is a registered Professional Engineer in the State of Ohio, and is authorized to practice the profession of Engineering pursuant to Ohio R. C. Section 4733.02 (Registration).

I certify under penalty of law that this document and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

William M. Sage, P.E.
Project Manger
State of Ohio Registration No. 53448

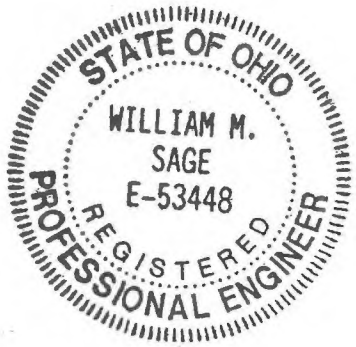


FIGURE 1

CAUSTIC BUILDING AREA DATA SHEET

AREA NO.	NET CONTAINED VOLUME[1] (GALLONS)	STORED HAZARDOUS WASTE VOLUME (GALLONS)		RAINFALL 25 YR. / 24 HR. (GALLONS)	SURFACE PREPARATION	COATING
		LARGEST	TOTAL			
8	23000	5,000	10,000	N.A.	Sandblast	Carboline Phenoline 379

[1] = The net contained volume was determined by calculating the gross volume of the coated structure plus the volume of the sump, minus the volume displacement of obstructions within the structure. (See Attachment 1 for further information.)

ATTACHMENT 1
CALCULATION DATA SHEETS

AREA 8 – CAUSTIC (FILTER PRESS) BUILDING

BUILDING PLAN DIMENSIONS: 50 ft. x 64 ft.

CONTAINMENT DIMENSIONS: 48.67 ft. (width) x 63 ft. (length) x 1.167 ft. (height)

CONTAINMENT VOLUME:

Gross	=	26,763 gallons
Sump	=	+ 376
(3) Caustic Tanks	=	- 3,474
(2) Hazardous Waste Tanks	=	- 672

Net volume	=	22993
		Say 23,000 gallons (see next page)

VOLUME OF LIQUIDS:

(3) Caustic raw material tanks -	14,400 gallons each
(2) Hazardous waste sludge tanks -	5,000 gallons each
	---
total -	53,200 gallons

RAINFALL EVENT: 25 year, 24 hour – not applicable

COATING: Carboline Phenoline 379 (orange or equivalent primary coat)
Carboline Phenoline 379 (gray or equivalent finishing coat)

CAUSTIC (FILTER PRESS) BUILDING - UPGRADED SECONDARY CONTAINMENT CAPACITY CALCULATIONS

econdary containment capacity for the upgraded system = V (in gallons) where,

V = (gross containment volume) + (sump volume) – (volume displaced by caustic tanks) – (volume displaced by sludge tanks)

Gross containment volume

W = building width = 600 inches (50 ft.) – 16 inches (wall thicknesses) = 584 inches (48.67 ft.)

L = building length = 772 inches (64 ft. 4 inches) - 16 inches (wall thicknesses) = 756 inches (63 ft.)

H = secondary containment height = 24 inches (2 ft.) – 10 inches lost due to truck ramp incline = 14 inches / 12 inches (1.167 ft.)

(48.67)(63)(1.167) = 3578 cu.ft. (Note: the ramp area volume of (10')(10')(1.167')/2 = 58 cu. ft. is negligible - ignore)

(3578 cu.ft.)(7.48 gal./cf) = 26,763 gal. gross volume of containment (ramp volume ignored)

Capacity of the main floor sump = $(pi)(r^2h)$

Where pi = 3.14,
r = tank sump = 2 ft
h = depth of sump= 4 ft

$(3.14)(2)^2(4)$ = 50.24 cu.ft.

(50.24 cu.ft.)(7.48 gal. / cu.ft.) = 376 gal. volume within the sump

---

Total volume displaced within the secondary containment area by the 3 caustic tanks = $(pi)(r^2h)(3)$

Where pi = 3.14
r = tank radius = 6.5 ft
h = height of tank within the containment system = 1.167 ft

$(3.14)(6.5)^2(1.167)$ = 154.82 cu.ft.

(154.82 cu.ft.)(7.48 gal. / cu.ft.) = 1,158 gal. volume within the containment area per tank

(1,158 gal.)(3 caustic tanks) = 3,474 total gallons volume displaced by the 3 caustic tanks within the containment area

Total volume displaced within the secondary containment area by the 2 sludge tanks = $(pi)(r^2h)(2)$

Where pi = 3.14
r = tank radius = 3.5 ft
h = height of tank within the containment system = 1.167 ft

$(3.14)(3.5)^2(1.167) = 44.89$ cu.ft.

(44.89 cu.ft.)(7.48 gal. / cu.ft.) = 336 gal. volume within the containment area per tank

(336 gal.)(2 sludge tanks) = 672 total gallons volume displaced by the 2 sludge tanks within the containment area

---

Therefore,

V = (gross volume) + (sump volume) – (volume displaced by caustic tanks) – (volume displaced by sludge tanks)

or,

V = (26,763 + 376 – 3474 – 672 = 22,993 gallons, say 23,000 gallons capacity for the upgraded secondary containment system

ATTACHMENT 2
CLARIFIER SLUDGE DESCRIPTION

36790 Giles Road, Grafton, Ohio 44044 1-800-878-ROSS(7677) (440) 748-2171 Fax (440) 748-1267 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90136

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES,INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES ROAD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD.
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-2171
After hours #: (440)-748-2171

Business contact: Cliff Goytowski
Business title:
Mailing Address: 36790 Giles Rd.
City: Grafton State: OH Zip: 44044
Phone: (440)-748-2171 Ext.: 2088 Fax: (440)-748-1267
Technical contact: Liz Loczi
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-2171 Ext.: 2081 Fax: (440)-748-1267

3. GENERAL INFORMATION

Waste name: FLY ASH FILTER CAKE (HIGH ARSENIC)

Generator code: NONE
SIC code: 4953
Waste generating process: INCINERATOR OFF-GAS CLOSED LOOP SYSTEM
Primary business activity at generating facility: INCINERATION

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Rate of Generation	Quantity	Time Period	Accum	One Time	Service Agreement Entity
Container				N	ROSS GENERATED WASTE
GALLONS	620000	YEAR			Per Subpart CC, VOC > 500 ppm: N

Physical Descr: VARIOUL COLORED SOLIDS/SLUDGES WITH POSSIBLE FREE LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: 20 CU YD ROLL OFF OR DUMP TRAI
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GRAB

Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range	Wt%	PPM
SOLIDS - FLY ASH	40.00	80.00	.00
WATER	20.00	60.00	.00
SODIUM CHLORIDE	.00	2.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Range		Total Concentration Range		Wt%:
S	.0	.1	.0	.1	
Cl	.0	.0	.0	1.2	
F	.0	.1	.0	.1	
Br	.0	.1	.0	.1	
I	.0	.1	.0	.1	
N	.0	.1	.0	.1	
P	.0	.1	.0	.1	

B. Metals maximum concent: Y

Sb	227.0p	Pb	61000.0
As	1900.0p	Hg	7.0
Ba	50.0p	Ni	200.0
Be	5.0p	Se	34.0
Cd	1200.0p	Ag	5.0
Cr	1000.0p	Tl	100.0
Cu	5.0p	Zn	1.0
Li	1000.0p	Mo	1.0

Al	.0	.1%	Si	.0	2.0		
Mg	.0	.1%	Na	.0	3.0		
K	.0	.1%					

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration	ppm/%

Dioxin: N Detection Limit: .000 ppm
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 ppm
Total available sulfides >500 ppm: N

36790 Giles Road, Grafton, Ohio 44044 1-800-878-ROSS(7677) (440) 748-2171 Fax (440) 748-1267 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90136 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Sludge

Viscosity at 70° F: Dusting Hazard? N

******* CPS Range *********

From	To	Fixed	Description
0	0	0	SLUDGE

Is material pumpable at 70° F (<2,000 cP)? N Describe:

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 30 %WT Suspended solids: 60 %WT

BTU/lb.: 0 to 8000 Ash content: 60 %WT

Flash pt: 200 to 600 °F Vap pr: 48.0 to 48.0 70°F

Specific gravity: 1.200 to 1.500 pH: 7.0 to 9.1

Corrosivity MPY: <30

Colors: BROWN
BLACK
GREY

Odorous? Y AVOID

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 24 106

B. Is material stable? Y (examples include but are not limited to polymerization with age, water/air reactive)

Sensitive: Shock? N Heat? N Friction? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity: Y

Eye: Y AVOID, TOXIC METALS

Inhalation: Y AVOID, TOXIC METALS

Dermal: Y AVOID, TOXIC METALS

Ingestion: Y AVOID, TOXIC METALS

Other: N

Carcinogen: N

Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection

D004 / ARSENIC

D006 / CADMIUM

D008 / LEAD

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:

HAZARDOUS WASTE, SOLID, N.O.S., (D004, D006, D008), 9, NA3077, PG III, (D004, D006, D008), RQ

DOT "Poison inhalation hazard?" N

Container label(s): CLASS 9

Placard(s): CLASS 9

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

ATTACHMENT 3
CARBOLINE COATINGS PRODUCT DATA

product data carboline

Phenoline® 379
(Formerly Semstone 145S)

Selection & Specification Data

Generic Type
Polyamine Epoxy Novolac

Description
Single-coat, airless-applied, ultra-high build coating for use on steel and concrete substrates subject to aggressive chemical fume and immersion exposure. Phenoline 379 has the same application and physical properties of Phenoline 309 but provides enhanced chemical protection for a broader and more concentrated range of acids.

Features
- Single coat application reduces labor costs
- Ultra-high build capabilities provides a void-free film and excellent edge protection
- Resistant to inorganic and organic acids, caustics and most solvents
- Can be mat reinforced where exposure conditions dictate
- Application by airless spray equipment (plural component acceptable but not required)
- VOC compliant to current AIM regulations

Color
Refer to Carboline Color Guide

Finish
Eggshell

Primers
Self-priming

Topcoats
Not recommended

Dry Film Thickness
1 coat system: 20-50 mils (500-1250 microns) Min.
2 coat system: 20-25 mils (500-625 microns) per coat.

Solids Content
By Volume: 99% ± 1%

Theoretical Coverage Rate
1588 mil ft² (39.0 m²/l at 25 microns)
Allow for loss in mixing and application

VOC Values
As supplied: 0.1 lbs/gal (12 g/l)
These are nominal values and may vary slightly with color.

Dry Temp. Resistance
Continuous: 140°F (60°C)
Non-Continuous: 180°F (82°C)
Discoloration and loss of gloss is observed above 140°F (60°C).

Wet Temp. Resistance
Immersion temperature resistance depends upon exposure. Consult Carboline Technical Service for specific information. It is recommended that metal tanks operating above 140°F (60°C) be insulated.

Limitations
- Epoxies lose gloss, discolor and eventually chalk in sunlight exposure.
- This coating commonly develops an *amine-blush* during cure. While this condition will not adversely affect performance of the coating, this blush must be removed before applying additional coats and may require removal before placing into service.

Substrates & Surface Preparation

General
Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating.

Steel
Immersion: SSPC-SP5
Surface Profile: 3.0-5.0 mils (75-125 micron)

Non-Immersion: SSPC-SP10
Surface Profile: 2 mils (50 micron) minimum.

Concrete
Immersion and Non-Immersion:
Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

Application Equipment

Spray Application (General)
Recommended for application by single or plural component airless spray. This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray
Not recommended

Airless Spray

Pump Ratio:	45:1 (min.)
GPM Output:	3.0 (min.)
Material Hose:	½" I.D. (min.)
Tip Size:	.035-.042"
Output PSI:	2700-3000
Filter Size:	60 mesh

Teflon packings are recommended and available from the pump manufacturer.
Contact Carboline Technical Service for plural component equipment recommendations.

Brush & Roller (General)
Not recommended for tank lining applications except when striping welds.

Brush
For touch up and limited areas only.

Roller
For touch up and limited areas only.

Mixing & Thinning

Mixing
Power mix separately, then combine and power mix. DO NOT MIX PARTIAL KITS.

Ratio
4:1 Ratio (A to B)

Thinning
Not recommended. Use of thinners other than those supplied by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life
45 minutes at 75°F (24°C). Pot life ends when material begins to thicken and starts to heat up. Pot life times will be less at higher temperatures.

Cleanup & Safety

Cleanup
Use #2 Thinner or Acetone. In case of spillage, absorb and dispose of in accordance with local applicable regulations.

Safety
Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Ventilation
Vapors and/or spray mist may cause explosion. When used as a tank lining or in enclosed areas, thorough air circulation must be used during and after application until the coating is cured. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. In addition to ensuring proper ventilation, appropriate respirators must be used by all application personnel.

Caution
This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	60°-85°F (16°-29°C)	60°-85°F (16°-29°C)	60°-90°F (16°-32°C)	0-80%
Minimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	90%

This product simply requires the substrate temperature to be above the dew point. Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions. To reduce outgassing when applying to concrete substrates, do not apply in direct sunlight or when surface temperatures are increasing. Best results are obtained when ambient and surface temperatures are decreasing or constant.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Minimum Recoat Time	Maximum Recoat Time	Final Cure for Immersion Service
45°F (10°C)	NR[4]	NR[4]	NR[4]
60°F (16°C)	24 Hours	4 Days	72 Hours
75°F (24°C)	12 Hours	2 Days	36 Hours
90°F (32°C)	4 Hours	1 Day	24 Hours

These times are based on a 20.0 mil (500 micron) dry film thickness. Higher film thickness, insufficient ventilation or cooler temperatures will require longer cure times. Condensation on the surface or humidity above 25% during application and curing will result in a surface haze or blush. Any haze or blush must be removed by water washing before recoating. During high humidity conditions, it is recommended that the application be done while temperatures are increasing. If the maximum recoat times exceeded, the surface must be washed with detergent and water, then abraded by sweep blasting prior to the application of additional coats. For force curing, contact Carboline Technical Service for specific requirements. Note: Final cure temperatures below 60°F (16°C) are not recommended for tank linings.

Packaging, Handling & Storage

Shipping Weight (Approximate)	1 Gallon Kit 12 lbs (5 kg)	5 Gallon Kit 55 lbs (25 kg)
Flash Point (Setaflash)	Part A: >205°F (96°C) Part B: >205°F (96°C)	
Storage (General)	Store indoors.	
Storage Temperature & Humidity	40° - 110°F (4°-43°C) 0-100% Relative Humidity	
Shelf Life	1 year if stored at 50°-85°F. To ensure maximum film build, Phenoline 379 should be applied within three (3) months of the manufactured date.	

carboline
350 Hanley Industrial Court St. Louis, MO 63144-1599
314-644-1000 314-644-4617 (fax) www.carboline.com
Group STONCOR

April 2000 replaces February 2000

CS 300EP Pavement Joint Sealant

Product Line Overview

Two Component Polymer Hybrid Containing Both Urethane and Epoxy Resins in Order to Provide a Resilient Filler for Control Joints in Pavement and Floors

Features/Benefits

This unique chemistry allows excellent flexural strength and elongation while maintaining high tensile strength.

The epoxy/urethane blend exhibits excellent adhesion, which results in a long lasting, durable repair.

Designed for sawcut or cast joints in floors and pavement.

It is recommended for use on highways, bridges, airports, garages, industrial floors and marine decks.

Contains 100 percent solids.

There are no solvents to cause shrinkage or odor problems.

The product also complies with V.O.C. (Volatile Organic Content) regulations in New York, New Jersey and California.

Flexible yet tough sealant.

Can accommodate minor slab movements, yet withstands the abuse of fork lift traffic and other types of heavy rolling loads.

Resists damage from point loads, such as high heels.

Key Applications

Recommended for use on highways, bridges, airports, garages, industrial floors and marine decks

Related Docum

If you would like

Additional Reso

Register

Ordering Information

Description	Working Time	Tensile Strength	Theoretical Coverage	Flexural Strength	Elongation at Break	Item No.
CS300EP FLOOR JOINT SEALANT (2 GAL KIT)	45 minutes at 70 deg. F	3289 psi	2 gallons at 1/2 in. x 1.0 in. yields 60 - 75 lineal ft.	2762 psi	50.4 percent at 70 deg. F	00020295

CS300EP FLOOR JOINT SEALANT (2 GAL KIT)

Product Page

Related Products

Accessories

Item No.
00020295

Technical Data

Limitations	CS300EP is a self-leveling sealant, which is not appropriate for vertical walls or steep slopes. Substrate and sealant temperature must be above 50 deg. F during installation and for 24 hours afterward. CS300EP is a two component sealant, requiring thorough mixing prior to use.
Theoretical Coverage	2 gallons at 1/2 in. x 1.0 in. yields 60 - 75 lineal ft.
Tensile Strength	3289 psi
Flexural Strength	2782 psi
Working Time	45 minutes at 70 deg. F
Abrasion Resistance	Taber abrasion, CS10 wheel, 1000 cycles, 1000 gm. Load, 25.4 mg. weight loss.
Elongation at Break	50.4 percent at 70 deg. F
Mix Ratio	1:1 by volume
Shore A Hardness	84
Shore D Hardness	56
Color	Concrete grey
Standards	ASTM C-881
Package Quantity	1
Package Contents	Includes: 2-gallon kit, containing equal volumes of parts A & B
One-Line Description	CS300EP FLOOR JOINT SEALANT (2 GAL KIT)

Return to top

Return to Waterstops Main Menu

Return to Moving Joints Menu

SUGGESTED MASTER SPECIFICATION SECTION 03257 HYDROPHILIC RUBBER WATERSTOPS

PART 1 - GENERAL

1.01 - SECTION INCLUDES

A. Provision of waterstops embedded in concrete and spanning control, expansion, and/or construction joints to create a continuous diaphragm to prevent fluid migration.

B. Non-metallic waterstops for use in concrete joints subjected to chlorinated water, sea water, and many waterborne chemicals.

1.02 - REFERENCES

A. American Society for Testing Materials (ASTM)

1.04 - DELIVERY, STORAGE, AND HANDLING

A. Store waterstops under tarps to protect from oil, dirt, sunlight, and premature exposure to water.

PART 2 - PRODUCTS

2.01 - MATERIALS

A. Provide hydrophilic rubber waterstop as supplied by Greenstreak, HYDROTITE profile style number (fill in profile style number).

B. The waterstop shall be a combination of chloroprene rubber and chloroprene rubber modified to impart hydrophilic properties.

Dudick inc.

Corporate Offices
1818 Miller Parkway
Streetsboro, OH 44241
330-562-1970
330-562-7638 FAX
www.dudick.com

PROTECTO-COAT 100XT

FLAKE FILLED, HIGH PERFORMANCE, 100% SOLIDS, NOVOLAC EPOXY COATING, LOW ODOR, ENVIRONMENTALLY SAFE, 30-40 MILS (1 mm)

FEATURES

Meets all VOC Requirements
Can Saturate 1 Ounce Fiberglass Mat
Can be filled with **EA-1 Aggregate** and Troweled at 1/4".
Can be seeded with Sand or Aluminum Oxide for Anti-Skid.

RECOMMENDED APPLICATIONS

Secondary Containment
Structural Steel
Floors (Spillage)
Storage Tanks
Pump Housings

CHEMICAL RESISTANCE

Inorganic Acids
Alkali Solutions
Salts
Sulfuric Acid (98%)
Oils
Solvents

TEMPERATURE LIMITS (METAL APPLICATIONS)

Immersion up to 130ºF
Dry - 250ºF - Continuous
300ºF - Intermittent

COLORS: Color Chart information is available upon request.

Not available in bright white.

PHYSICAL PROPERTIES

Compressive Strength ASTM C-579	9,000 – 9,500 PSI
Tensile Strength ASTM C-307	3,000 – 3,500 PSI
Flexural Strength ASTM C-580	5,000 – 5,200 PSI
Shore D Hardness ASTM D-2240	80 – 85
Taber Abrasion ASTM D-4060	50 mg.
Flame Spread ASTM D-635	<5 mm
VOC ASTM D-3960	<50 g/l
WVT ASTM E-96	0.0018 perm. in.

SPECIFICATIONS

Protecto-Coat 100XT shall be a 30-40 mils thick, 100% solids, flake-filled, high functionality, novolac epoxy coating consisting of a basecoat and topcoat of 15-20 mils each, as manufactured by Dudick, Inc. Materials shall be applied in accordance with manufacturer's recommended practices.

THE PROTECTO-COAT 100XT SYSTEM

Protecto-Coat 100XT uses a moisture-tolerant primer and two coats of low temperature cure, flake-filled novolac epoxy resin to protect concrete and metal substrates.

Primer 67 is designed to prevent abrasive-blasted steel from developing rust bloom prior to the application of the **Protecto-Coat 100XT**. For maximum performance, all metal surfaces should be primed, but primer may not be needed for mild, non-immersion service. Concrete must be primed to aid in the "wetting out" required for good bonding.

Primer 67C is designed for applications on concrete where spark testing is required or specified.

Basecoat/Topcoat: The novolac epoxy binder and overlapping flake fillers in **Protecto-Coat 100XT** provide the low permeability, high film integrity, and excellent chemical resistance required for prolonged substrate protection.

ESTIMATING QUANTITIES AND ORDER BILL OF MATERIAL

APPROXIMATE SQUARE FEET PER GALLON		
	CONCRETE	**STEEL**
PRIMER 67	150-200 ft.²	250-300 ft.²
PRIMER 67C	100-150 ft.²	----------
Protecto-Coat 100XT		
Actual 30-40 MIL DFT	38-40	38-40 ft.²
Theoretical 30-40 MIL	45 ft.²	45 ft.²
S-10 Solvent	500	500 ft.²

**Quantities shown are for estimating purposes only. Actual field usage may vary.

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

Metal: Metal surfaces must be abrasive blasted to an appropriate finish.

Immersion and heavy spillage service: White Metal, SSPC SP 5 or NACE #1, minimum 3.0 mil profile. Heavy non-immersion service (i.e. fumes and spillage): Near white, SSPC SP 10 or NACE #2, minimum 2.0 mil profile. Atmospheric service: Commercial SSPC SP 6 or NACE #3, minimum 2.0 mil profile.

Concrete: Concrete must be prepared mechanically to remove surface laitance. Oils, grease or other contaminant must be removed prior to surface preparation. Concrete must be free of curing compounds and form release agents. Surface texture should be similar to 40-60 grit sandpaper or the visual standard, CSP-5 from the International Concrete Repair Institute **with pea gravel exposed**. The prepared surface should have a tensile strength of 250 PSI per ASTM D-7234.

All concrete substrates must be checked for moisture prior to product application using the Plastic Sheet Test, ASTM D-4263.

Additional surface preparation will be required if 40-60 grit texture **with exposed pea gravel** is not achieved and the surface laitance not completely removed with the first mechanical preparation procedure.

Mechanical preparation removes laitance, exposing honeycombs or voids beneath the surface, which must be filled with **Scratch Coat 300**. (Refer to separate product bulletin.)

APPLICATION SPECIFICATIONS

Substrate temperature for both concrete and metal must be between 50°F and 110°F.

Relative humidity must not exceed 90%.

Substrate temperature must be 5°F above the Dew Point.

PRIMER 67/67C MIX RATIOS (BY VOLUME)

Primer 67	Component A	1 gallon
Primer 67	Component B	1 gallon
Primer 67C	Component A	1 gallon
Primer 67C	Component B	29 fl. oz.

Important: Primer 67C Component A must be mechanically mixed for 1-2 minutes prior to adding the correct amount of **Component B**.

Primer 67C must be roller applied. Use brush application for small touch-up or repair work only.

PRIMER 67/67C POT LIFE

TEMPERATURE	PRIMER 67 POT LIFE	PRIMER 67C POT LIFE
50°F	90 min.	110 min.
75°F	60 min.	90 min.
90°F	30 min.	50 min.

PRIMING

The following Primers are compatible with **Protecto-Coat 100XT:** Primer 67, Primer 67LV, Primer 67DPLV, Primer 67DTO & Primer 60.

PROTECTO-COAT 100XT MIX RATIO (BY VOLUME)

Component A	1 gallon
Component B	52fl. oz.

Dudick inc.

Corporate Offices
1818 Miller Parkway
Streetsboro, OH 44241
330-562-1970
330-562-7638 FAX
www.dudick.com

BASECOAT / TOPCOAT

Pot life of the mixed **Protecto-Coat 100XT** will depend on the temperature. To prevent material waste and avoid damage to equipment, do not mix more material than can be used according to the following table:

TEMPERATURE	POT LIFE
50ºF	65 min.
75ºF	40 min.
90ºF	20 min.

Do not attempt to store mixed material. Residual material should be properly disposed of at the end of each work period.

It is recommended that Component A be mixed for 1-2 minutes prior to adding Component B

Add the correct amount of **Component B** to **Protecto-Coat 100XT Component A** and mix thoroughly until a uniform color is achieved.

Apply at 15-20 mils WFT using a brush, spray or roller to an even, smooth finish.

Allow the basecoat to cure until firm or slightly tacky before applying the topcoat.

SPRAY SPECIFICATIONS

Consult Dudick representative for recommendation for spray application.

Brush or roller application may require additional coats to meet the specified dry film thickness.

CURE CYCLE

TEMPERATURE	RECOAT TIME MIN.	RECOAT TIME MAX.	CURE TIME
50ºF	14-16 hrs.	120 hrs.	96 hrs.
75ºF	8-10hrs.	72 hrs.	36 hrs.
90ºF	5-7 hrs.	48 hrs.	24 hrs.

If these recoat times are exceeded, consult a Dudick representative; sanding or abrasive blasting may be required before the next coat. Recoat times are dramatically reduced when the coating is exposed to direct sunlight.

Application of **Protecto-Coat 100XT** in direct sunlight may lead to blistering, pinholes, or wrinkling due to outgassing of air in the concrete and high substrate temperatures. Double priming, shading, or evening application may be required. Consult a Dudick representative.

TESTING

If spark testing is required, use a DC spark/holiday tester set to the appropriate voltage to achieve a minimum 100 volts per mil of applied coating. An AC tester can be used, but is not as effective as a DC tester. Mark and repair all pinholes using **Protecto-Coat 100XT.** Retest only the repairs.

CLEANING

Use **S-10 Cleaning Solvent** to clean tools and equipment.

SHIPPING

Refer to Material Safety Data Sheets.

STORAGE

Warning: All Dudick products classified with DOT labels as either white, yellow or red labels must not be mixed or stored together as an explosive reaction can occur.

All products should be stored in a cool, dry area away from open flames, sparks or other hazards.

When stored in their original, unopened containers, at 50°F-75°F the following shelf life periods will apply: **Primer 67** and **Protecto-Coat 100XT** components will have a six-month shelf life. **Primer 67C** components will

have a thirty-day shelf life. Storage in direct sunlight or excessive heat will reduce working time and shelf life.

SAFETY

M.S.D.S: Material Safety Data Sheets must always be read before using products. Protecto-Coat 100XT systems are intended for application by experienced, professional personnel. Dudick, Inc. can supply supervision to help determine that the surface has been properly prepared, the ingredients correctly mixed, and the materials properly and safely applied.

If **Protecto-Coat 100XT** materials are to be applied by your own personnel or by a third party contractor, please be sure that they are aware of the following safety precautions:

- Exposure to resins and hardeners through direct skin contact and/or inhalation may cause severe dermatitis reactions in some people. Cleanliness of the skin and clothing is critical and must be of paramount concern.
- Fumes are heavier than air. Proper ventilation should be maintained to minimize breathing of concentrated fumes.
- Suitable respirators should be used during application.
- Safety glasses, gloves, and suitable protective clothing must be worn at all times during application.
- If contact with hardeners occurs, remove an clothing involved and flush the skin with flowing water. Discard the clothing. Do not attempt to wash and reuse it. **Protecto-Coat 100XT** liquid can be removed with **S-10 Cleaning Solvent**, MEK, or lacquer thinner.
- Keep open flames and sparks away from the area where materials are being mixed and applied.
- If a rash occurs, remove the individual from the work area and seek a physician's care for dermatitis.
- In case of eye contact, flush with water for at least 15 minutes and consult a physician.
- If swallowed, do not induce vomiting; call a physician immediately.

NOTE: Dudick, Inc. ("Dudick") warrants all goods of its manufacture to be as represented in its catalogs and that the manufacture of its products by its employees or sub-contractors shall be performed in a workmanlike manner. Dudick's sole obligation under this warranty shall be to replace any material which its examination shall disclose to be defective. Dudick makes no warranty concerning the suitability of its product for application to any surface, it being understood that the goods have been selected and the application ordered by the Purchaser. DUDICK, INC. MAKES NO WARRANTY, EXPRESS OR IMPLIED, THAT THE GOODS SHALL BE MERCHANTABLE OR THAT THE GOODS ARE FIT FOR ANY PARTICULAR PURPOSE. THE WARRANTY OF REPAIR OR REPLACEMENT SET FORTH HEREIN IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES ARISING BY LAW OR OTHERWISE; AND DUDICK INC. SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOST PROFITS, DOWN TIME, DAMAGES TO PROPERTY OF THE PURCHASER OR OTHER PERSONS, OR DAMAGES FOR WHICH THE PURCHASER MAY BE LIABLE TO OTHER PERSONS, WHETHER OR NOT OCCASIONED BY DUDICK'S NEGLIGENCE. This warranty shall not be extended, altered or varied except by written instrument signed by Dudick and Purchaser.

11/11/20

SECTION D, APPENDIX D-2
ATTACHMENT 1

AREA 8 — CAUSTIC (FILTER PRESS) BUILDING

BUILDING PLAN DIMENSIONS: 50 ft. x 64 ft.

CONTAINMENT DIMENSIONS: 48.67 ft. (width) x 63 ft. (length) x 1.167 ft. (height)

CONTAINMENT VOLUME:

Gross	=	26,763 gallons
Sump	=	+ 376
(4) Caustic Tanks	=	- 4,632
(2) Hazardous Waste Tanks	=	- 14

Net volume	=	22493 gallons (see next pages)

VOLUME OF LIQUIDS:

(4) Caustic raw material tanks -		14,400 gallons each
(2) Hazardous waste sludge tanks -		3627 gallons each
		---
total	-	50,454 gallons

RAINFALL EVENT: 25 year, 24 hour — not applicable

COATING: Dudick Dual Layer Epoxy Coating (or equivalent)

CAUSTIC (FILTER PRESS) BUILDING - UPGRADED SECONDARY CONTAINMENT CAPACITY CALCULATIONS

Secondary containment capacity for the upgraded system = V (in gallons) where,

V = (gross containment volume) + (sump volume) (volume displaced by caustic tanks) (volume displaced by sludge tanks)

Gross containment volume

W = building width = 600 inches (50 ft.) - 16 inches (wall thicknesses) = 584 inches (48.67 ft.)

L = building length = 772 inches (64 ft. 4 inches) - 16 inches (wall thicknesses) = 756 inches (63 ft.)

H = secondary containment height = 24 inches (2 ft.) - 10 inches lost due to truck ramp incline = 14 inches /12 inches (1.167 ft.)

(48.67)(63)(1.167) = 3578 cu.ft. (Note: the ramp area volume of (10')(10')(1.167')/2 = 58 cu. ft. is negligible - ignore)

(3578 cu.ft.)(7.48 gal./cf) = 26,763 gal. gross volume of containment (ramp volume ignored)

Capacity of the main floor sump = $(pi)(r^2h)$

Where pi = 3.14,
r = tank sump = 2 ft
h = depth of sump = 4 ft

$(3.14)(2)^2(4)$ = 50.24 cu.ft.

(50.24 cu.ft.)(7.48 gal. / cu.ft.) = 376 gal. volume within the sump

---

Total volume displaced within the secondary containment area by the 4 caustic tanks = $(pi)(r^2h)(4)$

Where pi = 3.14
r = tank radius = 6.5 ft
h = height of tank within the containment system = 1.167 ft

$(3.14)(6.5)^2(1.167)$ = 154.82 cu.ft.

(154.82 cu.ft.)(7.48 gal. / cu.ft.) = 1,158 gal. volume within the containment area per tank

(1,158 gal.)(4 caustic tanks) = 4,632 total gallons volume displaced by the 4 caustic tanks within the containment area

---

Total volume displaced within the secondary containment area by the legs of the 2 sludge tanks = (pi)(r^2h)(2)

Where pi = 3.14
r = tank radius 0.25ft
h = height of tank within the containment system = 1.167 ft

(3.14)(0.25)^2(1.167)(4 legs/tank) = 0.916 cu.ft.

(0.916 cu.ft.)(7.48 gal. / cu.ft.) = 6.85 gal. volume within the containment area per tank

(6.85 gal.)(2 sludge tanks) = 13.7 = ~14 total gallons volume displaced by the 2 sludge tanks within the containment
area

Therefore,

V = (gross volume) + (sump volume) - (volume displaced by caustic tanks) - (volume displaced by sludge tanks)

or,

V = (26,763 + 376 - 4632 – 14 = 22,493 gallons capacity for the upgraded secondary containment system)

SECTION D, APPENDIX D-2
ATTACHMENT 2

AREA 4 – DOCK PIT (TANKS 70, 73 & 74 COATED SECONDARY CONTAINMENT CALCULATIONS)

COATED CONTAINMENT DIMENSIONS: 37.5 ft. (width) x 33 ft. (length) x 2 ft. (height) = 2,475 cu. ft.
(2,475 cu. ft.) x (7.48 gal./cu. ft.) = 18,500 gallons

COATED CONTAINMENT VOLUME:	Gross	=	18,500 gallons
	Pedestals and Posts	=	- 400
	Tanker Access Platform Legs (2)	=	- 6 (see calculation below)
	Net volume	=	18,094 gallons
VOLUME OF LARGEST TANK:	Tank 70	=	10,000 gallons
25 YEAR, 24 HOUR RAINFALL EVENT:		=	2,700 gallons
	total	=	12,700 gallons

The coated secondary containment capacity (i.e., 18,094 gallons) is greater than 100% of the volume of the largest hazardous waste tank within its boundary, plus the precipitation anticipated from a 25 year, 24 hour rainfall event (i.e., 12,7000 gallons).

COATING: Dudick Dual Layer Epoxy Coating (or equivalent)

Tanker Access Platform Leg Displacement Volume

Number of Platform support legs within the secondary containment system = 2

Volume displaced by the Platform support legs within the coated secondary containment system = (3.875 sq. in. cross sectional leg area) x (24 in. deep) x (2 legs) = 186 cu. in.

Volume displaced by angle iron between the support legs within the coated secondary containment system = (1.1875 sq. in. cross sectional area) x (67 in. length) = 80 cu. in.

Volume displaced by the grout for foot pads under the support legs within the coated secondary containment system =
(12 in.) x (12 in.) x (4 in.) = 576 cu. in. grout volume for each leg
(576 cu. in.) x (2 pads) = 1,152 cu. in.

Therefore:
(186 cu. in.) + (80 cu. in.) + (1,152 cu. in.) = 1,418 cu. in.
(1,418 cu. in.) x (0.004329 gal/cu. in.) = **6.1385 gallons of displacement** from the 2 Platform support legs within the coated secondary containment system

Revision 0
August 2023

Appendix D-3
Tank Assessment & Engineering Certifications

Ross Incineration Services, Inc .

Appendix D-3 - Tank Assessments and Engineering Certifications

Table of Contents

ACC INC
Applied Corrosion Control, Inc.
P.O. Box 73 • Rothschild, WI 54474 • (715) 359-4760

July 20, 1987

Phil Schaefer
Ross Incineration Services, Inc.
394 Giles Road
Grafton, Ohio 44044

Dear Phil:

Enclosed is our report covering the ultrasonic inspection testing performed in June 1987. Also enclosed is the invoice covering the testing, report etc., and the final 42 corrosion racks for tanks 23 to 36. An expense report is also included for direct travel expenses for the test work. If you have any comments or questions on the report, please give me a call.

Sincerely yours,

Applied Corrosion Control, Inc.

Thomas P. Oettinger

Thomas P. Oettinger

ULTRASONIC INSPECTION REPORT
OF
14 EXISTING HAZARDOUS WASTE STORAGE TANKS

TANK FARM I - TANKS 23 THROUGH 36
TANKS 67 AND 68

FOR: ROSS INCINERATION SERVICES, INC.
GRAFTON, OHIO

BY: APPLIED CORROSION CONTROL, INC.
P.O. BOX 73
ROTHSCHILD, WI

Dated:
July 20, 1987

ULTRASONIC INSPECTION REPORT
OF
N/A EXISTING HAZARDOUS WASTE STORAGE TANKS

FOR
ROSS INCINERATION SERVICES, INC.
GRAFTON, OHIO

JULY 20, 1987

BY:
APPLIED CORROSION CONTROL, INC.
P.O. BOX 73
ROTHSCHILD, WI

I. INTRODUCTION

An ultrasonic thickness inspection of the fourteen (14) existing hazardous waste storage tanks, 23 through 36, was conducted on June 25 and 26 at Ross Incineration Services, Inc., Grafton, Ohio. The inspection was performed in accordance with section 7.0 of the Ross Incineration Services, Inc. Tank Corrosion Testing/Monitoring/Inspection Procedure. The thickness measurements obtained were used to set a starting wall thickness for the fourteen (14) older hazardous waste storage tanks with regard to the corrosion monitoring program. A minimum of ten (10) readings were taken at the top, middle and bottom cone sections of the tanks. The average of the three lowest readings at each location was used as the starting wall thickness. The ultrasonic testing also indicated the general condition of each of the tanks after approximately four (4) years of service.

II. SUMMARY OF RESULTS

All fourteen (14) hazardous waste storage tanks evaluated had overall wall thicknesses well above the required minimum of 0.179 inches. Indications were that the most extensive wall thinning was at the very top sections of the tanks. In this area, a 0.020 to 0.035 inch wall loss was indicated from the original nominal wall thickness of 0.250 inch. This was likely due to vapor space phenomena such as; higher oxygen concentrations, accumulation of corrosive compounds by evaporation, etc.. A nitrogen blanket on these tanks will greatly reduce vapor space corrosion.

Although the ultrasonic thickness (UT) measurements are not intended as a localized corrosion inspection method, some areas of pitting were indicated on tank bottom sections and covers. Wall thickness measurements in pitted areas were below minimum wall of 0.179 for only two tanks. Tank #32 had one area of pitting about 1 to 1 1/2 inches in diameter with readings of 0.066 to 0.108 inch. Tank #36 had one small pit (less than 1/4 inch in diameter) with a thickness reading of 0.171 inch.

Some repair might be considered for the thinned area of tank #32. Pitting corrosion of this type can lead to leakage problems at some future date. Extensive leakage of tank contents is not likely, rather a slight "dripping" type leakage might occur. The overall wall thickness readings on tank #32 indicated acceptable wall thickness well over 0.179 inch.

III. PROCEDURES

1.) EQUIPMENT - Ultrasonic wall thickness measurements were obtained using a MagnaFlux model MX-10 Ultrasonic Thickness Gauge. The instrument was calibrated using a 0.375 inch carbon steel calibration block. The accuracy of the instrument is plus or minus .001 inch. Paint thickness measurements were obtained using a Checkline Coating Thickness Tester.

2.) WALL THICKNESS MEASUREMENT METHOD - Wall thickness measurements were taken at a minimum of ten (10) locations in each of the three sections of each tank; top, middle and bottom (cone). Several measurements were also taken on the cover of each tank, as access permitted. Measurements taken on the tank side walls and cone portions were taken in roughly verticle lines corresponding to 0, 90, 180, and 270 degree angles from a fixed reference point, which is described later in this section. Several readings in the top section were taken between these verticle lines. For each recorded measurement, numerous readings were taken over a six (6) square inch area. The reading recorded was the lowest found in an area which was not a pit. The purpose of taking readings over a larger area was to detect any possible localized pitting of the tank wall. Paint thickness measurements were taken at random locations of several tanks and the average paint thickness measurement was then subtracted from each recorded ultrasonic thickness measurement so that readings represented metal thickness only.

3.) MEASUREMENT RECORDING - The thickness measurements obtained on each tank were recorded on a tank layout sheet, one for each tank 23 through 36. Each of the tank layout sheets has four (4) scaled down drawings of the cover, top, middle, and bottom sections. The cover drawing is a top view of the tank cover, the top and middle section drawings represent the verticle tank wall rolled out flat, and the bottom section represents the cone section rolled out flat. Each of the four (4) scaled down drawings have a reference point marked 0 degrees. The 0 degree reference point corresponds to the 0 degree reference on the actual tank drawings and is the verticle line intersecting the tank vent nozzle. Thickness measurements obtained on each tank are recorded on the tank layout sheet in approximate reference to where the actual readings were taken.

IV. GENERAL RESULTS

The UT testing results of the fourteen (14) existing hazardous waste storage tanks are summurized in Table 1 and on the tank layout sheets for each tank presented in Appendix 1. The readings given are actual metal thickness values. Paint thickness values ranged from 0.005" to 0.009". A value of 0.007" was subtracted from the UT readings to give wall thicknesses. Thickness values to be used as starting wall thicknesses for the tank monitoring program (average of the three (3) lowest readings for each tank section) are given below for each tank along with general comments.

*TANK #23

Bottom - 0.308" Middle - 0.238" Top - 0.226

No areas of localized thinning or pitting were found on this tank. Area of thinnest wall was near top of tank, south exposure with a reading of 0.221".

*TANK #24

Bottom - 0.308" Middle - 0.238" Top- 0.307"

No areas of localized thinning or pitting found. Thinnest areas were at the very top portion of the tank at the north and west sides with the lowest reading being 0.223".

*TANK #25

Bottom - 0.307" Middle - 0.242" Top - 0.231"

Two small areas of localized thinning or more likely pitting were detected in the bottom section. The areas were on the north side and the affected areas were approximately 1/4 inch in diameter. Minimum thicknesses of the tank in these areas were found to be 0.266 and 0.261 inch respectively. The lowest general wall reading of 0.223" was on the south side at the very top.

*TANK #26

Bottom - 0.312" Middle - 0.239" Top - 0.228

No localized thinning or pitting was found on the straight side portion of the tank. One small pitted area about 1/4" diameter was detected in the bottom cone section on the west side with a minimum thickness indicated of 0.258".

*TANK #27

Bottom - 0.317" Middle - 0.243" Top - 0.234"

No indications of localized thinning or pitting were found on this tank. The thinnest reading was observed on the very top portion of the tank side wall on the south side, which was 0.222".

*TANK #28

Bottom - 0.310" Middle - 0.244" Top - 0.228

One small area of pitting, about 1/4" diameter, was indicated in the bottom section. The minimum thickness found was 0.270". Areas of pitting or localized thinning were also found in the cover. These areas had thicknesses ranging from 0.210" to 0.114". The lowest wall reading was 0.225" on the west side at the very top of the tank straight side.

*TANK #29

Bottom - 0.311" Middle - 0.237" Top - 0.230"

One small, 1/4" diameter, area of pitting was indicated on the bottom section of the tank with a minimum reading of 0.226". The lowest general wall reading was 0.225" on the east side at the very top.

*TANK #30

Bottom - 0.316" Middle - 0.242" Top - 0.226"

No localized thinning or pitting was observed. The minimum thickness reading was 0.219" on the south side at the very top.

*TANK #31

Bottom - 0.300" Middle - 0.240" Top - 0.223"

No localized thinning or pitting was indicated. Minimum wall thickness was 0.224" on the north side at the very top.

*TANK #32

Bottom - 0.310" Middle - 0.240" Top - 0.227"

One significant area of pitting was found in the bottom section of this tank about 2 to 3 feet from the bottom of the cone on the north side. The area was about 1 to 1.5 inches in diameter. Readings of 0.066" to 0.108" were indicated in this pitted section. It is likely other portions of the cone has pitted areas since UT readings indicate pits on a "hit and miss" basis. This tank has a potential for a leak developing at some future date (difficult to predict). The potential for a massive release of waste (major failure) is very unlikely since the average wall thickness in the area is 0.318". A "patch type" repair on the outside of the cone section over the pitted area is one possible consideration. Other than the pitted areas, the minimum wall thickness reading was 0.215" at the very top of the east side.

*TANK #33

Bottom - 0.311" Middle - 0.235" Top - 0.224"

One small area, 1/4" diameter, was indicated in the bottom section which had a minimum reading fo 0.236". The lowest wall thickness readings were 0.222" at both the north and south locations at the very top.

*TANK #34

Bottom - 0.312" Middle - 0.241" Top - 0.233"

Minimum wall thickness of 0.220" was found on the south side at the very top. One small area, 1/4" diameter, of pitting was indicated in the bottom section with a minimum reading of 0.257".

*TANK #35

Bottom - 0.313" Middle - 0.233" Top - 0.233"

No localized thinning or pitting was indicated. The minimum wall reading was 0.221" on the south side at the very top.

*TANK #36

Bottom - 0.310" Middle - 0.216" Top - 0.206"

This tank had the lowest general wall thickness readings of the fourteen (14) storage tanks. A minimum reading of 0.202" was indicated on the south side of the very top section. Readings of 0.210" and 0.216" were also recorded at the very top. The middle section of the tank had readings of 0.213" on the north side of the tank. In the bottom section, one small area (3/8" diameter) of pitting was indicated that had a minimum reading of 0.171". This tank is used for venting of the other thirteen (13) tanks which could help explain the greater wall thickness losses.

*GENERAL COMMENTS - The UT readings indicated that the most general thinning of the tank walls has occurred in the very top portion of each storage tank (upper 1 to 2 feet of the straight side). Probable causes for this are; increased oxygen concentrations in this area, more corrosive vapor accumulation at the top, and concentration of corrosive species on the metal surface due to evaporation. This more aggressive condition would be greatly decreased by a nitrogen blanket on the tank system (this is believed to be in the implementation phase). Tank #36 had the lowest thickness readings.

Pitting or localized thinning was indicated in several tanks in the bottom section and covers. In most cases, the areas of pitting were found about 1/4" or so in diameter. One exception was tank #32 where a larger pitting area was indicated with thickness reading of 0.066" to 0.108". It is suggested that possible repair of this area be considered.

It should be pointed out that UT testing is not intended as a means for detecting pitting type corrosion. The probe must be placed over the exact location of the pit, which in most cases, could be a very small area. In tanks where some pits were recorded, it is likely that more are present. Even in the tanks where no pits were found, some may be present.

The probability of a significant failure due to pitting of these tanks is extremely small. A slight weepage of waste would be the most likely result of any wall penetration. Overall tank mechanical integrity would not be considered of concern from the pitting indicated in the ultrasonic scope of work performed.

A nitrogen blanket on the tanks would be expected to greatly decrease most types of pitting since oxygen is normally involved in the corrosion reaction. Pits that are now present may stop growing depending upon the present envirnoment in the pit itself (under corrosion products).

TABLE 1

RECORDED UT MEASUREMENTS (6/25/87) - TANKS 23 TO 36

TANK #	GENERAL THICKNESS RANGE BOT.	MID.	TOP	INITIAL MONITORING THICKNESS BOT.	MID.	TOP	COMMENTS*
23	.306 .319	.234 .250	.221 .243	.308	.238	.226	No pitting or localized thinning (O.K.)
24	.306 .319	.237 .248	.223 .250	.308	.238	.227	O.K.
25	.301 .318	.241 .250	.223 .247	.307	.242	.231	Two pitted areas in bottom, min. .266"
26	.305 .325	.238 .252	.222 .249	.312	.239	.228	Widespread pitting in cover, min. .100". One pit in bottom, .258".
27	.316 .333	.242 .252	.224 .250	.317	.243	.234	O.K.
28	.308 .323	.241 .253	.225 .247	.310	.244	.228	Pitting in cover, .114" One pit in bottom, .270"
29	.308 .328	.235 .250	.225 .247	.311	.237	.230	One pit in bottom, .226"
30	.316 .343	.241 .259	.219 .254	.316	.242	.226	O.K.
31	.319 .329	.238 .251	.218 .249	.320	.240	.223	O.K.
32	.308 .318	.239 .249	.215 .251	.310	.240	.227	Large area of pitting in bottom, .066-.108"
33	.311 .314	.233 .244	.222 .249	.311	.235	.224	One pit in bottom, .236"
34	.310 .322	.241 .259	.220 .252	.312	.241	.228	One pit in bottom, .257"
35	.311 .333	.231 .250	.221 .256	.313	.233	.233	O.K.
36	.306 .323	.213 .238	.202 .233	.310	.216	.206	One pit in bottom, .171"

* NOTE: All values in inches. All values given in comments section represent the minimum reading found in the pitted area indicated.

APPENDIX A

NOTES: Thickness value given in the space to the right of each tank section is the initial starting thickness for the corrosion monitoring program.

The wall readings circled for each section are the three(3) lowest values found in that section.

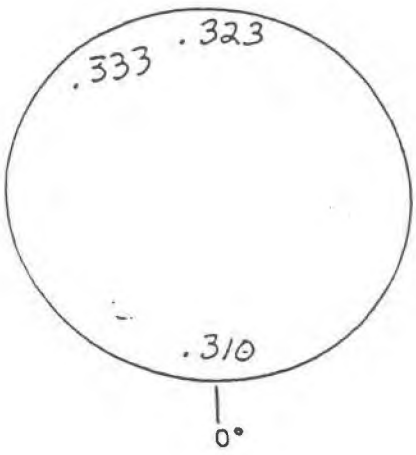
Pitted areas are circled in red and the minimum thickness reading for the pit indicated inside the circle.

TANK NO. TK-02-23

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

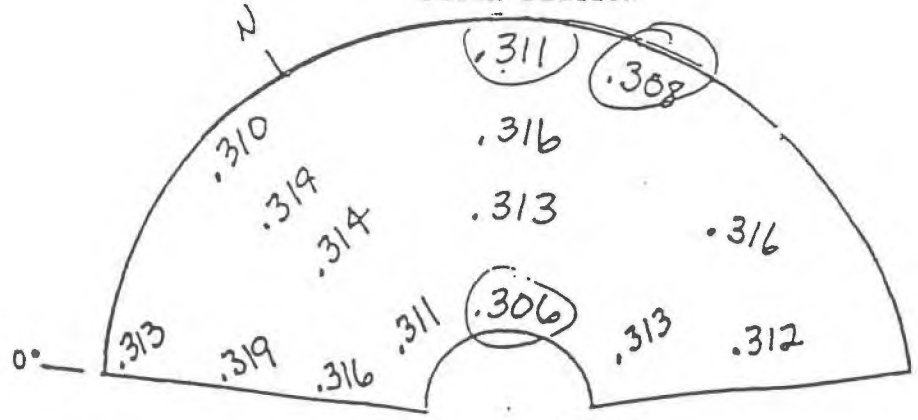
N

TOP SECTION

.231	.236	(.234)	(.221)	
		.236	(.225)	.226
.238	.241		.242	
		.240		
.237	.241	.243	.241	
(.234)	.241	MIDDLE SECTION .242	(.239)	
(.240)	.245	.248	.244	.244 .238
.250	.245	.250	.245	

0°

BOTTM SECTION

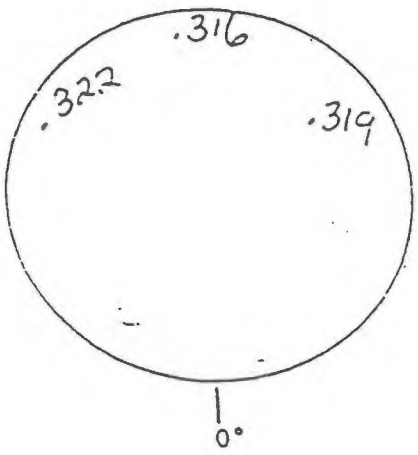


TANK NO. IK-02-24

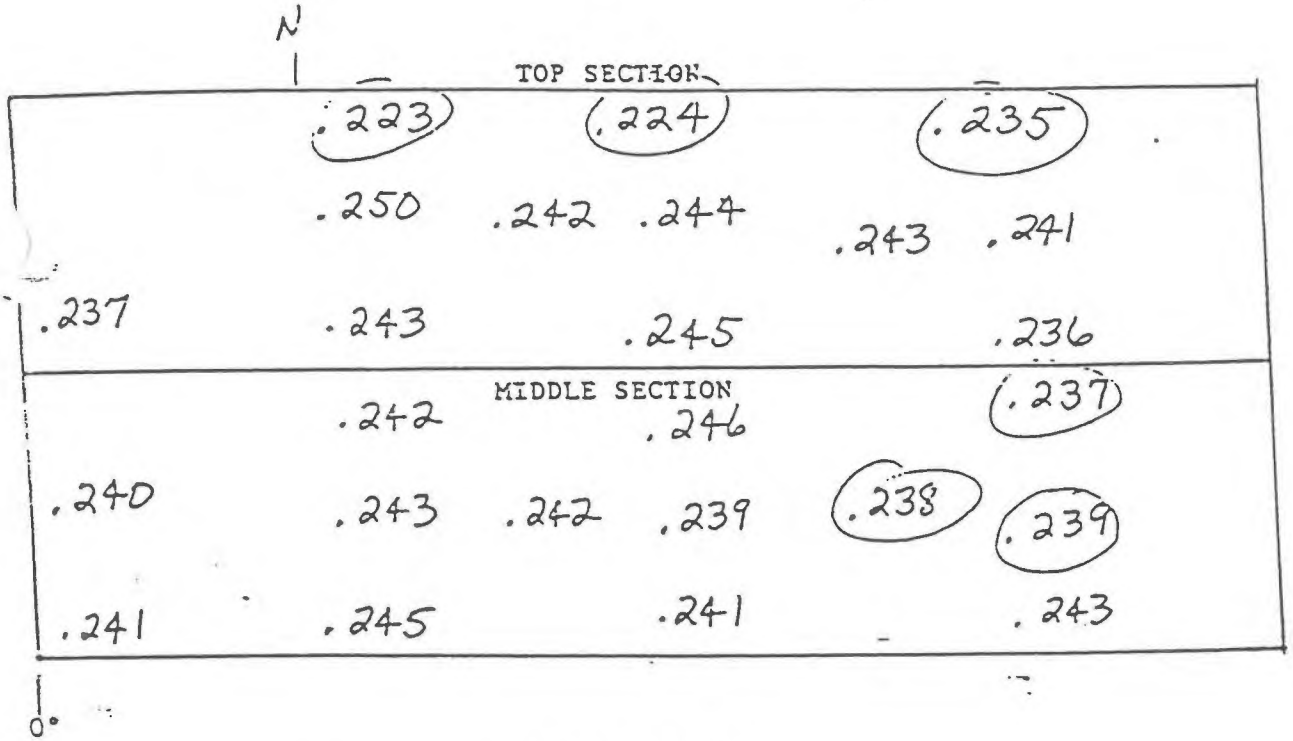
DATE 6/25/87

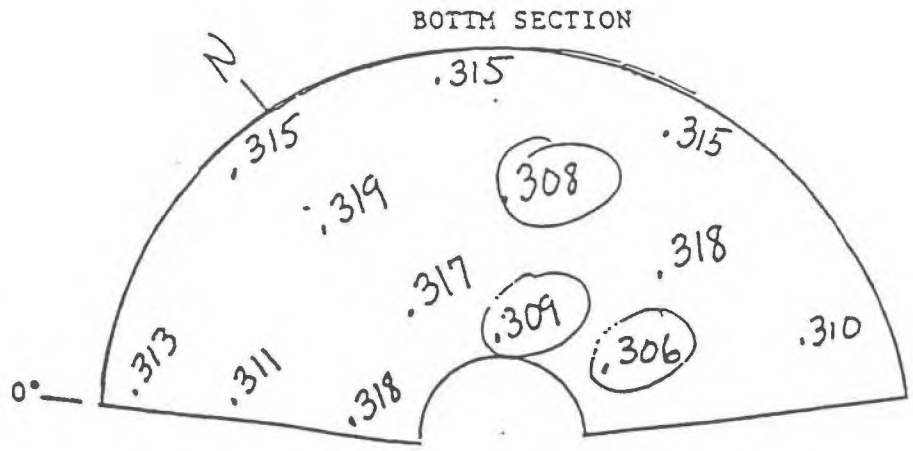
Revision 4
January, 1995

COVER



5'



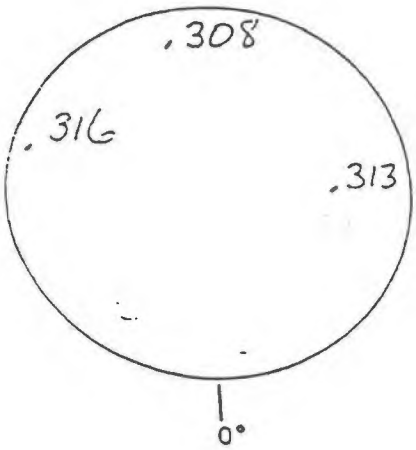


TANK NO. TK-02- 25

DATE 6/25/87

Revision 4
January, 1995

COVER



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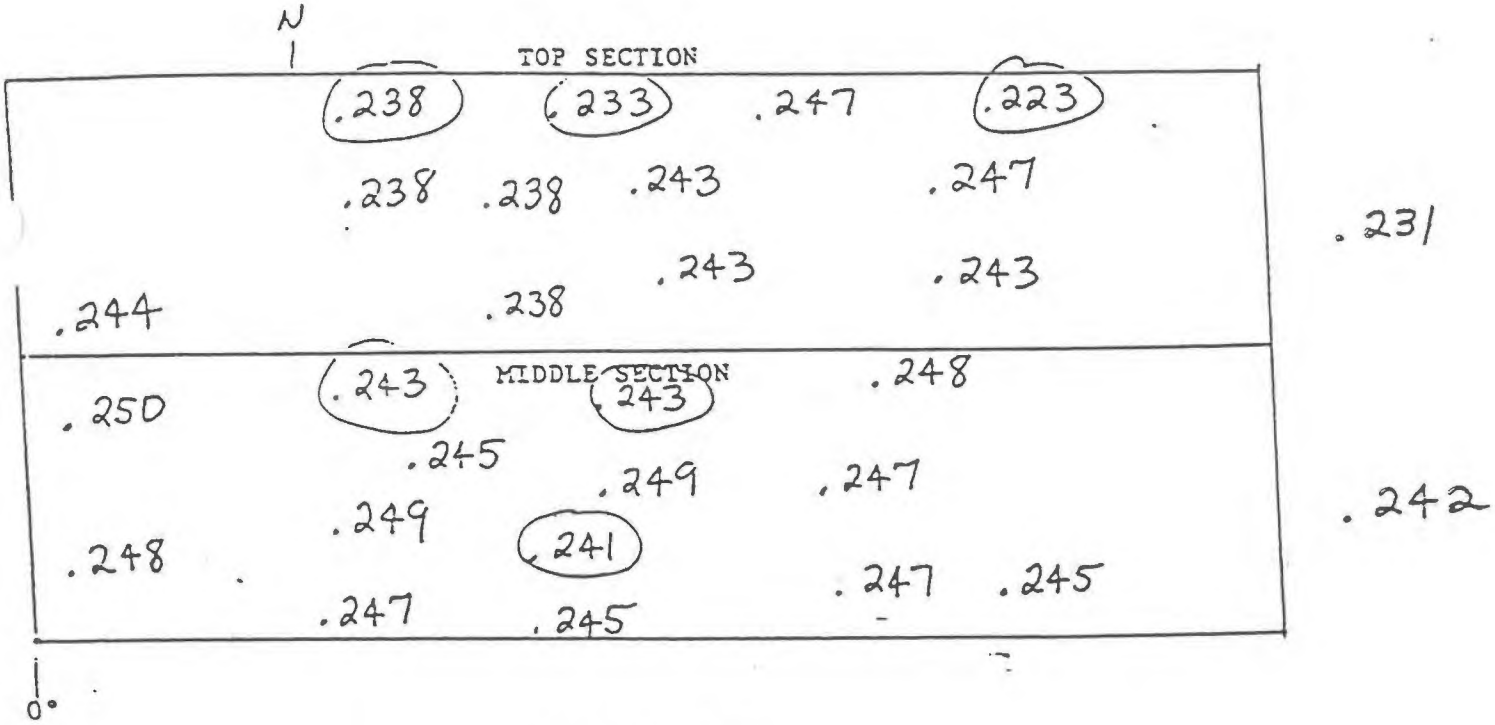
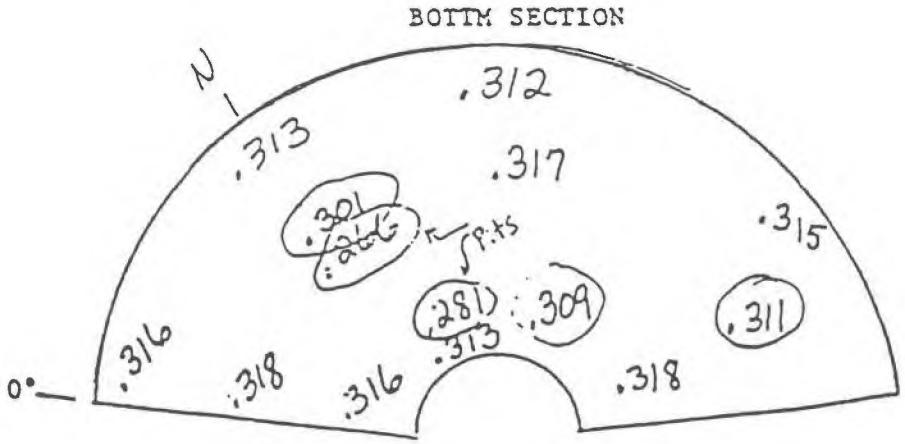
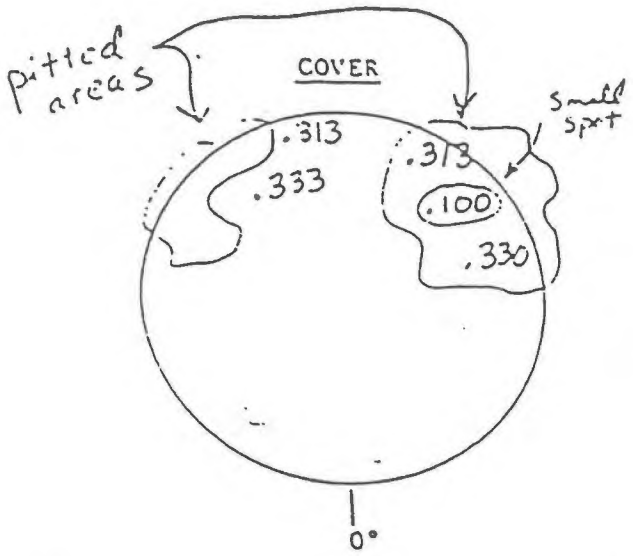




TANK NO. TK-02- 26

DATE 6/25/87

Revision 4
January, 1995



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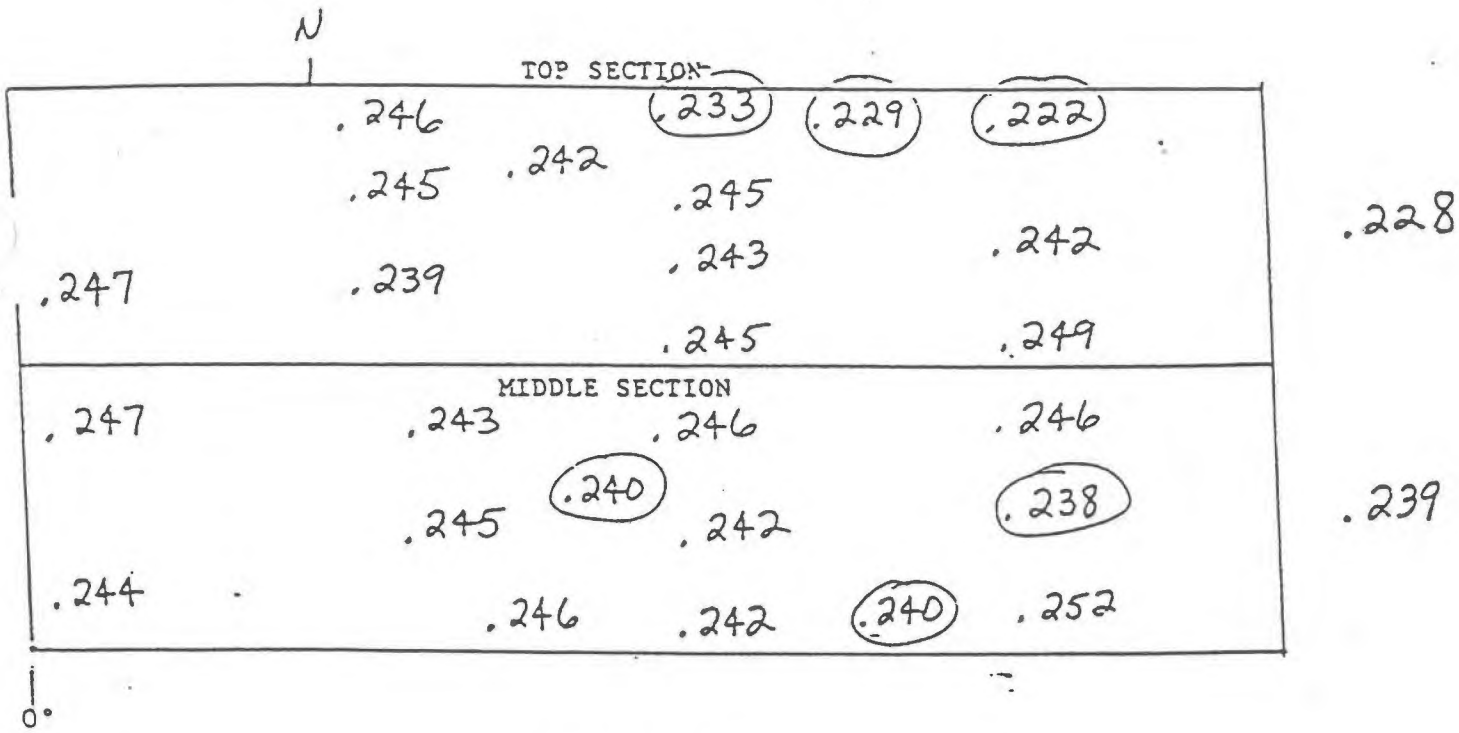
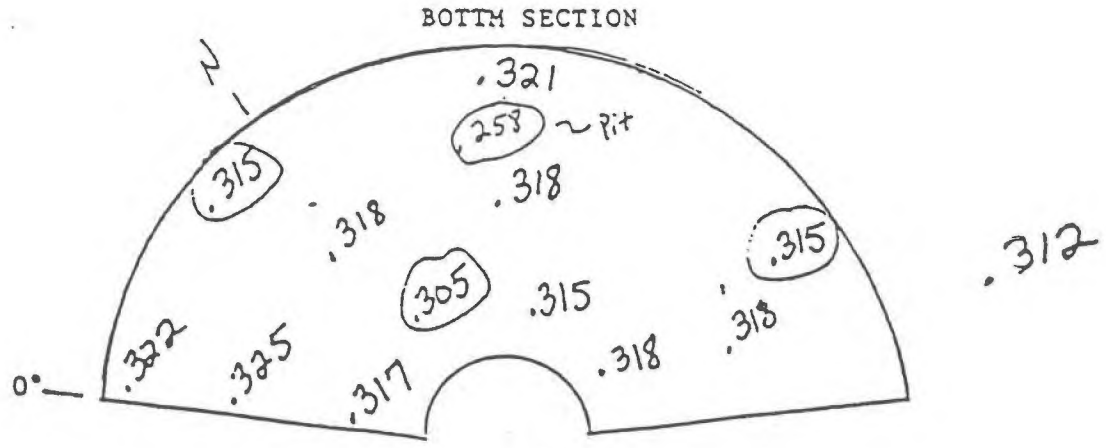


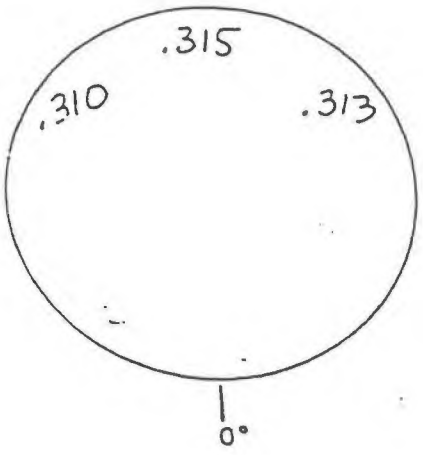


TANK NO. TK-02- 27

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

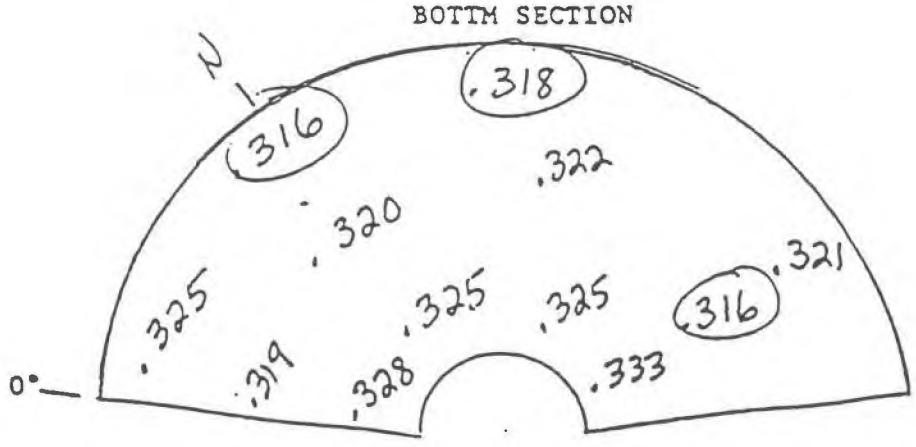
.235		.242		.224	
.246	.245	.247	.245	.245	.234
.248	.250	.249		.247	

MIDDLE SECTION

.244	.247	.243	.250	
	.247	.242	.247	.243
.252	.247	.246	.246	

0°

BOTTM SECTION



.317

TANK NO. TK-02- 28

DATE 6/25/87

Revision 4
January, 1995

5'

N

TOP SECTION

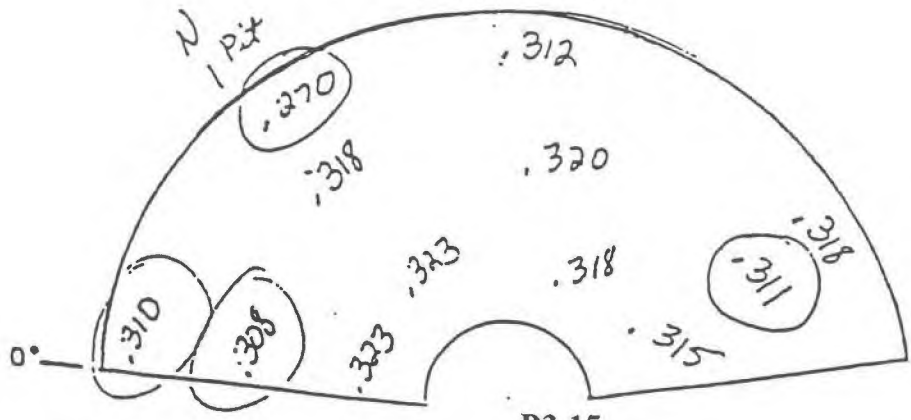
	.230	.225		.230	
	.242	.245 .248	.245	.245	.228
.237					
	.246	.247		.246	

MIDDLE SECTION

.241	.246	.252	.246	
	.245	.250	.246	.244
.245	.247	.253	.250	

0°

BOTTM SECTION



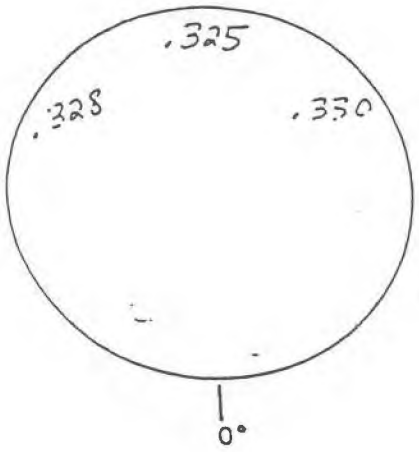
.310

TANK NO. TK-07- 27

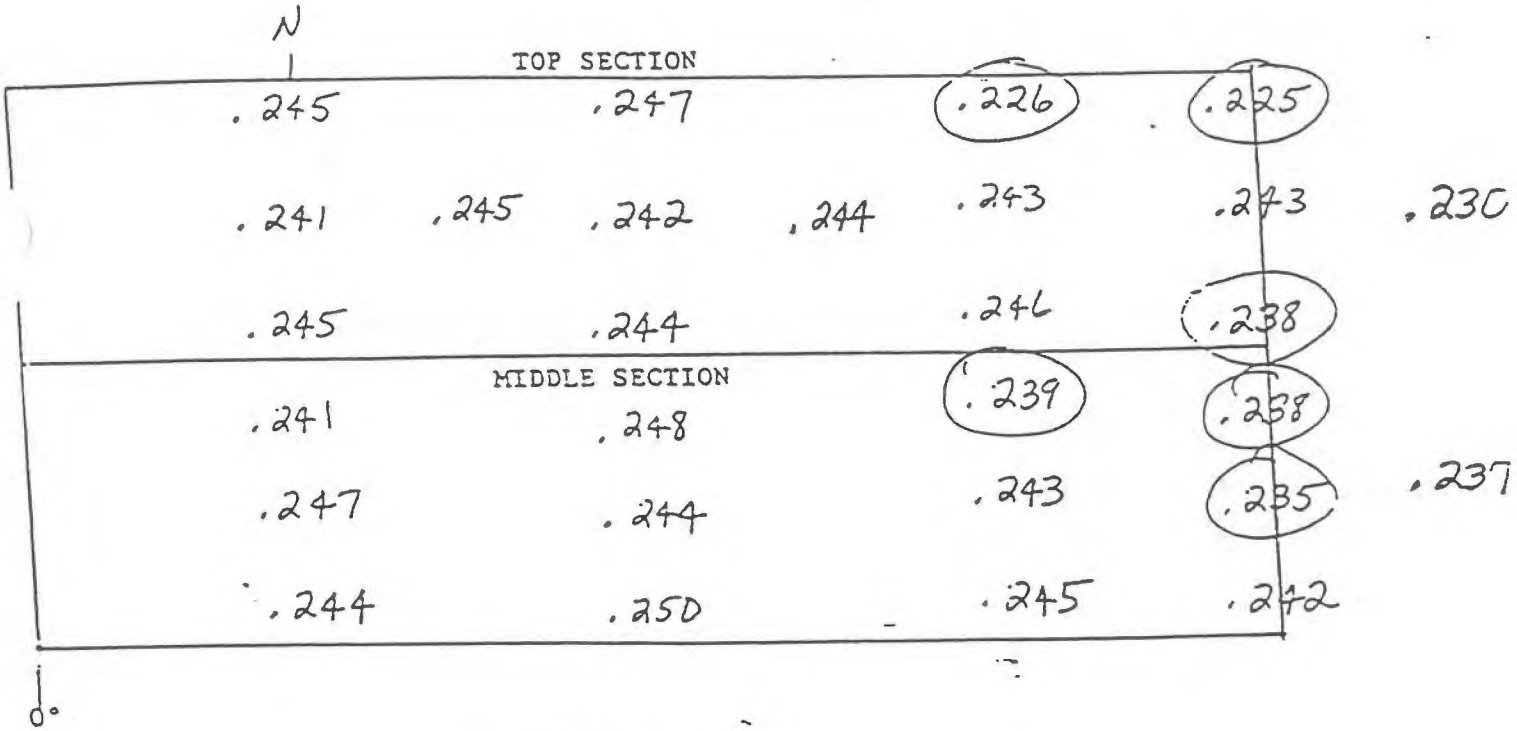
DATE 6/25/87

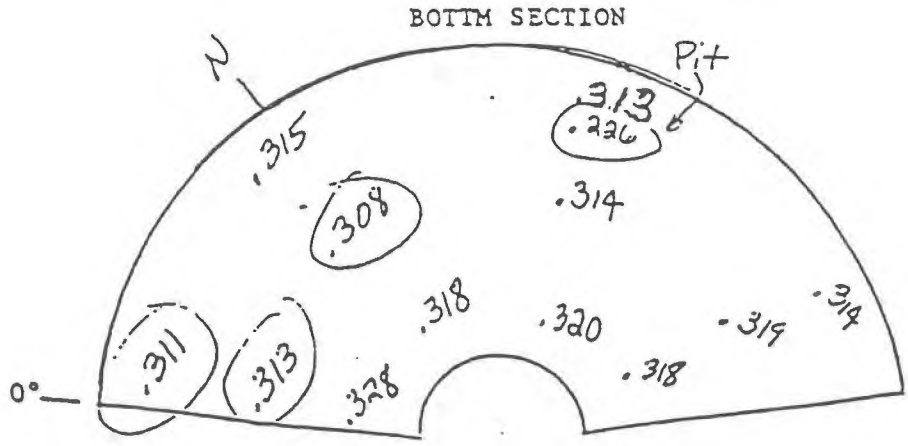
Revision 4
January, 1995

COVER



5'





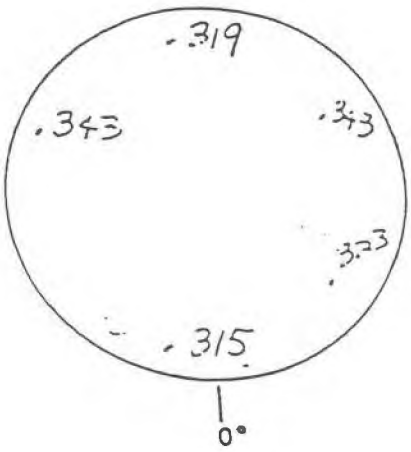
.311

TANK NO. TK-02-30

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

.235 (.219) (.224) (.235) .254

.245 .244 .249 .252 .226

.250 .249 .250 .247 .250

MIDDLE SECTION

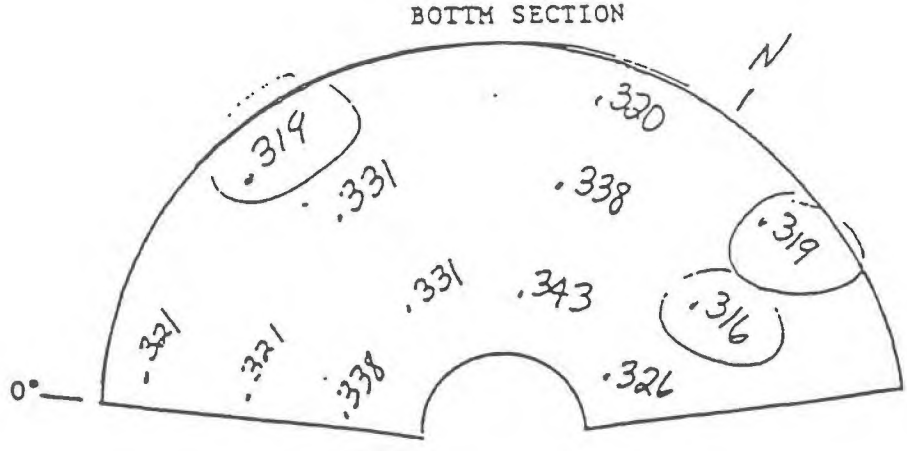
.246 .246 (.241) .246 .259

(.242) (.243) .251 .259 .242

.246 .252 .255 .250 .259

0°

BOTTM SECTION

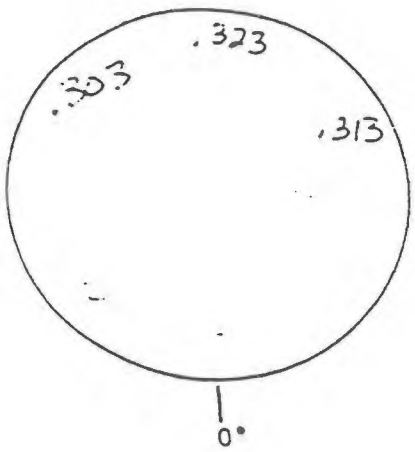


TANK NO. TK-02- 31

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

.226 .218 .224

.241 .243 .246 .240 .247 .223

.249 .243 .247 .243

MIDDLE SECTION

.241 .241 .241

.243 .251 .243 .238 .245 .240

.251 .247 .244 .240

0°

BOTTM SECTION

N

.320

.325 .329 .326 .321 .320

.320 .319 .326

.326 .326 .331 .329

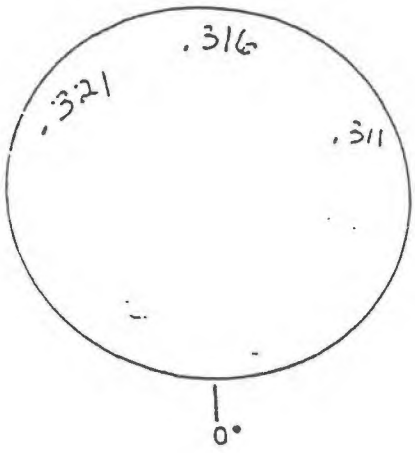
0°

TANK NO. TK-02- 32

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

.231 .215 .235

.251 .251 .248 .251 .247 .227

.243 .251 .243 .241

MIDDLE SECTION

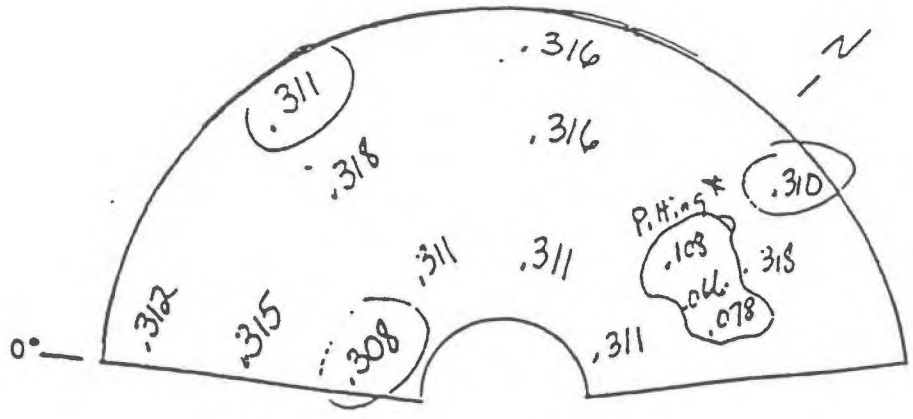
.247 .245 .239

.244 .247 .245 .241 .247 .239 .240

.241 .244 .252 .249

0°

BOTTM SECTION



.310

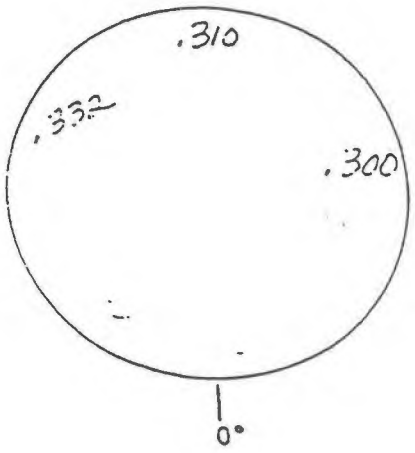
* Pit the size of a "silver dollar" about 2-3' from .318" in wall s pitted area

TANK NO. TK-02- 33

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

.222 .228 .222

.243 .244 .243 .249 .239 .224

.235

.248 .244 .243

MIDDLE SECTION

.233 .241 .243 .241

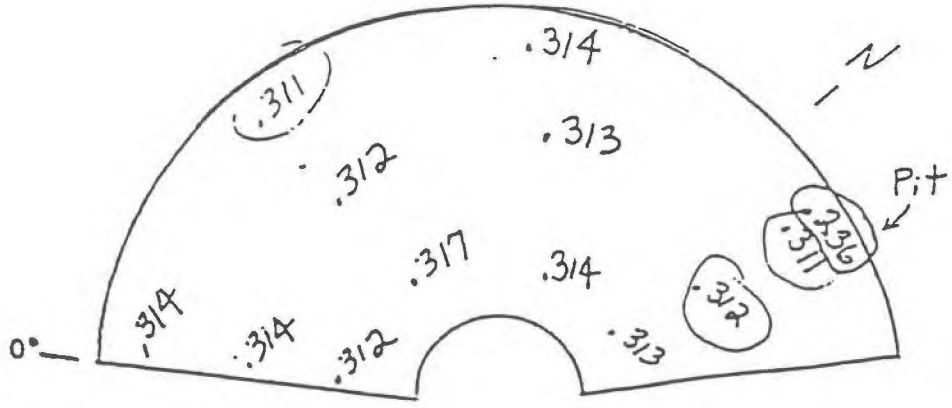
.243 .241 .243 .239 .236 .235

.236

.240 .241 .244

0°

BOTTM SECTION



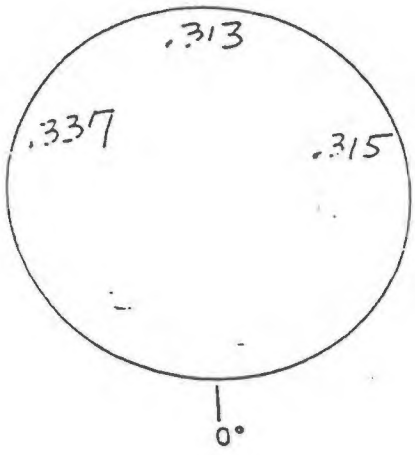
.311

TANK NO. TK-02- 34

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

.220 .233 .231

.252 .252 .250 .247 .247 .228

.244 .243 .250 .241

MIDDLE SECTION

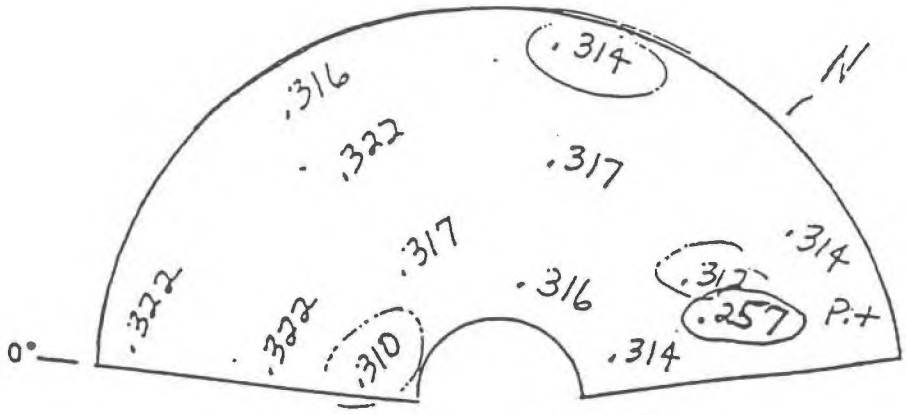
.241 .242 .245

.246 .243 .246 .251 .243 241 .241

.245 .259 .250 .242

0°

BOTTM SECTION

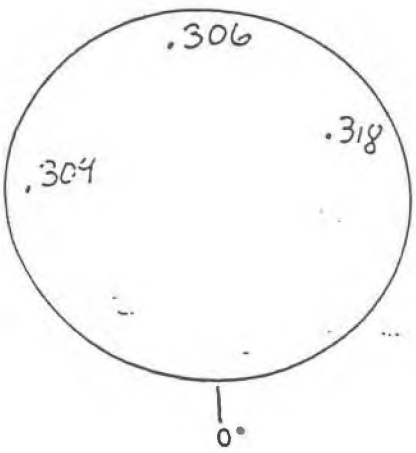


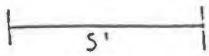
TANK NO. TK-02- 35

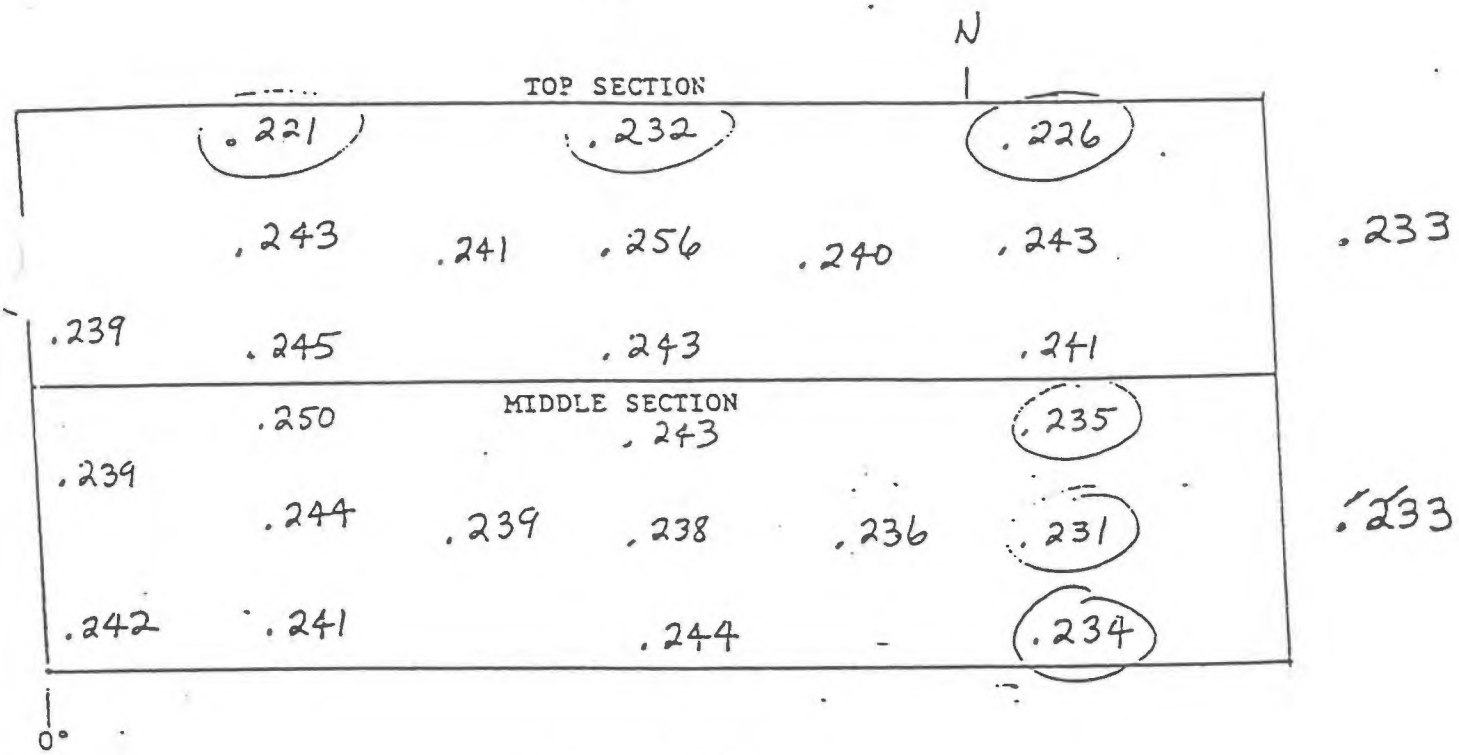
DATE 6/25/87

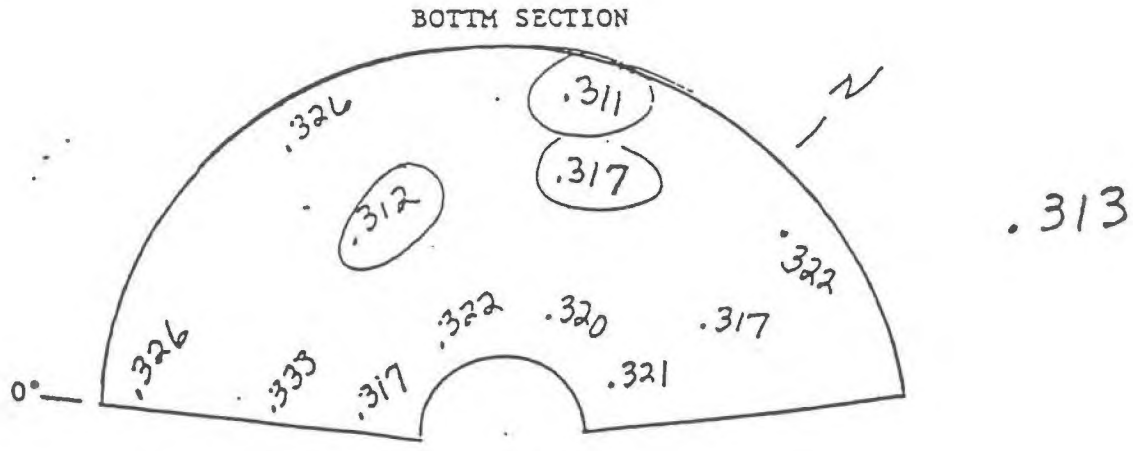
Revision 4
January, 1995

COVER







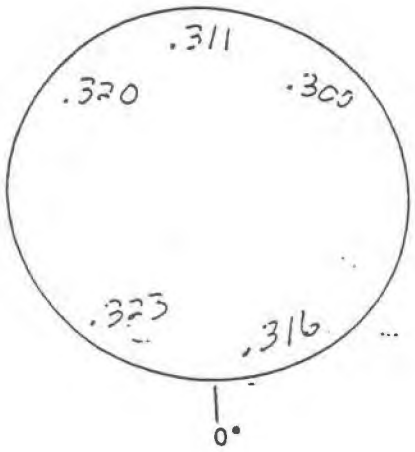


TANK NO. TK-02- 54

DATE 6/25/87

Revision 4
January, 1995

COVER



5'

N

TOP SECTION

(.202)	(.210)	.216	.221	.231
.229	.231	.224	.233	.229	.224
.227	.227		(.207)	.223

.206

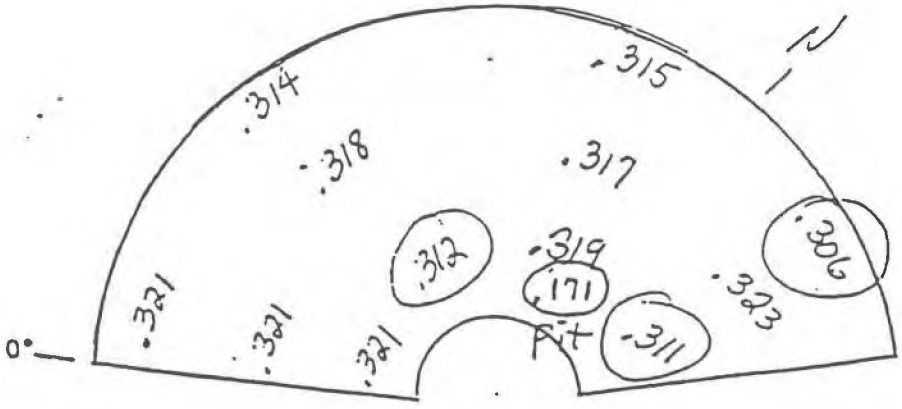
MIDDLE SECTION

.229	.225	(.213)	(.223)
.230	.226	(.213)	.232
.238	.235	.220	.223

.216

0°

BOTTM SECTION



.310

ACC
Applied Corrosion Control, Inc.
P.O. Box 73 • Rothschild, WI 54474 • (715) 359-4700

October 22. 1987

Phil Schaefer
Ross Incineration Services. Inc.
394 Giles Rd.
Grafton, OH 44044

Dear Phil:

This letter will document the inspection of hazardous storage tank #32 on October 2, 1987. This tank had shown indications of possible pitting at one location in the bottom cone during the previous inspection of June 25, 1987. Thickness readings by UT were as low as .073" at a very small location.

Again on October 2, thin external thickness readings were indicated at the same location. However, inspection of the inside of the tank did not indicate any significant general corrosion or pitting after detailed examination at this location. Wall thickness readings from inside the tank varied from .324 to .289 inches.

From this inspection it was obvious a pitting problem did not exist in tank 32. General condition of the tank appeared very good from observations from the bottom flange opening.

It is possible that a small void or delamination in the metal plate exists just below the outside surface at the location in question. UT will indicate any discontinuity in the metal.

From this inspection, tank 32 does not have a pitting or thickness problem at the area in question and can be put back in service. Condition of this tank would be considered similar to the other 13 tanks, none of which indicated any thickness measurements below design minimum. No special monitoring or inspections are needed for tank 32.

If you have any questions on this, please give us a call.

Sincerely,

Thomas P. Oettinger/mct

Thomas P. Oettinger

Mark C. Hoffman

Mark C. Hoffman

Applied Corrosion Control, Inc.

ACC INC
Applied Corrosion Control, Inc.
P.O. Box 73 • Rothschild, WI 54474 • (715) 359-4760

December 7, 1987

DEC 1 8 1987

Phillip Schaefer
Ross Incineration Services, Inc.
394 Giles Road
Grafton, OH 44044

Dear Phil:

Enclosed is our report on the two sludge solids storage tanks, #67 and #68, that were recently UT tested. As indicated, both tanks appear in good shape with all wall thickness readings being above .235 inches. No localized corrosion was indicated.

The minimum wall required is left blank in the report. As discussed, you could type this after calculations are made. Both tanks 67 and 68 have been assessed as integrally sound for continued storage use.

If you have any questions, please give us a call. Billing will follow shortly.

Sincerely,

Thomas P. Oettinger

Thomas P. Oettinger

Mark C. Hoffman

Mark C. Hoffman
Applied Corrosion Control, Inc.

UT Thickness Testing of the Sludge Solids Tanks

For Ross Incineration Services, Inc.

by

Applied Corrosion Control, Inc.

December 7, 1987

Introduction

Two sludge solids storage tanks, tanks #67 and #68, at Ross Incineration Services, Inc. were UT thickness tested on November 19, 1987. This was performed to verify that the nominal wall thickness of both tanks were above design minimum. Forty (40) readings were taken of each of the two tanks which were identified as the east and west tanks respectively. These readings were taken at random locations from the top to the bottom of each tank. Test results were then recorded on a fold-out diagram of the tanks with the location of the readings and results indicated on the diagram.

Procedure

The average paint thickness on the tanks was found to be about .020 inches. This value was subtracted off the readings given by the instrument. In some instances it was possible to place the probe against "bare" carbon steel where paint had peeled off. These readings tended to verify that a paint thickness of .020 inches was a good average value.

Results

The thickness readings on the west tank varied from .241 inches to .274 inches. Readings on the east tank varied from .239 inches to .262 inches. No significant pattern of variations in thicknesses were found for either tank. It appears the original nominal plate thickness for the tank was about .250 inches. Figures 1 and 2 at the end of this report, indicate the actual readings on each tank. The general location of the measurements is also given. No areas of localized corrosion, such as pitting, were indicated by the thickness measurements.

Conclusions

None of the thickness readings indicated that the tank walls were below or near design standards. The ten thousand gallon tanks previously evaluated in June 1987, had a design wall minimum of .179 inches. The two tanks presently inspected are smaller in volume and diameter and the minimm design wall required is $\leq .179$ inches. Since the lowest reading was .239 inches, both tanks are acceptable for continued use.

Figure 1

UT Wall Thickness Readings and General Location of These Measurements for the West Tank (inches).

N	W	S	E
.255	.245	.258	.258
.265	.250	.260	.244
.264	.255	.262	.240
.263	.260	.265	.242
.250	.243	.261	.244
.250	.241	.262	.244
.245	.260	.264	.257
.270	.261	.261	.246
.265	.249	.259	.247
.264	.259	.250	.251

Figure 2

UT Wall Thickness Readings and General Location of These Measurements for the East Tank (inches).

N	W	S	E
.248	.245	.241	.250
.239	.240	.240	.247
.252	.244	.244	.242
.251	.251	.241	.250
.250	.245	.252	.252
.243	.252	.258	.253
.251	.252	.253	.251
.246	.262	.256	.245
.250	.254	.253	.252
.252	.250	.262	.255

ULTRASONIC THICKNESS TESTING
FOR
HAZARDOUS WASTE STORAGE TANKS

TANK FARM I - TANKS 23 THROUGH 36
TANK FARM II - TANKS 37 THROUGH 50
TANK FARM III - TANKS 51 THROUGH 64
TANKS 70, 73, AND 74
TANKS 67 AND 68

Monitoring Dates:
May 15, 1993 to January 15, 1994

I. INTRODUCTION

The forty seven (47) hazardous waste storage tanks located at the Ross Incineration Services, Inc. plant site were ultrasonic thickness (UT) tested over the period of June 22 to June 25, 1993. The purpose of the UT testing was to provide five (5) year tank thickness data, as prescribed in the Ross Incineration Services, Inc. Tank Corrosion Protection Plan (The Plan). The ultimate purpose of this portion of the plan is to determine any gross differences between the calculated remaining wall thicknesses and the actual measured wall thickness.

As per the plan, thirty (30) UT readings were obtained on each storage tank; 10 from the top, 10 from the middle and 10 from the bottom portions of each tank. The thickness data obtained from this inspection was then compared to the Calculated Wall Thickness Remaining presented on the Tank Monitoring Cumulative Metal Loss Data sheets for each tank for the monitoring period November 15, 1992 to May 15, 1993. If UT readings indicated lower wall thicknesses than reported on the data sheets, adjustments were made to the Cumulative Metal Loss data to correct for the lower readings, as described in the Thickness Testing Results Section of this report.

II. PROCEDURES

The UT testing measurements were obtained using a Magnaflux MX-10 ultrasonic thickness tester calibrated to an ultrasonic velocity of 0.2324 inches/microsecond. The lowest reading obtained from each of the thirty test points of each tank was recorded as the test thickness for that point.

Since the MX-10 test measurements included the thickness of the external paint, as well as the tank metal wall thickness, an average paint thickness was subtracted from each reading before recording. The average paint thickness was determined for each tank farm group, since varying numbers of paint coatings have been applied depending upon the age of the tank farm. The average paint thicknesses were obtained using a Check-Line Coating Thickness Tester manufactured by Electromatic Equipment Company. The actual paint thicknesses used for each tank farm is presented in the Thickness Testing Results Section of this report.

III. THICKNESS TESTING RESULTS

A. RECORDED THICKNESS MEASUREMENTS:

As mentioned in the Procedures Section, average paint thicknesses were subtracted from the UT measurements before recording. The average paint thicknesses for the each of the various tank groups are listed as follows;

Tank Farm #1 (tanks 23-36) - 20 thousandths
Tank Farm #2 (tanks 37-50) - 10 thousandths
Tank Farm #3 (tanks 51-64) - 20 thousandths - no paint but rough surface
Tanks 70, 73 & 74 - 10 thousandths
Tanks 67 and 68 - Paint removed due to rough surface

As indicated above, 20 thousandths of an inch was subtracted from the insulated tanks 51-64 due to a very rough but unpainted surface. Tanks 67 and 68 had extremely rough and uneven painted surfaces which required chipping off of the paint to bare metal.

The recorded UT testing results for each tank is presented in Appendix A, by tank. The lowest reading obtained in each of the three tank sections is highlighted with magic marker.

B. WALL THICKNESS ADJUSTMENTS:

A comparison of the lowest recorded UT measurement from each tank section was made with the Calculated Wall Thickness Remaining on each tank data sheet in the May 15, 1993 Tank Monitoring Report. If the UT wall measurement was found to be lower than the Calculated wall thickness, an adjustment equal to the difference in readings was added to the Cumulative Metal Loss Data sheet. If the measured reading was found to be higher than the Calculated wall thickness, no change was made. All tanks requiring an adjustment to the remaining wall thicknesses are listed in Appendix B, which presents the Cumulative Metal Loss Data with the appropriate adjustments made.

Tanks 73 and 74 measurements indicated the remaining wall thicknesses to be considerably higher than what was thought to be the original wall thickness (eg the wrong original wall thickness was used, .375" instead of 0.625"). Therefore, the measured wall thickness was used as the Starting Wall Thicknesses on the Cumulative Metal Loss Data sheets instead of making an adjustment to Metal Loss Data.

IV. COMMENTS

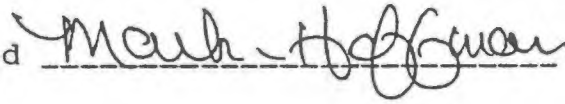
The majority of wall thickness adjustments were made to the top sections of the tanks. The adjustments ranged from 1 to 26 thousandths of an inch, with most being in the 1 to 12 range. This data coincides with semi-annual calculated data which indicated more pitting corrosion in the top sections of the tanks, over the past five years.

Tank number 55 indicated a lower than expected reading in the coned bottom section of the tank. This lower reading could likely be due to an internal delamination of the metal plate during forming. The readings were above 0.200 inch in this area, which is not an immediate concern. We would recommend that the bottom section of the tank be internally inspected sometime within the year to determine the cause of the lower reading.

Tanks 67 and 68 indicated variations in wall thicknesses, mainly in the top and middle sections of each tank. No readings, however, were below the minimum required thickness. As indicated in the semi-annual monitoring reports, these two tanks are experiencing a greater degree of pitting corrosion than the majority of tanks. Pitting corrosion will be closely monitored in the these tanks in future semi-annual periods.

In conclusion, the results of the UT testing did not indicate the need for any internal inspections of tanks due to below minimum wall thickness readings. The results also indicate that the majority of the remaining wall thicknesses presented in the semi-annual cumulative metal loss data is very close to the actual measured remaining wall thicknesses.

The above report and attached data was obtained and reported under the supervision of a NACE certified corrosion specialist whose signature is given below. The corrosion data was obtained and reported in accordance with Ross Incineration Services, Inc. Tank Corrosion Testing/Monitoring/Inspection Procedures.

Signed  Certification # 3324

Appendix A

ALL TANK READINGS ARE IN INCHES

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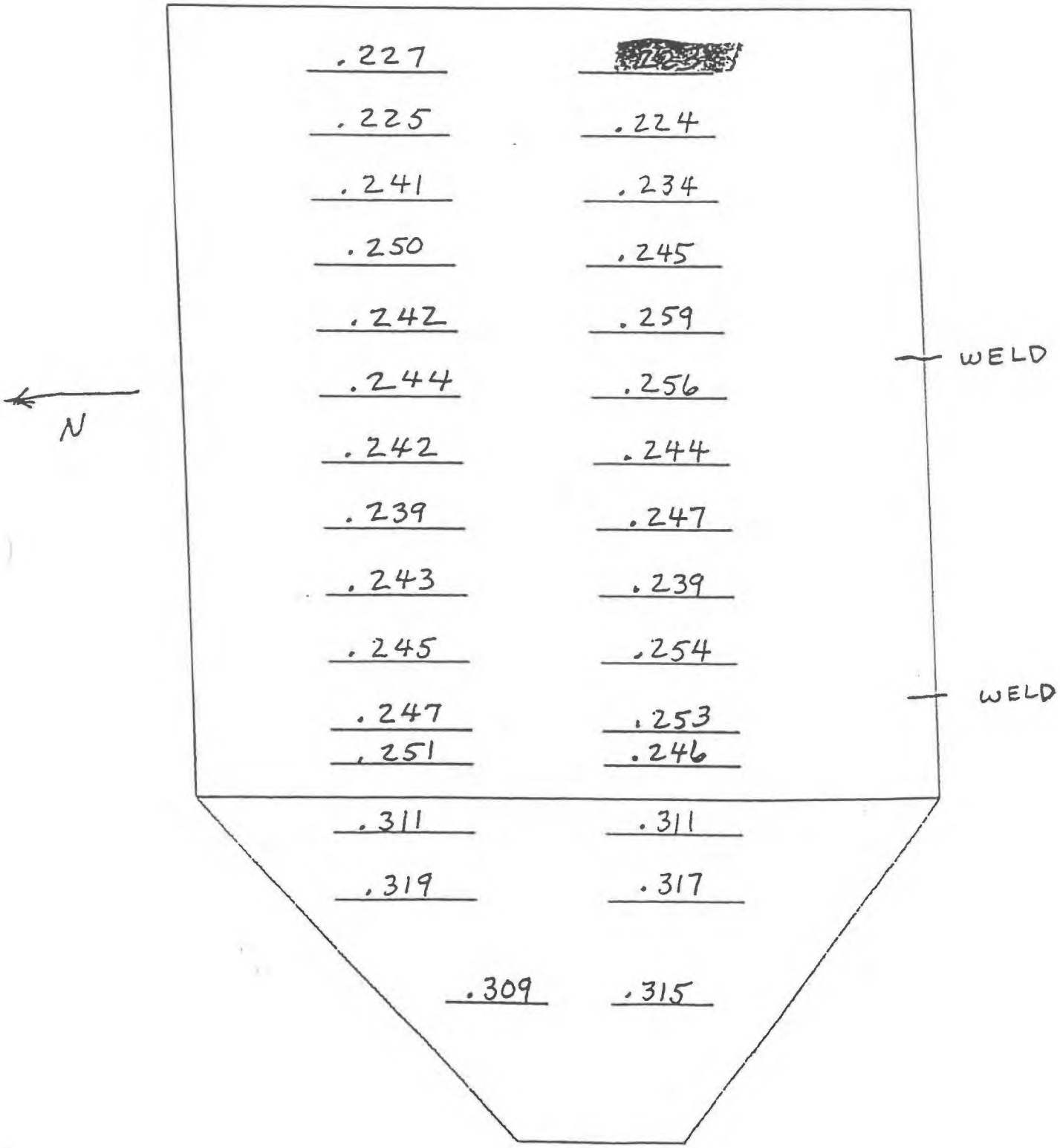
Revision 4
January, 1995



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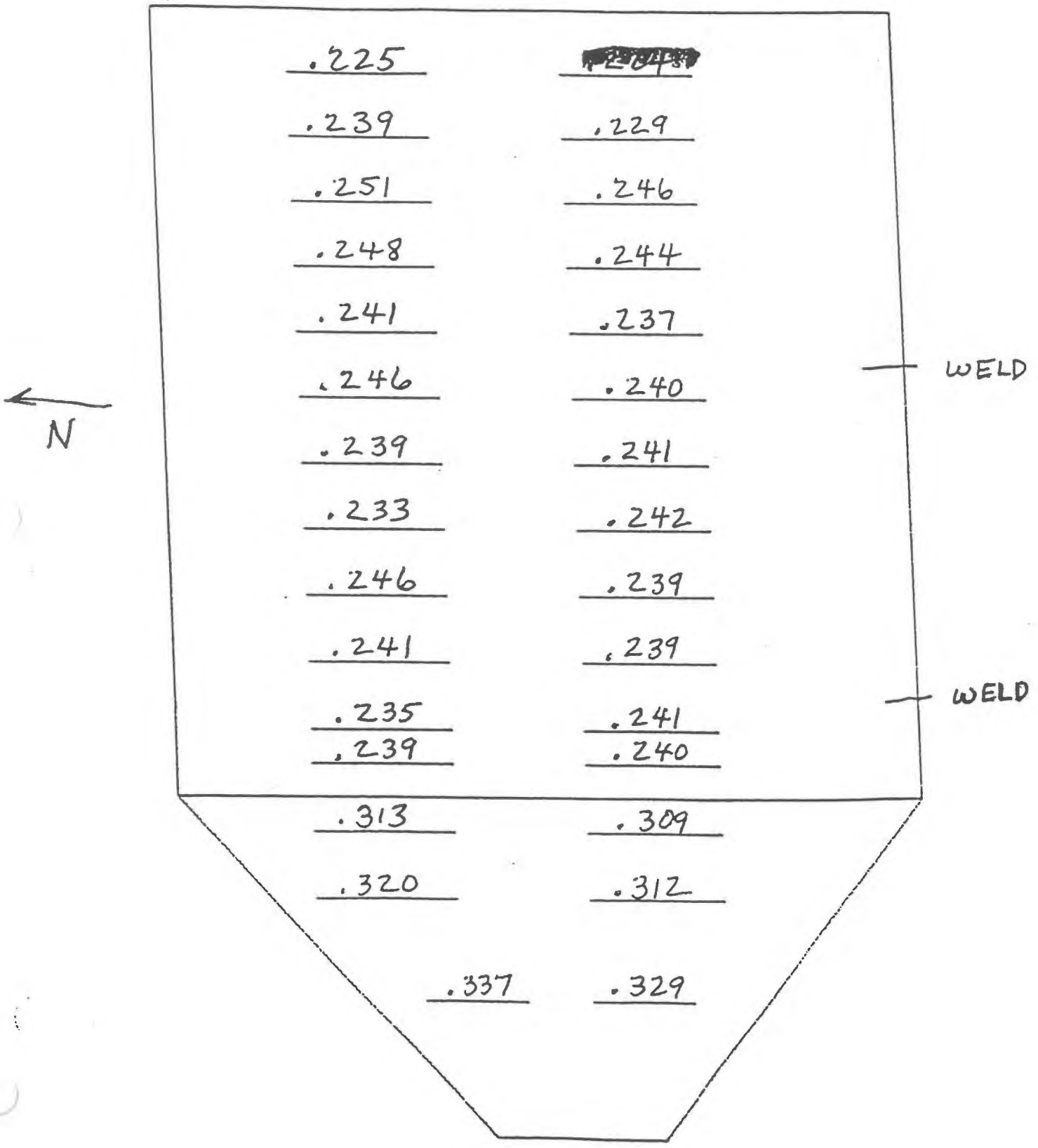

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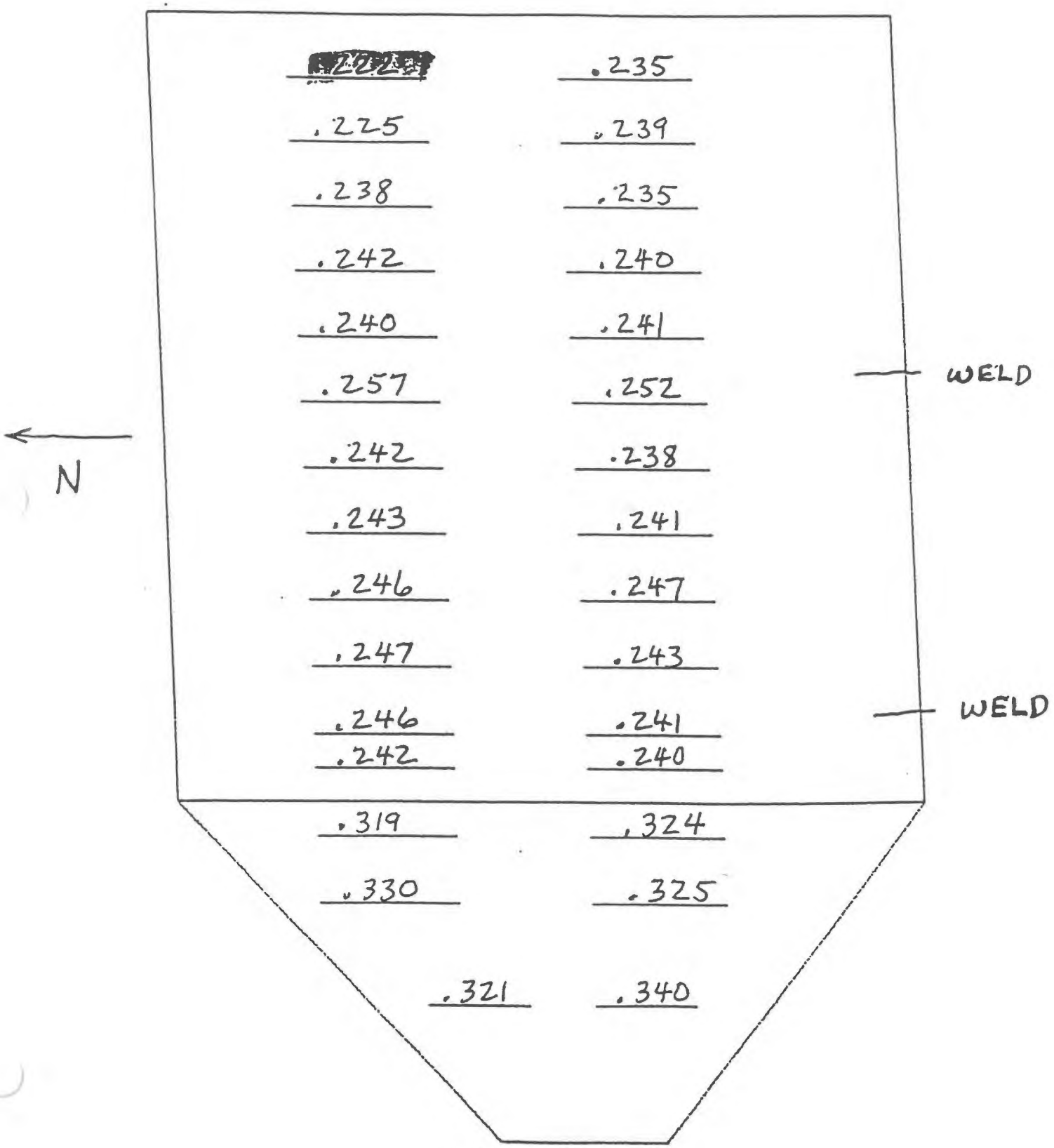

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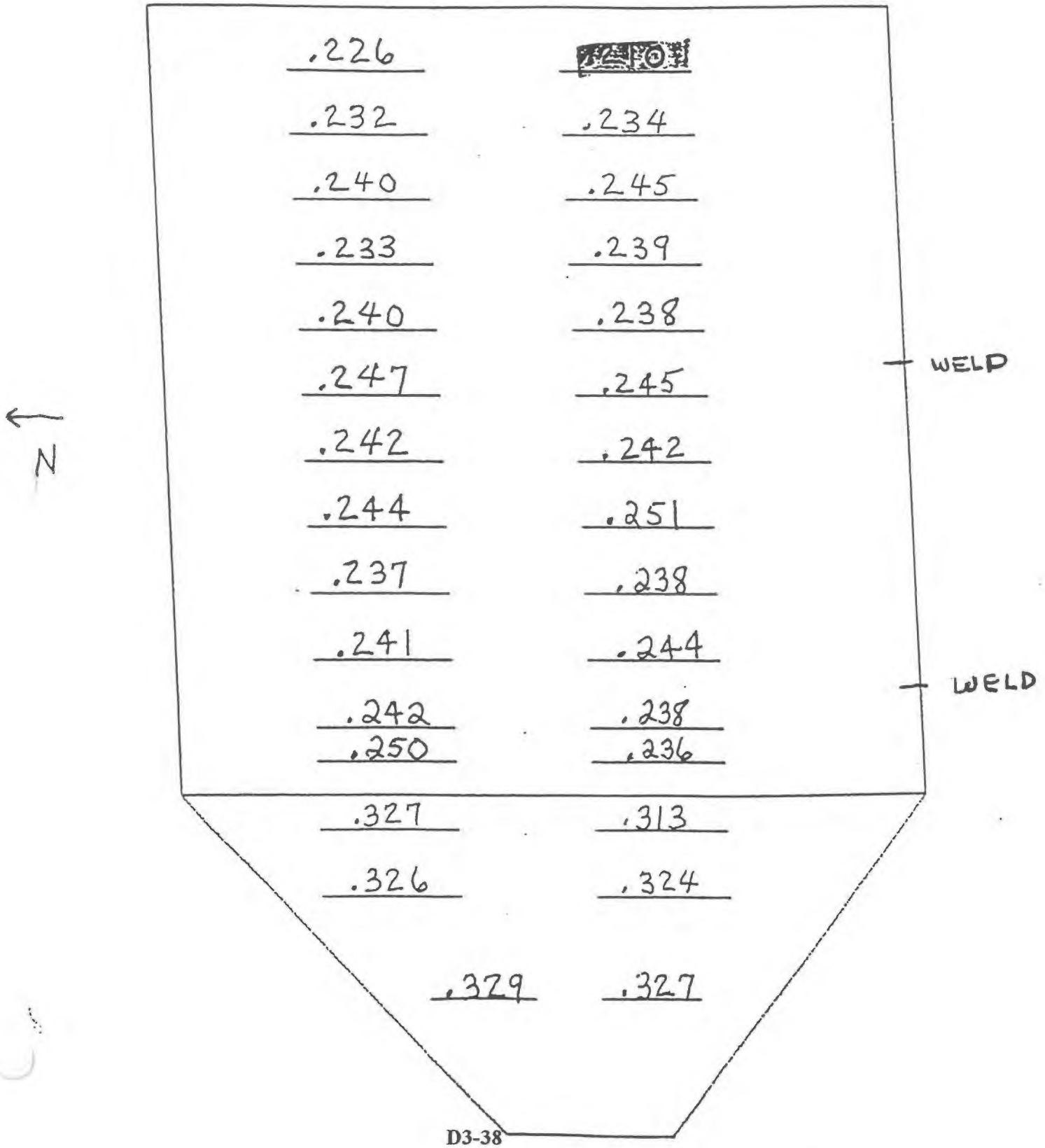

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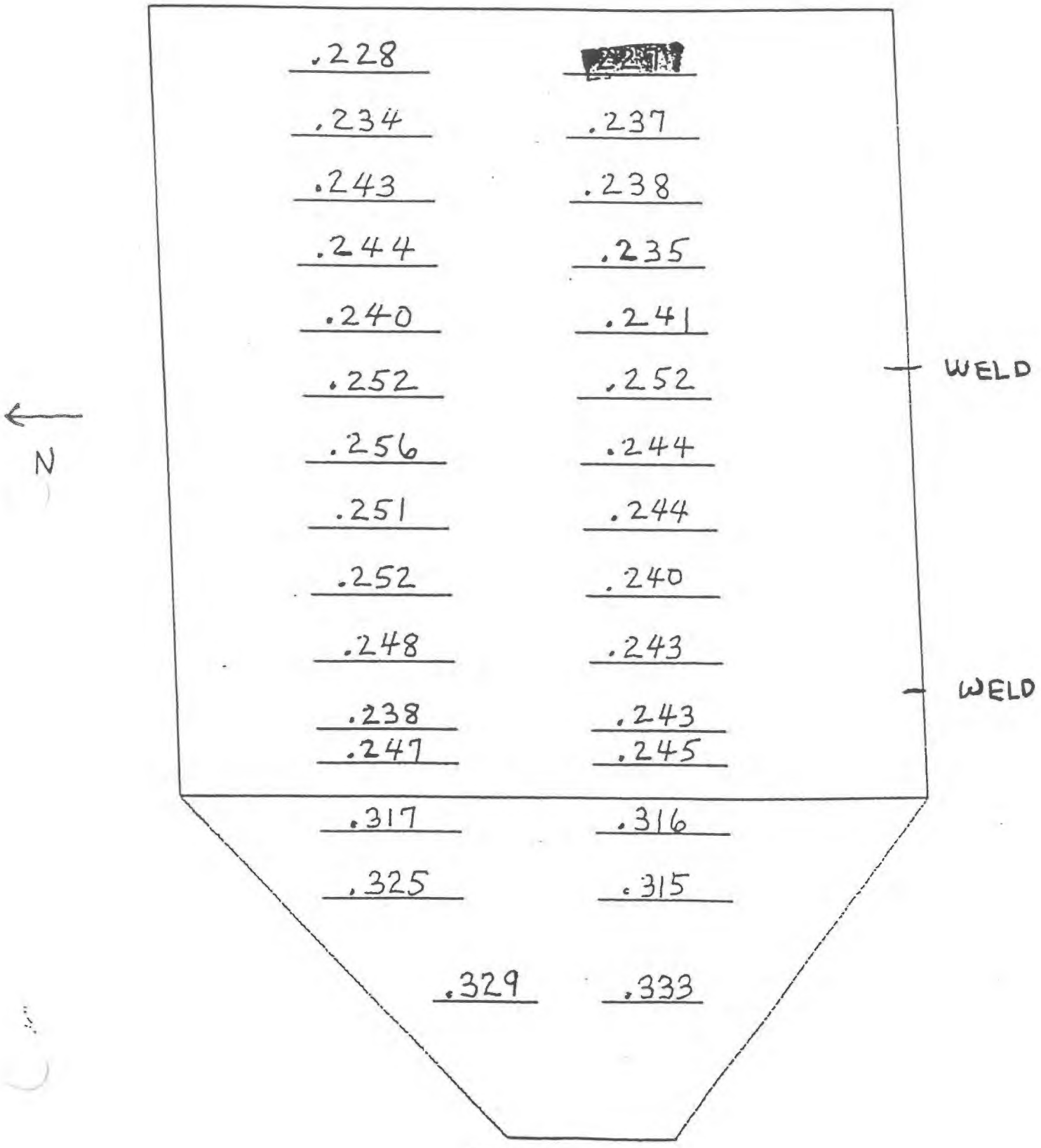

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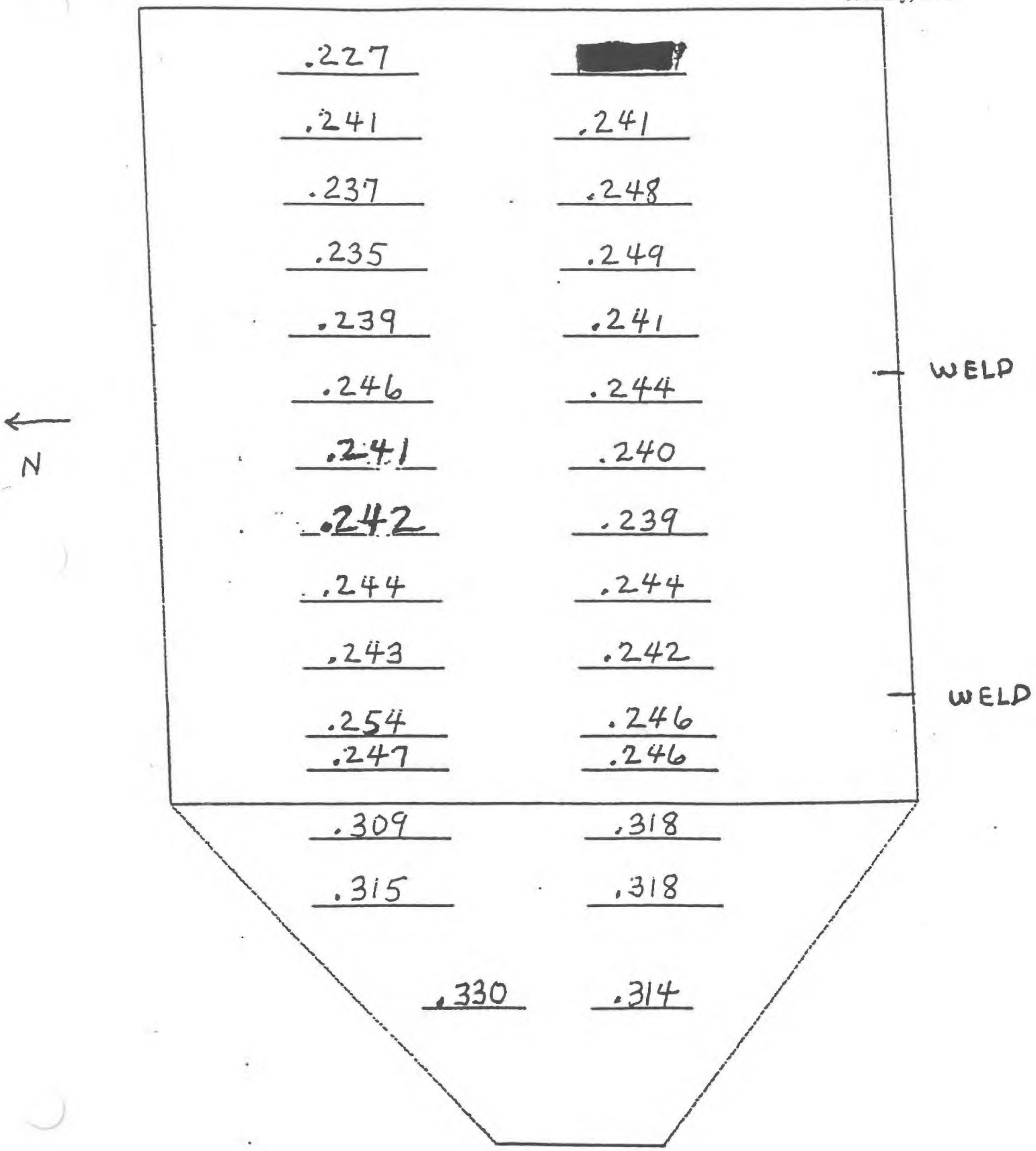

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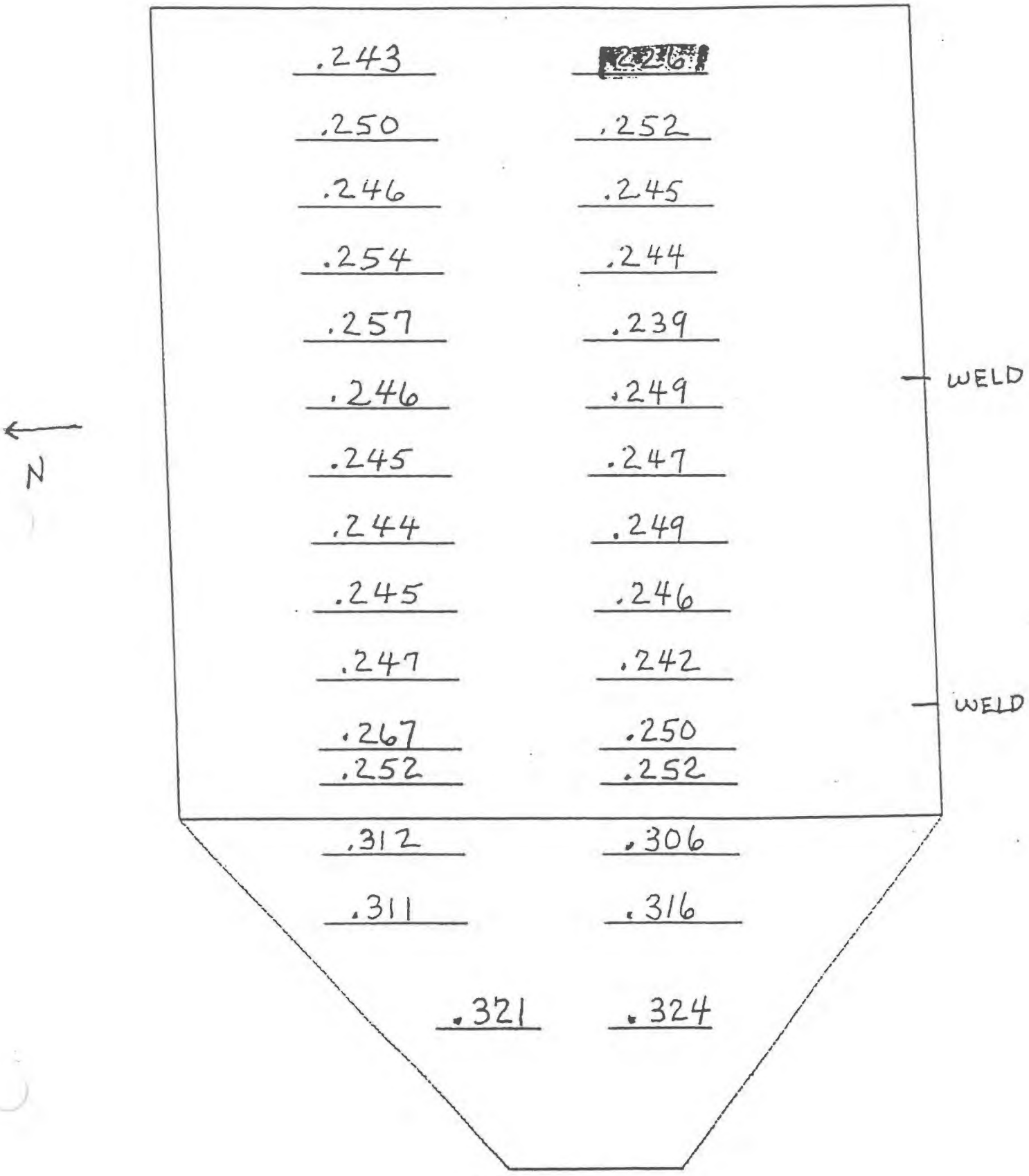

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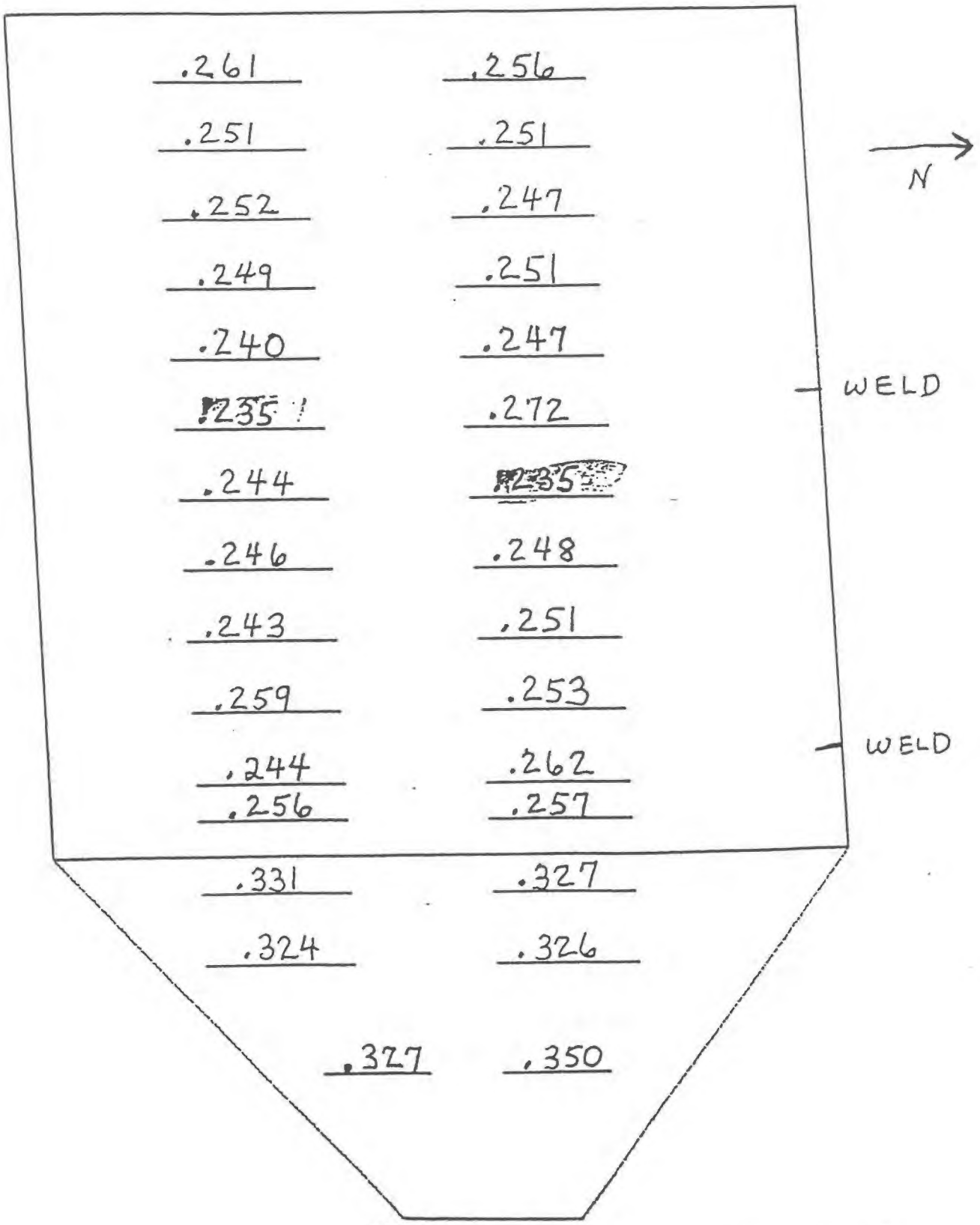

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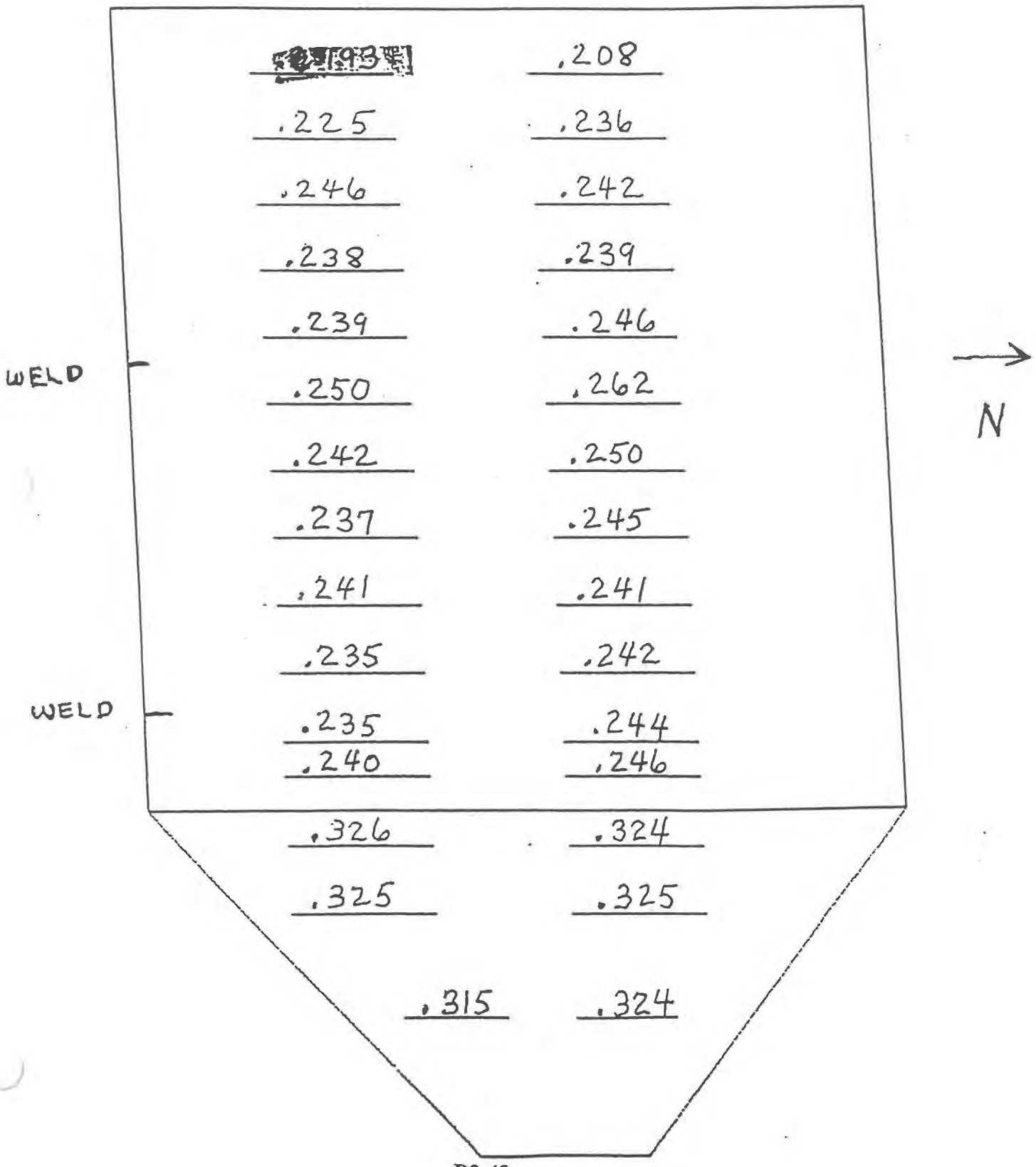

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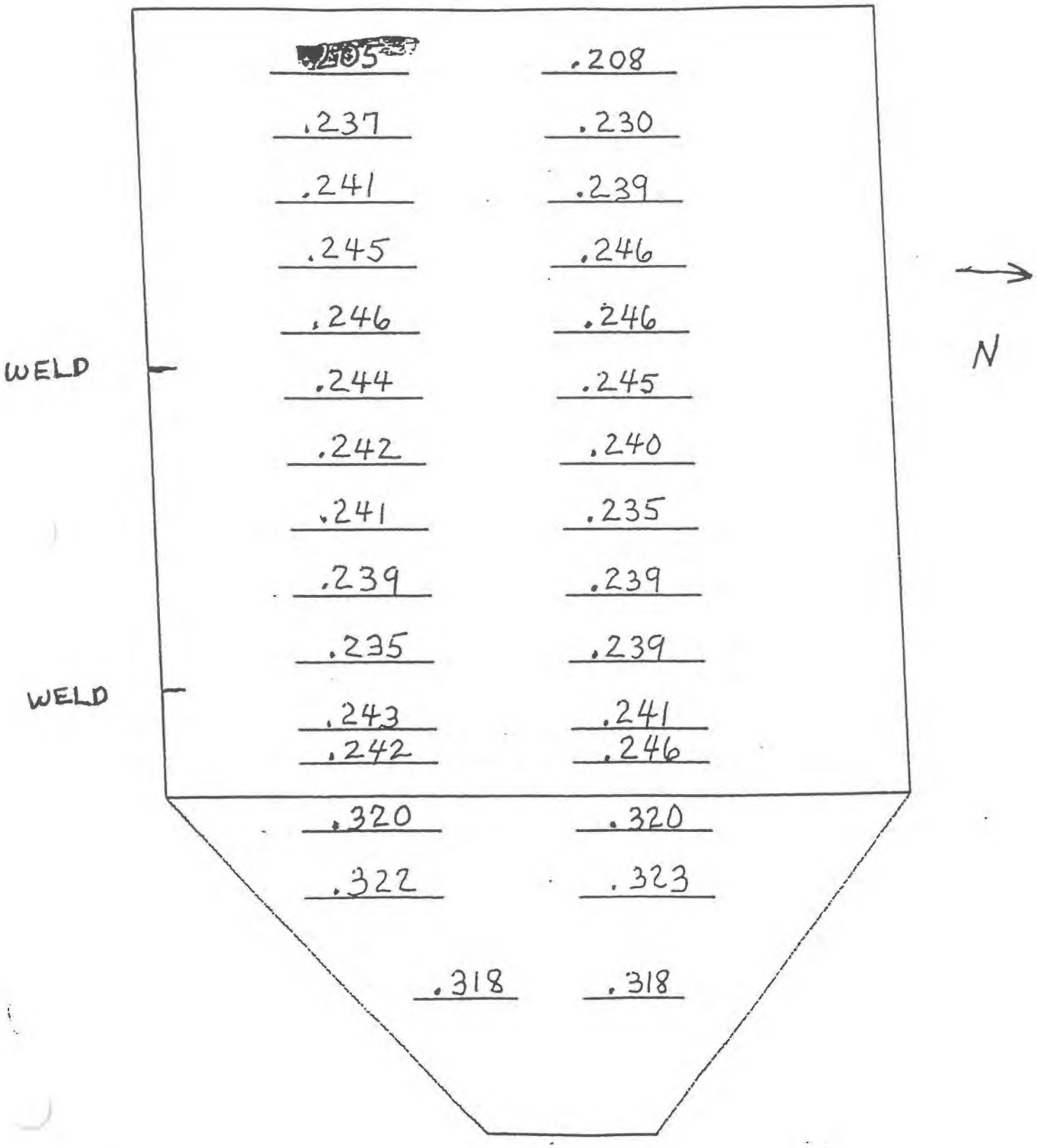

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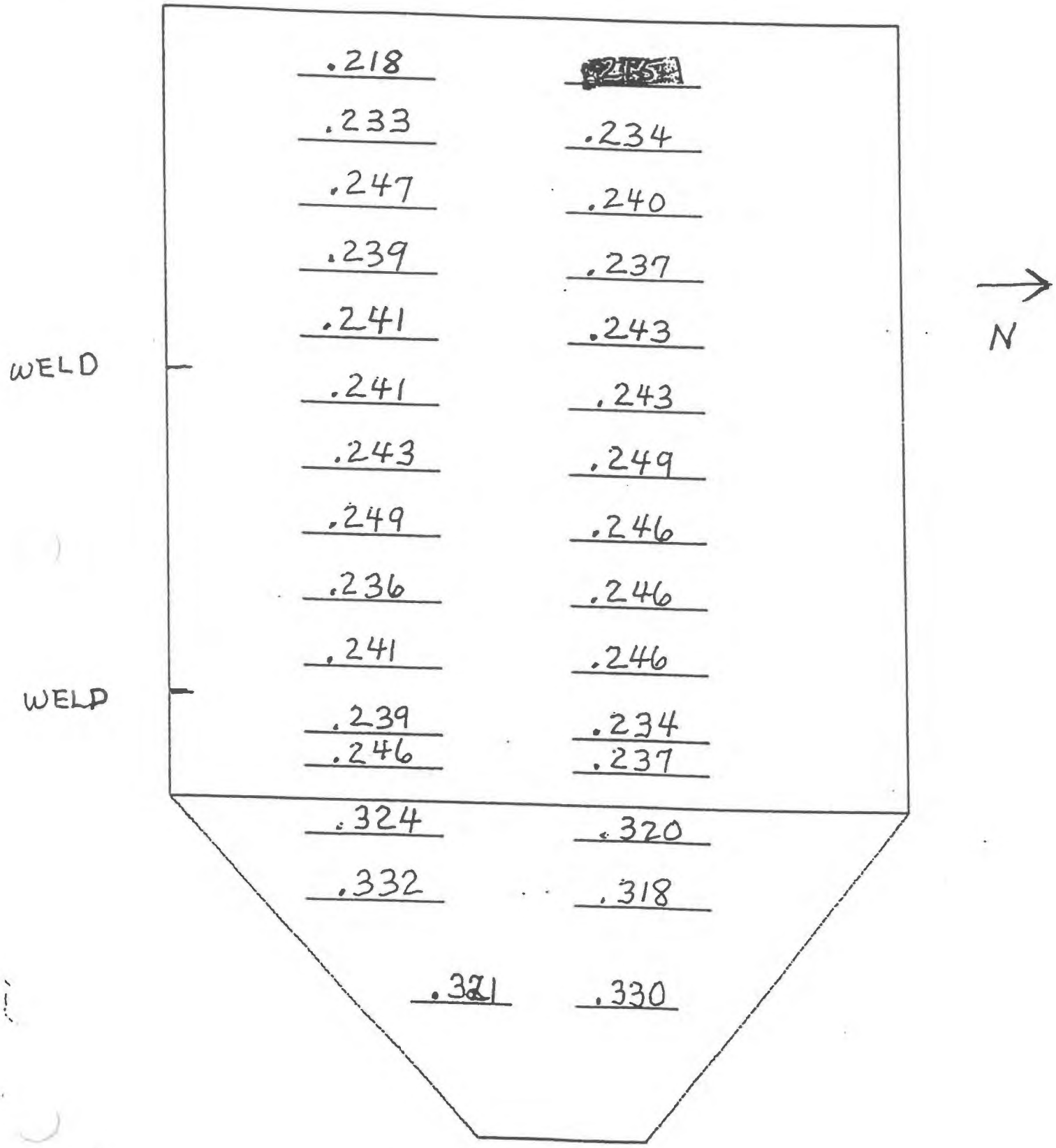

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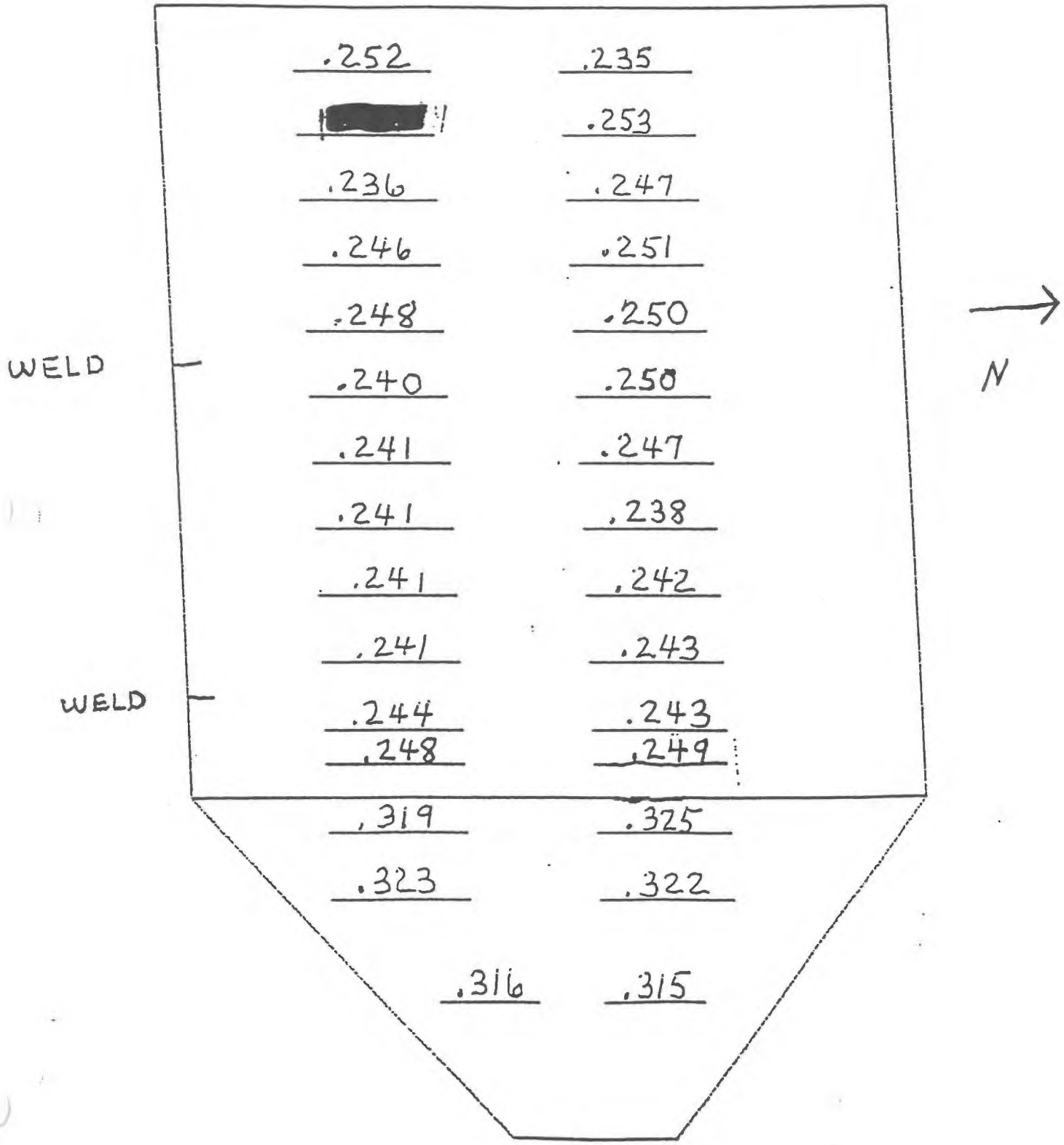

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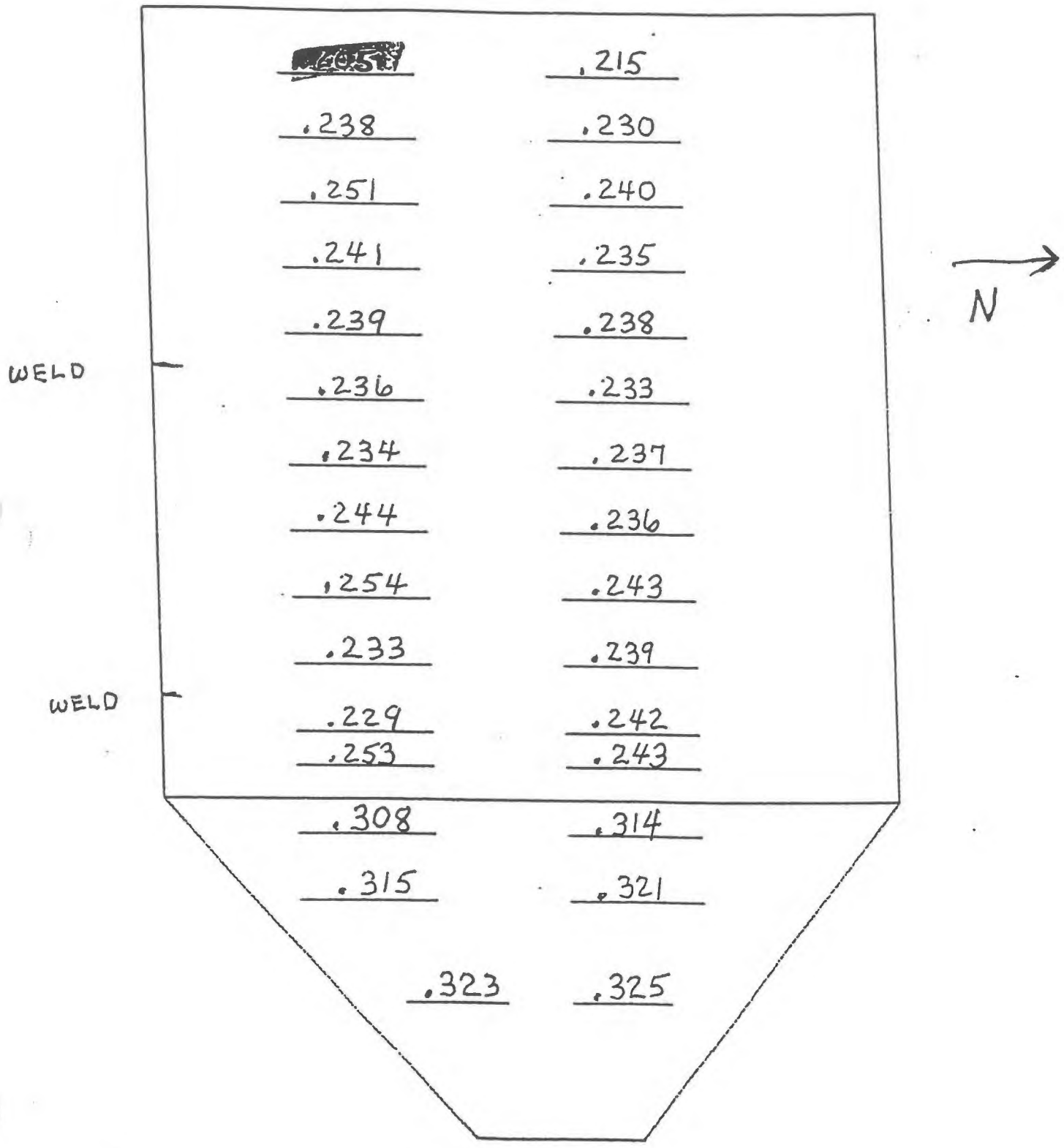

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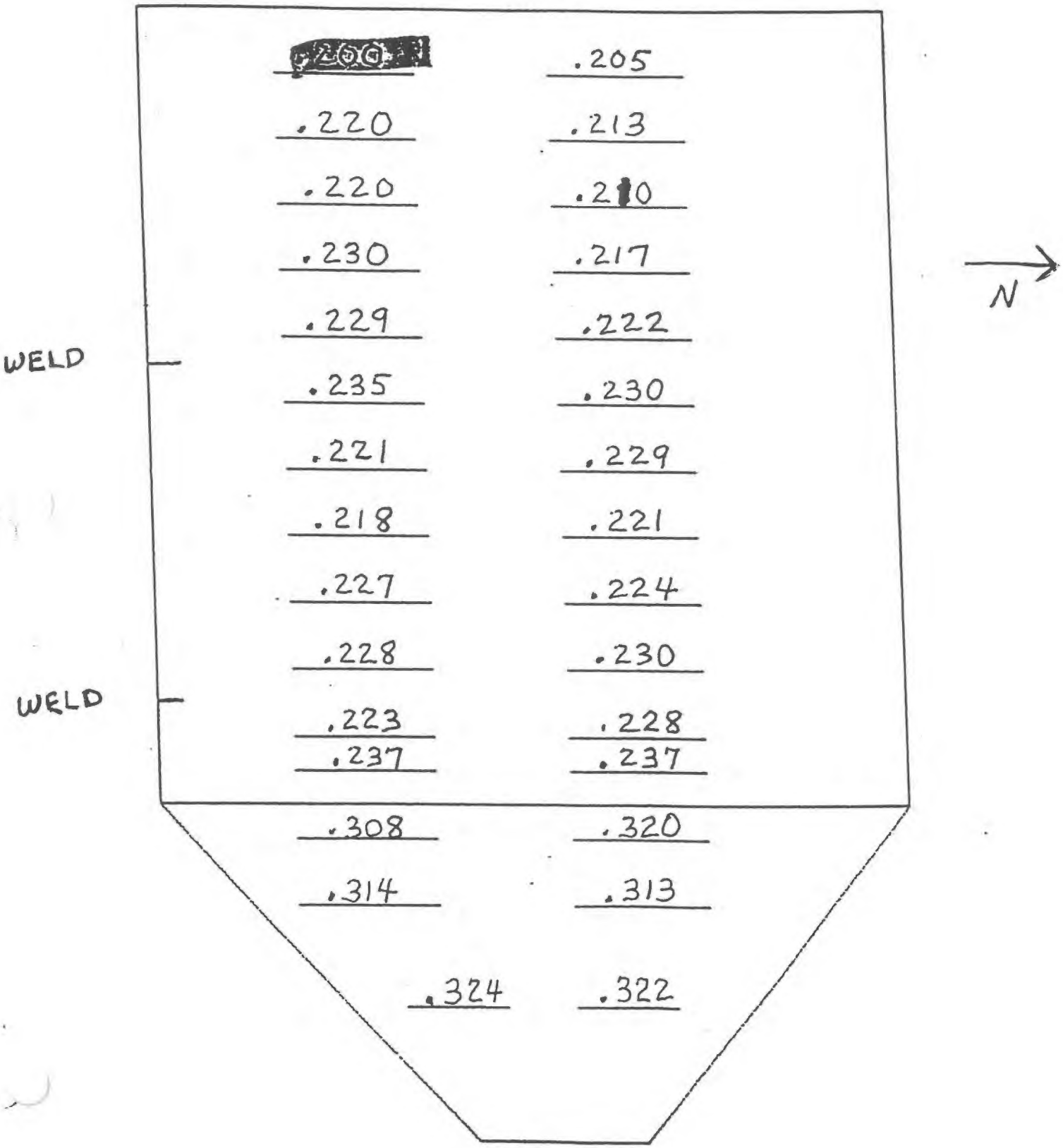

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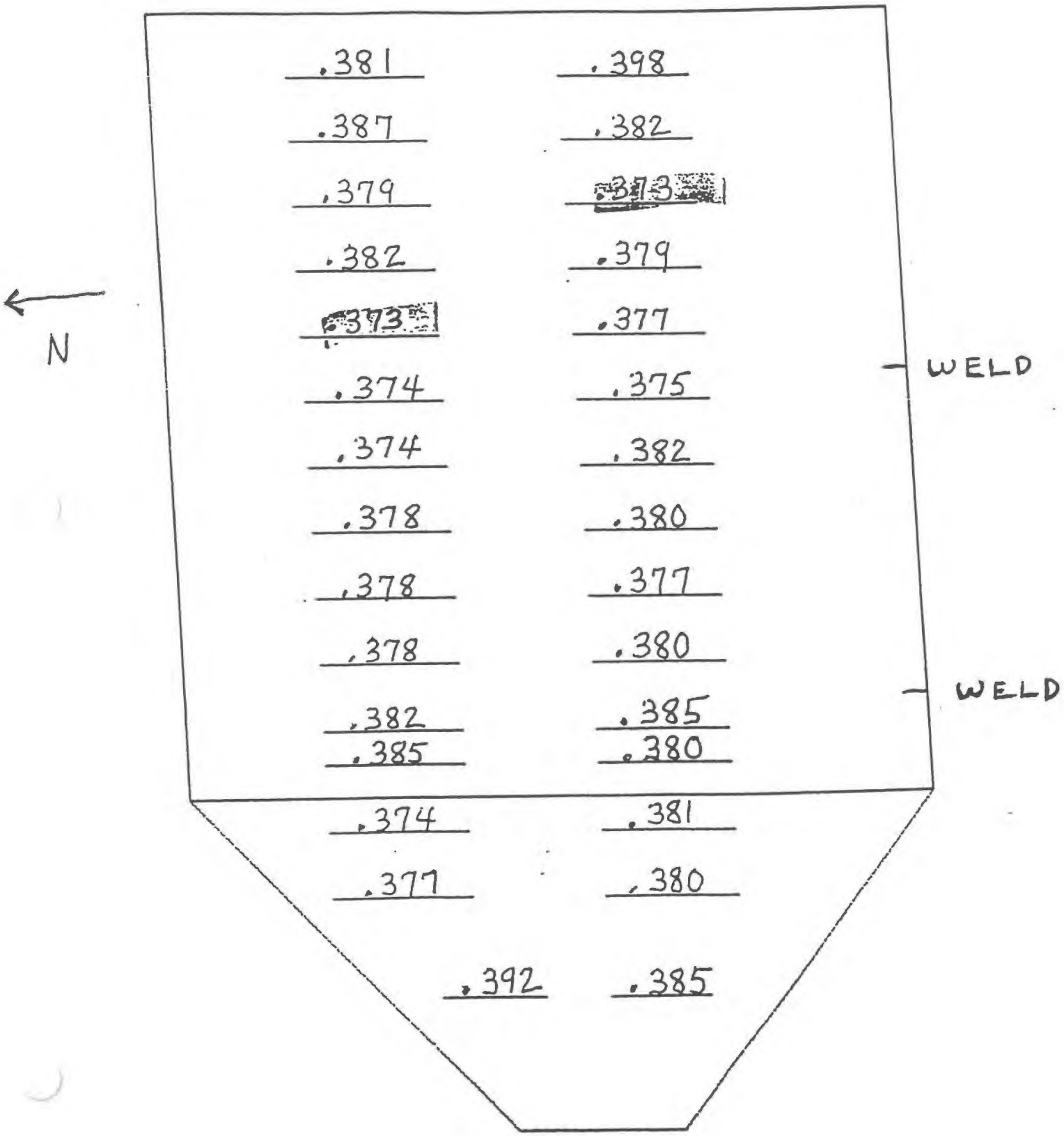

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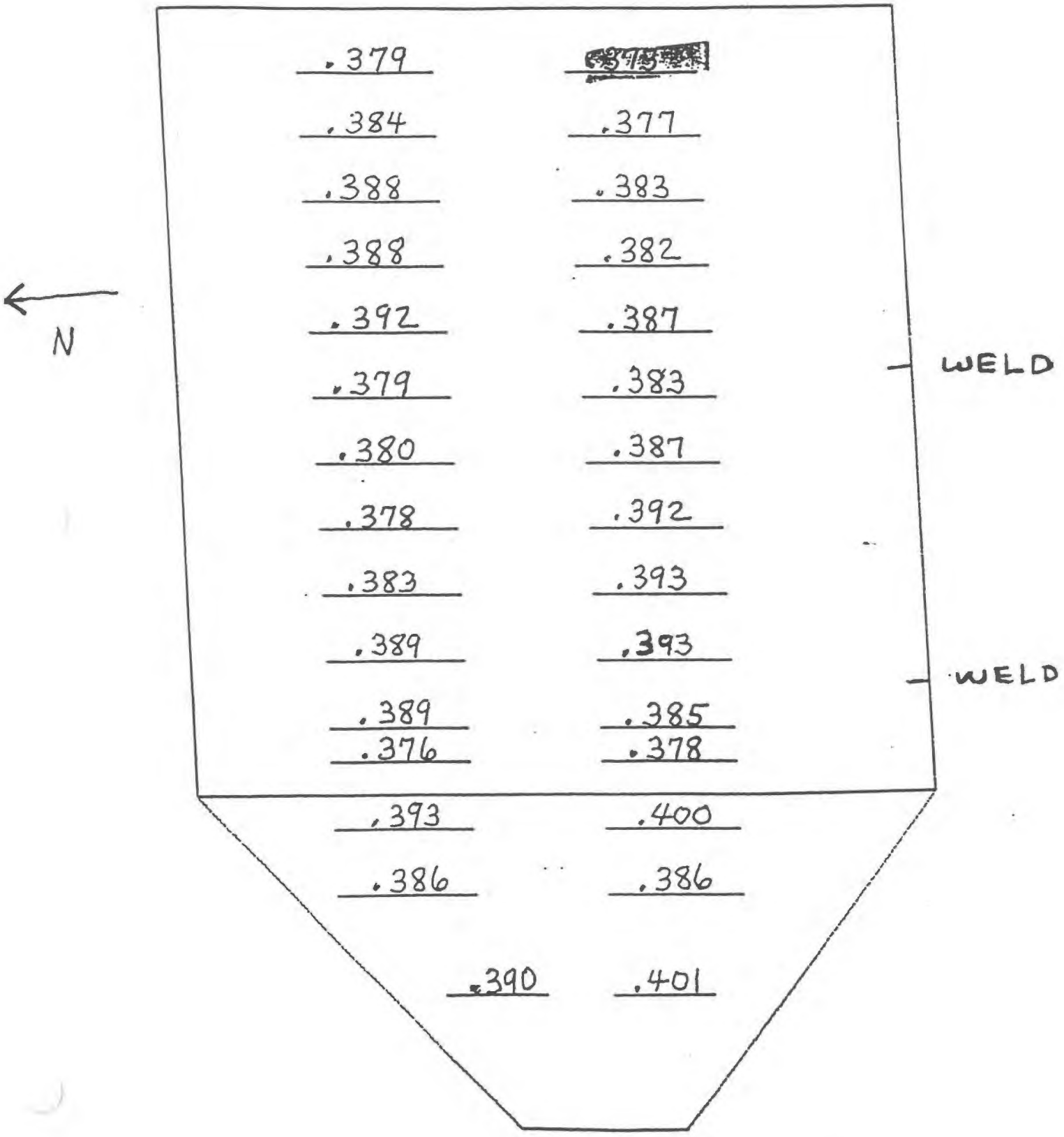

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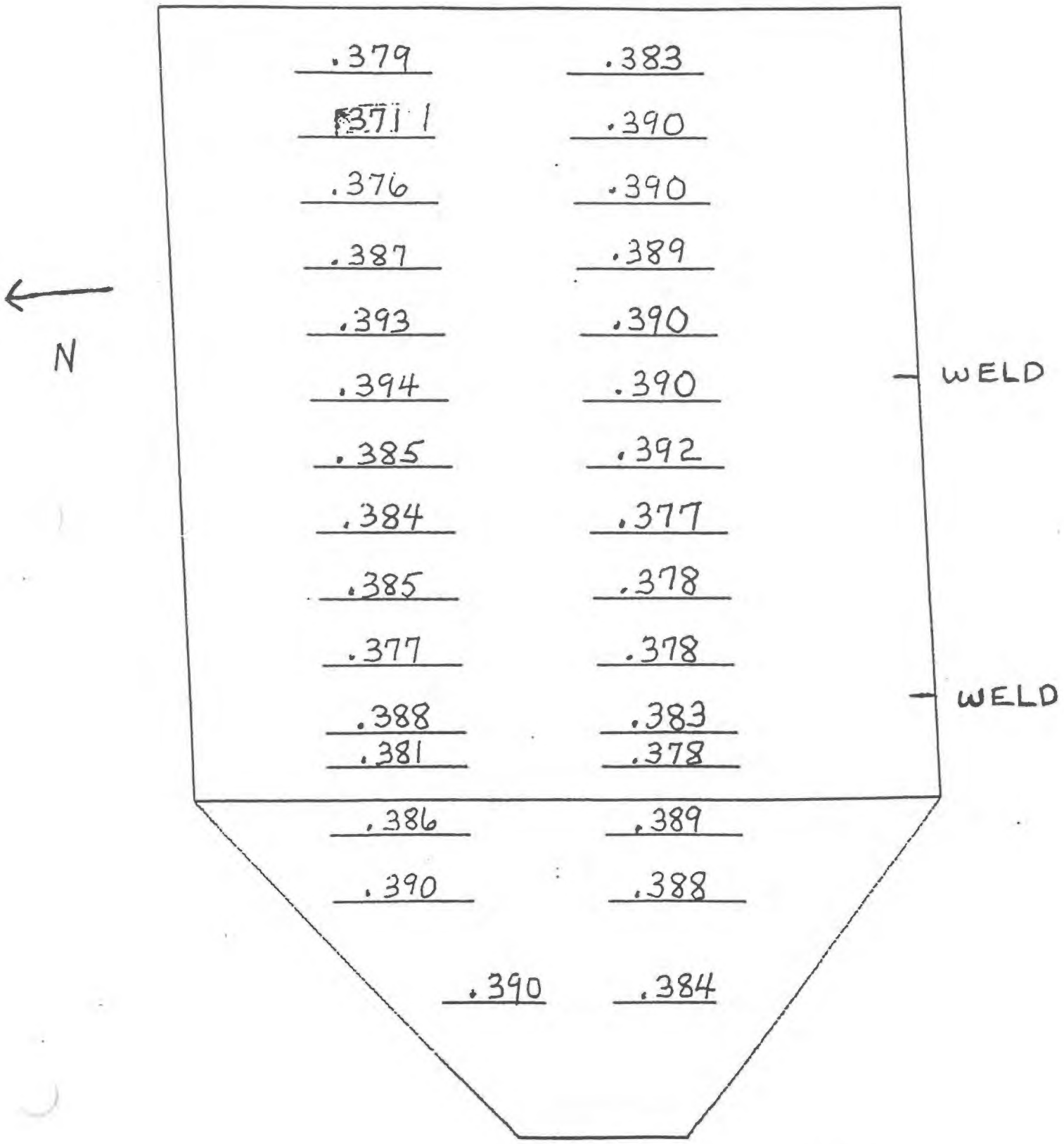

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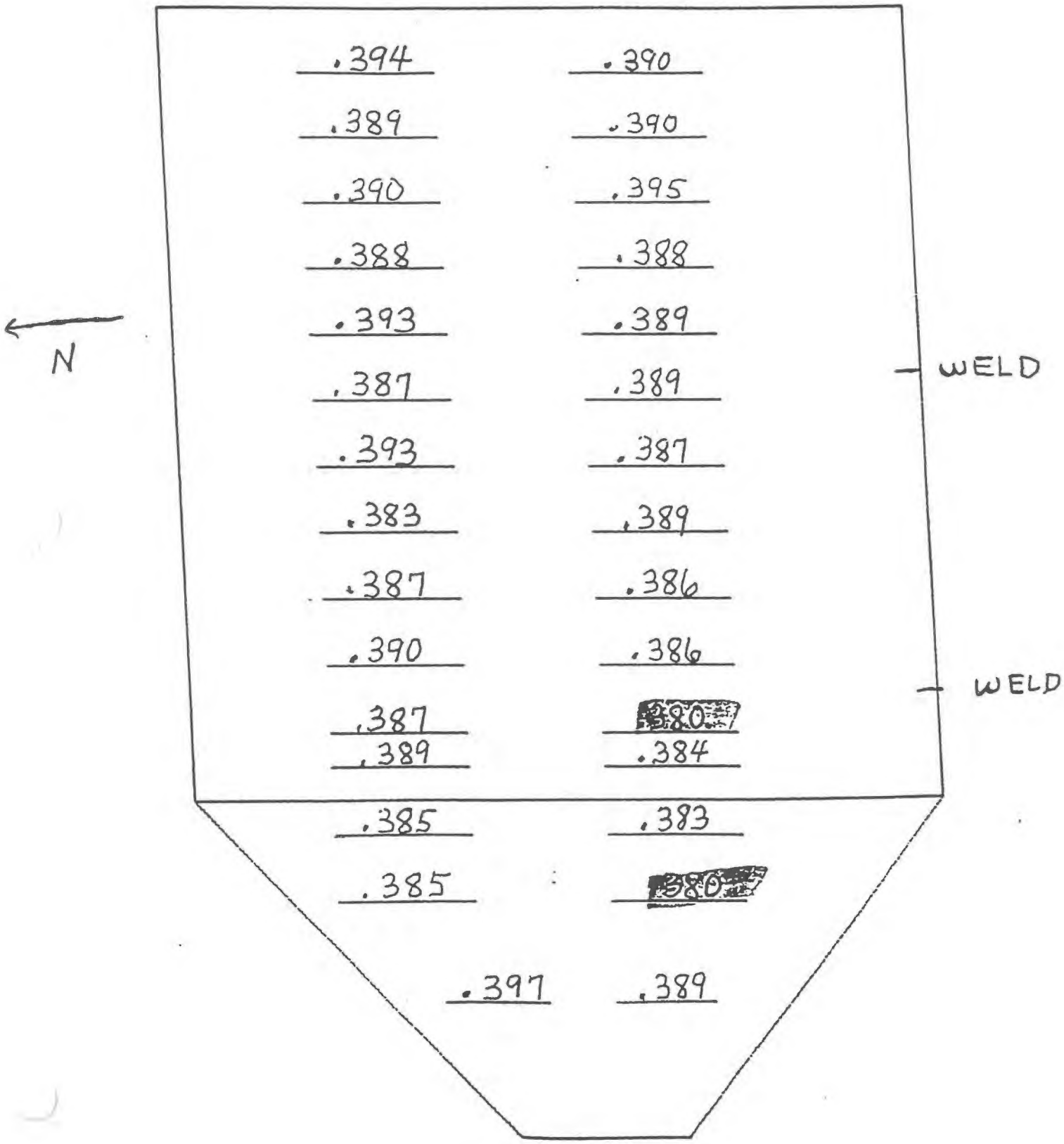

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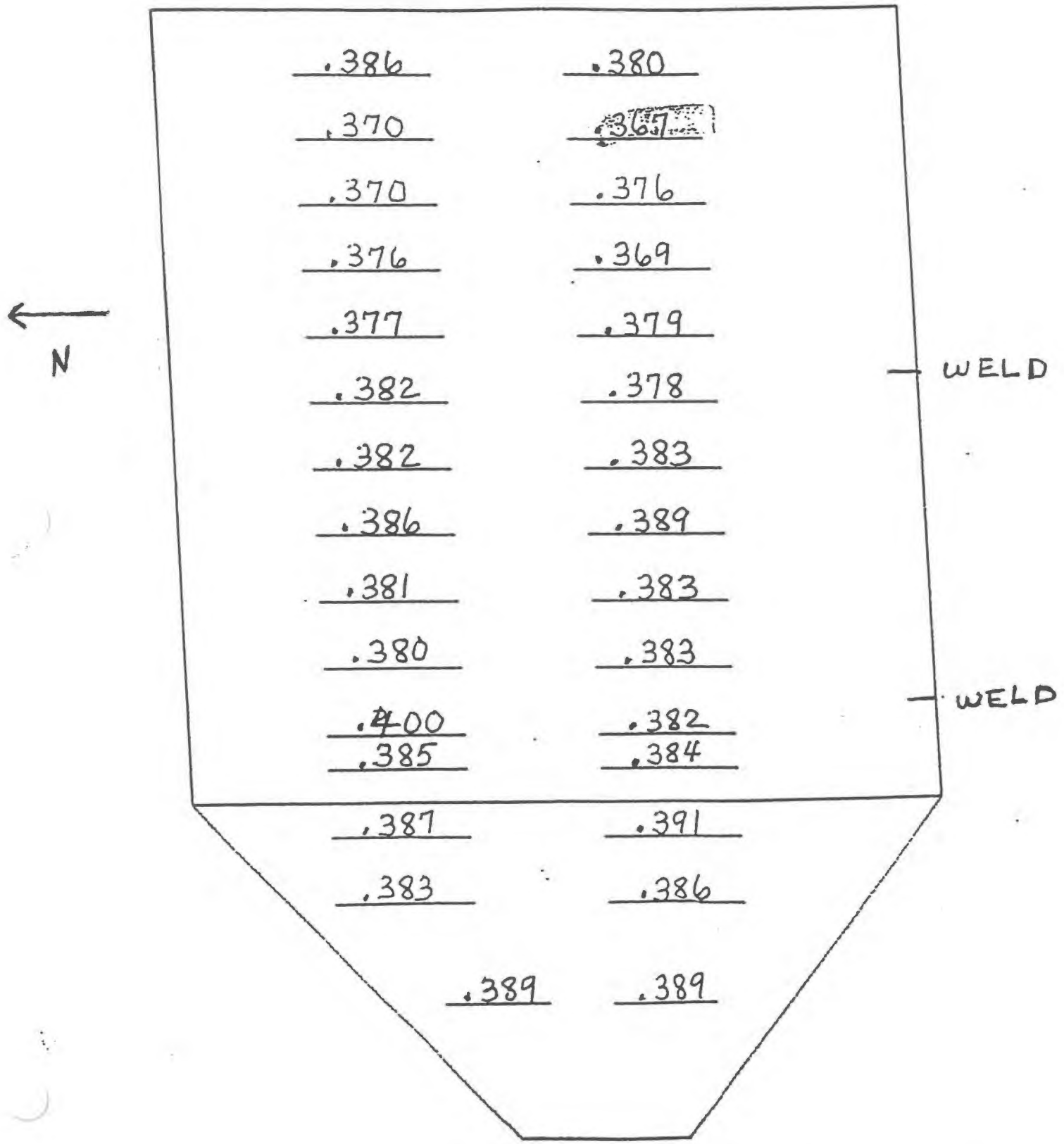

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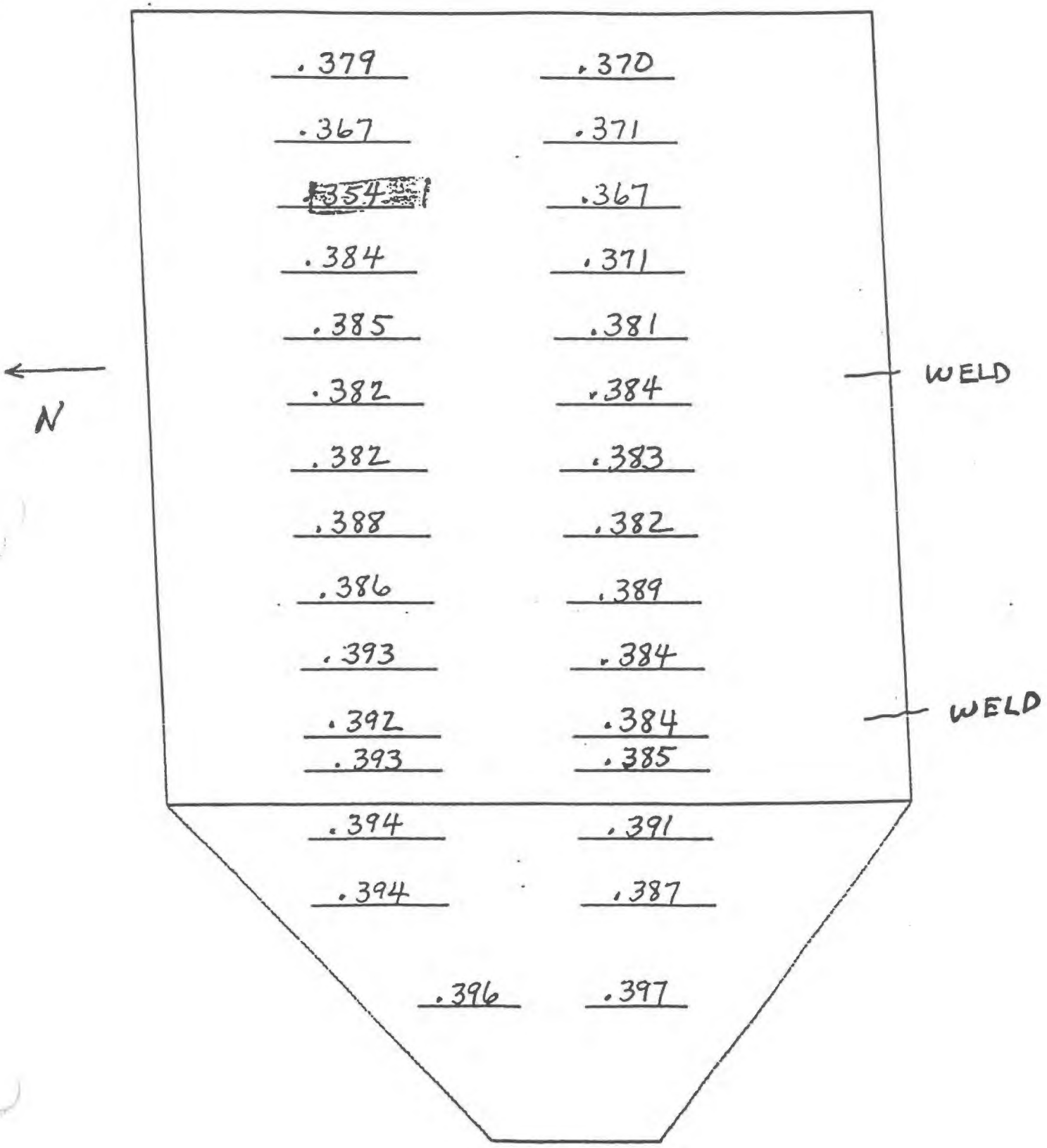

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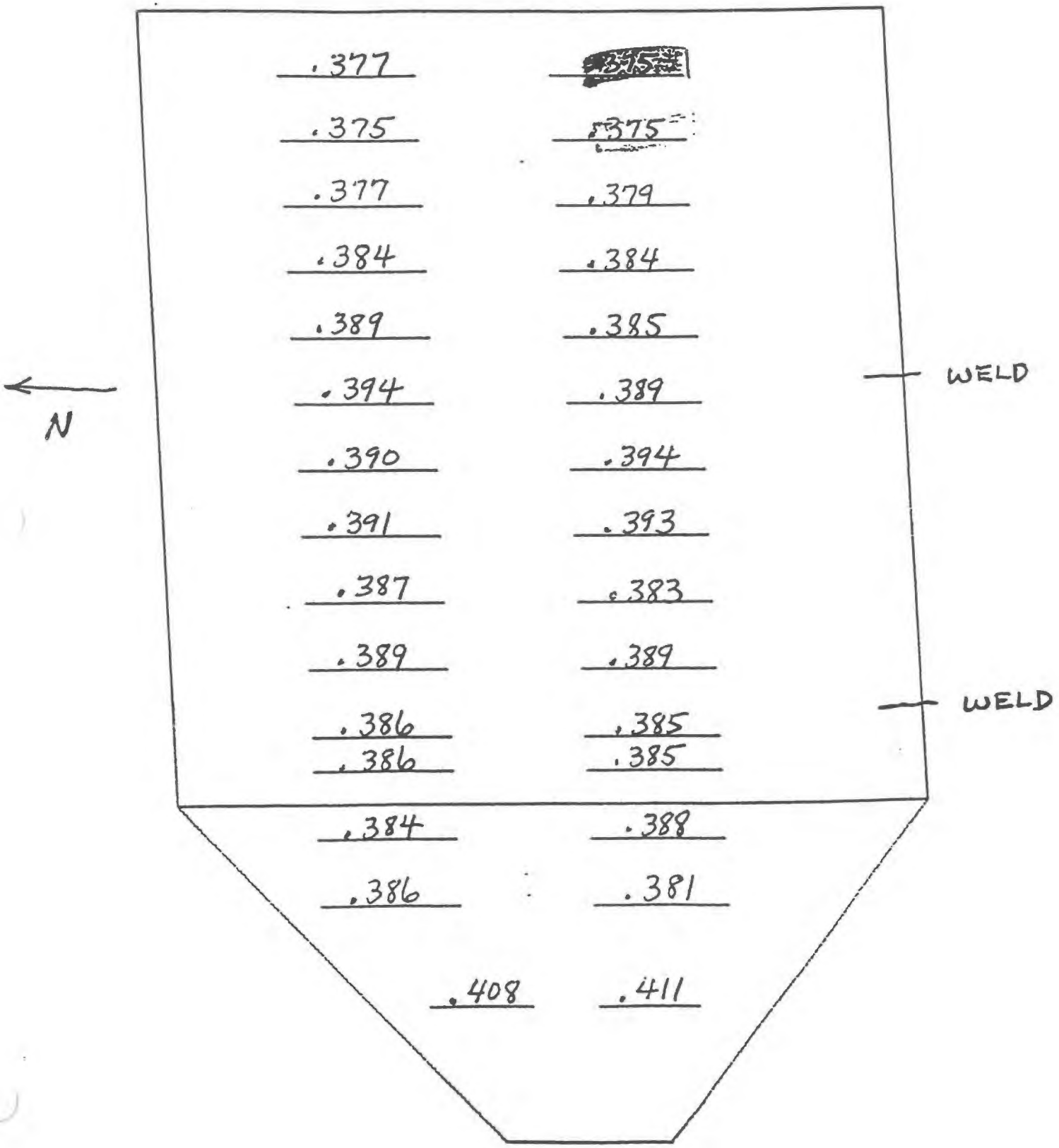

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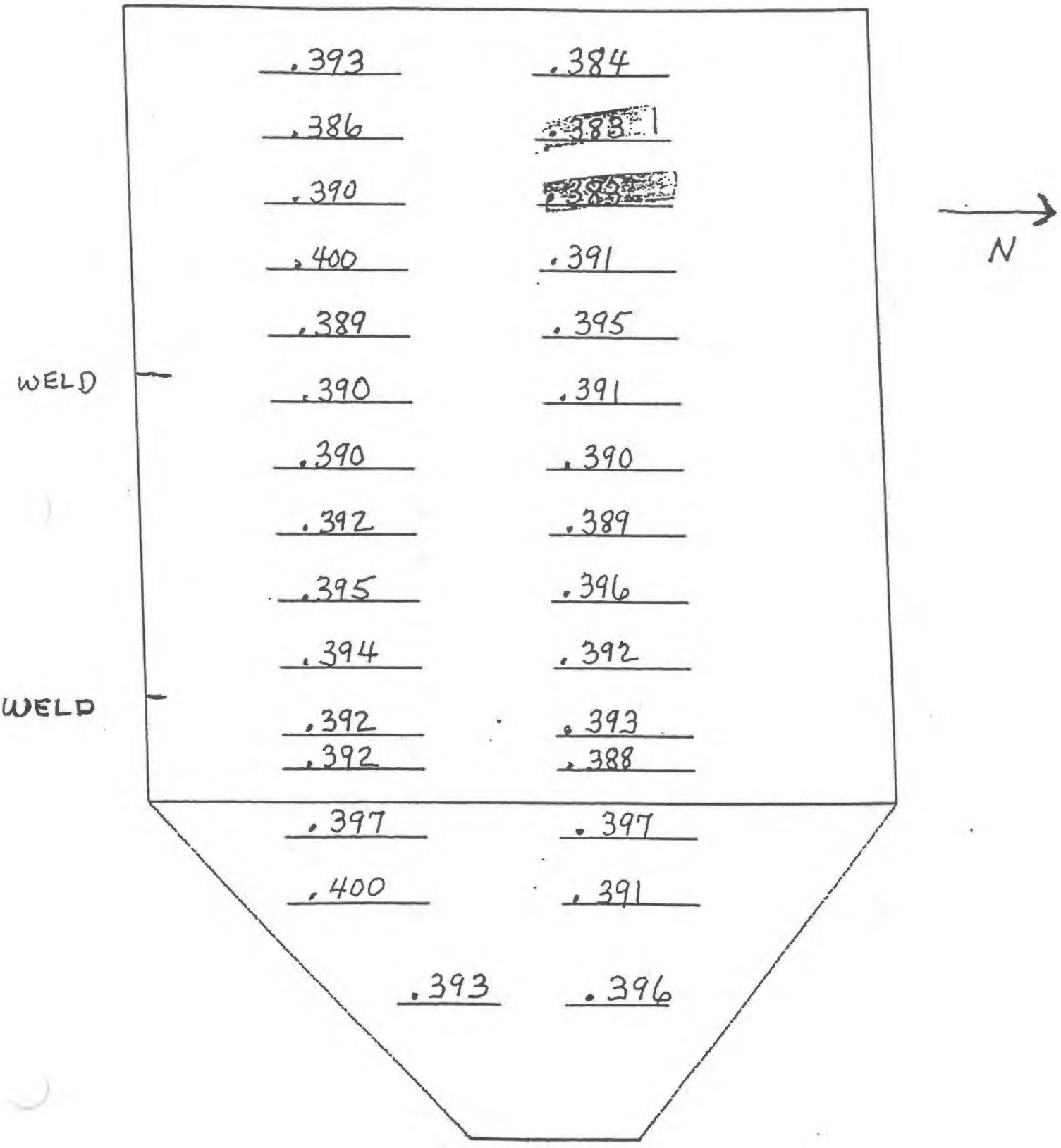

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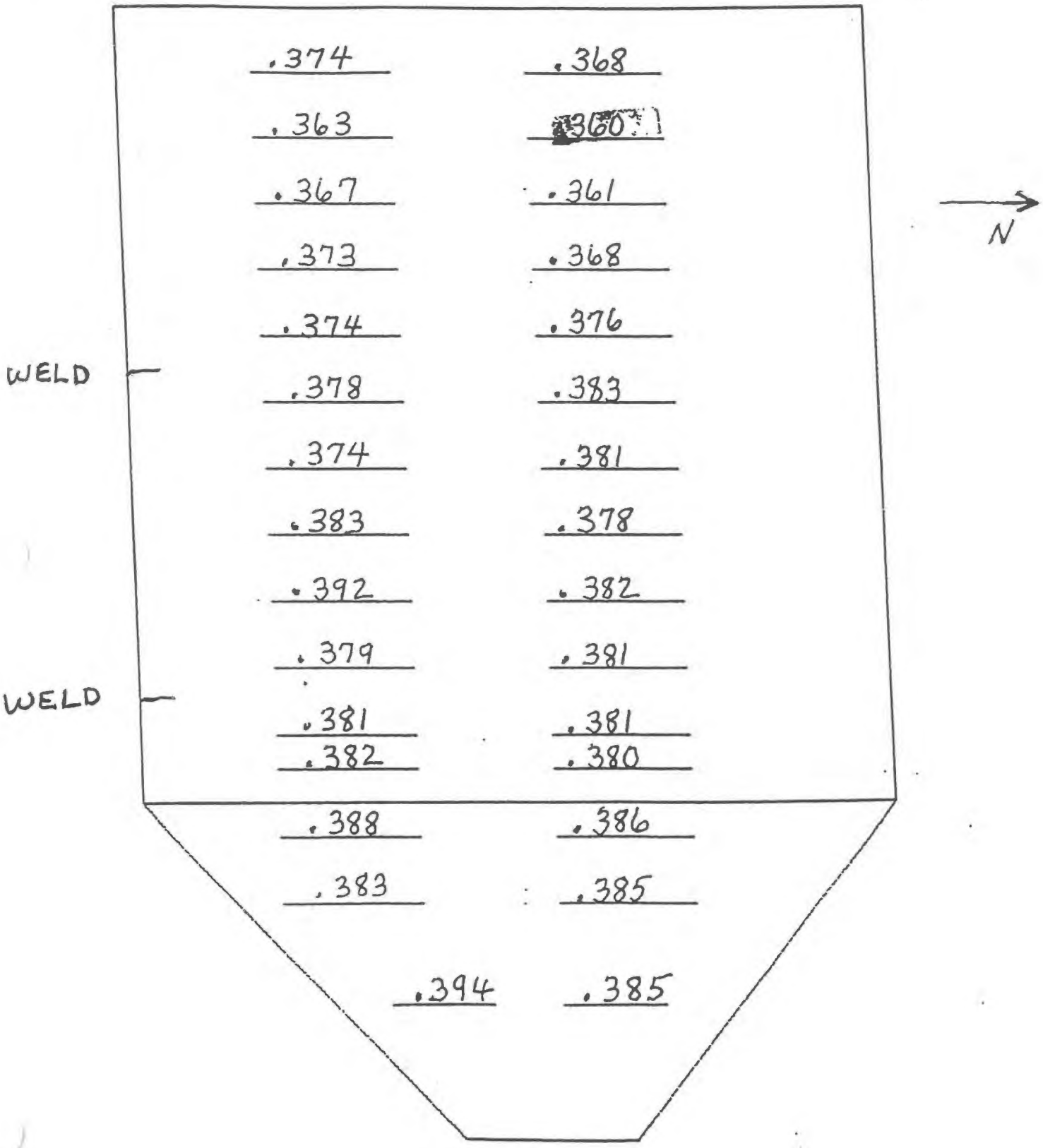

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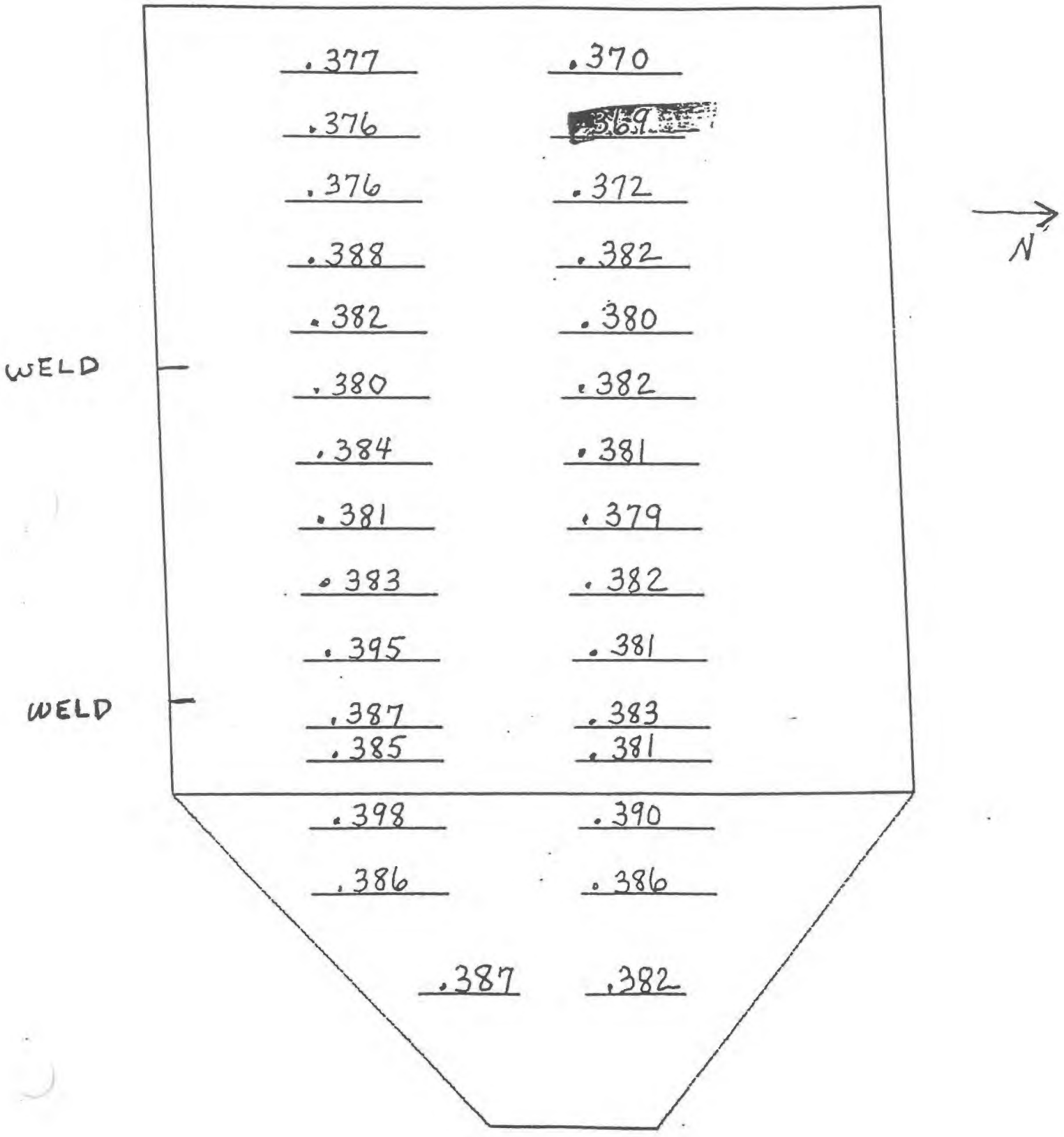

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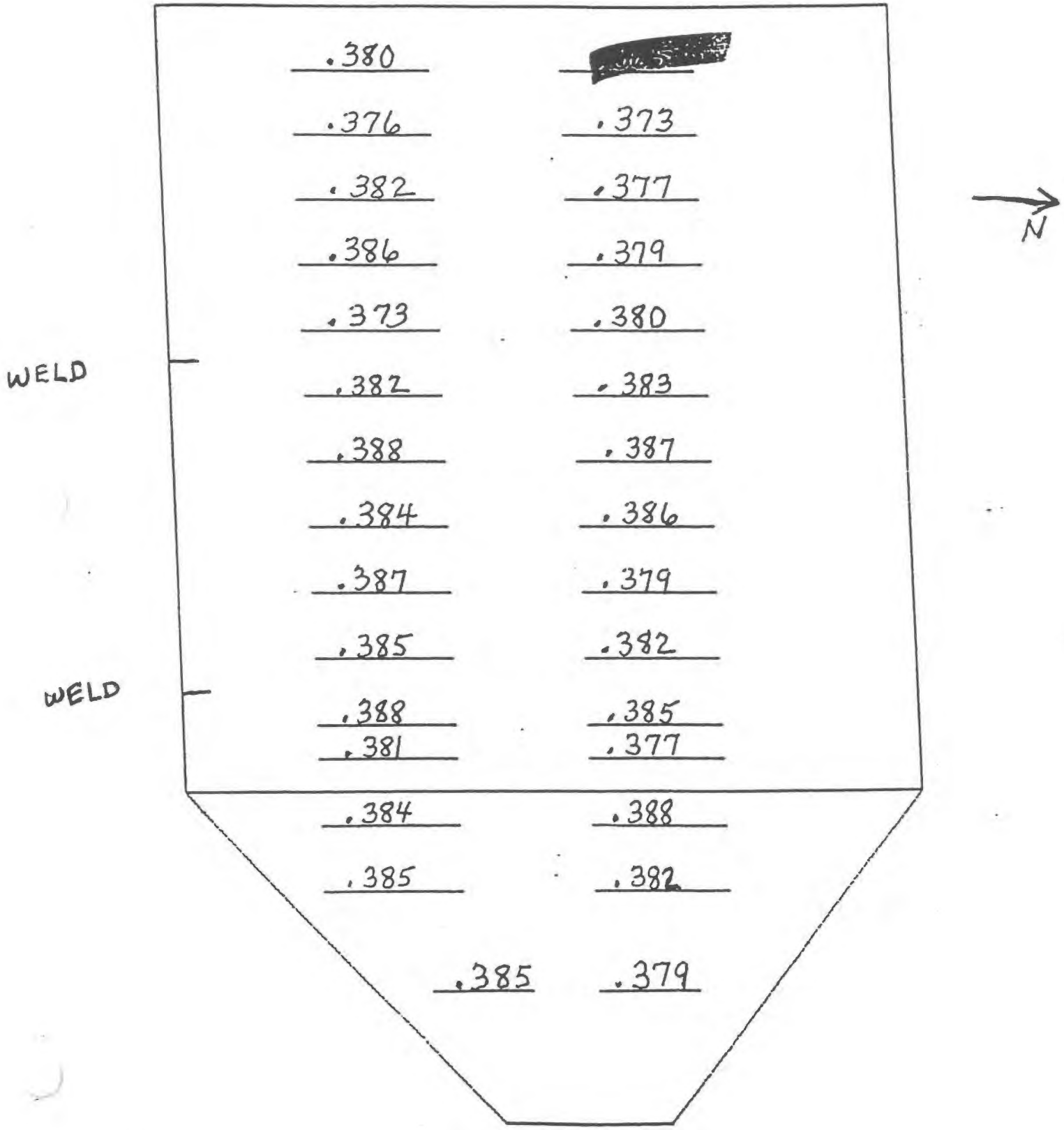

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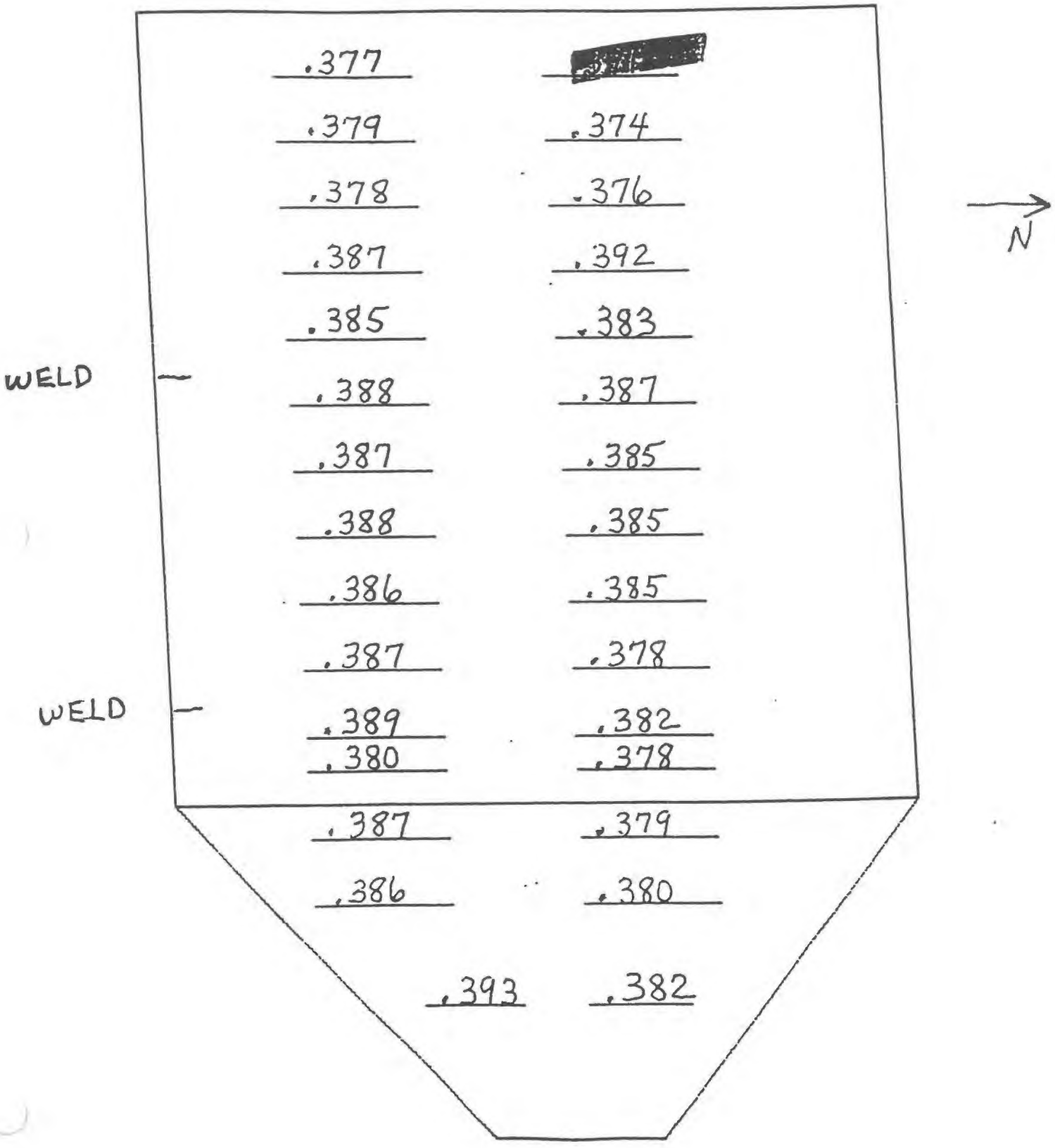

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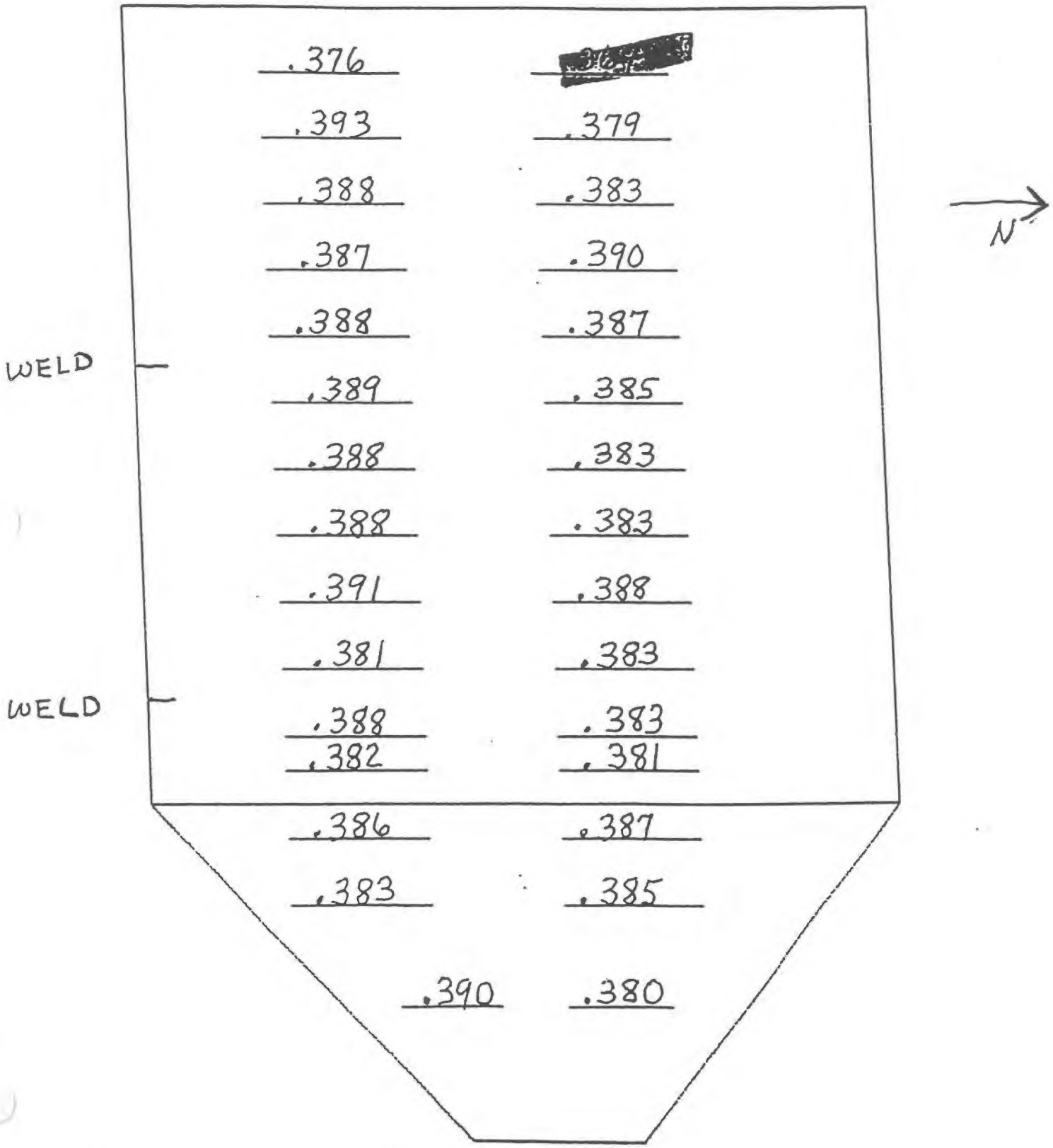

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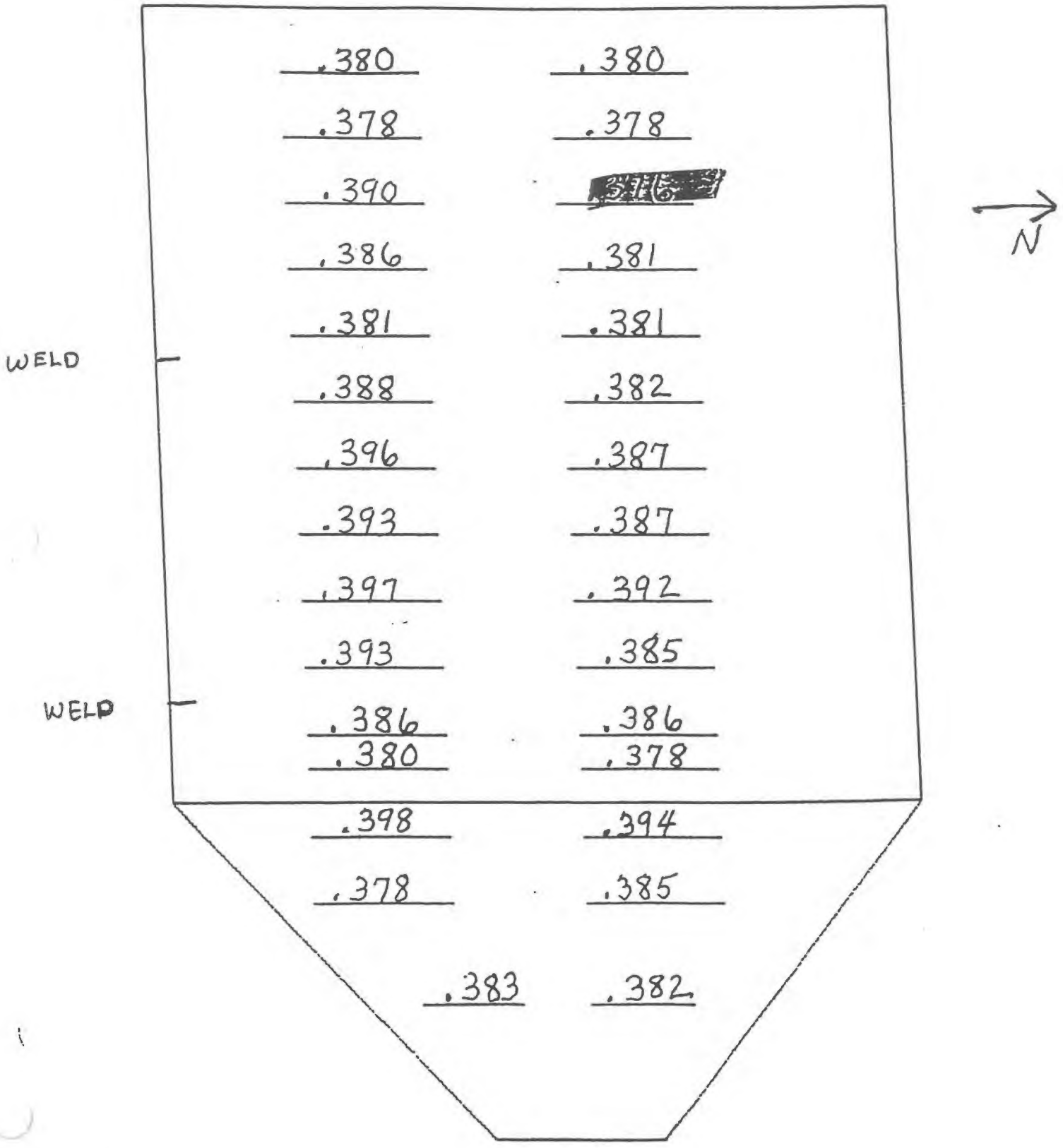

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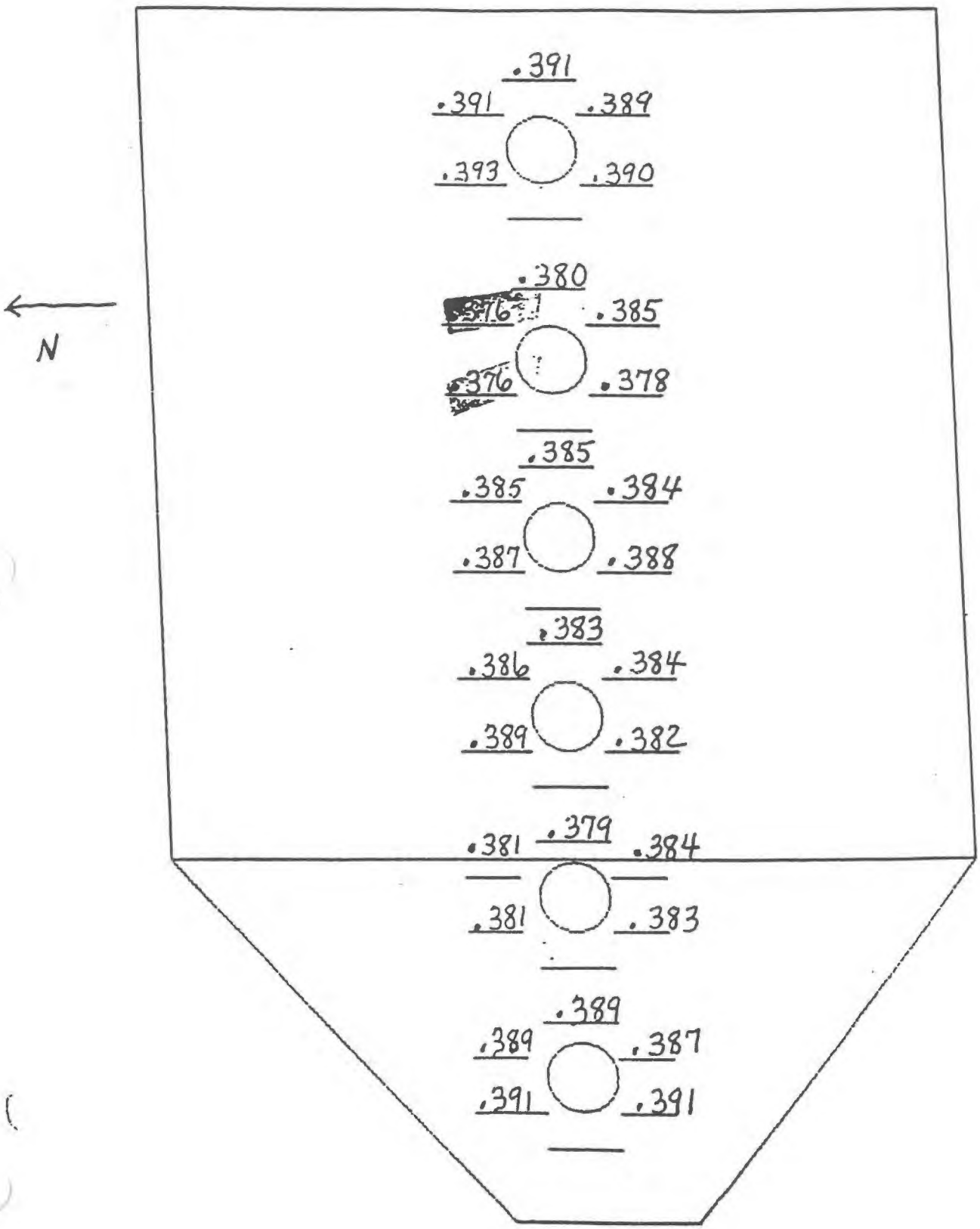

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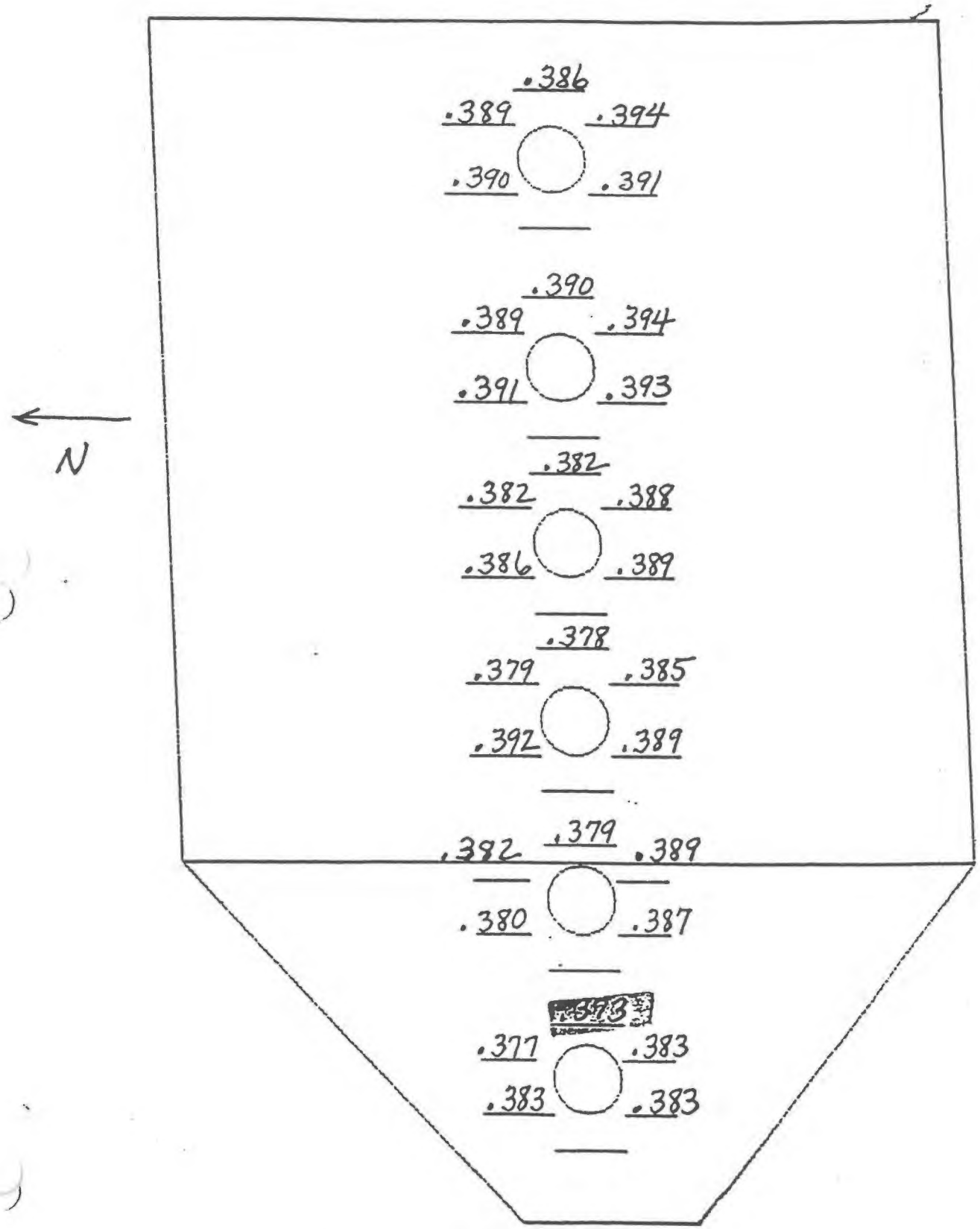

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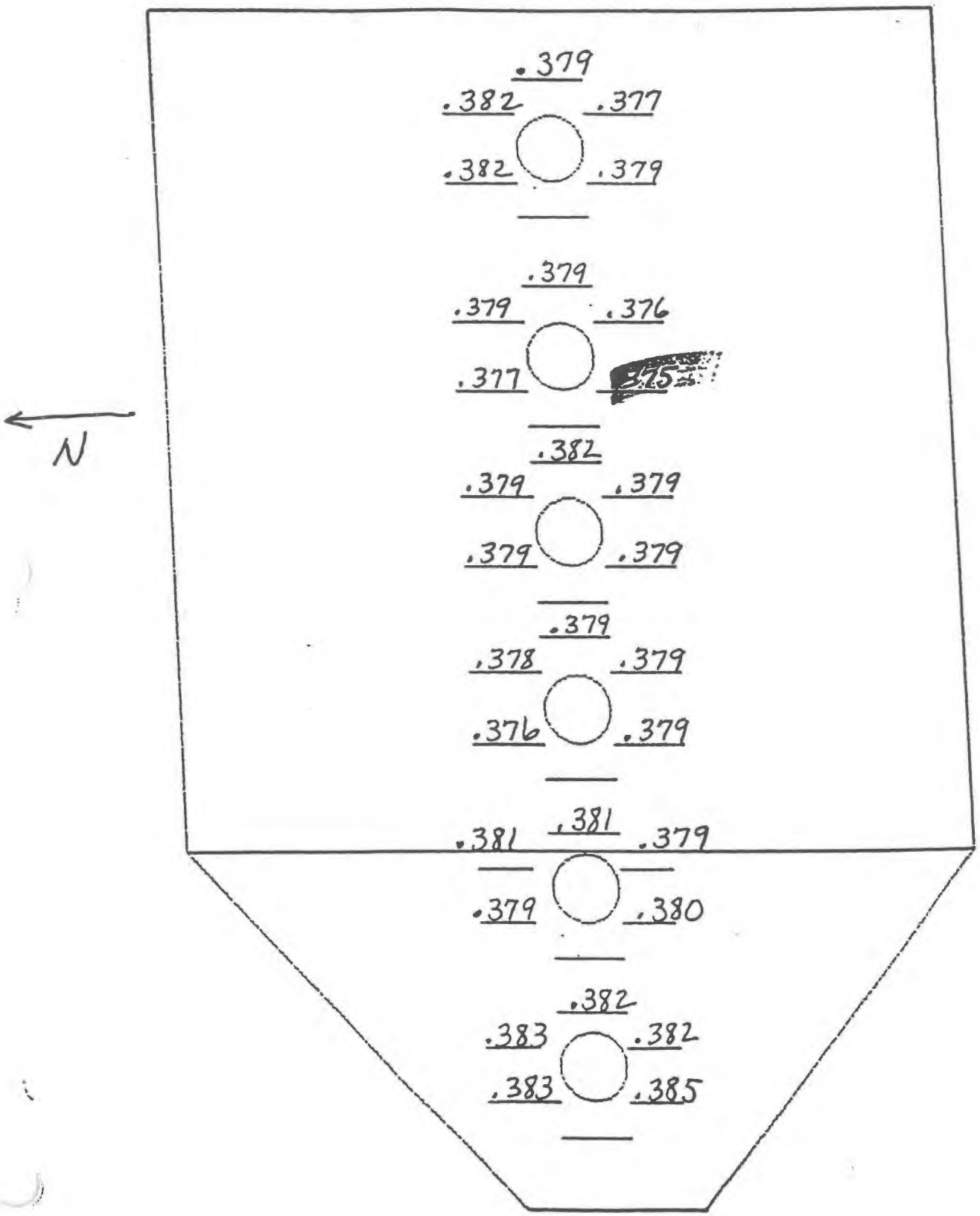

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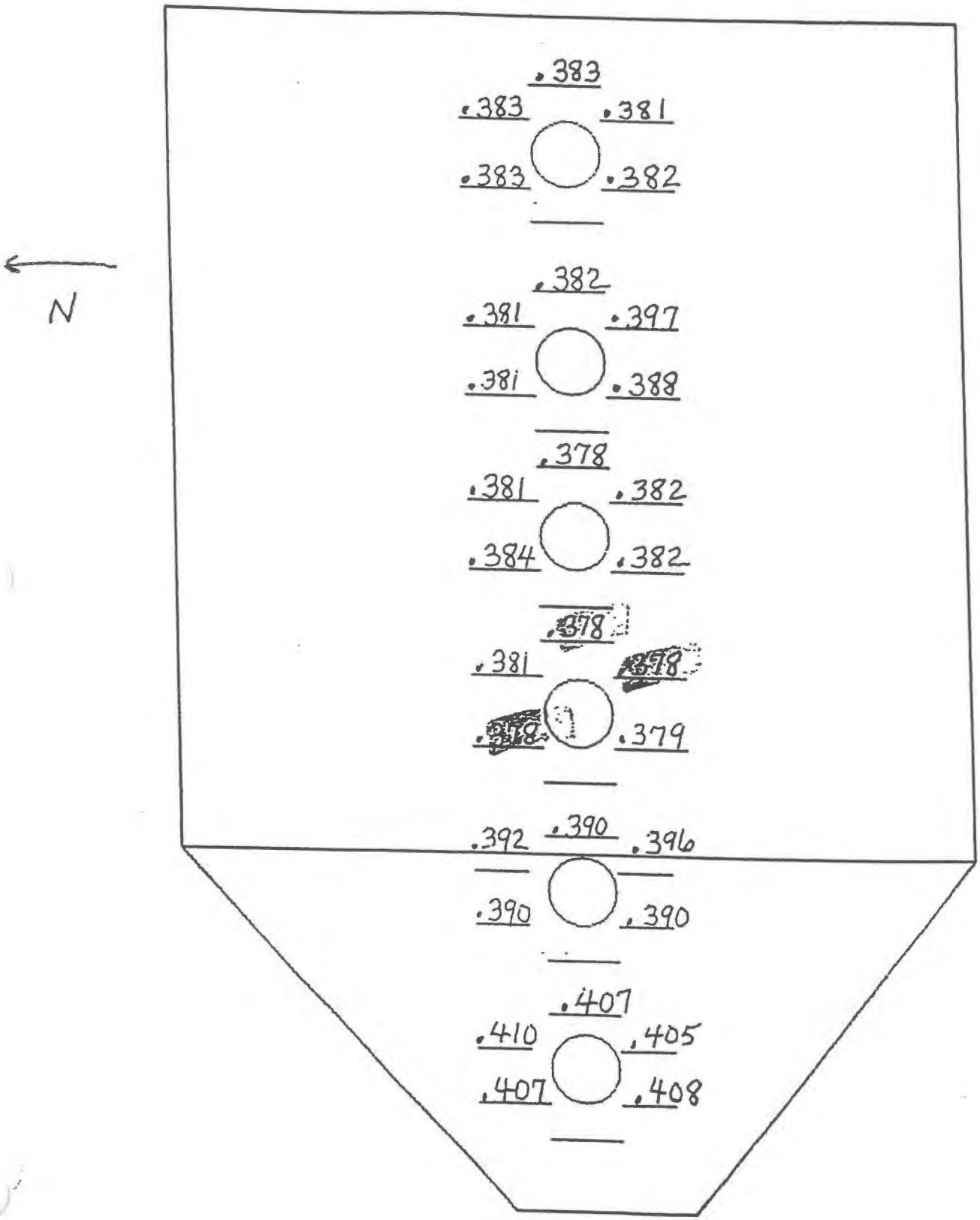
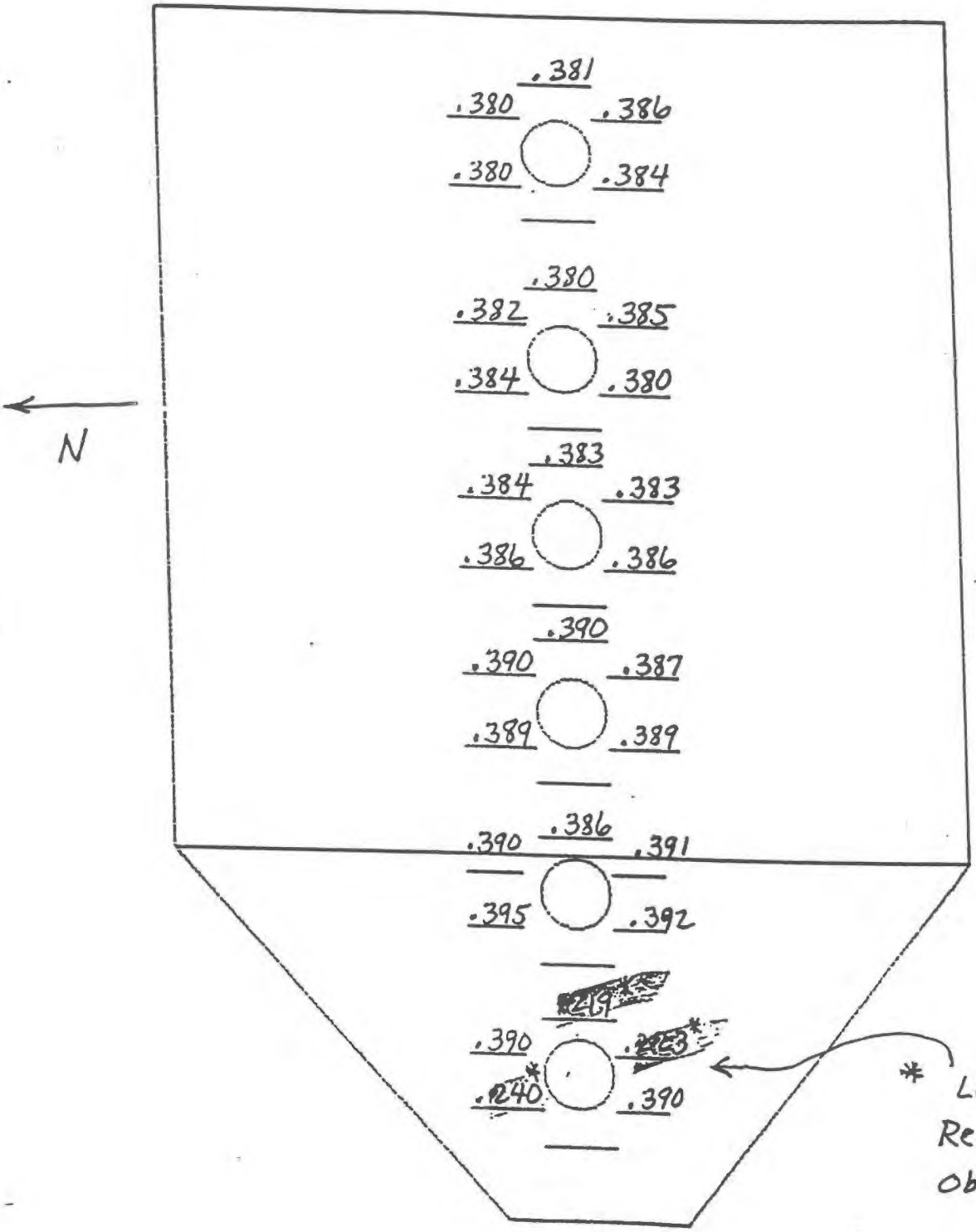


TANK NUMBER 55 (NOTE LOW READINGS BELOW)

Revision 4
January, 1995



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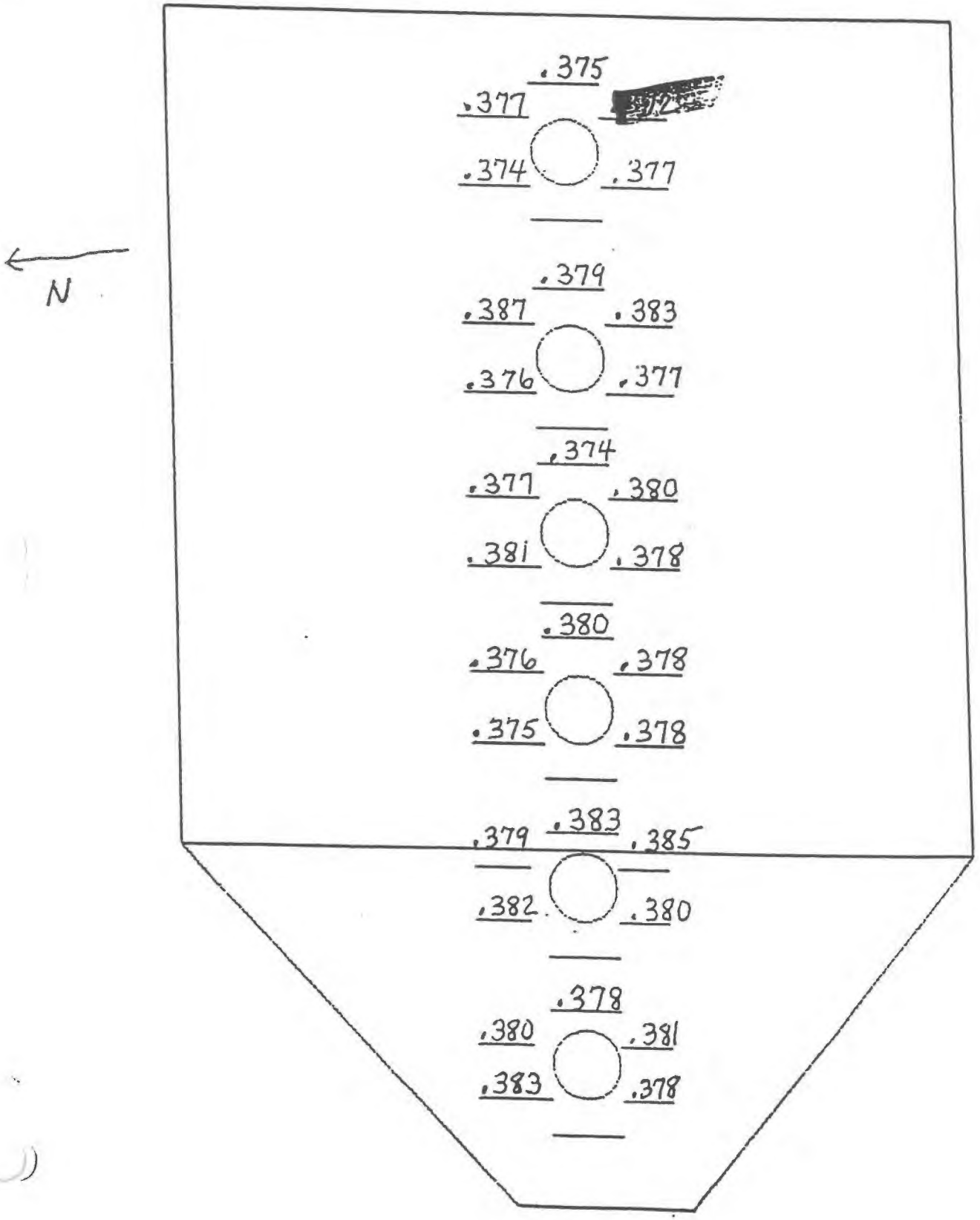

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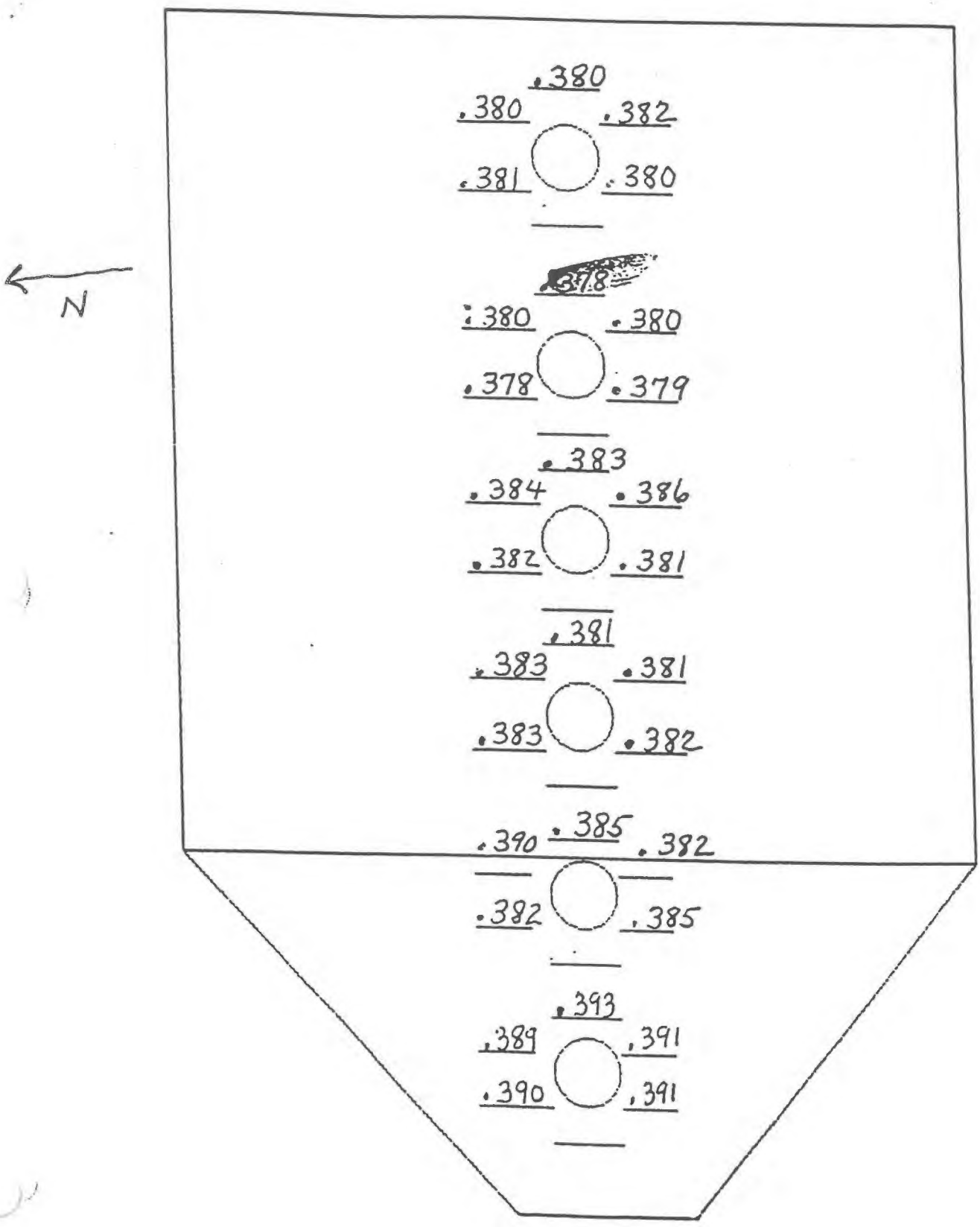

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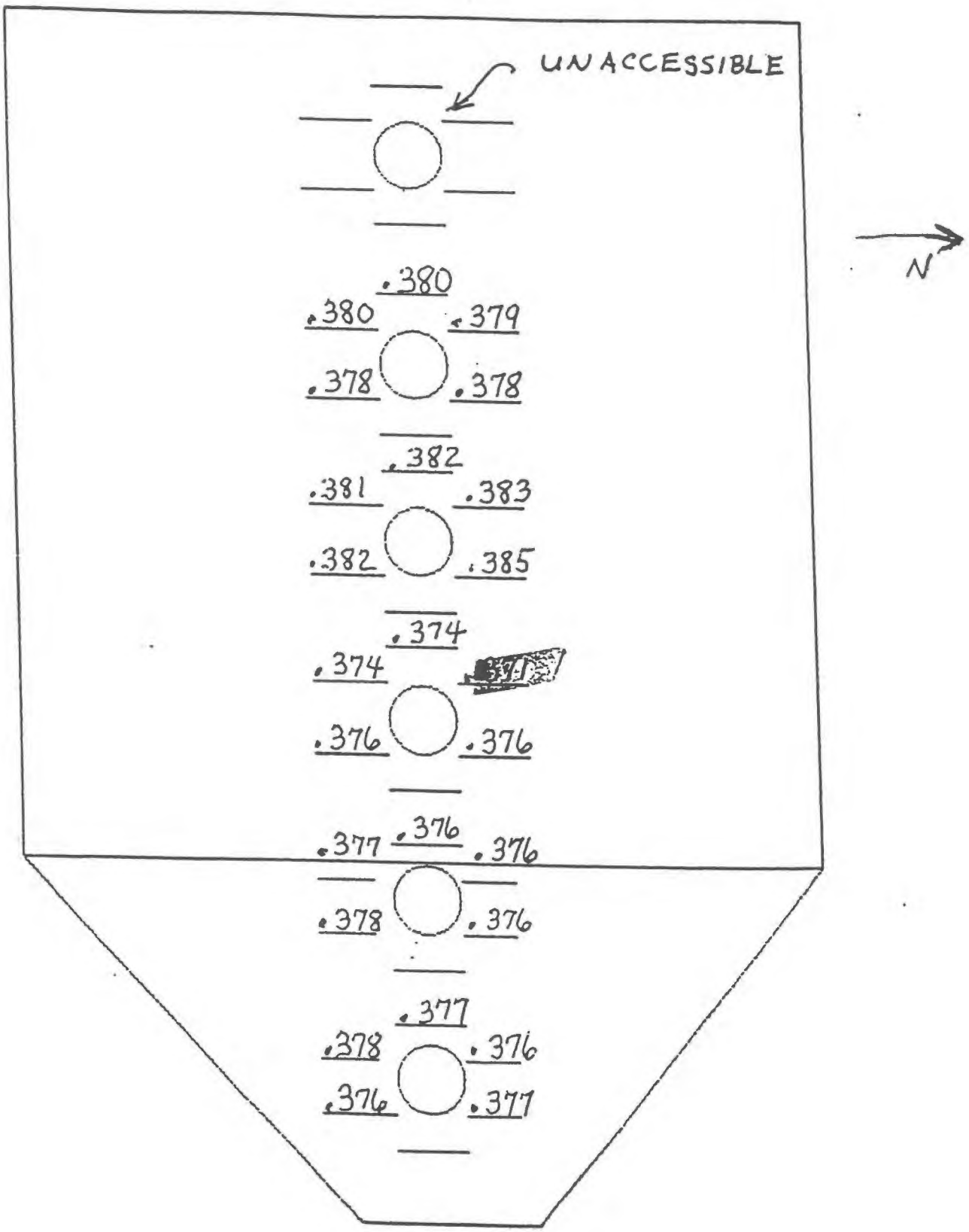

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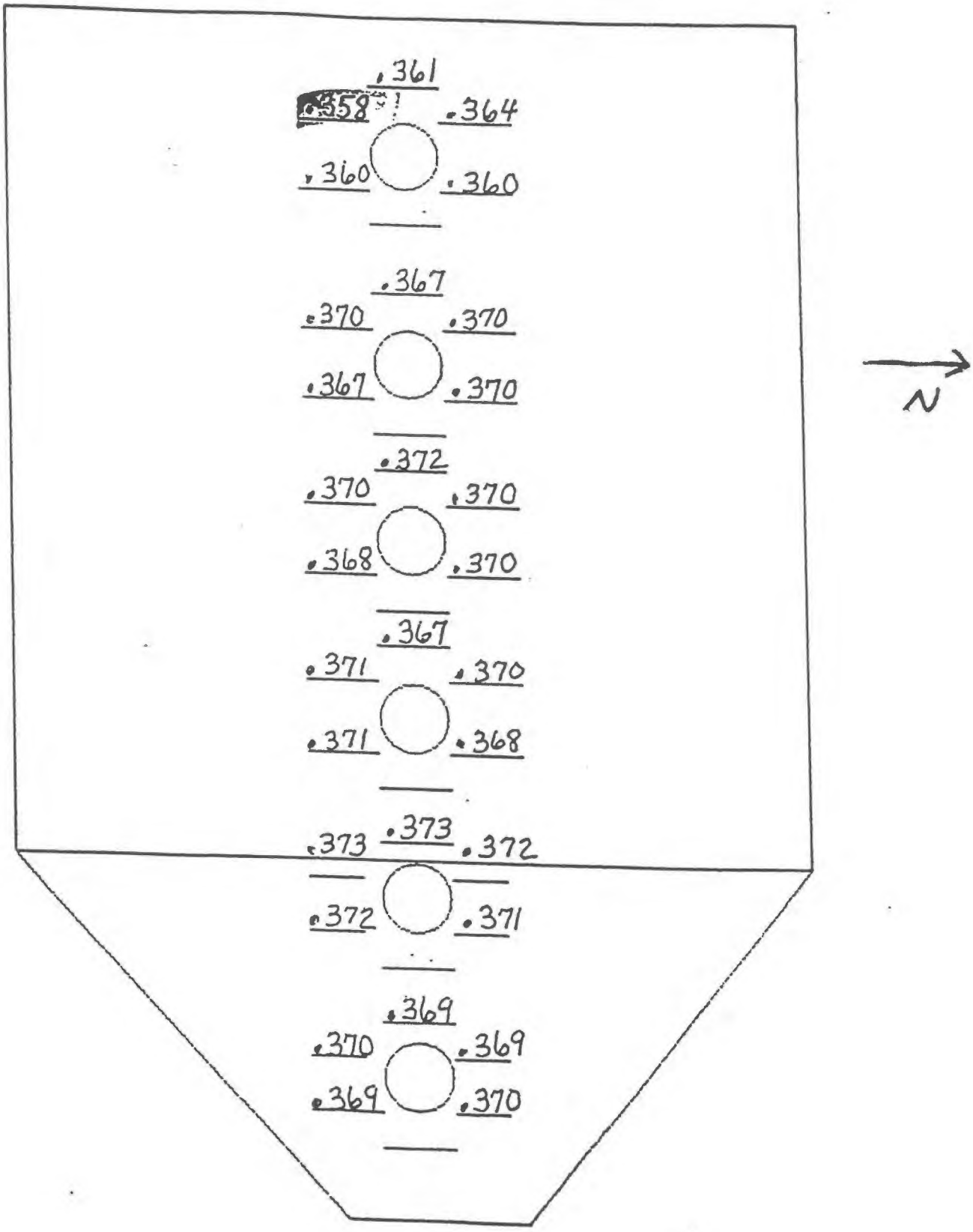

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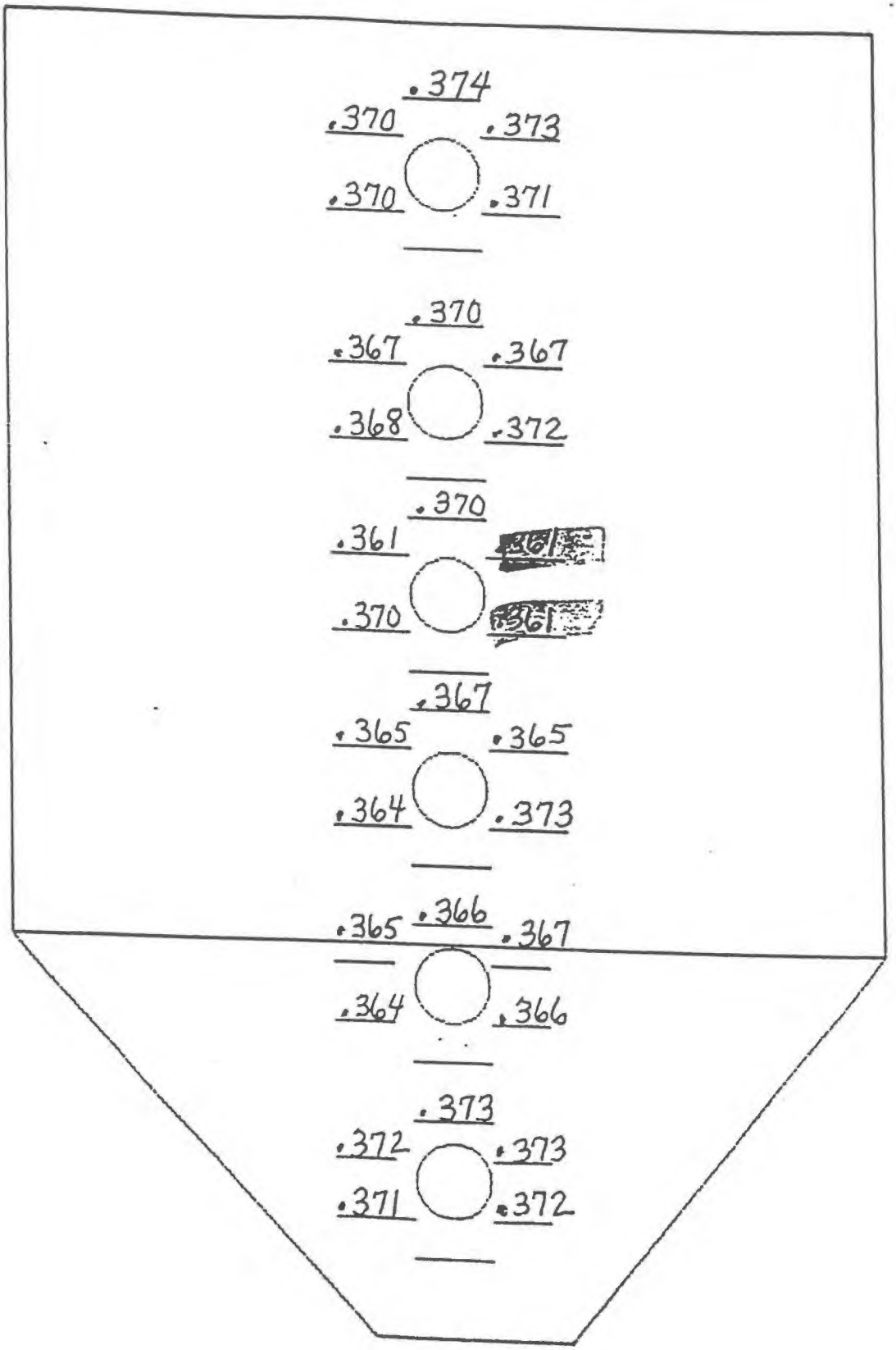

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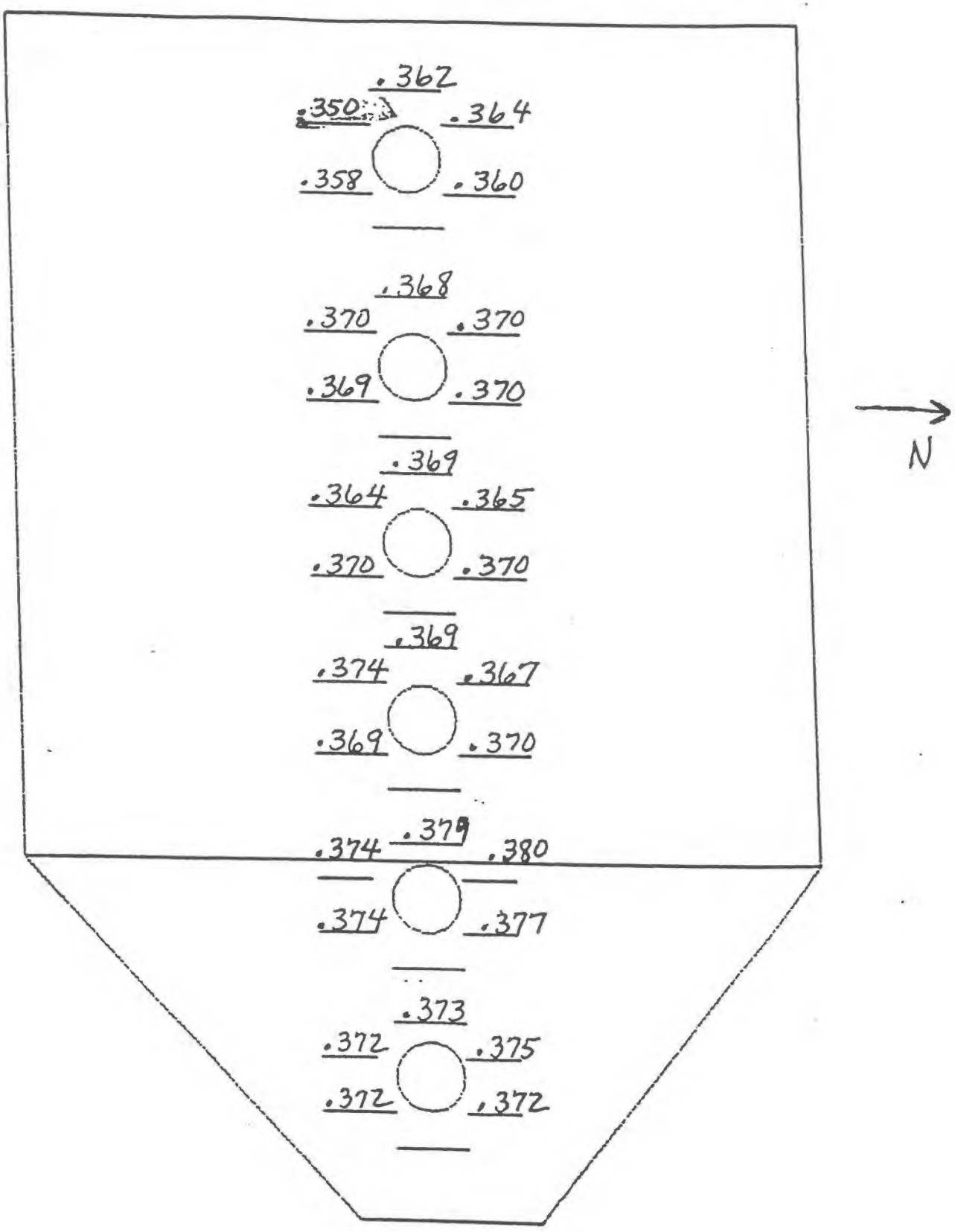
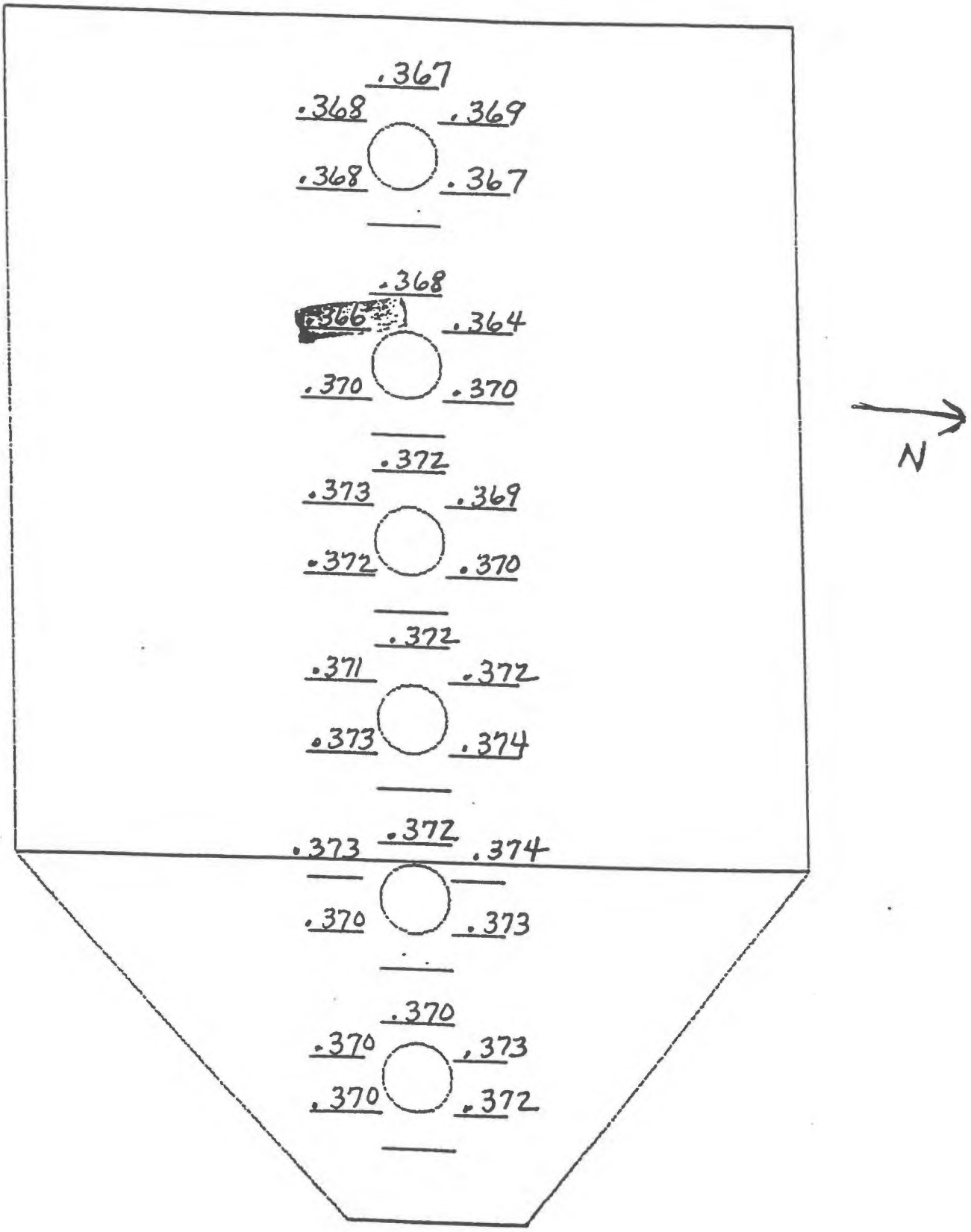
Revision 4
January, 1995



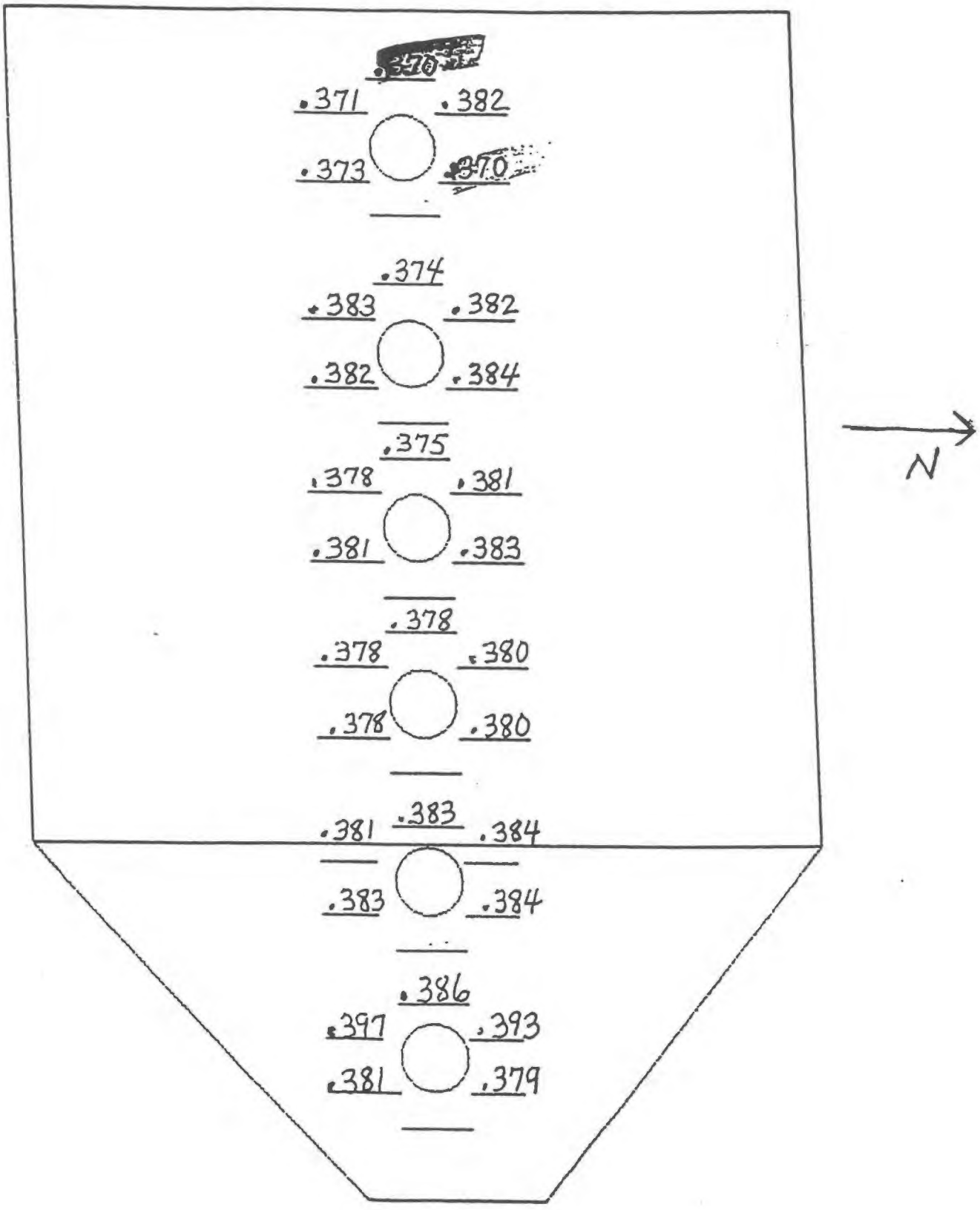
TANK NUMBER 62

Revision 4
January, 1995



Revision 4
January, 1995

TANK NUMBER 63



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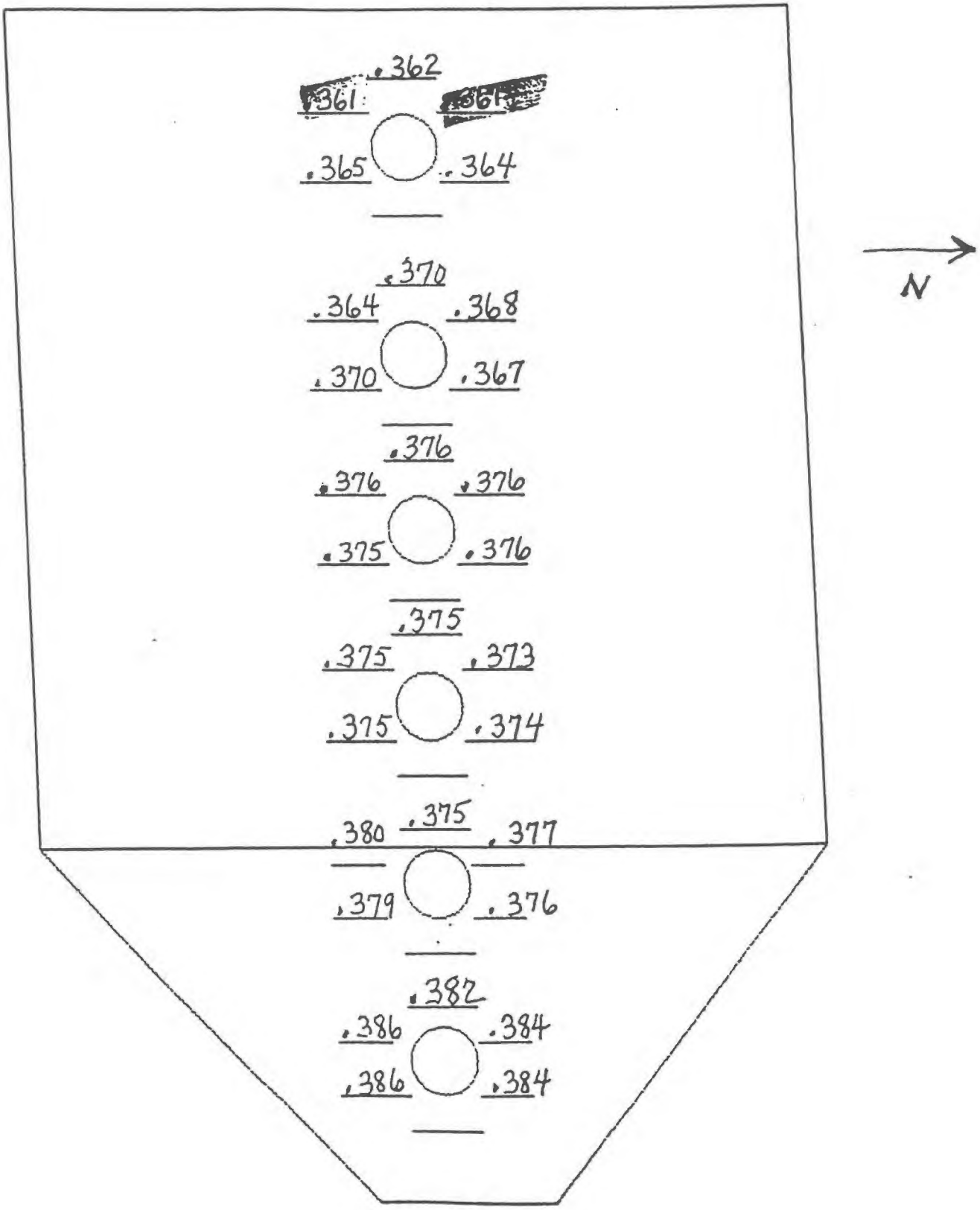


TANK NUMBER 67

EAST SLUDGE TANK

(Paint was chipped off to bare metal for all readings)

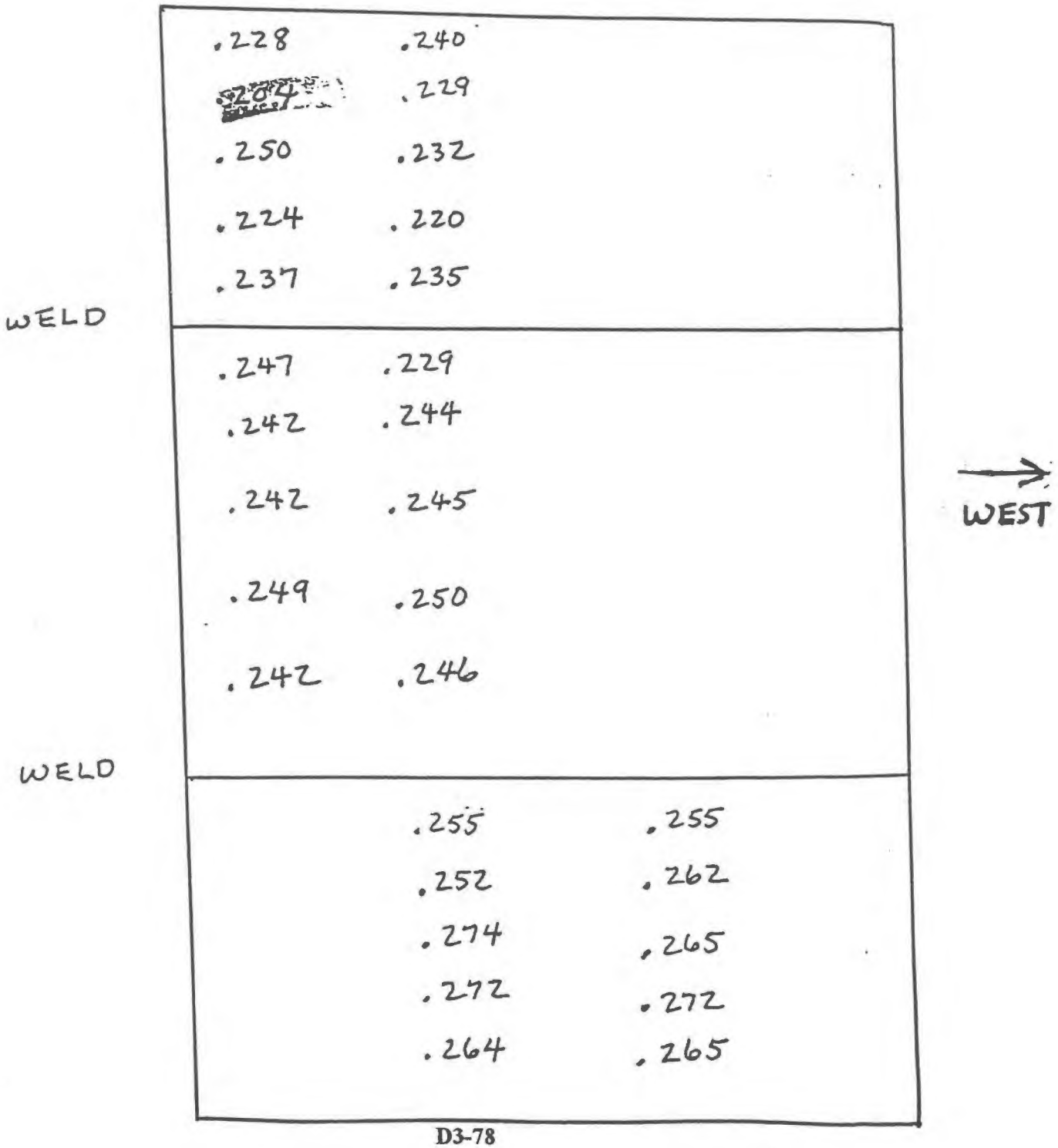
[redacted]	.230
.241	.227
.218	.233
.229	.231
.238	.244
WELD	
.235	.230
.244	.230
.245	.260
.250	.258
.259	.265
WELD	
.244	.250
.253	.265
.257	.255
.265	.270
.275	.258

← EAST

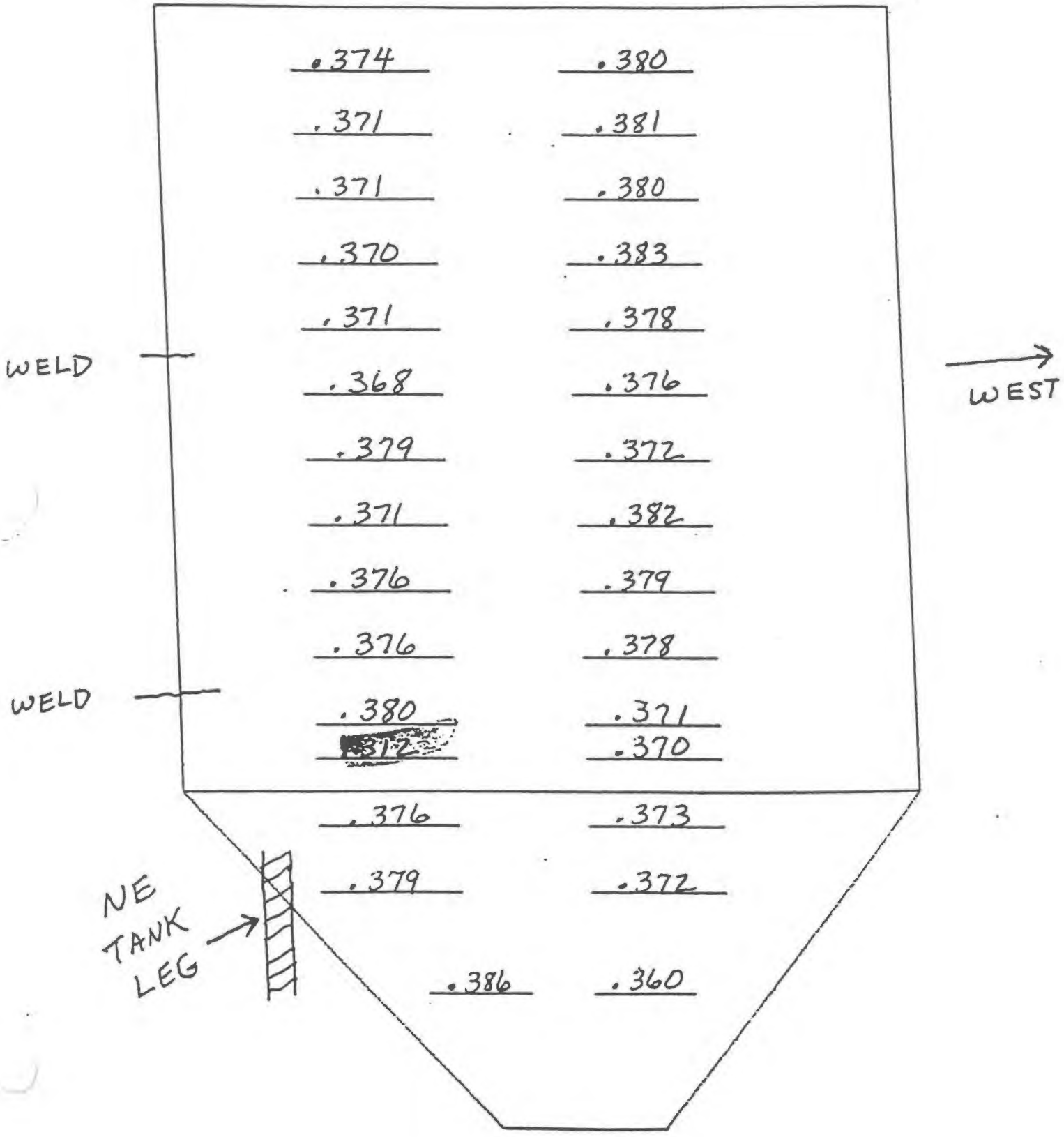
TANK NUMBER 68

WEST SLUDGE TANK

(Paint was chipped off to bare metal for all readings)



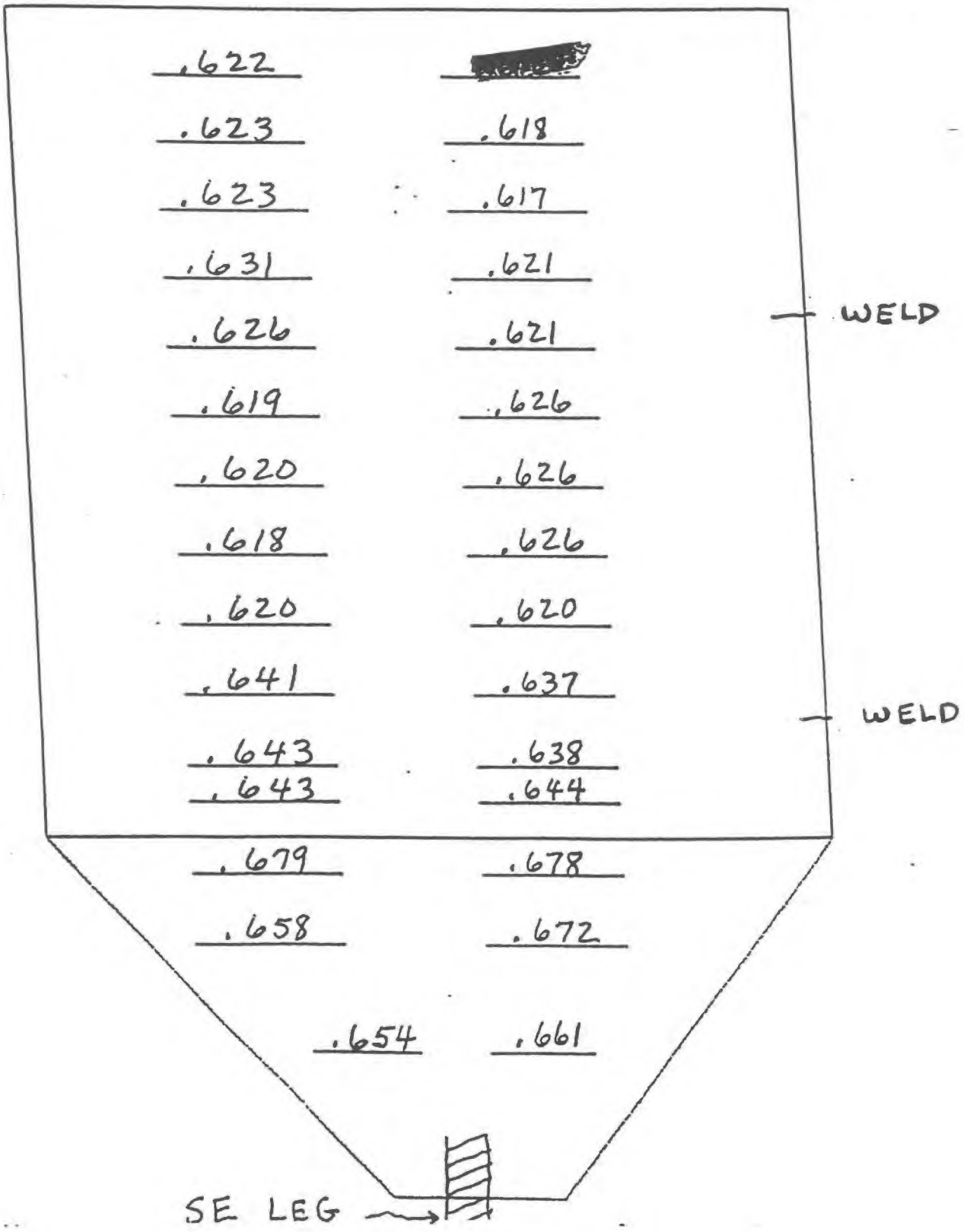
TANK NUMBER 70



All Readings taken from Southeast facing TANK LEG

TANK NUMBER 73

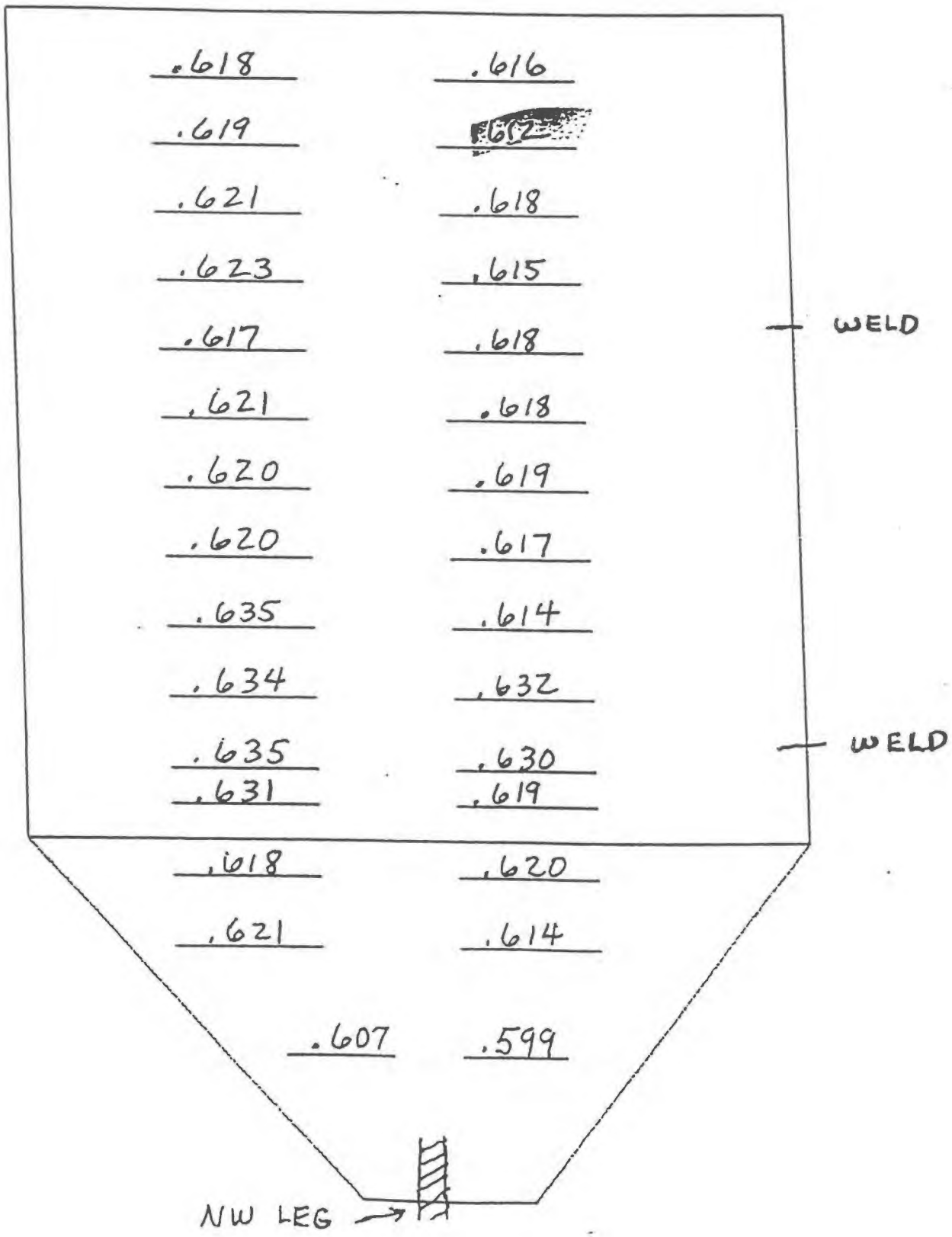
Revision 4
January, 1995



All Readings taken from Northwest facing TANK LEG

TANK NUMBER 74

Revision 4
January, 1995



TANK CERTIFICATIONS
AND
CERTIFICATIONS OF INSTALLATION
FOR NEW TANKS

TANK FARM II - TANKS 37 THROUGH 50
TANK FARM III - TANKS 51 THROUGH 64
TANKS 70, 73, 74 AND 75

R.E. WARNER & ASSOCIATES
SMINI TOWERS II • 2001 CROCKER ROAD
ESTLAKE, OHIO 44145 • TELEPHONE 216/835-9400

February 5, 1988

TANK CERTIFICATION
AND
CERTIFICATION OF INSTALLATION
Tank Farm II
Rose Incineration Services, Inc.
Grafton, Ohio 44044

I, John R. Dicke, being an independent, qualified, registered, professional engineer, do hereby attest that tanks 37 through 50, inclusive, together with their ancillary equipment have sufficient structural integrity and are acceptable for the storing and treating of hazardous wastes.

The following information was considered in evaluating the design of the tank system:

1. The design standard for the tanks was UL142 by Underwriters Laboratories, Inc. The piping design standards were the applicable standards of the American National Standards Institute: ANSI B16.5, B16.9, B16.11 and B16.21.

2. The tank system is competible with the characteristics of the hazardous waste which will be held within. The chemicals in the following list are typical of the hazardous wastes to be handled by the tank system.

Acetone	Styrene
Butanol	Toluene
Isopropanol	Trichloroethylene
Methyl ethyl ketone	Water
Methyl isobutyl ketone	Xylene
Methyl trichloroethylene	

3. No external metal component of the tank system will be in contact with soil or groundwater.

4. There are no underground system components.

5. The tank foundations were designed to support the load if all tanks are full of liquid at the highest expected specific gravity and to support the loads for combinations of empty and full tanks. The effect of wind on empty tanks was considered as well as the effect of earthquake zone 1 on full tanks.

Certification of Installation
Tank Farm II
Roas Incineration, Inc.

Neither the tanks nor the foundations are located in a saturated zone.

The tank system is protected against frost heave. The concrete slab at grade is circumscribed by a dike wall with footers reaching below the frost line which will prevent flow of water beneath the tanks. An underdrainage system beneath the slab carries away any water which might come up from the underlying soil.

Prior to the tank system being placed into operation, it was inspected for the presence of:

1. Weld breaks
2. Punctures
3. Scrapes of protective coatings
4. Cracks
5. Corrosion
6. Other structural damage or inadequate construction/installation.

All discrepancies were remedied before the tank system was placed in use. except for scrapes in the primer coating on the exterior of some of the tanks. These scrapes will be repaired as soon as the weather allows and before the finish coat is applied to the tank exteriors in the spring. An addendum will be added to this certification when this coating repair is completed.

The tanks themselves were tested for tightness by the tank manufacturer. The ancillary piping and other equipment were hydrostatically tested for tightness prior to being placed in use. All leaks identified during such testing were repaired prior to putting the system into operation.

Ancillary equipment is protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction. Protective measures include pipe supports, pipe saddles, flexible pipe connections, and foundations for pumps. I attest that the ancillary equipment associated with this tank system was not damaged due to excessive stress caused by settlement, vibration, expansion or contraction during installation.

Certification of Installation
Tank Farm II
Rose Incineration, Inc.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

John R. Dicks

John R. Dicks
Registered Professional Engineer
State of Ohio
Registration No. E-035862

R.E. WARNER & ASSOCIATES
GEMINI TOWERS II • 2001 CROCKER ROAD
WESTLAKE, OHIO 44145 • TELEPHONE 216/835-9400 • FAX 216/835-9474

May 16, 1989

Addendum To
Tank Certification and
Certification of Installation
Tank Farm II
Original Certification Letter
Dated February 5, 1988
Ross Incineration Services, Inc.
Grafton, Ohio 44044

I, Clarence D. Watkins, being an independent qualified registered professional engineer, do hereby attest that tanks 37 through 50 inclusive have been inspected by me on this date. The paint coating on these tanks showed no scratches or breaks in the surface coating. No rust spots were visible on the paint of the vessels.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Clarence D. Watkins, P.E.
Registered Professional Engineer
State of Ohio
Registration No. E-046956

STATE OF OHIO
CLARENCE
WATKINS
E-46956
REGISTERED
PROFESSIONAL ENGINEER

R.E. WARNER & ASSOCIATES
GEMINI TOWERS II • 2001 CROCKER ROAD
WESTLAKE, OHIO 44145 • TELEPHONE 216/835-9400

January 12, 1988

Tank Cert. of Installation
Tanks # 51-64

TANK CERTIFICATION
AND
CERTIFICATION OF INSTALLATION
Tank Farm III
Ross Incineration Services, Inc.
Grafton, Ohio 44044

I, John R. Dicks, being an independent, qualified, registered, professional engineer, do hereby attest that tanks 51 through 64, inclusive, together with their ancillary equipment have sufficient structural integrity and are acceptable for the storing and treating of hazardous wastes.

The following information was considered in evaluating the design of the tank system:

1. The design standard for the tanks was UL142 by Underwriters Laboratories, Inc. The piping design standards were the applicable standards of the American National Standards Institute: ANSI B16.5, B16.9, B16.11 and B16.21.

2. The tank system is compatible with the characteristics of the hazardous waste which will be held within. The chemicals in the following list are typical of the hazardous wastes to be handled by the tank system.

Acetone	Styrene
Butanol	Toluene
Isopropanal	Trichloroethylene
Methyl ethyl ketone	Water
Methyl isobutyl ketone	Xylene
Methyl trichloroethylene	

3. No external metal component of the tank system will be in contact with soil or groundwater.

4. There are no underground system components.

Jan4.8
50887:LU1/1

Certification of Installation
Tank Farm III
Ross Incineration, Inc.

5. The tank foundations were designed to support the load if all tanks are full of liquid at the highest expected specific gravity and to support the loads for combinations of empty and full tanks. The effect of wind on empty tanks was considered as well as the effect of earthquake zone 1 on full tanks.

   Neither the tanks nor the foundations are located in a saturated zone.

   The tank system is protected against frost heave. The concrete slab at grade is circumscribed by a dike wall with footers reaching below the frost line which will prevent flow of water beneath the tanks. An underdrainage system beneath the slab carries away any water which might come up from the underlying soil.

Prior to the tank system being placed into operation, it was inspected for the presence of:

1. Weld breaks
2. Punctures
3. Scrapes of protective coatings
4. Cracks
5. Corrosion
6. Other structural damage or inadequate construction/installation.

All discrepancies were remedied before the tank system was placed in use.

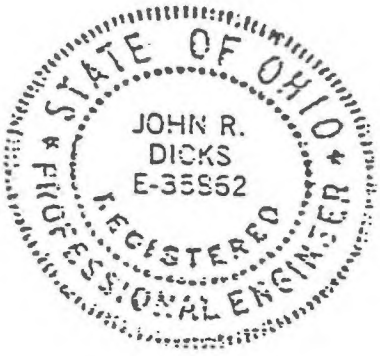
the tanks themselves were tested for tightness by the tank manufacturer. The ancillary piping and other equipment were hydrostatically tested for tightness prior to being placed in use. All leaks identified during such testing were repaired prior to putting the system into operation.

Ancillary equipment is protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction. Protective measures include pipe supports, pipe saddles, flexible pipe connections, and foundations for pumps. I attest that the ancillary equipment associated with this tank system was not damaged due to excessive stress caused by settlement, vibration, expansion or contraction during installation.

Jan4.8
50887:LU1/2

Certification of Installation
Tank Farm III
Ross Incineration, Inc.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



John R. Dicks

John R. Dicks
Registered Professional Engineer
State of Ohio
Registration No. E-035862

Jan4.8.
50887:LU1/2

R.E. WARNER & ASSOCIATES

2001 CROCKER ROAD, SUITE 600 • WESTLAKE, OHIO 44145
TELEPHONE 216/835-9400 • FAX 216/835-9474

September 18, 1992

TANK CERTIFICATION
AND
CERTIFICATION OF INSTALLATION
(TANK SYSTEM INTEGRITY)
Ross Incineration Services, Inc.
Grafton, Ohio 44044
Tanks No. 70, 73, & 74 – Processing Dock

I, Karl W. Schneider, being an independent, qualified, registered, professional engineer, to hereby attest that Tanks No. 70, 73 & 74 inclusive, together with their ancillary equipment have sufficient structural integrity and are acceptable for the storing and treating of hazardous wastes.

The following information was considered in evaluating the design acceptance of the tank system along with an actual inspection of the tank installations.

1. The design standard for the tanks was UL142 by Underwriters Laboratories, Inc. The piping design standards were the applicable standards of the American National Standards Institute: ANSI B16.5, B16.9, B16.11 and B16.21.

2. The tank system is compatible with the characteristics of the hazardous waste which will be held within. The chemicals in the following list are typical of the hazardous wastes to be handled by the tank system.

Acetone	Styrene
Butanol	Toluene
Isopropanal	Trichloroethylene
Methyl ethyl ketone	Water
Methyl isobutyl ketone	Xylene
Methyl trichloroethylene	

3. No external metal component of the tank system will be in contact with soil or groundwater.

4. There are no underground system components.

5. The tank foundations are designed to support the load of all tanks when full of liquid at the highest expected specific gravity and to support the loads for combinations of empty and full tanks. The effect of wind on empty tanks was considered as well as the effect of earthquake zone 1 on full tanks. .

   Neither the tanks nor the foundations are located in a saturated zone.

   The tank system is protected against frost heave. The concrete slab at grade is circumscribed by a dike wall with footers reaching below the frost line which will prevent flow of water beneath the tanks. An underdrainage system beneath the slab carries away any water which might come up from the underlying soil.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

K. W. Schneider

Karl W. Schneider
Registered Professional Engineer
State of Ohio
Registration No. 33546
Project Manager
R. E. Warner & Associates

5\55992\LTR\CERTINST.KWS

William A. Parsons, Ph.D., P.E.
Environmental Engineering Consultant
3412 Ridge Park Drive
Cleveland, Ohio 44147
(216)526-6296

January 12, 1988

Mr. Gary Ross, President
Ross Incineration Services, Inc.
394 Giles Road
Grafton, Ohio 44044

Subject: Certification of Installation of Aboveground Vapor Condensation Tank No. 70 and Aboveground Waste Transfer Tanks Nos. 73 and 74 Associated with Ross Project 86-215

Dear Mr. Ross:

I have been involved in the Subject Project prior to the commencement of construction and have inspected the construction status of the facility on 29 December 1987 and 9 January 1988. I have interviewed Ross and contractor personnel associated with the Project and have reviewed plans, specifications and documents listed on the attached Document List.

As and independent, qualified, registered professional engineer trained in the proper installation of tank systems, I attest that Tanks Nos. 70, 73 and 74 and ancilary components (nozzles, manways and supports) were inspected for the following:

1. Weld Breaks
2. Punctures
3. Scrapes of protective coatings
4. Cracks
5. Corrosion
6. Other structural damage or inadequate construction or installation.

I attest that all such defects identified in the above inspections were properly repaired prior to putting these Tanks and encilary components into operation.

I attest that these tanks were tested for tightness end that all leaks identified during such testing were repaired prior to putting these tanks into operation.

I attest that the ancillary components (nozzles, manways and supports) were not damaged due to excessive stress due to settlement, vibration, expansion or contraction during installation.

I certify under penalty of the law that this document and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very truly yours,

William A. Parsons

William A. Parsons

Encl: Document List

William A. Parsons, Ph.D., P.E.
Environmental Engineering Consultant
3412 Ridge Park Drive
Cleveland, Ohio 44147
(216)526-6296

January 12, 1988

Mr. Gary Ross, President
Ross Incineration Services, Inc.
394 Giles Road
Grafton, Ohio 44044

Subject: Certification of Aboveground Vapor Condensation Tank No. 70 and Aboveground Waste Transfer Tanks Nos. 73 and 74 Associated with Ross Project 86-215

Dear Mr. Ross:

I have been involved in the Subject Project prior to the commencement of construction and have inspected the construction status of the facility on 29 December 1987 and 9 January 1988. I have interviewed Ross and contractor personnel associated with the Project and have reviewed plans, specifications and documents listed on the attached Document List.

I do hereby attest to the following:

1. Tank No. 70 is designed for service at atmospheric pressure. The Tank is fabricated from 3/8 inch carbon steel in accordance with U.L. Specification #142. The tank has been air pressure tested with soap suds solution as per U.L. Spec. #142.

   Tanks Nos. 73 & 74 are designed for vacuum service. The Tanks are fabricated from 5/8 inch carbon steel in accordance with ASME Code Section VIII, Division 1. The design pressure is 15 psig internal/15 psig external. The fabricated tanks were shop hydro tested at 23 psig. The tank design provides for a 1/8 inch corrosion allowance.

2. Tanks NOs. 70, 73 and 74 are aboveground column supported tanks that do not come into contact with soil, groundwater or surface runoff. Therefore no special corrosion protection is required.

3. All underground components are designed to accept vehicular traffic.

4. The foundations of the Tanks are adequate to sustain the load of full tanks.

5. The tank installations are not subject to flooding or dislodgment by flooding.

6. The tanks are designed with the foundation and structural integrity to withstand frost heave and wind loading in accordance with ANSI Standard 58.1. Earthquake design is in accord with the Ohio Uniform Building Code.

As an independent, qualified, professional engineer, I do hereby attest that the the design, fabrication and installation of Tanks Nos. 70, 73 and 74 are in accordance with acceptable engineering practice. Therefore the Subject Tanks and associated nozzles, manways and supports have sufficient structural integrity for the storing and treatment of compatible hazardous waste that is not aggressively corrosive to carbon steel. It is understood that operating procedures will limit the service of the tanks to the prescribed conditions.

I certify under penalty of the law that this document and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Very truly yours,

William A. Parsons

William A. Parsons

Encl: Document List

DOCUMENT LIST

1.	Applied Corrosion Control, Inc., Appendix D-2 Tank Corrosion Protection Plan Rev. 1	5/28/87
2.	Brown Boiler & Tank Works, Ltd - F1430-1	12/23/87
3.	Brown Boiler & Tank Works, Ltd - F1430-2	12/23/87
4.	Continental Products, Inc. Drwg No MB 2262R2 - Explosion Proof Condenser	11/13/87
5.	Guenther Plumbing & Heating Welding Procedures & Certifications	12/29/87
6.	Hamilton Tanks Drwg HW 8784D	5/26/87
7.	Hamilton Tanks - TK-01-73 & TK-02-74 Drwg HW 87123D (1&2)	7/29/87 8/24/87
8.	Jennings & Churella - M. Chase Letter Conduit Schedule	8/18/87
9.	Jennings & Churella/South Shore Electric, Inc. Quality Assurance Plan, Project 86-215	9/21/87 12/28/87
10.	Jennings & Churella Drwgs: A-1,A-2,C-1,E-1,FS-1,FS-2,FS-3,M-1,M-2, M-3,M-4,M-5,S-1,S-2,S-3,S-4,S-5,S-6, S-7,S-8 & S-9	12/29/87
11.	David V. Lewin Corp. Report on Soil Conditions	10/9/86
12.	Ross Receiving Dock PID Drwg 8-01-001 Rev 1	2/17/87
13.	Ross Incineration Services, Inc., Project 86-215 Specification Carbon Steel Tanks, Rev 1	
14.	Ross Incineration Services, Inc. Permit Booklet	5/15/87
15.	Ross Letter - W.I. Ridle Contractor Approval	9/29/87
16.	Superior Electric Site Utilities Plan	9/16/87
17.	Relevant RCRA Permit Documents	2/28/87

January 12, 1988

R.E. WARNER & ASSOCIATES
GEMINI TOWERS II • 2001 CROCKER ROAD
WESTLAKE, OHIO 44145 • TELEPHONE 216/835-9400

August 10, 1988

TANK CERTIFICATION
AND
CERTIFICATION OF INSTALLATION

Closed Loop Scrubber Water System
Ross Incineration Services
Grafton, Ohio 44044

I, John R. Dicks, being an independent, qualified, registered, professional engineer, do hereby attest that the following tanks, together with their ancillary equipment, foundations, and secondary containment, have sufficient structural integrity and are acceptable for the storing and treating of hazardous wastes:

CL-61-001:	Clarifier
TK-61-075:	Maintenance Storage Tank
TK-61-076:	Quench Water Return Tank
TK-61-077:	Scrubber Water Return Tank
TK-61-079:	Surge Tank
TK-61-081:	Clarifier Pump Surge Tank
TK-61-082:	East Cooling Tower Basin
TK-61-083:	Middle Cooling Tower Basin
TK-61-084:	West Cooling Tower Basin

These tanks together with their ancillary equipment foundations, and secondary containment, comprise the tank system for the Closed Loop Scrubber Water System.

The following information was considered in evaluating the design of the tank system:

1. The design standards were:

CL-61-001:	AWWA D100-84 standard for welded steel tanks for water storage by the American Water Works Association
TK-61-075 thru TK-61-084:	API 650 by the American Petroleum Institute
Piping:	ASTM D-2310, D-2992, and D-2996 by the American Society for Testing and Materials. ANSI B16.5 and B16.21 by the American National Standards Institute

2. The tank system is compatible with the hazardous waste which will be held within. The waste is a water solution of chemicals scrubbed from incinerator flue gases and also contains some insoluble suspended solids. The characteristics of the waste are:

Temperature, °F:	100-180
Density, Lbs/Gal:	8.6 - 9.8
Viscosity, Centipoise:	10 - 300
pH:	7.0 - 9.0
Suspended Solids, Wt. %:	2 - 6
Dissolved Solids, Wt. %:	7 - 20
Containing the following ions, Wt. %	
Na^+	2.5 - 6.5
Ca^{++}	0.002 - 0.01
Cl^-	2.9 - 8.2
SO_4^{--}	1.2 - 3.5
F^-	0.1 - 0.2
CO_3^{--}	0.004 - 0.01
HCO_3^-	0.2 - 0.5

3. No external metal components of the tank system will be in contact with soil or groundwater.

4. The tank foundations are designed to support the load if all tanks are full of liquid at the highest specific gravity. The effect of wind on empty tanks was considered as well as the effect of earthquake zone 1 on full tanks.

   Neither the tanks nor the foundations are located in a saturated zone.

   The tank systems are protected against frost heave. The concrete slabs on which the tanks are placed are circumscribed by dike walls with footers reaching below the frost line which will prevent flow of water beneath the tanks. Underdrainage systems beneath the slabs carry away any water which might come up from the underlying soil.

Tank Certification and
Certification of Installation
Closed Loop Scrubber Water System
Ross Incineration Services, Inc.
August 10, 1988
Page 3

Prior to the tank system being placed into operation, it was inspected for the presence of:

1. Weld breaks.
2. Punctures.
3. Scrapes of protective coatings.
4. Cracks.
5. Corrosion.
6. Other structural damage or inadequate construction or installation.

All discrepancies found in this inspection have been remedied except that only tank CL-61-001 has received its exterior protective coating. All tanks are scheduled to receive their exterior protective coating between the date of this certification letter and the time that hazardous waste will first be placed in the system. As of the date of this letter, TK-61-081 has a coat of primer on the exterior which has a few scratches. The scratches are scheduled to be touched up before the final protective coating is applied. The following tanks have the surface rust typical of unpainted steel. This rust is scheduled for removal before the protective coatings are applied.

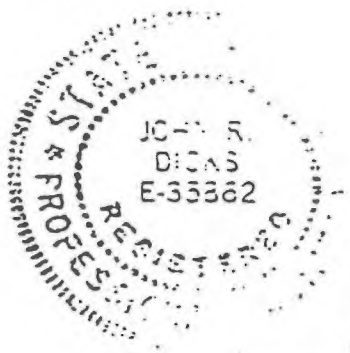
TK-61-075
TK-61-076
TK-61-077
TK-61-079
TK-61-082
TK-61-083
TK-61-084

All tanks except TK-61-075 have interior protective coatings that were observed to be free from scrapes and cracks. TK-61-075 is not scheduled for interior protective coating because hazardous waste will be put in it only if one of the other large tanks must be emptied for repair.

All tanks and all piping and other ancillary equipment (except pipelines 1, 12, 87, 88, and 89 and the south Quench Water Return Pump) have been hydrostatically tested for tightness following installation. All leaks identified during the testing have been repaired. The south Quench Water Return Pump is being used elsewhere in the facility and will not be installed in its permanent place until after the Closed Loop Scrubber Water System is in full operation. Pipelines 1, 12, 87, 88, and 89 are all short gravity drains from existing equipment that cannot be installed and tested until the last thing before the Closed Loop Scrubber Water System is put into full operation. Line 1 drains from Scrubber No. 1 to the Quench Water Return Tank. Line 12 drains from Scrubber No. 2 to the Scrubber Water Return Tank. Lines 87, 88 and 89 drain from the Ionized Wet Scrubbers to the Quench Water Return Tank.

Ancillary equipment is protected against physical damage and excessive stress due to settlement, vibration, expansion, or contraction. Protective measures include pipe supports, pipe saddles, flexible pipe connections, and pump foundations.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



John R. Dicks

John R. Dicks
Registered Professional Engineer
State of Ohio
Registration No. E-035862

R.E. WARNER & ASSOCIATES

2001 CROCKER ROAD, SUITE 600 • WESTLAKE, OHIO 44145
TELEPHONE 216/835-9400 • FAX 216/835-9474

December 14, 1992

TANK CERTIFICATION
AND
CERTIFICATION OF INSTALLATION
(TANK SYSTEM INTEGRITY)
Ross Incineration Services Inc.
Grafton, Ohio 44044
Tank 75 – Maintenance Storage Tank

I, Karl W. Schneider, being an independent, qualified, registered, professional engineer, do hereby attest that Tank No. 75 together with its ancillary equipment has sufficient structural integrity and is acceptable for the storing and treating of hazardous wastes.

The following information was considered in evaluating the design acceptance of the tank system along with an actual inspection of the tank installation.

1. The design standard for the tanks was UL142 by Underwriters Laboratories, Inc. The piping design standards were the applicable standards of the American National Standards Institute: ANSI B16.5, B16.9, B16.11 and B16.21.

2. The tank system (including the interior coating) is compatible with the hazardous waste which will be held within. The interior protective coating consisting of a corrosion resistant vinyl ester glassflake filled material of 70 mil. nominal thickness has been added to Tank No. 75. The waste is a water solution of chemicals scrubbed from incinerator flue gases and some insoluble suspended solids. The characteristics of the waste are:

Temperature	ambient – 180° F
Density lbs/gal:	8.34 – 9.8
Viscosity, Centipoise:	10 – 300
pH:	4 – 10
Suspended Solids, Wt. %:	0 – 6
Dissolved Solids, Wt. %:	0 – 20

Typically containing the following ions, Wt. %

Na^+	0 – 6.5
Ca^{++}	0 – 0.01
Cl^-	0 – 8.2
SO_4^-	0 – 3.5
F^-	0 – 0.2
CO_3^{--}	0 – 0.01
HCO_3^-	0 – 0.5

3. No external metal component of the tank system will be in contact with soil or groundwater.

4. There are no underground system components.

5. The tank foundation is designed to support the load of the tank when full of liquid at the highest expected specific gravity and to support the loads for combinations of empty and full tanks. The effect of wind on the empty tank was considered as well as the effect of earthquake zone 1 on a full tank.

   Neither the tank nor the foundation are located in a saturated zone.

   The tank system is protected against frost heave. The concrete slab at grade is circumscribed by a dike wall with footers reaching below the frost line which will prevent the flow of water beneath the tank. An underdrainage system beneath the slab carries away any water which might come up from the underlying soil.

This tank system was inspected for the following discrepancies and found satisfactory:

1. Weld breaks
2. Punctures
3. Scrapes of the interior protective coating
4. Cracks
5. Corrosion
6. Other structural damage or inadequate construction/installation related to the installation of the interior coating.
7. Exterior protective coating.

This tank and its ancillary equipment have also been examined for leaks and are determined as sound and leak free. In addition adequate routine inspection procedures and practices are in affect to insure the integrity of thus system.

Tank 75 was hydrostatically tested prior to being placed into service.

No ancillary equipment was affected by the installation of the interior coating to tank 75, therefore, no damage to ancillary equipment resulted in the installation of the interior coating.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Karl W. Schneider, P.E.
Registered Professional Engineer
State of Ohio
Registration No. 33546
Project Manager
R. E. Warner & Associates

[illegible]\LTR\TNK-CERT.75

R.E. WARNER & ASSOCIATES Inc.
A 1 Company

The R.E. Warner Companies
R.E. Warner & Associates, Inc.
R.E. Warner Architects, Inc.
R.E. Warner Environmental Services, Ltd.
R.E. Warner Construction Services, Inc.

November 1, 2001

Mr. Steve Goldman
Ross Environmental Services, Inc.
35716 Royalton Road
Grafton, Ohio 44044

Subject: Ross Incineration Services, Inc.
Fourth Feed Line Installation
R. E. Warner Job No. 13901-04

Dear Mr. Goldman:

R. E. Warner & Associates, Inc. has been engaged to provide visual inspection and engineering certification services for the modifications to the piping between the Tank Farm Area and the Incineration System Metering Building for the installation of a fourth feed line to the incinerator.

The visual inspection and certification was to determine the following:

1. That Ross has completed the upgrades to the piping systems per its design and the as-built P&ID's, and
2. That, based upon observations made, the piping systems appear to be properly installed and capable of operating.

The visual inspection of the piping systems was completed on October 2, 2001. R. E. Warner & Associates, Inc. hereby certifies the above conditions have been satisfied.

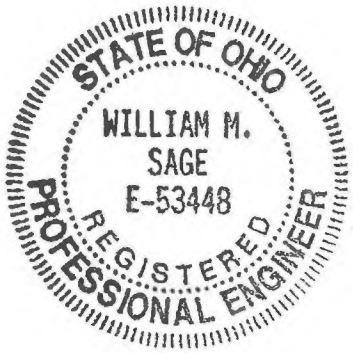
Furthermore, this modification was reviewed to identify any impact to the current tank system assessments required under OAC Rule 3745-55-92. None of the current tank assessments were impacted, thus no updates are required.

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathering and evaluate the information submitted. Based on my inquire of the person or persons who manage the system or those persons directly responsible for gather the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

R.E. WARNER & ASSOCIATES, INC.

William M. Sage, P.E.
Project Manager



/wms

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D3-104

PROFESSIONAL ENGINEERING ASSESSMENT

AND

CERTIFICATION

OF THE

HAZARDOUS WASTE STORAGE TANKS

TANK NO.'s 23 THRU 36

FOR

ROSS INCINERATION SERVICES, INC.

FINAL REPORT
February 16, 2004

TABLE OF CONTENTS

APPENDIXES

I. INTRODUCTION

Ross Incineration Services ("RIS") operates three tank farms for storage of hazardous waste under a State Hazardous Waste Facility Installation and Operation Permit ("RCRA Part B Permit") issued by the Ohio Environmental Protection Agency ("Ohio EPA" or "the Agency") on September 30, 2003 (Ohio Permit ID# 02-47-0295).

One grouping of fourteen (14) tanks is located in what is identified as Tank Farm 1. Each of these tanks has a nominal capacity of 9,920 gallons. The tanks have the unique identifiers of TANK 23 through 36, and were installed and have been in operation since in 1982. These tanks are all duplicate fabrications and were originally designed, fabricated and certified as meeting a modified UL-142 design tank standard. As such, they are "atmospheric" tanks. However, they have a nitrogen purge system utilizing a conservation vent that prevents air infiltration and provides a blanket of nitrogen above the liquid level in the tanks to minimize the fire hazard and the corrosive vapor phase.

In RIS' RCRA Part B Permit, Ohio EPA identified interim "minimum design thicknesses" for the subject tanks based on their original fabricated thickness minus an assigned corrosion allowance. Using the Agency's criteria, the "allowable minimum thickness" for each tank section would be as follows:

Shell	0.1875 inches
Top Cone	0.25 inches
Bottom Cone	0.25 inches

As an alternative to the above assigned values, RIS has retained the services of Acitec, Inc. ("Acitec") to perform an independent professional engineering review and certification of the Tank Farm 1 tanks, using standardized engineering calculations to determine allowable minimum thicknesses based upon established scientific criteria.

This Report contains the findings of the engineering review, and the required Professional Engineer's certification statement. The Report has been developed in part by personal observations, interviews with applicable RIS employees, review and discussions with the original tank manufacturer (i.e., Hamilton Tank), additional calculations, and a review of pertinent published data.

II. ENGINEERING ASSESSMENT OF EXISTING TANKS

The following information has been provided by RIS to assist with Acitec's engineering evaluation and review regarding these tanks. This information is provided in **Appendix 1** of this Report.

- The original fabrication drawing from Hamilton Tank: Dwg HW81121D Rev. 8, entitled "10,000 Gallon Vertical Mixing Tank";
- Hazardous waste profile (chemical description) data;
- Current Ohio RCRA Part B Permit information and Tables relating to the Tanks 23 through 36 including Section D-2b(2), Table D2-2, Table D5-6, "Waste Stream Definition" and the

- Tank Corrosion Monitoring Plan" limiting the corrosives stored in these tanks to below that of 50 mpy (50 mils penetration per year);
- Conservation vent data sheet confirming the tanks are operated and protected well below the allowable vacuum/pressure ratings of a UL142 tank;
- Calculations provided by the original tank manufacturer using the ASME Section VIII, Div1 code to determine allowable shell, top and bottom thicknesses;
- Most recent tank UT testing data from the year 2003;
- Most recent RIS Tank Farm 1 internal inspection log notes from the years 2000 and 2001.

The following are determinations or other important criteria that have been established for this Evaluation and Certification:

1. The current UL 142 code, 8th edition, July 11, 2002 is a design standard that provides minimum fabrication thicknesses for cylindrical vertical tanks with dish roofs and generally flat bottoms. [Note: The Tank Farm 1 units were initially fabricated and stamped as a UL142 modified design. The modified design designation is due to the tanks being constructed on legs for processing requirements.] It is also important to note that the UL142 standard does not consider wind or seismic loads and vessels supported by legs, nor does it account for tank contents having a density other than a specific gravity of 1.0.

   For reference, the UL142 Code (Section 15.2 and Table 15.1) requires that a minimum fabrication thickness for a vertical tank shall be "constructed from steel not thinner" than the thickness of that specified (for a tank volume greater than 1,100 U.S. gallons) for each tank component as follows:

Shell	0.167 inches
Top Cone	0.123 inches
Bottom Cone	0.240 inches

   See **Appendix 2** for applicable sections of the UL142 Standard referenced herein.

2. Analyzing these tanks to determine an actual minimum thickness under a set of design criteria using ASME Section VIII guidelines (and software such as CodeCalc) is an acceptable and practical methodology. Since Acitec is not fabricating these tanks but evaluating them for continued service, it is reasonable to analyze them using ASME Section VIII pressure vessel criteria, and to utilize more rigorous, published engineering information to determine an acceptable "allowable minimum thickness" for each element of the tank.
3. The ASME calculations provided by Hamilton Tank (Code Calc runs of February 8, 2002) utilize an established software program for analyzing tank designs under ASME Section VIII pressure vessel design code. This includes safety factors inherent in the ASME code. These calculations were run using the maximum liquid specific gravity for materials which may be stored in the Tank Farm 1 tanks, which is 2.18 (135.4 lbs./cu. ft.). However, these calculations only accounted for internal design pressures, and not external forces which can be significant. For reference, the information provided by RIS to Acitec regarding the Hamilton Tank calculations indicated allowable minimum thicknesses for each tank section as follows:

Shell	0.1088 inches
Top Cone	0.0373 inches
Bottom Cone	0.1309 inches

4. It was determined that the tanks with agitators required the "top cones" analyzed for combined snow, personnel and agitator live loads; and that the tanks without agitators required the "top cones" analyzed for combined snow and personnel loads to determine the allowable minimum thickness due to "external forces", which is the controlling factor.

   It was determined that the tank support legs required analysis under maximum load conditions. This includes the combined wind, snow, agitator (where applicable), and personnel live loads to determine the minimum shell thickness for which a tank support leg to shell failure could occur. Calculations using industry accepted design rules and ASME Section VIII Div. 1 allowable stresses are available for analyzing these requirements.

5. Acitec has analyzed the tanks, including "external force" components and provided the calculations in **Appendix 3** of this Report. All calculations are based on the reference drawing provided by Hamilton Tank and calculations using ASME Section VIII pressure vessel design code.

   Based on discussions with Hamilton Tank, no records exist to verify what grade of steel was used in the fabrication of these tanks. A review of the drawings indicates only the denotation of "HRCS" (i.e., hot rolled carbon steel) . In order to analyze the tanks, the material properties of A-36 grade carbon steel plate were assumed, as this is a structural quality material with documented specific "minimum" mechanical properties (i.e., 16,600 psi tensile strength) which is commonly used in chemical process tank fabrications. A-36 grade steel was also assumed by Hamilton Tank in their calculations which were provided to Acitec by RIS.

For assessments of unknown carbon steel plate, it is also a common engineering practice to use the lower tensile strength of 10,000 psi for material properties. Using the reduced steel strength would increase the bottom cone minimum thickness to 0.228 inches and the shell to leg connection would greatly exceed allowable stress requirements. Acitec believes this tank review warrants using the A-36 steel properties assuming the original manufacturer would have selected a higher grade of steel for fabrication.

It was determined that the shell to tank leg support attachment is the weakest factor. Using as the basis for the above analysis a specific gravity of 1.0 (62.4 lbs./cu. ft.), the support leg to tank shell is approximately **4%** deficient of the required attachment area and strength. This forms the basis for other calculations, and establishes a nominal allowable weight limitation for tank contents of (less than or equal to) **84,000 lbs**.

The minimum required thickness for the cone bottom using the allowable weight limitation is calculated to be 0.137 inches. The bottom cone to shell connection at this recommended minimum thickness meets the code requirement.

The minimum required thickness for the shell is 0.119 inches. However, where the shell attaches to the legs, the minimum required thickness is 0.19 inches.

RIS provided the weight of the agitator (1,700 lbs.) and the moment force (2800 ft.-lbs.) it generates. The tanks with agitators were evaluated using the recommended minimum thickness for the top cone of 0.25 inches. The stress from a 50 psf live load and agitator weight does not exceed the allowable load. However, the allowable stress' in the agitator

nozzle to plate are exceeded with the moment force of 2800 ft.-lbs. Therefore the agitator moment force should be limited to 1600 ft.-lbs. unless an engineered reinforcement pad is provided at the agitator nozzle in top cone.

For tanks without agitators it is reasonable to defer to the "minimum fabrication thickness" established by the UL142 Standard.

III. SUMMARY TABLE OF RESULTS

	Tank Thickness as Fabricated	EPA Current (or Original) Permit Value	UL 142 Minimum Tank Fabrication Thickness	Hamilton* Calculations of February 8, 2002	Acitec* Calculated Minimum Thickness
Shell Upper Portion	0.25	0.1875	0.167	0.1088	0.119
Shell Bottom Portion at Leg Attachment	0.25	0.1875	0.167	0.1088	0.19**
Top Cone	0.3125	0.25	0.123	0.0373	0.25***
Bottom Cone	0.3125	0.25	0.24	0.1309	0.137

Note: * Assumes A-36 steel

Note: ** Based on 1.0 specific gravity

Note: *** The Top Cone minimum thickness if moment force of agitator is reduced to 1600 ft-lb. or if reinforcement pad is added. The Top Cone minimum can be reduced to UL 142 required minimum fabrication thickness (0.123 inches) for the tanks without any agitator installed.

IV. RECOMMENDATIONS

The existing hazardous waste storage tanks have sufficient integrity and chemical compatibility with the hazardous waste being stored to continue in service under the following guidelines. Utilizing the conservative engineering analysis of ASME Section VIII code criteria including external live load forces on nozzles and tank support legs, Acitec recommends a design minimum thickness (inches) as follows:

Tanks 23, 24 and 25 with Agitators

Shell Upper Portion (0.119 inches)

Shell Bottom Portion at Leg Attachment	(0.19 inches)
Top Cone	(0.25 inches) with moment force of 1600 ft.-lbs. or less for agitator
Bottom Cone	(0.137 inches)

Tanks 26 through 36 without Agitators

Shell Upper Portion	(0.119 inches)
Shell Bottom Portion at Leg Attachment	(0.19 inches)
Top Cone	(0.123 inches)
Bottom Cone	(0.137 inches)

If and when these tanks are replaced, consideration should be given to specifying a different design standard, providing an engineered specification for fabrication, or specifying the ASME design standard without necessarily incurring the cost of having the tanks "stamped" as ASME pressure vessels. Acitec does not believe the minor non-conforming issues such as tank legs to shell support, agitator nozzle connection to the top cone, nor incomplete documentation of material fabrication properties warrants reducing the "recommended minimum thickness" any further. This is in part due to the consideration of the safety factors inherent in the ASME code, and the fact that these tanks have been in service for an extended period of time.

If the agitators in Tank 23, 24, or 25 exceed the allowed moment force, then a properly engineered reinforcement pad should be provided.

The most critical recommendation is that RIS should continue to perform its tank corrosion monitoring, and that it should ensure the recommended shell, top and bottom cone thicknesses for the tanks are maintained above the minimum allowable values.

If materials with a specific gravity above 1.0 (8.34 lbs. / gal.) are to be stored in these tanks, then Acitec recommends that RIS reduce the allowable level in the tank in accordance with the nominal allowable weight limitation of **84,000 lbs.** (i.e. a specific gravity of 2.0 would reduce the available operating level by approximately 50%). The significance of the specific gravity is a critical issue as these tanks were apparently originally designed for a specific gravity of 1.0 (per the UL 142 standard). RIS should continue to manage the types of materials it places in Tank Farm #1 through its review of customer waste profile data, and by adjusting their operating procedures to account for materials which have specific gravities of greater than 1.0. These tanks should not exceed their nominal allowed net operating weight.

V. CLARIFICATIONS

Acitec evaluation did not include design issues covered by OBC, Ohio Fire Code, NFPA codes and OSHA (i.e., tank foundations, diking, seismic, wind load, tank spacing, etc.). Acitec's scope was limited to the tank's integrity and is based on ASME and UL 142 criteria. It is not the intent of this engineering evaluation and certification to address the requirements for new tank installations for hazardous waste storage(Ohio Administrative Code 3745-66-92 etc.) standards. It is Acitec's understanding that these tanks are properly permitted under the applicable governing Ohio and/or US EPA regulations.

RIS has a "Waste Analysis Plan" and a "Tank Corrosion Monitoring Plan" as components of their State RCRA Part B Permit. These Plans limit the corrosives stored in Tank Farm 1 to below that of 50 mpy for 30 days or less. Acitec understands these Plans will continue to be followed by RIS. Also, a nitrogen inerting system reduces the corrosion rates in the vapor space of the Tank Farm 1 tanks. However, there is still a moderate corrosive concern that warrants the additional scrutiny provided only by internal inspections. External UT testing, in and by itself, will not identify pitting, nor localized corrosion problems. As such, the Tank Farm 1 tanks should be inspected internally on a more frequent basis than every ten (10) years.

VI. CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Leon F. Krulik, P.E.

Acitec Inc.
Leon F. Krulik, P.E.
Registered Professional Engineer
State of Ohio
Registration No. 30675
PE Stamp

5-9-08

CERTIFICATION OF THE FILTER PRESS

Prepared for:

ROSS INCINERATION SERVICES, INC.
GRAFTON, OHIO

ROSS®

REV. 0

APRIL 3, 2008

R.E. Warner Job No. 16608

Prepared by:

R.E. WARNER & ASSOCIATES, INC.
LA OFFICE PLAZA II, SUITE 200
25777 DETROIT ROAD
WESTLAKE, OHIO 44145
TEL: (440) 835-9400 FAX: (440) 835-9474
E-MAIL: contactus@rewarner.com
WEBSITE: www.rewarner.com

5-9-08

APPENDICES

1.0 PURPOSE

Ross Incineration Services, Inc. (RIS) replaced the existing Sperry filter press with a functionally equivalent JWI filter press. This was done as preventative maintenance because the existing press is nearing the end of its life cycle. RIS uses a filter press to process / dewater sludge from the agitator sludge tank, maintenance storage tank and / or the clarifier. Ohio hazardous waste regulations require that the design and installation of the replacement filter press be certified by an independent, qualified registered professional engineer per OAC Rules 3745-57-91 and 3745-55-92. Therefore, RIS contracted R.E. Warner & Associates, Inc. (R.E. Warner) to review and certify the design and installation of this filter press system in compliance with these Rules.

2.0 REVIEW AND INSPECTION OF FILTER PRESS

The following table lists specifications of the existing and replacement presses:

	Existing Filter Press	Replacement Filter Press
Dimensions	4 ft. x 4 ft. x 13.5 ft.	6.33 ft. x 4.58 ft. x 23.33 ft.
Unit Type	Recessed Plate	Recessed Plate
Closure mechanism	Hydraulic	Hydraulic
Holding Capacity	30 cubic feet per batch = 224 gallons	64 cubic feet per batch = 479 gallons
Plate Size	36 inch square	47 inch square
Number of plates	2 cast iron (or equivalent) slide head plates, plus 38 polypropylene (or equivalent) press plates	2 polypropylene (or equivalent) head plates, plus 69 polypropylene (or equivalent) press plates
Maximum feed pressure	100 pounds per square inch	100 pounds per square inch
Maximum Treatment Capacity	111,000 gallons per day	111,000 gallons per day

The replacement press will process the same waste as the existing press and use the same filter cloth material. This will result in filter cake having the same characteristics as that which is currently generated. The feed system and ancillary equipment (previously certified) for the filter press are identified below and will remain unchanged:

- Two 5,000 gallon sludge tanks with level indication (supplied from treatment facility pumps / piping);
- An air diaphragm pump and supply piping to the filter press;
- Filtrate collection sump and sump pump for return of filtrate to closed loop system or transfer to tanker for off-site disposal.

These components are located in the Filter Press / Caustic Building which includes secondary containment (previously certified) with a collection sump for these tanks. The previous certifications are available for review at RIS. See Appendix A for the filter press process and instrumentation diagram, the building general arrangement drawing and filter press platform / walkway drawings.

Prior to commissioning the replacement filter press, a physical inspection has been performed to identify and remedy any structural damages (i.e. weld breaks, punctures, cracks, etc). The support structure has been inspected and is designed to adequately support the full load of the new filter press. The replacement press also was pressure tested as indicated on attached Pressure Test Report, and all gaskets/seals were replaced as necessary.

The operation of the replacement press and system will not differ from the current operations.

3.0 CONCLUSION

The replacement filter press has sufficient structural integrity, is acceptable for treatment of hazardous waste (i.e. sludge from RIS's closed loop scrubber water system) and is properly designed and installed.

4.0 CERTIFICATION STATEMENT

Meets requirements of OAC 3745-50-42(D)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Brian Emery

4-3-08
Date

BRIAN J. EMERY, P.E.
SENIOR PROCESS ENGINEER
R.E. Warner & Associates, Inc.
LA OFFICE PLAZA II, SUITE 200
25777 DETROIT ROAD
WESTLAKE, OHIO 44145
(440) 835-9400

P.E. License Number 72492
P.E. Stamp

4-7-08

5-9-08

APPENDIX A

FILTER PRESS SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

FILTER PRESS BUILDING GENERAL ARRANGEMENT (SECONDARY CONTAINMENT)

FILTER PRESS WALKWAY

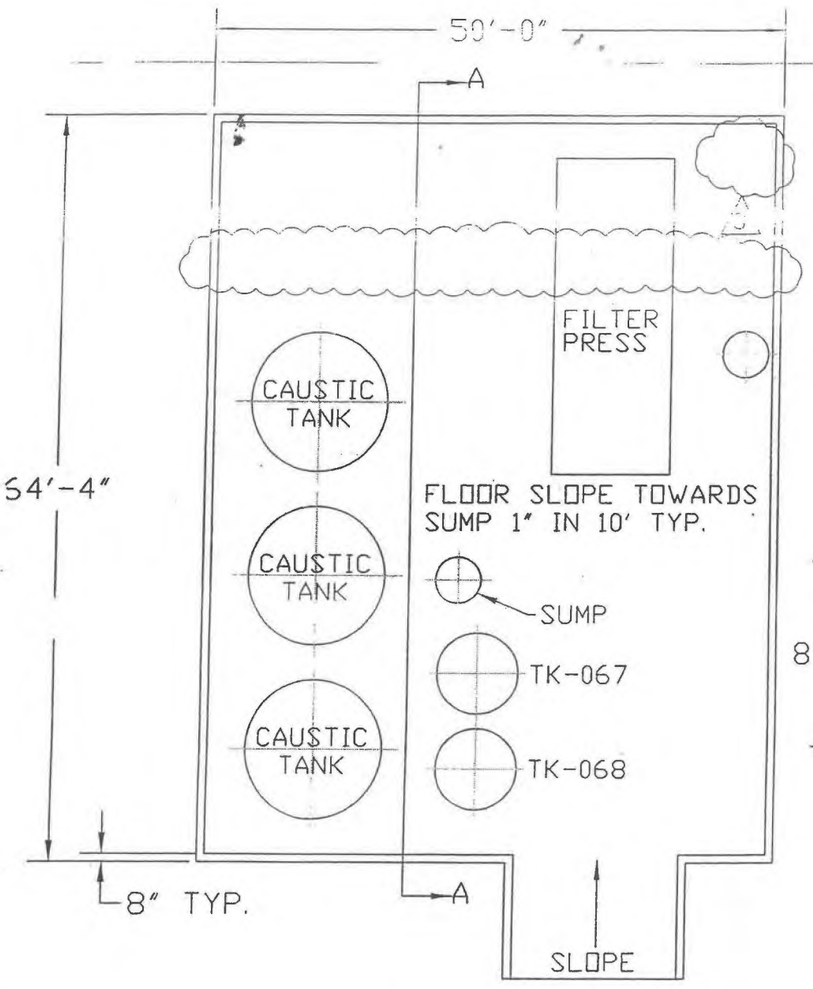
Filter Press System P&ID Drawing No.
B-62-001, Rev. 8 was previously provided
in Attachment 2 of RIS' March 25, 2008
Class 1 Permit Modification Request to The
Ohio Environmental Protection Agency

5-9-08

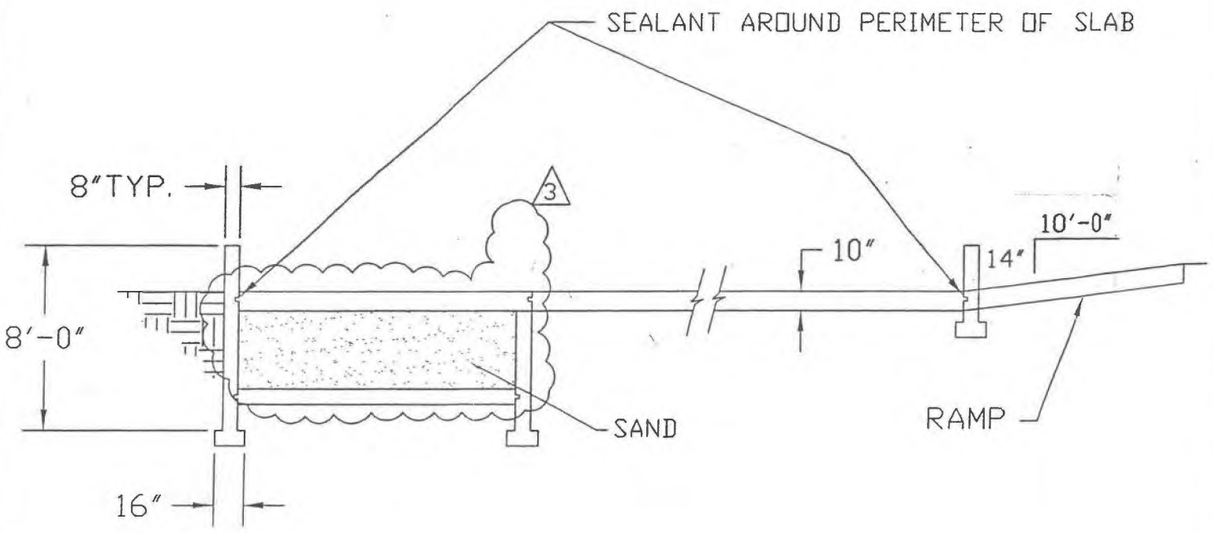
GENERAL NOTES:

1: TANK CAPACITY IN GALLONS:
FILTER PRESS FEED ~~TANKS~~
TK-067 & TK-068 = 5,000

2: SECONDARY CONTAINMENT:
COATED CAPACITY = 23,070 GALLONS (NOMINAL)
PROTECTIVE COATING BY CARBOLINE CO.:
PRIMER COAT - PHENOLINE 379 ORANGE OR EQUAL
FINISH COAT - PHENOLINE 379 FINISH GREY OR EQUAL



PLAN VIEW
SCALE: 1/8" = 1'-0"



SECTION A - A
SCALE: 1/4" = 1'-0"

FILTER PRESS BLDG.

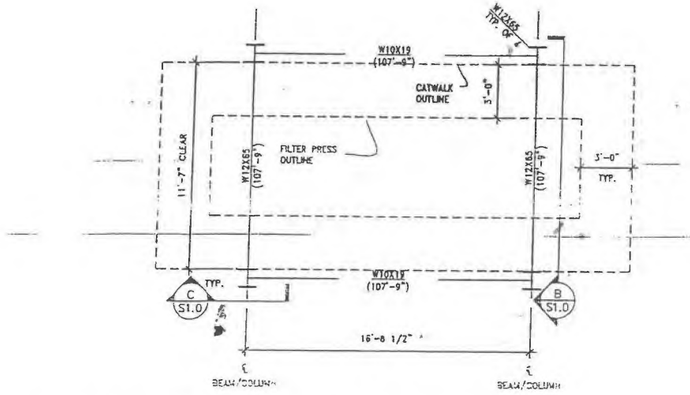
REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	GENERAL REVISION	DRD	9/92		
2	GENERAL REVISION	JF	9/94		
3	GENERAL REVISION	JF	7/01		
4	GENERAL REVISION	RZ	2/08		
5					
6					
7					
8					
9					
10					

ROSS®

DRAWN DRD DATE 1/91 | SUPERSEDES
CHECKED X DATE X | SUPERSEDED BY
APPROVED X DATE X | SCALE AS NOTED

36790 GILES ROAD
GRAFTON, OHIO 44044

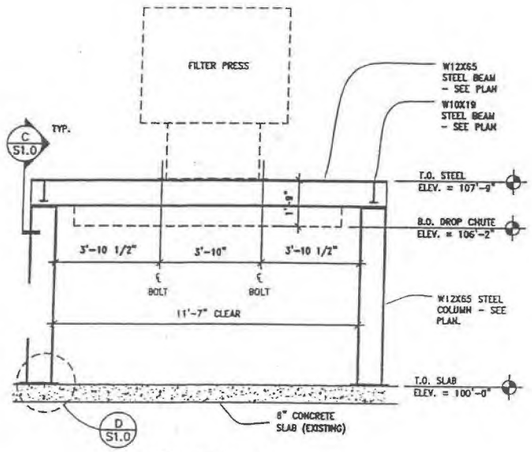
PROJECT NO. X
PROJECT NAME X
X
DWG. TITLE SECONDARY CONTAINMENT
FOR FILTER PRESS BLDG.
X
CORPORATION X
DWG. NO. C-90-103 REV. 4



A S1.0 FILTER PRESS SUPPORT FRAMING PLAN
1/4" = 1'-0"

FRAMING NOTES

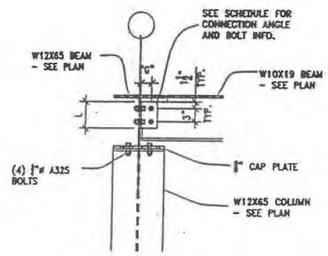
1. DESIGN LOADS: FILTER PRESS WEIGHT = 23,900 LB
   CATWALK DEAD LOAD = 10 PSF
   CATWALK LIVE LOAD = 60 PSF
2. FRAMING ON THIS PLAN HAS BEEN DESIGNED TO ACCOMODATE LOADS IMPOSED BY A FILTER PRESS AND A CATWALK PLATFORM (SEE ABOVE). CATWALK FRAMING IS NOT DESIGNED BY LEWIS ENGINEERING.
3. TOP OF SLAB ELEVATION = 100'-0".
   TOP OF STEEL ELEVATION = 107'-9" UNLESS NOTED OTHERWISE ON PLAN.
4. ALL STEEL TO BE HOT DIP GALVANIZED AFTER FABRICATION.
5. SEE GENERAL STRUCTURAL NOTES FOR MORE INFORMATION.



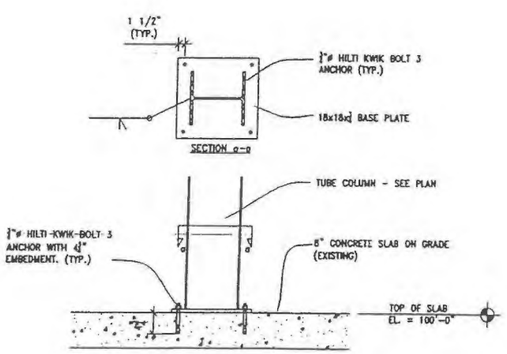
B S1.0 SECTION
3/8" = 1'-0"

CONNECTION SCHEDULE

BEAM SIZE	CONNECTION ANGLES (x2)	ANGLE LENGTH	QTY. BOLTS	BOLT DIA.	BOLT TYPE	GAGE "G"
W12	L4x4x¼	6"	6	3/4"	A325	2 1/2"



C S1.0 TYP. BEAM TO COL. CONN.
3/4" = 1'-0"



D S1.0 TYP. COL. BASE
3/4" = 1'-0"

STRUCTURAL NOTES:

A. GENERAL

1. THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE BUILDING IS FULLY COMPLETED. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE BUILDING AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, SHEETING, TEMPORARY BRACING, GUYS OR TIEDOWNS WHICH MIGHT BE NECESSARY. SUCH MATERIAL SHALL REMAIN THE CONTRACTOR'S PROPERTY AFTER THE COMPLETION OF THE PROJECT.
2. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
3. EQUIPMENT FRAMING LOADS, OPENINGS AND STRUCTURE IN ANY WAY RELATED TO HVAC, PLUMBING, OR ELECTRICAL REQUIREMENTS ARE SHOWN FOR BIDDING PURPOSES ONLY. CONTRACTOR SHALL OBTAIN APPROVAL OF THE INVOLVED TRADES BEFORE PROCEEDING WITH SUCH PORTION OF THE WORK. EXCESS COST RELATED TO VARIATION IN THESE REQUIREMENTS TO BE BORNE BY THE APPROPRIATE CONTRACTOR.
4. SHOULD ANY OF THE DETAILED INSTRUCTIONS SHOWN ON THE PLANS CONFLICT WITH THESE STRUCTURAL NOTES, THE SPECIFICATIONS, OR WITH EACH OTHER, THE STRICTEST PROVISION SHALL GOVERN
5. ALL DIMENSIONS AND ELEVATIONS SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE VERIFIED BY THE CONTRACTOR AND SHALL CONFORM TO THOSE SHOWN ON THE ARCHITECTURAL DRAWINGS

B. GOVERNING CODE: 2007 OHIO BUILDING CODE

1. DESIGN GRAVITY LOADS
   A. FILTER PRESS WEIGHT = 23,900 lbs.
   B. CATWALK PLATFORM LIVE LOAD = 60 psf.
   C. CALTWAL PLATFORM DEAD LOAD = 10 psf
2. EARTHQUAKE DESIGN DATA
   A. OCCUPANCY CATEGORY = II
   B. SEISMIC IMPORTANCE FACTOR (Ie) = 1.0
   C. SPECTRAL RESPONSE ACCELERATION (Ss) = .164
   D. SPECTRAL RESPONSE ACCELERATION (S1) = .051
   E. SITE CLASS = D
   F. SPECTRAL RESPONSE COEFFICIENT (Sms) = .175
   G. SPECTRAL RESPONSE COEFFICIENT (Sm1) = .082
   H. SEISMIC DESIGN CATEGORY = B
   J. SEISMIC FORCE RESISTING SYSTEM = CANTILEVERED COLUMNS
   K. DESIGN BASE SHEAR V = 3.04 KIPS
   L. SEISMIC RESPONSE COEFFICIENT Cs = .117
   M. RESPONSE MODIFICATION FACTOR R = 1.5
   N. ANALYSIS PROCEDURE = EQUIVALENT LATERAL FORCE

D. STRUCTURAL STEEL

1. MATERIALS (UNLESS NOTED OTHERWISE ON PLANS):
   A. "W" SHAPES: ASTM A992, Fy = 50 ksi.
   B. CHANNELS: ASTM A36, Fy = 36 ksi.
   C. ANGLES, PLATES, BOOS, & BARS: ASTM A36.
   D. STRUCTURAL PIPES: ASTM A53, Fy = 35 ksi.
   E. STRUCTURAL TUBES: ASTM A500, Fy = 46 ksi.
   F. WELDING ELECTRODES: SERIES E70.
   G. HIGH STRENGTH BOLTS: ASTM A325.
   H. ANCHOR BOLTS: ASTM A307 OR A36.
   I. EXPANSION BOLTS: HILTI KWIK BOLT 3, OR EQUAL.
2. SPECIFICATIONS: WELDING PERSONNEL AND PROCEDURES ARE TO BE QUALIFIED PER AWS D1.1. UNLESS SPECIFICALLY SHOWN OTHERWISE, DESIGN, FABRICATION AND ERECTION TO BE GOVERNED BY:
   A. AISC ASD SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS (JUNE 1, 1989).
   B. AISC CODE OF STANDARD PRACTICE (MARCH 7, 2000).
   C. STRUCTURAL WELDING CODE, AWS D1.1-2002 OF THE AMERICAN WELDING SOCIETY.
   D. SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS (JUNE 23, 2000).
3. CONNECTIONS:
   A. FIELD CONNECTIONS TO BE BOLTED. SHOP CONNECTIONS TO BE WELDED OR BOLTED. CONNECTIONS TO BE DESIGNED BY THE FABRICATOR TO DEVELOP FULL STRENGTH OF MEMBER.
      FOLLOW INSTRUCTIONS ON DRAWINGS FOR GENERAL ARRANGEMENT OR PARTICULAR DETAILS. FIELD CONNECTIONS TO BE BOLTED. SHOP CONNECTIONS TO BE WELDED OR BOLTED.
   B. FULL PENETRATION AND PARTIAL PENETRATION FIELD WELDS IN MATERIAL OVER 5/16 INCH THICK SHALL BE SUBJECT TO NON-DESTRUCTIVE TESTING (OTHER THAN VISUAL INSPECTION) BY AN INDEPENDENT LABORATORY.
   C. ALL BOLTS IN BRACED FRAMES AND BOLTS IN SHEAR CONNECTIONS USED IN CONJUNCTION WITH FULL PENETRATION FLANGE WELDS SHALL BE SLIP CRITICAL (FRICTION) TYPE.
4. GALVANIZING: ALL STEEL TO BE HOT-DIP GALVANIZED AFTER FABRICATION.
6. MISCELLANEOUS:
   A. PROVIDE HEAVY WASHER AT ALL ANCHOR BOLTS.
   B. FINISH ENDS OF ALL COLUMNS, STIFFENERS AND ALL OTHER MEMBERS IN DIRECT BEARING.
   C. EMBEDMENT LENGTH OF EXPANSION BOLTS INTO CONCRETE (IF NOT SHOWN ON DRAWINGS) SHALL BE AS FOLLOWS:
      1/2 INCH DIAMETER BOLTS --- 3½ INCHES EMBEDMENT
      3/4 INCH DIAMETER BOLTS --- 5½ INCHES EMBEDMENT

LEWIS ENGINEERING, INC
CONSULTING STRUCTURAL ENGINEERS
2000 W. HENDERSON RD., SUITE 5
Columbus, Ohio 43220
(614) 326-2806 (Phone)
(614) 326-2805 (Fax)

J.P.
5-9-08

REV #	DATE	DESCRIPTION

JOB #	08L094
DRAWN BY	RDH
CHK'D BY	BMD
ISSUE DATE	3/26/2008

FRAMING PLAN AND DETAILS

ROSS INCINERATION SERVICES, INC.
37690 GILES ROAD
GRAFTON, OHIO, 44044

S1.0

5-9-08

APPENDIX B

INSTALLATION AND OPERATION INSTRUCTIONS

FOR THE JWI FILTER PRESS

5-9-08

COPY

FILTER PRESS

INSTRUCTION MANUAL

SERIAL NO. 3062

JWI, INC.
2155 112th Avenue
Holland, MI 49423
(616) 772-9011

WARNING

PROTECTIVE EYEWEAR MUST BE WORN AT ALL TIMES DURING OPERATION OF THIS MACHINE.

WARNING

DO NOT OPERATE THIS MACHINE WITHOUT ALL SAFETY DEVICES IN PLACE.

5-9-08

JWI FILTER PRESS MANUAL

TABLE OF CONTENTS

5-9-08

JWI FILTER PRESS SPECIFICATIONS

MODEL NUMBER.....IZOOG25-67-60SA

SERIAL NUMBER.....3062

TOTAL VOLUME - CU.FT.....60

VOLUME/CHAMBER - CU.FT.....90

TOTAL AREA - SQ.FT.....1563

NUMBER OF CHAMBERS.....67

OVERALL LENGTH OF PRESS.....265 1/2"

OVERALL WIDTH OF PRESS.....60"

CLEARANCE - FLOOR TO PLATES.....26"

PLATE SIZE - INCHES.....47.2

- MM.....1200

PLATE STYLE.....GASKETED

GASKET STYLE.....O'RING

FILTER CLOTH.....#46210-6

CLOSING DEVICE.....AIR POWERED HYD. PUMP

CONTROL LOCATION.....LEFT HAND

AIR SUPPLY REQUIRED - MAXIMUM.....28 CFM

HYDRAULIC CLOSING PRESSURE.....~~3500~~ 2900

RELIEF VALVE SETTING - PSI.....~~3900~~ 3300

HYDRAULIC RESERVOIR CAPACITY.....15 GALLONS

HYDRAULIC OIL RECOMMENDED.....QUALITY BRAND-HYD. OIL

HYDRAULIC CYLINDER - SIZE.....10" BORE 30" STROKE

- TYPE.....PARKER

MAXIMUM INLET FEED.....100 PSI

DISCHARGE MANIFOLD (STYLE).....AIR

OPTIONS: AUTOGLIDE, BACK UP PLATE, AUTO PUMP CONTROL SYSTEM

5-9-08

JWI FILTER PRESS SPECIFICATIONS

MODEL NUMBER _____

SERIAL NUMBER _____

Total Volume - Cu. Ft. . . . . .

Volume/Chamber - Cu. Ft. . . . . .

Total Area - Sq. Ft. . . . . .

Number of Chambers . . . . . .

Overall Length of Press . . . . . .

Overall Width of Press . . . . . .

Clearance - Floor to Plates . . . . . .

Plate Size - Inches . . . . . .

MM . . . . . .

Plate Style . . . . . .

Gasket Style . . . . . .

Filter Cloth . . . . . .

Closing Device . . . . . .

Control Location . . . . . .

Air Supply Required - Maximum . . . . . .

Hydraulic Closing Pressure Max. PSI . . . . . .

Relief Valve Setting - PSI . . . . . .

Hydraulic Reservior Capacity . . . . . .

Hydraulic Oil Recommended . . . . . Quality Brand-Hyd. Oil

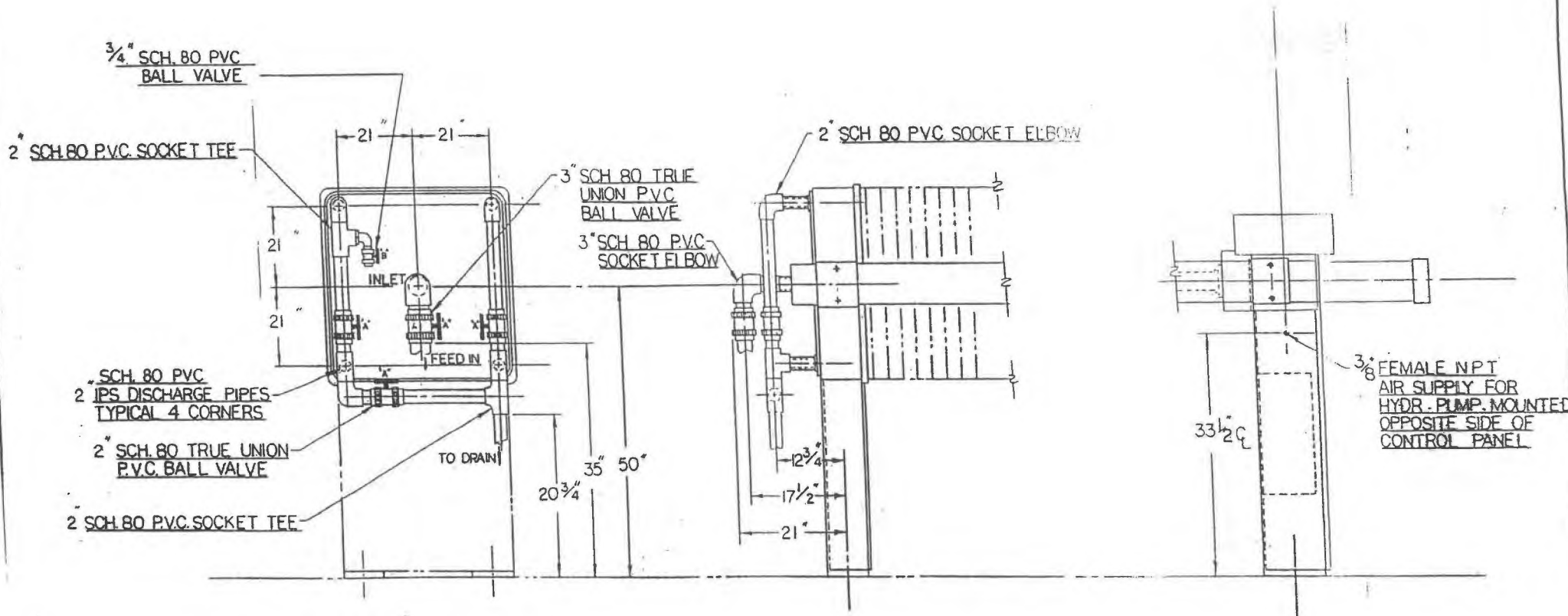
Hydraulic Cylinder - Size . . . . . .

Type . . . . . .

Maximum Inlet Feed Pump Pressure . . . . . .

Discharge Manifold (Style) . . . . . _____

Options



"A" VALVES – OPEN DURING FEED
CLOSED DURING AIR BLOW DOWN

"B" VALVE – CLOSED DURING FEED
OPEN DURING AIR BLOW DOWN

NOTE: AT END OF AIR BLOW DOWN, "A" VALVES (EXCEPT INLET FEED) SHOULD BE OPENED FOR A FEW MINUTES TO DRAIN THE PLATES PRIOR TO OPENING THE PRESS.

AIR BLOW DOWN MANIFOLD
CENTER FEED - FOUR CORNER DISCHARGE
POLYPROPYLENE PLATES

JWI INC.

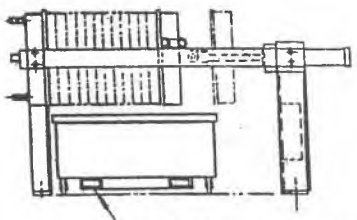
AIR BLOW DOWN MANIFOLD
1200 MM FILTER PRESS

JWI 12/87

PLATES TO BE CENTER FEED 4 CORNER DISCHARGE. PLATES OF POLYPROPYLENE GASKETED CONSTRUCTION WITH $\frac{5}{8}$" RECESSES FOR $1\frac{1}{4}$" THICK CAKES

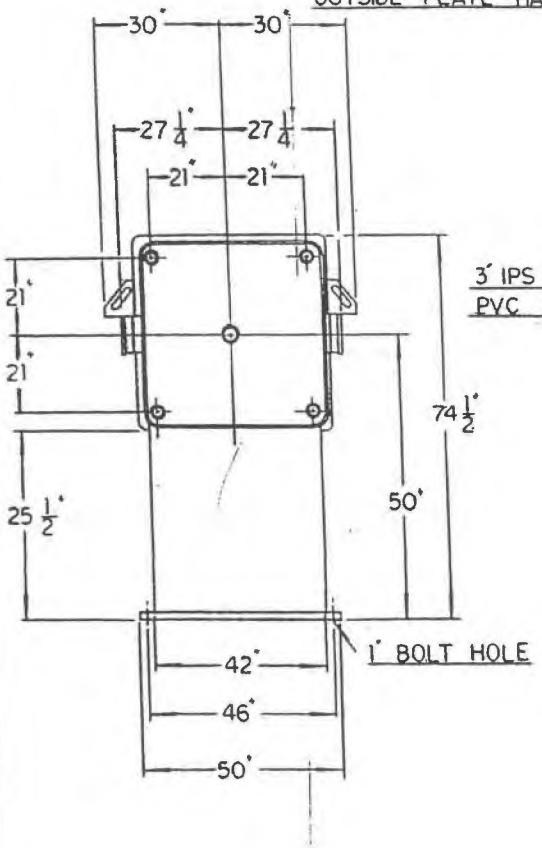
48 SIZE (1200 MM) FILTER PRESS					
CUBIC FEET	A	B	C	D	NO. OF CHAMBERS
40	202	159	147	84	33
45	211 1/2	168 1/2	156 1/2	93 1/2	37
50	221 1/2	178 1/2	166 1/2	103 1/2	41
60	243 1/2	200 1/2	188 1/2	125 1/2	50
75	273	230	218	155	62
100	324	281	269	206	83

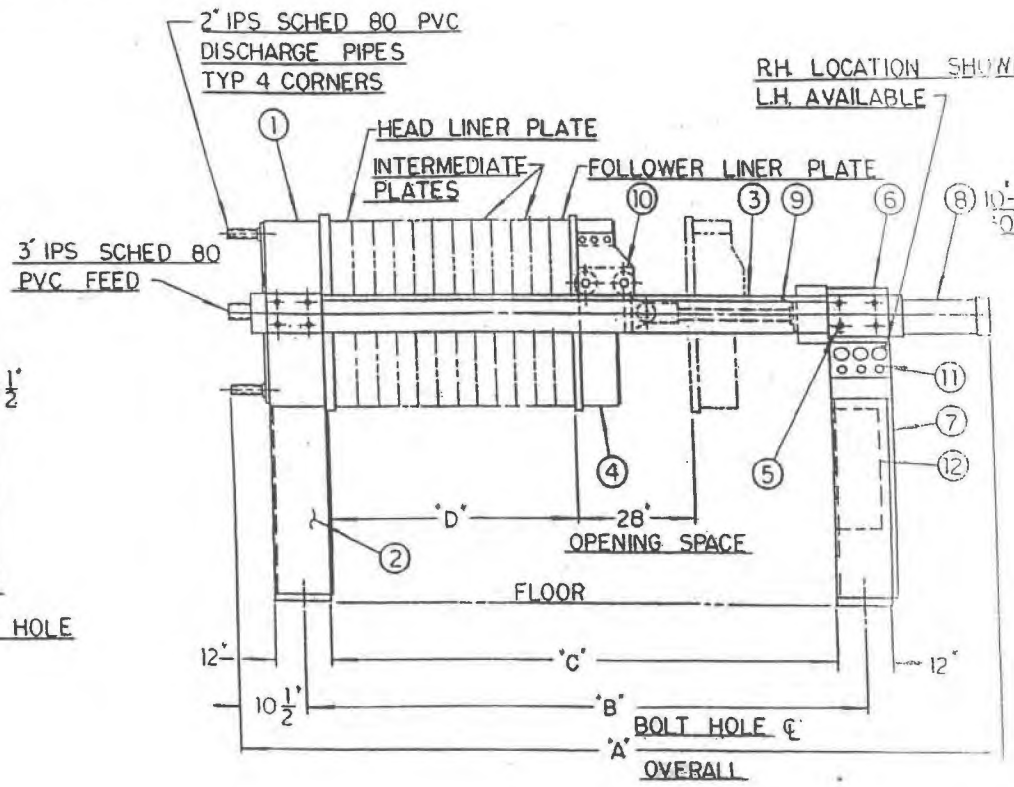
ITEM NO	QUAN	DESCRIPTION
1	1	HEAD
2	1	HEAD LEG
3	2	SIDE BAR
4	1	FOLLOWER
5	4	JOGGLE PLATE
6	1	CYLINDER BRACKET
7	1	CYLINDER BRACKET LEG
8	1	CYLINDER
9	2	S.S. SIDE BAR CAPS
10	4	FOLLOWER ROLLER
11	1	CONTROL CENTER
12	1	HYDRAULIC PUMPING UNIT



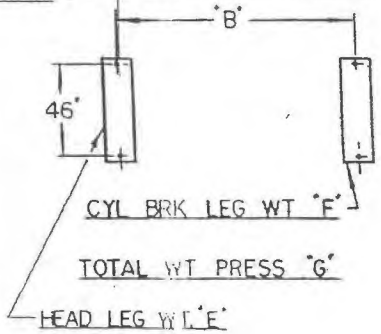
FILTER CAKE DUMPSTER (SELF DUMPING) OPTIONAL

OUTSIDE PLATE HANDLES





WEIGHT IN POUNDS			
CUBIC FEET	E	F	G
40	11600	7800	19400
45	12300	8200	20500
50	12800	8600	21400
60	14040	9360	23400
75	16200	10800	27000
100	19560	13040	32600

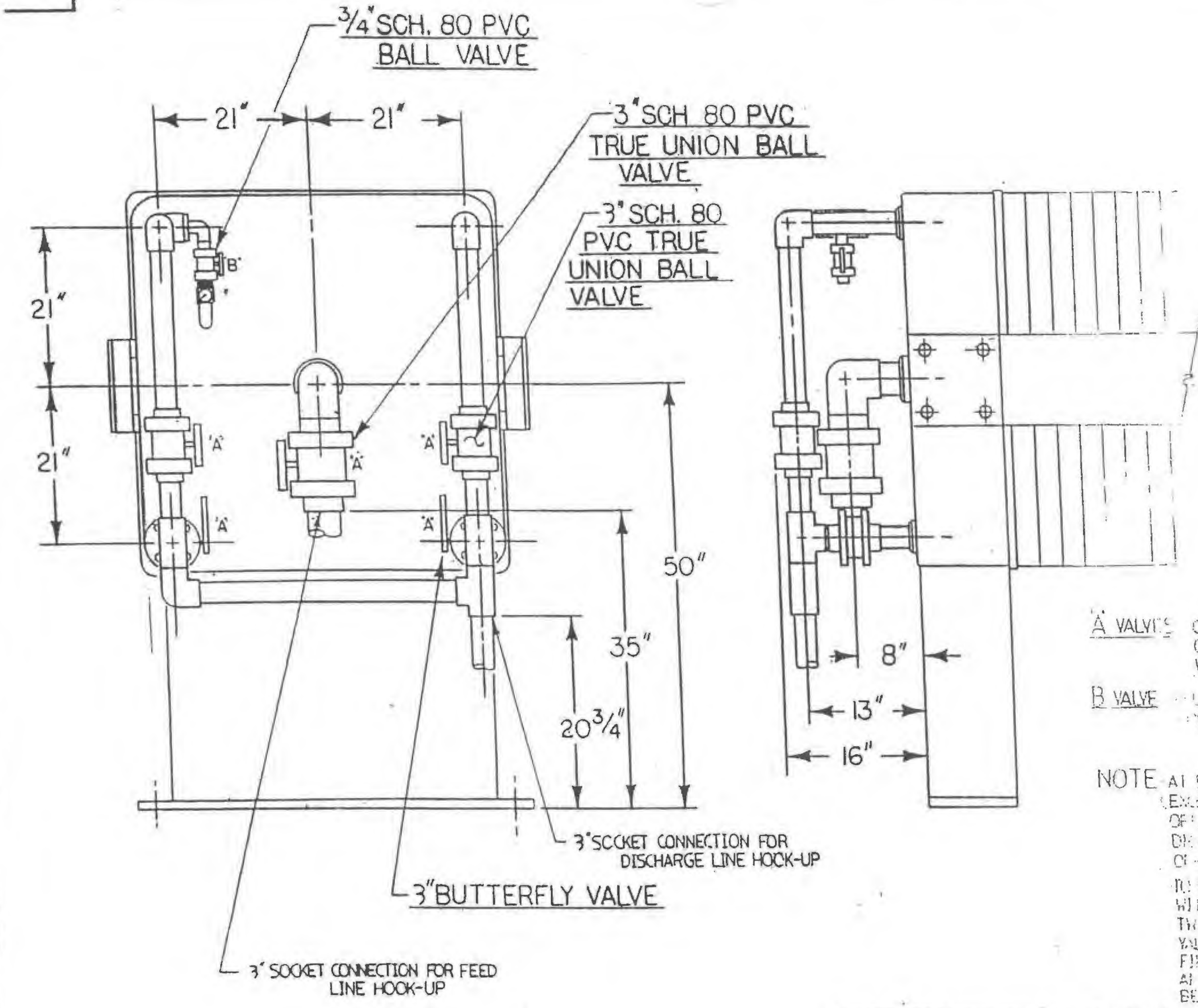


FOUNDATION DIMENSIONS ARE FOR BASIC LAYOUT ONLY. GROUT BOLT ONLY AFTER INSTALLATION OF PRESS

JWI
10-4-84
1200MM (48")
FILTER PRESS
W/O / SHIFTER

JWI 1.12
12/87

5-9-08



'A' VALV:S OPEN DURING FEED
CLOSED DURING AIR BLOWDOWN, WITH EXCEPTION OF LOWER RIGHT

B VALVE LOSED DURING FEED
PEN DURING AIR BLOWDOWN

NOTE AT END OF AIR BLOWDOWN, 'A' VALVES (EXCEPT INLET FEED) SHOULD BE OF NED FOR A FEW MINUTES TO DR IN THE PLATES PRIOR TO O NING THE PRESS

TO ENSURE EVEN FILLING, ON PRESSES WITH MORE THAN 50 CHAMBERS, THE TWO LOWER DISCHARGE BUTTERFLY VALVES MUST BE CLOSED FOR THE FIRST 10 MINUTES OF THE FILL CYCLE AFTER WHICH TIME THEY MUST BE OPEN

* OPTIONAL: AIR REGULATOR W/GAUGE IS SHIPPED UNATTACHED

AIR BLOWDOWN MANIFOLD
CENTER FEED-FOUR CORNER DISCHARGE
POLYPROPYLENE PLATES

DO NOT SCALE

CHK BY	CHG. BY	SYM.	DESCRIPTION	A.C.R.	DATE

JWI

DRAWN | CHECKED | REV.

TITLE: 1200MM AIR BLOW MANIFOLD

DWG. NO. | SHT. | OF

J.P.
5-9-08

SET UP INSTRUCTIONS

The JWI filter press is normally shipped completely assembled and pre-tested.

CAUTION: Use care in handling the filter press so as not to damage any components such as discharge extension pipes, plate handles, or hydraulic system.

1. Mount the filter press level to floor, platform, or extension legs through the base holes provided. NOTE: Press must be clamped up and square before exact dimension can be established. (See enclosed drawing)

2. Connect center inlet pipe to discharge of feed pump. (See enclosed filter press or manifold drawing)

3. Install drain pipe to bottom outlet of discharge manifold. (See enclosed manifold drawing) IMPORTANT! Be sure outlet of drain pipe is below level of discharge manifold outlet.

4. If optional air blowdown manifold is used, connect air supply as shown on manifold drawing. Use regulated air pressure 50 PSI maximum.

Automatic Closure Models Only

Connecting Air Supply

Air supply to the JWI filter press should be clean, dry air at 125 PSI maximum.

NOTE: An air line drying system should be installed if high levels of moisture are present in your air supply. This will prevent extensive damage to the air circuit components in the system.

1. Connect air supply, using a minimum 3/8" I.D. pipe, to fitting marked air inlet located at hydraulic cylinder end of filter press. NOTE: Use shut off valve in air line prior to filter press; air filter and regulators are incorporated within the filter press system.

JF
5-9-08

OPERATION OF A FILTER PRESS

AUTOMATIC CLOSURE

JWI uses an air over hydraulic system to open and close the filter press. To close the filter press, air pressure is applied to the hydraulic fluid reservoir, forcing hydraulic fluid into the rear of the hydraulic cylinder, rapidly extending the ram. The hydraulic pump is then turned on to reach the maximum closing pressure. To open the filter press the hydraulic pressure is released thru a pilot operated valve. Air pressure is directed to the front of the hydraulic fluid back to the reservoir tank.

To Close Filter Press

1. With air supply connected to filter press, line air pressure will register on gauge.

2. Turn selector switch to close position.

3. Turn air supply switch to on position. Regulated air pressure will register on gauge. Hydraulic cylinder will extend, closing the press.

4. Leave open-close selector switch in close position. With ram fully extended, turn hydraulic pump switch to on position. Leave hydraulic pump switch in on position when press is in operation. The hydraulic pump will engage, developing maximum closing pressure on hydraulic gauge.
   NOTE: Small amounts of air excaping momentarily from the hydraulic pump prior to stroking is normal. If maximum hydraulic pressure (see specification page one) is not reached, follow the instructions titled "Regulated Air Pressure" on page 8.

5. Open inlet valve and start feed pump. With air diaphragm feed pump cycling will slow as press becomes filled. With press completely filled, feed pump will stall. This usually occurs within 2 hours.

6. Turn off feed pump. This is done by shutting off its air supply.

7. Air blowdown (optional). Maximum pressure is 40 PSI.

   a. Close center inlet valve on line from feed pump.
   b. Close the three valves on discharge manifold. (See diagram #3.)
   c. Open air valve on discharge manifold expelling any water left in the press (approximately 2 minutes or longer).
   d. Close air valve.
   e. Open the three valves on discharge manifold. Leave inlet valve closed. This will allow gravity drainage of press (approximately 2 minutes).

J,P

5-9-08

REGULATED AIR PRESSURE

A. The regulated air pressure to the hydraulic pump is proportionate to the hydraulic output pressure in an air to hydraulic ratio of 1 - 71. The air pressure regulator is mounted in the upper section of the pump cabinet (round, black knob) on the air line adjacent to the hydraulic pump. Regulated air pressure will be indicated on the control panel gauge.
NOTE: Do not confuse this regulator with the pilot air regulator which is mounted below the hydraulic pump regulator. The pilot air regulator should read approximately 80 PSI on the accompaning gauge and is used only for pilot air supply.

B. With filter press tightly closed, increase air pressure clockwise until maximum hydraulic pressure (see specifications sheet) is indicated on hydraulic pressure gauges. NOTE: A preset hydraulic pressure relief valve at the pump will not allow pressure to exceed maximum limit. If hydraulic pressure does not reach approximate maximum, see hydraulic pump section.

C. If pump has reached maximum pressure but continues to cycle, decrease air pressure until the pump stalls, yet maintains maximum hydraulic pressure.

D. With air pressure set, push in outer ring on regulator knob to lock in position.

E. The air powered hydraulic pumping unit is designed to maintain a constant hydraulic pressure using no air consumption. The pump will automatically start and stop to maintain the preset pressure. (See hydraulic pump section.)

APPROXIMATE AIR USAGE FOR STANDARD J-PRESS®

(Press only, does not include feed pump)

Function and Max. Pressure	Approx. SCFM/Number of Minutes Cu. Ft. Press Size						
	.6 to 1.5	2 to 5	6 to 10	11 to 20	21 to 35	36 to 60	61 to 100
Closing @ 100 PSI*	N/A	25 / 1 Min.	25 / 1 Min.	30 / 2 Min.	30 / 2 Min.	30 / 3 Min.	30 / 3 Min.
Opening @ 100 PSI	N/A	25 / 1 Min.	25 / 1 Min.	30 / 1 Min.	30 / 1 Min.	30 / 1 Min.	30 / 1 Min.
Air Blowdown @ 40 PSI**	2 to 5 / 5 Min.	5 to 15 / 5 Min.	15 to 25 / 5 Min.	25 to 50 / 5 Min.	50 to 90 / 5 Min.	90 to 150 / 5 Min.	150 to 250 / 5 Min.
Shifter @ 50 PSI***	N/A	N/A	2 / 5 Min.	2 / 10 Min.	3 / 15 Min.	4 / 20 Min.	4 / 30 Min.

*A static pressure of 60 to 80 PSI with little or no consumption is required during press filling cycle.

**Approximation only. Actual consumption based on cake porosity and other variables.

***Based on approximate total cleaning time.

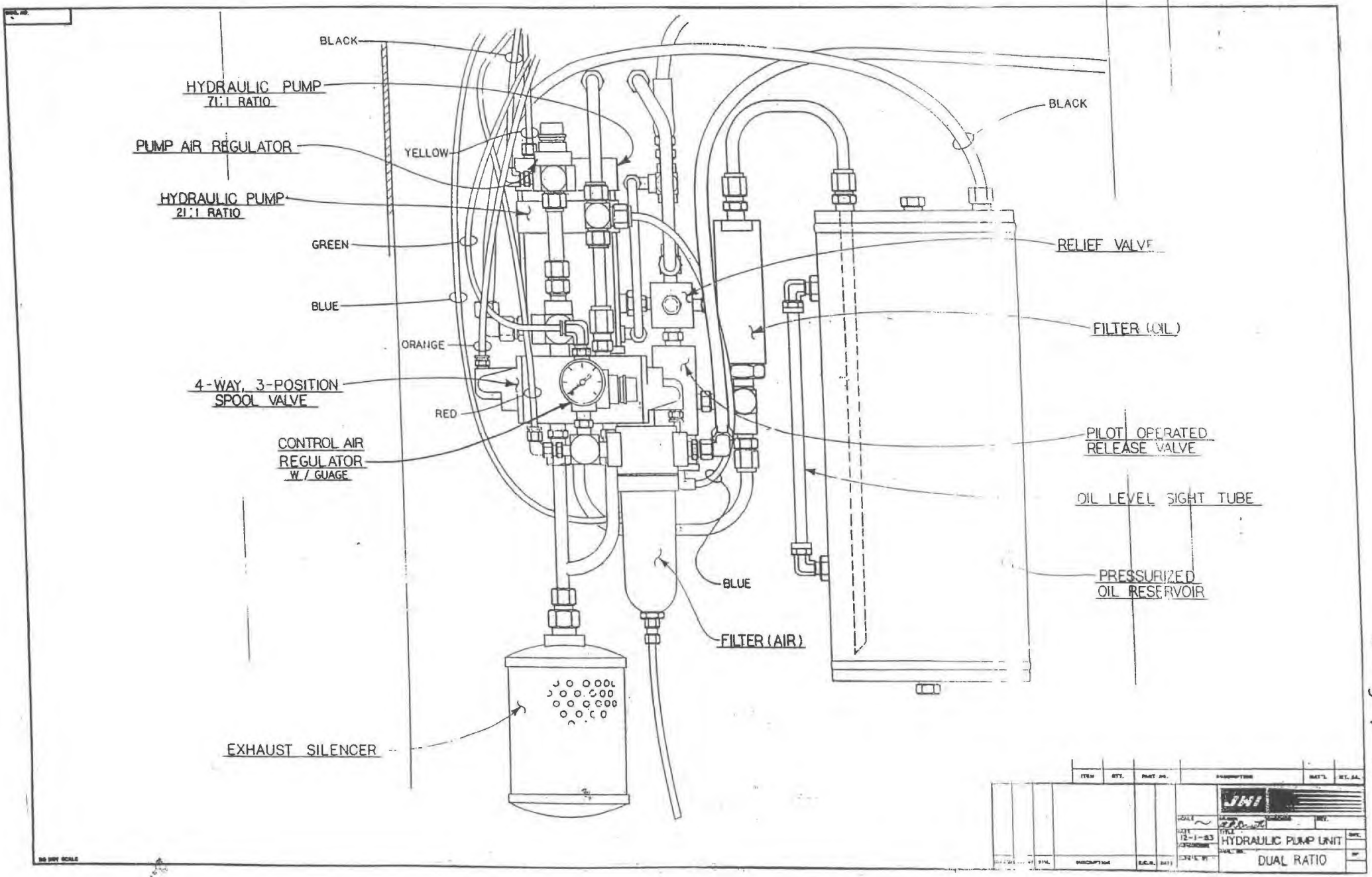
JWI 3.03
12/84

J-P
5-9-08

J.P
5-9-08

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Pump will not cycle.	1. Inadequate air supply.	1. Check air pressure and clear air system parts.
	2. Air filter plugged.	2. Check air regulator (see air regulator section).
	3. Air valve off.	3. Check air regulator (see air regulator section).
	4. Restriction in air line.	4. Check air regulator (see air regulator section).
	5. Pump seals bad.	5. Rebuild pump.
Pump cycles without building pressure or deadheading.	1. Check-valve in pump body malfunctions.	1. Clean, inspect and replace, if necessary.
	2. Low reservoir level.	2. Fill reservoir with oil (see maintenance section.)
	3. Filter plugged.	3. Replace filter.
	4. Bad seals in release valve.	4. Replace seals in release valve.
	5. Bad cylinder seals.	5. Replace cylinder seals.
	6. Bad relief valve.	6. Reset or replace relief valve.
Pump continues to cycle after it has reached maximum hydraulic pressure.	1. Air pressure is set too high.	1. Decrease regulator pressure.
	2. Relief valve is set too low.	2. Set relief valve to maximum pressure.
	3. Malfunction of relief valve.	3. Replace relief valve cartridge.
	4. Failure of hydraulic cylinder seals.	4. Replace seals in cylinder.


BLACK
HYDRAULIC PUMP
71:1 RATIO
PUMP AIR REGULATOR
YELLOW
HYDRAULIC PUMP
21:1 RATIO
GREEN
BLUE
ORANGE
4-WAY, 3-POSITION
SPOOL VALVE
RED
CONTROL AIR
REGULATOR
W/ GUAGE
EXHAUST SILENCER
BLACK
RELIEF VALVE
FILTER (OIL)
PILOT OPERATED
RELEASE VALVE
OIL LEVEL SIGHT TUBE
PRESSURIZED
OIL RESERVOIR
BLUE
FILTER (AIR)
JNI
12-1-83
HYDRAULIC PUMP UNIT
DUAL RATIO

J.R
5-9-08

AIR POWERED HYDRAULIC PUMP

Description

On many applications involving polypropylene filter elements, especially where filtration temperatures are high and wash temperatures are low, it is best to have a closure that compensates for expansion and contraction of the filter stack. During high temperature filtration on a machine with a locked closing system, stack expansion can impose increased stresses on the filter skeleton. A wash with temperatures below ambient causes a subsequent contraction of the filter force. Excessive leakage and/or frame bowing or failure may result from insufficient clamping force.

Air powered hydraulic pumping units, supplied by JWI, Inc., can overcome problems of expansion and contraction of the filter stack simply and reliably. The pumps convert plant air to hydraulic pressure through a simple ratio system that uses a large air piston area at low pressure to produce a high hydraulic pressure on a small area hydraulic piston. Automatic reciprocation is controlled by the action of a pilot operated selector valve in the pneumatic section of the pump.

As the hydraulic output approaches the desired pressure dictated by the air pressure regulator setting, the pump slows down and finally stalls when the hydraulic force balances the air force. Hydraulic force is therefore maintained with no consumption of power.

During filtration operations, the air supply is left on the pump. If stack contraction occurs, hydraulic thrust is reduced, causing an imbalance in the pump. The pump then cycles to restore the hydraulic thrust to the desired setting and once again stalls. Under conditions of stack expansion, hydraulic thrust is increased. The excess hydraulic pressure that results is bled back to the hydraulic reservior through a relief valve, thus maintaining the desired hydraulic thrust.

Dual Ratio Hydraulic System

Description

Dual ratio hydraulic system can be indentified by noting two hydraulic pump units (piggy-back), mounted in the pump cabinet. Filter presses provided with dual ratio hydraulic systems operate in the same manner as a standard single ratio unit. The dual ratio system provides larger volumes of oil to the cylinder during clamping, greatly reducing the time required to close the press.

System Operation

With the pump switch turned to the "on" position, both pumps will start simultaneously. The high volume 21:1 ratio pump will stall out at around 2000 PSI. The standard 71:1 ratio pump will continue operate until maximum closing pressure is reached. The 21:1 ratio pump operates at line air pressure while the 71:1 ratio pump operates on regulated air pressure to control closing pressure.

J.P.
5-9-08

ADJUSTING HYDRAULIC PRESSURES

Instructions for Adjusting Pressure Relief Valve

1. Pressure relief valve setting should be 300 to 400 PSI above maximum hydraulic closing pressure. (See specification Sheet No. 1.00)

2. To prepare relief valve for adjusting, remove cap and washer from adjusting screw. (See drawing no. 6.18)

3. Close press and allow hydraulic pump to build hydraulic pressure. (See Operation Instructions No. 3.00)

4. If air hydraulic pump stalls out before maximum closing pressure is reached, air pump regulator will have to be turned clockwise to increase pressure to air hydraulic pump. This must be done in small intervals, allowing pump to stall between each interval until maximum hydraulic closing pressure is reached.

5. With maximum hydraulic closing pressure reached, turn hydraulic air pump regulator clockwise to increase hydraulic pressure 300 to 400 PSI above maximum hydraulic closing pressure.

6. If air hydraulic pump does not stall and keeps pumping after reaching 300 to 400 PSI above maximum closing pressure, relief valve is operating and is set at proper pressure.

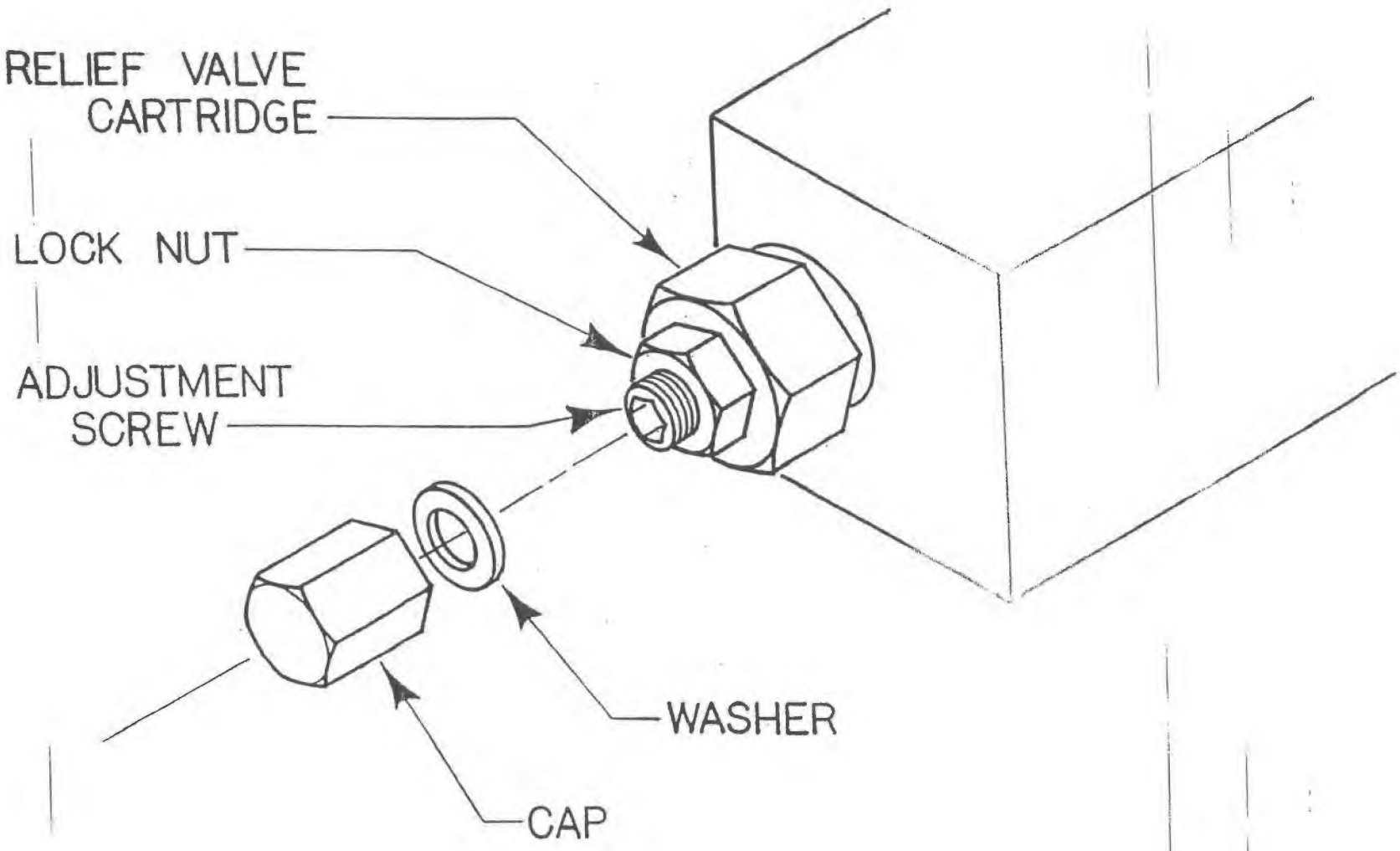
7. If the air hydraulic pump continues to pump and hydraulic pressure does not increase above maximum closing pressure, pressure relief valve setting is too low and must be adjusted.

8. WARNING: If at any time, pressure exceeds 400 PSI above maximum closing pressure for your press, relief valve must be readjusted. Loosen locknut around adjusting screw and back out adjusting screw (counter-clockwise) and proceed with instructions below.

9. To adjust relief valve, loosen locknut and turn screw with a hex key in a clockwise direction while watching hydraulic pressure gauge as pressure increases. Increase pressure to the 300 to 400 PSI above maximum closing pressure for your press as indicated on the specification sheet. Tighten locknut.

10. To check adjustment of pressure relief valve, turn hydraulic pump switch to "off" and drop pressure by momentarily turning selector valve to open position until hydraulic pressure drops to zero on panel gauge. Once pressure has dropped to zero, return selector knob to closed position and turn hydraulic pump on.

11. Allow hydraulic pump to build hydraulic pressure and watch pressure gauge and note at what pressure pump continues to pump, but no longer builds any greater hydraulic pressure.



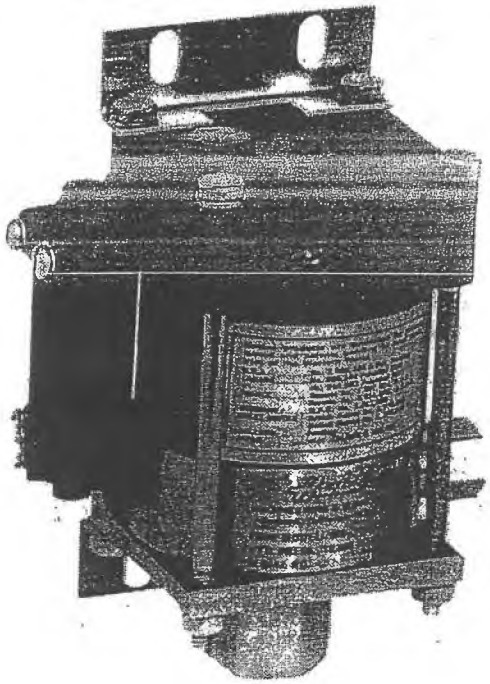
RELIEF VALVE

J.P.
5-9-08

OPERATING and MAINTENANCE INSTRUCTIONS

for

MINIATURIZED AIR DRIVEN HYDRAULIC PUMPS



MODEL NUMBER _____ SERIAL NUMBER _____ DATE _____

WHEN ORDERING REPLACEMENT PARTS ALWAYS INCLUDE THE PUMP SERIAL NUMBER.

WARRANTY

Haskel manufactured products are warranted free of original defects in material and workmanship. This warranty does not include packings, seals, nor failures caused by lack of proper maintenance; incompatible fluids; foreign materials in the driving media; in the pumped media; or application of pressures beyond catalog ratings.

Products believed to be originally defective may be returned for repair and/or replacement to the distributor, authorized service representative, or to the factory. If upon inspection by the factory or authorized service representative, the problem is found to be originally defective material or workmanship, repair or replacement will be made at no charge for labor or materials, F.O.B. the point of repair or replacement. No consequential damages from use of this equipment are covered under the terms of this warranty.

Permission to return under warranty should be requested before shipment and include the following; the original purchase date, purchase order number, serial number, model number, or other pertinent data to establish warranty claim, and to expedite the return or replacement to the owner.

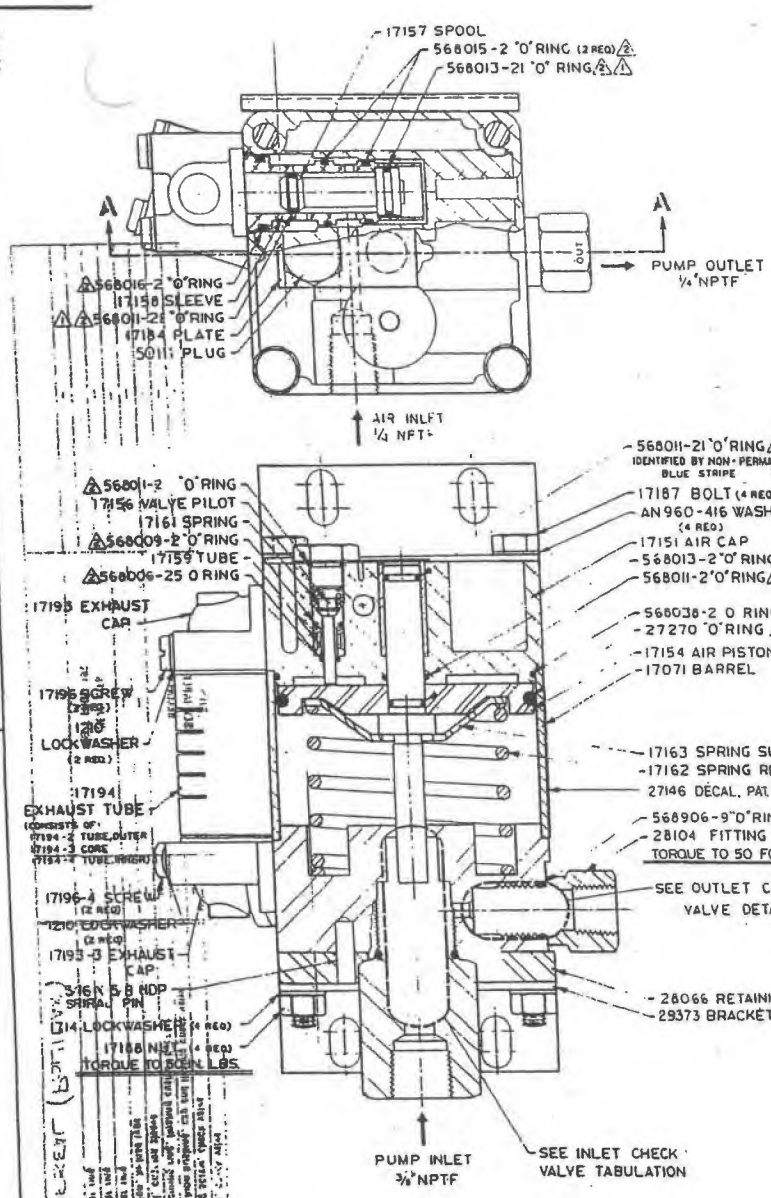
If pump has been disassembled and reassembled in a facility other than Haskel, warranty is void if it has been improperly reassembled or substitute parts have been used in place of factory manufactured parts.

Any modification to any Haskel product which you have made or may make in the future has been and will be made at your sole risk and responsibility, and without Haskel's approval or consent. Haskel disclaims any and all liability, obligation, or responsibility for the modified product; and for any claims, demands, or causes of action for damage or for personal injuries resulting from the modification and/or use of such a modified Haskel product.

NOTE: Warranty period is ONE year from date of manufacture.

Haskel INC.

100 EAST GRAHAM PLACE • BURBANK, CALIFORNIA 91502 • U.S.A.



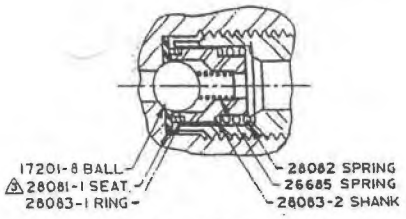
CROSS SECTION A-A

① THESE PARTS ARE INCLUDED IN 17179-XX HYDRAULIC SECTION SEALS KIT.

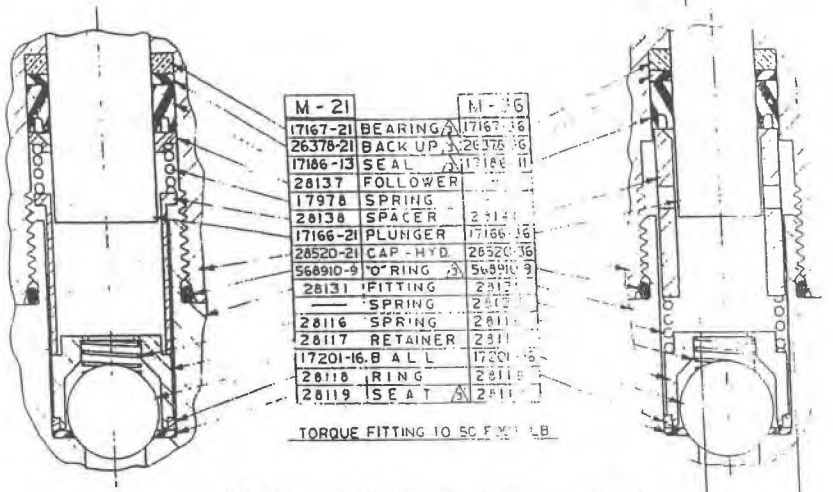
② THESE PARTS ARE INCLUDED IN 17178 AIR DRIVE SEALS KIT.

① APPLY VERY LIGHT COATING OF HASKEL LUBRICANT P.N. 28442 TO DYNAMIC SEALS IN AIR DRIVE SECTION.

NOTE:



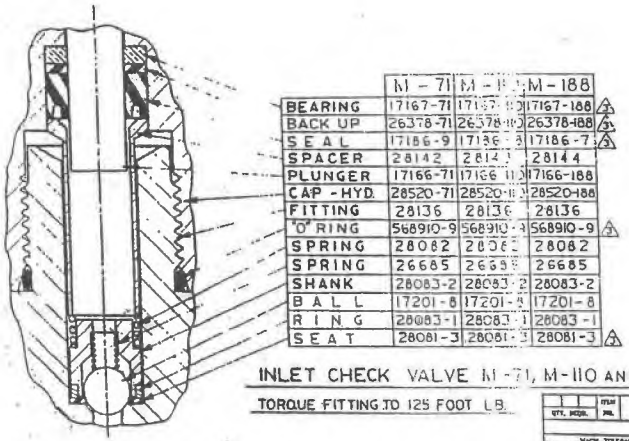
OUTLET CHECK VALVE



M-21		M-36
17167-21	BEARING ①	17167-36
26378-21	BACK UP ①	26378-36
17186-13	SEAL ①①	17186-11
28137	FOLLOWER	
17978	SPRING	
28138	SPACER	28144
17166-21	PLUNGER	17166-36
28520-21	CAP-HYD.	28520-36
568910-9	"O" RING ①	568910-9
28131	FITTING	28136
—	SPRING	28112
28116	SPRING	28111
28117	RETAINER	28111
17201-16	BALL	17201-16
28118	RING	28118
28119	SEAT ①	28111

TORQUE FITTING TO 50 FOOT LB.

INLET CHECK VALVE M-21 AND M-36



	M-71	M-110	M-188
BEARING	17167-71	17167-110	17167-188 ①
BACK UP	26378-71	26378-110	26378-188 ①
SEAL	17186-9	17186-9	17186-7 ①
SPACER	28142	28142	28144
PLUNGER	17166-71	17166-110	17166-188
CAP-HYD.	28520-71	28520-110	28520-188
FITTING	28136	28136	28136
"O" RING	568910-9	568910-9	568910-9 ①
SPRING	28082	28082	28082
SPRING	26685	26685	26685
SHANK	28083-2	28083-2	28083-2
BALL	17201-8	17201-8	17201-8
RING	28083-1	28083-1	28083-1
SEAT	28081-3	28081-3	28081-3 ①

INLET CHECK VALVE M-71, M-110 AND M-188.

TORQUE FITTING TO 125 FOOT LB.

QTY. REQD.	ITEM NO.	PART NO.	DESCRIPTION
			PARTS LIST

ASSEMBLY DRAWING MODEL "M" PUMP

28550 D

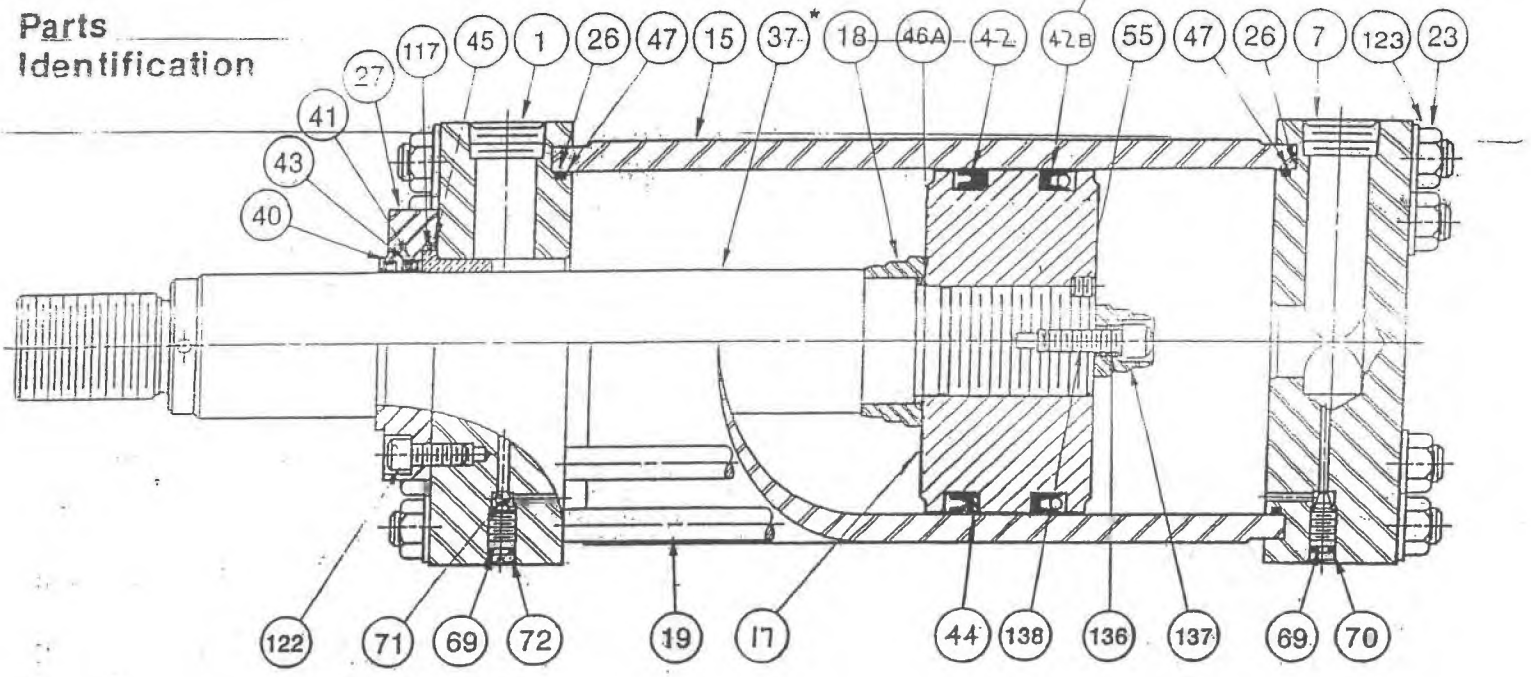
JMI 6.058

J. P. 5-9-08

Parker Series 3H Large Bore High Pressure Hydraulic Cylinders

SPECIAL POLYPAK LIPSEAL ON CAP END SIDE ONLY

Parts Identification



*OR 34, 35, 36

SYM NO.	
1	HEAD, Basic Style BB, DB, DD, HB & HH
2	HEAD, Style C
3	HEAD, Style E
5	HEAD, Style D
7	CAP, Basic Style D, DB, JB & JJ
8	CAP, Style C
9	CAP, Style E
11	CAP, Style DB
12	CAP, Style BB
15	CYLINDER BODY
16	PISTON BODY — Ring Type Piston
17	PISTON BODY — Lipseal
18	CUSHION SLEEVE
19	TIE ROD
20	TIE ROD, DD Style Head End
21	TIE ROD, DD Style Cap End
23	TIE ROD NUT — Non-Locking
26	BACK-UP WASHER, Cylinder Body
27	RETAINER
28A	HEAD, Style JJ
28B	HEAD, Style JB
29A	CAP, Style HH
29B	CAP, Style HB
34	PISTON ROD, Non Cushion
35	PISTON ROD, Cushion Head
36	PISTON ROD, Cushion Cap
37	PISTON ROD, Cushion Both Ends
40	WIPERSEAL
41	ROD SEAL (Polypak)
42	LIPSEAL, Piston
42	LIPSEAL. (POLYPAK)

SYM. NO.	
43	BACK-UP WASHER, Polypak
44	BACK-UP WASHER, Lipseal
45	O-RING, Gland to Head
46A	CUSHION SEALING RING
47	O-RING Cylinder Body
48	PISTON RING
55	PISTON LOCK PIN
57	PISTON ROD — Non Cushion K-Type
58	PISTON ROD, Cushion One End K- Type
59	PISTON ROD, Cushion Both K-Type
60	EXTENSION ROD, Non-Cushion K-Type
61	EXTENSION ROD, Cushion Both Ends K-Type
66	TRUNNION
67	SCREWS, DD Mounting
69	O-RING, Cushion Adj. & Check Screws
70	CUSHION ADJUSTING NEEDLE SCREW
71	CHECK VALVE BALL
72	CHECK VALVE SCREW
86	PIVOT PIN — BB Mount
87	RETAINING RINGS FOR PIVOT PIN — BB Mount
117	ROD BEARING
118	PISTON BODY — HI-LOAD
119	OUTER PISTON RING
120	INNER PISTON RING
121	WEAR RING
122	RETAINER BOLT
123	WASHER, TIE ROD NUT
136	SPACER, Cushion
137	CUSHION SPEAR, Detachable
138	BOLT, Cushion Spear

ker Cylinder Division
So. Wolf Road
Plaines, IL 60016
tional Plants
shley, IN
19/687-9102

• Atlanta, GA 404/349-0563
• Chicago (Des Plaines), IL 312/298-2400
• Cincinnati, OH 513/793-3500
• Des Plaines, IL 312/298-2400
• Plymouth, MI 313/455-1700
• Portland, OR 503/211-0182
• Saddle Brook, NJ 201/791-7406
• Santa Fe Springs, CA 213/698-0985
• Owen Sound, Ont. Can. 519/376-2691

INSTALLATION AND SERVICE INSTRUCTIONS

5-9-08

FORM 105-780603

ORTMAN

Series "3TH"

Heavy Duty Hydraulic Cylinders

WARNING

EAD INSTALLATION
ERVICE INSTRUCTIONS
ND GENERAL PARTS
REAKDOWN
EFORE INSTALLATION,
PERATION, OR SERVICING

1.50 to 14.00 Bores

Nineteen 143rd Street, Hammond, IN 46320
Telephone: (219) 932-0120 Telex: 72-5489

lt Industries

JWI 6.07A
11/83

INSTALLATION AND SERVICE INSTRUCTIONS

3TH CYLINDERS

J.12

5-9-08

1. GENERAL: The parts drawing on Page 2 shows a complete listing of parts and is applicable to all standard Series 3TH hydraulic cylinders. This parts drawing, when used in conjunction with the listed parts and kits, should facilitate the ordering of any replacement parts or kits by specifying; (1) cylinder serial number, as it appears on the name plate; and (2) item number and part name or kit type and name.

2. INSTALLATION OF CYLINDER: Standard cylinders are furnished with seals compatible with petroleum base fluids. These seals work best within the temperature range of -40°F. to 200°F. For fluids other than petroleum base, different seal material may have to be used.

For the cylinder to perform well, it must be properly installed. Alignment of the cylinder with load is most important. Forcing rod, clevis pins or mounting bolts into position indicates that the cylinder is not properly aligned, and permanent damage may result from such installation.

Protective port covers should not be removed before installing piping, as dirt or other foreign particles may enter the cylinder. All pipe and fittings must be clean before making final connections.

3. PROCEDURE FOR REPLACEMENT OF ROD SEALS AND CARTRIDGE:

A. Disconnect cylinder and drain oil from head end port.

B. In cases of circular cartridge retainer (12), remove socket head screws (17). In cases of square retainer (12), remove tie rod nuts (16). (See cylinder bore/rod combinations using square retainer, Page 4).

C. Remove circular or square retainer.

D. Remove rod bearing cartridge (9) from head (1). To facilitate removal, a screwdriver can be used to pry in the external groove.

E. Remove rod wiper (28), rod seal (29), rod cartridge O-ring (31) and rod cartridge non-extrusion ring (32).

F. Reassemble the cartridge with corresponding replacement parts, cleaning all parts thoroughly. Swelling, shrinking, wave, nicks, cuts, and indentations are all signs of defective seals, Such seals should be replaced.

G. Prior to installation, all rubber parts must be well coated with lubricant. Place the cartridge with new replacement parts on the rod end, and use a twisting motion in starting it onto the rod.

H. Guide the cartridge over the rod and carefully insert it into the head end cover (1); replace cartridge retainer plate (12) and screws (17). Tighten the screws with a hexagon key. In tightening the socket head screws for circular retainers, use the following torque:

SCREW SIZE No.	10-32	.25-28	.31-24
TORQUE(Ft.-lbs.)	6	15	30

I. Square retainer (re-installation), see tie rod torque, Page 4.

4. PROCEDURE FOR REPACKING CYLINDERS

A. Disconnect cylinder and drain oil from head and cap end ports.

B. Remove the tie rod nuts (16) and tie rods (13).

C. Remove cap end (2) and then head end (1). The rod bearing cartridge (9) and cartridge retainer plate (12) will come off with the head end.

D. Remove piston and rod assembly from tube (11).

E. Remove cartridge retainer plate screws (17) and rod bearing cartridge (9) from head end (1).

F. To disassemble piston rod (10), clamp in soft jaws, remove piston lockscrew item (18) and proceed as follows:

CAUTION CAUTION

Piston types (SCR and Block Vee) are also retained to the piston rod with "Loctite"* retaining compound, RC-40.

Heat (approximately 500°F. -550°F. for 30 minutes) must be appled to the piston in order to remove the piston from the rod.

* Registered Trademark, Loctite Corp.

NOTE: The piston and rod assembly should not require disassembly unless replacement of pistons(3) or (4), the piston rod (10) or head end cushion nose (41) is required.

(1) SCR Type Piston

a. Heat piston to required temperature.

b. The piston (4) is threaded onto the piston rod (10) and can be removed once the loctited assembly has broken loose. Use the pin spanner holes provided in the rear face of the piston.

c. Remove head end cushion nose (41) and cush. nose O-ring (50) as applicable.

d. Remove piston packing rings (26).

(2) Block Vee Type Piston

a. Heat piston to required temperature.

b. Loosen piston (3) and remove from the piston rod. Use the pin spanner holes provided in rear face of piston.

c. Remove head end cushion nose (41), and cushion nose O-ring (50) as applicable.

d. Remove block vee packing (24) and back-up (non-extrusion) ring (25).

(3) Vee Type Piston

a. Remove piston plate lock screws (18), loosen rear piston plate (6) and remove from piston rod. Use pin spanner holes provided in rear piston plate.

b. Remove piston bearing (7), forward piston plate (5), and head end cushion nose (41), as applicable.

c. Remove vee piston packing assemblies (27) from forward and rear piston plates.

G. Re-assemble each type piston with the corresponding replacement parts, cleaning all parts thoroughly.

CAUTION CAUTION

Re-assemble piston types (SCR and Block Vee) with the proper grade Loctite as noted above and tighten securely.

NOTE: Assembly with Loctite is per the manufacturer's recommendations.

H. To disassemble cap end cover (2):

(1) Remove end cover O-ring (33) and non -ext. ring (34).

(2) Remove ball check screw (58), spring (61), ball (63), and O-ring (65).

(3) Remove cush. adj. needle (57) and O-ring (65).

I. To disassemble head end cover (1):

(1) Remove end cover O-ring (33) and non-ext. ring (34).

(2) Remove ball check screw (43), spring (46), ball (48), and O-ring (49).

(3) Remove cush. adj. needle (42) and O-ring (49).

5. CLEANING: Clean all parts thoroughly. The packings and seals in this cylinder are compatible with hydraulic oils, air and neutral fluids. The cleaning agent must also be compatible to avoid damage to packings and seals. Whenever a particular lubricant is specified for an installation, do not deviate from this specification without checking for compability.

6. INSPECTION:

A. Inspect all packings, seals, and non-extrusion rings for swelling, shrinking, wear, nicks, cuts, and indentations. Discard all damaged packings, seals, and non-extrusion rings.

B. Check and inspect bore of tube for scratches, excessive wear, and any other defect that might damage piston packing or cause piston bypass.

C. Inspect piston rod for signs of wear, nicks, dents, scratches, or anything that may damage rod packing or rod bearing. Excessive wear on one side of piston rod or rod bearing usually indicates misalignment in installation and should be corrected.

D. Inspect all remaining items for evidence of damage or wear. In most cases, a little polishing of the various parts will restore them to like-new condition.

J.P.
5-9-08

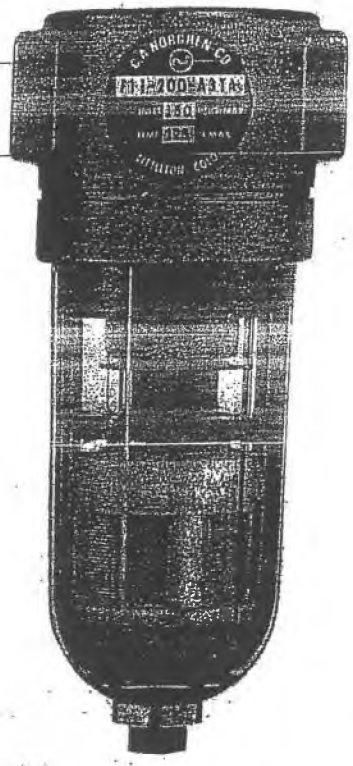
TYPE F

DESIGNER SERIES 1/4" BASIC FILTER

FOR COMPRESSED AIR SYSTEMS

1/4" & 3/8" PIPE SIZES

MANUAL OR AUTOMATIC DRAIN



he Streamlined "Designer"

The internal configuration of the F11 has been redesigned; reducing the number of parts from six to three with improved performance and maintenance. Filter elements are interchangeable between previous and current F11s.

ORDER TABLE

Standard models normally available from distributor stock.

PIPE SIZE	BOWL TYPE	DRAIN TYPE	MODEL NUMBER* (50-Micron)
1/4"	Transparent	Manual Automatic	F11-200-M3TA F11-200-A3TA
3/8"	Transparent	Manual Automatic	F11-300-M3TA F11-300-A3TA

***OPTION NOTES:**

When ordering products with optional features, substitute the designated letter or digit in the appropriate position of the model number.

Metal Bowl
Substitute the letter "M" in the 9th position.

3-Oz. Polycarbonate Bowl (with manual drain)
(Not available with automatic drain.)
Substitute the letter "8" in the 9th position.

Bowl Guard (1/3-Pint)
Substitute the letter "P" in the 9th position.

Element
5-Micron
Substitute the digit "1" in the 8th position.

25-Micron
Substitute the digit "2" in the 8th position.

75-Micron
Substitute the digit "4" in the 8th position.

APPLICATION

The "Designer" F11 Filter is intended for use in gener. application in compressed air systems where effective filtratio and water removal are required.

SPECIFICATIONS

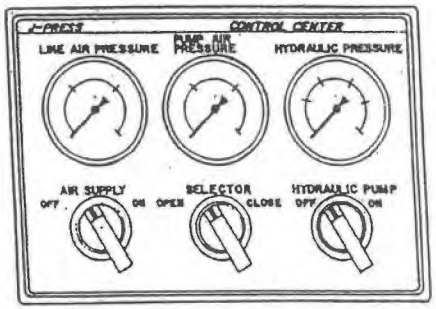
PIPE SIZES: 1/4" PTF, 3/8" PTF
FILTER ELEMENTS:
SINTERED BRONZE – 50-micron (Std)
5 & 25-micron (Opt)
SINTERED HDPE – 25-micron (Opt)
STAINLESS STEEL SCREEN – 75-micron (Opt)
BOWLS:
1/3-PINT TRANSPARENT POLYCARBONATE (Std)
METAL BOWL GUARD (Opt)
1/3-PINT ALUMINUM & 3-Oz. POLYCARBONATE (Opt)
BOWL DRAINS:
MANUAL OR AUTOMATIC
MAXIMUM RATED OPERATING CONDITIONS:
POLYCARBONATE BOWL
150 psig (10.3 bar) 125°F. (52°C)
METAL BOWL
250 psig (17.2 bar) 175°F. (80°C)

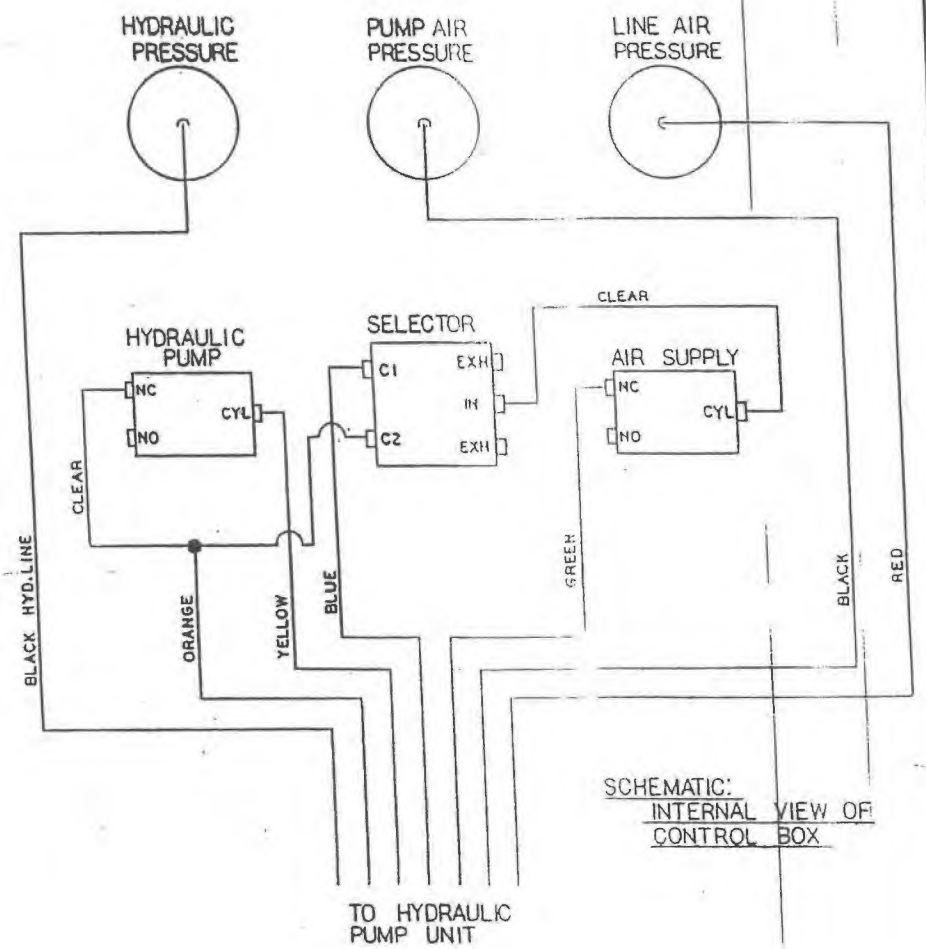
FEATURES

- OUTSTANDING WATER REMOVAL EFFICIENCY – OVER 96+% – HELPS PROTECT DOWNSTREAM EQUIPMENT.
- ALL ALUMINUM DIE-CAST BODY – LIGHTWEIGHT, YET RUGGED.
- NOW 50% FEWER PARTS, GIVING BETTER PERFORMANCE WITH EASIER MAINTENANCE.
- EASILY REPLACED AUTOMATIC OR MANUAL DRAINS – SCREW-ON TYPE BOWL REDUCES MAINTENANCE TIME AND INVENTORY REQUIREMENTS.
- INTERNAL PARTS CAN BE DISASSEMBLED FOR CLEANING WITHOUT USE OF TOOLS AND WITHOUT REMOVING FILTER FROM AIRLINE.
- DESIGNER STYLING THAT COMPLIMENTS THE APPEARANCE OF OEM EQUIPMENT.

NORGREN
LITTLETON, COLORADO ©
TWT 6-08 11/03

10039900





SCHEMATIC:
INTERNAL VIEW OF
CONTROL BOX

ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L	WT. EA.

SYM.	DESCRIPTION	E.C.N.	DATE

JMI
SCALE ~
DRAWN
CHECKED
REV.
DATE 10-5-84
SUB ASSEMBLY
TITLE CONTROL BOX
DWG. NO. C-10039900
SHT.
OF

DO NOT SCALE

JMI 6.25
12/87

C.P.
8-9-88

J.P.
5-9-08

POLYPROPYLENE FILTER PLATES

Description

Our standard polypropylene recessed, center feed, four corner alternating discharge chamber plates are superior in corrosion resistance, design and function and are available in two basic types; gasketed and non-gasketed. We also offer flush plates/frames and membrane plates.

Maintanance

Gasketed Type

With this type plate, the filter cloth is caulked into a groove located around the outer edge of the plate recess.

Redressing Procedures:

To Remove Filter Cloth

To remove a filter cloth, insert a thin bladed screw driver into the groove at the outer edge of the caulking and pry a small section of the cloth out. Grab the exposed caulking with vise grip pliers and pull the remaining cloth out of the caulking groove. After the cloth is removed, inspect and remove any accumulated solids from the groove before inserting the new cloth.

To Install New Filter Cloth

On plates having a center feed eye with sewn centers, it will be necessary to fold the cloth on one side into a small section so that it can be inserted through the center feed eye. Once the cloth is pulled through the eye, it can be unfolded for caulking.

Sewn in Sash Cord Type

The drainage surface on a gasketed chamber plate has a caulking groove approximately 3/8" wide by 3/8" deep. Filter cloths are made for this type of plate by sewing in a high density polypropylene sash cord around the outer edge of the cloth. Cord diameter will depend on type of cloth and relative thickness being used. In most cases, a No. 12 (3/8" diameter) cord is used. The filter press specifications will indicate the type of cloth used. NOTE: It is important to keep in mind that if you change the type of filter cloth, you may have to use a different number (diameter) sash caulking. Consult JWI, Inc. for proper sizing.

J.P.
5-9-08

or shreading into small particles. Also, if excessive temperatures exist and cycles are very long, the Nordel may go into additional cure, causing it to harden slightly.

While the Nordel elastomer is our standard gasket material, many other types have been used including Hypalon, neoprene, and Viton A. If the gasket life is unsatisfactory, contact JWI, Inc. for a suitable replacement.

Special Note: When gasketed plates are first put into use, the new gasket material may be slightly gummy and cause a few gaskets to pull out of the grooves when separating the plates. This condition will eliminate itself as product films are built up and act as a releasing agent. If a few of the gaskets show this characteristic, apply a silicone spray until the filter has been used for several days.

Non-Gasketed Type

With this type plate, the filter cloth provides the seal between the plates. Leakage will occur during operation even though JWI supplies most of the non-gasketed plate cloths with latex edging. The latex will cut down the wicking action somewhat but will not eliminate it.

Redressing Procedure:

To Remove Filter Cloth

Use diagonal cutters or snips to cut ties (if Supplied) on vertical sides and lift one cloth side off cloth pins on top of plate. Fold cloth and push thru center eye.

To Install New Filter Cloth

Fold and roll cloth on one side into a small section so that it can be inserted thru the center feed eye. Once the cloth is pulled thru, it can be unfolded and installed over the cloth pins on top of plate. Most types and sizes of cloth will be supplied with holes and/or grommets along the vertical sides for the installation of small plastic cable wire ties to further position and locate the cloth.

J.P.
5-9-08

2. Close filter press.

3. Disconnect center feed line from sludge pump.

4. Connect outlet of acid pump to center feed line to filter press.

5. Connect lower outlet of filter press to acid recirculation tank.

6. Open acid feed line to filter press.

7. Start acid feed pump. It will take considerable time to fill all of the chambers of the filter press before the acid will return to storage tank. Continually inspect filter press for leakage during filling and recirculating.

8. Allow pump to recirculate for one to two hours.

9. Turn off acid feed pump.

10. Follow air blowdown sequence in operation instructions to purge acid from filter press (use maximum 15 PSI air).

11. Disconnect acid feed system and reinstall sludge pump and outlet lines.

12. Filter press is now ready for operation.

CAUTION: Acid washing is not recommended on non-gasketed type filters unless extra precautions are taken to contain the leakage between plates.

You can also acid "dip" wash the plates by immersing them in a tank of acid. The immersion method though is less efficient than thru washing in the press and will probably require at least an overnight soaking to clean out the depth of the weave. Another slight problem is that the plates are lighter than water and will float, so some method of keeping them submerged must be used.

Another method used for cloth washing is a portable high pressure (800-1200 PSI at 2-10 GPM) cold water spray unit. These units come with a hand held power wand with spray nozzle which is slowly moved over the cloths. They clean by not only flushing off the cloth surfaces but by also penetrating the cloth to flush particles out of the depth of the weave. Contact JWI Inc. for more information on availability.

REMOVABLE DISTANCE PIECE

1. FOR FUTURE FILTER PRESS EXPANSION WITHOUT STRUCTURAL CHANGES.
2. REMOVAL OF DISTANCE PIECE ALLOWS INSTALLATION OF ADDITIONAL PLATES FOR MORE AREA AND CAPACITY.
3. SEE TABLE I FOR MAXIMUM SIZE OF DISTANCE PIECE.
4. DISTANCE PIECE CAN BE USED FOR SIZES LESS THAN MAXIMUMS IN TABLE I.
5. TABLE I ASSUMES STANDARD 1 1/4" CAKE THICKNESS.

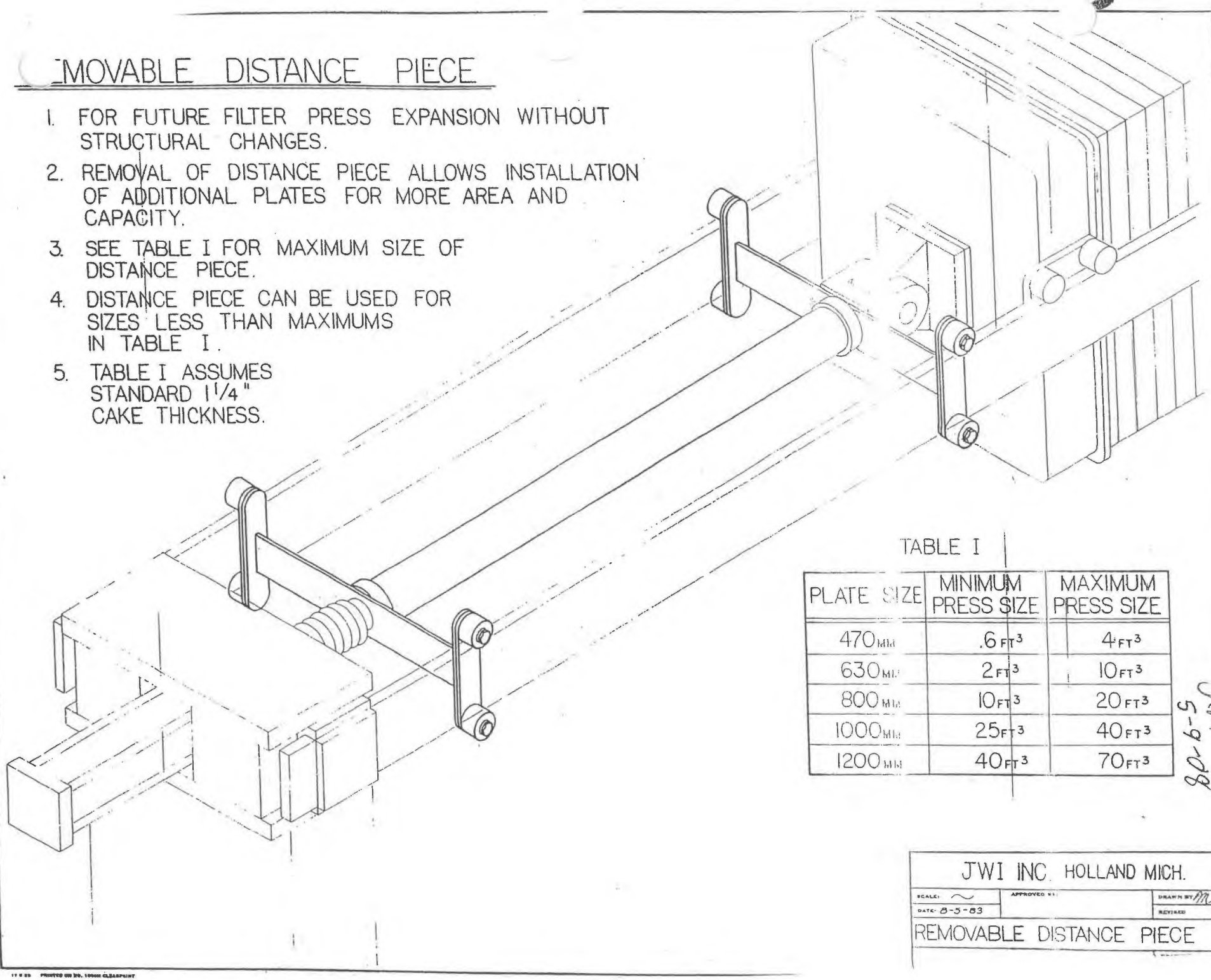


TABLE I

PLATE SIZE	MINIMUM PRESS SIZE	MAXIMUM PRESS SIZE
470 MM	.6 FT^3	4 FT^3
630 MM	2 FT^3	10 FT^3
800 MM	10 FT^3	20 FT^3
1000 MM	25 FT^3	40 FT^3
1200 MM	40 FT^3	70 FT^3

5-9-08

JWI INC. HOLLAND MICH.

SCALE: ~	APPROVED BY:	DRAWN BY: MDB
DATE: 8-5-83		REVISED

REMOVABLE DISTANCE PIECE

JWI 8.13
11/83

5-9-08

JWI, Inc. 2155 112th Avenue / Holland, Michigan 49424 U.S.A. / 616-772-9011 / TELEX 5101008013

J - P R E S S 1 2 0 0 M M

S P A R E P A R T S P R I C E L I S T

DESCRIPTION	UNIT PRICE	QUANTITY RECOMMENDED	TOTAL PRICE
Filter Cloths (Gasketed & Non-Gasketed	$ 79.00		$
Gasket Material (Sold in 100' Lengths	$ 95.00 per 100'		$
Plates - Non-Gasketed	$1,150.00		$
Plates - Gasketed	$1,250.00		$
Back-Up Plate	$ 990.00		$
Dumpster	$1,500.00		$
Dumpster Replacement Strap	$ 45.00		$
Sludge Pump (Air Diaphragm)	$1,850.00		$
Bellows	$ 125.00		$
Drum Cart	$ 150.00		$
Automatic Pump Control System	$2,350.00		$
Air/Hydraulic Closing System	$3,200.00		$
Cleaning Spatulas (48")	$ 75.00		$

TOTAL SPARE PARTS PACKAGE: $_____

SEND THIS ORDER TO:
JWI, INC.
2155 112th Avenue
Holland, MI 49424

ATTN: Sales/Service Manager

SHIP TO: _____

_____

_____

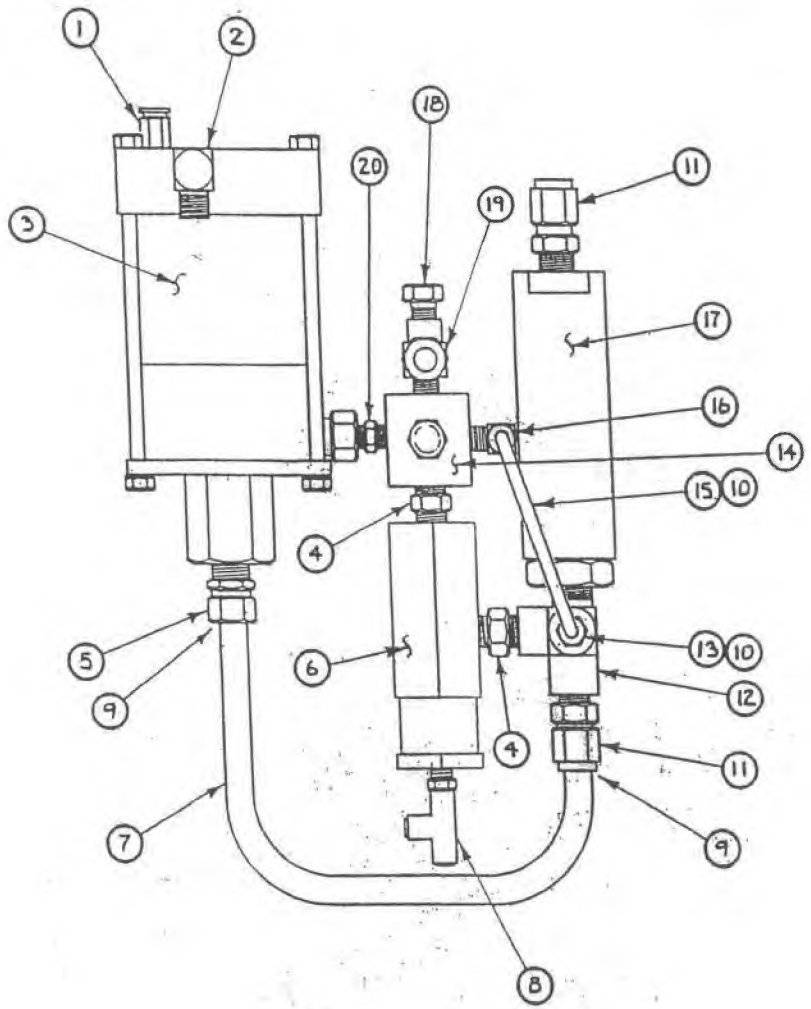
PURCHASE ORDER #: _____

_____
Authorized Signature

NOTE: All prices F.O.B. Holland, Michigan

JWI 12/87

DWG. NO. C-10017100



ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L	WT. EA.
20	1	10018101	PIPE NIPPLE		
19	1	10042300	MALE ELBOW, PORTED ¼ NPT		
18	1	10020900	MALE PIPE ADAPTER		
17	1	10021000	HYDRAULIC IN-LINE FILTER		
16	1	10017501	MALE ELBOW		
15	1	10057200	¼ O.D. x .035 WALL x 8 SS. TUB		
14	1	10057600	RELIEF VALVE		
13	1	10017400	MALE CONNECTOR		
12	1	10081000	STREET TEE PORTED ¼ NPT		
11	1	10017402	MALE CONNECTOR		
10	1	10018800	TUBE SLEEVE ¼		
9	1	10018801	TUBE SLEEVE ½		
8	1	10019900	MALE BRANCH TEE SWIVEL		
7	1	10057305	½ O.D. x .049 WALL x 15½" SS. TUB.		
6	1	10042701	RELEASE VALVE		
5	1	10017401	MALE CONNECTOR		
4	1	10018100	PIPE NIPPLE		
3	1	10042600	HYDRAULIC PUMP		
2	1	10018300	MALE PIPE ELBOW		
1	1	10019401	MALE CONNECTOR		

CNTR BY/CHG. BY	STM.	DESCRIPTION	E.C.N.	DATE	SUPS'D. BY
		FIRST ISSUE		5-4-88	

650MM
800MM
1000MM

SCALE ~

DATE 2-15-88

SUPERSEDES

DRAWN M.L.C. CHECKED REV.

TITLE HYDRAULIC MODULE

DWG. NO. C-10017100

SHT. OF

DO NOT SCALE

5-9-88

JWI 9.07
3/86

J-K
5-9-08

AUTOMATIC PUMP CONTROL SYSTEM

SERIAL NO. _____

JWI, INC.
2155 112th Avenue
Holland, MI 49423
(616) 772-9011

JWI 0.03
11/83

J-P-
5-9-08

JWI AUTOMATIC PUMP CONTROL SYSTEM MANUAL

Description

The automatic pump control system is designed to automatically increase the feed pump pressure during the fill cycle. Low initial feed pressures will allow a soft layer of sludge particles to be deposited on the filter cloth. This layer will become the filtering media, enhancing the filterability of the incoming slurry. High initial feed pump pressures can build a very tightly packed impermeable layer of solids on the filter cloth, restricting the filterability of incoming slurry.

The automatic feed pump system allows the pressure to be automatically increased in four intervals throughout the fill cycle. These intervals and pressures are fully adjustable to suit the type of slurry and the percentage of solids. Continuous monitoring of the feed pump pressure allows the system to automatically shut down when the press has become filled. Also incorporated into the system is a low hydraulic pressure safety shut down device. Any time the hydraulic pressure drops below the preset limits, the system will completely shut down, eliminating any possible leaking. The control panel features various switches, pilot lights, and timers to give at-a-glance monitoring of the system.

Installation and Set-Up

1. Mount the control panel near the filter press (unless factory installed).
2. Connect the 110 volt, 60 cycle current to the panel. (Note: See wiring diagram.)
3. Connect wires from the low hydraulic pressure switch, located in the pump cabinet, to the control panel (unless factory installed).
4. Install the air piloted regulator at the feed pump. (See diagram 2.03 or 8.06.)
5. Connect the pilot line and the pressure gauge line from the panel to the pilot regulator. (See diagram 2.03 or 8.06.)
6. Connect a filtered and regulated air line supply to the control panel. (See diagram.)
7. Air supply should maintain not less than 100 psi.

Pre-Operational Check Out

NOTE: Disconnect all power to control panel prior to making adjustments.

JWI recommends the following timer and regulator settings only as a place to start and can be changed to meet the needs of your system to give best cake density.

Timers		Regulators
1 TR	30 minutes	Stage 1 - 25 psi
2 TR	30 minutes	State 2 - 50 psi
3 TR	30 minutes	Stage 3 - 75 psi
4 TR	1 minute	Stage 4 - 100 psi

The psi settings of the solenoid controlled regulators will only show when the system is in operation and will read out on the regulated pressure gauge located on the control panel. NOTE: The solenoid controlled regulator number four (4) must always carry a 5 psi higher reading than the adjustable air pressure switch setting.

J.P.
5-9-08

The Operation of These Three Items Together

When the press is operating and our feed pump stalls out at 100 psi and pressure is holding; at this same time, the pressure switch set for the pressure slightly below 100 psi is operated. Once this pressure switch is operated, timer number four will start to time the amount of time this pressure switch is held by the pressure in the pump ~~control~~ circuit. With number four timer set ~~for one minute~~ and maintained 100 pounds per square inch on this pressure switch for one minute or more, the timer will time out and switch our pump control system off and give us a ~~press full indication on the panel~~. If the ~~pressure switch is maintained~~ at the 100 psi position for any period of time less than one minute and the pump makes a stroke, it will rob air from this pressure switch, drop the pressure switch back open again, and reset the timer back to zero. The timer will not start timing again until the pressure switch reads 100 psi once more. If it does, it will start to time again. Either time out and shut off or reset as before. This could go on for any amount of time depending on how close the other settings have been made the press could be on this last cycle for two to three hours depending on the type of operation of your press.

The end result is that our press could be on line for the total amount of time which we have on our first three timers. For example, we were using 30 minutes each for a total of 90 minutes plus any amount of time accumulated by the fourth timer. This could be in the hours. These adjustments will have to be adjusted and played with by the customer until satisfying results are obtained.

Pressure Swtich Adjustment

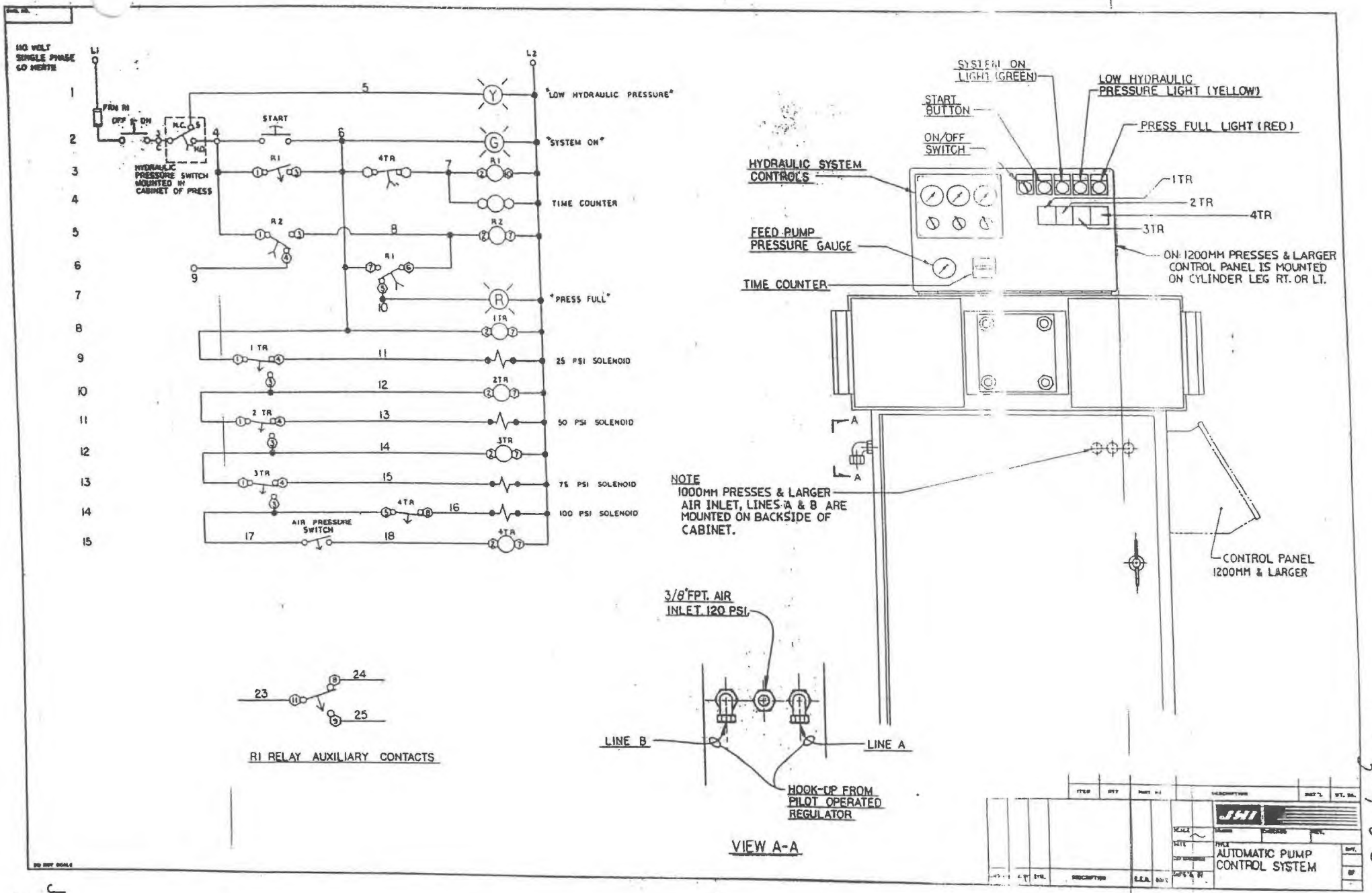
In adjusting the setting of the pressure switch in the cabinet, we recommend that the press first be run to the pressure which we would like to see for our final filtration pressure which, for example, use 100 psi and the pump has stalled out, turn the setting on the pressure switch down until it trips the pressure switch and starts timer number 4. If timer is set for one minute, the press should shut off in one minute.

Operation of Pilot Operated Regulator

Operation of pilot operated regulator as shown on page 2.03, 8.06, and 8.20A of instruction manual, this pilot operated regulator controls the air pressure to the pump on a 1:1 ratio or for each pound of air pressure in pilot line B, we get equal air to pump only in greater volume. Line A is a pressure monitor line which gives a gauge reading on the panel and also is the control for the pressure switch.

Auxiliary Contacts

Available for other monitors which operate upon a press full condition. See wiring diagram for relay wire numbers.



JWI 8.0; 12/87

5-9-08

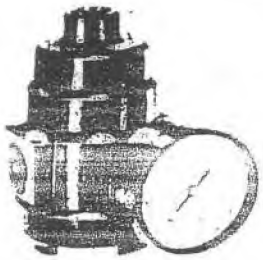
ISSUED: JUNE, 1986
Supersedes: March, 1982

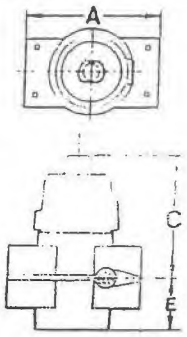
1R200 B

J.K. 5-9-08

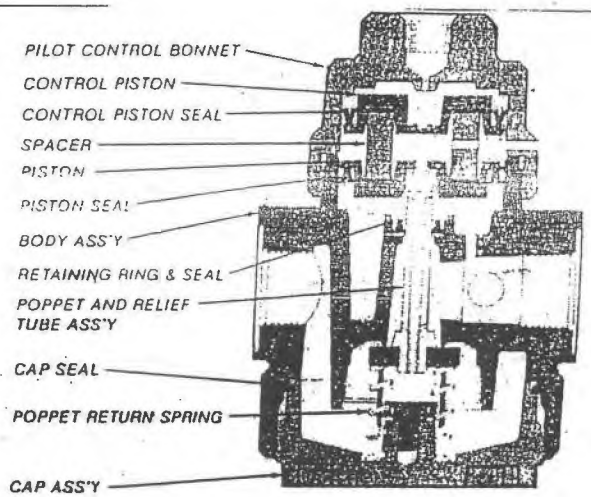
REGULATORS

PILOT CONTROLLED
COMPACT, STANDARD, HI-FLOW

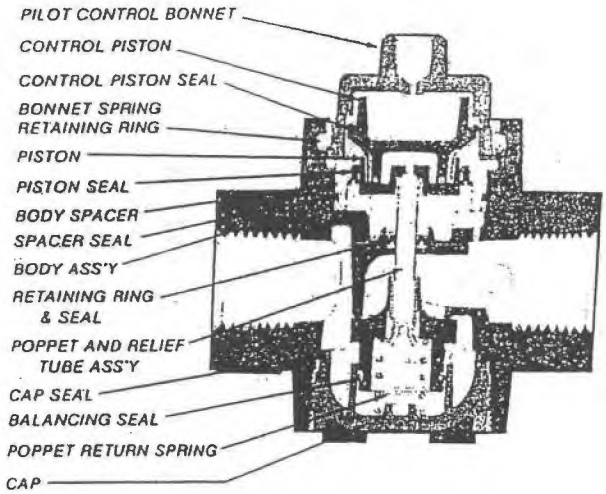




Model	Port Size (NPT)	DIMENSIONS		
		A	C	E
Compact	1/4" - 3/8"	2.75	2.57	1.69
Standard	1/4" - 3/8" - 1/2" - 3/4"	3.25	2.79	2.17
Hi-Flow	3/4" - 1" - 1 1/4" - 1 1/2"	5.00	3.27	1.99



PILOT CONTROLLED REGULATOR MODELS	COMPACT	STANDARD	HI-FLOW
POPPET KIT (1) POPPET AND RELIEF TUBE ASSY. (1) SEAL (BODY TO CAP)	PS112	PS212	PS312B
RELIEVING PISTON KIT (1) SEAL (PISTON) (1) PISTON	PS110	PS110	PS310
GAUGES			
0-60 PSI, 0-4 KG/CM²	P781641	P781641	P781641
0-160 PSI, 0-11 KG/CM²	P781642	P781642	P781642
0-300 PSI, 0-20 KG/CM²	P781643	P781643	P781643



Hi-Flow

MAXIMUM PRESSURE AND TEMPERATURE

Maximum (Primary) Operating Pressure 250 PSIG (17 bar)
Temperature Range – 10°F to + 175°F (– 24.5°C to + 80°C)

JWI 8.2C

12/87

J-12
5-9-08

319D TDR SS

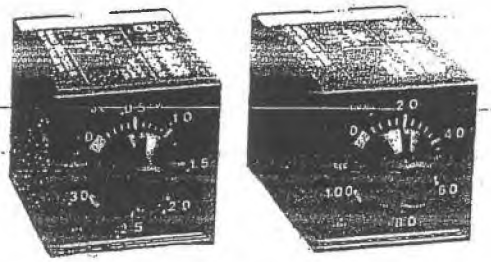
INSTALLATION INSTRUCTIONS
FEBRUARY 1981

319-000-01-00

DESCRIPTION:

The 319D Time Delay Relay is a plug-in, solid state On Delay timer. The relay contacts transfer at end of cycle. Two models are available:

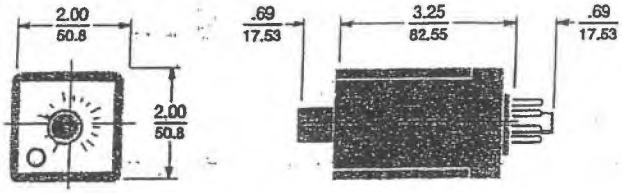
1. A three range model - 1 sec., 10 sec., and 100 sec.
2. A five range model - .3 sec., 3 sec., 30 sec., 3 min. and 30 min.

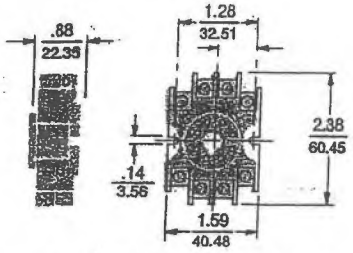


DIMENSIONS:

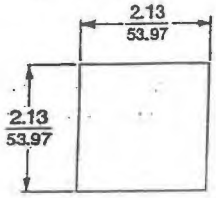
DIMENSIONS—AC TDR'S

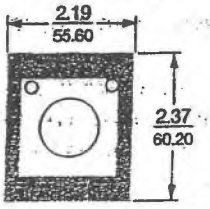
INCHES
MILLIMETERS

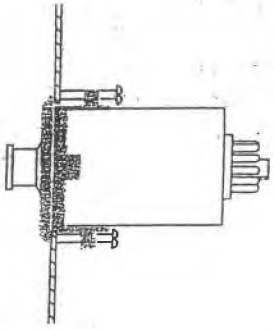




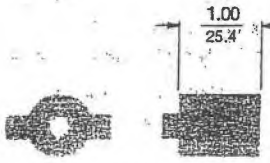
8 PIN OPTIONAL OCTAL SOCKET







PANEL MOUNT BEZEL



8 PIN
PANEL MOUNT SOCKET

MOUNTING:

Mounting position of the 319D is not critical. However, the use of a retaining clip is recommended. To surface mount, use an ATC surface mounting socket No. 00008256400, with a retaining clip No. 03190250200.

To panel mount, cut a 2 1/8" square cutout.

Position the bezel with the mounting screws on the side.

2. Snap the bezel assembly through the front of panel hole.
3. From the rear of the panel, loosely fit the mounting screws into the holes.
4. With the timer scale facing up, snap the unit into the bezel from the rear of the panel so it is retained in the cutout.
5. Tighten the mounting screws. Do not overtighten.

(Continued)

LOCKING THE RANGE SETTING:

Set required range. Remove knob, loosening with size 3/64 Allen Wrench. Pull off knob. Remove pin from end of shaft. Insert pin in either empty hole which will lock unit in position. Turn shaft ccw and replace knob with pointer at zero. Tighten set screw.

SPECIFICATIONS:

MODELS
Choice of two:
319D-016 has five dial-selected ranges, from 0.3 sec to 30 min.
Available in 24 VAC, 120 VAC, 240 VAC, and 24 VDC.
319D-134 has three dial-selected ranges, from 1 sec to 100 sec.
Available in 24 VAC, 120 VAC, 240 VAC.
Both operate in on delay mode only

RANGES AND MIN. SETTING

	Range	Min. Setting
319D-016:	0-0.3 sec	0.02 sec
	0-3 sec	0.07 sec
	0-30 sec	0.6 sec
	0-3 min	3.5 sec
	0-30 min	35.0 sec
319D-134:	0-1 sec	0.04 sec
	0-10 sec	0.2 sec
	0-100 sec	2.0 sec

SETTING ACCURACY
10% at full scale.

REPEAT ACCURACY
Varies as a function of line voltage and temperature but *not* of reset time (see Recycle Characteristics):
±1% of setting or 2.0 ms, when temperature is constant and line voltage is constant or varies within limits*
±4% of setting or 2.0 ms, when line voltage is constant and temperature varies within limits*
±6% of setting or 2.0 ms, when line voltage and temperature vary within limits*
*Variations of line voltage must be within 95 and 132V; of temperature between 0° and 70°C (32° and 158°F)

RECYCLE CHARACTERISTICS
When 0.1 sec or longer of reset time is allowed after time-out or after power interruption, the next interval is timed at full repeat accuracy; when only 0.07 sec is allowed, the next interval is shortened by as much as 1%.

RESET
5 ms if power is interrupted any time *after* time-out; 70 ms if power is interrupted *during* timing.

LOAD RELAY
TYPE: DPDT, hard-wired
LIFE: AC: 50,000,000 operations (no load)
DC: 100,000,000 operations (no load)
CONTACT RATING:
AC: 5A resistive at 24, 120 or 240V
DC: 5A at 24V

POWER REQUIREMENTS
120V AC: 95 to 132V, 50/60 Hz, .011A
240V AC: 190 to 264V, 50/60 Hz, .011A
24V AC: 19 to 28V, 50/60 Hz, 0.05A
24V DC: 19 to 28V, 0.05A (5 Ranger Model Only) 50% Ripple Max.

TEMPERATURE RATING
0° to 70°C (32° to 158°F)

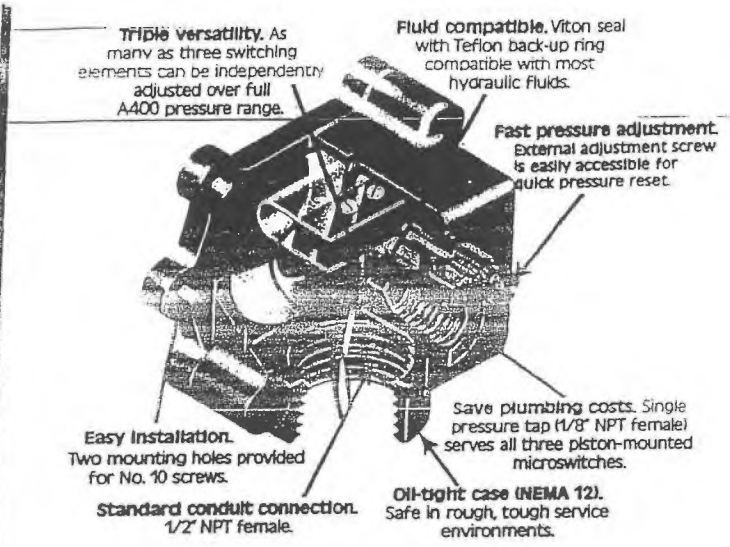
WEIGHT
NET: 6 oz
SHIPPING: 10 oz

MOUNTING
Plug-in octal base; mounts in any position. Optional surface mounting socket.

HOUSING
Dust, moisture and impact-resistant molded plastic case.

J-F 5-9-08

Paul-Munroe A400 Pressure Switch

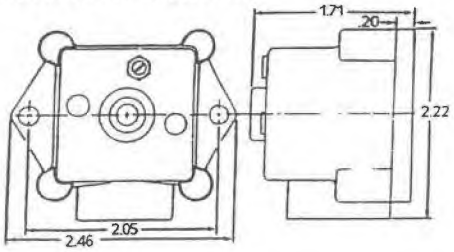


Economical. The new PMH A400 is a simple, dependable pressure-sensing device that converts a set hydraulic pressure to an electrical signal. It is adaptable to nearly any service requirement—yet is the most competitively priced switch on the market.
Ask your distributor!

Compact and Lightweight. So small it easily fits in the palm of the hand, the A400 weighs only 10 ounces. With its sturdy construction and oil-tight housing of die-cast anodized zinc, it can operate in rugged service environments. Repeatability is ±2% of set pressure.

Versatile. Despite its compact size, the A400 mounts up to **three** independent micro switches (see cutaway). Each can be adjusted over the unit's entire 300-3,000 psi range—permitting control of up to three separate functions simultaneously. Examples are 2- and 3-stage alarm systems, and multiple sequencing of hydraulic systems.

Installation Dimensions



Wiring Diagram

	SWITCH No. 1	SWITCH No. 2	SWITCH No. 3
NORMALLY OPEN	RED	RED WITH ONE YELLOW STRIPE	RED WITH TWO YELLOW STRIPES
COMMON	WHITE	WHITE WITH ONE YELLOW STRIPE	WHITE WITH TWO YELLOW STRIPES
NORMALLY CLOSED	BLACK	BLACK WITH ONE YELLOW STRIPE	BLACK WITH TWO YELLOW STRIPES

OPERATING CHARACTERISTICS

- Adjustable range: 300-3,000 psi
- Pressure reset: 125-300 psi nominal (Fixed at any pressure rating.)
- Rated pressure: 5,000 psi
- Burst pressure: 12,000 psi
- Temperature rating: -20° F. to 160° F.
- Repeatability: ±2% of set pressure

ELECTRICAL CHARACTERISTICS

- U.L. List switching elements
- 115/250 VAC, 4 amps
- 30 VDC, 3 amps inductive
- 30 VDC, 5 amps resistive
- Maximum inrush, 4 amps

OPTIONS

- Second and third independently adjustable switches
- Factory pre-setting at specified pressures
- Higher or lower reset differentials for special applications

Model Selection Chart

A400 V S 1 14

- A400 — TYPE
- V — SEAL V-Viton
- S — ADJUSTABLE RANGE S (300-3000 PSI Range)
- 1 — NO. OF SWITCHING ELEMENTS: 1. One switch 2. Two switches 3. Three switches
- 14 — DESIGN NUMBER

Form No. PMH-PD 1728-881-10-KG

J-U
5-9-08

5703/4 Elapsed Time Indicator

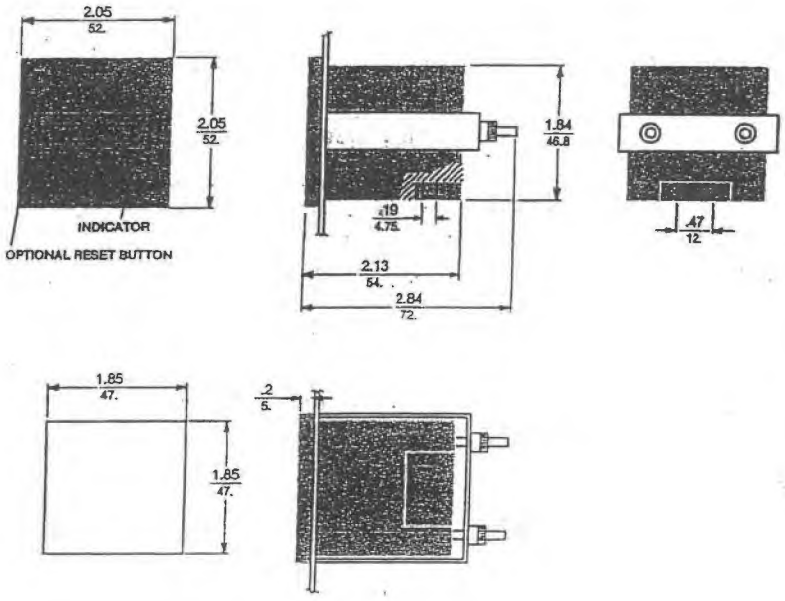
INSTALLATION INSTRUCTIONS
NOVEMBER 1982

DESCRIPTION:

The series 5703 is a non-reset elapsed time indicator and the 5704 is a reset elapsed time indicator to measure the running time of electrically-operated equipment in tenths of an hour. The non-reset version has a 6-digit range and the reset version a 5-digit range.

DIMENSIONS:

INCHES
MILLIMETERS



MOUNTING:

The unit is designed to front panel mount through a 47 mm² (1.85") cutout hole. Mount in a vibration free area. Hand tighten knurled mounting nuts (do not over tighten).

OPERATION:

When the 5703/4 is wired in parallel with electrical equipment, it accumulates running time and its indicator rotates when the monitored equipment is energized. The 5703 non-reset version provides a tamper-proof indication of total running time, continuously adding running time measurement to the previously accumulated total. The 5704 reset version starts a new running time total each time the reset button is pushed.

U/R
5-9-08

INSTALLATION AND MAINTENANCE INSTRUCTIONS

TRIPOINT® switches

FIXED DEADBAND COMPACT LINE SWITCHES OPEN FRAME, GENERAL PURPOSE OR WATERTIGHT SWITCH ENCLOSURES

SERIES

PB10, PB11, PB16
PB20, PB21, PB26
PB30, PB31, PB36

Form No. P7034

DESCRIPTION

The Fixed Deadband Compact Line Switch is of rugged aluminum alloy construction. The switch may be provided with a General Purpose NEMA Type 1 Switch Enclosure, a Watertight NEMA Type 3 and 4 Switch Enclosure or an open-frame switch.

The compact line switch may be supplied as a complete unit, that is, the switch assembly unit and transducer are completely assembled or as separate units to be assembled upon installation. The actuation (set) point is adjustable over the full range of the switch. The reactuation (reset) point is fixed relative to the actuation point and cannot be adjusted. The switch assembly can be mated with a wide selection of interchangeable pressure, temperature and mechanical transducers to cover a broad range of pressures, fluids, temperatures and mechanical movements. The switch will control electrical circuits in response to changes in pressure, temperature or mechanical signals.

IMPORTANT: This sheet is designed to cover the installation and use of this switch on pressure transducers, temperature transducers and mechanical transducers. Review this sheet and select the paragraphs that apply to your particular installation and application. Throughout the sheet, the word "signal" will be used in place of pressure, temperature or mechanical changes.

INSTALLATION

Check the nameplate for the correct catalog number, pressure range, temperature range, media and rated over range pressure or temperature. Nameplates are located on side cover and on the bottom of the transducer. Check to be sure the third digit in each number is the same. If not, the unit should not be used. (Refer to Figure 2)

IMPORTANT: All internal adjustments have been made at the factory. Any adjustment, alteration or repair to the internal parts of the switch other than stated herein voids all warranties. Signal setting adjustments required are made by adjusting nut on the top of the switch.

TEMPERATURE LIMITATIONS

Maximum ambient temperature is 60°C (140°F). Maximum fluid temperature is 82°C (179°F). For steam service, the fluid temperature with a pigtail (syphon tube or condensate loop) installed directly into the transducer will be below 82°C (179°F). For higher ambient and fluid temperature limitations, consult factory.

ASSEMBLY OF SWITCH AND TRANSDUCER UNITS (Refer to Figure 2)

IMPORTANT: The switch unit and transducer unit may be provided as a complete assembly or as separate units. If separate units are provided, refer to Form No. P7035 for a complete listing of switch unit and transducer unit combinations. Form No. P7035 is provided to insure that the proper switch unit be assembled to the proper transducer unit.

Pay careful attention to exploded view provided in Figure 2 for assembly of switch unit and transducer unit. Proceed in the following manner:

1. CAUTION: The third digit in the catalog number on both the switch unit and the transducer unit must be identical. If not, do not assemble to each other. If the same, proceed.
2. Remove bolts (4) from base of switch unit. On general purpose and watertight constructions, remove switch cover.
3. Remove instruction label and pressure, temperature or mechanical switch range scale from the transducer unit.
4. Place transducer unit on base of switch unit and assemble. Start bolts (4) approximately two turns by hand to avoid the possibility of cross threading. After initial engagement, torque bolts (4) in a crisscross manner to 80 ± 10 inch-pounds.
5. Remove backing paper from range scale and install on the front of the switch body over the opening for the adjusting indicator point.

POSITIONING

Switch may be mounted in any position.

MOUNTING

For mounting dimensions for open-frame switch, refer to Figure 2. For mounting dimensions for general purpose switch enclosures, refer to Figure 3. For all switches, an optional mounting bracket is available. For mounting bracket dimensions, refer to Figure 6.

PIPING/TUBING (PRESSURE TRANSDUCER)

Adequate support of piping and proper mounting of switch should be made to avoid excessive shock or vibration. To minimize the effect of vibration on a switch, mount perpendicular to vibration. Connect piping or tubing to switch at base of transducer. It is recommended that flexible tubing be used whenever possible. Apply pipe compound sparingly to male pipe threads only. If applied to transducer threads, it may enter the transducer and cause operational difficulty. Pipe strain on switch should be avoided by proper support and alignment of piping. When tightening pipe, do not use switch as a lever. Wrenches applied to transducer body or piping are to be located as close as possible to connection point. **IMPORTANT: For steam service, install a condensate loop (pigtail or steam syphon tube) directly into the pressure transducer.**

CAUTION: To avoid damage to the transducer body, DO NOT OVERTIGHTEN PIPE CONNECTIONS. If TEFLON* tape, paste or similar lubricant is used, use extra care because of reduced friction.

IMPORTANT: To eliminate the effect of undesirable pressure fluctuations in the system, install a surge suppressor.

*DuPont's Trademark for its TFE-fluorocarbon Resin.

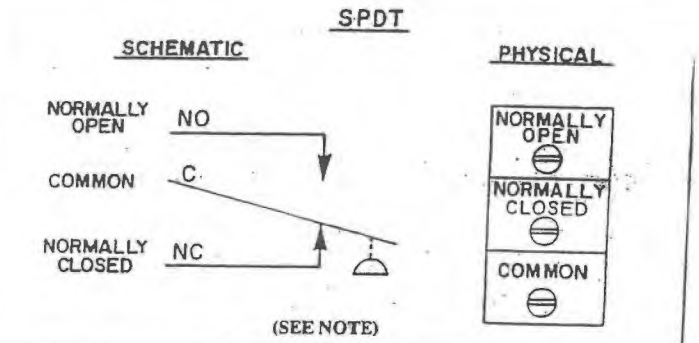
WIRING

Wiring must comply with Local and National Electrical Codes. The general purpose switch enclosure is provided with a 7/8 diameter hole to accommodate 1/2 inch electrical hub or connector. It is recommended that a flexible conduit connection be used. If rigid conduit is used, do not consider it or use it as a means of supporting (mounting) the switch. For watertight switch enclosures, a watertight conduit hub must be installed in the 7/8 diameter hole, use conduit hub Part No. PP01 or equivalent. IMPORTANT: Electrical load must be within range stated on nameplate. Failure to stay within the electrical range of the switch rating may result in damage to or premature failure of the electrical switch. Number 14 AWG wire is recommended. CAUTION: Do not exceed excessive screwdriver force on snap switch when making terminal connections. When connections are made, be sure there is no stress on the wire leads. Either condition may cause malfunction of switch.

STANDARD SWITCH AND OPTIONAL SWITCH SUFFIX "J" ATMOSPHERE SEALED ELECTRICAL RATING

5 Amps Res., 125, 250 VAC
1/8 HP 125 VAC
1/4 HP 250 VAC
1/2 Amp. Res., 125 VDC
1/4 Amp. Res., 250 VDC

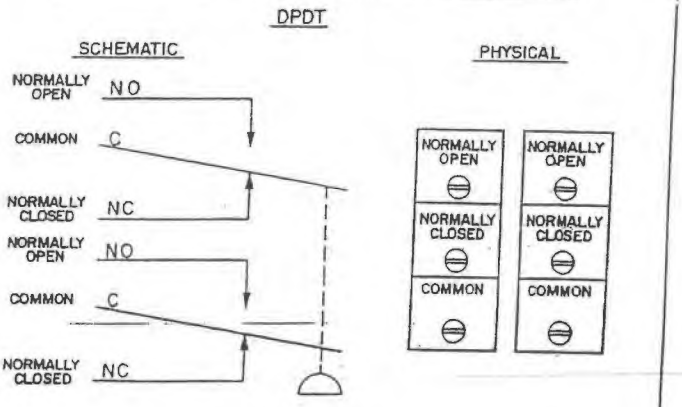
SCHEMATIC FOR STANDARD AND SUFFIX "J" SWITCHES



(SEE NOTE)

OPTIONAL SWITCH SUFFIX "K" DOUBLE POLE DOUBLE THROW ELECTRICAL RATING AND SCHEMATIC

5 Amps Res., 125, 250 VAC
1/8 HP 125 VAC
1/4 HP 250 VAC
1/2 Amp Res., 125 VDC
1/4 Amp Res., 250 VDC



(SEE NOTE)

NOTE: Terminal Connections (C, NC & NO) on snap switch are located differently then shown in schematic above. Common "C" is located at the bottom. Normally Closed "NC" is located in the center. Normally Open "NO" is located at the top.

J.P. 5-9-08

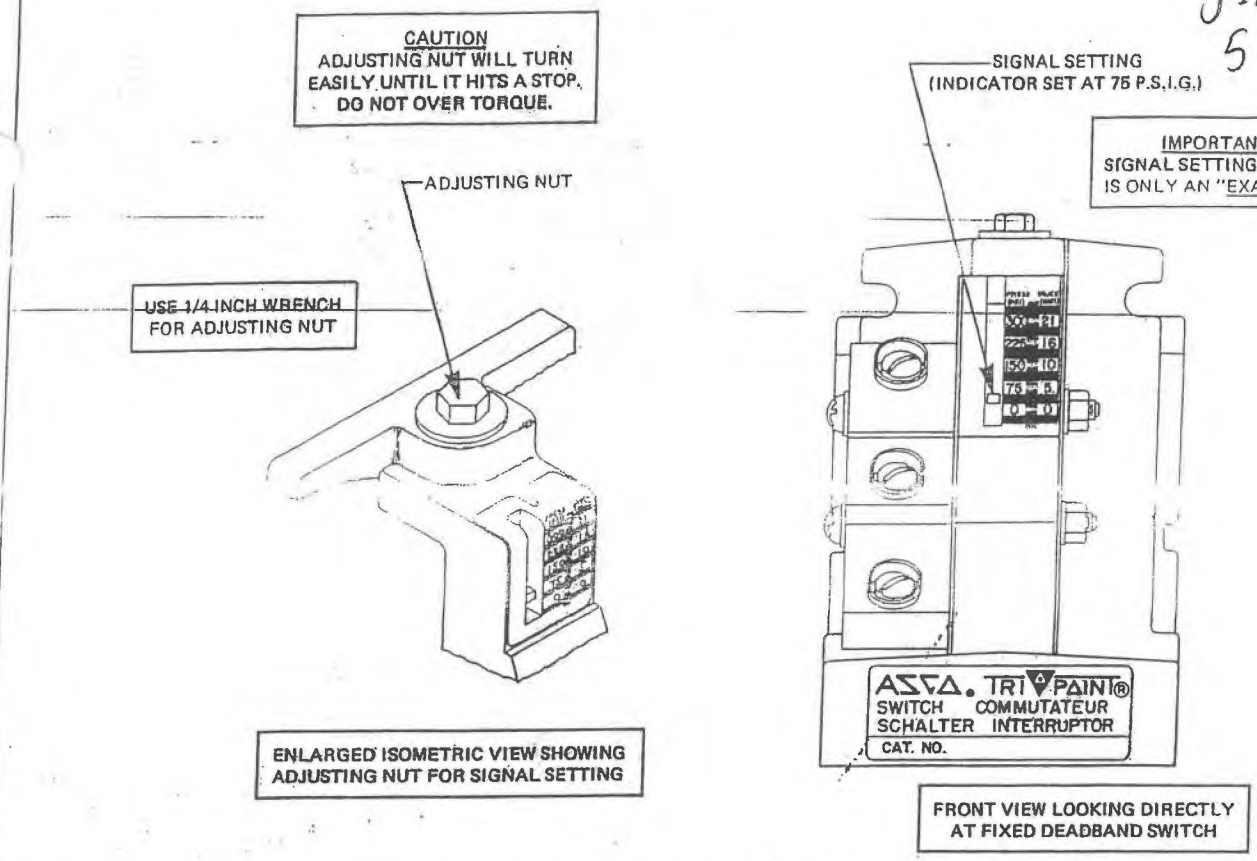


Figure 1. **Adjustment (Signal Setting) of Fixed Deadband Switch**

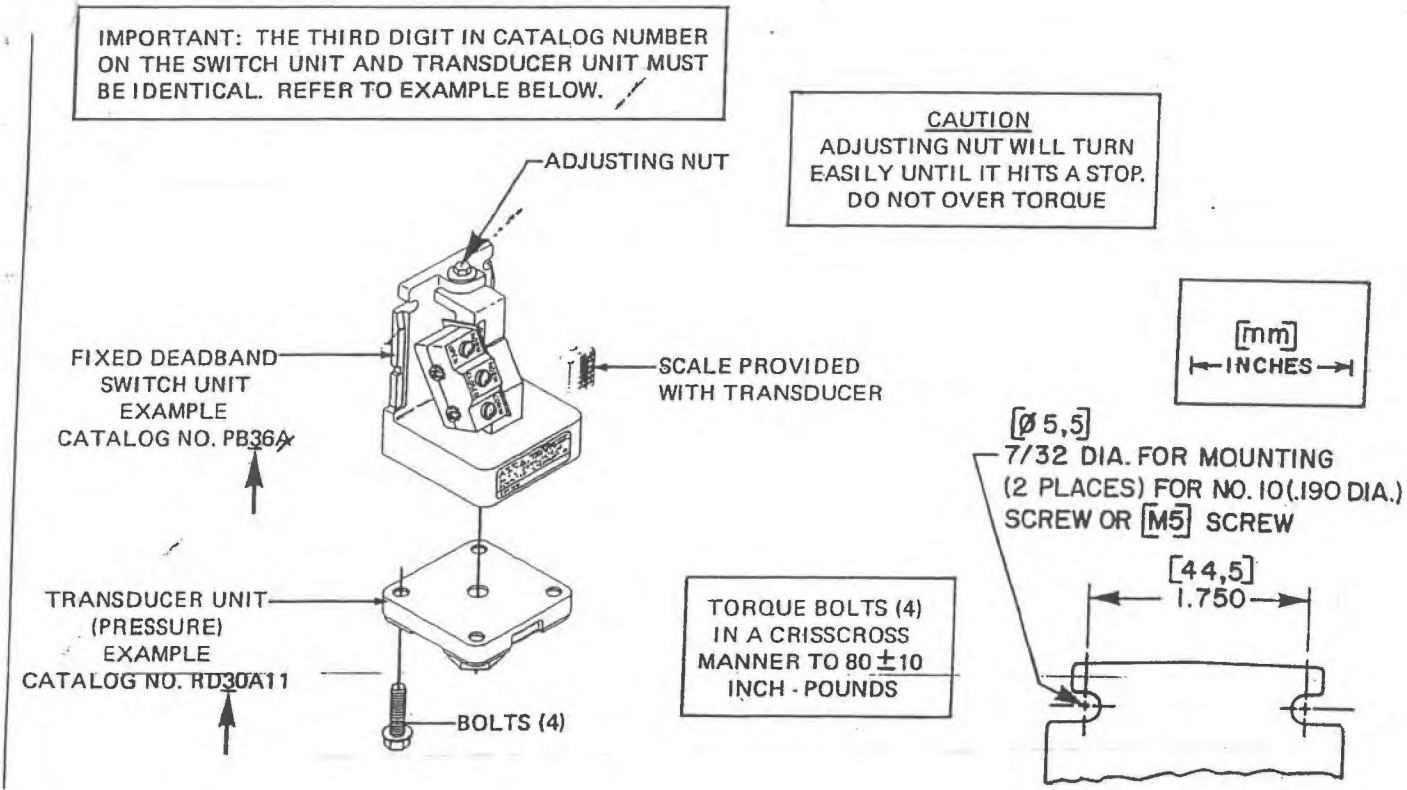


Fig. 2. **Open Frame Switch and Mounting Dimensions (Switch Unit and Transducer Unit to be Assembled)**

J.P.
5-9-08

JWI AUTOMATIC PUMP CONTROL SYSTEM MANUAL

Description

The automatic pump control system is designed to automatically increase the feed pump pressure during the fill cycle. Low initial feed pressures will allow a soft layer of sludge particles to be deposited on the filter cloth. This layer will become the filtering media, enhancing the filterability of the incoming slurry. High initial feed pump pressures can build a very tightly packed impermeable layer of solids on the filter cloth, restricting the filterability of incoming slurry.

The automatic feed pump system allows the pressure to be automatically increased in four intervals throughout the fill cycle. These intervals and pressures are fully adjustable to suit the type of slurry and the percentage of solids. Continuous monitoring of the feed pump pressure allows the system to automatically shut down when the press has become filled. Also incorporated into the system is a low hydraulic pressure safety shut down device. Any time the hydraulic pressure drops below the preset limits, the system will completely shut down, eliminating any possible leaking. The control panel features various switches, pilot lights, and timers to give at-a-glance monitoring of the system.

Installation and Set-Up

1. Mount the control panel near the filter press (unless factory installed).
2. Connect the 110 volt, 60 cycle current to the panel. (Note: See wiring diagram.)
3. Connect wires from the low hydraulic pressure switch, located in the pump cabinet, to the control panel (unless factory installed).
4. Install the air piloted regulator at the feed pump. (See diagram 2.03 or 8.06.)
5. Connect the pilot line and the pressure gauge line from the panel to the pilot regulator. (See diagram 2.03 or 8.06.)
6. Connect a filtered and regulated air line supply to the control panel. (See diagram.)
7. Air supply should maintain not less than 100 psi.

Pre-Operational Check Out

NOTE: Disconnect all power to control panel prior to making adjustments.

JWI recommends the following timer and regulator settings only as a place to start and can be changed to meet the needs of your system to give best cake density.

Timers		Regulators
1 TR	30 minutes	Stage 1 - 25 psi
2 TR	30 minutes	State 2 - 50 psi
3 TR	30 minutes	Stage 3 - 75 psi
4 TR	1 minute	Stage 4 - 100 psi

The psi settings of the solenoid controlled regulators will only show when the system is in operation and will read out on the regulated pressure gauge located on the control panel. NOTE: The solenoid controlled regulator number four (4) must always carry a 5 psi higher reading than the adjustable air pressure switch setting.

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Sequence of Operation

NOTE: Read carefully before starting system.

Turn the on/off switch on the control panel to the "on" position. Push the green start button. System will start. showing a green systems on light. NOTE: If the green systems on light does not glow and the system does not start, a yellow low hydraulic pressure light may come on indicating the press is not completely closed or up to its maximum hydraulic pressure. If the yellow light had come on during the filling cycle, the system would have completely shut down.

With the green systems on light on, timer 1 TR will be energized, opening the number one (1) solenoid valve directing air through the number one (1) regulator. A 25 psi reading will register on the regulated pressure gauge. The number one (1) regulator will open the air piloted regulator to start operating the feed pump at 25 psi. The feed pump will continue to operate at 25 psi through the duration of the 30 minutes on the 1 TR timer. The lapsed timer indicator will start operating and continue through the entire cycle unless shut down manually, automatically, or by the low hydraulic pressure switch. When the 1 TR timer has timed out, it will energize 2 TR timer which will open the number two (2) solenoid valve directing air through the number two (2) regulator, increasing the air piloted regulator to 50 psi which will also read on the regulated pressure gauge and increase the feed pump to 50 psi. This will continue at 50 psi through the duration of the thirty minutes on the 2 TR timer. When the 2 TR timer has timed out, it will energize the 3 TR timer which will open the number three (3) solenoid valve directing air through the number three (3) regulator increasing the air pilot regulator to 75 psi. This will show on the regulated pressure gauge and will increase the pressure at the feed pump to 75 psi for the duration of thirty minutes set on the 3 TR timer. When the 3 TR timer times out, it will open the number four (4) solenoid valve directing air through the number four (4) regulator, increasing the air pilot regulator to 100 psi. This will also show on the regulated pressure gauge and will increase the feed pump pressure to 100 psi maximum. The feed pump will maintain the 100 psi or maximum pressure until shut down by the control system.

At this point, it is important to understand the operation of three selective components in the system.

First, the fourth timer, setting on the fourth timer from our first page we suggested to start out at one minute. Setting on this timer will always be a very short time in comparison to the first three timers. The reason is that the timer does not directly control the time duration that the fourth solenoid is directing 100 pounds pressure to our pilot regulator. The timer is used to monitor the amount of time between strokes of the feed pump.

The second item is the setting of the fourth-stage regulator in the panel. This regulator should be set at a pressure you would like to have the press operate at, as our full operating filtration pressure. For example, we used 100 psi.

The third item to understand is the adjustable air pressure switch (see page 8.24). This pressure switch is mounted in the bottom of the cabinet. The setting of this pressure switch should be at a pressure slightly below the setting of the fourth regulator connected with our fourth-stage setting. For example, I will recommend 5 psi or less below the setting of the fourth regulator. This to ensure that we do have enough pressure to operate the pressure switch. The purpose of the switch is to signal the number four timer that the system is holding 100 psi, and start timing.

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The Operation of These Three Items Together

When the press is operating and our feed pump stalls out at 100 psi and pressure is holding; at this same time, the pressure switch set for the pressure slightly below 100 psi is operated. Once this pressure switch is operated, timer number four will start to time the amount of time this pressure switch is held by the pressure in the pump control circuit. With number four timer set for one minute and maintained 100 pounds per square inch on this pressure switch for one minute or more, the timer will time out and switch our pump control system off and give us a press full indication on the panel. If the pressure switch is maintained at the 100 psi position for any period of time less than one minute and the pump makes a stroke, it will rob air from this pressure switch, drop the pressure switch back open again, and reset the timer back to zero. The timer will not start timing again until the pressure switch reads 100 psi once more. If it does it will start to time again. Either time out and shut off or reset as before. This could go on for any amount of time depending on how close the other settings have been made the press could be on this last cycle for two to three hours depending on the type of operation of your press.

The end result is that our press could be on line for the total amount of time which we have on our first three timers. For example, we were using 30 minutes each for a total of 90 minutes plus any amount of time accumulated by the fourth timer. This could be in the hours. These adjustments will have to be adjusted and played with by the customer until satisfying results are obtained.

Pressure Swtich Adjustment

In adjusting the setting of the pressure switch in the cabinet, we recommend that the press first be run to the pressure which we would like to see for our final filtration pressure which, for example, use 100 psi and the pump has stalled , turn the setting on the pressure switch down until it trips the pressure switch and starts timer number 4. If timer is set for one minute, the press should shut off in one minute.

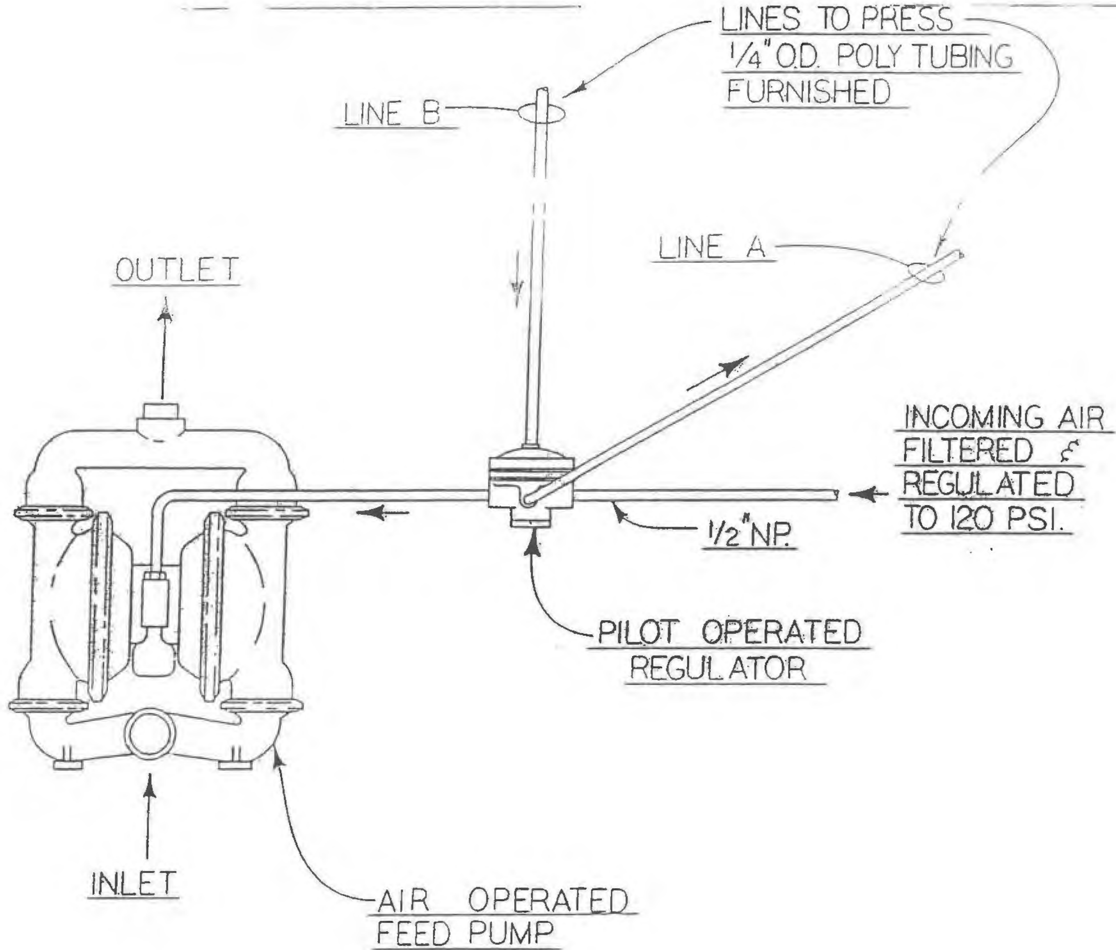
Operation of Pilot Operated Regulator

Operation of pilot operated regulator as shown on page 2.03, 8.06, and 8.20A of instruction manual, this pilot operated regulator controls the air pressure to the pump on a 1:1 ratio or for each pound of air pressure in pilot line B, we get equal air to pump only in greater volume. Line A is a pressure monitor line which gives a gauge reading on the panel and also is the control for the pressure switch.

Auxiliary Contacts

Available for other monitors which operate upon a press full condition. See wiring diagram for relay wire numbers.

J.P.
5-9-08



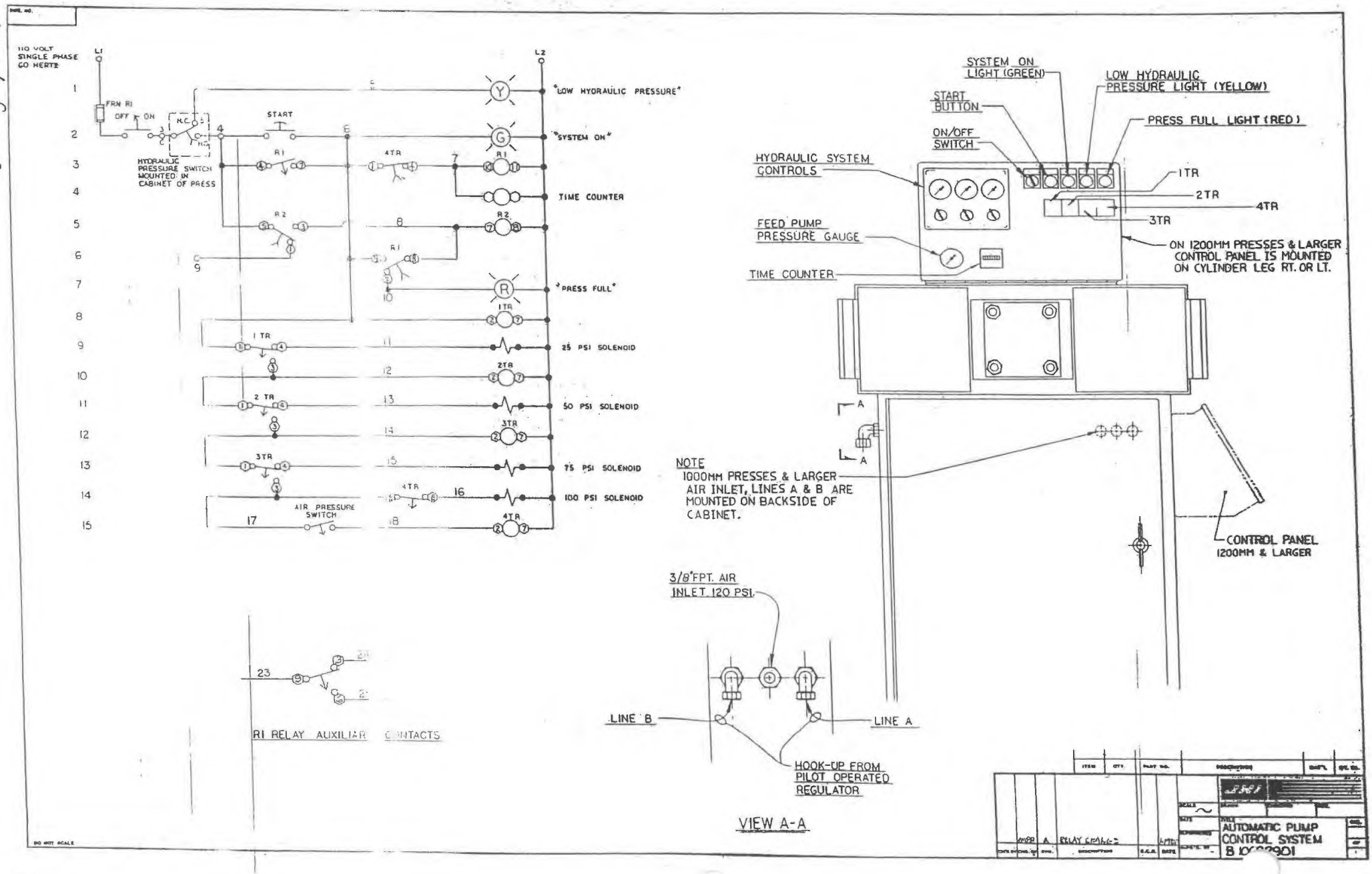
ITEM	QTY.	PART NO.	DESCRIPTION	MAT'L	WT. EA.

JWI

SCALE ~	DRAWN M.P. Doucett	CHECKED	REV.	
DATE 11-29-83	TITLE PILOT OPERATED			SHT.
SUPERSEDES				
SUPS'D. BY	REGULATOR HOOK-UP			OF

CHK BY	CHG. BY	SYM.	DESCRIPTION	E.C.N.	DATE

U-P-5-9-08


110 VOLT
SINGLE PHASE
60 HERTZ
L1
L2
FRN R1
OFF
ON
START
HYDRAULIC PRESSURE SWITCH MOUNTED IN CABINET OF PRESS
R1
R2
4TR
1TR
2TR
3TR
"LOW HYDRAULIC PRESSURE"
"SYSTEM ON"
TIME COUNTER
"PRESS FULL"
25 PSI SOLENOID
50 PSI SOLENOID
75 PSI SOLENOID
100 PSI SOLENOID
AIR PRESSURE SWITCH
SYSTEM ON LIGHT (GREEN)
LOW HYDRAULIC PRESSURE LIGHT (YELLOW)
START BUTTON
PRESS FULL LIGHT (RED)
ON/OFF SWITCH
HYDRAULIC SYSTEM CONTROLS
FEED PUMP PRESSURE GAUGE
TIME COUNTER
ON 1200MM PRESSES & LARGER CONTROL PANEL IS MOUNTED ON CYLINDER LEG RT. OR LT.
NOTE
1000MM PRESSES & LARGER AIR INLET, LINES A & B ARE MOUNTED ON BACKSIDE OF CABINET.
CONTROL PANEL
1200MM & LARGER
3/8" FPT. AIR INLET 120 PSI.
LINE B
LINE A
HOOK-UP FROM PILOT OPERATED REGULATOR
VIEW A-A
R1 RELAY AUXILIAR CONTACTS
DO NOT SCALE
AUTOMATIC PUMP CONTROL SYSTEM

U.I.
5-9-08

APPENDIX C

PRESSURE TEST REPORT

J.R.
5-9-08

ROSS®
Ross Incineration Services, Inc.

36790 Giles Road
Grafton, OH 44044-9125

Replacement Filter Press Tightness Test

On March 4th, 2008, the JWI filter press was pressure tested with water. During the first run the filter press leaked. Gaskets were inspected and changed. During the re-tests, the filter press held water and did not leak. As such, the filter press was found to be tight.

Ryan Zwick
Project Manager
Technology Department
Ross Incineration Services, Inc.

MW
4-30-09

CERTIFICATION FOR REPLACEMENT TANKS 67 AND 68 AT ROSS INCINERATION SERVICES, INC.

R.E. WARNER JOB NO. 59608

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OH 44044

REV. 0

MARCH 9, 2009

Prepared by:

R.E. WARNER & ASSOCIATES, INC.
LA CENTRE, SUITE 200
25777 DETROIT ROAD
WESTLAKE, OHIO 44145
TEL: (440) 835-9400 FAX: (440) 835-9474
E-MAIL: contactus@rewarner.com
WEBSITE: www.rewarner.com

APPENDICES

1.0 PURPOSE

Ross Incineration Services, Inc. (RIS) replaced the existing Filter Press Feed Tanks 67 and 68 with functionally equivalent units. This was done as preventative maintenance because the existing units are nearing the end of their operational lives. RIS uses Tanks 67 and 68 to store sludge from its Closed Loop Scrubber Water System prior to it being dewatered by the onsite Filter Press. Ohio hazardous waste regulations require that the design and installation of the replacement tanks be certified by an independent, qualified registered professional engineer per OAC Rule 3745-55-92. Therefore, RIS contracted R.E. Warner & Associates, Inc (R.E. Warner) to review and certify the design and installation of the replacement Filter Press Feed Tanks 67 and 68 in compliance with this Rule.

2.0 REVIEW AND INSPECTION OF FILTER PRESS FEED TANKS 67 AND 68

The table below lists specifications for replacement Filter Press Feed Tanks 67 and 68:

Tank Design Data:	
Design basis	Portions of: ASME Pressure Vessel Code, Section VIII, Division 1; UL-142 ; Pressure Vessel Design Handbook (Van Nostrand Reinhold); Manual of Steel Construction (AISC).
Construction material	304 Stainless Steel
Lining material	None
Corrosion allowance	0.0625 inches
Design life	25 years
Capacity (nominal)	3,627 gallons/tank
Fabricated shell thickness	0.25 inch
Minimum shell thickness	0.1875 inch
Fabricated top thickness	0.25 inch
Minimum top thickness	0.1875 inch
Fabricated bottom thickness	0.25 inch
Minimum bottom thickness	0.1875 inch
Type of tank bottom	Dish
Diameter (nominal)	6 ft 4 inches
Height (nominal)	17 ft 0.4 inches (19 ft 8 inches from grade)
Design Pressure	Atmospheric
Operating pressure	Atmospheric
Maximum liquid level	16 ft. 0.4 inches
Operating temperature	Ambient
Month/Year of construction	January, 2009
Level indicator present	Yes

The replacement Filter Press Feed Tanks 67 and 68 are fabricated of 304 stainless steel, which represents an upgrade in the material of construction from the existing tanks. The tanks were fabricated in accordance with the 'as-built' drawing in Appendix 2. In addition, the replacement tanks are dish bottom units that are supported on legs, such that they are suspended above the floor of the building. The replacement tanks are also equipped with redundant, upgraded overfill control systems, and will store the same waste sludge as the existing Tanks 67 and 68.

These components are located in the Filter Press / Caustic Building which includes a secondary containment system (previously certified by others). The previous certification is available for review at RIS. See Appendices 1, 2 and 3 for the replacement Filter Press Feed Tanks 67 and 68 process and instrumentation diagram, 'As-Built' drawing and the Filter Press / Caustic Building secondary containment system drawing, respectively.

Prior to commissioning the replacement Filter Press Feed Tanks 67 and 68, a visual inspection has been performed to identify and remedy any structural damages (i.e. weld breaks, punctures, cracks, corrosion, etc). The support structures for the replacement tanks have been inspected and are designed to adequately support the full loads of the tanks. The replacement tanks were also tightness tested and all the gaskets / seals were replaced as necessary.

The operation of the replacement Filter Press Feed Tanks 67 and 68 will not differ from current operations.

3.0 CONCLUSION

The replacement Filter Press Feed Tanks 67 and 68 have sufficient structural integrity, are acceptable for storage of hazardous waste (i.e. sludge from RIS's Closed Loop Scrubber Water System) and are properly designed and installed.

4.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BRIAN EMERY
R.E. WARNER & ASSOCIATES, INC.
LA CENTRE, SUITE 200
25777 DETROIT ROAD
Westlake, Ohio 44145
(440) 835-9400 (phone)

March 9, 2009

P.E. License Number

P.E. Stamp

NPW
4-20-09

PUBLIC INFORMATION VERSION

APPENDIX 1

TANKS 67 & 68 PROCESS AND INSTRUMENTATION DIAGRAM (P&ID);
DRAWING #B-62-001, REV. 9

This Process & Instrumentation drawing delineates with specificity the design of RIS' incineration system including detailed information pertaining to the existence and operation of RIS' waste handling and feed systems, a characteristic of RIS' system which provides a distinct competitive advantage because it allows RIS to accept a wide variety of waste types. This drawing contains information which RIS has claimed confidential business information because it reveals what RIS considers valuable information pertaining to its processes and capabilities. For this reason, RIS has removed this drawing from the Public Information version of the Professional Engineer's certification.

NW

PUBLIC INFORMATION VERSION

H-30-09

APPENDIX 2

TANKS 67 & 68 'AS-BUILT DRAWING

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its incineration System and tanks within the closed loop scrubber water system. For this reason, RIS has removed this drawing from the Public Information Version of the Professional Engineer's certification.

PUBLIC INFORMATION VERSION

Nfw
H-70-09

APPENDIX 3

SECONDARY CONTAINMENT FOR FILTER PRESS BUILDING;
DRAWING #C-90-103, REV. 5

RIS has claimed this drawing confidential because it reveals information pertaining to the size and configuration of its incineration System and tanks within the closed loop scrubber water system. For this reason, RIS has removed this drawing from the Public Information Version of the Professional Engineer's certification.

J.R.
12-20-10

CERTIFICATION OF THE REPLACEMENT SURGE TANK NO. 79 AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP JOB NO. RSD-10-14

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

DECEMBER 9, 2010

Prepared by:
REYNARD S. DEPUY P.E.
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

J.B. 12-2010

TABLE OF CONTENTS

J.P.
12-20-10

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) uses a closed loop scrubber water system (CLSS) to cool and neutralize flue gases in their air pollution control equipment. The scrubber water that is used in the air pollution control equipment for this purpose is pumped to the CLSS to remove particulate, and cool and correct its pH, before being recycled back to the air pollution control equipment for reuse.

The replacement Surge Tank No. 79 consists of an above ground tank which is used for the processing of blowdown from the CLSS. Scrubber water and/or sludge is pumped from the clarifier, maintenance storage tank, or filter press to Surge Tank No. 79. When necessary, RIS adds chemicals (reagents such as ferric chloride and lime) to the scrubber water in the Surge Tank to reduce the concentration of heavy metals in the scrubber water. The scrubber water is then either sent off-site from Surge Tank No. 79 or filtered through the filter press and sent off-site for disposal. If decreasing the concentration of heavy metals is not required, RIS will pump scrubber water directly from Surge Tank No. 79 or the clarifier to tank trucks for shipment to off-site treatment and disposal facilities. RIS also places the scrubber water sludge into Surge Tank No. 79 prior to pumping it to the filter press for dewatering (a Waste Product Survey which describes the hazardous characteristics of the scrubber water is included in **APPENDIX 1**). Surge Tank No. 79 may also be used for storage of makeup water as needed.

The replacement Surge Tank No. 79 is located within the CLSS secondary containment system which prevents any releases from migrating into the environment.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the replacement Tank 79 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly designed and installed, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group via NORFAB to review and certify the design, installation and operation of replacement Surge Tank No. 79 in compliance with these regulatory requirements.

J.P.
12-20-10

Public Information Version

The information on this page pertains to the design and operation of RIS' incineration system. For this reason, RIS has removed all confidential information from this page.

2.0 REVIEW AND INSPECTION OF REPLACEMENT SURGE TANK NO. 79

The replacement Surge Tank No. 79 meets the following specifications:

Physical Characteristics of Replacement Surge Tank No. 79	
Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 satisfied	
Containment basin capacity	
Two-layer waste impermeable coating on containment basin	
Year of construction	
Level indication	

J.P.
12-20-10

The new Tank No. 79 meets the same design standard (i.e., API 650), capacity (i.e., 56,402 gallons), nominal height (i.e., 24 feet) and diameter (i.e., 20 feet) as the unit it is replacing. The new Tank No. 79 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., scrubber water) also remain the same as that of the unit it is replacing. Overall, the new Tank No. 79 will function in an equivalent manner to the unit it is replacing. Drawing No. C-90-101, Rev. 3 which identifies the location of the replacement Surge Tank No. 79 within the CLSS is included in **APPENDIX 2.**

Replacement Surge Tank No. 79 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the hazardous scrubber water. In addition, replacement Surge Tank No. 79 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3.**

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

12-9-10

Date

REYNARD S. DEPUY P.E.
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

J.P.
12-20-10

APPENDIX 1

SCRUBBER WATER WASTE PRODUCT SURVEY

J.P. 12-20-10

Ross Incineration Services, Inc. Waste Product Survey 6/18/10 Page 1

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

Former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5835

Business contact: Deb Bishop
Business title:
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5827 Ext.: Cell: (440)-366-3827
Technical contact: Deb Bishop
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5827 Ext.: Cell: (440)-366-3827

3. GENERAL INFORMATION

Waste name: SPENT SCRUBBER WATER

Generator code:
SIC code:
Waste generating process: INCINERATOR OFF-GAS SCRUBBING
Primary business activity at generating facility: INCINERATION

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Rate of Generation	Container	Quantity	Time Period	Accum	One Time	Service Agreement Entity
	GALLONS	25000	DAY		N	ROSS GENERATED WASTE Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: CLEAR TO YELLOW LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL	

Bulk shipment: BULK
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GRAB

Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
SODIUM CHLORIDE	6.00	20.00	.00
SODIUM SULFATE	1.00	4.00	.00
WATER	76.00	93.00	.00
OTHER INORGANICS	.00	3.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

			Total Concentration Range Wt%:	
S	.0	.1	.0	1.0
Cl	.0	.1	3.0	12.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	.1
P	.0	1.0	.0	1.0

B. Metals maximum content: Y

Sb	70.00p	Pb	500.00p	Al	.0	1.0%
As	10000.00p	Hg	.00p	Si	.0	1.0
Ba	140.00p	Ni	4.00p	Mg	.0	1.0%
Be	1.00p	Se	7.00p	Na	2.8	9.2
Cd	20.00p	Ag	30.00p			
Cr	25.00p	Tl	33.00p			
Cu	20.00p	Zn	300.00p			
Li	50000.00p	Mo	1.00p			

C. Does the waste contain: K .0 1.0%
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

12-20-10

Former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 22 %WT Suspended solids: 1 %WT
BTU/lb.: 0 to 12000 Ash content: 20 %WT
Flash pt: 201 to 600 °F Vap pr: .0 to 18.0 70°F
Specific gravity: 1.100 to 1.600 pH: 7.0 to 8.5
Corrosivity MPY: <30
Colors: CLEAR
YELLOW

Odorous? Y MILD

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 24

Is material stable? Y (If unstable i.e., merization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: Y Non-wastewater: N

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2
Eye: Y AVOID CONTACT
Inhalation: Y AVOID CONTACT
Dermal: Y AVOID CONTACT
Ingestion: Y AVOID CONTACT
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D004 / ARSENIC
D006 / CADMIUM
D007 / CHROMIUM
D008 / LEAD
D010 / SELENIUM

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
NA3082, HAZARDOUS WASTE, LIQUID, N.O.S., (D004,D006,D007,D008,D010), 9, PG III, RQ

DOT "Poison inhalation hazard?" N
Container label(s): CLASS 9
Placard(s): CLASS 9

COMMENTS:
SEE THE ATTACHED WASTE CODE LIST
THIS WASTE STREAM MAY BE "DERIVED FROM"
ACTUAL RESULTS FOR MERCURY AND NICKEL
ARE 2.96 PPM AND 2.2 PPM, RESPECTIVELY

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature _____ Date _____

Print Name _____ Print Title _____

JP
12-2010

APPENDIX 3

REPLACEMENT SURGE TANK NO. 79 TIGHTNESS TEST RESULTS

Ross Incineration Services, Inc.

36790 Giles Road
Grafton, OH 44044-9125

J.P.
12-20-10

12/10/10

REPLACEMENT SURGE TANK NO. 79 TIGHTNESS TEST

On December 10, 2010 the replacement Surge Tank No. 79 was completely filled with water from the Fresh Water Lake. The water remained in the tank for 12 hours. The water level did not change, nor did the tank show any signs of leakage during this period.

Scott Kogler – Project Manager

MW
9-19-11

CERTIFICATION OF TANK NO. 54 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

AUGUST 29, 2011

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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APPENDICES

NFW
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1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1.**

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 54), was removed from service due to excessive corrosion in its cone bottom. A new cone bottom was subsequently installed on Tank No. 54 and this unit is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 54 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 54 in compliance with these regulatory requirements.

pjw
9-19-11

PUBLIC INFORMATION VERSION

Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO. 54 REPAIRS

Tank No. 54 meets the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

NJW
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The repaired Tank No. 54 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 54 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 54 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 19: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 4: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No. 54 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 54 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S. DePuy — 8/29/11

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

Date

P.E. STAMP & NO.

NTW
9-19-11

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

Ross Incineration Services, Inc. | Waste Product Survey | 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 | (440) 748-5800 | US EPA ID# OHD048415665

former WPS# (if applicable) | Please do not leave any blank spaces. | 1. WPS# 58526 N

MJW 9-19-11

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)

Primary business activity at generating facility: TSDF

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: Y

Are you the original generator: N VARIES

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340. N

Rate of Generation	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
Container GALLONS	5000	WEEK			CHEMTRON CORPORATION Per Subpart CC. VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D.O.T. Specification

lk shipment: TANKER

llet: N Gaylord: N Hopper: N Drum: N

Overall. Length: Width: Height: Volume:

Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE.	.00	30.00	.00
BUTYL CELLOSOLVE, METHYL ETHYL	.00	.00	.00
KETONE, XYLENE, PROPYLENE GLYCOL	.00	.00	.00
METHYL ETHER ACETATE, TOLUENE,	.00	.00	.00
XYLENE	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE	.00	5.00	.00
CHLORIDE, 1.1.1-TRICHLOROETHANE	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL,	.00	5.00	.00
METHANOL	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT,	.00	10.00	.00
SAND, SILT, SCALE POLYMERS,	.00	.00	.00
RUST, PIGMENTS	.00	.00	00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Range		Total Concentration Range		Wt%:
S	.0	.1	.0	.1	
Cl	.0	4.0	0	4.0	
F	.0	.1	.0	.1	
Br	.0	.1	.0	1	
I	.0	.1	0	.1	
N	.0	.1	.0	.1	
P	.0	1	.0	.1	

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p
As	10.00p	Hg	.20p
Ba	5000.00p	Ni	1.00p
Be	100.00p	Se	1.00p
Cd	25.00p	Ag	500.00p
Cr	250.00p	Tl	3000.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	3 0%	Si	.0	3.0
Mg	.0	.2%	Na	.0	.3
K	.0	.3%			

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: Y

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

NJW 4-19-11

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 58526 N

8 PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range ********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb. 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s). 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System):
Eye: N
Inhalation: N
Dermal N
Ingestion. N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (SOLVENTS), 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N.O.S. 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS01I1RP CHEMIST REPORT WTW 9-19-11 Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	I
						RIS Type	A
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

Ross Incineration Services, Inc. — Waste Product Survey — NPW 8/05/11 Page

36790 Giles Road, Grafton, Ohio 44044 — (440) 748-5600 — 9-19-11 — US EPA ID# OHD048415665

Former WPS# (if applicable) — Please do not leave any blank spaces. — 1. WPS# 30667 N

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives. N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation Container	Quantity	Time Period	Accum	One Time	Service Agreement Entity
LBS	2000000	YEAR		N	LORD CORPORATION

Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D.O.T. Specification

lk shipment: BULK LIQUID
allet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE
MSDS
Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	00
SULFURIC ACID	00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETH	.00	7.00	.00
LENE, TETRACHLOROETHYLENE, ETC.)	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE,	.00	4.00	00
XYLENE)	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE,	.00	5.00	.00
SODIUM CHLORIDE, ETC.)	.00	.00	00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Range Wt%		Total Wt%	
S	.0	.1	.0	.1
Cl	.0	4.0	.0	6.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	1
P	.0	.1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	25.00p
As	10.00p	Hg	.00p
Ba	100.00p	Ni	1.00p
Be	1.00p	Se	1.00p
Cd	25.00p	Ag	25.00p
Cr	25.00p	Tl	25.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	.1%	Si	.0	1
Mg	.0	.1%	Na	.0	5.0
K	.0	.1%			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

MJW 9-19-11

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range ********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC SOLVENTS	0	15	0
2. WATER	70	85	0
3.	0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100 0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

9. REACTIVITY AND STABILITY

A. Reactivity group number(s) 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (METHANOL) 3, PG II RQ, (METHANOL)

DOT "Poison inhalation hazard?" N

Container label(s).	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN. INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE.
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature _____ Date _____

Print Name _____ Print Title _____

CS0121RP CHEMIST REPORT NW 9-19-11 Date: 8/05/11 User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....: Y	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

. Neut %: 26 Ash % 0 to 5 NONE APPLY N

. Waste Properties:

	Y/N	From	To	Fixed		
S. G.		.800	1.100	.000		
Btu Value/Lb.		0	8000	0		
Melting Point		0				
pH	Y	4.0	10.0	.0		
Free Liquids		100.00			%	
R. G. N.		4	17	106		
Vapor Pressure	Y	50.0	100.0	.0	mm hg	
Min. Flash Pt	Y	0	140	0	F	

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	N
Sulfide >250 ppm	N
Benzene	N
Classification	N
Category	P
Generation	3
Revenue Source	D
RIS Type	
Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

NJW
9-19-11

APPENDIX 2

DRAWING #D-02-001, REV. 19: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 4: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

NJW
9-19-11

APPENDIX 3

REPAIRED TANK NO. 54 TIGHTNESS TEST RESULTS

NM
9-19-11

08-29-11

Tank # 54 repair completion certification test

Tank was pressure tested @ 5lbs PSI

Soap test was completed on all the replaced cone welds & related Flanges

The results were no visible leaks can be detected.
Present Observing this test were the following:

Mark Gibson Mark Gibson 8/29/11

Reynard Depuy

Dave Woodward

CERTIFICATION OF TANK NO. 64 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

APRIL 19, 2012

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 64), was removed from service due to excessive corrosion. The corroded sections of the unit were fill welded, and Tank No. 64 is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 64 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 64 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION.
CONFIDENTIAL INFORMATION HAS
BEEN REMOVED FROM THIS PAGE.

2.0 REVIEW AND INSPECTION OF TANK NO. 64 REPAIRS

Tank No. 64 meets the following specifications:

Tank Design Data:	
Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Fabricated top thickness	
Minimum design top thickness	
Fabricated bottom thickness	
Minimum design bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Design Pressure	
Pressure Relief Valve Setting	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 design standard satisfied	
Month/Year of construction	
Level indicator present	
Secondary Containment System Data:	
Capacity	73,650 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

* Tank was designed and installed in accordance with applicable Ohio Basic Building Code standards, which incorporate NFPA codes by reference, including NFPA Code 30.

The repaired Tank No. 64 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 64 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 64 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 19: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 4: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No. 64 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 64 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S. DePuy — 4/19/12

REYNARD S. DEPUY — Date
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

D-166

JAN 23 2015

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)
Primary business activity at generating facility: TSDF

Rate of Generation	Quantity	Time Period	Accum	One Time N
Container				
GALLONS	5000	WEEK		

Per Subpart CC.
VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: N VARIES
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D.O.T. Specification

Bulk shipment: TANKER
Pallet: N Gaylord: N Hopper: N Drum: N

Overall	Length:	Width:	Height:	Volume:
Waste:	Length:	Width:	Height:	

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste

Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE,	.00	30.00	00
BUTYL CELLOSOLVE, METHYL ETHYL	.00	00	.00
KETONE, XYLENE, PROPYLENE GLYCOL	.00	.00	.00
METHYL ETHER ACETATE, TOLUENE,	.00	00	.00
XYLENE	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE	.00	5.00	.00
CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL,	.00	5.00	.00
METHANOL	.00	.00	00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT,	.00	10.00	.00
SAND, SILT, SCALE POLYMERS,	.00	.00	00
RUST, PIGMENTS	.00	.00	00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

S	.0	.1	Cl	.0	4.0	F	.0	.1	
Br	.0	.1	I	0	.1	N	.0	1	
P	.0	1							

Total Concentration Range Wt%

S	.0	.1	Cl	.0	4.0	F	.0	.1	
Br	.0	.1	I	0	.1	N	.0	1	
P	.0	1							

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p	Al	.0	3.0%	Si	.0	3.0
As	10.00p	Hg	.20p	Mg	.0	.2%	Na	.0	.3
Ba	5000.00p	Ni	1.00p	K	.0	.3%			
Be	100.00p	Se	1.00p						
Cd	25.00p	Ag	500.00p						
Cr	250.00p	Tl	3000.00p						
Cu	1.00p	Zn	1.00p						
Li	1.00p	Mo	1.00p						

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration	ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: Y
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 58526 N

8 PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F. Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb. 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal N
Ingestion. N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (SOLVENTS) 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID N.O.S. COMBUSTIBLE LIQUID, NA1993, III*** WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N.O.S. 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:

12 ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

JAN 23 2015

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2 Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4.....	2. Hazers.....:	3.
4. G Drum.....	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%..	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19	20.	21. ReacMtls>16%.:
22.	23. Reactives	24.
25.	26.	27.
28.	29	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	I
						RIS Type	A
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

After hours #: (614) 760 2045 Phone: (614) 760 2045 Ext.: 127 Cell: (614) 352 0278

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation	Container	Quantity	Time Period	Accum	One Time N
	LBS	2000000	YEAR		

Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE
MSDS
Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	00
SULFURIC ACID	00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETHYLENE, TETRACHLOROETHYLENE, ETC.)	.00	7.00	.00
	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE, XYLENE)	.00	4.00	00
	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE, SODIUM CHLORIDE, ETC.)	.00	.00	00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Range	Wt%: Y
S	.0	.1
Cl	.0	4.0
F	.0	.1
Br	.0	.1
I	.0	.1
N	.0	.1
P	.0	.1

Total Concentration Range Wt%:

	Range	Wt%
	.0	.1
	.0	6.0
	.0	.1
	.0	.1
	.0	.1
	.0	.1
	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	25.00p
As	10.00p	Hg	.00p
Ba	100.00p	Ni	1.00p
Be	1.00p	Se	1.00p
Cd	25.00p	Ag	25.00p
Cr	25.00p	Tl	25.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	.1%	Si	.0	1
Mg	.0	.1%	Na	.0	3.0

C. Does the waste contain: K 0 .1%
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration	ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

JAN 23 2015

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

	Description of Layer	From	To	Fixed
1	(Top) ORGANIC SOLVENTS	0	15	0
2.	WATER	70	85	0
3.		0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100.0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C. State Haz. Waste No.(s) / Reason for Selection

9. REACTIVITY AND STABILITY

A. Reactivity group number(s) 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S (METHANOL), 3, PG II RQ, (METHANOL)

11. LAND DISPOSAL RESTRICTIONS

A Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s).
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN. INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

JAN 2 3 2015

CS0121RP CHEMIST REPORT Date 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4.....:	Y	2. Hazers.....:		3.	
4. G Drum.....:		5. Caustic pH>10:		6.	
7.		8.		9.	
10. Isocy>10%....:		11.		12.	
13.		14.		15. Odorous.....:	
16.		17.		18. HighTox>=5...:	
19.		20.		21. ReacMtls>16%.:	
22.		23. Reactives....:		24.	
25.		26.		27.	
28.		29.		30.	

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9 Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.800	1.100	.000		Stable	Y
Btu Value/Lb.		0	8000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	0		Cyanide >250 PPM	N
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		4	17	106		Benzene	N
Vapor Pressure	Y	50.0	100.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
Form Codes:		(Liquid: W101 Solid: W403)				Generation	3
Composite Category:						Revenue Source	D
Likely to contain PCBs?	N					RIS Type	
						Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

JAN 23 2015

APPENDIX 2

DRAWING #D-02-001, REV. 19: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 4: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

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CONFIDENTIAL INFORMATION HAS
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PUBLIC INFORMATION VERSION.
CONFIDENTIAL INFORMATION HAS
BEEN REMOVED FROM THIS PAGE.

APPENDIX 3

REPAIRED TANK NO. 64 TIGHTNESS TEST RESULTS

04/19/12

Tank Farm III Tank # 64 repair completion certification test:

Tank was pressure tested @ 5lbs PSI

Soap test was completed on all repaired areas of the cone welds & related flanges

There are no visible leaks that can be detected.

Present observing the Test were the Following

Maintenance Manager	John Grey	X_____
Maintenance Supervisor	Mark Gibson	X Mark Gibson 4/19/12
Professional Engineer The Edge Cliff Group 25521 Edgecliff Drive Cleveland Ohio 44132-1161	Reynard S. Depuy	X Reynard S. Depuy

D-179

JAN 23 2015

NFW
2-21-17

PROFESSIONAL ENGINEER'S CERTIFICATION of WEST DIRECT FEED PIPE TRENCH and THIRD DIRECT FEED INSTALLATION AT ROSS INCINERATION SERVICES, INC.

R.E. WARNER & ASSOCIATES INC.

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

PUBLIC INFORMATION VERSION

REV. 0

February 13, 2013

Prepared by:
Craig A. Kleve
R.E. WARNER & ASSOCIATES INC.
25777 DETROIT ROAD
WESTLAKE, OH 44145
440.835.9400

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APPENDICES

PUBLIC INFORMATION VERSION

The six drawings listed above have been provided in the CONFIDENTIAL version of this PE Certification for informational purposes only. They contain design details that go beyond what is required by the RCRA technical standards. Therefore, those details do not become an integral part of RIS' Permit or Application. RIS is bound to the information on these drawings only to the extent that they show general operating and layout information that is required by RCRA.

RIS has claimed these drawings CONFIDENTIAL because they reveal information pertaining to the size and configuration of its incineration system including detailed information pertaining to the existence and operation of RIS' waste handling and feed system, a characteristic of RIS' system which provides a distinct competitive advantage because it allows RIS to accept a wide variety of waste types. These drawings contain information which RIS has claimed confidential business information because they reveal what RIS considers valuable information pertaining to its processes and capabilities. For this reason, RIS has removed these drawings from the PUBLIC INFORMATION version of this PE Certification.

MW
2-21-13

1.0 BACKGROUND

On October 04, 2012, Ross Incineration Services, Inc. ("RIS") submitted an Ohio Hazardous Waste Facility Installation and Operation Permit ("Permit") Modification Request ("PMR") to the Ohio Environmental Protection Agency ("Ohio EPA") for the redesign of its existing Tanker Direct Feed pad at the southwest side of the incineration system to accommodate three tankers for simultaneous processing, as well as the relocation of the current Drum Direct Feed station. The PMR was followed by a December 06, 2012 Addendum which provided additional information, including, but not limited to, a set of six detailed construction-quality scale drawings.

As part of the above submittals, RIS indicated that once the direct feed upgrades were completed, it would submit to Ohio EPA a written assessment, reviewed and certified by an independent, qualified, registered professional engineer, in accordance with OAC 3745-50-42(D), which attests that the new West Direct Feed Pipe Trench has sufficient structural integrity and is acceptable for the containment of a hazardous waste spill from a Direct Feed Tanker. In addition, RIS indicated that the P. E. Certification would attest that the installation was consistent with the drawings in **Attachment Three** of the December 06, 2012 Addendum.

Ohio EPA subsequently approved the PMR in a letter dated December 10, 2012.

2.0 CONCRETE SPECIFICATIONS

The concrete specifications for this project were as follows:

Water/Cement Ratio:	Type 1 Cement: 611 lbs/cubic yard
Compressive Strength:	6,000 psi @ 28 days
Air Entrainment:	6% ± 1%
Water:	278 lbs/cubic yard
#57 Limestone:	1,620 lbs/cubic yard
Natural Sand:	1,245 lbs/cubic yard
Euclid Chemical Eucon MSA Microsilica:	50 lbs/cubic yard
Euclid Chemical Eucon 37 Super:	106 oz.
Euclid Chemical TUF-STRAND SF:	8 lbs/cubic yard

All concrete construction joints for the trench and retaining wall were constructed with 6" PVC waterstops. The construction joints for the new concrete pavement slab and between new and existing concrete pavement slabs were constructed with Vandex Expanseal B Plus or equivalent and will be sealed with Tremco Vulchem 45 joint sealer when weather permits. The new slab is sloped toward the new West Direct Feed Pipe Trench for the collection of rainwater and potential spills. Run-on to the extended direct feed concrete pad is controlled by sloping the areas to the main kiln area sump for collection.

3.0 WEST DIRECT FEED PIPE TRENCH CONTAINMENT CAPACITY

NRW
2-21-13

Potential spills from tanker direct feed locations No.'s 1, 2 or 3 are intended to be collected in the new West Direct Feed Pipe Trench and/or the incineration spill collection sump. The dimensions of the new West Direct Feed Pipe Trench are as follows:

Length = 91 feet
Width = 3 feet
Depth = 3.5 feet

Deducting for displacement due to piping, the net containment capacity of the new West Direct Feed Pipe Trench is approximately 6,800 gallons. The largest size tanker which RIS expects to feed from tanker direct feed locations #1, 2 or 3 is not anticipated to be greater than 6,000 gallons in capacity.

4.0 DRAWINGS

A set of the six detailed construction-quality scale drawings which were provided in **Attachment Three** of RIS' December 06, 2012 Addendum are included in the **Appendix** to this Certification.

5.0 ATTESTATION

The new West Direct Feed Pipe Trench has sufficient structural integrity and is acceptable for the containment of a hazardous waste spill from a Direct Feed Tanker. In addition, the project installation is consistent with the drawings in the **Appendix** to this Certification.

6.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

C. A. Kleve

2-13-2013

Craig A. Kleve
R.E. WARNER & ASSOCIATES INC.
25777 DETROIT ROAD
WESTLAKE, OH 44145
440.835.9400

Date

NFW
2-26-13

APPENDIX

DRAWING No. D-21-116, Rev. E – SITE PLAN AND DRAWING INDEX
DRAWING No. D-21-117, Rev. E – DEMOLITION PLAN
DRAWING No. D-21-118, Rev. E – GENERAL ARRANGEMENT PLAN & SECTIONS PIPING
DRAWING No. D-21-119, Rev. E – FOUNDATION & SLAB PLAN
DRAWING No. D-21-120, Rev. E – SECTIONS AND DETAILS
DRAWING No. D-21-121, Rev. E – STRUCTURAL NOTES

PUBLIC INFORMATION VERSION

RIS has claimed these drawings CONFIDENTIAL because they reveal information pertaining to the size and configuration of its incineration system including detailed information pertaining to the existence and operation of RIS' waste handling and feed system, a characteristic of RIS' system which provides a distinct competitive advantage because it allows RIS to accept a wide variety of waste types. These drawings contain information which RIS has claimed confidential business information because they reveal what RIS considers valuable information pertaining to its processes and capabilities. For this reason, RIS has removed these drawings from the PUBLIC INFORMATION version of this PE Certification.

CERTIFICATION OF TANK NO. 56 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

MAY 24, 2013

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 56), was removed from service because of localized excessive pitting in the cone area due to corrosion. The corroded sections of the unit were fill welded, and Tank No. 56 is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 56 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 56 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO. 56 REPAIRS

Tank No. 56 meets the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

The repaired Tank No. 56 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 56 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 56 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 22: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No. 56 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 56 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5/24/13

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

Date

P.E STAMP & NO

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

JUL 28 2014

OHIO EPA NEDO

Ross Incineration Services, Inc. Waste Product Survey 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 58526 N

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)

Primary business activity at generating facility: TSDF

Rate of Generation	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
Container GALLONS	5000	WEEK			CHEMTRON CORPORATION

Per Subpart CC.

VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: Y

Are you the original generator: N VARIES

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: TANKER

Pallet: N Gaylord: N Hopper: N Drum: N

Overall: Length: Width: Height: Volume

Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other.

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range	Wt%	PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE, BUTYL CELLOSOLVE, METHYL ETHYL KETONE, XYLENE, PROPYLENE GLYCOL METHYL ETHER ACETATE, TOLUENE, XYLENE	.00	30.00	.00
	.00	.00	.00
	.00	.00	.00
	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	5.00	.00
	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL, METHANOL	.00	5.00	.00
	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT, SAND, SILT, SCALE, POLYMERS, RUST, PIGMENTS	.00	10.00	.00
	.00	.00	.00
	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p-ppm)

A. Organic Bound Constituents Range Wt%: Y

	Range	Wt%
S	.0	.1
Cl	.0	4.0
F	.0	.1
Br	.0	.1
I	0	.1
N	0	.1
P	.0	.1

Total Concentration Range Wt%

	Range	Wt%
S	.0	.1
Cl	0	4.0
F	.0	.1
Br	.0	.1
I	0	.1
N	0	.1
P	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p	Al	.0	3.0%
As	10.00p	Hg	.20p	Mg	.0	.2%
Ba	5000.00p	Ni	1.00p	K	.0	.3%
Be	100.00p	Se	1.00p	Si	.0	3.0
Cd	25.00p	Ag	500.00p	Na	.0	.3
Cr	250.00p	Tl	3000.00p			
Cu	1.00p	Zn	1.00p			
Li	1.00p	Mo	1.00p			

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: Y

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 58526 N

8 PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

	Description of Layer	From	To	Fixed
1.	(Top) ORGANIC	0	30	0
2	AQUEOUS	70	99	0
3.	SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System):
Eye: N
Inhalation: N
Dermal N
Ingestion N
Other: N
Carcinogen: N
Attach supporting data, including detection limit.

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (SOLVENTS), 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTIBLE LIQUID, NA1993, III*** WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N.O.S. 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N

Container label(s).	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed	
S. G.		.900	1.000	.000	
Btu Value/Lb.		0	5000	0	
Melting Point		0			
pH	Y	4.0	10.0	.0	
Free Liquids		100.00			%
R. G. N.		106	101		
Vapor Pressure	Y	.0	50.0	.0	mm hg
Min. Flash Pt	Y	0	140	0	F

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	Y
Sulfide >250 ppm	N
Benzene	Y
Classification	N
Category	P
Generation	3
Revenue Source	I
RIS Type	A
Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

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Ross Incineration Services, Inc.   W a s t e P r OHIO EPA NEDO   8/05/11   Page 1

36790 Giles Road, Grafton, Ohio 44044   (440) 748-5800   US EPA ID# OHD048415665

former WPS#   (if applicable)   Please do not leave any blank spaces.   1 WPS# 30667 N

3 GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation Container	Quantity	Time Period	Accum	One Time	Service Agreement Entity
LBS	2000000	YEAR		N	LORD CORPORATION

Per Subpart CC.
VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	.00
SULFURIC ACID	.00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETH	.00	7.00	.00
LENE, TETRACHLOROETHYLENE, ETC.)	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE,	.00	4.00	.00
XYLENE)	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE,	.00	5.00	.00
SODIUM CHLORIDE, ETC.)	.00	.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE
MSDS
Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Organic Bound		Total	
S	.0	.1	0	.1
Cl	0	4.0	.0	6.0
F	.0	.1	.0	1
Br	0	1	0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	.1
P	.0	.1	.0	1

B. Metals maximum content Y

Sb	25.00p	Pb	25.00p
As	10.00p	Hg	.00p
Ba	100.00p	Ni	1.00p
Be	1.00p	Se	1.00p
Cd	25.00p	Ag	25.00p
Cr	25.00p	Tl	25.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	.1%	Si	.0	1
Mg	.0	1%	Na	.0	3.0
K	.0	.1%			

C. Does the waste contain:
PCBs: N
Asbestos: N   Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC SOLVENTS	0	15	0
2. WATER	70	85	0
3.	0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.. 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100 0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

9. REACTIVITY AND STABILITY

A. Reactivity group number(s) 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (METHANOL) 3, PG II, RQ, (METHANOL)

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE.
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....: Y	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed	
S. G.		.800	1.100	.000	
Btu Value/Lb.		0	8000	0	
Melting Point		0			
pH	Y	4.0	10.0	.0	
Free Liquids		100.00		%	
R. G. N.		4	17	106	
Vapor Pressure	Y	50.0	100.0	.0 mm hg	
Min. Flash Pt	Y	0	140	0 F	

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	N
Sulfide >250 ppm	N
Benzene	N
Classification	N
Category	P
Generation	3
Revenue Source	D
RIS Type	
Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

APPENDIX 2

DRAWING #D-02-001, REV. 22: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

APPENDIX 3

REPAIRED TANK NO. 56 TIGHTNESS TEST RESULTS

05-24-13

Tank # 56 Repair completion certification test

Tank was pressure Tested @ 5lbs

Soap test was completed on all the repaired cone areas of welding

The results were no visible leaks were detected

Present observing the test were the following:

Maintenance Manager Michael Brucchieri

Maintenance Project Manager Mark Gibson 5/24/13

EDGECLIFF GROUP PE Reynard Depuy 5/24/13

CERTIFICATION OF TANK NO. 62 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

MAY 24, 2013

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 62), was removed from service because of localized excessive pitting in the cone area due to corrosion. The corroded sections of the unit were fill welded, and Tank No. 62 is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 62 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 62 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO. 62 REPAIRS

Tank No. 62 meets the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

The repaired Tank No. 62 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 62 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 62 will function in an equivalent manner to this same unit prior to its repairs RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 22: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No. 62 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 62 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5/24/13

Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

JUL 2 8 2014

OHIO EPA NEDO

Ross Incineration Services, Inc. Waste Product Survey 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 58526 N

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)

Primary business activity at generating facility: TSDF

Rate of Generation		Time		One Time	Service Agreement Entity
Container	Quantity	Period	Accum	N	CHEMTRON CORPORATION
GALLONS	5000	WEEK			Per Subpart CC,
					VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: Y

Are you the original generator: N VARIES

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T Specification

Bulk shipment: TANKER

Pallet: N Gaylord: N Hopper: N Drum: N

Overall: Length: Width: Height: Volume:

Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other.

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE,	.00	30.00	.00
BUTYL CELLOSOLVE, METHYL ETHYL	.00	.00	.00
KETONE, XYLENE, PROPYLENE GLYCOL	.00	.00	.00
METHYL ETHER ACETATE, TOLUENE,	.00	.00	.00
XYLENE	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE	.00	5.00	.00
CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL,	.00	5.00	.00
METHANOL	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT,	.00	10.00	.00
SAND, SILT, SCALE, POLYMERS,	.00	.00	.00
RUST, PIGMENTS	.00	.00	00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

S	.0	.1	Cl	.0	4.0	F	.0	.1	Br	.0	.1
I	.0	.1	N	.0	.1	P	.0	.1			

Total Concentration Range Wt%:

S	.0	.1	Cl	.0	4.0	F	.0	.1	Br	.0	.1
I	.0	1	N	.0	.1	P	.0	.1			

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p	Al	.0	3.0%	Si	.0 3.0
As	10.00p	Hg	.20p	Mg	.0	.2%	Na	.0 .3
Ba	5000.00p	Ni	1.00p	K	.0	.3%		
Be	100.00p	Se	1.00p					
Cd	25.00p	Ag	500.00p					
Cr	250.00p	Tl	3000.00p					
Cu	1.00p	Zn	1.00p					
Li	1.00p	Mo	1.00p					

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: Y

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 58526 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (SOLVENTS) 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N O S., 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N

Container label(s):	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	I
						RIS Type	A
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 30667 N

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Waste generating process: CHEMICALS MANUFACTURING

Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: N

Are you the original generator: Y

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Rate of Generation		Time		One Time	Service Agreement Entity
Container	Quantity	Period	Accum	N	LORD CORPORATION
LBS	2000000	YEAR			Per Subpart CC,
					VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID

Pallet: N Gaylord: N Hopper: N Drum: N

Overall Length: Width: Height: Volume:

Waste Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	.00
SULFURIC ACID	.00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETH	.00	7.00	.00
LENE, TETRACHLOROETHYLENE, ETC.)	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE,	.00	4.00	.00
XYLENE)	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE,	.00	5.00	.00
SODIUM CHLORIDE, ETC.)	.00	.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

GENERATOR KNOWLEDGE

MSDS

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Range		Total Concentration Range		Wt%:
S	.0	.1	.0	.1	
Cl	0	4.0	.0	6.0	
F	.0	.1	0	.1	
Br	.0	.1	0	.1	
I	.0	.1	.0	.1	
N	.0	1	.0	.1	
P	.0	.1	.0	1	

B. Metals maximum content Y

Sb	25.00p	Pb	25.00p	Al	.0	.1%
As	10.00p	Hg	.00p	Mg	.0	.1%
Ba	100.00p	Ni	1.00p	K	.0	.1%
Be	1.00p	Se	1.00p	Si	.0	1
Cd	25.00p	Ag	25.00p	Na	.0	3.0
Cr	25.00p	Tl	25.00p			
Cu	1.00p	Zn	1.00p			
Li	1.00p	Mo	1.00p			

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: N

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC SOLVENTS	0	15	0
2. WATER	70	85	0
3.	0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100.0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (METHANOL) 3, PG II, RQ, (METHANOL)

DOT "Poison inhalation hazard?" N

Container label(s):	Placard(s):
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE,
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature _____ Date _____

Print Name _____ Print Title _____

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....: Y	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.800	1.100	.000		Stable	Y
Btu Value/Lb.		0	8000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	N
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		4	17	106		Benzene	N
Vapor Pressure	Y	50.0	100.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	D
						RIS Type	
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

APPENDIX 2

DRAWING #D-02-001, REV. 22: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

APPENDIX 3

REPAIRED TANK NO. 62 TIGHTNESS TEST RESULTS

05-24-13

Tank # 62 Repair completion certification test

Tank was pressure Tested @ 5lbs

Soap test was completed on all the repaired cone areas of welding

The results were no visible leaks were detected

Present observing the test were the following:

Maintenance Manager Michael Brucchieri

Maintenance Project Manager Mark Gibson 5/24/13

EDGECLIFF GROUP PE Reynard Depuy 5/24/13

CERTIFICATION OF TANK NO. 55 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

June 07, 2013

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 55), was removed from service because of localized excessive pitting in the cone area due to corrosion. The corroded sections of the unit were fill welded, and Tank No. 55 is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 55 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 55 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO. 55 REPAIRS

Tank No. 55 meets the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

The repaired Tank No. 55 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 55 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 55 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 22: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I. II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No. 55 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 55 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

[signature] 6·7·13

REYNARD S. DEPUY — Date

THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E STAMP & NO

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

JUL 28 2014

OHIO EPA NEDO

Ross Incineration Services, Inc. — W a s t e P r o d u c t S u r v e y — 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 — (440) 748-5800 — US EPA ID# OHD048415665

former WPS# (if applicable) — Please do not leave any blank spaces. — 1. WPS# 58526 N

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)

Primary business activity at generating facility: TSDF

Rate of Generation Container	Quantity	Time Period	Accum	One Time
GALLONS	5000	WEEK		N

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: Y

Are you the original generator: N VARIES

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Service Agreement Entity
CHEMTRON CORPORATION
Per Subpart CC.
VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: TANKER

Pallet: N Gaylord: N Hopper: N Drum: N

Overall: Length: Width: Height: Volume:

Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE,	.00	30.00	.00
BUTYL CELLOSOLVE, METHYL ETHYL	.00	.00	.00
KETONE, XYLENE, PROPYLENE GLYCOL	.00	.00	.00
METHYL ETHER ACETATE, TOLUENE,	.00	.00	.00
XYLENE	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE	.00	5.00	.00
CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL,	.00	5.00	.00
METHANOL	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT,	.00	10.00	.00
SAND, SILT, SCALE, POLYMERS,	.00	.00	.00
RUST, PIGMENTS	.00	.00	00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other.

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y — Total Concentration Range Wt%:

	Organic Bound		Total	
S	.0	.1	.0	1
Cl	.0	4 0	0	4 0
F	.0	1	.0	1
Br	.0	.1	.0	1
I	.0	.1	0	.1
N	.0	.1	.0	.1
P	.0	1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p
As	10.00p	Hg	.20p
Ba	5000.00p	Ni	1.00p
Be	100.00p	Se	1.00p
Cd	25.00p	Ag	500.00p
Cr	250.00p	Tl	3000.00p
Cu	1.00p	Zn	1.00p
Li	1 00p	Mo	1.00p

Al	.0	3.0%	Si	.0	3.0
Mg	.0	.2%	Na	.0	.3
K	.0	.3%			

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: Y

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 58526 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range ********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s) 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System):
Eye: N
Inhalation: N
Dermal N
Ingestion N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (SOLVENTS) 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N.O.S. 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N

Container label(s).	Placard(s):
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	I
						RIS Type	A
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

JUL 2 8 2014

OHIO EPA NEDO

Ross Incineration Services, Inc. — Waste Product Survey — 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 — (440) 748-5800 — US EPA ID# OHD048415665

former WPS# (if applicable) — Please do not leave any blank spaces. — 1 WPS# 30667 N

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Waste generating process: CHEMICALS MANUFACTURING

Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
Container					LORD CORPORATION
LBS	2000000	YEAR			Per Subpart CC.
					VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: N

Are you the original generator: Y

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID

Pallet: N Gaylord: N Hopper: N Drum: N

Overall: Length: Width: Height: Volume:

Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	.00
SULFURIC ACID	.00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETHYLENE, TETRACHLOROETHYLENE, E C.)	.00	7.00	.00
NON HALOGENATED ORGANICS (TOLUENE, XYLENE)	.00	4.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE, SODIUM CHLORIDE, ETC.)	.00	5.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

GENERATOR KNOWLEDGE

MSDS

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

S	.0	.1	.0	1	
Cl	0	4.0	.0	6 0	
F	.0	.1	.0	.1	
Br	.0	.1	0	.1	
I	.0	.1	.0	.1	
N	.0	.1	.0	1	
P	.0	.1	.0	1	

Total Concentration Range Wt%:

Al	.0	.1%	Si	.0	1
Mg	.0	1%	Na	.0	3.0
K	.0	1%			

B. Metals maximum content: Y

Sb	25.00p	Pb	25.00p
As	10.00p	Hg	.00p
Ba	100.00p	Ni	1.00p
Be	1.00p	Se	1.00p
Cd	25.00p	Ag	25.00p
Cr	25.00p	Tl	25.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: N

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC SOLVENTS	0	15	0
2. WATER	70	85	0
3.	0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100.0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

9. REACTIVITY AND STABILITY

A. Reactivity group number(s) 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (METHANOL) 3, PG II, RQ, (METHANOL)

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE,
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS0121RP CHEMIST REPORT OHIO EPA NEDO Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	Y	2. Hazers.....:		3.	
4. G Drum.....:		5. Caustic pH>10:		6.	
7.		8.		9.	
10. Isocy>10%....:		11.		12.	
13.		14.		15. Odorous.....:	
16.		17.		18. HighTox>=5...:	
19.		20.		21. ReacMtls>16%.:	
22.		23. Reactives....:		24.	
25.		26.		27.	
28.		29.		30.	

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.800	1.100	.000		Stable	Y
Btu Value/Lb.		0	8000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	N
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		4	17	106		Benzene	N
Vapor Pressure	Y	50.0	100.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	D
						RIS Type	
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs? N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

APPENDIX 2

DRAWING #D-02-001, REV. 22: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

APPENDIX 3

REPAIRED TANK NO. 55 TIGHTNESS TEST RESULTS

06-07-13

Tank # 55 Repair completion certification test

Tank was pressure Tested @ 5lbs

Soap test was completed on all the repaired cone areas of welding

The results were no visible leaks were detected

Present observing the test were the following:

		Sign	
Maintenance Manager	Michael Brucchieri		Date: 6-7-13
Maintenance Project Manager	Mark Gibson		Date: 6/7/13
EDGECLIFF GROUP PE	Reynard Depuy		Date: 6/7/13

CERTIFICATION OF TANK NO.'s 61 & 63 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

June 24, 2013

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, two of the tanks within Tank Farm III (i.e., Tank No.'s 61 & 63), were removed from service because of localized excessive pitting due to corrosion. The corroded sections of these units were repaired and Tank No.'s 61 & 63 are now being returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank No.'s 61 & 63 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank systems that attest that they were properly repaired, and that the tanks were properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No.'s 61 & 63 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO.'S 61 & 63 REPAIRS

Tank No.'s 61 & 63 meet the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

* Tank was designed and installed in accordance with applicable Ohio Basic Building Code standards, which incorporate NFPA codes by reference, including NFPA Code 30.

The repaired Tank No.'s 61 & 63 meet the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No.'s 61 & 63 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of these same units prior to their repairs. Overall, the repaired Tank No.'s 61 & 63 will function in an equivalent manner to these same units prior to their repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 22: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No.'s 61 & 63 have been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and they have been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No.'s 61 & 63 were tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6/26/13
Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

JUL 2 8 2014

OHIO EPA NEDO

Ross Incineration Services, Inc. | Waste Product Survey | 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 | (440) 748-5800 | US EPA ID# OHD048415665

former WPS# (if applicable) | Please do not leave any blank spaces. | 1. WPS# 58526 N

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)

Primary business activity at generating facility: TSDF

Rate of Generation	Quantity	Time Period	Accum	One Time
Container				N
GALLONS	5000	WEEK		

Service Agreement Entity: CHEMTRON CORPORATION

Per Subpart CC.

VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: Y

Are you the original generator: N VARIES

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: TANKER

Pallet: N Gaylord: N Hopper: N Drum: N

Overall Length: Width: Height: Volume:

Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE, BUTYL CELLOSOLVE, METHYL ETHYL KETONE, XYLENE, PROPYLENE GLYCOL METHYL ETHER ACETATE, TOLUENE, XYLENE	.00	30.00	.00
	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	5.00	.00
	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL, METHANOL	.00	5.00	.00
	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT, SAND, SILT, SCALE, POLYMERS, RUST, PIGMENTS	.00	10.00	.00
	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

Total Concentration Range Wt%:

	Organic Bound Range		Total Concentration Range	
S	.0	.1	.0	.1
Cl	.0	4.0	0	4.0
F	.0	.1	0	.1
Br	.0	.1	.0	.1
I	0	.1	0	.1
N	.0	1	.0	.1
P	.0	1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p	Al	.0	3.0%
As	10.00p	Hg	.20p	Mg	.0	.2%
Ba	5000.00p	Ni	1.00p	K	.0	.3%
Be	100.00p	Se	1.00p	Si	.0	3.0
Cd	25.00p	Ag	500.00p	Na	.0	.3
Cr	250.00p	Tl	3000.00p			
Cu	1.00p	Zn	1.00p			
Li	1.00p	Mo	1.00p			

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: Y

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 58526 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11 LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1

Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (SOLVENTS), 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N O.S., 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N
Container label(s): FLAMMABLE LIQUID
Placard(s): FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

CS0121RP CHEMIST REPORT **OHIO EPA NEDO** Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	I
						RIS Type	A
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

JUL 28 2014

OHIO EPA NEDO

Ross Incineration Services, Inc. | Waste Product Survey | 8/05A1 Page 1

36790 Giles Road, Grafton, Ohio 44044 | (440) 748-5800 | US EPA ID# OHD048415665

former WPS# (if applicable) | Please do not leave any blank spaces. | 1 WPS# 30667 N

2

[illegible]

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code.

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation Container	Quantity	Time Period	Accum	One Time	Service Agreement Entity
LBS	2000000	YEAR		N	LORD CORPORATION

Per Subpart CC,
VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	.00
SULFURIC ACID	.00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETH	.00	7.00	.00
LENE, TETRACHLOROETHYLENE, ETC.)	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE,	.00	4.00	.00
XYLENE)	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE,	.00	5.00	.00
SODIUM CHLORIDE, ETC.)	.00	.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE
MSDS
Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%.

B. Metals maximum content: Y

	Organic Bound Range Wt%		Total Concentration Range Wt%		Metal		Metal	
S	.0	.1	.0	.1	Sb	25.00p	Pb	25.00p
					As	10.00p	Hg	.00p
					Ba	100.00p	Ni	1.00p
Cl	0	4.0	.0	6 0	Be	1.00p	Se	1.00p
F	.0	.1	.0	1	Cd	25.00p	Ag	25.00p
Br	.0	.1	0	1	Cr	25.00p	Tl	25.00p
I	.0	.1	.0	.1	Cu	1.00p	Zn	1.00p
N	.0	.1	.0	1	Li	1.00p	Mo	1.00p
P	.0	.1	.0	1				

Metal			Metal		
Al	.0	.1%	Si	.0	1
Mg	.0	.1%	Na	.0	3.0
K	.0	.1%			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

	Description of Layer	From	To	Fixed
1.	(Top) ORGANIC SOLVENTS	0	15	0
2.	WATER	70	85	0
3.		0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100.0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

9. REACTIVITY AND STABILITY

A. Reactivity group number(s) 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S. (METHANOL) 3, PG II, RQ, (METHANOL)

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE.
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature _____ Date _____

Print Name _____ Print Title _____

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....: Y	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed	
S. G.		.800	1.100	.000	
Btu Value/Lb.		0	8000	0	
Melting Point		0			
pH	Y	4.0	10.0	.0	
Free Liquids		100.00			%
R. G. N.		4	17	106	
Vapor Pressure	Y	50.0	100.0	.0	mm hg
Min. Flash Pt	Y	0	140	0	F

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	N
Sulfide >250 ppm	N
Benzene	N
Classification	N
Category	P
Generation	3
Revenue Source	D
RIS Type	
Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

APPENDIX 2

DRAWING #D-02-001, REV. 22: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

APPENDIX 3

REPAIRED TANK NO.'S 61 & 63 TIGHTNESS TEST RESULTS

06-26-13

Tank #61 & Tank #63 Repair completion certification test

Tank was pressure Tested @ 5lbs

Soap test was completed on all the repaired cone areas of welding

The results were no visible leaks were detected

Present observing the test were the following:

		Sign	
Maintenance Manager	Michael Brucchieri		Date:
Maintenance Project Manager	Mark Gibson		Date: 6/26/13
EDGECLIFF GROUP PE	Reynard Depuy		Date: 6/26/13

CERTIFICATION OF TANK NO. 51 REPAIRS AND TANK FARM III NITROGEN LINE REPLACEMENT AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

OCTOBER, 2015

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 51), was removed from service due to excessive corrosion in its cone bottom. A new cone bottom was subsequently installed on Tank No. 51 and this unit is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 51 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 51 in compliance with these regulatory requirements.

In addition, each tank farm is equipped with a nitrogen blanketing system which minimizes the oxygen level in the tanks and consequently minimizes the possibility of fires in the tank. Each tank farm is a single system, with the headspace in all tanks connected by the nitrogen inlet and vent outlet manifolds.

During an inspection it was observed that corrosion was evident in several locations of the Nitrogen Line piping in Tank Farm III.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, for the nitrogen blanketing piping. RIS must also keep on file written statements by those persons required to certify the design of the system that attest that it was properly installed, and that the piping was properly integrity tested before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the nitrogen blanketing piping in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF TANK NO. 51 REPAIRS

Tank No. 51 meets the following specifications:

Tank Design Data:	
Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Fabricated top thickness	
Minimum design top thickness	
Fabricated bottom thickness	
Minimum design bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Design Pressure	
Pressure Relief Valve Setting	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 design standard satisfied	
Month/Year of construction	
Level indicator present	
Secondary Containment System Data:	
Capacity	73,650 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

* Tank was designed and installed in accordance with applicable Ohio Basic Building Code standards, which incorporate NFPA codes by reference, including NFPA Code 30.

Tank 51

The repaired Tank No. 51 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet), as this same unit existed prior to its repairs. The repaired Tank No. 51 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 51 will function in an equivalent manner to this same unit prior to its repairs.

Tank 51 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 51 was integrity tested and found not to be leaking. The repaired Tank No. 51 was tested for using UE monitoring and an air pressure test at 5 psig (using soap for visual indication). The testing results are included in **APPENDIX 2**.

Nitrogen Blanketing Piping

The replacement nitrogen blanketing piping also meets the same design standard (ASME/ANSI B31.3) as this same system prior to its repairs. Overall the replaced nitrogen blanketing piping will function in an equivalent manner to this system prior to its replacement.

The replaced nitrogen blanketing piping has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity. In addition, the replaced nitrogen blanketing piping was integrity tested by the manufacturer. The testing results are included in **APPENDIX 2**.

RIS has included the following relevant engineering drawings within **APPENDIX 3**:

- Drawing #D-02-001, Rev. 22: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S. DePuy — 10/21/15

Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

DEC 0 3 2015

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

Ross Incineration Services, Inc. — Waste Product Survey — 8/05/11 Page 1
36790 Giles Road Grafton Ohio 44044 — (440) 748 5800 — US EPA ID# OHD048415665
Former WPS# (if applicable) — Please do not leave any blank spaces — WPS# ... N

GENERAL INFORMATION
Waste name: ON DEMAND WATER

Generator code

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: N
Do you produce, use or receive munitions or explosives: N
Is facility a ... Mg generator per 40 CFR ... : N

Service Agreement Entity: CHEMTRON CORPORATION
Per Subpart CC
VOC > 500 ppm: Y

Time ... Accum N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI LAYERING

SHIPPING CONTAINERS (must meet DOT/RCRA requirements)
Drum Size Gal — Material of Construction — D.O.T. Specification

Bulk shipment: TANKER
Pallet N Gaylord N Hopper N Drum N
Overall Length Width Height Volume
Waste Length Width Height

6. SOURCE OF INFORMATION
Method used to obtain a representative sample of the analyzed waste

Other

5. CHEMICAL COMPOSITION
Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE,	.00	30.00	.00
BUTYL CELLOSOLVE, METHYL ETHYL	.00	.00	.00
KETONE, XYLENE, PROPYLENE GLYCOL	.00	.00	.00
METHYL ETHER ACETATE, TOLUENE,	.00	.00	.00
XYLENE	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE	.00	5.00	.00
CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL,	.00	5.00	.00
METHANOL	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT,	.00	10.00	.00
SAND, SILT, SCALE, POLYMERS,	.00	.00	.00
RUST, PIGMENTS	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents / Total Concentration

	Organic Bound Range Wt%		Total Concentration Range Wt%	
S	0	1	0	1
Cl	0	4.0	0	4.0
F	0	1	0	1
Br	0	1	0	1
I	0	1	0	1
N	0		0	1
P	0	1	0	1

B. Metals maximum content Y

Sb	25.00p	Pb	100.00p
As	10.00p	Hg	.20p
Ba	5000.00p	Ni	1.00p
Be	100.00p	Se	1.00p
Cd	25.00p	Ag	500.00p
Cr	250.00p	Tl	3000.00p
Cu	1.00p	Zn	1.00p
Co	1.00p	Mo	1.00p
Al	0 3.0%	Si	0 3.0
Mg	0 2%	Na	0 3
K	0 3%		

C. Does the waste contain:
PCBs: N
Asbestos: N — Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N
Name — Concentration ppm/%

Dioxin: N Detection Limit .000 %
Total available cyanides >250 ppm: Y
Amenable cyanide: N Concentration .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

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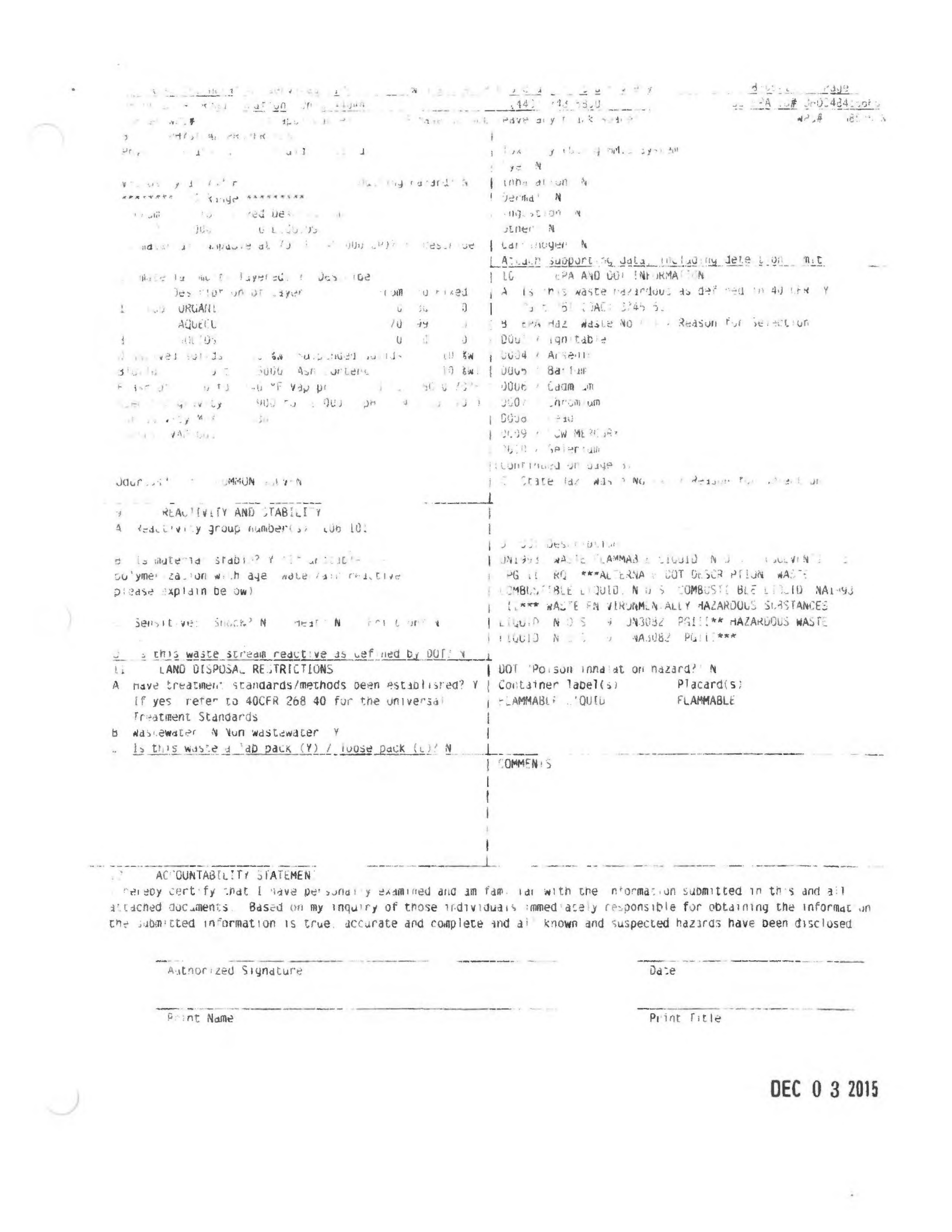

CHEMIST REPORT

Date: 8/05/11
User: DBISHOP

1 Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2 Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3 Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6 Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4 G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%..	11.	12.
13	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%..:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut % 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed	
S. G.		.900	1.000	.000	
Btu Value/Lb.		0	5000	0	
Melting Point		0			
pH	Y	4.0	10.0	.0	
Free Liquids		100.00			%
R. G. N.		106	101		
Vapor Pressure	Y	.0	50.0	.0	mm hg
Min. Flash Pt	Y	0	140	0	F

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	Y
Sulfide >250 ppm	N
Benzene	Y
Classification	N
Category	P
Generation	3
Revenue Source	I
RIS Type	A
Universal Waste	N

10 Containerization: P = Pre Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

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US EPA ID# [illegible]
(440) 748 [illegible]

GENERAL INFORMATION

Waste generating process CHEMICALS MANUFACTURING
Primary business activity at generating facility ADHESIVES AND COATINGS MFG

Was this waste generated from a CERCLA activity N
Do you receive RCRA hazardous waste from another company N
Are you the original generator Y
Do you produce use or receive munitions or explosives N
Is facility a LQ Mq generator per 40 CFR 61 340 N

Rate of Generation		Time	One Time	Service Agreement Entity
Container	Quantity	Period	Activity	
			N	LORD CORPORATION
LBS	[illegible]	YEAR		Per Subpart CC
				VOC > 500 ppm Y

Physical Descr VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4 SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D O T Specification

Bulk shipment BULK LIQUID
Pallet N Gaylord N Hopper N Drum N
Overall Length Width Height Volume
Waste Length Width Height

5 CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	00
[illegible] HANE	[illegible]	20.00	00
[illegible]	00	[illegible]	00
[illegible]	[illegible]	5.00	00
[illegible]	00	7.00	00
[illegible]	00	[illegible]	00
[illegible]	00	4.00	00
[illegible]	00	[illegible]	00
[illegible]	00	[illegible]	00
[illegible] SODIUM HYDROXIDE	[illegible]	[illegible]	00
[illegible]	00	[illegible]	00

TOTAL [illegible]

6 SOURCE OF INFORMATION
Method used to obtain a representative sample of the analyzed waste
GENERATOR KNOWLEDGE
MSDS
Other

7 SPECIFIC ANALYSIS OF WASTE (p-ppm)

A Organic Bound Constituents Range Wt% Y; Total Concentration Range Wt%

	Organic Bound Range Wt%		Total Range Wt%	
S	0	1	[illegible]	1
Cl	0	4.[illegible]	[illegible]	[illegible]
F	0	1	[illegible]	[illegible]
Br	0	[illegible]	[illegible]	[illegible]
I	0		[illegible]	[illegible]
N	0	1	0	[illegible]
P	0	1	0	[illegible]

B Metals maximum content Y

Metal	Content	Metal	Content
Sb	25.00p	Pb	25.00p
As	10.00p	Hg	[illegible]00p
Ba	100.00p	Ni	1.00p
Be	1.00p	Se	1.00p
Cd	25.00p	Ag	25.00p
Cr	25.00p	Tl	25.00p
[illegible]	1.00p	Zn	1.00p
[illegible]	1.00p	Mo	1.00p
Al	0 1%	Si	0 1
Mg	0 1%	Na	0 [illegible]0
K	0 1%		

C Does the waste contain
PCBs N
Asbestos N Is this waste TSCA regulated N
Insecticides pesticides, herbicides, rodenticides N
Name Concentration ppm/%

Dioxin N Detection Limit [illegible]000 %
Total available cyanides >250 ppm N
Amenable cyanide N Concentration [illegible]000 %
Total available sulfides >500 ppm N
Radioactivity above background N
Infectious waste N

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8 PHYSICAL PROPERTIES
Physical state ... Liquid
... Boiling range ... N
... range ********
...
... Liquid
... Describe

Is material multi layered? Y Describe

	Description of Layer	From	To	Fixed
1	(Top) ORGANIC SOLVENTS	0	15	0
2	WATER	70	85	0
3		0	0	0

Dissolved solids 3 %WT Suspended solids 3 %WT
BTU/lb 0 to 3000 Ash content 5 %WT
Flash pt 0 to 140 °F Vap pr 50 0 to 100 0 70°F
Specific gravity 800 to 1 100 pH 4 0 to 10 0
Corrosivity MPY <20
Odors VARIOUS

Odor list Y ALCOHOL

9 REACTIVITY AND STABILITY
A Reactivity group number(s) 4 10a

B Is material stable? Y (If unstable i e polymerization with age water/air reactive please explain below)

Sensitive Shock? N Heat N Friction? N

C Is this waste stream reactive as defined by DOT? N

11 LAND DISPOSAL RESTRICTIONS
A Have treatment standards/methods been established? Y
If yes refer to 40CFR 268 40 for the Universal Treatment Standards
B Wastewater N Non wastewater Y
C Is this waste a lab pack (Y) / loose pack (L) N

Toxicity (using HMIS system)
Eye N
Inhalation N
Dermal N
Ingestion N
Other N
Carcinogen N
Attach supporting data including detection limit

10 EPA AND DOT INFORMATION
A Is this waste hazardous as defined in 40 CFR Y
Part 261 (OAC) 3745 51?
B EPA Haz Waste No (s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C State Haz Waste No (s) / Reason for Selection

D DOT Description
UN1993, WASTE FLAMMABLE LIQUID N O S (METHANOL) 3
PG II RQ (METHANOL)

DOT "Poison inhalation hazard?" N
Container label(s) Placard(s)
FLAMMABLE LIQUID FLAMMABLE

COMMENTS
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE

12 ACCOUNTABILITY STATEMENT
I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed

Authorized Signature Date

Print Name Print Title

DEC 0 3 2015

CSD121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4	Y	2. Hazers.....:		3.	
4. G Drum.....		5. Caustic pH>10:		6.	
7.		8.		9.	
10. Isocy>10%		11.		12.	
13.		14.		15. Odorous.....:	
16		17.		18. HighTox>=5...:	
19		20.		21. ReacMtls>16%.:	
22.		23. Reactives.....:		24.	
25.		26.		27.	
28.		29.		30.	

8. Neut % 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed		
S. G.		.800	1.100	.000		
Btu Value/Lb.		0	8000	0		
Melting Point		0				
pH	Y	4.0	10.0	.0		
Free Liquids		100.00			%	
R. G. N.		4	17	106		
Vapor Pressure	Y	50.0	100.0	.0	mm hg	
Min. Flash Pt	Y	0	140	0	F	

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	N
Sulfide >250 ppm	N
Benzene	N
Classification	N
Category	P
Generation	3
Revenue Source	D
RIS Type	
Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

DEC 0 3 2015

APPENDIX 2

REPAIRED TANK NO. 51 AND REPLACEMENT NITROGEN BLANKETING PIPING REPAIR COMPLETION TESTS

Date: 10/21/2015

Tank #51 and Nitrogen Blanketing Piping Repair Completion
Certification Test

Tank was pressure tested at : 5 psig

Soap test was completed on all replaced cone welds and related flanges. The results showed no visible leaks can be detected.

Personnel present to observe the test included: TOM NELSON
Print Name

Thomas Nelson
Signature

Print Name

Signature

DEC 0 3 2015

SMP Welding, LLC

8171 Tyler Blvd
Mentor, OH 44060
Phone (440) 205-9353
Fax (440) 255-7273

PIPING PRESSURE CHECK DOCUMENTATION

This form is required for documenting the test plan required for all pressure tests. The supervisor in charge of the test must approve, the pressure systems program manager must approve all tests other than routine hydrostatic tests of existing systems. A single approved test plan may be used for several similar tests, but a separate test record is required for each test. Copies of the approved plan are kept by the custodian (for five years) and the pressure systems program manager (permanently) (see Pressure Systems: Pressure Test Procedures [SLAC-I-730-0A21C-033]).

Pressure test plan number: 001	Project number: P.O. 113683	Pressure system ID:
System description: Vent piping		
Test Information		
Type of test: ☐ Hydrostatic	☒ Pneumatic *(attach justification)*	
System design pressure.	System design temperature:	
Description of test configuration *(attach sketch or piping and instrument diagram)*:		
Test Parameters		
Required test pressure: 50 psi	Holding time: 15 min.	
Test fluid:	Fluid temperature: ambient	
Test Equipment – Pressure Gauge		
Type: Ashcroft	Pressure range: 0-100 psi	Calibration date: 4-5-15
Environmental Controls		
Exclusion zone for safety of people *(consult project engineer or calculate stored energy)*: N/A		
Test area controls *(barricades, signage, etc.)*: N/A	Safe disposal of test fluid: N/A	
Administrative Controls		
Qualifications of the inspector(s) and mechanic(s): Certified welder per procedure		
Inspection requirements *(before, during, and after the test)*:		
Pressure test procedures *(attach detailed steps)*:		
Approvals		
Supervisor in charge of test *(print)*: Lew Downs	Signature: 	Date: 9-14-15
Pressure systems program manager *(print)* *(not required for routine hydrostatic test of existing systems)*:	Signature:	Date:

DEC 0 3 2015

Certificate of Tests and Qualifications of Welding Operator

ELEMENT MATERIALS TECHNOLOGY
HAS PREPARED AND TESTED
THE SPECIMENS WELDED BY

SHELDON DAWAVENDEWN

WELDING PERFORMED UNDER THE SUPERVISION OF

SMP WELDING

IN ACCORDANCE WITH
API 1104 20th EDITION
SMAW 12" SCH.40 API 5L GR.50 1G BRANCH CONNECTION TEST

Qualification Date		Expiration Date
7-2-2015		INDEFINITE PER CODE
Lab Number	Elliott F Smith CWI 86040841	Authorized Signature
150620011-1		ELLIOTT F. SMITH, WELDING MANAGER CWI/CWE

Element Materials Technology

5405 E. Schaaf Rd, Cleveland, OH 44131
(216) 524-1450, Fax: (216) 524-1459

DEC 0 3 2015

SMP Welding

Coupon Test Report

Code or specification: API 1104 twentieth edition errata 2

Date	3/16/2015	**Procedure**	API 1/50-1	**Revision #**	1
Location	SMP Welding 8171 Tyler Blvd	Mentor, Ohio	44060		
State	Ohio	**Weld Position:**	Branch	☐ Roll	☑ Fixed
Welder	Sheldon Dawavendewn	**Mark**	n/a		
Welding time	n/a	**Time of Day**	n/a		
Mean temperature	ambient	**Wind break used**		n/a	
Weather conditions	indoors				
Voltage	23-27	**Amperage**	125		
Welding machine type	n/a	**Welding machine size**		n/a	
Filler metal	Power Weld 6010 1/8"				
Reinforcement size	none				
Pipe type and grade	API 5L Grade 50				
Wall thickness	3/8"	**Outside dia.**	12.75"		

	1	2	3	4	5	6
Coupon stenciled						
Original specimen dimensions						
Original specimen area						
Maximum load						
Tensile strength						
Fracture location						

Procedure	☐	**Line Test**	☐
Welder	☑	**Qualified**	☑
Qualifying Test	☐	**Disqualified**	☐

Maximum tensile	n/a
Minimum tensile	n/a
Average tensile	n/a
Remarks on tensile strength tests	n/a
Remarks on bend tests	n/a
Remarks on nick-break tests	Four(4) Nick Breaks Per Figure 10 = Satisfactory Two(2) @ Crotch Two(2) @ 90° 2" Wide. 1/8" Notch. No discontinuities, inclusions or defects detected.

Elliot F Smith
CWI 96040841
QC1 EXP. 4/1/2017

Elliot F Smith 7/2/15

Test made at	Element Materials Technology	**Date**	1/25/2014
Work order number	150620011 1	**Written by**	Dave Cook

DEC 0 3 2015

RECORD OF WELDING OPERATOR'S QUALIFICATION TEST

S.S # 0114

Process MANUAL S.M.A.W.

Base Material MILD STEEL A-36 Filler Material LH-E7018

Thickness UNLIMITED Position 3G-4G Joint V-GROOVE

Remarks ALL POSITIONS

We, the undersigned, certify that the statements in this record are correct and that the welds were prepared and tested in accordance with the requirements of the designated codes

Inspector Jay Miller

Signature

Date 5/12/2012

WELDING CERTIFICATION

WILMINGTON SKILLS CENTER

Lab Number 24149 Date of Test 6/7/12

THIS IS TO CERTIFY

Name Signature MARK SNELL

has satisfactorily completed and passed the welding test requirements

of AWS D1.1

The undersigned certifies that he witnessed the [illegible] as detailed on the reverse side of this card.

Name ______ Inspector

Wilmington Skills Center, Los Angeles Unified School District

Mark Snell - CERTIFIED WELDER

Process	FCAW	SMAW	GTAW	GMAW
Position	3G			
Range	Unlim			
Code	D1.1			
Date	5/12			

PALOMAR COMMUNITY COLLEGE

DEC 0 3 2015

APPENDIX 3

DRAWING #D-02-001, REV. 22: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the public information version of appendix 3 of this P.E. Certification

CERTIFICATION OF TANK NO. 78 (CLARIFIER) REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

October 14, 2015

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

The water used in the air pollution control system is collected, cleaned, cooled, and pH adjusted in the closed-loop scrubber water system before the water is recycled back to the air pollution control system. The closed-loop scrubber water system includes Tank 78, the clarifier. Scrubber water from the air pollution control system enters the clarifier for the purpose of removing the suspended solids in the scrubber water. The solids that settle in the clarifier are removed as a sludge or slurry and are pumped to the surge tank for filter pressing or sent directly off site for further treatment and disposal.

The purpose of the clarifier is to remove the suspended solids in the scrubber water. The clarifier is approximately a 90-foot-diameter unit with a total volume of approximately 560,000 gallons. The material which settles in the clarifier is removed as a sludge or slurry and is typically pumped from the clarifier directly to the filter press feed tanks, or directly off site for further treatment and disposal. The scrubber water which flows over the weirs on the clarifier goes to the clarifier pump surge tank and is pumped to the cooling towers by the clarifier pumps. RIS can also transfer scrubber water from the top of the clarifier to the surge tank for storage and/or treatment, or to tankers for shipment off-site. A Waste Product Survey which describes the characteristics of the scrubber water stored within Tank 78 is included in **APPENDIX 1**.

Recently, Tank 78 (i.e., Clarifier), was removed from service due to excessive corrosion in its cone bottom. A new cone bottom was subsequently installed on Tank No. 78 and this unit was returned to service on October 10, 2015 for the storage of scrubber water.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 78 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 78 in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF TANK NO. 78 REPAIRS

Tank No. 78 meets the following specifications:

Tank Design Data	
Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum design shell thickness	
Design top thickness	
Minimum top thickness	
Design bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Operating pressure	
Maximum liquid level	
Operating temperature (typical)	
NFPA Code 30 satisfied	
Containment basin capacity	
Two-layer waste impermeable coating on containment basin	
Year of construction	
Level indication	

* This unit is a process tank associated with the incinerator air pollution control equipment closed loop scrubber system

Tank 78

The repaired Tank No. 78 meets the same design standard (i.e., American Water Works Association, ["AWWA"]), capacity (i.e., 560,000 gallons), design diameter (i.e., 90 feet), as this same unit existed prior to its repairs. The repaired Tank No. 78 steel thicknesses, operating conditions, controls and type of material to be stored (i.e., scrubber water) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 78 will function in an equivalent manner to this same unit prior to its repairs.

Tank 78 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the scrubber water as described above. In addition, the repaired Tank No. 78 was integrity tested and found not to be leaking. The repaired Tank No. 78 was tested for using UE monitoring and an air pressure test at 5 psig (using soap for visual indication). The testing results are included in **APPENDIX 2**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S DePuy — 10/21/15
Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

DEC 0 3 2015

APPENDIX 1

TYPICAL SCRUBBER WATER WASTE PRODUCT SURVEY

Ross Incineration Services, Inc. | Waste Product Survey | 10/14/15 Page 1

36790 Giles Road, Grafton, Ohio 44044 | (440) 748-5800 | US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5835

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5847 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5847 Ext.: Cell: (440)-537-2573

3. GENERAL INFORMATION

Waste name: SPENT SCRUBBER WATER

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: INCINERATOR OFF-GAS SCRUBBING
Primary business activity at generating facility: INCINERATION

Rate of Generation		Time		One Time	Service Agreement Entity
Container	Quantity	Period	Accum	N	ROSS GENERATED WASTE
GALLONS	25000	DAY			Per Subpart CC,
					VOC > 500 ppm: N

Physical Descr: CLEAR TO YELLOW LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL	

Bulk shipment: BULK
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GRAB

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

			Total Concentration Range Wt%:	
S	.0	.1	.0	1.0
Cl	.0	.1	3.0	12.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	.1
P	.0	1.0	.0	1.0

B. Metals maximum content: Y

Sb	70.00p	Pb	500.00p
As	10000.00p	Hg	.00p
Ba	140.00p	Ni	4.00p
Be	1.00p	Se	7.00p
Cd	20.00p	Ag	30.00p
Cr	25.00p	Tl	33.00p
Cu	20.00p	Zn	300.00p
Li	50000.00p	Mo	1.00p

Al	.0	1.0%	Si	.0 1.0
Mg	.0	1.0%	Na	2.8 9.2
K	.0	1.0%		

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
SODIUM CHLORIDE	6.00	20.00	.00
SODIUM SULFATE	1.00	4.00	.00
WATER	76.00	93.00	.00
OTHER INORGANICS	.00	3.00	.00

TOTAL >= 100%

DEC 0 3 2015

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range ********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 22 %WT Suspended solids: 1 %WT

BTU/lb.: 0 to 12000 Ash content: 20 %WT

Flash pt: 201 to 600 °F Vap pr: .0 to 18.0 70°P

Specific gravity: 1.100 to 1.600 pH: 7.0 to 8.5

Corrosivity MPY: <30

Colors: CLEAR
YELLOW

Odorous? Y MILD

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 24

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: Y Non-wastewater: N

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2

Eye: Y AVOID CONTACT

Inhalation: Y AVOID CONTACT

Dermal: Y AVOID CONTACT

Ingestion: Y AVOID CONTACT

Other: N

Carcinogen: N

Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection

D004 / ARSENIC

D006 / CADMIUM

D007 / CHROMIUM

D008 / LEAD

D010 / SELENIUM

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:

NA3082, HAZARDOUS WASTE, LIQUID, N.O.S., (D004,D006,D007,D008,D010), 9, PG III, RQ

DOT "Poison inhalation hazard?" N

Container label(s): CLASS 9

Placard(s): CLASS 9

COMMENTS:

SEE THE ATTACHED WASTE CODE LIST

THIS WASTE STREAM MAY BE "DERIVED FROM"

ACTUAL RESULTS FOR MERCURY AND NICKEL

ARE 2.96 PPM AND 2.2 PPM, RESPECTIVELY

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

DEC 0 3 2015

APPENDIX 2

REPAIRED TANK NO. 78 COMPLETION TESTS

Date: 10/21/15

Tank #78 Repair Completion Certification Test

Tank #78 is an open top atmospheric tank. No visible leaks were detected upon filling. Tank is currently full.

Personnel present to observe the test included: Scott Traylor
Print Name

Signature

Print Name

Signature

DEC 0 3 2015

CERTIFICATION OF TANK NO. 55 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

PUBLIC INFORMATION VERSION

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

September 08, 2017

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 55), was removed from service because of localized excessive pitting due to corrosion. The corroded sections of the unit were fill welded or replaced, and Tank No. 55 is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 55 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 55 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO. 55 REPAIRS

Tank No. 55 meets the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

Tank was designed and installed in accordance with applicable Ohio Basic Building Code standards, which incorporate NFPA codes by reference, including NFPA Code 30.

The repaired Tank No. 55 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 55 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 55 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 22: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 2: Secondary Containment for Tanks 23-64.

The repaired Tank No. 55 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 55 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard C. DePuy — 9/8/17

REYNARD S. DEPUY — Date
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

P.E. STAMP & NO.

NOV 1 3 2017

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process. BULKING WASTE (TSDF)
Primary business activity at generating facility. TSDF

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: N VARIES
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340. N

Rate of Generation	Quantity	Time Period	Accum	One Time	Service Agreement Entity
Container GALLONS	5000	WEEK		N	CHEMTRON CORPORATION Per Subpart CC. VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D.O.T. Specification

Bulk shipment. TANKER
Pallet: N Gaylord: N Hopper: N Drum: N
Overall Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other.

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range	Wt%	PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE, BUTYL CELLOSOLVE, METHYL ETHYL KETONE, XYLENE, PROPYLENE GLYCOL METHYL ETHER ACETATE, TOLUENE, XYLENE	.00	30.00	.00
	.00	.00	.00
	.00	.00	.00
	.00	.00	.00
	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	5.00	.00
	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL, METHANOL	.00	5.00	.00
	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT, SAND, SILT, SCALE POLYMERS, RUST, PIGMENTS	.00	10.00	.00
	.00	.00	.00
	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Bound Range	Bound Y	Total Range	Total
S	.0	.1	.0	1
Cl	.0	4.0	0	4.0
F	.0	.1	.0	1
Br	.0	.1	.0	1
I	0	.1	0	.1
N	.0	1	.0	.1
P	.0	1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p
As	10.00p	Hg	.20p
Ba	5000.00p	Ni	1.00p
Be	100.00p	Se	1.00p
Cd	25.00p	Ag	500.00p
Cr	250.00p	Tl	3000.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	3.0%	Si .0 3.0
Mg	.0	.2%	Na .0 .3
K	.0	.3%	

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: Y
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

NOV 1 3 2017

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 58526 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: 0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal N
Ingestion N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S (SOLVENTS) 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S , 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N O.S. 9 NA3082, PGIII***

DOT "Poison inhalation hazard?" N
Container label(s). Placard(s)
FLAMMABLE LIQUID FLAMMABLE

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

NOV 1 3 2017

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives.....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	I
						RIS Type	A
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

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Ross Incineration Services, Inc. — Waste Product Survey — 8/05/11 Page 1

36790 Giles Road, Grafton, Ohio 44044 — (440) 748-5800 — US EPA ID# OHD048415665

former WPS# (if applicable) — Please do not leave any blank spaces. — 1. WPS# 30667 N

2.

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation Container	Quantity	Time Period	Accum	One Time	Service Agreement Entity
LBS	2000000	YEAR		N	LORD CORPORATION

Per Subpart CC.
VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	.00
SULFURIC ACID	.00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETH	.00	7.00	.00
LENE, TETRACHLOROETHYLENE, ETC.)	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE,	.00	4.00	.00
XYLENE)	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE,	.00	5.00	.00
SODIUM CHLORIDE, ETC.)	.00	.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE
MSDS
Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y — Total Concentration Range Wt%.

	Organic Bound		Total	
S	.0	.1	.0	1
Cl	0	4.0	.0	6 0
F	.0	.1	.0	.1
Br	.0	1	0	1
I	.0	.1	.0	.1
N	.0	.1	.0	1
P	.0	.1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	25.00p
As	10.00p	Hg	.00p
Ba	100.00p	Ni	1 00p
Be	1.00p	Se	1.00p
Cd	25.00p	Ag	25.00p
Cr	25.00p	Tl	25.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	.1%	Si	0	1
Mg	.0	.1%	Na	0	3.0
K	.0	.1%			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm. N
Radioactivity above background: N
Infectious waste: N

NOV 1 3 2017

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC SOLVENTS	0	15	0
2. WATER	70	85	0
3.	0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100 0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

Toxicity (using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A Is this waste hazardous as defined in 40 CFR. Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C State Haz. Waste No.(s) / Reason for Selection

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (METHANOL) 3, PG II RQ, (METHANOL)

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

DOT "Poison inhalation hazard?" N

Container label(s)	Placard(s)
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE.
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

NOV 13 2017

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	Y	2. Hazers.....:		3.	
4. G Drum.....:		5. Caustic pH>10:		6.	
7.		8.		9.	
10. Isocy>10%....:		11.		12.	
13.		14.		15. Odorous.....:	
16.		17.		18. HighTox>=5...:	
19.		20.		21. ReacMtls>16%.:	
22.		23. Reactives....		24.	
25.		26.		27.	
28.		29.		30.	

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.800	1.100	.000		Stable	Y
Btu Value/Lb.		0	8000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	N
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		4	17	106		Benzene	N
Vapor Pressure	Y	50.0	100.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	D
						RIS Type	
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

NOV 1 3 2017

APPENDIX 2

DRAWING #D-02-001, REV. 22: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 2: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

APPENDIX 3

REPAIRED TANK NO. 55 TIGHTNESS TEST RESULTS

09-08-17

Tank #55 Repair completion certification test

Tank was pressure Tested @ 5lbs

Soap test was completed on all the repaired cone & side areas of welding

The results were no visible leaks were detected

Present observing the test was the following:

		Sign	
Maintenance Manager	Ron Harper	_____	Date: 9/11/17
Maintenance Project Manager	Mark Gibson	_____	Date: 9/8/17
EDGECLIFF GROUP PE	Reynard Depuy	_____	Date: 9/8/17

CERTIFICATION OF TANK NO. 59 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

May 04, 2018

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, one of the tanks within Tank Farm III (i.e., Tank No. 59), was removed from service because of localized excessive pitting in the cone area due to corrosion. The corroded sections of the unit were fill welded, and Tank No. 59 is now ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 59 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 59 in compliance with these regulatory requirements.

PUBLIC INFORMATION VERSION
Confidential Information has been removed from this page.

2.0 REVIEW AND INSPECTION OF TANK NO. 59 REPAIRS

Tank No. 59 meets the following specifications:

Tank Design Data:
Design standard
Construction material
Lining material
Corrosion allowance
Design life
Capacity (nominal)
Fabricated shell thickness
Minimum design shell thickness
Fabricated top thickness
Minimum design top thickness
Fabricated bottom thickness
Minimum design bottom thickness
Type of tank bottom
Diameter (nominal)
Height (nominal)
Influent pump capacity
Effluent pump capacity
Design Pressure
Pressure Relief Valve Setting
Operating pressure
Maximum liquid level
Operating temperature
NFPA Code 30 design standard satisfied
Month/Year of construction
Level indicator present
Secondary Containment System Data:
Capacity
Coating

JUN 0 7 2018

The repaired Tank No. 59 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 59 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 59 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001, Rev. 23: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049, Rev. 5: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100, Rev. 3: Secondary Containment for Tanks 23-64.

The repaired Tank No. 59 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 59 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S DePuy — 5/4/18

REYNARD S. DEPUY — Date
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

JUN 07 2018

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

Former WPS# — if applicable — Please do not leave any blank spaces — WPS# 58526 N

3 GENERAL INFORMATION

Waste name ON DEMAND WATER

Generator code

Waste generating process BULKING WASTE TSDF

Primary business activity at generating facility TSDF

Was this waste generated from a CERCLA activity N
Do you receive RCRA hazardous waste from another company Y
Are you the original generator N VARIES
Do you produce use or receive munitions or explosives N
Is facility a 10 Mg Generator per 40 CFR 61 340 N

Rate of Generation Container	Quantity	Time Period	Accum	One Time
GALLONS	5000	WEEK		N

Service Agreement Entity CHEMTRON CORPORATION
Per Subpart CC
VOC > 500 ppm Y

Physical Descr VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4 SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal	Material of Construction	D O T Specification

Bulk shipment TANKER
Pallet N Gaylord N Hopper N Drum N

Overall	Length	Width	Height	Volume
Waste	Length	Width	Height	

6 SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste

Other

5 CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON HALOGENATED SOLVENTS ACETONE	.00	30.00	.00
BUTYL CELLOSOLVE, METHYL ETHYL	.00	.00	.00
KETONE XYLENE PROPYLENE GLYCOL	.00	.00	.00
METHYL ETHER ACETATE TOLUENE	.00	.00	.00
XYLENE	.00	.00	.00
HALOGENATED SOLVENTS, METHYLENE	.00	5.00	.00
CHLORIDE 1 1 1 TRICHLOROETHANE	.00	.00	.00
ALCOHOLS: BUTANOL ISOPROPANOL,	.00	5.00	.00
METHANOL	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS DIRT	.00	10.00	.00
SAND SILT SCALE POLYMERS	.00	.00	.00
RUST PIGMENTS	.00	.00	.00

TOTAL >= 100%

7 SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt% Y — Total Concentration Range Wt%

	Organic Bound Low	Organic Bound High	Total Low	Total High
S	.0	1	0	1
Cl	0	4.0	0	4.0
F	.0	1	0	1
Br	0	1	0	1
I	0	1	0	1
N	0	1	0	1
P	0	1	0	1

B Metals maximum content Y

Metal	Content	Metal	Content
Sb	25.00p	Pb	100.00p
As	10.00p	Hg	20p
Ba	5000.00p	Ni	1.00p
Be	100.00p	Se	1.00p
Cd	25.00p	Ag	500.00p
Cr	250.00p	Tl	3000.00p
Cu	1.00p	Zn	1.00p
Li	1.00p	Mo	1.00p
Al	0 3.0%	Si	0 3.0
Mg	0 2%	Na	0 3
K	0 3%		

C Does the waste contain PCBs N
Asbestos N Is this waste TSCA regulated N
Insecticides pesticides herbicides rodenticides N

Name	Concentration ppm/%

Dioxin N Detection limit .000 %
Total available cyanides >250 ppm Y
Amenable cyanide N Concentration .000 %
Total available sulfides >500 ppm N
Radioactivity above background N
Infectious waste N

JUN 07 2018

Former WPS# ... Please do not leave any blank spaces WPS# 3852-1

8 PHYSICAL PROPERTIES
Physical state ... Solid

Viscosity at 70°F ... Dusting hazard? N
******* CPS Range *********
From To Fixed Description
0 1000 0 LIQUIDS
Is material pumpable at 70°F <2,000 CP? Y Describe:

Is material multi-layered? Y Describe

	Description of Layer	From	To	Fixed
1	Top ORGANIC	0	30	0
2	AQUEOUS	70	99	0
3	SOLIDS	0	10	0

Dissolved solids 10 %WT Suspended solids 10 %WT
BTU 0 to 5000 Ash content 10 %WT
Flash pt 0 to 140 °F Vap pr 0 to 50.0 70°F
Specific gravity .900 to 1.300 pH 4.0 to 10.0
Corrosivity MPY <30
Colors VARIOUS

Odorous? Y COMMON SOLVENT

Toxicity using HMIS System
Eye N
Inhalation N
Dermal N
Ingestion N
Other: N
Carcinogen N
Attach supporting data, including detection limit

10 EPA AND DOT INFORMATION
A Is this waste hazardous as defined in 40 CFR Y
Part 261 (OAC) 3745 51?
B EPA Haz. Waste No(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
Continued on page 3.
C State Haz. Waste No(s) / Reason for Selection

9 REACTIVITY AND STABILITY
A Reactivity group number(s) 106 101

B Is material stable? Y If unstable (i.e., polymerization with age, water/air reactive, please explain below)

C Sensitive Shock? N Heat? N Friction? N

D Is this waste stream reactive as defined by DOT? N

D DOT Description
UN1993 WASTE FLAMMABLE LIQUID N.O.S. (SOLVENTS) 3 PG II RQ ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID N.O.S. (COMBUSTIBLE LIQUID) NA1993 III*** WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES LIQUID N.O.S. 9 UN3082 PGIII** HAZARDOUS WASTE LIQUID N.O.S. 9 NA3082 PG III***

11 LAND DISPOSAL RESTRICTIONS
A Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards
B Wastewater N Non-wastewater Y
C Is this waste a lab pack (Y) / loose pack (L)? N

DOT "Poison inhalation hazard?" N
Container label(s) Placard(s)
FLAMMABLE LIQUID FLAMMABLE

COMMENTS:

12 ACCOUNTABILITY STATEMENT
I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature ______ Date ______

Print Name ______ Print Title ______

JUN 0 7 2018

1 Waste Product Surve No. 58526 ACTIVE SPECIAL/STANDARD: SD
2 Generator Loca

INTERMEDIARY
Waste Name..... : ON DEMAND WATER
3 Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4 Physical State.
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas N

5. Toxic Rating.... :Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6 Pricing Factors : (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4		2. Hazers		3	
4. G Drum		5. Caustic pH>10:		6	
7.		8.		9	
10. Isocy>10%		11.		12	
13.		14.		15	Odorous...
16.		17.		18.	HighTox>=5....
19		20.		21	ReacMtls>16%
22		23. Reactives		24	
25.		26		27	
28.		29		30	

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
Form Codes:		(Liquid: W101 Solid: W403)				Generation	3
Composite Category:						Revenue Source	I
Likely to contain PCBs? N						RIS Type	A
						Universal Waste	N

10 Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
8B	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

JUN 0 7 2018

3 GENERAL INFORMATION

Waste name "B" WASTE

Generator code

Was this waste generated from a CERCLA activity N
Do you receive RCRA hazardous waste from another company Y
Are you the original generator Y
Do you produce use or receive munitions or explosives
Is facility a 10 Mg Generator (per 40 CFR 61 34) N

Waste generating process CHEMICALS MANUFACTURING
Primary business activity at generating facility ADHESIVES AND COATINGS MFG

Rate of Generation		Time		One Time	Service Agreement set by
Container	Quantity	Period	Accum	N	LORD CORPORATION
LBS	2000000	YEAR			Per Subpart CC
					VOC > 500 ppm Y

Physical Descr. VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4 SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size	Material of Construction	DOT Specification
Ga		

Bulk shipment BULK LIQUID
Pallet N Gaylord N Hopper N Drum N
Overall Length Width Height Volume
Waste Length Width Height

5 CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	00
METHANOL	10.00	20.00	00
OIL	00	00	00
SULFURIC ACID	00	5.00	00
CHLORINATED SOLVENTS TRICHLOROETHYLENE TETRACHLOROETHYLENE ETC	00	7.00	00
NON HALOGENATED ORGANICS TOLUENE XYLENE	00	4.00	00
RESINS ACRYLIC EPOXY POLYAMIDE	00	2.00	00
SODIUM SALTS SODIUM HYDROXIDE SODIUM CHLORIDE ETC	00	3.00	00

TOTAL = 100 %

6 SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste
GENERATOR KNOWLEDGE
MSDS
Other

7 SPECIFIC ANALYSIS OF WASTE (p-ppm)

A Organic Bound Constituents Range wt% Y

	Range wt%	Y
S	0 .1	
C	1 40	0 60
F	0 1	
Br	0	
I	0	1
N	0	
P	0	

Total Concentration Range wt%

	Range wt%
A	1
Mg	0

B Metals maximum content

Sb	25 00p	Pb	25 00p
As	10 00p	Hg	00p
Ba	100 00p	Ni	00p
Be	1 00p	Se	00p
Cd	25 00p	Ag	25 00p
Cr	25 00p	Tl	25 00p
Cu	1 00p	Zn	1 00p
	1 00p	Mo	00p
		1% Sn	0
		1% Na	0

C Does the waste contain < 0 1%
PCBs N
Asbestos N Is this waste TSCA regulated N
Insecticides pesticides herbicides rodenticides N
Name Concentration ppm %

Dioxin N Detection Limit 000 ppb
Total available cyanides >250 ppm N
Amenable cyanide N Concentration 000 ppm
Total available sulfides >500 ppm N
Radioactivity above background N
Infectious waste N

JUN 07 2018

8 PHYSICAL PROPERTIES
Physical state 70° F Liquid

Viscosity at 70° F Distinct hazard? N
******** CPS Range ********
From To Fixed Description
0 2000 0 LIQUID
Is material pumpable at 70° F (<2,000 cP)? Y Describe

Is material multi-layered? Y Describe

Description of Layer	From	To	Fixed
1 (Top) ORGANIC SOLVENTS	0	15	0
2 WATER	70	85	0
3	0	0	0

Dissolved solids 3 %WT Suspended solids 3 %WT
BTU/lb 0 to 8000 Ash content 5 %WT
Flash pt 0 to 140 °F Vap pr 50 0 to 100 0 70°F
Specific gravity 800 to 1 100 pH 4 0 to 10 0
Corrosivity MPY <30
Colors. VARIOUS

Odorous? Y ALCOHOL

9 REACTIVITY AND STABILITY
A Reactivity group number(s) 4 17 106

B Is material stable? Y If unstable (i.e. polymerization with age, water/air reactive please explain below)

C Sensitive Shock? N Heat? N Friction? N

D Is this waste stream reactive as defined by DOT? N

11 LAND DISPOSAL RESTRICTIONS
A Have treatment standards/methods been established? Y If yes, refer to 40CFR 268 40 for the Universal Treatment Standards
B Wastewater N Non-wastewater Y
C Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity using HMIS System
Eye N
Inhalation N
Dermal N
Ingestion N
Other N
Carcinogen N
Attach supporting data including detection limit

10 EPA AND DOT INFORMATION
A. Is this waste hazardous as defined in 40 CFR Y Part 261 (OAC) 3745-51?
B EPA Haz Waste No (s) / Reason For Selection
D001 / FLAMMABLE LIQUID

C State Haz Waste No (s) / Reason For Selection

D DOT Description
UN1993, WASTE FLAMMABLE LIQUID N.O.S. (METHANOL) 3 PG II RQ, (METHANOL

DOT "Poison Inhalation Hazard?" N
Container label(s) Placard(s)
FLAMMABLE LIQUID FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE
PYROPHORIC EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE

12 ACCOUNTABILITY STATEMENT
I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents Based on my inquiry of those individuals immediately responsible for obtaining the information the submitted information is true accurate and complete and all known and suspected hazards have been disclosed

Authorized Signature Date

Print Name Print Title

JUN 0 7 2018

CS[illegible]RP CHEMIST REPORT Date 8/05/..
User OBISHOP

1 Waste Product Survey No. 30557 ACTIVE SPECIAL/STANDARD ST
2 Generator/Location:

0

GENERATOR DIRECT
Waste Name... ....: "B" WASTE
3 Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State . . :
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas N

5 Toxic Rating..... :Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4	Y	2. Hazers . . . . :		3.	
4. G Drum.		5. Caustic pH>10:		6.	
7.		8.		9.	
10. Isocy>10%		11.		12.	
13.		14.		15. Odorous . . . :	
16.		17.		18. HighTox>=5...:	
19.		20.		21. ReacMtls>16%..	
22.		23. Reactives		24.	
25.		26.		27.	
28.		29.		30.	

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N

9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.800	1.100	.000		Stable	Y
Btu Value/Lb.		0	8000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	N
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		4	17	106		Benzene	N
Vapor Pressure	Y	50	0 100.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
Form Codes:		(Liquid: W101 Solid: W403)				Generation	3
Composite Category:						Revenue Source	D
Likely to contain PCBs? N						RIS Type	
						Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

JUN 0 7 2018

APPENDIX 2

DRAWING #D-02-001, REV. 23: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049, REV. 5: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100, REV. 3: SECONDARY CONTAINMENT FOR
TANKS 23-64

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the Public Information Version of Appendix 2 of this P.E. Certification.

APPENDIX 3

REPAIRED TANK NO. 59 TIGHTNESS TEST RESULTS

05-04-18

Tank #59 Repair completion certification test

Tank was pressure Tested @ 3 lbs

Soap test was completed on all the repaired cone.

The results were no visible leaks were detected

Present observing the test was the following:

		Sign	
Maintenance Manager	Ron Harper		Date: 5/4/18
Maintenance Project Manager	Mark Gibson		Date: 5/4/18
EDGECLIFF GROUP PE	Reynard Depuy		Date: 5/4/18

JUN 0 7 2018

CERTIFICATION OF TANK NO. 61 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

September 21, 2018

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low BTU hazardous waste that is stored within Tank Farm III is included in **APPENDIX 1**.

Recently, Tank No. 61 within Tank Farm III was removed from service because of localized excessive pitting due to corrosion. The corroded sections of Tank 61 were repaired, and Tank No. 61 is now being returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 61 in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system. The written statement attests that Tank 61 was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 61 in compliance with these regulatory requirements.

The repaired Tank No. 61 meets the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this same unit prior to its repairs. The repaired Tank No. 61 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that prior to their repairs. Overall, the repaired Tank No. 61 will function in an equivalent manner to the same unit prior to repairs. RIS has included the following relevant engineering drawings within **APPENDIX 2**:

- Drawing #D-02-001: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID);
- Drawing #D-90-049: Tank Farms I, II, III Process Flow Diagram (PFD); and
- Drawing #C-90-100: Secondary Containment for Tanks 23-64.

The repaired Tank No. 61 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and has been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tank No. 61 was tightness tested and found not to be leaking. The tightness testing results are included in **APPENDIX 3**.

3.0 CERTIFICATION STATEMENT, WHICH MEETS OAC 3745-50-42(D) REQUIREMENTS

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S. DePuy — 9/19/18

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

Date

P.E. STAMP & NO.

OCT 3 0 2018

APPENDIX 1

TYPICAL LOW BTU HAZARDOUS WASTE PRODUCT SURVEY

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 58526 f

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)

Primary business activity at generating facility: TSDF

Rate of Generation		Time		One Time	Service Agreement Entity
Container	Quantity	Period	Accum	N	CHEMTRON CORPORATION
GALLONS	5000	WEEK			Per Subpart CC.
					VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N

Do you receive RCRA hazardous waste from another company: Y

Are you the original generator: N VARIES

Do you produce, use, or receive munitions or explosives: N

Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: TANKER

Pallet: N Gaylord: N Hopper: N Drum: N

Overall Length: Width: Height: Volume:

Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE, BUTYL CELLOSOLVE, METHYL ETHYL KETONE, XYLENE, PROPYLENE GLYCOL METHYL ETHER ACETATE, TOLUENE, XYLENE	.00	30.00	.00
	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	5.00	.00
	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL, METHANOL	.00	5.00	.00
	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT, SAND, SILT, SCALE, POLYMERS, RUST, PIGMENTS	.00	10.00	.00
	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Total Concentration Range Wt%:	
S	.0	.1
Cl	.0	4.0
F	.0	.1
Br	.0	.1
I	.0	1
N	.0	1
P	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p	Al	.0	3.0%
As	10.00p	Hg	.20p	Mg	.0	.2%
Ba	5000.00p	Ni	1.00p	K	.0	.3%
Be	100.00p	Se	1.00p	Si	.0	3.0
Cd	25.00p	Ag	500.00p	Na	.0	.3
Cr	250.00p	Tl	3000.00p			
Cu	1.00p	Zn	1.00p			
Li	1.00p	Mo	1.00p			

C. Does the waste contain:

PCBs: N

Asbestos: N Is this waste TSCA regulated: N

Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %

Total available cyanides >250 ppm: Y

Amenable cyanide: N Concentration: .000 %

Total available sulfides >500 ppm: N

Radioactivity above background: N

Infectious waste: N

OCT 3 0 2018

former WPS# (if applicable) Please do not leave any blank spaces. 1 WPS# 58526 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S (SOLVENTS) 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N O.S . 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N O.S.. 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N
Container label(s): FLAMMABLE LIQUID
Placard(s): FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

OCT 3 0 2018

APPENDIX 2

Public Information Version

DRAWING #D-02-001: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING #D-90-049: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

DRAWING #C-90-100: SECONDARY CONTAINMENT FOR TANKS 23-64

RIS has claimed these drawings confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed the drawings from the Public Information Version of the State Part B Application.

APPENDIX 3

REPAIRED TANK NO. 61 TIGHTNESS TEST RESULTS

DATE: September 19, 2018

Tank Number 61 was pressure tested @ 3 psi.

Soap Test was completed on all repaired joints.

The results were no visible leaks were detected.

Present observing the test included:

Maintenance Manager, Ron Harper _____ Date: 9/19/18

Maintenance Project Manager, Mark Gibson N/A Date: N/A

EDGECLIFF Group PE, Reynard Depuy _____ Date: 9/19/18

OCT 3 0 2018

CERTIFICATION OF TANK FARM ANCILLARY PIPING

AT ROSS INCINERATION SERVICES, INC.

By EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

DECEMBER 2018

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste. As part of these tank systems, RIS routinely transfers hazardous waste from the tank farms via ancillary piping, where it is fed to the incinerator for destruction. The ancillary piping is surrounded by a secondary containment system (pipe trench), which prevents any releases from migrating into the environment.

Ancillary piping is used for the transfer of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. RIS replaced four (4) pipes used for the transfer of hazardous waste to the incineration system. Refer to **APPENDIX A** – Drawing C-90-021 Rev. 4, Pipe Trench Secondary Containment. A Waste Product Survey which describes the characteristics of a typical low and high BTU hazardous waste that is transferred through the piping is included in **APPENDIX B** – Typical High and Low BTU Hazardous Waste. RIS replaced a 3" high BTU line, a 3" low BTU line, a 3" direct feed line, and a 2" by-pass fuel line.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the tank farm ancillary equipment in use. RIS must also keep on file written statements by those persons required to certify the design of the Tank System attesting that the replacement ancillary piping was properly installed, and that the replacement ancillary piping was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the installation of replacement ancillary piping in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF ANCILLARY PIPING

The tank system was designed with sufficient structural integrity and is acceptable for managing hazardous waste. The foundation, structural support, seams, connections, and pressure controls are adequately designed with the structural strength, to ensure that it will not collapse, rupture, or fail. Replacement of ancillary piping with equivalent piping will not affect the integrity of the tank system.

Design Standard: The replaced ancillary piping is Schedule 40 carbon steel and was constructed to meet the design standards found in **APPENDIX C** – Tank Farm Ancillary Piping Standards. All prefabricated lines were air pressure tested prior to installation.

Hazardous Material Characteristics: Hazardous waste will be transferred in the replaced piping. Specifics for the waste(s) to be handled are found in **APPENDIX B**. The tank farm pipe trench is constructed of concrete and is coated. The tank farm pipe trench has a containment capacity of 18,280 gallons.

Ancillary Equipment Installation: Ancillary piping was secured using U-bolts attached to existing T-Bar supports. As such, the replacement ancillary piping will withstand the effects of frost heave. Proper installation and handling procedures were adhered to prevent damage to the system during pipe replacement.

Prior to placing the ancillary piping into use, Reynard Depuy, Professional Engineer of the Edgecliff Group reviewed and certified the design of the replacement piping for compliance with applicable standards. Prior to use, the system was inspected for the following items:

(1) Weld breaks;

(2) Punctures;

(3) Scrapes of protective coatings;

(4) Cracks;

(5) Corrosion;

(6) Other structural damage or inadequate construction/installation.

Tightness Testing: The replacement piping was tested for tightness prior to being placed in use. All prefabricated lines were shop air pressure tested before installation. In addition, after installation the piping was pressure tested using water to 1.5 times the pipe's expected working pressure. Refer to **APPENDIX D** – Newly Installed Ancillary Piping Completion Tests.

3.0 CERTIFICATION STATEMENT

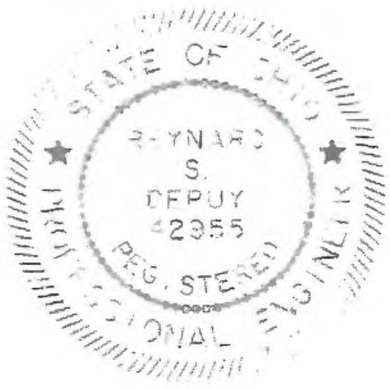
[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

12/14/18
Date

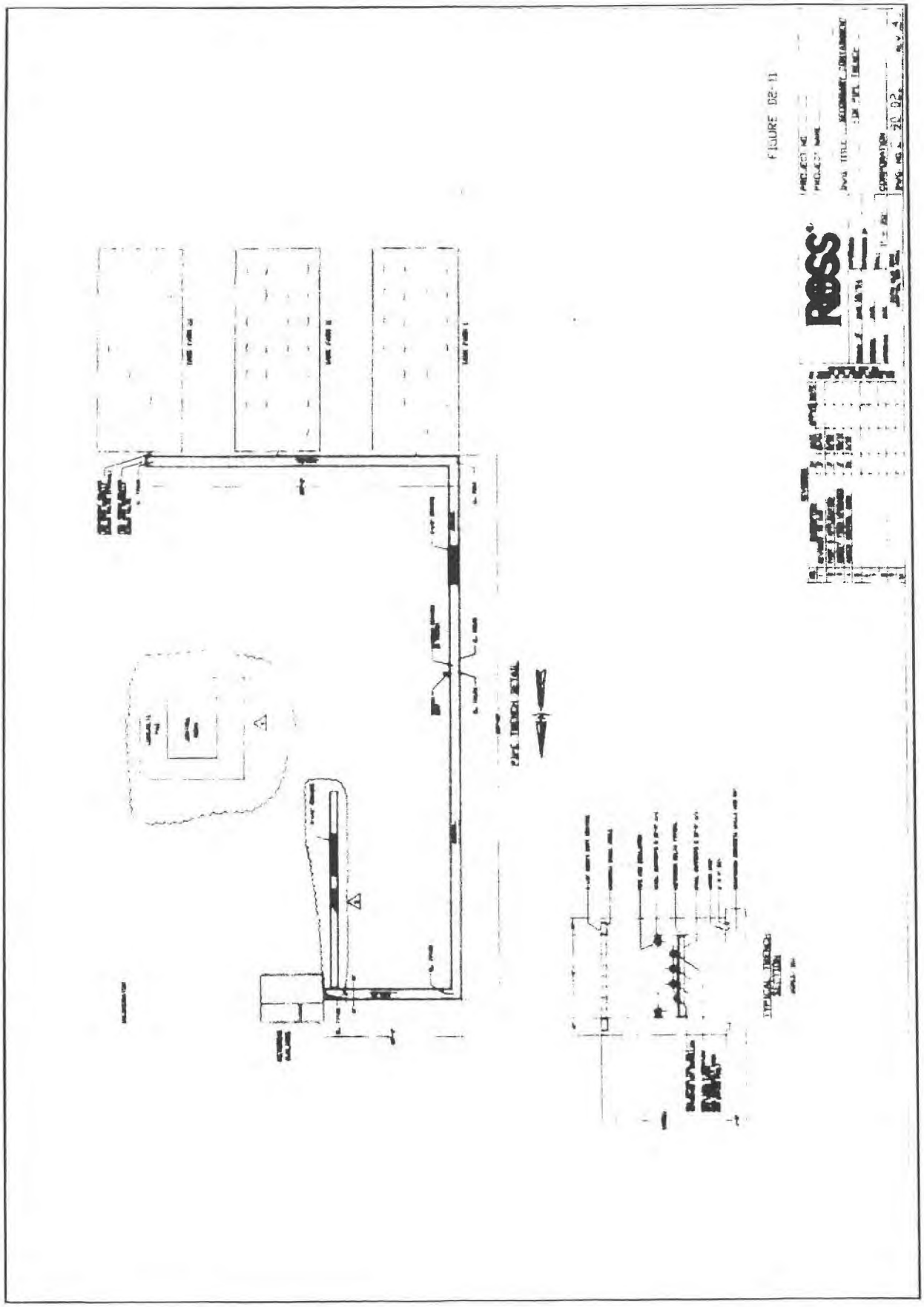
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

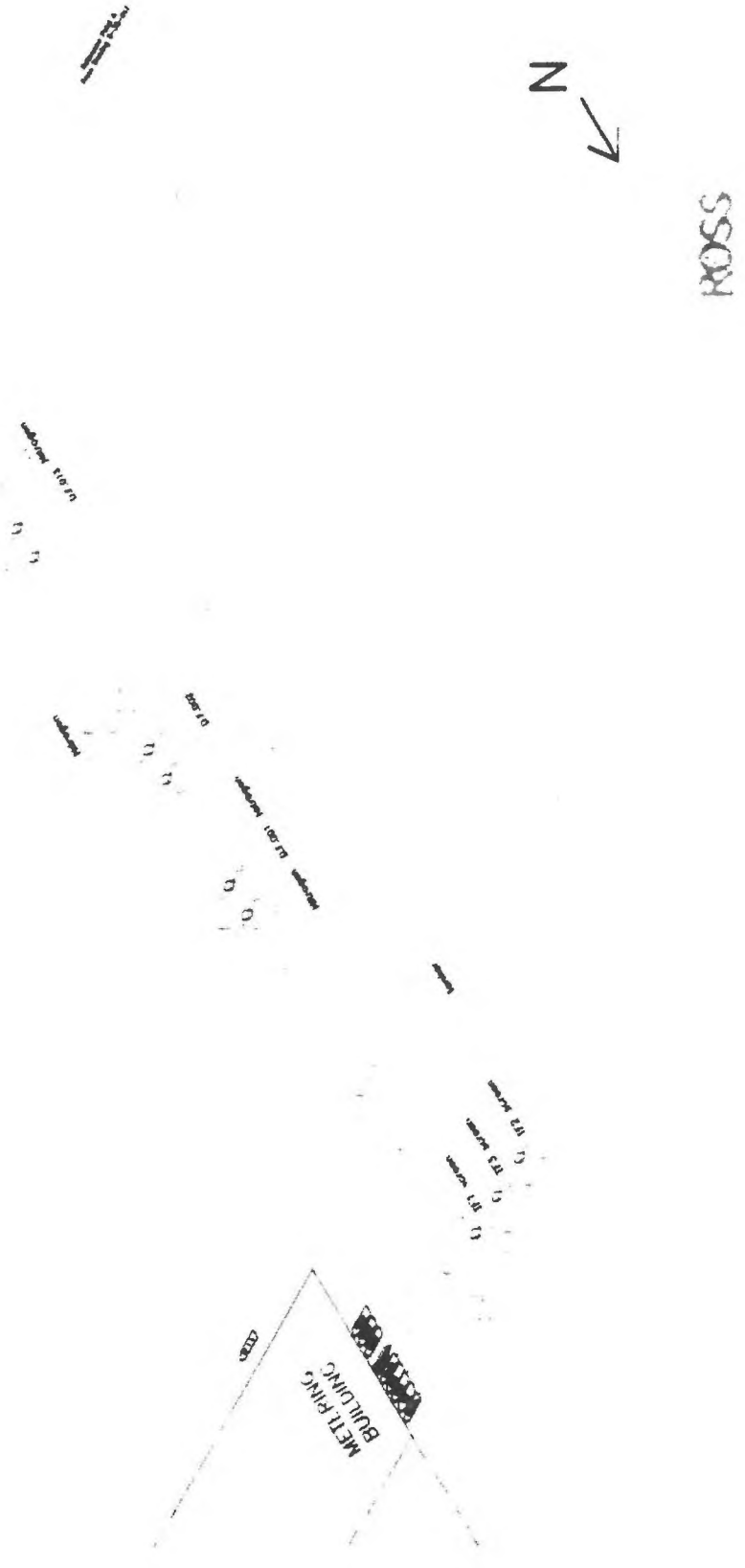
P.E. STAMP & NO:



APPENDIX A

DRAWING #C-90-021 REV. 4
SECONDARY CONTAINMENT FOR PIPE TRENCH





FEB 1 1 2019

APPENDIX B

TYPICAL LOW AND HIGH BTU HAZARDOUS WASTE PRODUCT SURVEY

Ross Incineration Services Inc — Waste Product Survey — 8/05/11 — Page 1
36790 Giles Road Grafton Ohio 44044 — (440) 748 5800 — US EPA ID# OHD048415665
Former WPS# — If applicable. Please do not leave any blank spaces. — WPS# 58576 N

GENERAL INFORMATION
Waste name: ON COMMAND WATER

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y

Primary business activity of generating facility: TSDF

Service Agreement Entity: CHEMTRON CORPORATION
Per Subpart CC
VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE LAYERING

4 SHIPPING CONTAINERS (must meet DOT/RCRA requirements)
Drum Size — Material of — DOT
Gal — Construction — Specification

Bulk shipment: TANKER
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length, Width, Height, Volume
Waste: Length, Width, Height

6 SOURCE OF INFORMATION
Method used to obtain a representative sample of the analyzed waste

Other

5 CHEMICAL COMPOSITION
Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	70 00	100 00	00
NON HALOGENATED SOLVENTS: ACETONE	00	30 00	00
BUTYL CELLOSOLVE, METHYL ETHYL	00	10	00
KETONE, XYLENE, PROPYLENE GLYCOL	00	00	00
METHYL ETHER ACETATE, TOLUENE	00	00	00
XYLENE	00	00	00
HALOGENATED SOLVENTS: METHYLENE	00	5 00	00
CHLORIDE, 1 1 1 TRICHLOROETHANE	00	00	00
ALCOHOLS: BUTANOL, ISOPROPANOL	00	5 00	00
METHANOL	00	00	00
BENZENE	00	00	100 00
SUSPENDED OR SETTLED SOLIDS: DIRT	00	10 00	00
SAND, SILT, SCALE, POLYMERS,	00	00	00
RUST, PIGMENTS	00	00	00

TOTAL >= 100%

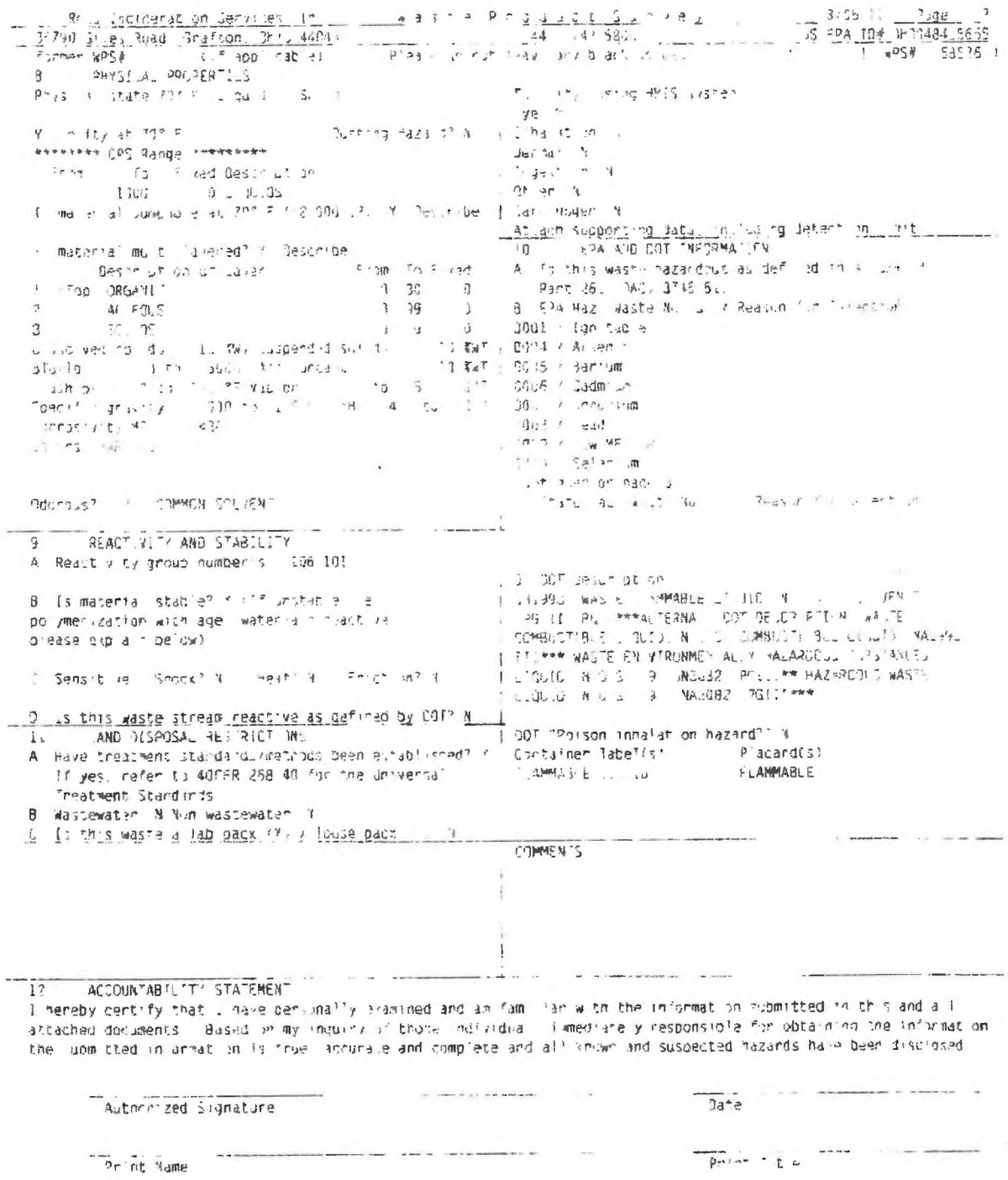
7 SPECIFIC ANALYSIS OF WASTE (p=ppm)
A Organic Bound / Total Constituents Concentration Range Wt% — B Metals maximum content

	Range wt%		Range Wt%		Metal		Metal	
	0	1	0		Sb	25 00p	Pb	130 00p
	0	4 0	0	4 0	As	10 00p	Hg	20p
					Ba	5000 00p	Ni	1 00p
					Be	100 00p	Se	1 00p
	0		0		Cd	2 00p	Ag	500 00p
Br	0	1	0	1	Cr	250 0p	Tl	3000 00p
	0	1	0	1	Cu	1 00p	Zn	00p
N	0	1	0	1		00p	Mo	1 00p
P	0	1	0	1	Al	0	3 0%	Si
					Mg	0	2%	Na

C Does the waste contain K 0 3%
PCBs: N
Asbestos: N — Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N
Name — Concentration ppm/%

Dioxin: N Detection limit 000 Y
Total available cyanides >250 ppm: Y
Amenable cyanide: N Concentration 000 Y
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

FEB 11 2019



FEB 1 1 2019

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1 Waste Product Survey No: 58525 ACTIVE SPECIAL/STANDARD: SD
2 Generator/Loca

INTERMEDIARY
Waste Name . . . . . : ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State. . :
Solid: Y Sludge. N Semi-Solid: N Liquid: Y Slurry: N Gas N

5. Toxic Rating Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors (1=OK/2=DNS/3=WT) Storage Code: 1

4	5.	6.
7.	8.	9.
10.	11 LongRunTime * 10	12 LongRunTime * 1

Characteristics: Y/

1. Acid pH<4	2. Hazers	3.
4 G Drum. .	5. Caustic pH>10:	6
7.	8.	9.
10. Isocy>10%	11.	12
13.	14	15. Odorous . .
16	17.	18. HighTox>=5. . :
19	20.	21 ReacMtls>15%.:
22	23. Reactives . . .	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y
9. Waste Properties:

	Y/N	From	To	Fixed			
						Rate of Generation	H
						RIS Sample	Y
S. G.		.900	1.000	.000		Stable	Y
Btu Value/Lb.		0	5000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	Y
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		106	101			Benzene	Y
Vapor Pressure	Y	.0	50.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
Form Codes:		(Liquid: WL01 Solid: W403)				Generation	3
Composite Category:						Revenue Source	I
Likely to contain PCBs?: N						RIS Type	A
						Universal Waste	N

10 Containerization: P = Pre Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

FEB 1 1 2019

Waste Profile Analysis — Page
EPA ID# OHD...
WPI# 10667

1 GENERAL INFORMATION
Waste name: TANK WASTE
Generation Code
Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG
Rate of Generation — Container — Gals — Time Period — YEAR — Accum — One Time N

Was this waste generated from a CERCLA activity N
Do you receive RCRA hazardous waste from another company
Are you the original generator
Do you produce, use or receive ... explosives
Is facility a LQ generator

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4 SHIPPING CONTAINERS (must meet DOT/RCRA requirements)
Drum Size Gal — Material of Construction — DOT Specification

Bulk shipment BULK LIQUID
Pallet N Gaylord N Hopper N Drum N
Overall Length Width Height Volume
Waste Length Width Height

6 SOURCE OF INFORMATION
Method used to obtain a representative sample of the analyzed waste
GENERATOR KNOWLEDGE
MSDS
Other

5 CHEMICAL COMPOSITION
Components including but not limited to 40 CFR 261 Subpart B C & D

Chemical Components	Concentration Range Wt%		PPM
WATER	[illegible]	[illegible]	00
METHANOL	[illegible]	10.00	00
[illegible]		7.00	00
SULFURIC ACID	[illegible]	5.00	00
CHLORINATED SOLVENTS (CHLOROETHENE, TETRACHLOROETHENE, ETC)	00	00	00
NON HALOGENATED ORGANICS (TOLUENE, XYLENE)	00	4.00	00
	00	00	00
RESIN (ACRYLIC, ...)	00	2.00	00
SODIUM SALTS (SODIUM HYDROXIDE, SODIUM CHLORIDE, ETC)	00	[illegible]	00

TOTAL

7 SPECIFIC ANALYSIS OF WASTE (p=ppm)
A Organic Bound Constituents Range Wt% — Total Concentration Range Wt%
B Metals maximum content

Sb 25.00p	Pb 25.00p	As 10.00p	Hg 00p
Ba 100.00p	Ni 1.00p	Be 1.00p	Se 1.00p
Cd 25.00p	Ag 25.00p	Cr 25.00p	Tl 25.00p
1.00p	Zn 1.00p	1.00p	Mo 1.00p
Al	S	Mg	Na

C Does the waste contain 0 1%
PCBs N
Asbestos N   Is this waste TSCA regulated N
Insecticides, pesticides, herbicides, rodenticides
Name — Concentration (ppm)

Dioxin N Detection Limit %
Total available cyanides >250 ppm N
Amenable cyanide N Concentration %
Total available sulfides >500 ppm N
Radioactivity above background N
Infectious waste N

FEB 1 1 2019

Ross Incineration Services Inc — Waste Product Survey — 8/03/11 Page 2
36790 Giles Road, Grafton, Ohio 44044 — (440) 748-5800 — US EPA ID# OHD048415665
former WPS# (if applicable) — Please do not leave any blank spaces — I WPS# 30667 N

8 PHYSICAL PROPERTIES
Physical state 70 F: liquid
Viscosity ... Dust hazard? N
******** Range ********
Is material pumpable at 70 F ...

Is material multi layered? Y Describe

Description of Layer	From	To	Fixed
1 (Top) ORGANIC SOLVENTS	3	15	0
2 WATER	75	85	0
3	0	0	0

Dissolved solids: 3 %WT Suspended solids 3 %WT
BTU lb: ... to 8000 Ash content 5 %WT
Flash pt ... to 140 °F ...
Specific gravity .800 to 1.1 ...
Corrosivity MPY <30
Colors VARIOUS

Odorous? Y ALCOHOL

Toxicity Using ...
Eye N
Inhalation N
Dermal N
Ingestion N
Other N
Carcinogen N
Attach supporting data including detection limit

10 EPA AND DOT INFORMATION
A Is this waste hazardous as defined in 40 CFR, Y
Part 261 (OAC) 3745-51?
B EPA Haz Waste No ... Reason for Selection
D001 FLAMMABLE ...

C State Haz Waste No's Reason for Selection

9 REACTIVITY AND STABILITY
A Reactivity group numbers 4 ... 106

B Is material stable? Y If unstable ... polymerization with age, water air reactive
please explain below

C Sensitive Shock? N Heat? N Friction? N

D Is this waste stream reactive as defined by DOT? N

D DOT Description
UN1993, WASTE FLAMMABLE LIQUID ...
PG II RQ METHANOL

11 ... AND DISPOSAL RESTRICTIONS
A Have treatment standards/methods been established? ...
If yes, refer to 40CFR 268.40 for the Universal
Treatment Standards
B Wastewater N Non wastewater Y
... Is this waste a lab pack (Y) or loose pack (L)? N

DOT "Poison Inhalation Hazard?" N
Container label(s) Placards
FLAMMABLE LIQUID FLAMMABLE

COMMENTS
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE,
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE

12 ACCOUNTABILITY STATEMENT
I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed

Authorized Signature — Date

Print Name — Print Title

FEB 1 1 2019

```
CS0121RP                        CHEMIST REPORT                    Date: 8/09/11
                                                                  User: DBISHOP

1.  Waste Product Survey No:    30567     ACTIVE          SPECIAL/STANDARD: ST
2   Generator/Location:



                                                           0
    GENERATOR DIRECT
  Waste Name . . . . .:         "B" WASTE
3  Physical Description:        VARIOUS COLORED (BLACK/BROWN AMBER/GREY) LIQUID

4. Physical State . . .:
  Solid: N  Sludge: N  Semi-Solid: N  Liquid: Y  Slurry: N  Gas: N

5. Toxic Rating. . . . .:Eye:3  Inhalation:3  Dermal:3  Ingestion:3 CSF Code:  6W
6. Pricing Factors. . .:                      (1=OK/2=DNS/3=WT) Storage Code:   1
  4.                        5.                         6.
  7.                        8.                         9.
 10.                        11  LongRunTime * 10      12. LongRunTime *  1
  Characteristics:  Y/
  1. Acid pH<4      Y       2. Hazers    . . .:     3.
  4. G Drum .               5. Caustic pH>10:       6.
  7.                        8.                      9.
 10. Isocy>10%             11.                     12
 13.                       14.                     15. Odorous . . .  :
 16                        17.                     18. HighTox>=5. . .:
 19                        20.                     21. ReacMtls>15%.:
 22.                       23. Reactives. . .      24.
 25.                       26                      27.
 28.                       29.                     30.
8  Neut %:     26  Ash %      0 to      5                NONE APPLY       N
9. Waste Properties:
                  Y/N  From     To   Fixed                Rate of Generation  H
                                                          RIS Sample          Y
  S. G.               .800 1.100    .000                  Stable              Y
  Btu Value/Lb.          0  8000      0                   Corrosive           N
  Melting Point          0                                Reactive            N
  pH               Y   4.0  10.0     .0                   Cyanide >250 PPM    N
  Free Liquids     100.00              %                  Sulfide >250 ppm    N
  R. G. N.             4   17  106                        Benzene             N
  Vapor Pressure Y  50.0 100.0       .0 mm hg             Classification      N
  Min. Flash Pt  Y     0  140         0 F                 Category            P
  Form Codes:        (Liquid: W101 Solid: W403)           Generation          3
  Composite Category:                                     Revenue Source      D
  Likely to contain PCBs?: N                              RIS Type
                                                          Universal Waste     N
10. Containerization:              P = Pre Shipment / S = Special Shipment
   Cont Code    Billing Codes    Process Codes      P S
      BB        LB               LB LE LF           N Y
      9999
```

FEB 1 1 2019

APPENDIX C

TANK FARM ANCILLARY PIPING DESIGN STANDARDS

Ross Incineration Services
Grafton, Ohio
15311 10 of 17
Revision 1, 11/11/87

SPECIFICATION PS-07 (1 OF 2)

SERVICE: HIGH BTU FUEL (HF), BYPASS FUEL (BF), LOW BTU FUEL (LF)
TEMPERATURE: -20°F TO 500°F
PRESSURE: PER ANSI B16.5

CLASS 150
CARBON STEEL: 2" & SMALLER SOCKET WELD AND FLANGED
3" & LARGER BUTTWELD AND FLANGED

ITEM	SIZE	DESCRIPTION
PIPE	1/2" - 2"	ASTM A106 GRADE B, SCH. 40, P.E.
	3" - 8"	ASTM A-53B, SCH. 40, B.E.
ELBOW	1/2" - 2"	ASTM A105, 3000# S.W. ANSI B16.11.
	3" - 8"	ASTM A-234, GR. WPB, B.E., SCH. 40, ANSI B16.9.
TEE	1/2" - 2"	ASTM A105, 3000# S.W. ANSI B16.11.
	3" - 8"	ASTM A-234, GR. WPB, B.E., SCH. 40, ANSI B16.9.
COUPLING	1/2" - 2"	ASTM A105, 3000# S.W. ANSI B16.11.
UNION	1/2" - 2"	ASTM A105, C.S., 3000#, S.S. INTEGRAL SEATS, S.W. ENDS.
FLANGES	1/2" - 2"	CLASS 150 R.F., ASTM A105 S.W., SCH. 40 BORE, ANSI B16.5.
	3" - 8"	CLASS 150# R.F., ASTM A105, SLIP-ON, ANSI B16.5.

546286:RS9/33

APPENDIX D

NEWLY INSTALLED ANCILLARY PIPING COMPLETION TESTS

Date: _____

Ancillary Piping Replacement
Certification Test

High BTU line, and connectors were pressure tested with water at 100 psi for 1 hour.

Low BTU line, and connectors were pressure tested with water at 100 psi for 1 hour.

Remote direct feed line, and connectors were pressure tested with water at 100 psi for 1 hour.

Bypass fuel BTU line, and connectors were pressure tested with water at 100 psi for 1 hour.

Present observing the test included:

Maintenance Manager, Ron Harper _____ Date: 12/14/18

Maintenance Project Manager, Mark Gibson _____ Date: 12/14/18

EDGECLIFF Group PE, Reynard Depuy _____ Date: 12/14/18

Class 1 Permit Modification Request
Tank Farm Ancillary Piping

CERTIFICATION

In accordance with OAC 3745-50-42(D), the following certification is provided.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing the violations.

Date:	12/19/18	Name:	James N. Larson
		Signature:	James N Larson
		Title:	President, Ross Incineration Services, Inc.

FEB 1 1 2019

CERTIFICATION OF:

- **CERTIFICATION OF TANK 70 TO UL 142 STANDARD**
- **TANK 73, 74 and 70 NITROGEN LINE ADDITION**
- **MODIFICATIONS TO TANKS 73 AND 74**

AT ROSS INCINERATION SERVICES, INC.

By EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

OCTOBER, 2018

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tanks for the storage and treatment of hazardous waste. The tanks are surrounded by a secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks via transfer pumps to the tank farms, where it is fed to the incinerator for destruction, or an external tank truck, where it is transferred off-site for destruction.

Tanks 70, 73, and 74 are used for the treatment or storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical low and high BTU hazardous waste that is treated or stored within Tanks 70, 73, and 74 is included in **APPENDIX 1**. Recently, RIS modified Tanks 70, 73, and 74. Those modifications included:

- Removing the flame arrestors on Tanks 73 and 74 and replacing them with a rupture disk;
- Adding a 2" valve, camlock, and applicable piping for Tank 74; and
- Adding a level transmitter with local readout on Tank 70.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the modified Tank 70, 73, and 74 in use. RIS must also keep on file written statements by those persons required to certify the design of the Tank System attesting that the Tank System was properly changed, and that the Tank System was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the modified Tank System in compliance with these regulatory requirements.

In addition, Tanks 70, 73, and 74 are now equipped with a nitrogen blanketing system similar to the nitrogen blanketing system used in the Tank Farms, which minimizes the possibility of fire in the tanks. Tanks 70, 73, and 74 are considered a single system, with the headspace in all tanks connected by the nitrogen inlet and vent outlet manifolds.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, for the nitrogen blanketing piping. RIS must also keep on file written statements by those persons required to certify the design of the system attesting that the nitrogen blanketing system was properly installed, and that the piping was properly integrity tested before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the nitrogen blanketing piping in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF TANK NO. 70 CHANGES

Tank No. 70 meets the following specifications:

Tank Design Data:	
Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum shell thickness	
Fabricated top thickness	
Minimum top thickness	
Fabricated bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Design Pressure	
Rupture Disc Setting	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 design standard satisfied	
Month/Year of construction	
Level indicator present	
Secondary Containment System Data:	
Capacity	18,094 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

3.0 REVIEW AND INSPECTION OF TANK NO. 73 AND 74 CHANGES

Tank No. 73 and 74 meets the following specifications:

Tank Design Data:	
Design standard	
Construction material	
Lining material	
Corrosion allowance	
Design life	
Capacity (nominal)	
Fabricated shell thickness	
Minimum shell thickness	
Fabricated top thickness	
Minimum top thickness	
Fabricated bottom thickness	
Minimum bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Rupture disc setting	
Design Pressure	
Operating pressure (vacuum)	
Maximum liquid level	
Operating temperature	
NFPA Code 30 design standard satisfied	
Month/Year of construction	
Level indicator present	
Secondary Containment System Data:	
Capacity	18,094 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline 300 Finish Gray or equivalent

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

Tanks 70, 73, and 74

The flame arresters, valves and associated piping on tanks 73 and 74 were removed per NFPA 30, 21.4.3.9. Tanks 73, 74 were evaluated per NPFA 30, 21.4.3.5. The wetted surface was calculated and evaluated versus table 22.7.3.2. A 3" rupture disk was added to both tanks 73, and 74.

A level transmitter was mounted on the manhole on the top of tank 70. A local readout for the tank was mounted at the base of the tank.

A 2" camlock fitting, valve and applicable piping was added to pump liquids into tank 74.

Nitrogen Blanketing Piping

The installation of nitrogen blanketing piping meets the same design standard (ASME/ANSI B31.3) as the existing tank farm systems. Overall the installed nitrogen blanketing piping will function in an equivalent manner to the tank farm nitrogen blanketing system.

The installed nitrogen blanketing piping has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and it has been found to be of sufficient structural integrity. The testing results are included in **APPENDIX 2**.

RIS has included the following relevant engineering drawings within **APPENDIX 3**:

- Drawing #B-01-001, Rev. 12: Tanks 70 ,73, and 74 Process and Instrumentation Diagram (P&ID); and
- Drawing # C-90-102, REV. 4: Secondary Containment for Tanks 70 ,73, and 74.

4.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S. DePuy — 11/8/2018

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

Date

P.E. STAMP & NO.

APPENDIX 1

TYPICAL LOW AND HIGH BTU HAZARDOUS WASTE PRODUCT SURVEY

3. GENERAL INFORMATION

Waste name: ON DEMAND WATER

Generator code:

Waste generating process: BULKING WASTE (TSDF)
Primary business activity at generating facility: TSDF

Rate of Generation	Quantity	Time Period	Accum	One Time	Service Agreement Entity
Container				N	CHEMTRON CORPORATION
GALLONS	5000	WEEK			Per Subpart CC.
					VOC > 500 ppm: Y

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: N VARIES
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Physical Descr: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: TANKER
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	100.00	.00
NON-HALOGENATED SOLVENTS: ACETONE, BUTYL CELLOSOLVE, METHYL ETHYL KETONE, XYLENE, PROPYLENE GLYCOL METHYL ETHER ACETATE, TOLUENE, XYLENE	.00	30.00	.00
	.00	.00	.00
HALOGENATED SOLVENTS: METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE	.00	5.00	.00
	.00	.00	.00
ALCOHOLS: BUTANOL, ISOPROPANOL, METHANOL	.00	5.00	.00
	.00	.00	.00
BENZENE	.00	.00	100.00
SUSPENDED OR SETTLED SOLIDS: DIRT, SAND, SILT, SCALE, POLYMERS, RUST, PIGMENTS	.00	10.00	.00
	.00	.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Bound Range	Bound Y	Total Range	Total Y
S	.0	.1	.0	.1
Cl	.0	4.0	0	4.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	.1
P	.0	1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	100.00p	Al	.0	3.0%
As	10.00p	Hg	.20p	Si	.0	3.0
Ba	5000.00p	Ni	1.00p	Mg	.0	.2%
Be	100.00p	Se	1.00p	Na	.0	.3
Cd	25.00p	Ag	500.00p	K	.0	.3%
Cr	250.00p	Tl	3000.00p			
Cu	1.00p	Zn	1.00p			
Li	1.00p	Mo	1.00p			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: Y
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

MAY 0 9 2019

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 58526 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	1000	0	LIQUIDS

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC	0	30	0
2. AQUEOUS	70	99	0
3. SOLIDS	0	10	0

Dissolved solids: 10 %WT Suspended solids: 10 %WT
BTU/lb.: 0 to 5000 Ash content: 10 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 50.0 70°F
Specific gravity: .900 to 1.000 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 106 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / Ignitable
D004 / Arsenic
D005 / Barium
D006 / Cadmium
D007 / Chromium
D008 / Lead
D009 / LOW MERCURY
D010 / Selenium
(Continued on page 3)

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (SOLVENTS), 3, PG II, RQ, ***ALTERNATE DOT DESCRIPTION: WASTE COMBUSTIBLE LIQUID, N.O.S. COMBUSTI BLE LIQUID, NA1993, III*** WASTE EN VIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S., 9, UN3082, PGIII** HAZARDOUS WASTE, LIQUID, N.O.S., 9, NA3082, PGIII***

DOT "Poison inhalation hazard?" N
Container label(s): Placard(s):
FLAMMABLE LIQUID FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

MAY 0 9 2019

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 58526 ACTIVE SPECIAL/STANDARD: SD
2. Generator/Loca

INTERMEDIARY
Waste Name.....: ON DEMAND WATER
3. Physical Description: VARIOUS COLORED LIQUID WITH POSSIBLE BI-LAYERING

4. Physical State....:
Solid: Y Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	2. Hazers.....:	3.
4. G Drum.....:	5. Caustic pH>10:	6.
7.	8.	9.
10. Isocy>10%....:	11.	12.
13.	14.	15. Odorous.....:
16.	17.	18. HighTox>=5...:
19.	20.	21. ReacMtls>16%.:
22.	23. Reactives....:	24.
25.	26.	27.
28.	29.	30.

8. Neut %: 4 Ash % 0 to 10 NONE APPLY Y

9. Waste Properties:

	Y/N	From	To	Fixed	
S. G.		.900	1.000	.000	
Btu Value/Lb.		0	5000	0	
Melting Point		0			
pH	Y	4.0	10.0	.0	
Free Liquids		100.00			%
R. G. N.		106	101		
Vapor Pressure	Y	.0	50.0	.0	mm hg
Min. Flash Pt	Y	0	140	0	F

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

Rate of Generation	H
RIS Sample	Y
Stable	Y
Corrosive	N
Reactive	N
Cyanide >250 PPM	Y
Sulfide >250 ppm	N
Benzene	Y
Classification	N
Category	P
Generation	3
Revenue Source	I
RIS Type	A
Universal Waste	N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE	N	N
55SL	LD LI	LD KM LG FC	N	N
9999				

MAY 0 9 2019

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

After hours #: (614) 760-2545 Phone: (614) 760-2545 Ext.: 127 Cell: (614) 352-3270

3. GENERAL INFORMATION

Waste name: "B" WASTE

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: N
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: CHEMICALS MANUFACTURING
Primary business activity at generating facility: ADHESIVES AND COATINGS MFG.

Rate of Generation	Quantity	Time Period	Accum	One Time	Service Agreement Entity
Container				N	LORD CORPORATION
LBS	2000000	YEAR			Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification

Bulk shipment: BULK LIQUID
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE
MSDS
Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
WATER	70.00	80.00	.00
METHANOL	10.00	20.00	.00
OIL	.00	2.00	.00
SULFURIC ACID	.00	5.00	.00
CHLORINATED SOLVENTS (TRICHLOROETHYLENE, TETRACHLOROETHYLENE, ETC.)	.00	7.00	.00
	.00	.00	.00
NON HALOGENATED ORGANICS (TOLUENE, XYLENE)	.00	4.00	.00
	.00	.00	.00
RESINS (ACRYLIC, EPOXY, POLYAMIDE)	.00	2.00	.00
SODIUM SALTS (SODIUM HYDROXIDE, SODIUM CHLORIDE, ETC.)	.00	5.00	.00
	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

S	.0	.1		
Cl	.0	4.0		
F	.0	.1		
Br	.0	.1		
I	.0	.1		
N	.0	1		
P	.0	.1		

Total Concentration Range Wt%:

	.0	.1		
	.0	6.0		
	.0	.1		
	.0	.1		
	.0	.1		
	.0	1		
	.0	.1	Al	.0 .1%
			Mg	.0 .1%
			K	.0 .1%

B. Metals maximum content: Y

Sb	25.00p	Pb	25.00p	Si	.0	1
As	10.00p	Hg	.00p	Na	.0	3.0
Ba	100.00p	Ni	1.00p			
Be	1.00p	Se	1.00p			
Cd	25.00p	Ag	25.00p			
Cr	25.00p	Tl	25.00p			
Cu	1.00p	Zn	1.00p			
Li	1.00p	Mo	1.00p			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

MAY 0 9 2019

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 30667 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

Is material pumpable at 70° F (<2,000 cP)? Y Describe:

Is material multi-layered? Y Describe:

Description of Layer	From	To	Fixed
1. (Top) ORGANIC SOLVENTS	0	15	0
2. WATER	70	85	0
3.	0	0	0

Dissolved solids: 3 %WT Suspended solids: 3 %WT
BTU/lb.: 0 to 8000 Ash content: 5 %WT
Flash pt: 0 to 140 °F Vap pr: 50.0 to 100.0 70°F
Specific gravity: .800 to 1.100 pH: 4.0 to 10.0
Corrosivity MPY: <30
Colors: VARIOUS

Odorous? Y ALCOHOL

Toxicity (Using HMIS System): 1
Eye: N
Inhalation: N
Dermal: N
Ingestion: N
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / FLAMMABLE LIQUID

C. State Haz. Waste No.(s) / Reason for Selection

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 4 17 106

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (METHANOL), 3, PG II, RQ, (METHANOL)

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

DOT "Poison inhalation hazard?" N

Container label(s):	Placard(s):
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:
WASTE IS SAFE TO OPEN, INSPECT AND SAMPLE.
MATERIAL IS NOT SHOCK OR FRICTION SENSITIVE.
PYROPHORIC, EXPLOSIVE OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

MAY 0 9 2019

CS0121RP CHEMIST REPORT Date: 8/05/11
User: DBISHOP

1. Waste Product Survey No: 30667 ACTIVE SPECIAL/STANDARD: ST
2. Generator/Location:

0

GENERATOR DIRECT
Waste Name.....: "B" WASTE
3. Physical Description: VARIOUS COLORED (BLACK/BROWN/AMBER/GREY) LIQUID

4. Physical State....:
Solid: N Sludge: N Semi-Solid: N Liquid: Y Slurry: N Gas: N

5. Toxic Rating.....:Eye:3 Inhalation:3 Dermal:3 Ingestion:3 CSF Code: 6W
6. Pricing Factors...: (1=OK/2=DNS/3=WT) Storage Code: 1

4.	5.	6.
7.	8.	9.
10.	11. LongRunTime * 10	12. LongRunTime * 1

Characteristics: Y/

1. Acid pH<4....:	Y	2. Hazers.....:		3.	
4. G Drum.....:		5. Caustic pH>10:		6.	
7.		8.		9.	
10. Isocy>10%....:		11.		12.	
13.		14.		15. Odorous.....:	
16.		17.		18. HighTox>=5...:	
19.		20.		21. ReacMtls>16%.:	
22.		23. Reactives....:		24.	
25.		26.		27.	
28.		29.		30.	

8. Neut %: 26 Ash % 0 to 5 NONE APPLY N
9. Waste Properties:

	Y/N	From	To	Fixed		Rate of Generation	H
						RIS Sample	Y
S. G.		.800	1.100	.000		Stable	Y
Btu Value/Lb.		0	8000	0		Corrosive	N
Melting Point		0				Reactive	N
pH	Y	4.0	10.0	.0		Cyanide >250 PPM	N
Free Liquids		100.00			%	Sulfide >250 ppm	N
R. G. N.		4	17	106		Benzene	N
Vapor Pressure	Y	50.0	100.0	.0	mm hg	Classification	N
Min. Flash Pt	Y	0	140	0	F	Category	P
						Generation	3
						Revenue Source	D
						RIS Type	
						Universal Waste	N

Form Codes: (Liquid: W101 Solid: W403)
Composite Category:
Likely to contain PCBs?: N

10. Containerization: P = Pre-Shipment / S = Special Shipment

Cont Code	Billing Codes	Process Codes	P	S
BB	LB	LB LE LF	N	Y
9999				

MAY 0 9 2019

APPENDIX 2

CHANGED TANK NO. 70, 73, AND 74 AND NEWLY INSTALLED NITRROGEN BLANKETING PIPING COMPLETION TESTS

Date: 11/8/2018

Tank #70, 73 and 74 Modifications
Certification Test

Tank Number 70 was pressure tested @ 3 psi.

Nitrogen blanket system was leak tested using the soap test.

Soap Test was completed on all modified Tank 73, 74, and 70 joints.

The results were no visible leaks were detected.

Soap test was completed on all replaced cone welds and related flanges. The results showed no visible leaks can be detected.

Present observing the test included:

Maintenance Manager, Ron Harper N/A Date: N/A

Corporate Project Manager, Joe Sherman Date: 11/8/18

EDGECLIFF Group PE, Reynard Depuy Date: 11/8/2018

APPENDIX 3

DRAWING #B-01-001, REV. 13: TANKS 70, 73, AND 74
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

DRAWING # C-90-102, REV. 4: SECONDARY CONTAINMENT FOR TANKS 70, 73, AND 74

PUBLIC INFORMATION VERSION

RIS has claimed the drawings in this Appendix confidential because they reveal information pertaining to the size and configuration of its incineration system and tanks. For this reason, RIS has removed these drawings from the public information version of Appendix 3 of this P.E. Certification

The Ohio Environmental Protection Agency
Permit Modification Request
Tanks 70, 73 & 74 Piping Changes

CERTIFICATION

In accordance with OAC 3745-50-42(D), the following certification is provided:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Date: February 22, 2019

Name: James N. Larson

Signature: James N. Larson

Title: President, RIS

Professional Engineer's Certification for Tank Farms I and II (Updated 6-2020)

PE Certification Coming After Construction

CERTIFICATION OF TANK NO. 67 (SLUDGE TANK) REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

June 18, 2020

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

TABLE OF CONTENTS

1.0 BACKGROUND

The water used in the air pollution control system is collected, cleaned, cooled, and pH adjusted in the closed-loop scrubber water system before the water is recycled back to the air pollution control system. Scrubber water from the air pollution control system enters the clarifier for the purpose of removing the suspended solids in the scrubber water. The solids that settle in the clarifier are removed as a sludge or slurry.

Tanks 67 and 68 are used for processing residuals (scrubber water and fly ash sludge from the air pollution control equipment). Tank 67 and 68 are feed tanks for the filter press. Typically, sludge (ranging from thick to very dilute) is transferred from the closed loop scrubber water system or the maintenance storage tank to Tank 67 and 68. Residual liquids from the filter press unit will be recycled back to the clarifier, maintenance storage tank, or offsite disposal. RIS ships scrubber water blowdown off-site as needed to minimize the concentration of salts and other contaminants in the closed loop scrubber water system. A Waste Product Survey which describes the characteristics of RIS residual sludge stored within Tank 67 is included in **APPENDIX 1**.

Recently, Tank 67 was repaired at weld locations. Welds were repaired on Tank 67 and the units were returned to service on June 10, 2020.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 67 into use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 67 and in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF TANK NO. 67 REPAIRS

Tank No. 67 meets the following specifications:

Tank Design Data:	
Design basis	Portions of: ASME Pressure Vessel Code, Section VIII, Division 1; UL-142 ;Pressure Vessel Design Handbook (Van Nostrand Reinhold); Manual of Steel Construction (AISC).
Construction material	304 Stainless Steel
Lining material	None
Corrosion allowance	0.0625 inches
Design life	25 years
Capacity (nominal)	3,627 gallons/tank
Fabricated shell thickness	0.25 inch
Minimum shell thickness	0.1875 inch
Fabricated top thickness	0.25 inch
Minimum top thickness	0.1875 inch
Fabricated bottom thickness	0.25 inch
Minimum bottom thickness	0.1875 inch
Type of tank bottom	Dish
Diameter (nominal)	6 ft 4 inches
Height (nominal)	17 ft 0.4 inches (19 ft 8 inches from grade)
Design Pressure	Atmospheric
Operating pressure	Atmospheric
Maximum liquid level	16 ft. 0.4 inches
Operating temperature	Ambient
Month/Year of construction	January, 2009
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	22,493 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

Tank 67

The repaired Tank No. 67 meet the design standard (i.e., American Water Works Association, ["AWWA"]), capacity (i.e., 3,627 gallons each), design diameter (i.e., 76 inches), as this same unit existed prior to its repairs. The repaired Tank No. 67 steel thicknesses, operating conditions, controls and type of material to be stored (i.e., sludges and scrubber water) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 67 will function in an equivalent manner to these same unit prior to repair.

Tank 67 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and they are found to be of sufficient structural integrity to store sludges and scrubber water as described above. In addition, the repaired Tanks No. 67 were integrity tested using water and found not to be leaking. The testing results are included in **APPENDIX 2**.

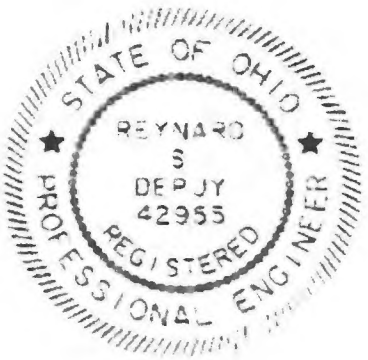
3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S DePuy — 6/11/2020

REYNARD S. DEPUY — Date
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058



P.E. STAMP & NO.

APPENDIX 1

TYPICAL SCRUBBER WATER WASTE PRODUCT SURVEY

6790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

ormer WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

. GENERATOR INFORMATION

enerator: ROSS INCINERATION SERVICES INC
.S EPA ID #: OHD048415665
Address: 36790 GILES RD
ity: GRAFTON St: OH Zp: 44044
hip From Address: 36790 GILES RD
ity: GRAFTON St: OH Zp: 44044
mergency #: (440)-748-5800
fter hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

. GENERAL INFORMATION

aste name: SPENT SCRUBBER WATER

enerator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

aste generating process: INCINERATOR OFF-GAS SCRUBBING
rimary business activity at generating facility: INCINERATION

Rate of Generation		Time		One Time	Service Agreement Entity
Container	Quantity	Period	Accum	N	ROSS GENERATED WASTE
GALLONS	25000	DAY			Per Subpart CC,
					VOC > 500 ppm: N

hysical Descr: CLEAR TO YELLOW LIQUID

. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL	

ul. ipment: BULK
allet: N Gaylord: N Hopper: N Drum: N
verall: Length: Width: Height: Volume:
aste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GRAB

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Total Concentration Range Wt%:	
S	.0	.1
Cl	.0	.1
F	.0	.1
Br	.0	.1
I	.0	.1
N	.0	.1
P	.0	1.0

	Total Concentration Range Wt%:	
S	.0	1.0
Cl	3.0	12.0
F	.0	.1
Br	.0	.1
I	.0	.1
N	.0	.1
P	.0	1.0

B. Metals maximum content: Y

Sb	70.00p	Pb	500.00p	Al	.0	1.0%	Si .0 1.0
As	10000.00p	Hg	.00p	Mg	.0	1.0%	Na 2.8 9.2
Ba	140.00p	Ni	4.00p	K	.0	1.0%	
Be	1.00p	Se	7.00p				
Cd	20.00p	Ag	30.00p				
Cr	25.00p	Tl	33.00p				
Cu	20.00p	Zn	300.00p				
Li	50000.00p	Mo	1.00p				

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

. CHEMICAL COMPOSITION

omponents including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
ODIUM CHLORIDE	6.00	20.00	.00
ODIUM SULFATE	1.00	4.00	.00
ATER	76.00	93.00	.00
THER INORGANICS	.00	3.00	.00

TOTAL >= 100%

ormer WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

. PHYSICAL PROPERTIES

hysical state 70° F: Liquid

ity at 70° F: Dusting Hazard? N

*** CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

s material pumpable at 70° F (<2,000 cP)? Y Describe:

s material multi-layered? N Describe:

Description of Layer	From	To	Fixed
(Top)	0	0	0
	0	0	0
	0	0	0

issolved solids: 22 %WT Suspended solids: 1 %WT
TU/lb.: 0 to 12000 Ash content: 20 %WT
lash pt: 201 to 600 °F Vap pr: .0 to 18.0 70°F
pecific gravity: 1.100 to 1.600 pH: 7.0 to 8.5
orrosivity MPY: <30
olors: CLEAR
YELLOW

dorous? Y MILD

. REACTIVITY AND STABILITY

. Reactivity group number(s): 106 24

. Is material stable? Y (If unstable i.e.,
ol ization with age, water/air reactive
le explain below)

. Sensitive: Shock? N Heat? N Friction? N

. Is this waste stream reactive as defined by DOT? N

1. LAND DISPOSAL RESTRICTIONS

. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards
. Wastewater: Y Non-wastewater: N
. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2
Eye: Y AVOID CONTACT
Inhalation: Y AVOID CONTACT
Dermal: Y AVOID CONTACT
Ingestion: Y AVOID CONTACT
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D004 / ARSENIC
D006 / CADMIUM
D007 / CHROMIUM
D008 / LEAD
D010 / SELENIUM

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
NA3082, HAZARDOUS WASTE, LIQUID, N.O.S.,
(D004,D006,D007,D008,D010), 9, PG III, RQ

DOT "Poison inhalation hazard?" N
Container label(s): CLASS 9
Placard(s): CLASS 9

COMMENTS:
SEE THE ATTACHED WASTE CODE LIST. THIS WASTE STREAM MAY BE "DERIVED FROM" ACTUAL RESULTS FOR MERCURY AND NICKEL ARE 2.96 PPM AND 2.2 PPM, RESPECTIVELY. ACCORDING TO 40CFR 261.33 - U202 HAS BEEN REMOVED FROM FEDERAL AND OHIO EPA LIST OF HAZARDOUS WASTE CODES, BUT WE ACCEPT WASTE USING RCRA WASTE CODE U202 FROM

2. ACCOUNTABILITY STATEMENT

hereby certify that I have personally examined and am familiar with the information submitted in this and all ttached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, he submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

APPENDIX 2

REPAIRED 06/11/2020

Tank #67 Sludge tank repair Certification test.

Tank was HYDROSTATIC leak tested to 1.2 S.G. per design (74.44 LBS/FT^3)

The Results were no visible leaks found.

Present observing test were the following

Maintenance Manager Dave Woodward Dave Woodward 6/11/20

Maintenance Specialist Mark Gibson 6/11/2020

EDGECLIFF GROUP PE Reynard Depuy Reynard DePuy 6/11/2020

REPAIRED TANK NO. 67 COMPLETION TEST

CERTIFICATION OF TANKS NO. 23A, 24A, 37A, 38A, 51A, 52A AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

CONFIDENTIAL

REV. 0

January, 2022

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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ATTACHMENTS

1.0 BACKGROUND

Ross Incineration Services, Inc. ("RIS") utilizes three tank farms for the storage of hazardous waste. RIS originally installed tanks in Tank Farm I in 1982, and tanks in Tank Farms II and III were originally installed in 1987. RIS uses tanks in Tank Farms I, II, and III to store hazardous waste that will be treated in the RIS incineration system. Tank Farms I and II are used for the storage of high or low BTU halogenated, non-halogenated, toxic, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, non-halogenated, toxic, flammable, and/or ignitable hazardous wastes. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction. Each of the tank farms is surrounded by its own secondary containment system, which prevents releases from migrating into the environment.

Due to the age of the tanks and as a matter of preventive maintenance, RIS intends to replace all tanks within its Tank Farms over a five (5) to seven (7)-year schedule. The first phase of the Tank Project, beginning in 2021, will involve the replacement of tanks numbered Tanks 23 & 24 (Tank Farm I), 37 & 38 (Tank Farm II), 51 & 52 (Tank Farm III). As such a P.E. Certification is required for the installation of new tanks per applicable United States Environmental Protection Agency ("U. S. EPA") hazardous waste regulation (40 CFR 270.16) and Ohio Environmental Protection Agency ("Ohio EPA") hazardous waste regulation (OAC 3745-55-92) to ensure the design and installation of the replacement tanks.

2.0 PROJECT DESCRIPTION

Beginning November 11, 2021, RIS replaced hazardous waste storage Tanks 23 & 24 (Tank Farm I), 37 & 38 (Tank Farm II), 51 & 52 (Tank Farm III) with functionally equivalent units. Tank replacement was done as preventative maintenance in that the existing units are nearing the end of their operational lives.

Tanks 23 & 24 (Tank Farm I), 37 & 38 (Tank Farm II), 51 & 52 (Tank Farm III) were removed from service, and closed in accordance with RIS' Closure Plan requirements. The Tanks were replaced with Tanks 23A & 24A (Tank Farm I), 37A & 38A (Tank Farm II), 51A & 52A (Tank Farm III).

As a part of the replacement, RIS also replaced certain associated ancillary equipment including piping, flanges and valves, where necessary. The replacement tanks and ancillary equipment meet the same conditions as the currently permitted tanks. In addition, the new tanks and ancillary equipment will manage the same wastes as the currently permitted units. Process use and piping configurations will not change. The capacity difference between currently permitted tanks and the replacement tanks are no more than 1,500 gallons per unit, and RIS' overall permitted tank capacity will not increase. Valves, control devices, covers, connections, and ducts for the replacement tanks are consistent with currently permitted tanks or are upgraded.

3.0 REPLACEMENT TANK DESCRIPTION

Replacement tanks and replaced ancillary equipment are functionally equivalent to the existing tanks. High BTU waste stored in Tanks 23A, 24A, 25-36 (Tank Farm I), low or

high BTU waste stored in Tanks 37A, 38A, 39-50 (Tank Farm II), and low BTU waste from Tanks 51A, 52A, 53-64 (Tank Farm III).

Tanks 23A & 24A (Tank Farm I), 37A & 38A (Tank Farm II), 51A & 52A (Tank Farm III) are equipped with level transmitters for monitoring the level in each tank. Transmitters have local displays and can also by monitored remotely through Ross's control system. The facility control system triggers local and remote alarms on low and high level. On high level, the control system shuts off power to transfer pumps, preventing overfilling of tanks Each tank farm is equipped with a nitrogen blanketing system which minimizes the oxygen level in the tanks and consequently minimizes the possibility of fires in the tanks. In addition, each tank is equipped with a pressure relief vent (i.e., rupture disc) in case a sudden pressure increase is experienced in the tanks. Each tank farm vent header is also equipment with several conservation vents. These devises protect tanks from over pressurization without blowing a rupture disc. They also protect tanks from collapse if a vacuum condition were to occur. Tanks and tank leg supports are designed to maintain the load of a full tank. In addition, new tanks are designed to withstand the effects of frost heave.

Design Data: Tank 23A & 24A, 37A & 38A, 51A & 52A	
Design Basis	
Construction material	
Lining material	
Corrosion allowance	
Capacity (nominal)	
Fabricated shell thickness	
Minimum shell thickness	
Fabricated top thickness	
Minimum top thickness	
Fabricated Bottom thickness	
Minimum design bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Design Pressure	
Pressure Relief Valve Setting	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 design standard satisfied	
Month/Year of construction	
Level indicator present	
Secondary Containment System Data:	
Capacity	Volume of the largest container, plus precipitation.
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

* Tank was designed and installed in accordance with applicable Ohio Basic Building Code standards, which incorporate NFPA codes by reference, including NFPA Code 30.

4.0 HAZARDOUS CHARACTERISTICS OF THE WASTE(S) TO BE HANDLED

Only wastes that are compatible with the tanks and their ancillary equipment are placed into the tanks. RIS isolates tank valves and utilizes tank log information and waste handling instructions to ensure that potential unintended flow of incompatible wastes does not occur from one tank to another. Copies of typical Waste Product Surveys ("WPS") for wastes managed in each of the Tank Farms are included in **ATTACHMENT A – Typical Tank Farm WPSs.**

5.0 TANK TIGHTNESS TESTING

Tanks were designed and fabricated by Hamilton Tanks of Columbus, Ohio. Upon completion, Hamilton Tank conducted integrity testing in accordance with UL Code 142 *Steel Aboveground Tanks for Flammable and Combustible Liquids*. All tank fittings were sealed and internal air pressure (1 ½ psi to 2 ½ psi) was applied while soap-suds (or equivalent material) was used externally on each weld seam to detect possible leaks. Each tank was certified by two Technicians, and a Supervising Witness. Hamilton Air Testing certifications are included in **ATTACHMENT B - Hamilton Tank Certifications.**

Upon completion of tank and ancillary equipment installation and beginning December 28, 2021 new equipment was tested for tightness. New tanks and ancillary equipment were first inspected for potential weld breaks, punctures, cracks, corrosion, other potential structural damage, and inadequate construction/ installation. In addition, bolts used to join piping and tanks were tightened using a torque wrench to meet the requirements of "*ASME/ANSI Standard B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard.*" Please refer to **ATTACHMENT C – Replacement Tank and Equipment Tests** for documentation of Tank Tightness Testing.

6.0 CERTIFICATION STATEMENT

In accordance with the applicable sections of 40 CFR 270.16 and Ohio Administrative Code ("OAC") Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to the U.S. EPA and Ohio EPA, prior to placing the Tanks 23A & 24A (Tank Farm I), 37A & 38A (Tank Farm II), 51A & 52A (Tank Farm III) into use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that they were properly installed, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design and installation of Tanks 23A & 24A (Tank Farm I), 37A & 38A (Tank Farm II), 51A & 52A (Tank Farm III) in compliance with these regulatory requirements. Specifically, tanks will be examined for weld breaks, punctures, cracks, corrosion; and other structural damage or inadequate construction/installation prior to placing the tanks into service. A Certification Statement is included in **ATTACHMENT D – P.E. Certification**.

ATTACHMENT A

Typical Tank Farms' Waste Product Surveys

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000009 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

3. GENERAL INFORMATION

Waste name: LOW BTU TANK FARM CLEANOUT

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: TANK CLEANOUT
Primary business activity at generating facility: INCINERATION

Rate of Generation Container	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
					ROSS GENERATED WASTE Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUIDS, SOLIDS, AND SLUDGES

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL	
55	FIBER	
30	FIBER	
5	PLASTIC	

Bulk shipment: TANKER
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

85 & 110

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range	Wt%	PPM
SOLIDIFIED ORGANIC COMPOUNDS	30.00	60.00	.00
ALPHATICS: HYDROCARBONS, ALCOHOLS,	.00	.00	.00
ETHERS, ALDEHYDES, KETONES,	.00	.00	.00
CARBOXYLIC ACIDS, CARBOHYDRATES	.00	.00	.00
CYCLICS: ALICYCLIC HYDROCARBONS,	.00	.00	.00
AROMATICS, HETROCYCLICS	.00	.00	.00
COMBINATIONS OF ALIPHATES & CYCLIC	.00	.00	.00
EXTENDERS, FILLERS, DILUENTS,	.00	.00	.00
REINFORCING AGENTS	.00	.00	.00
WATER	30.00	60.00	.00
INORGANICS-ACIDS, BASES, METALS	.00	10.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Organic Bound Range		Total Range	
S	.0	5.0	.0	5.0
Cl	.0	20.0	.0	20.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	10.0	.0	10.0
P	.0	.1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	750.00p	Al	.0	1.0%
As	25.00p	Hg	.00p	Si	.0	1.0
Ba	1500.00p	Ni	25.00p	Mg	.0	1.0%
Be	1.00p	Se	30.00p	Na	.0	1.0
Cd	20.00p	Ag	5.00p	K	.0	1.0%
Cr	200.00p	Tl	37.00p			
Cu	5.00p	Zn	50.00p			
Li	1000.00p	Mo	.00p			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration	ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000009 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid Sludge

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	0	0	LIQUID/SLUDGE/SOLID

Is material pumpable at 70° F (<2,000 cP)? N Describe:

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 0 %WT Suspended solids: 0 %WT
BTU/lb.: 0 to 10000 Ash content: 30 %WT
Flash pt: 141 to 200 °F Vap pr: .0 to 20.0 70°F
Specific gravity: .800 to 1.500 pH: N/A
Corrosivity MPY: 31-50
Colors: VARIOUS

Odorous? N

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 101 4 28 29

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2
Eye: Y IRRITANT
Inhalation: Y IRRITANT
Dermal: Y IRRITANT
Ingestion: Y IRRITANT
Other: Y IRRITANT
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D007 / CHROMIUM

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
NA3077, HAZARDOUS WASTE, SOLID, N.O.S., (ALCOHOLS, AROMATIC HYDROCARBONS), 9, PG III, RQ, (D007)

DOT "Poison inhalation hazard?" N
Container label(s): CLASS 9
Placard(s): NONE

COMMENTS:
CONTAINERS ARE SAFE TO OPEN/SAMPLE/INSPECT. MATERIAL IS NOT SHOCK/FRICTION SENSITIVE, PYROPHORIC, EXPLOSIVE, OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000010 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

3. GENERAL INFORMATION

Waste name: HIGH BTU TANK FARM CLEANOUT

Generator code:

Waste generating process: TANK CLEANOUT
Primary business activity at generating facility: INCINERATION

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Rate of Generation Container	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
					ROSS GENERATED WASTE Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED SOLIDS AND SLUDGE WITH POSSIBLE FREE LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL/PLAS	
30	FIBER	
5	PLASTIC	

Bulk shipment: TANKER
Pallet: N Gaylord: Y Hopper: N Drum: N
Overall: Length: 36 Width: 36 Height: 39 Volume:
Waste: Length: Width: Height:

85 & 110

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
SOLIDIFIED ORGANIC COUMPOUNDS:	70.00	100.00	.00
ALIPHATICS: HYDROCARBONS, ALCOHOLS	.00	.00	.00
ETHERS, ALDEHYDES, KETONES,	.00	.00	.00
CARBOXYLIC ACIDS, CARBOHYDRATES	.00	.00	.00
CYCLICS: ALICYCLIC HYDROCARBONS,	.00	.00	.00
AROMATICS, HETEROCYCLICS	.00	.00	.00
COMBINATION OF ALIPHATIC & CYCLIC	.00	.00	.00
EXTENDERS, FILLERS, DILUENTS,	.00	.00	.00
REINFORCING AGENTS	.00	.00	.00
WATER	.00	30.00	.00
INORGANICS-ACIDS, BASES, METALS	.00	10.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Bound Range		Total Range	
S	.0	5.0	.0	5.0
Cl	.0	10.0	.0	.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	10.0	.0	.0
P	.0	.1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	750.00p			
As	25.00p	Hg	.00p			
Ba	1500.00p	Ni	25.00p			
Be	1.00p	Se	30.00p			
Cd	25.00p	Ag	5.00p			
Cr	200.00p	Tl	37.00p			
Cu	5.00p	Zn	50.00p			
Li	1000.00p	Mo	.00p			
Al	.0	1.0%	Si	.0	1.0	
Mg	.0	1.0%	Na	.0	1.0	
K	.0	1.0%				

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000010 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Solid Sludge

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	0	0	SOLID/SLUDGE

Is material pumpable at 70° F (<2,000 cP)? V Describe: MAY BE THICK

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 0 %WT Suspended solids: 0 %WT
BTU/lb.: 10000 to 18000 Ash content: 30 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 20.0 70°F
Specific gravity: .800 to 1.500 pH: N/A
Corrosivity MPY: 31-50
Colors: VARIOUS

Odorous? N

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 101 28 29

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2
Eye: Y IRRITANT
Inhalation: Y IRRITANT
Dermal: Y IRRITANT
Ingestion: Y IRRITANT
Other: Y IRRITANT
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / IGNITABLE

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (ALCOHOLS, AROMATIC HYDROCARBONS), 3, PG II, RQ, (D001)

DOT "Poison inhalation hazard?" N
Container label(s): FLAMMABLE LIQUID
Placard(s): FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature _____ Date _____

Print Name _____ Print Title _____

ATTACHMENT B

Hamilton Tank Certifications

Tank 23A

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-126283	Work Order #	WO-124798	Tank #	T-1
Customer:	ROSS INCINERATION SERVICES				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

Pre-entry CONFINED SPACE ALTERNATE ENTRY

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	5-19-21	Temperature:	70°
	Start Time:	10:00	End Time:	12:00
	Gauge No.	G 15087	Calibration Date:	9-16-20
	Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	25	Initial:	E.J
	Re-Test Technician:	Tjay Heiner	Signature:	Tjay Heiner
	Air Pressure Applied:	2.5	Initial:	TH.
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	5-20-21	Signature:	

Tank 24A

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-126283	Work Order #	WO-124799	Tank #	T-2
Customer:	ROSS INCINERATION SERVICES				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANKS				

Pre-entry CONFINED SPACE ALTERNATE ENTRY

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	5-17-21	Temperature:	63°
	Start Time:	12:00 P.M	End Time:	1:30 P.M
	Gauge No.	15085	Calibration Date:	9-16-20
	Test Technician:	Omar Cuda	Signature:	Omar Cuda
	Air Pressure Applied:	2 1/2 P.S.I	Initial:	O.C
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	2 1/2 P.S.I	Initial:	E.J
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	5-17-21	Signature:	

Tank 37A

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-126283	Work Order #	WO-124800	Tank #	T-3
Customer:	ROSS INCINERATION SERVICES				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

CONFINED SPACE ALTERNATE ENTRY

Pre-entry

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	5/5/21	Temperature:	56
	Start Time:	9:00	End Time:	
	Gauge No.	G 14639	Calibration Date:	6/8/20
	Test Technician:	Tim Haines	Signature:	Tim Haines
	Air Pressure Applied:	2 165	Initial:	TH
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	2 P.S.I	Initial:	E.J
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	5-5-21	Signature:	

Tank 38A

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-126283	Work Order #	WO-124801	Tank #	T-4
Customer:	ROSS INCINERATION SERVICES				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

CONFINED SPACE ALTERNATE ENTRY

Pre-entry

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	5-6-21	Temperature:	46°
	Start Time:	9:00 AM	End Time:	10:30 AM
	Gauge No.	G-150 45	Calibration Date:	9-16-20
	Test Technician:	JOSEPH CAMPA	Signature:	JOSEPH CAMPA
	Air Pressure Applied:	2½ PSI	Initial:	J.C.
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	2.5 P.S.I	Initial:	E.J
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	5-6-21	Signature:	

Tank 51A

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-126283	Work Order #	WO-124802	Tank #	T-5
Customer:	ROSS INCINERATION SERVICES				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

CONFINED SPACE ALTERNATE ENTRY

Pre-entry

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	3/29/21	Temperature:	62
	Start Time:	10:00	End Time:	12:15
	Gauge No.	G14639	Calibration Date:	6/8/20
	Test Technician:	Tim Hainer	Signature:	Tim Hainer
	Air Pressure Applied:	2 lbs	Initial:	T.H.
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	2 P.S.I	Initial:	E.J.
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	6-4-21	Signature:	

Tank 52A

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-126283	Work Order #	WO-124803	Tank #	T-6
Customer:	ROSS INCINERATION SERVICES				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

CONFINED SPACE ALTERNATE ENTRY

Pre-entry

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	5/26/21	Temperature:	69°
	Start Time:	7:00	End Time:	8:30
	Gauge No.	15089	Calibration Date:	9/26/20
	Test Technician:	ANTONIO	Signature:	ANTONIO MOTA
	Air Pressure Applied:	2.5 PSI	Initial:	ASM
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	2.5 P.S.I	Initial:	E.J
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	6-4-21	Signature:	

ATTACHMENT C

REPLACEMENT TANK AND EQUIPMENT TESTS

NEW TANK COMPLETION TESTS

Tightness evaluation completed using a torque wrench to meet the requirements of "ASME/ANSI Standard B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard."

Date: 2/11/22

Personnel present to observe the test include: Kevin Culligan
Print Name

Signature

TANK	Torque Requirements (notes)	Signature of Technician
To ensure completion of construction and tightness of newly installed tanks		
TANK 23A		
TANK 24A		
TANK 37A		
TANK 38A		
TANK 51A		
TANK 52A		

ATTACHMENT D

P.E. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

1/31/2022

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

Date

P.E. STAMP & NO.

CERTIFICATION OF TANK NO. 68 (SLUDGE TANK) REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

May 25, 2022

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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APPENDICES

1.0 BACKGROUND

The water used in the air pollution control system is collected, cleaned, cooled, and pH adjusted in the closed-loop scrubber water system before the water is recycled back to the air pollution control system. Scrubber water from the air pollution control system enters the clarifier for the purpose of removing the suspended solids in the scrubber water. The solids that settle in the clarifier are removed as a sludge or slurry.

Tanks 67 and 68 are used for processing residuals (scrubber water and fly ash sludge from the air pollution control equipment). Tank 67 and 68 are feed tanks for the filter press. Typically, sludge (ranging from thick to very dilute) is transferred from the closed loop scrubber water system or the maintenance storage tank to Tank 67 and 68. Residual liquids from the filter press unit will be recycled back to the clarifier, maintenance storage tank, or offsite disposal. RIS ships scrubber water blowdown off-site as needed to minimize the concentration of salts and other contaminants in the closed loop scrubber water system. A Waste Product Survey which describes the characteristics of RIS residual sludge stored within Tank 68 is included in **APPENDIX A**.

Recently, Tank 68 was repaired at weld locations. Welds were repaired on Tank 68 and the units were returned to service on May 20, 2022.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired Tank 68 into use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of the repaired Tank No. 68 and in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF TANK NO. 68 REPAIRS

Tank No. 68 meets the following specifications:

Tank Design Data:	
Design basis	Portions of: ASME Pressure Vessel Code, Section VIII, Division 1; UL-142 ;Pressure Vessel Design Handbook (Van Nostrand Reinhold); Manual of Steel Construction (AISC).
Construction material	304 Stainless Steel
Lining material	None
Corrosion allowance	0.0625 inches
Design life	25 years
Capacity (nominal)	3,627 gallons/tank
Fabricated shell thickness	0.25 inch
Minimum shell thickness	0.1875 inch
Fabricated top thickness	0.25 inch
Minimum top thickness	0.1875 inch
Fabricated bottom thickness	0.25 inch
Minimum bottom thickness	0.1875 inch
Type of tank bottom	Dish
Diameter (nominal)	6 ft 4 inches
Height (nominal)	17 ft 0.4 inches (19 ft 8 inches from grade)
Design Pressure	Atmospheric
Operating pressure	Atmospheric
Maximum liquid level	16 ft. 0.4 inches
Operating temperature	Ambient
Month/Year of construction	January, 2009
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	22,493 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

Tank 68

The repaired Tank No. 68 meets the same design standard (i.e., American Water Works Association, ["AWWA"]), capacity (i.e., 22,493 gallons each), design diameter (i.e., 76 inches), as this same unit existed prior to its repairs. The repaired Tank No. 68 steel thicknesses, operating conditions, controls and type of material to be stored (i.e., sludges and scrubber water) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tank No. 68 will function in an equivalent manner to the unit prior to repair.

Tank 68 has been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and they are found to be of sufficient structural integrity to store sludges and scrubber water as described above. In addition, the repaired Tank No. 68 was integrity tested using water and found not to be leaking. Documentation of testing results are included in **APPENDIX B**.

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard A DePuy — 5/25/22

Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

APPENDIX A

TYPICAL SCRUBBER WATER WASTE PRODUCT SURVEY

Ross Incineration Services, Inc. — Waste Product Survey — 6/09/20 Page 1

6790 Giles Road, Grafton, Ohio 44044 — (440) 748-5800 — US EPA ID# OHD048415665

ormer WPS# (if applicable) — Please do not leave any blank spaces. — 1. WPS# 90002 N

. GENERATOR INFORMATION

enerator: ROSS INCINERATION SERVICES INC
.S. EPA ID #: OHD048415665
lant Address: 36790 GILES RD
ity: GRAFTON St: OH Zp: 44044
hip From Address: 36790 GILES RD
ity: GRAFTON St: OH Zp: 44044
mergency #: (440)-748-5800
fter hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

. GENERAL INFORMATION

aste name: SPENT SCRUBBER WATER

enerator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

aste generating process: INCINERATOR OFF-GAS SCRUBBING
rimary business activity at generating facility: INCINERATION

Rate of Generation		Time		One Time	Service Agreement Entity
Container	Quantity	Period	Accum	N	ROSS GENERATED WASTE
GALLONS	25000	DAY			Per Subpart CC,
					VOC > 500 ppm: N

hysical Descr: CLEAR TO YELLOW LIQUID

. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size	Material of	D.O.T.
Gal.	Construction	Specification
55	STEEL	

ulk shipment: BULK
allet: N Gaylord: N Hopper: N Drum: N
verall: Length: Width: Height: Volume:
aste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GRAB

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

S	.0	.1	.0	1.0
Cl	.0	.1	3.0	12.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	.1
P	.0	1.0	.0	1.0

Total Concentration Range Wt%:

Al	.0	1.0%	Si	.0 1.0
Mg	.0	1.0%	Na	2.8 9.2
K	.0	1.0%		

B. Metals maximum content: Y

Sb	70.00p	Pb	500.00p
As	10000.00p	Hg	.00p
Ba	140.00p	Ni	4.00p
Be	1.00p	Se	7.00p
Cd	20.00p	Ag	30.00p
Cr	25.00p	Tl	33.00p
Cu	20.00p	Zn	300.00p
Li	50000.00p	Mo	1.00p

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

. CHEMICAL COMPOSITION

omponents including but not limited o 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
ODIUM CHLORIDE	6.00	20.00	.00
ODIUM SULFATE	1.00	4.00	.00
ATER	76.00	93.00	.00
THER INORGANICS	.00	3.00	.00

TOTAL >= 100%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

6790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

'ormer WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90002 N

.. PHYSICAL PROPERTIES

'hysical state 70° F: Liquid

'iscosity at 70° F: Dusting Hazard? N

******* CPS Range *********

From	To	Fixed	Description
0	2000	0	LIQUID

's material pumpable at 70° F (<2,000 cP)? Y Describe:

's material multi-layered? N Describe:

Description of Layer	From	To	Fixed
.. (Top)	0	0	0
.	0	0	0
.	0	0	0

)issolved solids: 22 %WT Suspended solids: 1 %WT
:TU/lb.: 0 to 12000 Ash content: 20 %WT
'lash pt: 201 to 600 °F Vap pr: .0 to 18.0 70°F
)pecific gravity: 1.100 to 1.600 pH: 7.0 to 8.5
:orrosivity MPY: <30
:olors: CLEAR
YELLOW

)dorous? Y MILD

. REACTIVITY AND STABILITY

.. Reactivity group number(s): 106 24

:. Is material stable? Y (If unstable i.e.,)olymerization with age, water/air reactive)lease explain below)

:. Sensitive: Shock? N Heat? N Friction? N

). Is this waste stream reactive as defined by DOT? N

.1. LAND DISPOSAL RESTRICTIONS

.. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

:. Wastewater: Y Non-wastewater: N

:. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2
Eye: Y AVOID CONTACT
Inhalation: Y AVOID CONTACT
Dermal: Y AVOID CONTACT
Ingestion: Y AVOID CONTACT
Other: N
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D004 / ARSENIC
D006 / CADMIUM
D007 / CHROMIUM
D008 / LEAD
D010 / SELENIUM

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
NA3082, HAZARDOUS WASTE, LIQUID, N.O.S., (D004,D006,D007,D008,D010), 9, PG III, RQ

DOT "Poison inhalation hazard?" N
Container label(s): CLASS 9
Placard(s): CLASS 9

COMMENTS:
SEE THE ATTACHED WASTE CODE LIST. THIS WASTE STREAM MAY BE "DERIVED FROM" ACTUAL RESULTS FOR MERCURY AND NICKEL ARE 2.96 PPM AND 2.2 PPM, RESPECTIVELY. ACCORDING TO 40CFR 261.33 - U202 HAS BEEN REMOVED FROM FEDERAL AND OHIO EPA LIST OF HAZARDOUS WASTE CODES, BUT WE ACCEPT WASTE USING RCRA WASTE CODE U202 FROM

.2. ACCOUNTABILITY STATEMENT

hereby certify that I have personally examined and am familiar with the information submitted in this and all ttached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, he submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

APPENDIX B

DOCUMENTATION OF REPAIRED TANK NO. 68 TEST

Date: May 20, 2022

Tank #68 Repair Completion Certification Test

Tank #68 is an atmospheric tank. No visible leaks were detected upon filling. Tank is currently full.

Personnel present to observe the test included: Tom Nichols
Print Name

Signature

ATTACHMENT 3

[Certification Statement]

Class 1 Permit Modification Request
Repairs to Tank No. 68
CERTIFICATION

In accordance with OAC 3745-50-42(D), the following certification is provided:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Date: May 31, 2022

Name: Neil E. Gorman

Signature: 

Title: Vice President, Operations
Ross Incineration Services, Inc.

ATTACHMENT 4

[Administrative Completeness Checklist]

Administrative Completeness Checklist for Permit Modification Request or Notification

Facility Name	Ross Incineration Services, Inc.	**Ohio ID No.**	02-47-0295
	Repairs to Tank No. 68	**US EPA ID No.**	OHD 048 415 665
Contact Name	Susan K. Kaiser	**Date**	May 2022

This checklist is intended to assist permit holders in submitting permit modification requests or notifications that are administratively complete. The use of this checklist does not relieve the applicant of the responsibility to comply with applicable requirements outlined in OAC Rule 3745-50-51.

Item	Yes	N/A
1) Cover letter including (per OAC Rule 3745-50-51(D)):	✓	
A) Classification (1, 1*, 2, 3) and identification of specific listing in appendix to OAC Rule 3745-50-51, or classification as determined by director	✓	
B) Summary of changes to permit and application	✓	
C) Explanation of why changes are necessary	✓	
D) Paragraph listing the applicable public notification/participation requirements (including implementation schedule)	✓	
2) Red-line/strike-out version of pages to be revised	✓	
3) Clean copies of pages to be revised	✓	
A) Include date of revision in page corner	✓	
4) All other applicable information and supporting documentation	✓	
5) Certification including:		
A) Specific language in OAC Rule 3745-50-42 (D)	✓	
B) Signature of responsible person under OAC Rule 3745-50-42 (A)	✓	
6) Copies sent to:		
A) Ohio EPA Central Office Regulatory Information Services Section (2 copies)	✓	
B) Ohio EPA District Office Contact	✓	
C) U.S. EPA Contact (if applicable)		✓
7) Other Attachments:		
Attachment 1: "Strike-out / underlined" Permit Application pages	✓	
Attachment 2: "Clean" copy of Permit Application pages	✓	
Attachment 3: Certification Statement	✓	
Attachment 4: Administrative Completeness Checklist	✓	

3.0 CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Reynard S DePuy — 5/25/22

REYNARD S. DEPUY — Date
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO.

CERTIFICATION OF THE CONTAINER STORAGE AREA BUILDING & SECONDARY CONTAINMENT

AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES. INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

June 2022

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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APPENDICES

1.0 BACKGROUND

Ross Incineration Services, Inc. ("RIS") is a hazardous treatment and storage facility. RIS' primary operation is waste treatment via incineration. RIS several permitted areas to manage hazardous waste in containers. Specifically, RIS constructed a Container Storage Area ("CSA") that will be used to store up to 33,000 gallons of hazardous waste in containers.

The CSA floor is concrete and a quadrant of it is sloped to a secondary containment system, which prevents any releases from migrating into the environment. RIS may store a variety of hazardous wastes in the CSA. A copy of RIS waste codes is included as **Attachment A – Permitted Waste Codes**.

RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the CSA into use. As such, RIS has contracted the Edgecliff Group to review and certify the design of the CSA and its secondary containment sump.

2.0 UNIT DESCRIPTION

The CSA is a 75' x 150' free-standing steel-sided building, permitted to store 33,000 gallons of hazardous waste. The CSA has a steel 3/12 pitched roof sided with under eve ventilation. The CSA was constructed on top of a concrete pad. The CSA is accessed by two 16' x 16' powered garage doors and four man doors. Please refer to **Attachment B – Figures**.

The CSA was designed and constructed to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. The surrounding grounds are graded to minimize run-on from precipitation. The CSA containment system was designed as follows:

(1) A concrete floor (base) was installed throughout the CSA which is free of cracks or gaps and sufficiently impervious to contain leaks, spills, and accumulated precipitation until the collected material is detected and removed;

(2) In the area where containerized liquid waste will be stored, the floor is sloped to a secondary containment sump that is designed to collect liquids resulting from leaks, spills, or precipitation. The sump is coated with a corrosion resistant epoxy to ensure that potential spill will be contained by the sump. Please refer to **Attachment C – Sump Coating Photos**;

(3) The secondary containment sump has a capacity of 3,300 gallons which is ten per cent of the volume of hazardous waste containers to be stored in the CSA;

(4) Precipitation run-on is not expected as the building is enclosed. Waste storage areas are inspected daily for spills and leaks. Spilled, leaked, and accumulated wastes and

wash waters are removed from the sumps and containment systems to prevent overflow of the collection system; and

(5) Spilled or leaked waste and accumulated precipitation will be removed from the sump or collection area in as timely a manner as is necessary to prevent overflow of the collection system.

3.0 P.E. CERTIFICATION

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-50-42, RIS is required to submit a professional engineer's certification of plans, specifications, and information to Ohio EPA. Therefore, RIS has contracted the Edgecliff Group to review and certify the construction of the CSA and its secondary containment system in compliance with these regulatory requirements.

Edgecliff Group inspected the CSA on June 22, 2022 to confirm completion of the CSA, and to view completion of the sump coating. A certification statement is included in **Attachment D – Certification Statement**.

Attachment A

Permitted Waste Codes

ROSS®
Ross Incineration Services, Inc.
A member of The Rossway Group

Permitted Waste Codes

Rely on Ross. We do it right!

"D" Waste Codes

D001	D012	D023	D034
D002	D013	D024	D035
D003	D014	D025	D036
D004	D015	D026	D037
D005	D016	D027	D038
D006	D017	D028	D039
D007	D018	D029	D040
D008	D019	D030	D041
D009+-	D020	D031	D042
D010	D021	D032	D043
D011	D022	D033	

"F" Waste Codes

F001	F011
F002	F012
F003	F019
F004	F024
F005	F025
F006	F032
F007	F034
F008	F035
F009	F037
F010	F038
	F039+

"K" Waste Codes

K001	K025	K050	K102	K141
K002	K026	K051	K103	K142
K003	K027	K052	K104	K143
K004	K028	K060	K105	K144
K005	K029	K061	K106	K145
K006	K030	K062	K107	K147
K007	K031	K069	K108	K148
K008	K032	K071	K109	K149
K009	K033	K073	K110	K150
K010	K034	K083	K111	K151
K011	K035	K084	K112	K156
K013	K036	K085	K113	K157
K014	K037	K086	K114	K158
K015	K038	K087	K115	K159
K016	K039	K088	K116	K161
K017	K040	K093	K117	K169
K018	K041	K094	K118	K170
K019	K042	K095	K123	K171
K020	K043	K096	K124	K172
K021	K044	K097	K125	K174+
K022	K045	K098	K126	K175+
K023	K046	K099	K131	K176+
K024	K047	K100	K132	K177+
	K048	K101	K136	K178
	K049			K181

"P" Waste Codes

P001	P020	P041	P063	P082	P105	P127
P002	P021	P042	P064	P084	P106	P128
P003	P022	P043	P065	P085	P108	P185
P004	P023	P044	P066	P087	P109	P188
P005	P024	P045	P067	P088	P110	P189
P006	P026	P046	P068	P089	P111	P190
P007	P027	P047	P069	P092+-	P112	P191
P008	P028	P048	P070	P093	P113	P192
P009	P029	P049	P071	P094	P114	P194
P010	P030	P050	P072	P096	P115	P196
P011	P031	P051	P073	P097	P116	P197
P012	P033	P054	P074	P098	P118	P198
P013	P034	P056	P075	P099	P119	P199
P014	P036	P057	P076	P101	P120	P201
P015	P037	P058	P077	P102	P121	P202+
P016	P038	P059	P078	P103	P122	P203
P017	P039	P060	P081	P104	P123	P204
P018	P040	P062				P205

"U" Waste Codes

U001	U020	U038	U058	U077	U095	U115	U134+	U155	U176	U196	U217	U243	U373
U002	U021	U039	U059	U078	U096	U116	U135	U157	U177	U197	U218	U244	U387
U003	U022	U041	U060	U079	U097	U117	U136	U158	U178	U200	U219	U246	U389
U004	U023	U042	U061	U080	U098	U118	U137	U159	U179	U201	U220	U247	U394
U005	U024	U043	U062	U081	U099	U119	U138	U160	U180	U202*	U221	U248	U395
U006	U025	U044	U063	U082	U101	U120	U140	U161	U181	U203	U222	U249	U404
U007	U026	U045	U064	U083	U102	U121	U141	U162	U182	U204	U223	U271	U409
U008	U027	U046	U066	U084	U103	U122	U143	U163	U183	U205	U225	U278	U410
U009	U028	U047	U067	U085	U105	U123	U144	U164	U184	U206	U226	U279	U411
U010	U029	U048	U068	U086	U106	U124	U145	U165	U185	U207	U227	U280	
U011	U030	U049	U069	U087	U107	U125	U146	U166	U186	U208	U228	U328	
U012	U031	U050	U070	U088	U108	U126	U147	U167	U187	U209	U234	U353	
U014	U032	U051	U071	U089	U109	U127	U148	U168	U188	U210	U235	U359	
U015	U033	U052	U072	U090	U110	U128	U149	U169	U189	U211	U236	U364	
U016	U034	U053	U073	U091	U111	U129	U150	U170	U190	U213	U237	U367	
U017	U035	U055	U074	U092	U112	U130	U151+	U171	U191	U214+-	U238	U372	
U018	U036	U056	U075	U093	U113	U131	U152	U172	U192	U215+	U239		
U019	U037	U057	U076	U094	U114	U132	U153	U173	U193	U216+	U240		
						U133	U154	U174	U194				

EPA hazardous waste codes that are acceptable for incineration based on the Ohio Permit and the Federal Permit for Ross Incineration Services, Inc. Ross Incineration reserves the right to suspend receipts of any given code. Please contact the Customer Service Department at 1-800-878-7677 for verification.

+ Contact customer service for availability for these waste codes.

+- Contact customer service for availability if mercury concentration is greater than 260 ppm.

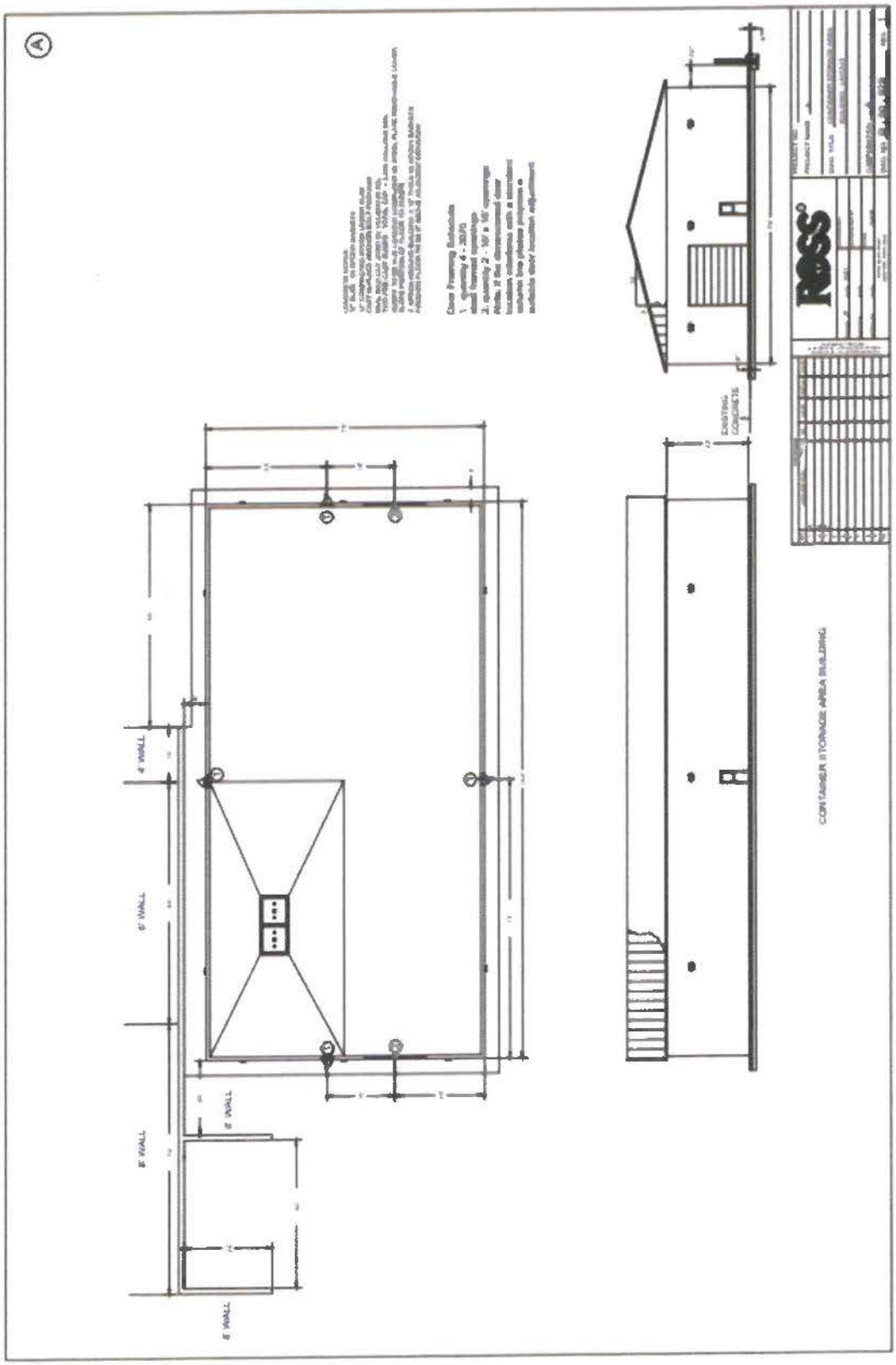
* U202 is no longer regulated by U.S. or Ohio EPA.

www.rossincineration.com | 36790 Giles Road Grafton, OH 44044 | 1-800-878-7677 sales@rossenvironmental.com

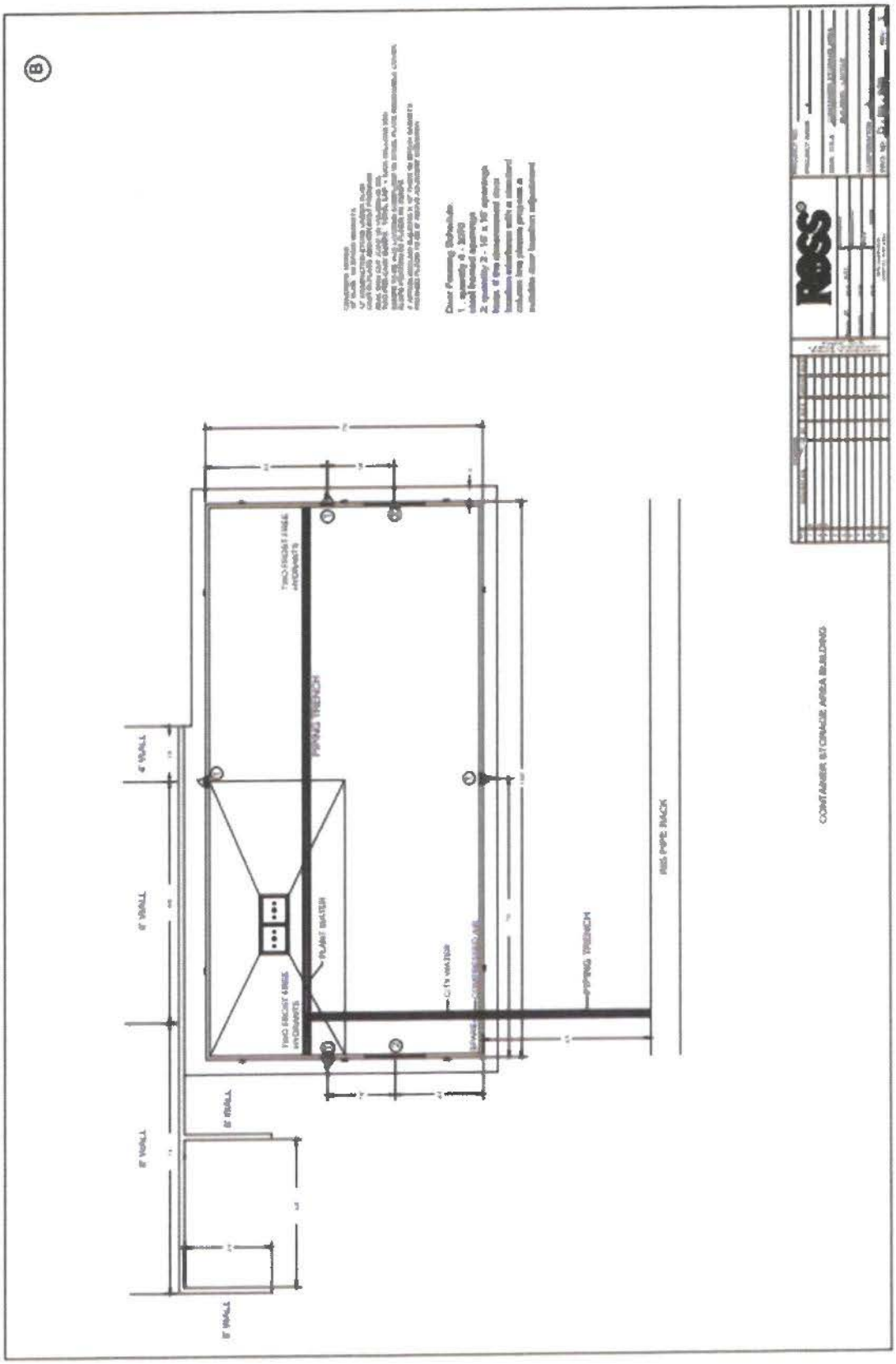
Attachment B

Figures

Ross Incineration Services, Inc.
Certification of Container Storage Building
June 2022



Ross Incineration Services, Inc.
Certification of Container Storage Building
June 2022

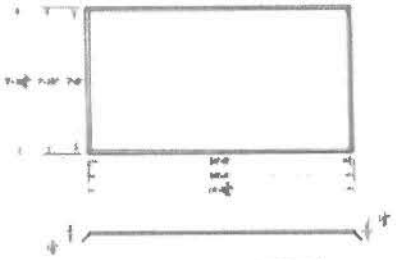


BUILD SHEET

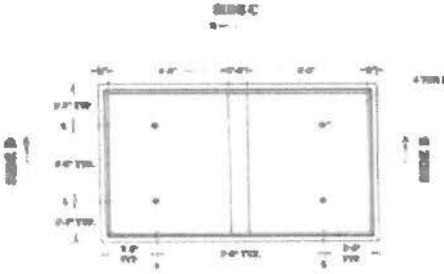
ITEM	QUANTITY	DESCRIPTION
CI-01	1	2" WIDE X ¼" DEEP X ⅜" STEEL ANGLE FRAME WITH STUDS @ 18" O.C. (CAST-IN)

3,871 GALLON SUMP BOX DETAILS

DESCRIPTION	UOM	QUANTITY	WEIGHT (LBS)
7'-0" X 14'-0" X 7'-0" I.D. BASE WITH INTEGRAL BEAM STEEL ANGLE FRAME CAST-IN	EA	1	27,965
TOTAL STRUCTURE			27,965



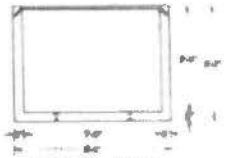
STEEL ANGLE FRAME DETAILS



PLAN VIEW
TOP REMOVED FOR CLARITY

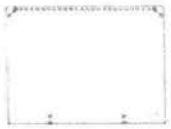
NOTES
1. CONCRETE: 5,000 PSI @ 28 DAYS.
2. AIR 6%±2%
3. REINFORCING: ASTM A-A-615 GRADE 60.

SECTION VIEW A-A



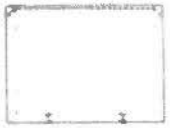
SECTION VIEW B-B

ELEVATION VIEW SIDE "A"



ELEVATION VIEW SIDE "B"

ELEVATION VIEW SIDE "C"



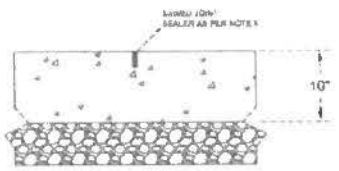
ELEVATION VIEW SIDE "D"

NCI
Norwalk Concrete Industries

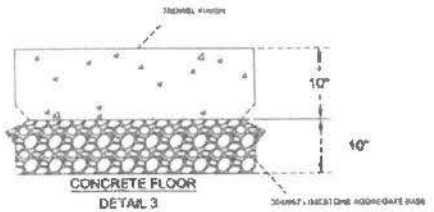
SUMP BOX
PRECAST CONCRETE
ROSS ENVIRONMENTAL
NCI JOB #21-3091

REVISION	JOB	DATE	BY
09-13-21	21309[illegible]-1	09-20-21	

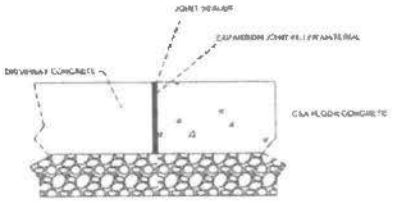
CONTAINER STORAGE AREA BUILDING (CSA)



CONTROL JOINT
DETAIL 1



CONCRETE FLOOR
DETAIL 3



EXPANSION JOINT
DETAIL 2

GENERAL NOTES:

1. CONCRETE SHALL DEVELOP 5,000 PSI MINIMUM COMPRESSIVE STRENGTHS IN A 28 DAY PERIOD. THE ROSS STANDARD CONCRETE MIX DEFINED BELOW SHALL BE USED.

   ASTM C33–CONCRETE AGGREGATES
   ASTM 94–READY MIXED CONCRETE
   ASTM C260–AIR ENTRAINING ADMIXTURES FOR CONCRETE
   ASTM C39/C39M–05–COMPRESSIVE STRENGTH OF CYLINDRICAL CONCRETE SPECIMEN
   WATER: 276#/CYD
   TYPE 1 CEMENT: 611 LBS/CYD
   AIR ENTRAINMENT: MINIMUM 6% +1%/–0%
   EUCLID CHEMICAL EUCON MSA MICROSILICA: 50#/CYD
   #57 LIMESTONE 1,620#/CYD
   NATURAL SAND 1,240#/CYD
   EUCLID CHEMICAL EUCON 37 SUPER 100OZ.
   EUCLID CHEMICAL FIF-STRAND SF: 5LBS/CYD: 4IN FIBER IN 36MP

2. THE SUBGRADE IS TO BE 304, #57, #2 LIMESTONE AS NEEDED
3. WATER STOP MATERIAL – 6" x 6" PVC RIBBED CENTERBULB BETWEEN POURS AND VANDEX EXPANSEAL 9 PLUS AROUND DRAIN PIPES OR EQUAL
4. EXPANSION JOINT FILLER – SEALTIGHT DECK–O–FOAM OR EQUAL
5. EXPANSION JOINT SEALER – RENCO VULCHEM 40 OR EQUAL
6. ALL REBAR IS TO BE EPOXY COATED
7. APPLY PRODUCT MATERIALS IN ACCORDANCE WITH MANUFACTURES' RECOMMENDATIONS
8. CONTAINMENT SUMP COATING – QUICK PRIMER 67, RED IN COLOR & QUICK PROTECTO COAT 100HT MEDIUM GRAY IN COLOR – BY ISS OR OTHER
9. CONCRETE FLOOR COATING – EUCLID CHEMICAL SUPER DIAMOND CLEAR CONCRETE SEALER OR EQUAL

NO	DESCRIPTION	BY	CK'D	APPVD	DATE
0					
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9					
10					

ROSS®

PROJECT NO
PROJECT NAME
DWG TITLE CONTAINER STORAGE AREA CONCRETE FLOOR DETAILS
CORPORATION ROSS
DWG NO D-80-1007 REV 0

Attachment C

Sump Coating Photos

Sump during coating process.

Sump after coating was applied.

Attachment D

P.E. Certification

CERTIFICATION STATEMENT

[Meets requirements of OAC 3745-50-42(D)]

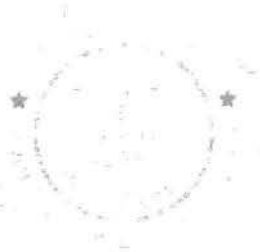
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6/29/22

Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058

P.E. STAMP & NO



CERTIFICATION OF TANKS NO. 39 & 43 REPAIRS AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

REV. 0

May 12, 2023

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

1.0 BACKGROUND

Ross Incineration Services, Inc. (RIS) utilizes three tank farms for the storage of hazardous waste prior to incineration. Each of these tank farms is surrounded by its own secondary containment system, which prevents any releases from migrating into the environment. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, transfer pumps or emulsifier pumps to the metering building where it is fed to the incinerator for destruction.

Tank Farms I and II are used for the storage of high or low BTU halogenated, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, flammable, and/or ignitable hazardous wastes. A Waste Product Survey which describes the characteristics of a typical hazardous waste that is stored within Tank Farm II is included in **APPENDIX A**.

Recently, a scheduled inspection was completed on several Tank Farm II tanks. As a result of the inspection, two (2) tanks within Tank Farm II (i.e., Tanks No. 39 & 43), were removed from service because of localized excessive pitting due to corrosion. The corroded sections of the unit were fill welded, and Tanks No. 39 and 43 are ready to be returned to service for the storage of hazardous waste.

In accordance with the applicable sections of Ohio Administrative Code (OAC) Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to Ohio EPA, prior to placing the repaired tanks in use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that it was properly repaired, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design of repaired Tanks No. 39 & 43 in compliance with these regulatory requirements.

2.0 REVIEW AND INSPECTION OF TANK NO. 39 & 43 REPAIRS

Tanks No. 39 and 43 meet the following specifications:

Tank Design Data:	
Design standard	UL 142 - (Designated to operate at atmospheric condition)
Construction material	Steel
Lining material	None
Corrosion allowance	0.125 inch
Design life	20 years
Capacity (nominal)	9,920 gallons
Fabricated shell thickness	0.375 inch
Minimum design shell thickness	0.25 inch
Fabricated top thickness	0.375 inch
Minimum design top thickness	0.25 inch
Fabricated bottom thickness	0.375 inch
Minimum design bottom thickness	0.25 inch
Type of tank bottom	60° conical
Diameter (nominal)	10 feet
Height (nominal)	22.5 feet
Influent pump capacity	0-350 gpm
Effluent pump capacity	0-350 gpm
Design Pressure	< 0.5 psig, emergency relief per UL 142 at < 2.5 psig
Pressure Relief Valve Setting	No relief valves. These tanks have conservation vents. The pressure and vacuum relief for the tank farm vent headers is set at 3 inches WC (water column) to 3 inches WC pressure.
Operating pressure	Less than 0.5 psig
Maximum liquid level	21.5 feet
Operating temperature	Ambient
NFPA Code 30 design standard satisfied	Yes*
Month/Year of construction	December, 1987
Level indicator present	Yes
Secondary Containment System Data:	
Capacity	71,379 x 0.57 = 40,686 gallons
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

* Tanks were designed and installed in accordance with applicable OBBC standards, which incorporate NFPA codes by reference, including NFPA Code 30.

The repaired Tanks No. 39 & 43 meet the same design standard (i.e., UL 142), capacity (i.e., 9,920 gallons), nominal height (i.e., 22.5 feet) and diameter (i.e., 10 feet) as this unit prior to its repairs. The repaired Tanks No. 39 & 43 steel thicknesses, operating conditions, overfill prevention controls and type of material to be stored (i.e., high and low BTU halogenated, flammable, and/or ignitable hazardous wastes) also remain the same as that of this same unit prior to its repairs. Overall, the repaired Tanks No. 39 & 43 will function in an equivalent manner to this same unit prior to its repairs. RIS has included the following relevant engineering drawings within **APPENDIX B**.

- Drawing #D-02-001: Tank Farms I, II, III Process and Instrumentation Diagram (P&ID).
- Drawing #D-90-049: Tank Farms I, II, III Process Flow Diagram (PFD).
- Drawing #C-90-100: Secondary Containment for Tanks 23-64.

The repaired Tanks No. 39 & 43 have been inspected for weld breaks, punctures, scrapes of protective coatings, cracks, corrosion, structural damage, and inadequate construction / installation, and they have been found to be of sufficient structural integrity to store the types of hazardous waste described above. In addition, the repaired Tanks No. 39 & 43 were tightness tested and found not to be leaking after repairs were complete. The tightness testing results are included in **APPENDIX C**.

3.0 CERTIFICATION STATEMENT

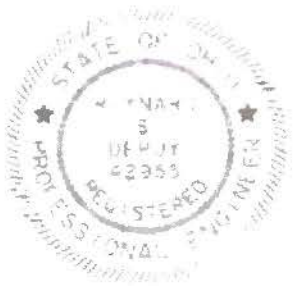
[Meets requirements of OAC 3745-50-42(D)]

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

5/13/23

Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.058



P.E. STAMP & NO.

APPENDIX A

TYPICAL HAZARDOUS WASTE PRODUCT SURVEY

Ross Incineration Services, Inc. — Waste Product Survey — 5/12/23 Page 1

36790 Giles Road, Grafton, Ohio 44044 — (440) 748-5800 — US EPA ID# OHD048415665

former WPS# (if applicable) — Please do not leave any blank spaces. — 1. WPS# 90033 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES ROAD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

3. GENERAL INFORMATION

Waste name: DOCK SCREENINGS & DEBRIS

Generator code: WPS 90033

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: DOCK SCREEN CLEAN-OUT
Primary business activity at generating facility: INCINERATION

Rate of Generation	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
Container					ROSS GENERATED WASTE
DRUMS	60	YEAR			Per Subpart CC,
					VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUIDS,SLUDGES,SOLIDS,RESINS,TRACE PAPER,CLOTH,PPE,PLASTIC,METAL OR GLASS JARS

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
5	STEEL/POLY	
55	STEEL/POLY	

Bulk shipment: GAYLORD
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE

Other:

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D Chemical Components	Concentration Range Wt%		PPM
SLUDGE, SOLIDS (PIGMENT, DIRT, SCALE, RESIN)	78.00	100.00	.00
	.00	.00	.00
PAPER, RAGS, WIPES, SHEETING	.00	5.00	.00
PLASTIC (PAILS, GLOVES, PPE)	.00	10.00	.00
SAMPLE BOTTLES (GLASS)	.00	2.00	.00
ACETONE	.00	5.00	.00
WATER	.00	5.00	.00
	.00	.00	.00

TOTAL >= 100%

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Range		Total Concentration Range	
S	.0	.1	.0	.1
Cl	.0	10.0	.0	10.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	.1	.0	.1
P	.0	.1	.0	.1

B. Metals maximum content: Y

Sb	60.00p	Pb	160.00p
As	10.00p	Hg	.00p
Ba	1000.00p	Ni	20.00p
Be	5.00p	Se	1.00p
Cd	20.00p	Ag	25.00p
Cr	65.00p	Tl	100.00p
Cu	10.00p	Zn	1.00p
Li	1.00p	Mo	1.00p

Al	.0	1.0%	Si	.0	5.0
Mg	.0	1.0%	Na	.0	1.0
K	.0	1.0%			

C. Does the waste contain:
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415565

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 90033 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid Sludge

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed Description
0	0	0

Is material pumpable at 70° F (<2,000 cP)? N Describe:

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 50 %WT Suspended solids: 90 %WT

BTU/lb.: 7500 to 15500 Ash content: 90 %WT

Flash pt: 0 to 140 °F Vap pr: .0 to 40.0 70°F

Specific gravity: .800 to 1.200 pH: N/A

Corrosivity MPY: <30

Colors: DARK

Odorous? Y COMMON SOLVENT

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 101

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 1

Eye: N

Inhalation: N

Dermal: N

Ingestion: N

Other: N

Carcinogen: N

Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection

D001 / FLASH POINT LESS THAN 140'F

F003 / ACETONE

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:

UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (ACETONE), 3, PG II, RQ, (D001)

DOT "Poison inhalation hazard?" N

Container label(s): FLAMMABLE LIQUID

Placard(s): FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

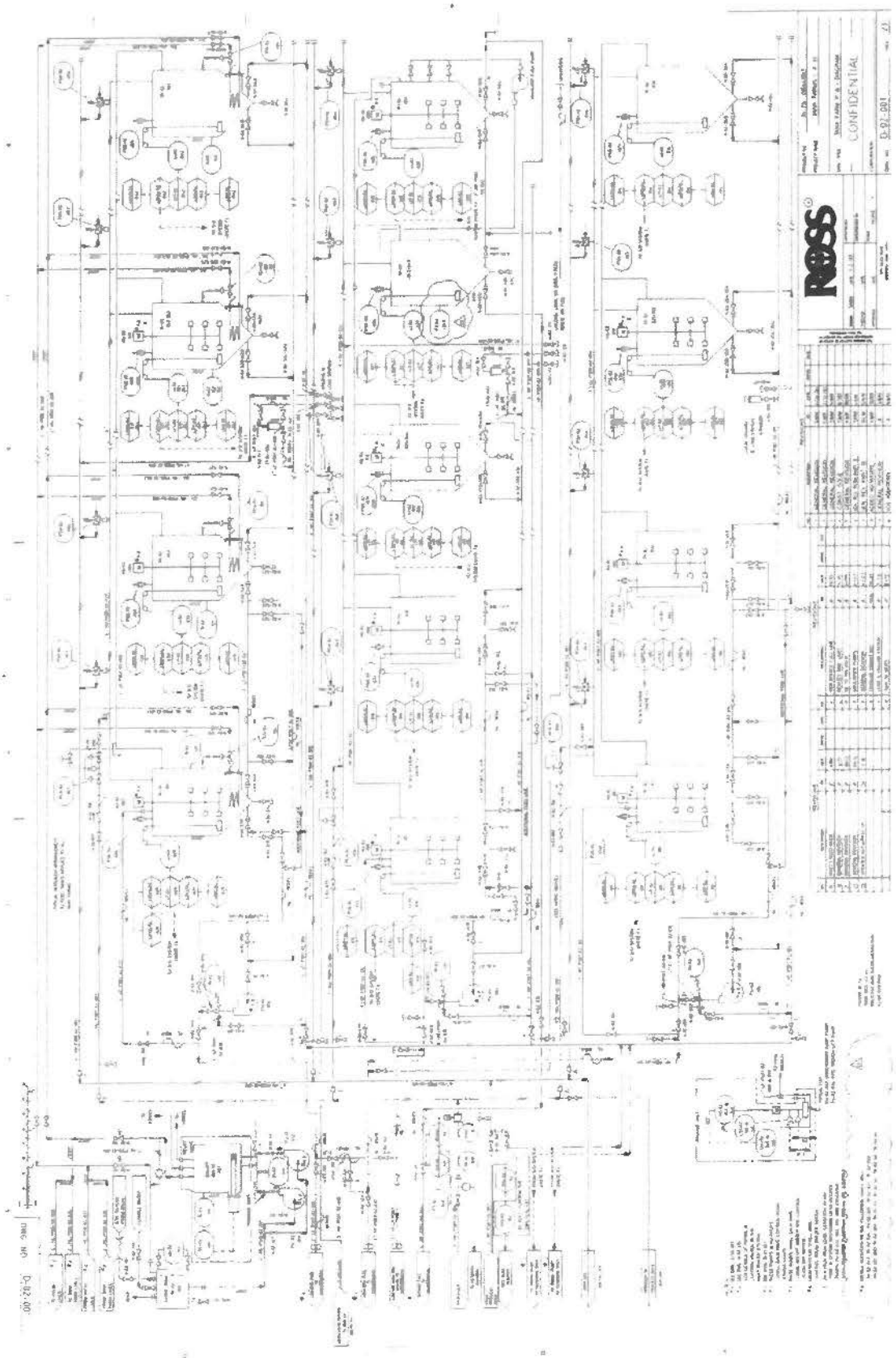
APPENDIX B

DRAWING #D-02-001: TANK FARMS I, II, III
PROCESS AND INSTRUMENTATION DIAGRAM (P&ID)

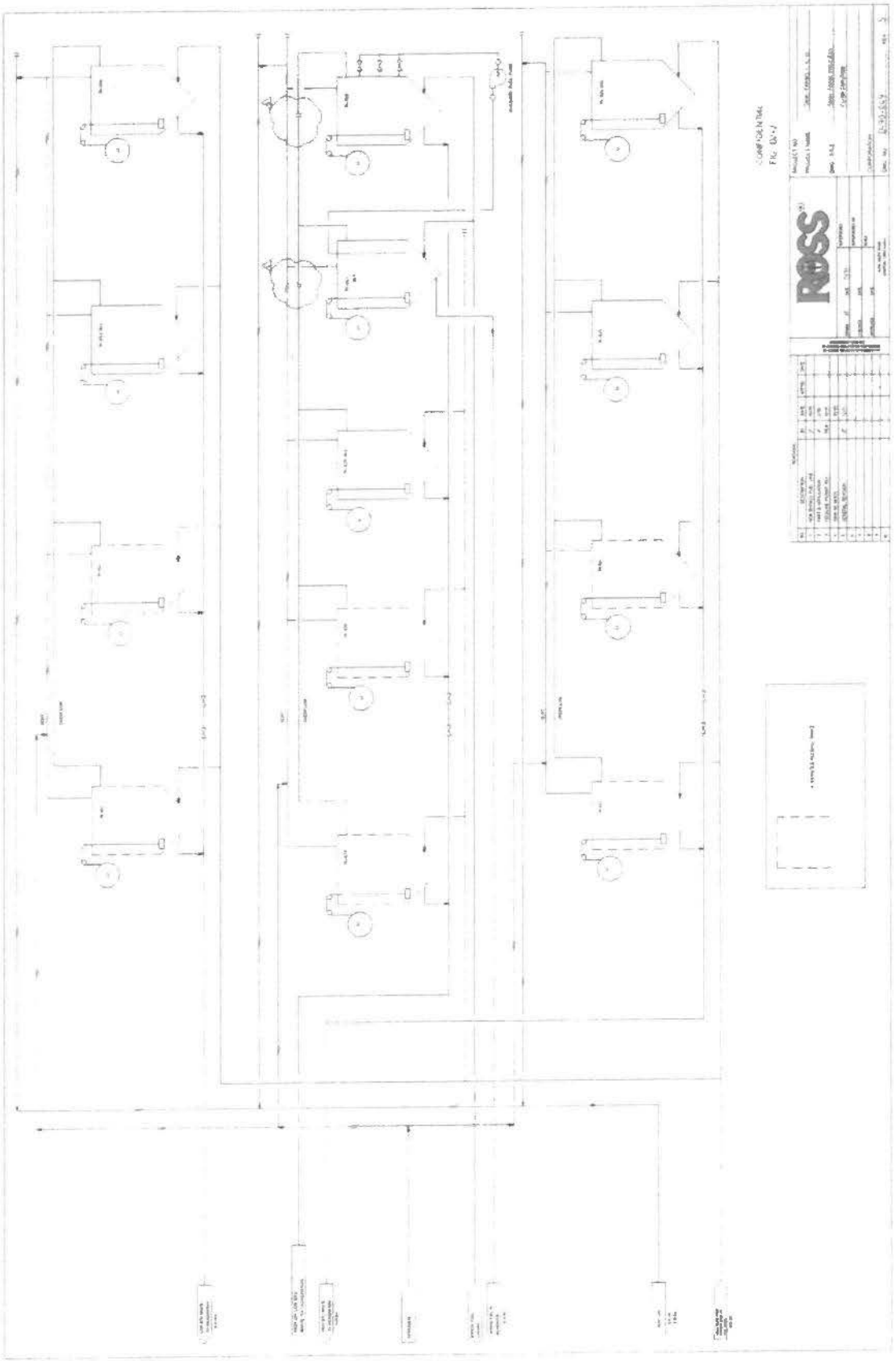
DRAWING #D-90-049: TANK FARMS I, II, III
PROCESS FLOW DIAGRAM (PFD)

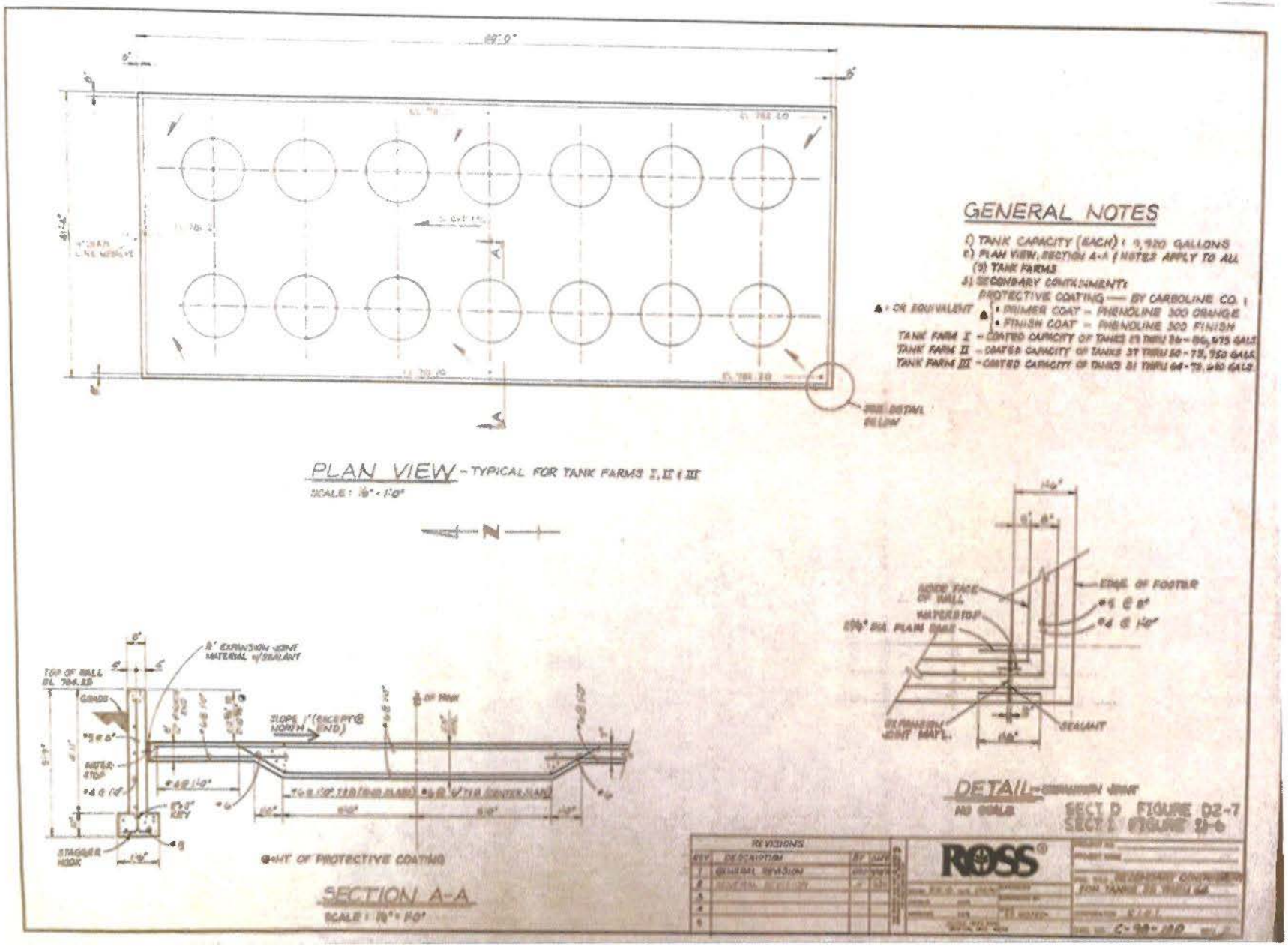
DRAWING #C-90-100: SECONDARY CONTAINMENT FOR TANKS 23-64

Ross Incineration Services, Inc.
Certification of Tank No. 39 & 43 Repairs
May 2018



Ross Incineration Services, Inc.
Certification of Tank No. 39 & 43 Repairs
May 2018




GENERAL NOTES
1) TANK CAPACITY (EACH) : 9,920 GALLONS
2) PLAN VIEW, SECTION A-A & NOTES APPLY TO ALL (3) TANK FARMS
3) SECONDARY CONTAINMENT:
PROTECTIVE COATING — BY CARBOLINE CO. ▲ OR EQUIVALENT
▲ • PRIMER COAT - PHENOLINE 300 ORANGE
• FINISH COAT - PHENOLINE 300 FINISH
TANK FARM I - COATED CAPACITY OF TANKS 29 THRU 38 - 86,975 GALS
TANK FARM II - COATED CAPACITY OF TANKS 39 THRU 50 - 73,950 GALS
TANK FARM III - COATED CAPACITY OF TANKS 51 THRU 64 - 73,640 GALS
PLAN VIEW - TYPICAL FOR TANK FARMS I, II & III
SCALE : 1/8" = 1'-0"
N
SECTION A-A
SCALE : 1/8" = 1'-0"
DETAIL - EXPANSION JOINT
NO SCALE
SECT D FIGURE D2-7
SECT I FIGURE I2-6
REVISIONS
ROSS

APPENDIX C

REPAIRED TANK NO. 39 & 43 TIGHTNESS TEST RESULTS

DOCUMENTATION OF REPAIRED TANK NO. 39 TEST

Date: May 9, 2023

Tank #39 Repair Completion Certification Test

Tank #39 is an atmospheric tank. After welding the welds were evaluated using a dye penetrant test. The dye penetrant test showed that the welds were intact.

In addition, on May 10, 2023, after the tank was re-assembled, water was added to the tank cone. Soapy water was then applied in the area of the welds on the outside of the tank. No visible leaks were detected upon completion of the tightness test.

Personnel present to observe the test included: Tom Nichols
Print Name

Tom Nichols
Signature

DOCUMENTATION OF REPAIRED TANK NO. 43 TEST

Date: May 9, 2023

Tank #43 Repair Completion Certification Test

Tank #43 is an atmospheric tank. After welding the welds were evaluated using a dye penetrant test. The dye penetrant test showed that the welds were intact.

In addition, on May 10, 2023, after the tank was re-assembled, water was added to the tank cone. Soapy water was then applied in the area of the welds on the outside of the tank. No visible leaks were detected upon completion of the tightness test.

Personnel present to observe the test included: Tom Nichols
Print Name

Tom Nichols
Signature

CERTIFICATION OF TANKS NO. 58A, 59A, 60A, 61A, 62A, 63A, 64A AT ROSS INCINERATION SERVICES, INC.

EDGECLIFF GROUP

Prepared for:

ROSS INCINERATION SERVICES, INC.
36790 GILES ROAD
GRAFTON, OHIO 44044

CONFIDENTIAL

REV. 0

June 2023

Prepared by:
REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582

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SECTION	DESCRIPTION	PAGE

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ATTACHMENTS

1.0 BACKGROUND

Ross Incineration Services, Inc. ("RIS") utilizes three tank farms for the storage of hazardous waste. RIS originally installed tanks in Tank Farm I in 1982, and tanks in Tank Farms II and III were originally installed in 1987. RIS uses tanks in Tank Farms I, II, and III to store hazardous waste that will be treated in the RIS incineration system. Tank Farms I and II are used for the storage of high or low BTU halogenated, non-halogenated, toxic, flammable and/or ignitable hazardous wastes. Tank Farm III is utilized for the storage of low BTU halogenated, non-halogenated, toxic, flammable, and/or ignitable hazardous wastes. RIS routinely transfers hazardous waste from the tanks in the three tank farms via gravity flow, or transfer pumps to the metering building where it is fed to the incinerator for destruction. Each of the tank farms is surrounded by its own secondary containment system, which prevents releases from migrating into the environment.

Due to the age of the tanks and as a matter of preventive maintenance, RIS intends to replace all tanks within its Tank Farms over the next several years. The first phase of the Tank Project began in 2021, with the replacement of tanks numbered Tanks 23 & 24 (Tank Farm I), 37 & 38 (Tank Farm II), 51 & 52 (Tank Farm III).

Beginning June 5, 2023, RIS began replacing Tank Farm III - Tanks 58 through 64 with Tank 58A through 64A. The project was complete on July 14, 2023. As such a P.E. Certification is required for the installation of new tanks per applicable United States Environmental Protection Agency ("U. S. EPA") hazardous waste regulation (40 CFR 270.16) and Ohio Environmental Protection Agency ("Ohio EPA") hazardous waste regulation (OAC 3745-55-92) to ensure the design and installation of the replacement tanks.

2.0 PROJECT DESCRIPTION

Beginning June 5, 2023, RIS replaced hazardous waste storage Tanks 58 through 64 (Tank Farm III) with functionally equivalent units. Tank replacement was done as preventative maintenance as the existing units are nearing the end of their operational lives.

Tanks 58 through 64 (Tank Farm III) were removed from service and closed in accordance with RIS' Closure Plan requirements. The Tanks were replaced with Tanks 58A through 64A (Tank Farm III).

As a part of the replacement, RIS also replaced certain associated ancillary equipment including piping, flanges and valves, where necessary. The replacement tanks and ancillary equipment meet the same conditions as the currently permitted tanks. In addition, the new tanks and ancillary equipment will manage the same wastes as the currently permitted units. RIS added a redundant flow path for the inlet header around Tank Farm III, and added backup nozzles on the tanks for uniformity. RIS also added additional flanges and valves to Tank Farm III pipe headers for greater ability to isolate piping and control flow paths, process use will not change. The capacity difference between currently permitted tanks and the replacement tanks are no more than 1,500 gallons per unit, and RIS' overall permitted tank capacity will not increase. Valves, control devices, covers, connections, and ducts for the replacement tanks are functionally equivalent with currently permitted tanks or are upgraded.

3.0 REPLACEMENT TANK DESCRIPTION

Replacement tanks and replaced ancillary equipment are functionally equivalent to the existing tanks. Low BTU waste is stored in Tanks 58A through 64A (Tank Farm III).

Tanks 58A through 64A are equipped with level transmitters for monitoring the level in each tank. Transmitters have local displays and can also by monitored remotely through RIS' control system. The facility control system triggers local and remote alarms on low and high level. On high level, the control system shuts off power to transfer pumps, preventing overfilling of tanks. Each tank farm is equipped with a nitrogen blanketing system which minimizes the oxygen level in the tanks and consequently minimizes the possibility of fires in the tanks. In addition, each tank is equipped with a pressure relief device (i.e., rupture disc) in case a sudden pressure increase is experienced in the tanks. Each tank farm vent header is also equipment with conservation vents. These devises protect tanks from over pressurization without blowing a rupture disc. They also protect tanks from collapse if a vacuum condition were to occur. Tanks and tank leg supports are designed to maintain the load of a full tank. In addition, new tanks are designed to withstand the effects of frost heave.

Design Data: Tanks 58A through 64A	
Design Basis	
Construction material	
Lining material	
Corrosion allowance	
Capacity (nominal)	
Fabricated shell thickness	
Minimum shell thickness	
Fabricated top thickness	
Minimum top thickness	
Fabricated Bottom thickness	
Minimum design bottom thickness	
Type of tank bottom	
Diameter (nominal)	
Height (nominal)	
Influent pump capacity	
Effluent pump capacity	
Design Pressure	
Pressure Relief Setting	
Operating pressure	
Maximum liquid level	
Operating temperature	
NFPA Code 30 design standard satisfied	
Month/Year of construction	
Level indicator present	
Secondary Containment System Data:	
Capacity	Volume of the largest container, plus precipitation.
Coating	Prime Coat: Phenoline 300 Orange or equivalent Finish Coat: Phenoline Finish Gray or equivalent

* Tank was designed and installed in accordance with applicable Ohio Basic Building Code standards, which incorporate NFPA codes by reference, including NFPA Code 30.

4.0 HAZARDOUS CHARACTERISTICS OF THE WASTE(S) TO BE HANDLED

Only wastes that are compatible with the tanks and their ancillary equipment are placed into the tanks. RIS isolates tank valves and utilizes tank log information and waste handling instructions to ensure that potential unintended flow of incompatible wastes does not occur from one tank to another. Copies of typical Waste Product Surveys ("WPS") for wastes managed in each of the Tank Farms are included in **ATTACHMENT A – Typical Tank Farm WPSs.**

5.0 TANK TIGHTNESS TESTING

Tanks were designed and fabricated by Hamilton Tanks of Columbus, Ohio. Upon completion, Hamilton Tank conducted integrity testing in accordance with UL Code 142 *Steel Aboveground Tanks for Flammable and Combustible Liquids*. Tanks were pressurized and tested according to file MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids. Each tank was certified by two Technicians, and a Supervising Witness. Hamilton Air Testing certifications are included in **ATTACHMENT B - Hamilton Tank Certifications.**

As tank and ancillary equipment was installated and new equipment was tested for tightness. New tanks and ancillary equipment were first inspected for potential weld breaks, punctures, cracks, corrosion, other potential structural damage, and inadequate construction/ installation. In addition, bolts used to join piping and tanks were tightened using a torque wrench to meet the requirements of "*ASME/ANSI Standard B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard*." Please refer to **ATTACHMENT C – Replacement Tank and Equipment Tests** for documentation of Tank Tightness Testing.

6.0 CERTIFICATION STATEMENT

In accordance with the applicable sections of 40 CFR 270.16 and Ohio Administrative Code ("OAC") Rule 3745-55-92, RIS is required to submit a written assessment, reviewed and certified by a qualified professional engineer to the U.S. EPA and Ohio EPA, prior to placing the Tanks 58A, 59A, 60A, 61A, 62A, 63A, 64A (Tank Farm III) into use. RIS must also keep on file written statements by those persons required to certify the design of the tank system that attest that they were properly installed, and that the tank was properly tested for tightness before being placed into use. Therefore, RIS has contracted the Edgecliff Group to review and certify the design and installation of Tanks 58A, 59A, 60A, 61A, 62A, 63A, 64A (Tank Farm III) in compliance with these regulatory requirements. Specifically, tanks will be examined for weld breaks, punctures, cracks, corrosion; and other structural damage or inadequate construction/installation prior to placing the tanks into service. A Certification Statement is included in **ATTACHMENT D – P.E. Certification**.

ATTACHMENT A

Typical Tank Farms' Waste Product Surveys

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000009 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

3. GENERAL INFORMATION

Waste name: LOW BTU TANK FARM CLEANOUT

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: TANK CLEANOUT
Primary business activity at generating facility: INCINERATION

Rate of Generation Container	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
					ROSS GENERATED WASTE Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED LIQUIDS, SOLIDS, AND SLUDGES

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL	
55	FIBER	
30	FIBER	
5	PLASTIC	

Bulk shipment: TANKER
Pallet: N Gaylord: N Hopper: N Drum: N
Overall: Length: Width: Height: Volume:
Waste: Length: Width: Height:

85 & 110

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range Wt%		PPM
SOLIDIFIED ORGANIC COMPOUNDS	30.00	60.00	.00
ALPHATICS: HYDROCARBONS, ALCOHOLS,	.00	.00	.00
ETHERS, ALDEHYDES, KETONES,	.00	.00	.00
CARBOXYLIC ACIDS, CARBOHYDRATES	.00	.00	.00
CYCLICS: ALICYCLIC HYDROCARBONS,	.00	.00	.00
AROMATICS, HETROCYCLICS	.00	.00	.00
COMBINATIONS OF ALIPHATES & CYCLIC	.00	.00	.00
EXTENDERS, FILLERS, DILUENTS,	.00	.00	.00
REINFORCING AGENTS	.00	.00	.00
WATER	30.00	60.00	.00
INORGANICS-ACIDS, BASES, METALS	.00	10.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y / Total Concentration Range Wt%:

	Range		Range	
S	.0	5.0	.0	5.0
Cl	.0	20.0	.0	20.0
F	.0	.1	.0	.1
Br	.0	.1	.0	.1
I	.0	.1	.0	.1
N	.0	10.0	.0	10.0
P	.0	.1	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	750.00p
As	25.00p	Hg	.00p
Ba	1500.00p	Ni	25.00p
Be	1.00p	Se	30.00p
Cd	20.00p	Ag	5.00p
Cr	200.00p	Tl	37.00p
Cu	5.00p	Zn	50.00p
Li	1000.00p	Mo	.00p

Al	.0	1.0%	Si	.0	1.0
Mg	.0	1.0%	Na	.0	1.0

C. Does the waste contain: K .0 1.0%
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000009 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Liquid Solid Sludge

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	0	0	LIQUID/SLUDGE/SOLID

Is material pumpable at 70° F (<2,000 cP)? N Describe:

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 0 %WT Suspended solids: 0 %WT

BTU/lb.: 0 to 10000 Ash content: 30 %WT

Flash pt: 141 to 200 °F Vap pr: .0 to 20.0 70°F

Specific gravity: .800 to 1.500 pH: N/A

Corrosivity MPY: 31-50

Colors: VARIOUS

Odorous? N

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 101 4 28 29

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2

Eye: Y IRRITANT

Inhalation: Y IRRITANT

Dermal: Y IRRITANT

Ingestion: Y IRRITANT

Other: Y IRRITANT

Carcinogen: N

Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection

D007 / CHROMIUM

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:

NA3077, HAZARDOUS WASTE, SOLID, N.O.S., (ALCOHOLS, AROMATIC HYDROCARBONS), 9, PG III, RQ, (D007)

DOT "Poison inhalation hazard?" N

Container label(s): CLASS 9

Placard(s): NONE

COMMENTS:

CONTAINERS ARE SAFE TO OPEN/SAMPLE/INSPECT. MATERIAL IS NOT SHOCK/FRICTION SENSITIVE, PYROPHORIC, EXPLOSIVE, OR SPONTANEOUSLY COMBUSTIBLE.

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature

Date

Print Name

Print Title

36790 Giles Road, Grafton, Ohio 44044 (440) 748-5800 US EPA ID# OHD048415665

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000010 N

2. GENERATOR INFORMATION

Generator: ROSS INCINERATION SERVICES INC
U.S. EPA ID #: OHD048415665
Plant Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Ship From Address: 36790 GILES RD
City: GRAFTON St: OH Zp: 44044
Emergency #: (440)-748-5800
After hours #: (440)-748-5800

Business contact: Susan Kaiser
Business title: Corporate EHS Manager
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573
Technical contact: Susan Kaiser
Mailing Address: 36790 Giles Road
City: Grafton State: OH Zip: 44044
Phone: (440)-748-5800 Ext.: Cell: (440)-537-2573

3. GENERAL INFORMATION

Waste name: HIGH BTU TANK FARM CLEANOUT

Generator code:

Was this waste generated from a CERCLA activity: N
Do you receive RCRA hazardous waste from another company: Y
Are you the original generator: Y
Do you produce, use, or receive munitions or explosives: N
Is facility a 10 Mg Generator, per 40 CFR 61.340: N

Waste generating process: TANK CLEANOUT
Primary business activity at generating facility: INCINERATION

Rate of Generation Container	Quantity	Time Period	Accum	One Time N	Service Agreement Entity
					ROSS GENERATED WASTE Per Subpart CC, VOC > 500 ppm: Y

Physical Descr: VARIOUS COLORED SOLIDS AND SLUDGE WITH POSSIBLE FREE LIQUID

4. SHIPPING CONTAINERS (must meet DOT/RCRA requirements)

Drum Size Gal.	Material of Construction	D.O.T. Specification
55	STEEL/PLAS	
30	FIBER	
5	PLASTIC	

Bulk shipment: TANKER
Pallet: N Gaylord: Y Hopper: N Drum: N
Overall: Length: 36 Width: 36 Height: 39 Volume:
Waste: Length: Width: Height:

85 & 110

5. CHEMICAL COMPOSITION

Components including but not limited to 40 CFR 261 Subpart B, C & D

Chemical Components	Concentration Range	Wt%	PPM
SOLIDIFIED ORGANIC COUMPOUNDS:	70.00	100.00	.00
ALIPHATICS: HYDROCARBONS, ALCOHOLS	.00	.00	.00
ETHERS, ALDEHYDES, KETONES,	.00	.00	.00
CARBOXYLIC ACIDS, CARBOHYDRATES	.00	.00	.00
CYCLICS: ALICYCLIC HYDROCARBONS,	.00	.00	.00
AROMATICS, HETEROCYCLICS	.00	.00	.00
COMBINATION OF ALIPHATIC & CYCLIC	.00	.00	.00
EXTENDERS, FILLERS, DILUENTS,	.00	.00	.00
REINFORCING AGENTS	.00	.00	.00
WATER	.00	30.00	.00
INORGANICS-ACIDS, BASES, METALS	.00	10.00	.00

TOTAL >= 100%

6. SOURCE OF INFORMATION

Method used to obtain a representative sample of the analyzed waste:
GENERATOR KNOWLEDGE

Other:

7. SPECIFIC ANALYSIS OF WASTE (p=ppm)

A. Organic Bound Constituents Range Wt%: Y

	Total Concentration Range	Wt%:
S	.0	5.0
Cl	.0	10.0
F	.0	.1
Br	.0	.1
I	.0	.1
N	.0	10.0
P	.0	.1

B. Metals maximum content: Y

Sb	25.00p	Pb	750.00p			
As	25.00p	Hg	.00p			
Ba	1500.00p	Ni	25.00p			
Be	1.00p	Se	30.00p			
Cd	25.00p	Ag	5.00p			
Cr	200.00p	Tl	37.00p			
Cu	5.00p	Zn	50.00p			
Li	1000.00p	Mo	.00p			
Al	.0	1.0%	Si	.0	1.0	
Mg	.0	1.0%	Na	.0	1.0	

C. Does the waste contain: K .0 1.0%
PCBs: N
Asbestos: N Is this waste TSCA regulated: N
Insecticides, pesticides, herbicides, rodenticides: N

Name	Concentration ppm/%

Dioxin: N Detection Limit: .000 %
Total available cyanides >250 ppm: N
Amenable cyanide: N Concentration: .000 %
Total available sulfides >500 ppm: N
Radioactivity above background: N
Infectious waste: N

former WPS# (if applicable) Please do not leave any blank spaces. 1. WPS# 9000010 N

8. PHYSICAL PROPERTIES

Physical state 70° F: Solid Sludge

Viscosity at 70° F: Dusting Hazard? N

******** CPS Range *********

From	To	Fixed	Description
0	0	0	SOLID/SLUDGE

Is material pumpable at 70° F (<2,000 cP)? V Describe: MAY BE THICK

Is material multi-layered? N Describe:

Description of Layer	From	To	Fixed
1. (Top)	0	0	0
2.	0	0	0
3.	0	0	0

Dissolved solids: 0 %WT Suspended solids: 0 %WT
BTU/lb.: 10000 to 18000 Ash content: 30 %WT
Flash pt: 0 to 140 °F Vap pr: .0 to 20.0 70°F
Specific gravity: .800 to 1.500 pH: N/A
Corrosivity MPY: 31-50
Colors: VARIOUS

Odorous? N

9. REACTIVITY AND STABILITY

A. Reactivity group number(s): 101 28 29

B. Is material stable? Y (If unstable i.e., polymerization with age, water/air reactive please explain below)

C. Sensitive: Shock? N Heat? N Friction? N

D. Is this waste stream reactive as defined by DOT? N

11. LAND DISPOSAL RESTRICTIONS

A. Have treatment standards/methods been established? Y
If yes, refer to 40CFR 268.40 for the Universal Treatment Standards

B. Wastewater: N Non-wastewater: Y

C. Is this waste a lab pack (Y) / loose pack (L)? N

Toxicity (Using HMIS System): 2
Eye: Y IRRITANT
Inhalation: Y IRRITANT
Dermal: Y IRRITANT
Ingestion: Y IRRITANT
Other: Y IRRITANT
Carcinogen: N
Attach supporting data, including detection limit

10. EPA AND DOT INFORMATION

A. Is this waste hazardous as defined in 40 CFR: Y
Part 261 (OAC) 3745-51?

B. EPA Haz. Waste No.(s) / Reason for Selection
D001 / IGNITABLE

C. State Haz. Waste No.(s) / Reason for Selection

D. DOT Description:
UN1993, WASTE FLAMMABLE LIQUID, N.O.S., (ALCOHOLS, AROMATIC HYDROCARBONS), 3, PG II, RQ, (D001)

DOT "Poison inhalation hazard?" N

Container label(s):	Placard(s):
FLAMMABLE LIQUID	FLAMMABLE

COMMENTS:

12. ACCOUNTABILITY STATEMENT

I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, the submitted information is true, accurate and complete and all known and suspected hazards have been disclosed.

Authorized Signature Date

Print Name Print Title

ATTACHMENT B

Hamilton Tank Certifications

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127745	Tank #	T-58
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-58				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

Pre-entry **CONFINED SPACE ALTERNATE ENTRY**

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	10-24	Temperature:	59°
	Start Time:	1:00 PM	End Time:	2:00
	Gauge No.	G17984	Calibration Date:	7-7-22
	Test Technician:	JOSE ANTONIO	Signature:	JOSE ANTONIO
	Air Pressure Applied:	2½ PSI	Initial:	J.A.C.
	Re-Test Technician:	OMAR CRUZ	Signature:	OMAR CRUZ
	Air Pressure Applied:	2½	Initial:	O.C.
	Supervisor Witness:	JOSH KANDEL	Signature:	
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	10/24/22	Signature:	

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127746	Tank #	T-59
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-59				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

Pre-entry CONFINED SPACE ALTERNATE ENTRY

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	10-10-22	Temperature:	44°
	Start Time:	8:00 AM	End Time:	9:00 AM
	Gauge No.	17985	Calibration Date:	7-7-22
	Test Technician:	Omar Cuellar	Signature:	Omar Cuellar
	Air Pressure Applied:	3.P.S.I.	Initial:	O.C
	Re-Test Technician:	JOSE MENDOZA	Signature:	JOSE MENDOZA
	Air Pressure Applied:	3.P.S.I	Initial:	J.M.C.
	Supervisor Witness:	JOSH KINDLE	Signature:	
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	10/10/22	Signature:	

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127747	Tank #	T-60
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-60				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

CONFINED SPACE ALTERNATE ENTRY

Pre-entry

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	12-12-22	Temperature:	38°
	Start Time:	1:00 pm	End Time:	2:00 pm
	Gauge No.	G179B4	Calibration Date:	7-7-22
	Test Technician:	JOSE A. CAMPA	Signature:	JOSE A. CAMPA
	Air Pressure Applied:	3 PSI	Initial:	J.A.C.
	Re-Test Technician:	Omar Cano	Signature:	Omar Cano
	Air Pressure Applied:	3. P.S.I.	Initial:	O.C.
	Supervisor Witness:	Josh Kinyon	Signature:	
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	12/12/22	Signature:	

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127748	Tank #	T-61
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-61				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

CONFINED SPACE ALTERNATE ENTRY

Pre-entry

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	11-14-22	Temperature:	41°
	Start Time:	11:40 AM	End Time:	12:30 P.M
	Gauge No.	17985	Calibration Date:	7-7-22
	Test Technician:	Omar Cruz	Signature:	Omar Cruz
	Air Pressure Applied:	3. P.S.I	Initial:	O.C
	Re-Test Technician:	JOSH CAMPA	Signature:	JOSH CAMPA
	Air Pressure Applied:	3. P.S.I	Initial:	J.C.
	Supervisor Witness:	JOSH KINDER	Signature:	
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	11/14/22	Signature:	

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127749	Tank #	T-62
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-62				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

Pre-entry CONFINED SPACE ALTERNATE ENTRY

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	1-23-22	Temperature:	29°
	Start Time:	7:00 A.M.	End Time:	8:00 A.M.
	Gauge No.	17985	Calibration Date:	7-7-22
	Test Technician:	Omar Cuda	Signature:	Omar Cuda
	Air Pressure Applied:	3. P.S.I.	Initial:	O.C
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	3. P.S.I.	Initial:	E.J
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	1/23/23	Signature:	

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127750	Tank #	T-63
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-63				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

Pre-entry CONFINED SPACE ALTERNATE ENTRY

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	12-8-22	Temperature:	46°
	Start Time:	1:00 P.M	End Time:	2:00 P.M
	Gauge No.	17985	Calibration Date:	7-7-22
	Test Technician:	Omar Cano	Signature:	Omar Cano
	Air Pressure Applied:	3. P.S.I.	Initial:	O.C
	Re-Test Technician:	JOSEH CAMPA	Signature:	JOSEH CAMPA
	Air Pressure Applied:	3. P.S.I.	Initial:	J.A.C.
	Supervisor Witness:	JOSH KINDIG	Signature:	
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	12/8/22	Signature:	

HAMILTON TANKS, LLC
2200 Refugee Road
Columbus, OH 43207
PH 614-445-8446
FAX 614-445-7248

CUSTOMER & TANK DATA

Sales Order #	SO-127779	Work Order #	WO-127751	Tank #	T-64
Customer:	ROSS INCINERATION SERVICES / SO-127779 / T-64				
Description:	10,000 GALLON VERTICAL SINGLE WALL STORAGE TANK ON LEGS				

Pre-entry CONFINED SPACE ALTERNATE ENTRY

INITIALS	DATE	TIME	Percent Oxygen (O_2) 19.5%-23.5%	Flammability < 10% of LEL	Toxic Air (H_2S) < 10.0 PPM	Carbon Monoxide (CO) < 35 PPM

AIR TEST DATA

INITIAL TEST OF PRIMARY TANK ONLY	Test Date:	1-30-23	Temperature:	340
	Start Time:	1:00 PM	End Time:	~~1:45 PM~~ 2:00 PM
	Gauge No.	G17884	Calibration Date:	7-7-22
	Test Technician:	Jose A-Carmona	Signature:	Jose A-Carmona
	Air Pressure Applied:	2½ PSI	Initial:	J.A.C
	Re-Test Technician:	Elias Jude	Signature:	Elias Jude
	Air Pressure Applied:	2.5 P.S.I	Initial:	E.J
	Supervisor Witness:	Elias Jude	Signature:	Elias Jude
FINAL TEST OF PRIMARY TANK & SECONDARY WRAP	Test Date:		Temperature:	
	Start Time:		End Time:	
	Gauge No.		Calibration Date:	
	Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Re-Test Technician:		Signature:	
	Air Pressure Applied:		Initial:	
	Supervisor Witness:		Signature:	

Performance Test Method

Per File MH17883 of the Underwriters Laboratories (UL) Code for Steel Aboveground Tanks for Flammable and Combustible Liquids, seal all tank fittings and apply an internal air pressure. Apply internal air pressure and use soap-suds, or equivalent material for the detection of leaks. For a horizontal or rectangular tank, the test gauge pressure is not to be less than 3 psi or more than 5 psi. For a vertical tank, the test gauge pressure is not to be less than 1-1/2 psi or more than 2-1/2 psi. Each welded seam on the tank is to be sprayed with a water and soap-suds solution and visually inspected for leaks. Once the initial test is complete, the tank is tested again by a different technician to ensure no leaks. All pressure gauges used in the testing process are calibrated, certified and identifiable with serial numbers.

QUALITY CONTROL INSPECTION

Inspection Date:	1-30-23	Signature:	

ATTACHMENT C

REPLACEMENT TANK AND EQUIPMENT TESTS

NEW TANK COMPLETION TESTS

Tightness evaluation completed using a torque wrench to meet the requirements of "ASME/ANSI Standard B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24, Metric/Inch Standard."

Date: 1-11-2023

Personnel present to observe the test include: Brian Price
Print Name

Signature

TANK	Torque Requirements (notes)	Signature of Technician
To ensure completion of construction and tightness of newly installed tanks		
TANK 58A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP
TANK 59A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP
TANK 60A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP
TANK 61A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP
TANK 62A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP
TANK 63A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP
TANK 64A	Flanges: 3 lines on cone, 1 overflow, 1 vent, 1 transmitter, 1 rupture disc, and 1 coupon flange	BP

ATTACHMENT D

P.E. Certification

Project:
Ross Incineration Services, Inc. ("RIS") Tank Replacement Project.

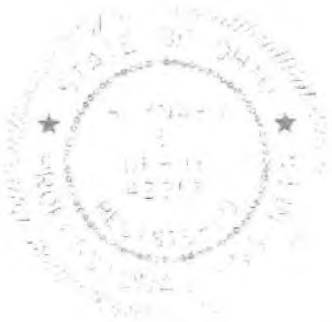
RIS began replacing Tank Farm III - Tanks 58 through 64 with Tank 58A through 64A on June 5, 2023. Tank installation was complete on July 14, 2023. As such a P.E. Certification is required for the installation of new tanks per applicable United States Environmental Protection Agency ("U. S. EPA") hazardous waste regulation (40 CFR 270.16) and Ohio Environmental Protection Agency ("Ohio EPA") hazardous waste regulation (OAC 3745-55-92) to ensure the proper installation of the replacement tanks.

Certification:
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7/17/23

Date

REYNARD S. DEPUY
THE EDGECLIFF GROUP
25521 EDGECLIFF DRIVE
CLEVELAND, OH 44132-1161
216.261.0582



P.E. STAMP & NO.

Revision 0
August 2023

Appendix D-4

Tank Farm Structural Calculations
Pipe Trench Calculations
Tanks 67, 68, 70, 73, 74, 75 Calculations

Ross Incineration Services, Inc .

Appendix D-4
Tank Farm Structural Calculations
Pipe Trench Structural Calculations

Table of Contents

THE FOLLOWING PAGES CONTAIN STRUCTURAL DESIGN CALCULATIONS FOR THE TANK FOUNDATIONS AND SURROUNDING DIKE WALL. THESE ARE HAND CALCULATIONS COMPLETED BY THE DESIGN ENGINEER.

R.E. WARNER & ASSOCIATES

2001 CROCKER ROAD, SUITE 600 • WESTLAKE, OHIO 44145
TELEPHONE 216/835-9400 • FAX 216/835-9474

September 18, 1992

TANK SYSTEM
SECONDARY CONTAINMENT
Ross Incineration Services, Inc.
Grafton, Ohio 44044
Tank Nos. 67, 68, 70, 73, 74, and 75

R. E. Warner & Associates have evaluated the subject tank systems for the following and have determined that these systems have adequate secondary containment.

The secondary containment system has been designed, installed and operated to prevent any migration of waste or accumulated liquid from the tank system to the soil, groundwater, or surface water at any time during its use. Also, the secondary containment system can detect and collect releases and accumulated liquids. This demonstration includes the following:

1. The materials of construction used to construct or line the system are compatible with the wastes in the tank system.

2. The system has sufficient strength and thickness to prevent failure causes by any of the following:

   - Pressure gradients (including static head and external hydrological forces).
   - Physical contact with the wastes.
   - Climatic conditions.
   - Stress of daily operation (including stresses from nearby vehicular traffic).
   - Withstand 80 MPH wind loads.

Design calculations supporting the suitability of these systems are enclosed.

Sincerely,

R. E. WARNER & ASSOCIATES

K.W. Schneider

Karl W. Schneider, P.E.
Project Manager

Enclosure

5\5599\LTR\TNK-SYS.KWS

R.E. WARNER & ASSOCIATES Inc.
An ISO 9001 Company

The R.E. Warner Companies
R.E. Warner & Associates, Inc.
R.E. Warner Architects, Inc.
R.E. Warner Environmental Services, Ltd.
R.E. Warner Construction Services, Inc.

March 11, 2002

Mr. Scott Kogler
Ross Environmental Services, Inc.
35716 Royalton Road
Grafton, Ohio 44044

Reference: Ross Incineration Services, Inc.
Caustic Building Tank Nos. 67 and 68
Engineering Assessment Of Upgraded Secondary Containment System
R. E. Warner Job 13901

R. E. Warner & Associates has evaluated the secondary containment system for the subject tank system as outlined herein, and has determined that the secondary containment upgrade is acceptable.

The secondary containment system has been designed and installed to prevent any migration of waste or accumulated liquid from the tank system to the soil, groundwater, or surface water during its use. The design of the secondary containment system allows for visual detection and collection of releases and accumulated liquids. Our conclusions are based upon the following:

1. The materials of construction used to line the system are compatible with the wastes in the tank system.

2. The underlying slab installed in the upgrade of the system has sufficient strength and thickness to prevent failure caused by the loads anticipated to be applied to the slab, including:

   - Stresses caused by daily operations of the vehicles and equipment used in this building.
   - Pressure gradients (including static head and external hydrological forces).
   - Climatic conditions.

I certify under penalty of law that this document and all attachments were prepared under my direction in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,

R. E. WARNER & ASSOCIATES, INC.

William M. Sage, P.E.
Project Manger
State of Ohio Registration No. 53448

O:\13901\LTR\13901-Final-Caustic-REWCert.doc

List of Figures
used in
Structural Calculations

Tanks	Drawing Number
70, 73, 74	D-01-108, D-01-109, D-01-110
67 & 68	C-90-103
75	D-61-107

R.E. WARNER & ASSOCIATES

BY WMS DATE 9/92 SUBJECT ROSS ENVIRONMENTAL TANK CERTIFICATION TRUCK DOCK AREA SHEET NO. 1 OF 4
CHKD. BY ____ DATE ____ JOB NO. F55792

TNK 70 - 9920 GAL, 10'-0" φ REF DWGS D-01-108, 109 & 110
TANKS 73 & 74 - 7500 GAL, 10'-0" φ

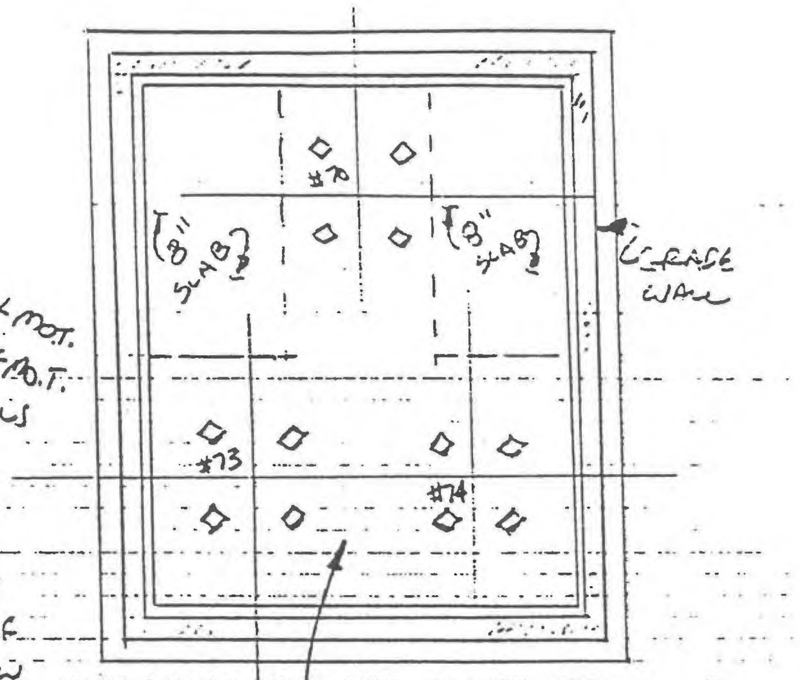
TANK WTS (APPROX)
70 - 15000# EMPTY
90000# OPP

73 & 74 - 13000# EMPTY
70,000# OPP

EQ. LOAD = .05(90) = 4.5K × 10' = 45 1K M.O.T.
WIND @ 15 psf × 20 × 8 × 10' × 10' = 30 1K M.O.T.
SOIL PRESS: EQ CONTROLS

SAY TANK FULL, 10'0" φ AREA EFFECTIVE

$q = 90{,}000\# / \pi(10)^2/4 \; (78.5\text{ sf}) = 1200\text{ psf} < 2500\text{ psf}$ ALLOW OK



PLAN

THICKENED SLAB 18" W/#6 @ 10" c/c T & B EW @ 5" c/c BTWN TANKS

CONCRETE:

PIER LOAD = $90{,}000/4 = 22{,}500\# \pm 45{,}000 \text{ 1\#}/\text{4'} = 29{,}000\#$ OR $16{,}000\#$

SAY $P_u = 1.65(29000) \cong 48{,}000\#$

$V_u = .85(4)\sqrt{3000}\,[4(16" + 15")](15") = 346{,}000\# >> 48{,}000\#$ OK

LOCAL LOADS UNDER TANKS

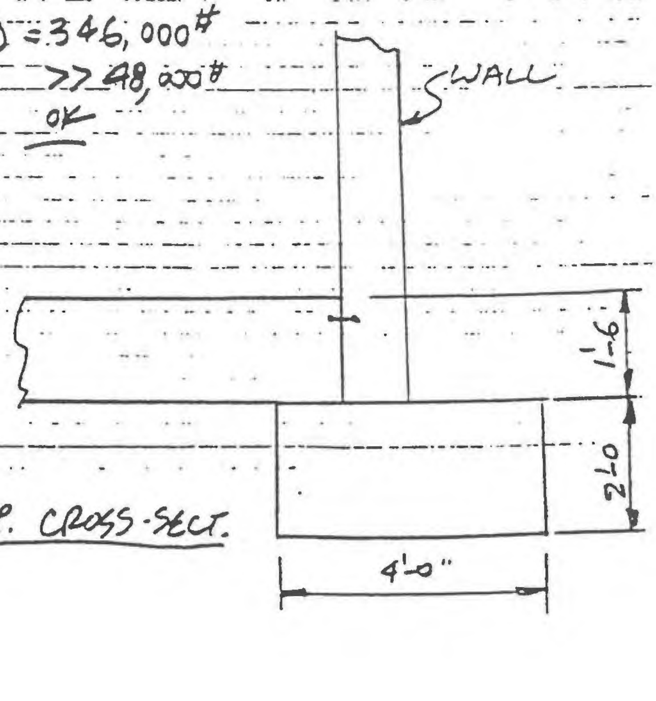
$q_u = 1.7(1200) = 2\text{ KSF}$

$M_u = 2(11)^2/8 = 30^{1K}$

$K_u = 30{,}000/15^2 = 133$

$\rho = .0033$, $A_s = .0033(12)(15) = .6\text{ in}^2$

#6 @ 5" $A_s = 1.06\text{ in}^2/\text{FT}$ OK



TYP. CROSS-SECT.

EXIST. FOUNDATION OK

R.E. WARNER & ASSOCIATES

BY WMS DATE 9/92 CHKD. BY ____ DATE ____

SUBJECT ROSS ENVIRONMENTAL TANK CERTIFICATION FILTER PRESS BLDG

SHEET NO. 2 OF 4 JOB NO. F55992

TANKS G7 & G8 – 5000 GAL EA, 7'-0"ϕ x 18'-0", FLAT BOTTOM
REF DWG C-90-103

TANK WTS – $5000 \times 7.5^{\#} = 37500^{\#} + \pi(7)(18)(10.2) + \pi(7)^2/4 \times 10.2 \times 2 = 42400^{\#}$

FOR "FOUNDATION", NO DATA AVAILABLE OTHER THAN SLAB IS 10" IN THICKNESS. ASSUME MINIMAL REINFORCEMENT FOR TEMP. ONLY ∴ SLAB IS A "SPREAD FOOTER" UNDER AREA OF TANK.

$q = 43000^{\#} / \pi(7)^2/4 = 1117$ psf < 2500 psf ASSUMED ALLOW. ∴ OK

FOR PUNCHING SHEAR

$V_U = \pi(7+.25')(.25')(.85)\sqrt{3000}(144)(4) \approx 158{,}000 > 43000^{\#}$ OK
(d)

SINCE TANK IS FLAT BOTTOM ON SLAB, NO SIGNIFICANT MOMENT WILL BE INDUCED INTO THE SLAB DUE TO FULL TANK.

EXIST CONDITION OK

R.E. WARNER & ASSOCIATES

BY WMS DATE 9/92 SUBJECT ROSS ENVIRONMENTAL TANK CERTIFICATION SHEET NO. 3 OF 4
CHKD. BY ____ DATE ____ JOB NO. F55992

TNK 75 - 617,000 GAL, 50'-0" DIA x 42'-0" HIGH, REF DWG D-61-107

TANK WT - $617{,}000 \times 7.5\# + \pi(50)(42)(15.3) + \pi(50)^2/4\,(2)(15.3) = 4{,}850{,}000\#$
$4{,}650{,}000\#$ $101{,}000$ $60{,}000$

SOIL PRESSURE UNDER TANK

$q = 4850 / \pi(52.5)^2/4 = 2250$ psf < 2500 psf OK

PUNCHING SHEAR N/A

DEAD WT/TANK ON RING = $161 / \pi(50)(2.5') = 400$ psf < 2500 psf OK

WIND ON TANK SAY 20 psf X .8 = 16 psf

O.T. = $16(50)(42)^2/2 = 705{,}600\#$

$M_{RES} = 161{,}000(50)/2 = 4{,}025{,}000\# > 705{,}600$ OK

EXIST. FDTN OK

R.E. WARNER & ASSOCIATES

BY WMS DATE 9/92 SUBJECT ROSS ENVIRONMENTAL TANK CERTIFICATION SHEET NO. 4 OF 4
CHKD. BY ____ DATE ____ JOB NO. E55792

SUMMARY:

TANKS 70, 73, 74 & 75

BASED ON THE FOLLOWING:

1. DESIGN DRAWINGS D-01-108, 109 & 110, & D-61-107
2. TANKS INSTALLED PER DESIGN REQ'TS.
3. TANK DATA AS GIVEN TO REW.
4. SOIL BEARING = 2500 PSF ALLOW

CONCLUSION:

EXISTING FOUNDATION IS SATISFACTORY FOR DESIGNED LOADING.

TANKS 67 & 68:

BASED ON THE FOLLOWING:

1. DRAWING C-90-103 PROVIDED BY ROSS.
2. ASSUMED 3000PSI CONCRETE, 2500 PSF ALLOWABLE SOIL BEARING.
3. TANK DATA AS GIVEN TO REW.

CONCLUSION:

EXISTING FOUNDATION IS SATISFACTORY FOR DESIGN LOADING

ROSS ENVIRONMENTAL SERVICES

TANK FARM FOUNDATION DESIGN

PROJECT Nº 546286

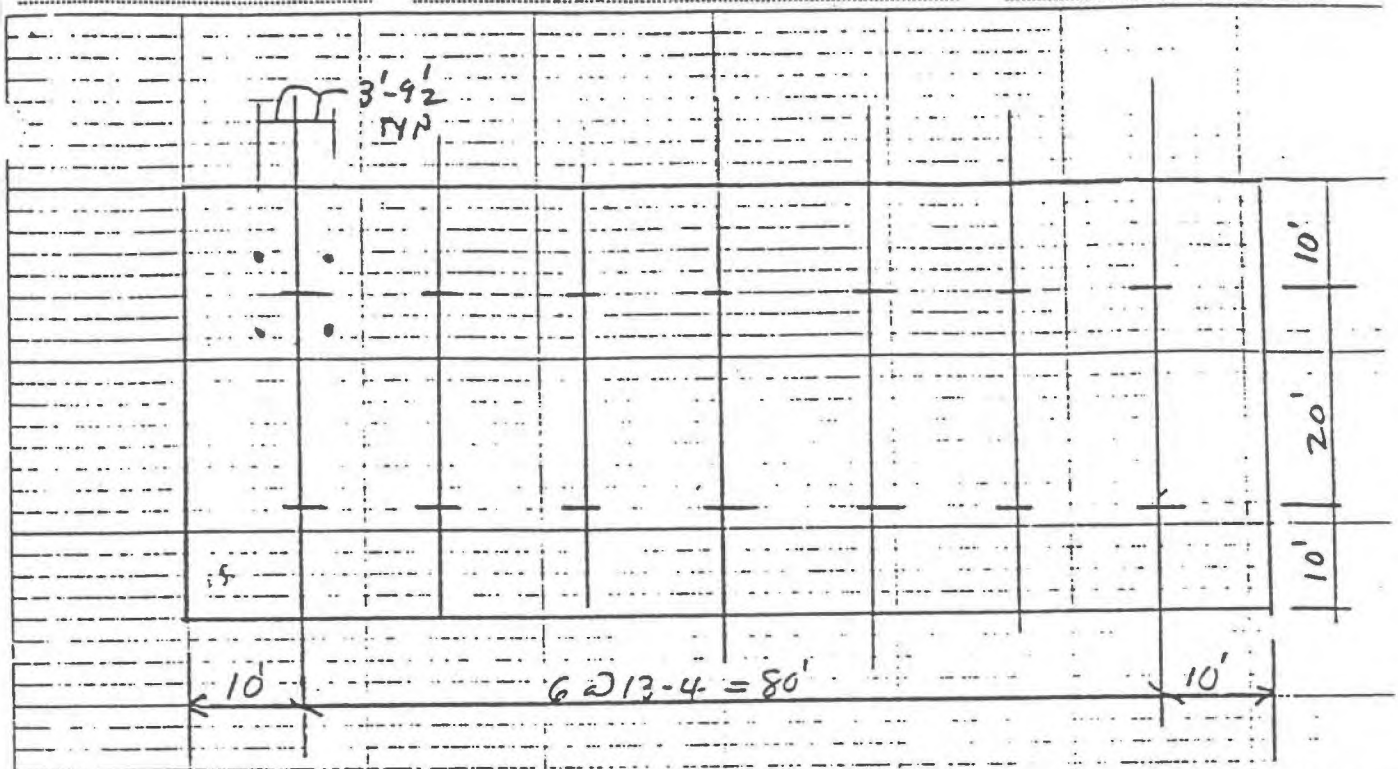
BY JACK LONG
OCT. 86

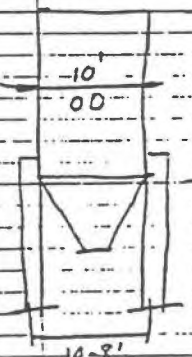
R.E. WARNER & ASSOCIATES

CONSULTING W ENGINEERS

ESTABLISHED IN 1951

BY ___ DATE 10/26 SUBJECT K055 SHEET NO. 1 OF
CHKD. BY ___ DATE ___ Tank Farm JOB NO. 546286
Foundation





14 Tanks
DL 12.5K
FULL 100 KIP
LL 87.5K

factored wt of Tanks
100 x 1.4 = 140K
35K each Leg

10.71 x .707 = 7.57 ft

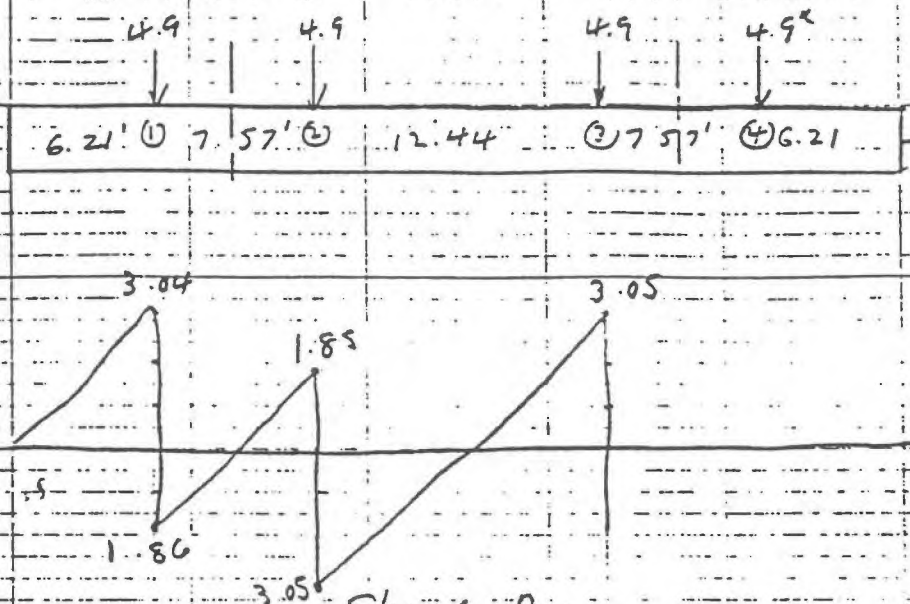
Short Direction Assuming Uniform Pressure

Total Load 140K x 14 = 1960 KIP factored Wts

$\frac{P}{A} = \frac{1960}{40 \times 100} = .49$ KSF

BY [illegible] DATE 10/86 SUBJECT Ross Tank Farm Fdn. SHEET NO. 2 OF
CHKD. BY DATE JOB NO. 546286

Short Direction



Shear

① 6.21 x .49 = 3.0
4.9
↓ 1.9
① 7.57 x .49 = ↑ 3.7
② ↑ 1.8
↓ 4.9
② ↓ 3.0
12.44 x .49 ↑ 6.1
③ ↑ 3.0
4.9
③ 1.85

Moment ①

$6.21' \times .49 \times \frac{6.21}{2} = 9.45^{IK} \curvearrowright$

② $\frac{13.78^2}{2} \times .49 = 46.52 \curvearrowright$

$7.57 \times .49 = 37.1$

9.4.2

℄ $20^2/2 \times .49 = 98 \curvearrowright$

$-4.9 \times (6.22 + 13.79) = 98$ ℄

20' 0

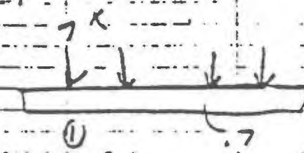
BOT Mom
9.5^IK/FT

Max Shear
3.05 K/FT

BY ____ DATE 10/8 SUBJECT Res: Tank Farm fdns SHEET NO. 3 OF ____
CHKD. BY ____ DATE ____ JOB NO. 546286

USING 10' Strip & Two Vessels

$$\frac{P}{A} = \frac{2 \times 140}{10 \times 40} = .7^{K/FT}$$



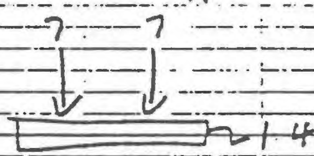
Mom @ ①

$$.7 \times 6.21^2/2 = 13.49^{IK}$$

Shear = 4.35^K

Try Local Pressure Max

~~one Vessel 140K~~ $\frac{P}{A} = \frac{140}{10 \times 10} = 1.4 KSF$



Mom @ ℄

$\frac{5^2 \times 1.4}{2} = 17.5^{IK}$

$- 7 \times 3.79 = 26.53$

9.03 Tor Max

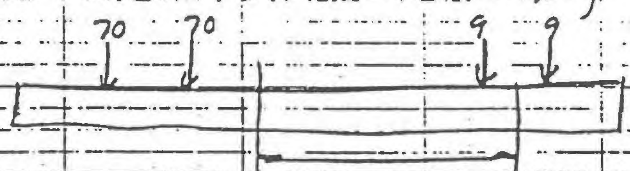
Shear

$1.23 \times 1.4 = 1.72$

$- 7.0$

5.3 Kips

Try one Vessel Full one Empty 10' wide Section



$158^K / 10 \times 40 = .395$

$M/S = \frac{1220}{2667} = .458$

C.G.

$18 \times 0 = 0$

$140 \times 20 = 2800$

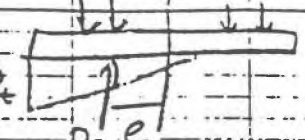
$2800 \div 158 = 17.72' + 10 = 27.72$ $e = 7.72$

$Pe = 7.72 \times 158 = 1219.8^{IK}$

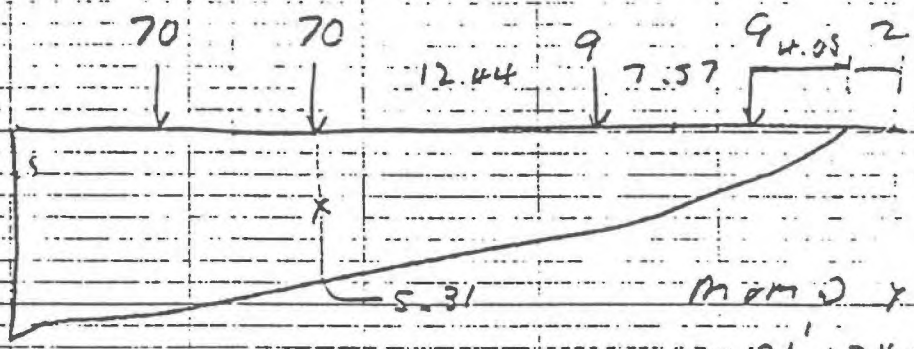
$$S = \frac{10 \times 40^2}{6} = 2667$$

BY JL DATE 10/86 SUBJECT K-055 Tank Farm fdn SHEET NO. 4 OF
CHKD. BY DATE JOB NO. 5462 86

20.0'
e = 7.72
12.28 x 3 = 37.84'



½ Pt x 37.84' x 10' = 158 K
Pt = .835 KSF



Mom @ x
5.31' x 24.05/2 x 1/3 24.05 = 51
9 x 12.44
20
32.44 = 29
220 K

Shear
5.31 x 24.05/2 = 63.85
18
45.85
÷ 10' = 4.6 K
= 22 K
BOT Mor

Try using Thicken Slip Approach with control joint isolating the two vessels see pg 5

BY JT DATE 11/18/ SUBJECT Ross Tank Farm SHEET NO. 2 OF
CHKD. BY DATE JOB NO. 546286

Design Mat Short Direction

1 = 3" Mat d = 11.5"

$V_u = 2 \times .85 \times \sqrt{3500} \times 12 \times 11.5$

$= 13.9^K$

12" Mat

$V = 13.9 \times \frac{8.5}{11.5} = 10.3^K$

Max Factored Shear 5.3K pg 3

	Max Mom. Bot	Max Mom. Top	Max Shear
Ps 2	9.5	0	3.1
Ps 3	13.5	0	4.4
3	—	9.1	5.3
Ps 4	22	—	4.6

12" Mat d = 8.5 F = .072

$K_n = \frac{22}{.072} = 305$

3000 @ = .0061

4000 .0059

$A_s = .006 \times 12 \times 8.5 = .61$

USE #6 @ 9"

$A_s = .59$ BOT Short Direction

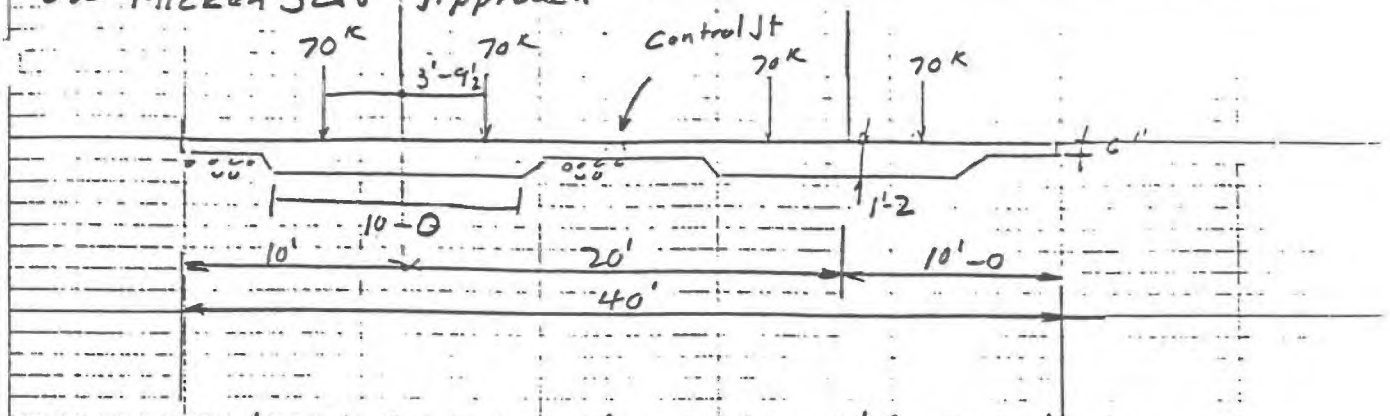
BY RL DATE 10/86 CHKD. BY ____ DATE ____

R.E. WARNER & ASSOCIATES

SUBJECT ROSS Tank Farm Foundation

SHEET NO. 6 OF ____ JOB NO. 546286

USE Thicken Slab Approach



Local Pressure Assumed on 10'-6 x 10-6 Area

$\frac{P}{A} = \frac{140}{10.5^2} = 1.27 \text{ ksf}$

Bot Mom $1.5' \times 1.27 \times \frac{1.5}{2} = 1.43^{1K}$

mom @ Tanks

$\frac{5.25^2}{2} \times 1.27 = 17.5^{1K}$

$\frac{7.0}{10.5} \times 3.79^{1} = 25.3$

7.8^{1K} TOP

Punching Shear $d = 14 - 4 = 10"$

$bo = (12+10)4 = 88$

$d = 14 - 2\frac{1}{2} = 11\frac{1}{2}$

$F = .132$

$K = \frac{7.8}{.132} \cdot \frac{7}{} = 59$

min ρ

$V_{up} = .85 \times 4 \times \sqrt{3500} \times 88 \times 10 = 177^{K/P}$

OK > 35K

$V = .85 \times 2\sqrt{3500} \times 12 \times 10 = 12^{K}$

$12 \times 11.5 \times .0033 = .45$

#6 @ 1'-0

Shear $1.27 \times 1.46' \times 10.5' = 19.469$

$= 70.000$

50.5

$= 10.5 = 4.81^{K}$ OK

Assume 8" SL6 settles with Thicken Section

check for ½" bending on SL6 Section

$D = \frac{1}{8} = \frac{PL^3}{3EI}$

$\rho = \frac{.125 \times 3 \times 3.37 \times 10^6 \times 216}{(4.08 \times 12)^3}$

$\rho = 5513$ #

Say it Acts @ ½ 4.08'

$12 \times .009 = .54$

#6 @ 1'-0

$A_s = .44$

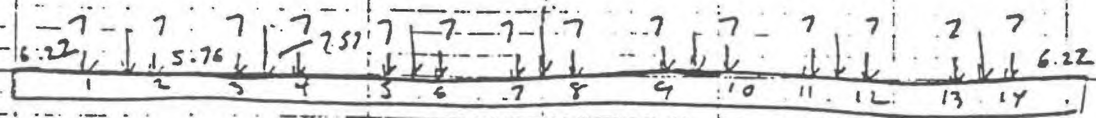
Mom = 11.2'K

d = 5" F = .025 ρ = .009

$K = \frac{11.2}{.025} = .448$

BY D DATE 10 1 86 SUBJECT Ross SHEET NO. 7 OF
CHKD. BY DATE Tank Farm JOB NO. 5462 86

Long Direction No Joints



10' Strip $\frac{7 \times 140}{10 \times 10} = \frac{980}{1000} = .98$ KSF

Shear

① 6.10 ↑
− 7.00 ↓
① .90 ↓
7.42 ↑
② 6.52 ↑
7.00 ↓
② .48 ↓
5.65 ↑
③ 5.17 ↑
7.00 ↓
3. 1.83 ↓
7.42 ↑
4 5.59 ↑
7.00 ↓
④ 1.41 ↓
5.65 ↑
⑤ 4.24 ↑
7.00 ↓
⑤ 2.76 ↓
7.42 ↑
6 4.66 ↑
7.00 ↓
⑥ 2.34 ↓
5.65 ↑
⑦ 3.31 ↑
7.00 ↓
⑦ 3.69 ↓
3.71 ↑ ℄ ✓
℄ 0 ✓

.98 × 6.22 = 6.1
7.57 = 7.42
5.76 = 5.65

Max Shear
6.52 @ 2

Mom @ 1
$6.22^2/2 \times .98 = 18.96$ 'K

Mom @ 2
$13.79^2/2 \times .98 = 93.18$
$- 7 \times 7.57 = 52.99$
40.19 'K Bot

Mom @ 3
$\frac{19.55^2}{2} \times .98$ 187.3
$- 7 \times 19.09 = 133.6$
53.7 'K

Mom @ 4
$27.12^2/2 \times .98 = 360.5$
$7 \times 41.8 = 292.6$
67.9 'K

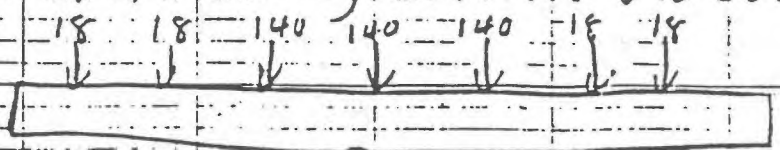
Mom @ ℄
$50^2/2 \times .98 = 1225$
$80' \times 14 = 1120$
$- 7 \times 3.78 = - 26$
79 'K

10' Strip is To Conservative
USE 15' wide Strip Soil $p = \frac{7 \times 140}{15 \times 100} = .653$

Mom ℄ $= \frac{.653}{.98} \times 79 = 53$

BY JL DATE 10/86 SUBJECT Ross Tank Farm SHEET NO. 8 OF
CHKD. BY DATE JOB NO. 546286

Load Mat Heavy with 3 vessels ℄ 15' wide Section



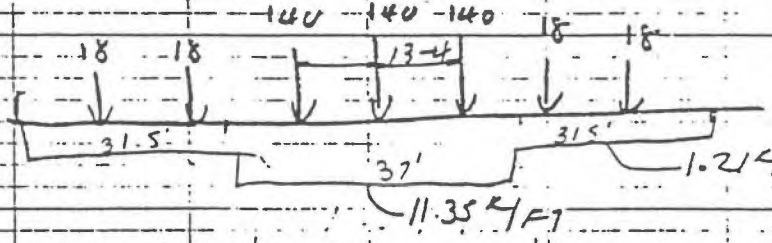
P = 3x140 = 420
4x18 = 76
496 KIP

Mom ℄
50²/2 x 4.96 = 6200
- 140 x 13.33 = - 1867
- 18 x 26.67 = - 1200
40
3133
- 70 x 3.78 = 265
2868 ÷ 15' = 191 K/FT

Check Steel 1'-3" M.F
d = 11.5 F = .132
Kn = 1.91 / .132 = 1447

140 x 3 / 37' = 11.35
76 / 63' = 1.21

No Good Try distribution Load more direct into Soil



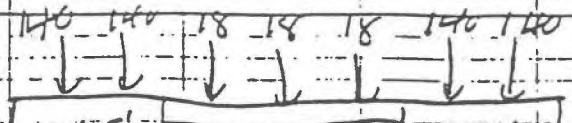
Mom ℄ 18 x 40' = 720
140 x 13.33 = 1867
2587

11.35 x 37/2 = 209.98 x 37/4 = 194
1.21 x 31.5 = 38 11.34 x 25 = 130
248.1
246 ✓
324
258
660

Mom ℄ 660
÷ 10 = 66 K
÷ 15' = 4.4 K

BY DATE 10/96 SUBJECT Ross SHEET NO. 9 OF
CHKD. BY DATE Tank Farm JOB NO. 546286

Load The outside Tanks
and Three empty



$\frac{2 \times 140}{31.5} = 8.89^K$

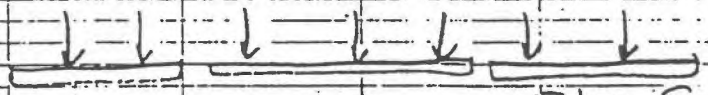
$\frac{54}{37} = 1.46^K$

Moment $140 \times 40' = 5600$
$18 \times 13.33 = 240$ / 5840

$8.89 \times 31.5' = 280.04 \times 34.25 = 9591.4$
$1.46 \times \frac{37}{2} = 27.0 \times 37/4 = 249.8$
307.05
307
9841
5840
4001

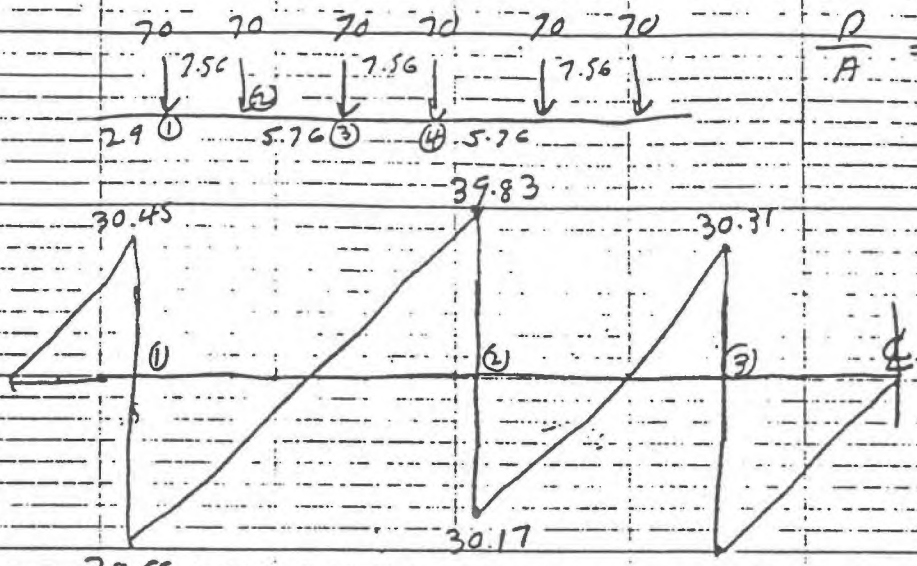
Moment per ft
4001
÷ 10' = 400 ^K
÷ 15' = 267 ^K
very high

Conclusion:
A continuous Mat will develope Moments at the center of the Mat that are to high to develope
Therefore design a Mat To Support Tanks on Three Mats



BY ____ DATE 10/86 SUBJECT Ross SHEET NO. 10 OF
CHKD. BY ____ DATE ____ Tank Farm JOB NO. 546286

Center Section - 10' Wide Strip.



$\frac{P}{A} = \frac{3 \times 140}{10 \times 40} = 1.05$ ksf

Shear

$1.05 \times 2.9 \times 10 = 30.45$

$1.05 \times 7.56 \times 10 = 79.38$

$1.05 \times 5.76 \times 10 = 60.48$

30.45 ↑ ①
70 ↓
39.55 ↓ ①
79.38 ↑
39.83 ↑ ②
70 ↓
30.17 ↓ ②
60.48 ↑
30.37 ↑ ③
70
39.69 ↓ ③
79.38 ↑
39.69 ↑ ④
70 ↓
30.31 ↓

Moment

$\frac{2.9' \times 1.05 \times 2.9}{2} = 4.42$ 'K Bot

Mom between 1 & 2

$\frac{6.68^2}{2} \times 1.05 = 23.43$

$\frac{70}{10} \times 3.78 = 26.46$

3.03 K Top

Between 2 & 3

$13.34^2/2 \times 1.05 = 93.43$

$\frac{70}{10} \times (2.88 + 10.44) = 93.24$

small

@ 3 $\frac{16.22^2}{2} \times 1.05 = 138.1$

$\frac{70}{10} \times (5.76 + 13.32) = 133.6$

4.5 K Top

@ ℄

$\frac{20^2}{2} \times 1.05 = 210$

$\frac{70}{10} \times (3.78 + 9.54 + 17.$

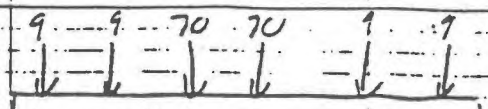
$7 \times 30.42 = 213$

3 K Top

BY DD DATE 10/86 SUBJECT Ross SHEET NO. 11 OF
CHKD. BY DATE Tank Farm JOB NO. J46286

Center Section 10' wide Strip
Load Center tank

Uniform Soil Distribution



$\frac{176}{10 \times 40} = .44$ KSF

Moment

$.44 \times \frac{20^2}{2} = 88^{1K}$

Shear

$.44 \times 16.22 = 7.14$

$= \frac{18}{10} = 1.8$

5.35

$- \frac{70}{10} \times 3.78 = 26.5$

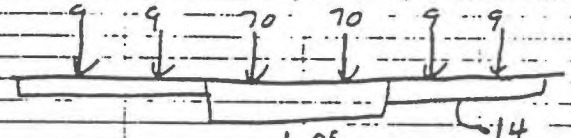
$- \frac{18}{10} \times 13.33 = 24$

$- \frac{70}{10} = 7$

1.67

37.5^{1K} Bot

Local Soil Distribution



$\frac{140}{13.33 \times 10} = 1.05$

$\frac{1.8}{13.33 \times 10} = .14$

Moment

$.14 \times 13.33 \times 13.33 = 24.9$

$1.05 \times \frac{6.67^2}{2} = 123.4$

48.3^{1K}

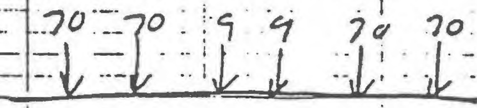
(Mom. above $= (26.5 + 24) = 50.5$

2:2 Top

R.E. WARNER & ASSOCIATES

BY JZ DATE 10/86 SUBJECT ROSS SHEET NO. 12 OF
CHKD. BY DATE JOB NO. 546286
Tank Farm

Center Section Load outer Two tanks



$\frac{P}{A} = \frac{298}{10 \times 40} = .745\ ^{K}/_{SF}$

Mom @ ℄ $.745 \times \frac{20^2}{2} = 149^{'K}$

$\frac{140}{10} \times 13.33 = 186.7$

$\frac{9}{10} \times 3.78 = 3.4$

$41^{'K}$ TOP

Shear
$10.46 \times .745 = 7.79^{K}$
$- 14.00$
6.21^{K}

Local Soil Distribution

Mom @ ℄
$1.05 \times 13.333^2 = 186.7$
$.14 \times \frac{6.62^2}{2} = 3.1$
$189.8^{'K}$

$\frac{140}{10} \times 13.33 = 186.6$
$\frac{9}{10} \times 3.78 = 3.4$
0

1-3" Mat

$V_u = 2 \times .85 \times \sqrt{3500} \times 12 \times 11.5$
$= 13.9^{KIP}$ OK
V_u-12" mat 10.3K pg 5

$V_{upunch} = 4 \times .85 \times \sqrt{3500} \times 11.5 \times 94$
$= 217^{K} > 70^{KIP}$ OK

12" SS Base ℞
$(12 + 11.5) \times 4 = 94$
12" mate = 82
$V_{upunch} = 140^{K}$ ok

Max Moment
pg 10 10' strip 37.5 Bot
Local loading 22 Top
This pg 10' strip $41^{'K}$ Top
Local Loading 0
USE $25^{'K}$ TOP & BOT

14" mat $d = 10"$ $F = .1$

$K_n = \frac{.25}{.1} = 250$

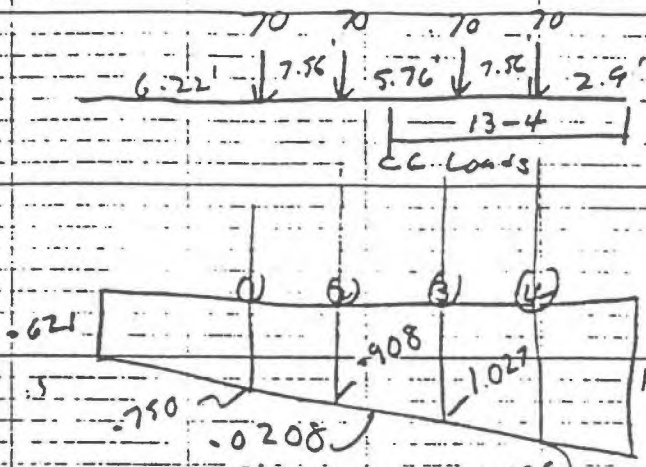
$\rho = .0049$ f'c 3500

$A_s = 12 \times 10 \times .0049 = .59 □"$
#6 @ 6" $A_s = .88 □"$
TOP & BOT.

BY RB DATE 10/86 SUBJECT ROSS SHEET NO. 13 OF
CHKD. BY DATE Tank Farm JOB NO. 546286

Edge Section (Two tanks) 10' wide Strip

$S = 10 \times 3.0^2/6 = 1500$



$e = 1.67'$

$Pe = 1.67 \times 280 = 467.6$

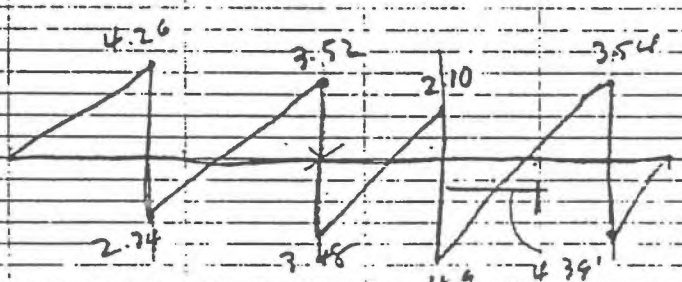
$\frac{P}{A} = \frac{280}{30 \times 10} = .933$

$\frac{m}{S} = \frac{467.6}{1500} = .312$

1.245

$\frac{1}{2}$ .621

Shear



$.621 \times 6.22 = 3.86$

$\frac{.129 \times 6.22}{2} = .40$

① 4.26

7

① 2.74

$.75 \times 7.56 = 5.67$

$.157 \quad .59$

② 3.52

7

② 3.48

$.908 \times 5.76 = 5.23$

$\frac{.1198 \times 5.76}{2} = .35$

② 2.10

7.00

③ 4.90

$1.027 \times 7.56 = 7.76$

$\frac{.157 \times 7.56}{2} = .59$

④ 3.54

7.00

④ 3.55

$1.185 \times 2.9 \quad 3.44$

Moment ②

$\frac{.621 \times 13.78^2}{2} = 58.96$

$\frac{.287 \times 13.78 \times 13.78}{2} \times \frac{1}{3} = 9.07$

6803 in-k

$-\frac{70}{10} \times 7.56 = 52.92$

15.1 ft-k BOT

Max between 3-4

$1.185 \times 6.07 \times 6.07/2 = 20.6$

$\frac{.127 \times 6.07^2}{2} \times 6.07 \times \frac{2}{3} = 1.6$

22.2

$-7 \times 3.17 = 22.2$

0

R.E. WARNER & ASSOCIATES

BY R DATE 10/86 SUBJECT Ross SHEET NO. 14 OF
CHKD. BY DATE JOB NO. 546286
Tank Farm

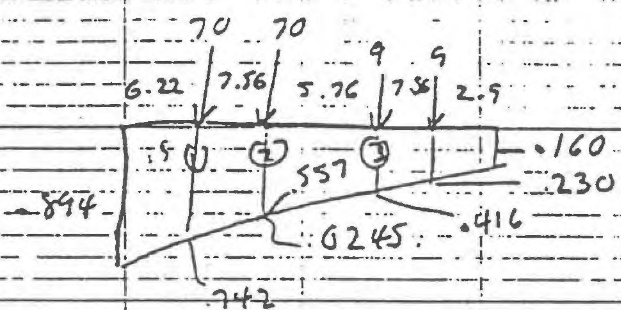
Edge Section Load one Tank

70 70 9 9

11.81 6.67

C.C. Tanks

18 × 0 = 0
140 × 13.33 = 1866.6
158 ÷ 158 = 11.81 Ft
6.67
18.48



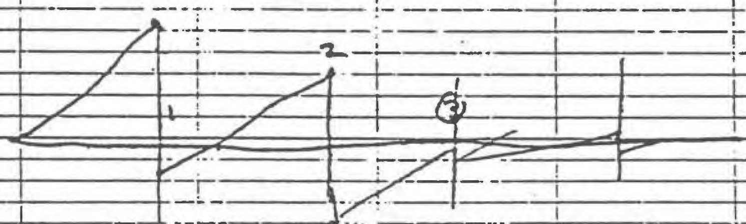
e = 3.48'

Pe = 158 × 3.48 = 549.8 'K

P/A = 158 / (30×10) = .527 KSF

M/S = 549.8 / 1500 = .367

.894 & .16



Shear

.742×6.22 4.62
.152×6.22/2 = .47
① 5.09
7
① 1.91
.557×7.56 = 4.21
.185×7.56/2 = .70
② 3.00
7.00
② 4
.416×5.76 2.40
.14×5.76/2 = .41
③ 1.19
③ .9 ↓
2.09 ↓
.23×7.56 = 1.74 ↑
.18×7.56/2 = .70 ↑
4 .35 ↑
.9 ↓
.55

Mom @ 2

.557 × 13.78²/2 = 52.88

.337 × 13.78/2 × 13.78/3 × 2 = 21.33

74.21

− 7×7.56 52.9

21.3 'K Bot

Mom @ ①

6.22²/2 × .894 = 17.3 'K

R.E. WARNER & ASSOCIATES

BY A DATE 10/86 SUBJECT ROSS Tank Farm SHEET NO. 15 OF
CHKD. BY DATE JOB NO. 54628C

END SLABS

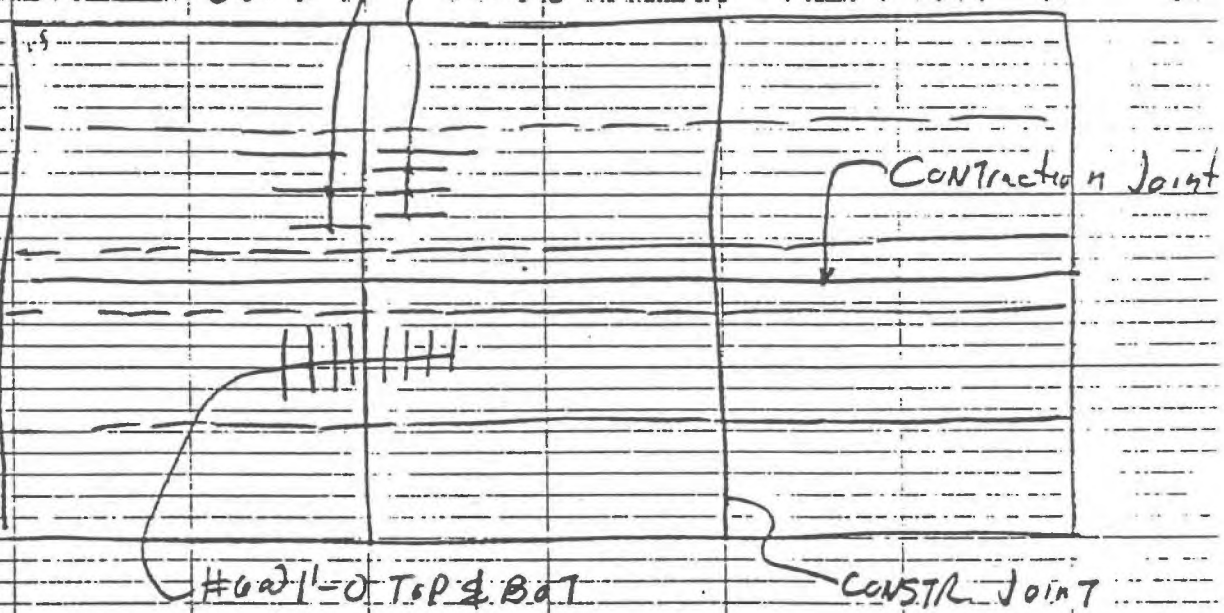
Max Mom @ 14 21.3 'K

1'-2 Mat $Kn = \frac{21.3}{.1} = 213$

$\rho = .0040$

$A_S = 12 \times 10 \times .0040 = .48$

USE #6 @ 1'-0 Top & Bot

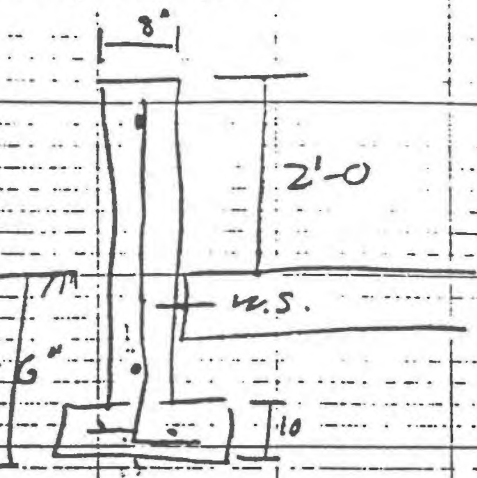


Rebar Plan

R.E. WARNER & ASSOCIATES

BY B DATE 10/86 SUBJECT Ross SHEET NO. 16 OF
CHKD. BY DATE Tank Farm JOB NO. 546286

Dike Wall



Assume 2' height Free Standing

62.4×2 = 125#

Mom = 125 × 2/2 × 2/3 = 83 'K

Small

d = 4" F = .016

K = .083/.016 5

USE Min Wall Steel

Horz.

.002 × 8 × 12 = .192

Vert

.0012 × 8 × 12 = .115

USE #5 @ 8" Vertical

.31 × 12/8 = .47 > .115

4 @ 1'-0 Hor

.2 > .19

Ftg Min Temp

10" × 12 × .0018 = .216

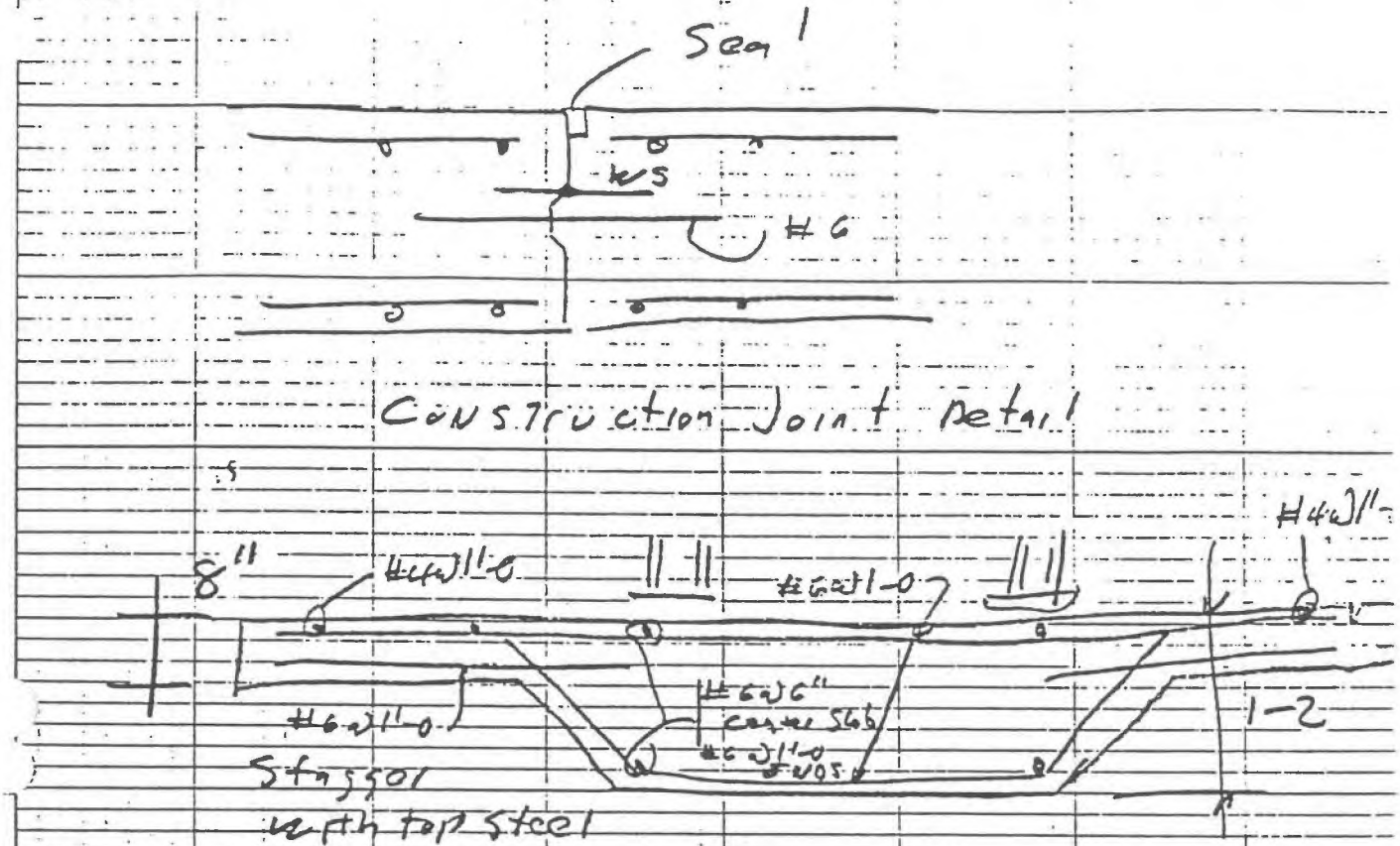
2-#4 ok

.31 × 12/16 = .23

Staggered hooks OK

R.E. WARNER & ASSOCIATES

BY R DATE 10/86 SUBJECT Ross Tank Farm SHEET NO. 17 OF
CHKD. BY DATE JOB NO. 546286



THE FOLLOWING PAGES CONTAIN STRUCTURAL DESIGN CALCULATIONS FOR THE PIPE TRENCH WHICH SERVES AS THE SECONDARY CONTAINMENT FOR ALL ANCILLARY EQUIPMENT OTHERWISE OUTSIDE OF OTHER SECONDARY CONTAINMENT AREAS AND THAT REQUIRE SECONDARY CONTAINMENT. THESE ARE HAND CALCULATIONS COMPLETED BY THE DESIGN ENGINEER.

ROSS ENVIRONMENTAL SERVICES

PIPE TRENCH DESIGN

PROJECT Nº 546286

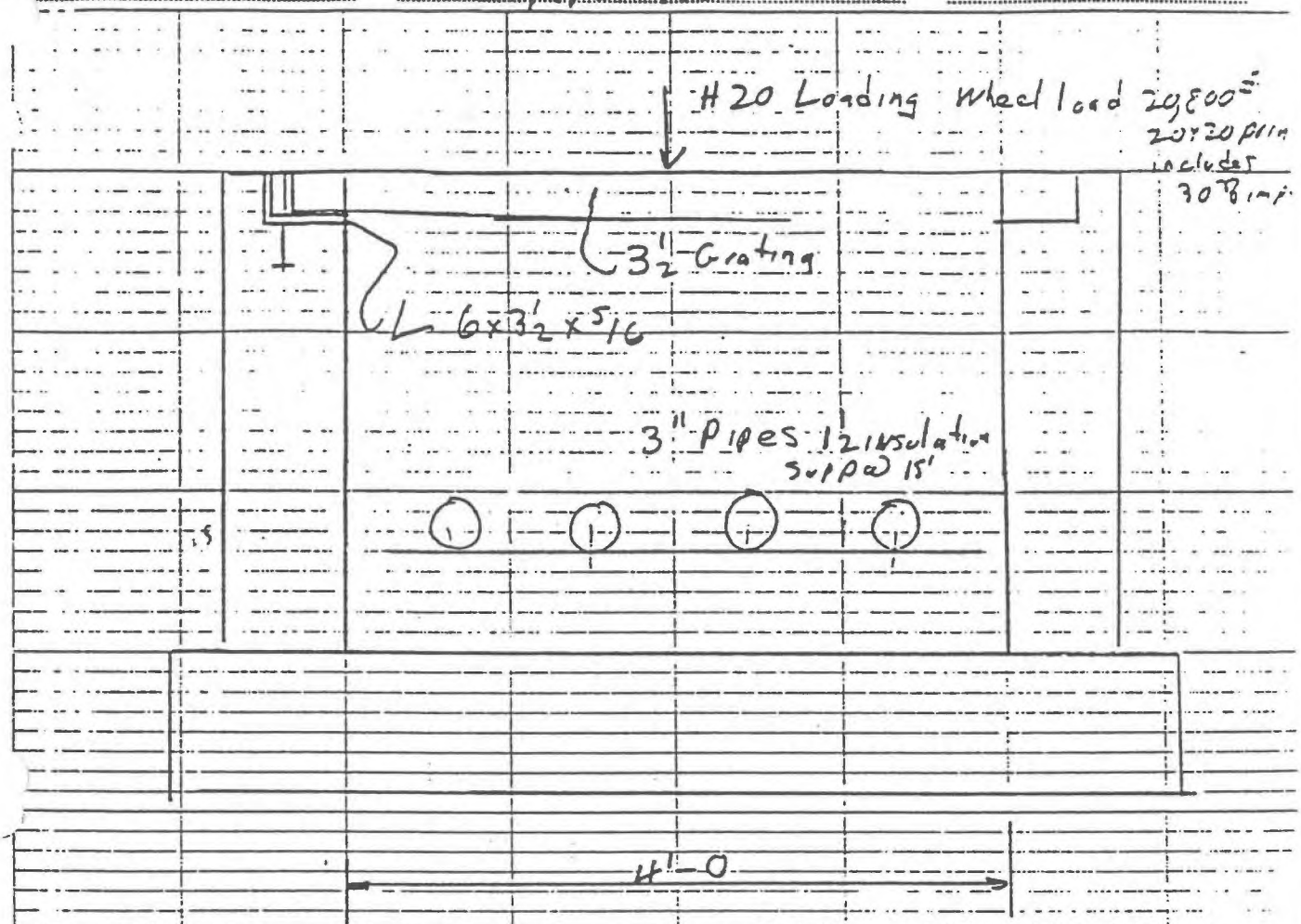
BY JACK LONG
NOV. 86

R.E. WARNER & ASSOCIATES

CONSULTING W ENGINEERS

ESTABLISHED IN 1951

BY ___ DATE 11/20/80 SUBJECT K05 SHEET NO. 1 OF ___
CHKD. BY ___ DATE ___ Tank Farm Pipe Trench JOB NO. ___



Grating Heavy Duty
Borden CEC 16B
3½ x 5/16 Bearing Bars
on 1⅜ c/c

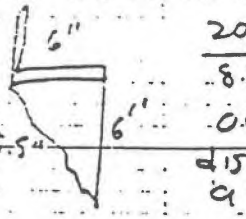
For H20 Loading
Safe Span
47.8 in
wheel print
20" x 20"
welded Cross Bars
36 #/ft²

Grating Stress
S = 5.57 in³

Check Bearing on Concrete

$\frac{P}{A} = \frac{20,800\#}{20 \times 6} = 173 PSI$ OK

Shear



$\frac{20,800}{8.5 \times 20} = 122 PSI$

OK Will distribute Load over greater dist.

Mom = 10,400 x 2 = 20,800#

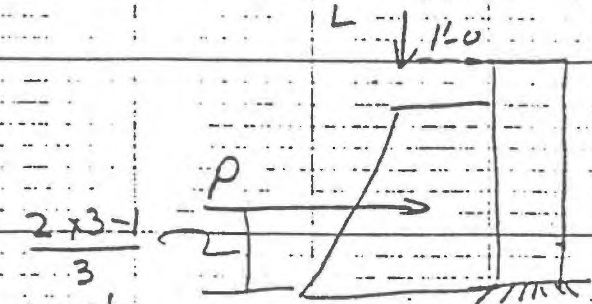
$f_b = \frac{20\,800 \times 12}{5.57 \times 1.83}$ = 24,500 PSI OK

1.83 = foot print

BY: [initials] DATE: 11/20
CHKD. BY: DATE:
SUBJECT: R 05 J Tank Farm pipe Trench
SHEET NO. 2 OF
JOB NO.

Wall Design

Assume a Line Load for H20 Loading



L = 20,800 ÷ Say 4' = 5200

$P = L\left(\tan 45 - \frac{\phi}{2}\right)$

Say $\phi = 26$

P = 5200 (tan 32) = 3,250

mom = 1.67 x 3250 = 5.43'K

10" wall d = 8" F = .064

$K = \frac{5.43 \times 1.7}{.064} = 144$

min flex

.0033 x 12 x 8 = .32

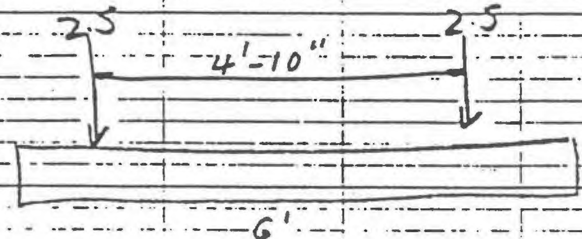
#5 @ 12"

ACI Shear

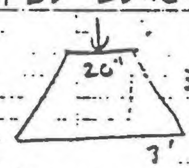
$V_a = 2 \times .85 \times \sqrt{3500} \times 12 \times 8 = 9.7^K$

OK

FTg Design



H20 Loading



~~[illegible] dist. on~~ Say 5'

2080 #

$\frac{P}{A} = \frac{5^K}{6'} = .833\ ^K/FT$

Grating
36 x 2' = 72 #

$Mom\ \frac{wL^2}{8} = \frac{.833 \times 4.83^2}{8} = 2.43'^K$

wall
.83 x 3 x .15 = 373

SAY 2.5 K

10" Slab d = 8" TOP

$K = \frac{2.43 \times 1.7}{.064} = 64$

min flex #5 @ 1'-0 TOP Steel

BY JZ DATE 11/20 SUBJECT Ross SHEET NO. 3 OF
CHKD. BY DATE Tank Farm JOB NO.
Pipe Trench

Bot Steel use Wall Mom for H20 Loading
5.43'k

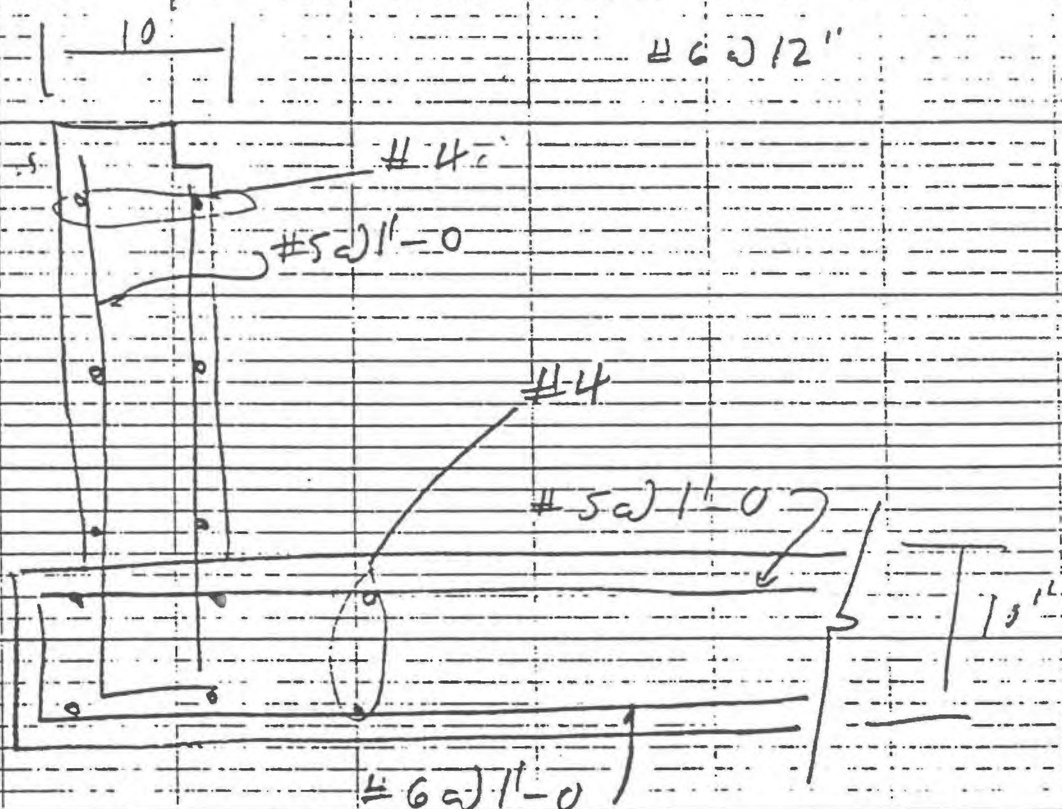
d Bot = 10-4 = 6 F = .036

K = 5.43 x 1.7 / .036 = 256

ρ = .006

x12 x 6 = .43

#6 @ 12"



R.E. WARNER & ASSOCIATES

BY: WMS DATE 8/87 SUBJECT ROSS INCINERATION SHEET NO. 1 OF
CHKD. BY DATE TRENCH TO INCINERATOR JOB NO. 546637

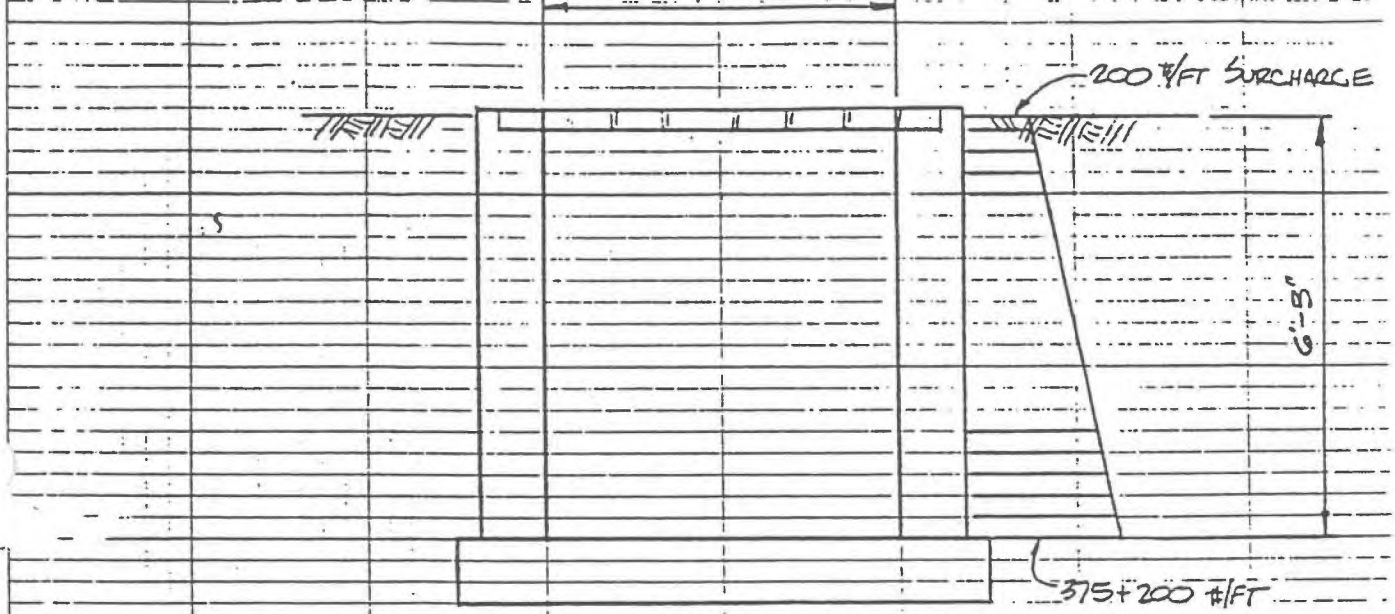
TRENCH DESIGN:

DESIGN LOADS

TRUCK LOAD SURCHARGE FOR HS20 LOAD, SAY 20^K WHEEL LOAD

SOIL PRESSURE 60 pcf

SOIL WT. 110 pcf (DRY)



$M_c = \left[.2(6.25)^2/2 + .375(6.25)^2/3\right](1.7) = 15^{1K}$

TRY 10" WALL, d = 8"

$F = 12(8)^2/12000 = .064$

$K = 15/.064 = 234.4$

$\rho = .0047$

$A_s = .0047(12)(8) = .45 IN^2/FT$

TRY 12" WALL : 4000 psi CONC.

$F = 12(10)^2/12000 = .1$

$K = 150$

ρ = MIN FLEX = .0033

$A_s = .0033(12)(10) = .40$ $M_u = .9(.9)(60)(10 - .59/2)/12 = 17.5^{1K}$ OK

Revision 0
August 2023

Appendix D-5

Carbon Bed Assessment

Ross Incineration Services, Inc .

Tank Farm and Process Dock Vapor Emission Control System

Description of Control System

Organic vapors from the storage tanks in tank farms 1, 2 and 3, and from the process dock are routed to the vapor recovery system. The vapor recovery system is a carbon adsorption system (note: the carbon bed was installed and tested in December of 1997). Figure 1 is a simplified process flow diagram of the vapor recovery system. The gases are routed to the inlet of the carbon adsorption unit. Just prior to entering the carbon adsorption unit, the vent gases are diluted with approximately 3,960 cfm of dilution air. The dilution air is ambient air and is provided by the dilution air fan.

The carbon adsorption unit consists of a single carbon bed filled with activated carbon. The system is designed for off-site regeneration of the carbon. When the carbon is depleted, the bed will be removed and replaced with a new bed of fresh carbon. In the event that the off-site regeneration facility is unable to accept the carbon due to the presence of waste codes which are not included in its facility operating permit, the spent carbon will be burned in RIS's on-site incinerator. RIS may also burn the spent carbon at its on-site incinerator if economic considerations deem it to be more desirable than off-site regeneration.

Although the worst-case bed life is based on the presence of a high vapor pressure material in the vent gas and 100% organics, RIS would not normally exclusively receive waste streams that contained 100% of a pure high vapor pressure material such as vinyl acetate. In 2022, organics only accounted for 42% of the material processed in the tank farms and process dock. As such, RIS would expect the bed life to be greater than the 3.6 weeks calculated for the worst-case bed life. The treated off-gas exiting the carbon bed is monitored continuously and gets Method 21 monitoring weekly along with the process dock bed. We consider breakthrough to be 3-day average over 50ppm using a portable organic volatile analyzer (OVA). This testing frequency will help RIS to assure that any premature breakthrough is detected.

Carbon Bed Design Analysis

Design Basis and Assumptions

There are several factors that affect the bed life of a carbon bed. These include the type and volume of activated carbon; the type of organic materials in the vent stream; the flow rate of the vent stream; the temperature and pressure of the vent stream; and the relative humidity of the ambient air.

RIS receives many different types of waste materials with varying physical and chemical properties. Most often the wastes are mixtures of several different compounds including raw materials, manufacturing intermediates and finished products. To estimate bed life, vinyl acetate was chosen since its vapor pressure is mid-range when compared to the compounds typically seen in the waste streams received at the facility. To prolong bed life, higher vapor pressure materials are not processed in the tank farm and are instead processed in our direct feed location, and because of this vinyl acetate was used for the worst-case evaluation Worst case bed life will be calculated assuming a worst-case relative humidity of 100%; and a corresponding efficiency loss of 20%.

There are several operations that yield flow of organic vapors in the vent gas to the carbon bed. These include breathing losses due to ambient diurnal temperature changes; off-loading of bulk tanker material into the tank farm tanks; pumping of material from the process dock to the tank farm tanks; and operation of the Drum Vacuum System (DVS). Organic vapor flow due to diurnal temperature changes are minimal. Pumping of material from tankers or from the process dock contribute the highest loading to the carbon bed. For purposes of calculating bed life under maximum loading conditions, weekly loading was calculated using 2022s actual throughput with an extra 25% averaged on a weekly basis. Calculation methods were updated to be consistent with Ross's Title V Emissions Inventory and AP 42, Fifth Edition, Volume I Chapter 7: Liquid Storage Tanks.

Carbon Bed Design Specifications

Carbon Bed Type:	Calgon Vapor-Pac 10 or equivalent
Capacity of Carbon Bed:	Varies with bed; Vapor-Pac 10 is designed to hold approx. 13,000 lbs.
Type of Carbon:	Calgon VPR 4x10 or equivalent
Working Capacity of Carbon:	Approx. 18 lbs./100 lbs. of carbon (based on vinyl acetate @ 50 °F)
Carbon Replacement Interval:	Approx. 3.6 weeks (calculation attached)

Vendor specifications and schematics are included in the attached operating manual.

Sources and References

1) Vendor information on carbon bed size and capacity, bed life, type and working capacity of carbon, provided by Calgon Corporation

2) Miscellaneous References
Meyers, Alan L., and Seider, Warren D., 1976. "Introduction to Chemical Engineering and Computer Calculations", Englewood Cliffs, New Jersey; Prentice-Hall

3) Joseph, Gerald T., P.E., and Beachler, David S., December 1981. "APTI Course 415: Control of Gaseous Emissions", USEPA

4) Perry, J.H., Ed., 1973. "Chemical Engineer's Handbook", 5th Edition. New York: McGraw Hill

5) AP 42, Fifth Edition, Volume I Chapter 7: Liquid Storage Tanks

Carbon Bed Design Analysis Summary Data

Maximum Loading to Carbon Bed Design Basis			
2022 Liquids to tank farm	49,764,519.70	lbs	from 2022 Title V Emissions Inventory Data
2022 Liquids to tank farm	62,205,649.63	lbs	added additional throughput to represent a realistic maximum
(with an added 25% to throughput)	7,995,584.78	gallons using vinyl acetate density	loading volume to the carbon bed
2022 Tankers to tank farm	1,599	tankers per year	
	31	average tankers per week	

Maximum Weekly VOC Loading to Carbon Bed from All Sources			
$L_{T,washouts}$	1.88	lbs/week	Process Dock Washouts
$L_{T,DVS}$	54.53	lbs/week	Drum Vacuum System Operation
$L_{T,Tank\ Farms}$	466.08	lbs/week	Transfers to Tank Farm
$L_{T,All\ Sources}$	522.49	lbs/week	Total from all sources

***overestimated by not accounting for nitrogen in the vent composition, and assuming 100% organics**

***Design basis throughputs are based on actual 2022 data with an added 25% to estimate maximum loading flow rate**

Estimated Carbon Life at Maximum Expected Loading			
$L_{T,All\ Sources}$ (Vinyl Acetate through bed)	522.49	lbs VA/week	
VA captured per 100 lbs carbon	~18	lbs VA/100 lbs carbon	derived from calgon data
Carbon Bed Capacity	13,000.00	lbs carbon	
Max VA per bed	2,369.00	lbs VA	reference attached calculations on calgon data sheet
Replacement interval (50% RH)	4.53	weeks	
Replacement interval (100% RH)	3.63	weeks	assuming 20% efficiency loss

Carbon Bed Loading from Process Dock Operations

1) ORGANIC PORTION OF MATERIAL PROCESSED IS: VINYL ACETATE
2) TANK FARM THROUGHPUT IS EQUAL TO CALENDAR YEAR 2022 TOTAL LIQUIDS PROCESSED AT THE INCINERATOR, LESS DIRECT FEED WITH AN ADDED 25% TO THE TOTAL AS A SAFETY FACTOR
3) ASSUMING 5,000 GALLONS PER TANKER
4) ASSUMING WE RINSE EVERY TANKER AND IT'S 99% WASH WATER
5) ASSUMING 50 GALLONS OF WASH WATER PER TANKER
6) COEFFICIENTS WERE CALCULATED WITH THE SAME ASSUMPTIONS FROM TITLE V EMISSIONS INVENTORY AND 2022 WEATHER DATA

WASH OUTS

	POUNDS	%ORGANIC	%WATER
POUNDS LIQUIDS IN TANKERS*	62,205,650		
GALS wash water @ PROC DOCK	**74,947**	1.00%	99.00%
LBS WASH WATER @ PROC DOCK	**622,056**		

pounds x	gal x	tkr x	50 gal =	gal wash water
62,205,650	8.3 lbs	5000 gal	tkr	

	%ORGANIC (a)	%WATER (b)	TOTAL
MATERIAL	1.00%	99.00%	100.00%
POUNDS	6,220.56	615,835.93	622,056
DENSITY OF TANK FARM LIQUID	0.00	8.33	8.25
MOLECULAR WEIGHT (LB/LBMOL)	86.09	18.00	18.68
MOLES OF COMPOUND	72.26	34,213.11	34285.36
MOLE FRACTION OF COMPOUND	0.0021	0.9979	100.00%
VP @ AVG AMBIENT TEMPERATURE (mm Hg)	75.1471	10.7300	10.866
VP @ AVG AMBIENT TEMPERATURE (psia)	1.453	0.207	0.210

M_V = MOLECULAR WEIGHT OF VAPORS IN DOCK TANK = Ma(Pa*Xa)/Pt + Mb(Pb*Xb)/Pt = 18.992

$Ls = 365*K_E [\pi/4\ D^2] H_{VO} K_S W_V$ **Lw = WV Vq Kn Kp Kb**

Ke	0.011550888		Wv	0.000723001	lbs/ft3
D	10	ft	Vq	74,947	gal/yr
Hvo	10	ft		10,020	ft3/yr
Ks	0.899800306		Kn	1	
Wv	0.000723001	lbs/ft3	Kp	1	
	2.15418662	lbs/year (per tank)	Kb	1	
Ls	90.47583803	lbs/year (all 42 tanks)	Lw	7.244179592	lbs/yr
	1.739919962	lbs/week		0.139311146	lbs/week

$L_{T,washouts}$ 1.879231108 lbs/week

1) ORGANIC PORTION OF MATERIAL PROCESSED IS: VINYL ACETATE
2) ASSUMING ORGANIC AT 100% IS A LARGE OVERESTIMATE. ACTUAL FOR 2022 WAS 42%
3) USING 2022 DVS THROUGHPUT WITH A 25% INCREASE AS UPDATED DESIGN BASIS
4) COEFFICIENTS WERE CALCULATED WITH THE SAME ASSUMPTIONS FROM TITLE V EMISSIONS INVENTORY AND 2022 WEATHER DATA

DRUM VACUUM SYSTEM

	POUNDS	%ORGANIC	%WATER
2022 Total DVS	7,268,694.00	100.00%	0.00%
2022 Total DVS (with an added 25% to total throughput)	9,085,867.50		
2022 Total Gallons (with an added 25% to total throughput)	934,253.02		

	%ORGANIC (a)	%WATER (b)	TOTAL
MATERIAL	100.00%	0.00%	100.00%
POUNDS	9,085,867.50	-	9,085,868
DENSITY OF TANK FARM LIQUID	7.78	8.33	7.78
MOLECULAR WEIGHT (LB/LBMOL)	86.09	18.00	46.73
MOLES OF COMPOUND	1,167,816.27	0.00	1,167,816.27
MOLE FRACTION OF COMPOUND	1.0000	0.0000	100.00%
VP @ AVG AMBIENT TEMPERATURE (mm Hg)	75.1471	10.7300	75.147
VP @ AVG AMBIENT TEMPERATURE (psia)	1.453	0.207	1.453

M_V = MOLECULAR WEIGHT OF VAPORS IN TANK FARM STORAGE TANK = Ma(Pa*Xa)/Pt + Mb(Pb*Xb)/Pt = 86.090

$Ls = 365*K_E [\pi/4\ D^2] H_{VO} K_S W_V$ **Lw = WV Vq Kn Kp Kb**

Ke	0.011550888		Wv	0.022665387	lbs/ft3
D	10	ft	Vq	934,253.02	gal/yr
Hvo	10	ft		124,900.14	ft3/yr
Ks	0.564925553		Kn	1	
Wv	0.022665387	lbs/ft3	Kp	1	
	0.116101916	lbs/year (per tank)	Kb	1	
Ls	4.876280458	lbs/year (all 42 tanks)	Lw	2,830.91	lbs/yr
	0.093774624	lbs/week		54.44	lbs/week

$L_{T,DVS}$ 54.53434965 lbs/week

Carbon Bed Loading from Tank Farm Operations

1) ORGANIC PORTION OF MATERIAL PROCESSED IS: vinyl acetate

2) TANK FARM THROUGHPUT IS EQUAL TO CALENDAR YEAR 2022 TOTAL LIQUIDS PROCESSED AT THE INCINERATOR, LESS DIRECT FEED WITH AN ADDED 25% TO THE TOTAL AS A SAFETY FACTOR

3) ASSUMING ORGANIC AT 100% IS A LARGE OVERESTIMATE. ACTUAL FOR 2022 WAS 42%

4) COEFFICIENTS WERE CALCULATED WITH THE SAME ASSUMPTIONS FROM TITLE V EMISSIONS INVENTORY AND 2022 WEATHER DATA

$Ls = 365 * K_E [\pi/4 D^2] H_{VO} K_S W_V$

EQ (1-4)

Ke	0.031379688	
D	10	ft
Hvo	5	ft
Ks	0.721983933	
Wv	0.022665387	lbs/ft3
Ls	0.201548213	lbs/year (per tank)
	8.465024947	lbs/year (all 42 tanks)
	0.162788941	lbs/week

Lw = WV Vq Kn Kp Kb

EQ (1-35)

Wv	0.022665387	lbs/ft3
m	62,205,650	lbs/yr
Vq	7,995,585	gal/yr
	1,068,928	ft3/yr
Kn	1	
Kp	1	
Kb	1	
Lw	24,227.68	lbs/yr
	465.92	lbs/week

$L_{T,Tank\ Farms}$	466.08	lbs/week

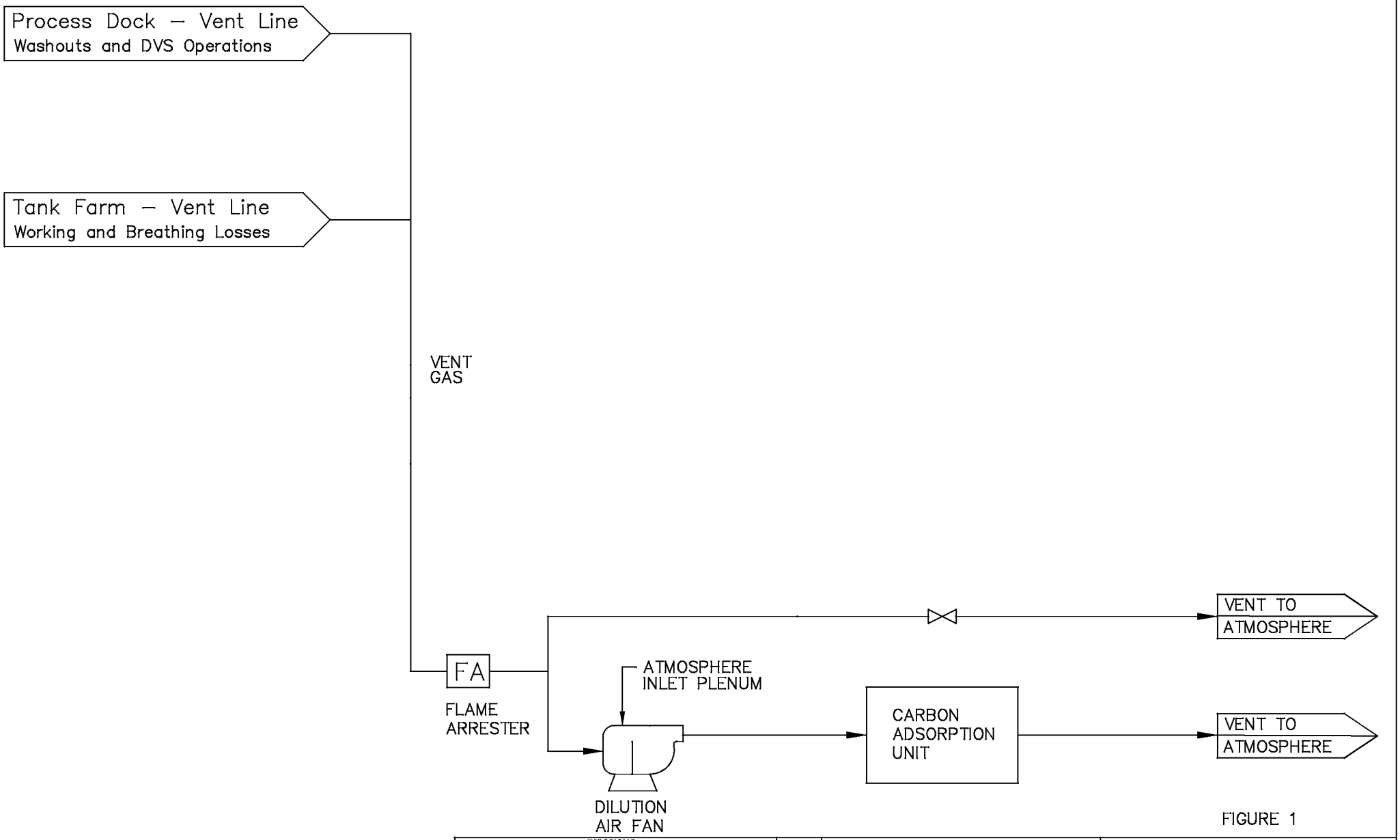


FIGURE 1

REVISIONS					
NO.	DESCRIPTION	BY	DATE	APPVD	DATE
1	GENERAL REVISION	JF	12/97		
2		JF	7/98		
3	PERMIT UPDATE	KCC	7/23		
4					
5					
6					
7					
8					
9					
10					

ROSS®

DRAWN JF DATE 11/97 | SUPERSEDES

CHECKED DATE | SUPERSEDED BY

APPROVED DATE | SCALE NONE

36790 GILES ROAD
GRAFTON, OHIO 44044

PROJECT NO.

PROJECT NAME

DWG. TITLE VOE MODIFICATIONS PER SUBPART CC

CORPORATION

DWG. NO. SK-VOE97 REV. 3

CALGON

CALGON CARBON CORPORATION

FAX

To:	Debbie Bishop Ross Environmental @ 216-748-3217
From:	Andrew F. McClure
Date:	October 24, 1997
Pages:	1 (including cover page)

Subject: Revised Vapor Phase Usage Estimates - Vapor-Pac 10

Using your revised inlet conditions, I have re-estimated the carbon consumption rates for the three cases you are considering. These use rates assume the use of our type BPL 4x10 carbon to treat the air stream.

Case	Usage Rate (lb./1000 ft3)	Usage Rate (lb./hr)	Vapor-Pac 10 Life (hrs)
1780 ppmv Vinyl Acetate, 50°F	1.46	350	36
1020 ppmv Vinyl Acetate, 32°F	0.85	204	61
4756 ppmv Methylene Chloride, 32°F	4.13	990	13

I hope this information meets your needs at this time. If you have any further questions, please contact me at the number below. Thank you for your continued use of Calgon Carbon's products and services.

Andrew McClure

Andrew McClure
Applications Engineer
Phone: 412-787-4781
Fax: 412-787-6324

$0.01645 \frac{lb}{CUFT} \times 4000\ CUFT \times 36 hrs = 2369$ lbs organic 6/22/98 RAB

$\frac{2369 \text{ lb organic}}{13000 \text{ lbs carbon}} \times 100 \approx \frac{18 \text{ lb organic}}{100 \text{ lb carbon}}$

CALGON CARBON CORPORATION
P.O. Box 717, Pittsburgh, PA 15230

November 5, 1997

Mr. Joe Ferritto
Ross Environmental
36790 Giles Road
Grafton, OH 44044

RE: Vapor-Pac 10 Information

Dear Joe:

In response to your fax, our answers to your questions are as follows:

1. The operating manual for our Vapor-Pac 10 is attached. This manual contains detailed information on the unit and the type and quantity of carbon provided, as you requested.

2. With regard to performance, the removal efficiency of carbon will change over time. Initially, you should expect to see removal to below detection limits (100% removal, for all practical purposes). Then, as the carbon approaches saturation, a breakthrough of the contaminant will occur and the removal efficiency will drop off. I have attached predicted breakthrough curves for the two cases you asked for (1780 ppmv vinyl acetate at 50°F and 1020 ppmv vinyl acetate at 32°F), which show the rapid breakthrough at the saturation point. As we previously estimated, the bed would last for 36 hours of continuous operation at 1780 ppmv, and 61 hours at 1020 ppmv.

3. With regard to our Big Sandy reactivation facility in Catlettsburg, KY, our Facilities Engineering group has issued the following statement:

Calgon Carbon Corporation's Big Sandy and Neville Island reactivation and storage facilities are subject to the requirements of "40 CFR 61, Subpart FF - National Emission Standard for Benzene Waste Operations" and 40 CFR 265 "Subpart CC - Air Emissions Standards for Tanks, Surface Impoundments, and Containers". The requirements of "40 CFR 61, Subpart J - National Emission Standard for Equipment Leaks of Benzene" are not applicable to either facility based upon the nature of operations.

In conformance with Subpart FF and Subpart CC standards, annual leak detection testing for components is scheduled to be completed for both Calgon facilities prior to November 14, 1997.

CC: STEVE KOVACH
↳ CALGON: SUBPART CC STATEMENT

4. Finally, all of the waste codes on your list are acceptable at our Big Sandy facility except for the following codes: D002, D003, K141, K142, K143, K144, K145, K147, K148, K149, K150, and K151. Our Big Sandy facility will be the only potential reactivation site for your carbon, since it is the only facility equipped to handle the reactivation of large mesh vapor phase carbons. The above waste codes are simply not on our operating permit at Big Sandy.

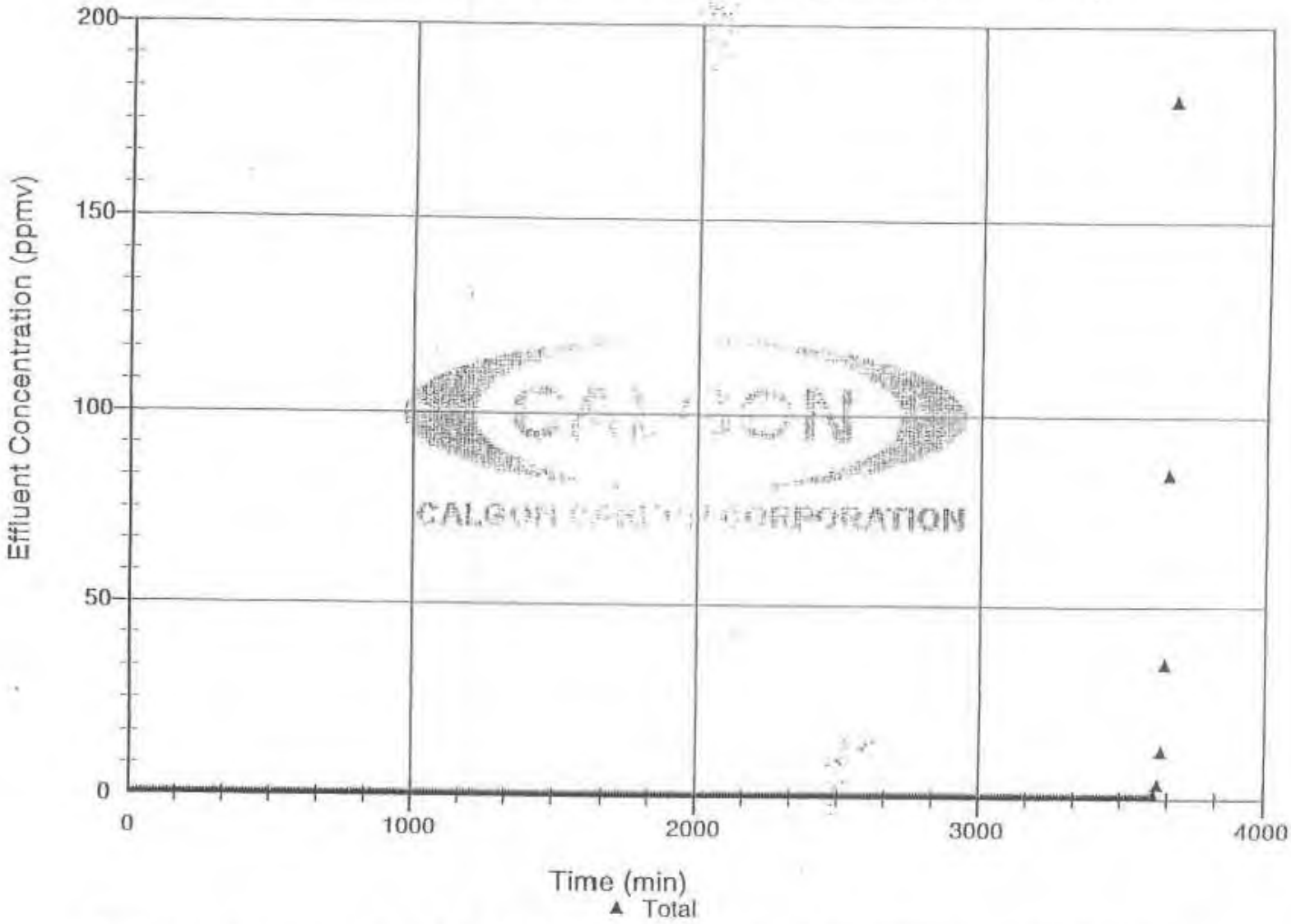
I hope this information meets your needs at this time. Please contact me if there are any additional questions. Thank you for your continued use of Calgon Carbon's products and services.

Sincerely,

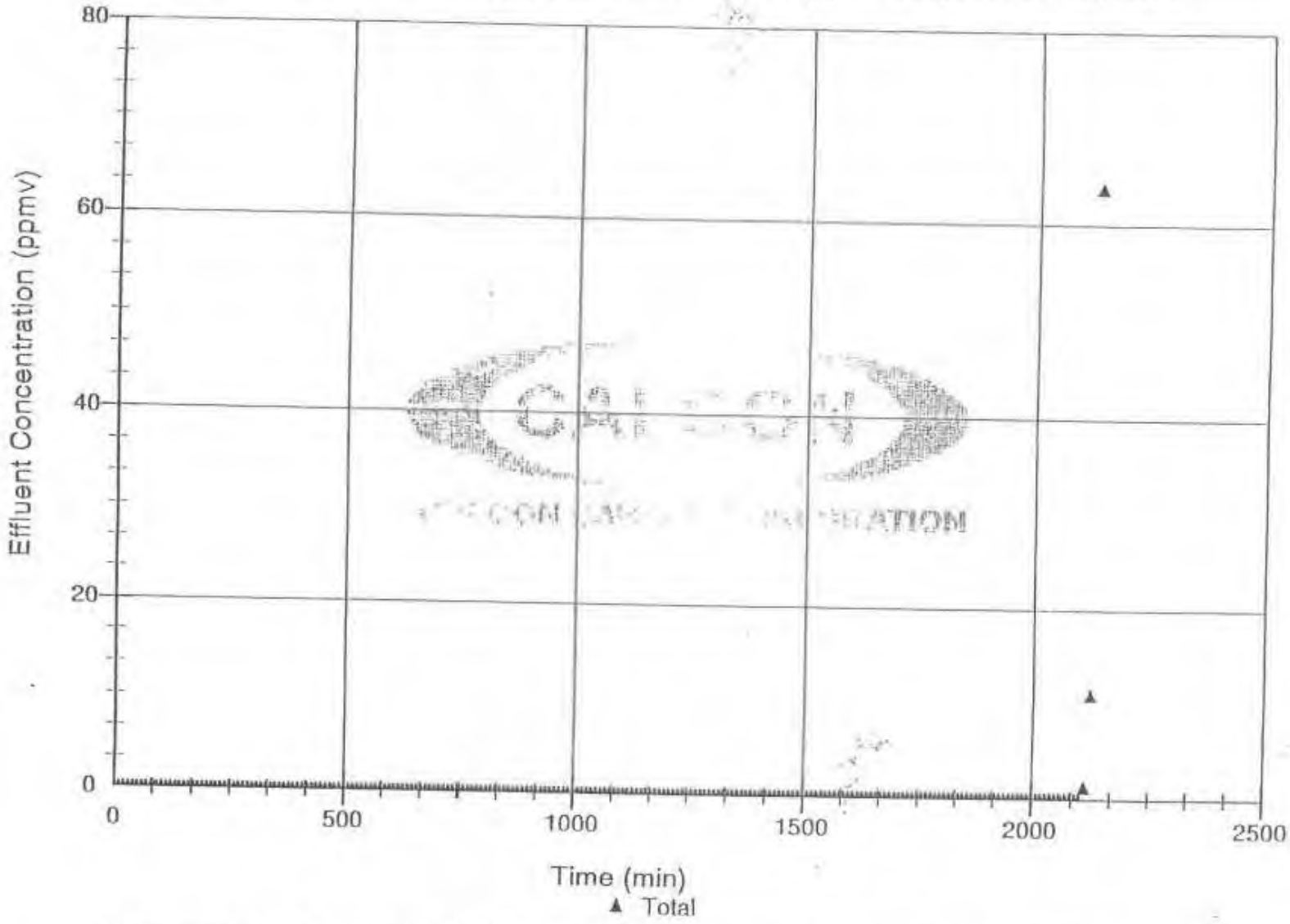
Andrew McClure

Andrew F. McClure
Applications Engineer

Vapor-Pac 10 Breakthrough Curve: 1020 ppm Vinyl Acetate, 32°F



Vapor-Pac 10 Breakthrough Curve: 1780 ppm Vinyl Acetate, 50°F



This information has been generated using Calgon Carbon's proprietary predictive model. The model provides estimates based on the input conditions specified by the user. There is no expressed or implied warranty regarding the suitability or applicability of results.

OPERATING MANUAL

VAPOR-PAC 10

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PROPERTY OF CALGON CARBON CORPORATION

The service agreement between the Subscriber and Calgon Carbon Corporation is binding and is not superseded by any part of this Operating Manual without mutual agreement.

This manual is to be returned to Calgon Carbon Corporation upon termination of the contract between Calgon Carbon Corporation and the Subscriber.

OPERATING MANUAL
VAPOR-PAC 10

TABLE OF CONTENTS

1.0 INTRODUCTION

This manual covers a general description and operating procedures for a Vapor-Pac 10 granular carbon adsorption system. This system is designed to treat vapor streams containing organic compounds amenable to adsorption using Calgon Carbon Corporation's granular activated carbon products. If the guidelines in this manual are read and followed carefully, the system can be operated efficiently and safely with minimal operating expense.

The recommended operating practices set forth in this manual are patterned to suit normal operating conditions. Different conditions may require modifications of these operating practices. Since varying operating conditions or problems may arise over long term operation, the skill and judgement of the operating personnel should be exercised when needed.

This manual should be available to operating personnel and engineers so that the operating instructions are followed. Record all operating data and maintenance work (overhauls, repairs, etc.) in an operator's logbook. Only trained personnel should operate the system. If further information beyond what is contained in this manual is required, please contact the nearest Calgon Carbon Corporation regional sales office for assistance.

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1.1 VAPOR-PAC 10 SPECIFICATIONS & OPERATING CONDITIONS

1. Carbon

Carbon Quantity in Adsorber: 12,500 lbs. (nominal) - 14,000 lbs.

Carbon Type: VPR
Mesh Size: 4 x 10

2. Adsorber Specifications

Material of Construction:	Carbon Steel
Internal Coating:	Coal Tar Epoxy
External Coating:	Polyurethane
Internal Screen Material of Construction:	Polypropylene
Adsorber Dimensions:	22'-4"L x 8'-0"W x 8'-4"H
Design Temperature:	150°F Max. (dry air)
Static Pressure Rating:	0.5 psig

Adsorber Capacities & Weights

Bed Volume: 425 ft³

Bed Depth: 3.0 ft

Air Flow Rate:
1,000 - 10,000 cfm

System Pressure Drop
(Short Term Operation):
0.5" W.C. at 1,000 cfm
5.5" W.C. at 10,000 cfm
(Note: BPL 4x10 pressure drop data used to approximate VPR 4x10)

Shipping Weight:
14,500 lbs. (Empty)
28,500 lbs. (Filled w/carbon)
33,500 lbs. (Spent)
35,500 lbs. (Spent & Washed)

Adsorber Mode of Operation: Single Bed Flow

1.1 VAPOR-PAC 10 SPECIFICATIONS & OPERATING CONDITIONS

3. Adsorber Specifications

Vessel Nozzle	*Number*	*Size*	*Connection*
Manways/Process Connections	8	20" I.D.	Stub
Pressure/Air Sample Taps (sides)	4	¾" FPT	Threaded
Pressure/Air Sample Taps (ends)	2	¾" FPT	Threaded

4. Other Options/Instrumentation:

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1.2 VAPOR-PAC 10 GENERAL DESCRIPTION

Calgon Carbon's Vapor-Pac 10 is to be used for the removal of Volatile Organic Compounds (VOC's) from vapor streams. The unit is designed and fabricated to contain up to 14,000 pounds of vapor phase granular activated carbon for treatment of vapor streams up to 10,000 cfm. The unit is modular and serves as both adsorber and shipping container. No crane or additional equipment is required to off-load or load the adsorber.

The unit containing virgin or reactivated carbon is provided as a service of Calgon Carbon to remove VOC's from air/gas streams such as those from industrial processes, air-stripper off gases, and soil remediation processes. Thus, there is no need for large capital expenditure for equipment procurement, nor is there any on-going maintenance expenditure since the equipment is owned by Calgon Carbon Corporation.

The frequency of exchange of the unit will depend on the type and amount of VOC's removed, and the effluent from the unit must be monitored for breakthrough. A unit exchange should be scheduled before breakthrough occurs. When an exchange is required, simply contact Calgon Carbon to arrange for the exchange. Calgon Carbon will ship a unit from our Pittsburgh, PA facility. When the fresh unit is delivered, the same truck will pick up the spent unit and return it to our Pittsburgh, PA reactivation facility, provided the spent carbon meets our acceptance criteria. The returned unit will then be unloaded, inspected, repaired if necessary, filled with up to 14,000 pounds of activated carbon, and retained at our site, ready for the next exchange.

As another option for carbon changeout, Calgon Carbon can provide the service of unloading spent carbon from the Vapor-Pac 10 and loading fresh carbon into the unit on-site, without removing the adsorber vessel from the site. Contact your Calgon Carbon Technical Sales Representative for more information on Calgon Carbon's Site Services.

There are three modes of operation for the Vapor-Pac 10: Single Bed Flow, Split Bed Flow, and Series Flow. All three modes are described below, and arrangement drawings for all three modes are in the Appendix of this manual. For all three modes, contaminated air flows into the Vapor-Pac 10 where it passes through the mesh supporting the activated carbon. The air next contacts the granular activated carbon bed where the contaminants are adsorbed until the activated carbon is saturated or treatment objectives are reached, at which point the unit should be replaced. Upon exit from the carbon bed, the purified air passes through the outlet plenum and exits the adsorber through the outlet connections.

Single Bed Flow: The carbon bed chamber is between an inlet and an outlet air plenum; both plenums run the entire 22 foot length of the vessel without interruption. One bed of activated carbon treats the entire air flow. A total of four inlet connections are located on the vessel, two per side. Depending upon the air flow being treated, any combination (one to four) of the inlets may be used. Discharge of the treated air is through four outlet manways located at the top of the vessel.

Split Bed Flow: In this flow arrangement, the vessel is split into two carbon beds with separate inlet connections, outlet connections, and plenums. The vessel is split into two beds by adding baffle plates to an existing support wall mid-way through both plenums. Inlet connections are made on the sides of the vessel, and treated air flows out through the outlet manways on the top of the vessel.

Series Flow: In this flow arrangement, the carbon chamber is divided in half with the inlet flow being directed through each half of the bed. One internal baffle plate is attached mid-way through the inlet plenum. This baffle is located at the carbon support wall which divides the carbon bed chamber. Inlet connections are made at one side of the vessel, while outlet connections are made at the other side of the vessel. The top manways on the vessel are NOT used in this arrangement.

For some vapor phase applications, such as treating the off-gas from an air stripper system, the relative humidity of the vapor stream approaches 100%. High moisture content of the vapors can reduce carbon efficiency, and therefore, the relative humidity of the stream should be lowered to 40-50% in these cases. An in-line duct heater which heats the air 20-25°F above ambient levels will usually reduce the relative humidity to the optimum level.

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2.0 INSTALLATION INSTRUCTIONS

2.1 INITIAL SET-UP

Off-load the adsorber onto level ground or a concrete pad. Calgon Carbon's delivery truck is the only equipment needed for this step. For off-loading the vessel, the maximum overhead clearance needed is 20'; the maximum overall length needed is 90' (see Figure 1 in the Appendix).

2.2 CARBON BED INSPECTION

Open the carbon doors (square doors) on top of the adsorber and inspect the carbon bed for settling that may have occurred during shipment. IMPORTANT: Some activated carbon may have to be added to "top-off" the bed so that short circuiting of the inlet stream does not occur. Extra activated carbon is shipped in bags and stored in a compartment on the unit for "top-off" purposes if it is required.

2.3 DUCT CONNECTIONS

Install 20" ID flexible inlet and outlet ductwork to the inlet and outlet manholes of the Vapor-Pac 10. Make sure the proper inlet and outlet points are used to correspond with the correct mode of operation of the unit (refer to Section 1 for descriptions of the three modes of operation). See the General Arrangement drawings in the appendix of this manual for further ductwork connection details.

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3.0 OPERATING INSTRUCTIONS

3.1 STARTUP

Once the Vapor-Pac 10 is in place with ductwork connected, startup is accomplished simply by starting the fan which supplies the contaminated air. The pressure drop across the unit should be checked to compare with design expectations.

If carbon acceptance has not yet been approved by Calgon Carbon, it will be necessary to obtain a sample of the spent carbon. The sample can be obtained using the carbon acceptance canister located on either end of the Vapor-Pac 10 unit. Simply open the 3/4" PVC valve upstream of the canister which is filled with approximately one quart of granular activated carbon. Monitor the effluent from the canister to determine when the carbon in the canister is spent. When it is spent, send the sample back to our laboratories in Pittsburgh, PA for testing.

3.2 OPERATION

The pressure drop across the carbon bed should be checked periodically. A sudden increase in pressure drop may indicate the entrapment of some solid materials in the carbon bed. Severe solids build-up may require carbon replacement.

3.3 MONITORING

Air monitoring on the Vapor-Pac 10 can be achieved by using any of the four sampling taps located on the sides of the unit. Two sampling ports are located on the inlet plenum and two are located on the outlet plenum. These ports are also convenient points at which pressure drop measurements can be taken. Close monitoring should be a routine practice so that lead time is available for unit replacement.

3.4 SHUTDOWN

Shutdown of the Vapor-Pac 10 is accomplished by turning off the fan and closing any dampers in the ductwork around the adsorber. When the adsorber is shut down, open a drain outlet to drain off any liquid that has built up in the bottom of the adsorber.

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3.5 TROUBLESHOOTING GUIDE

PROBLEM		*PROBABLE CAUSE*		*REMEDY*
High pressure drop across adsorber.	1.	High solids loading on carbon.	1.	Exchange unit and install an external influent filter.
	2.	Improper damper setting.	2.	Open damper until design pressure drop is achieved.
Sudden decrease in pressure drop.	1.	Flow velocity is too high - carbon bed has become fluidized.	1.	Close damper until design pressure drop is achieved.
	2.	Carbon bed is being "short-circuited."	2.	Add additional carbon to top off bed as required.
Premature breakthrough of organics in the effluent.	1.	Influent concentration change.	1.	Confirm by analyzing effluent sample(s) before changing carbon.
	2.	High relative humidity in feed stream.	2.	Measure moisture content of influent. Install duct heater upstream of adsorber.
	3.	Flow velocity is too high - carbon bed has become fluidized.	3.	Close damper until design pressure drop is achieved.
	4.	Carbon bed is being "short-circuited."	4.	Add additional carbon to top off bed as required.
Sudden high contaminant concentration in effluent.	1.	Mass transfer zone has extended through bed.	1.	Exchange unit.

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4.0 SAFETY

4.1 OXYGEN DEMAND CREATED BY CARBON

Studies have shown that low oxygen content exists in vessels containing wet drained granular activated carbon. Laboratory experiments conducted since that time have also revealed that commercial activated carbons in a wet or moist condition will lower the oxygen content of an isolated space.

Preliminary indications of this research are:

1. The phenomenon occurs with wet activated carbon of all carbon types.

2. The rate of oxygen uptake naturally varies with the degree of exposure of the wet carbon to the air. Thus, it is relatively rapid in a drained bed.

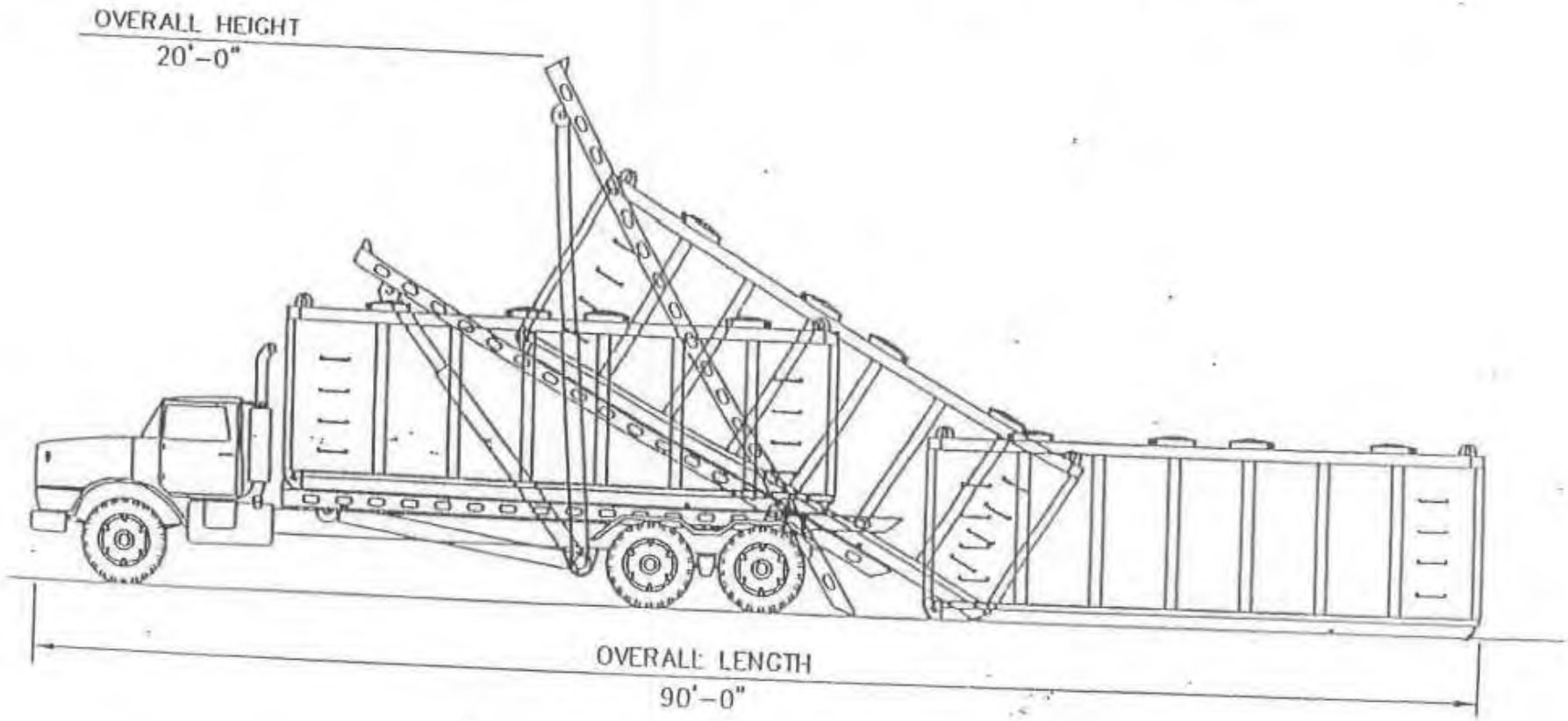
3. There is some indication of a limit to the carbon's capacity for oxygen, but until more is known, it would be prudent to assume that all carbons (fresh, used, reactivated) will also exhibit this characteristic. Similarly, although these tests were run with water, it should be assumed that the phenomenon will occur in other liquid and vapor systems.

4.2 ADSORBER ENTRY

Based on the properties of wet activated carbon in Section 4.1 above, a confined space entry procedure should be established for any facility using carbon in confined spaces.

All confined spaces, including those containing activated carbon, should be presumed to be hazardous. Appropriate safety measures should always be taken before entering, as well as when workers are in a confined space. OSHA regulations applicable to respiratory protection in oxygen deficient atmospheres should be strictly adhered to.

Figure 1: Off-Loading of Vapor-Pac 10



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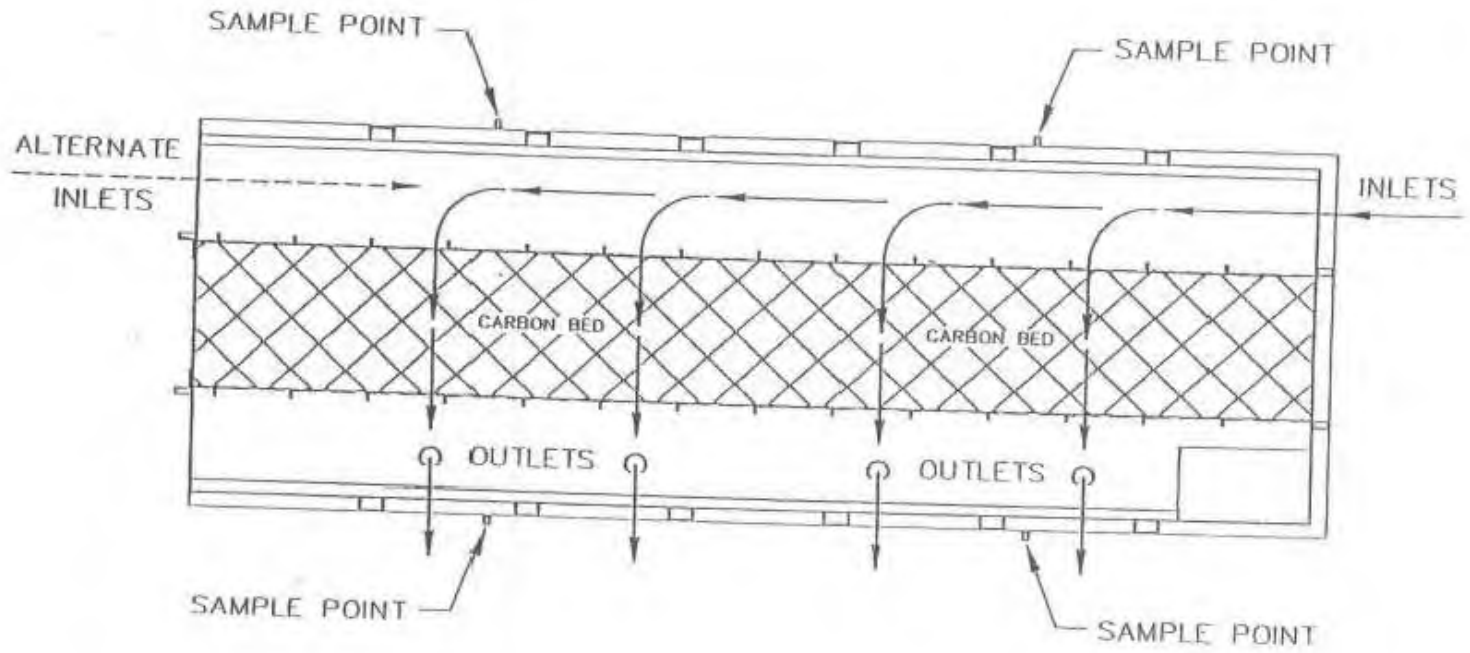

VaporPac 10
Single Bed

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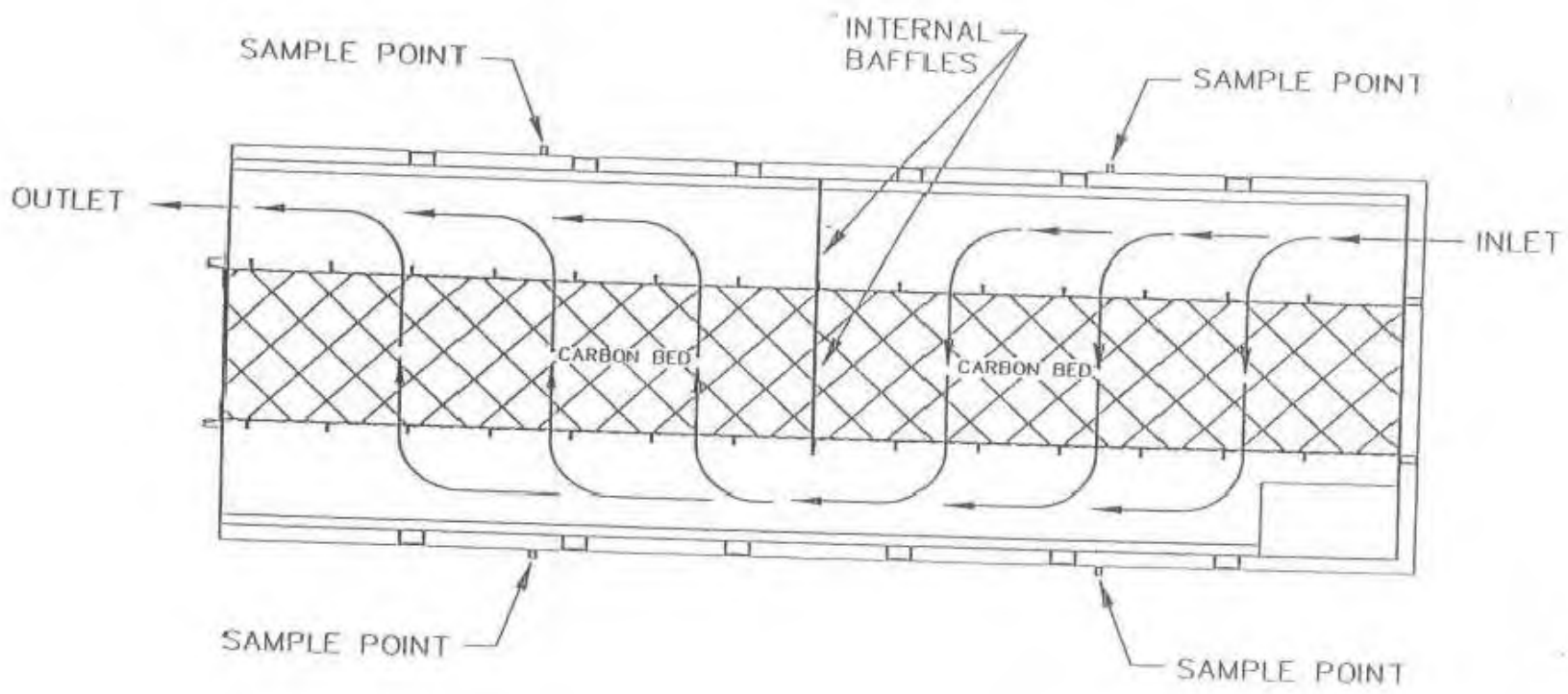

VaporPac

10: SERIES OPERATION

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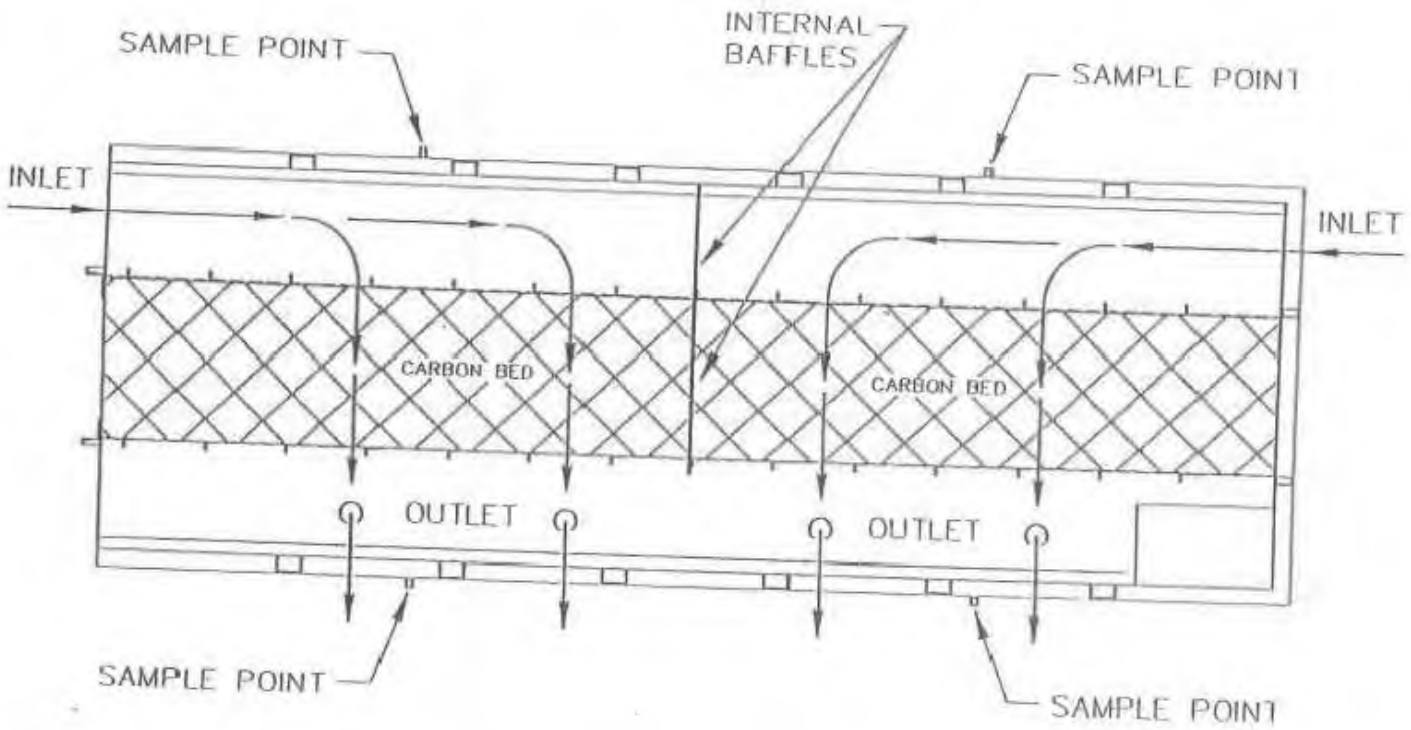

VaporPac

10 : Split Bed Flow

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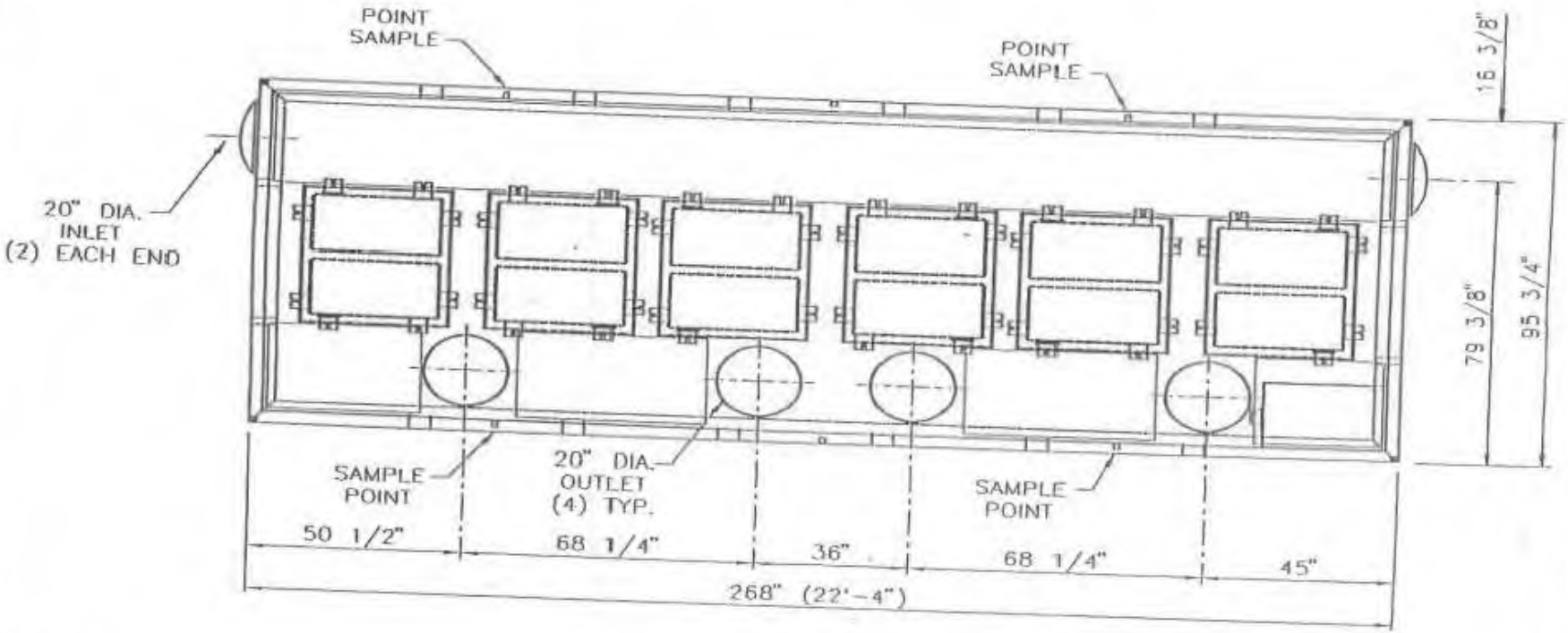

VaporPac 10
Plan View

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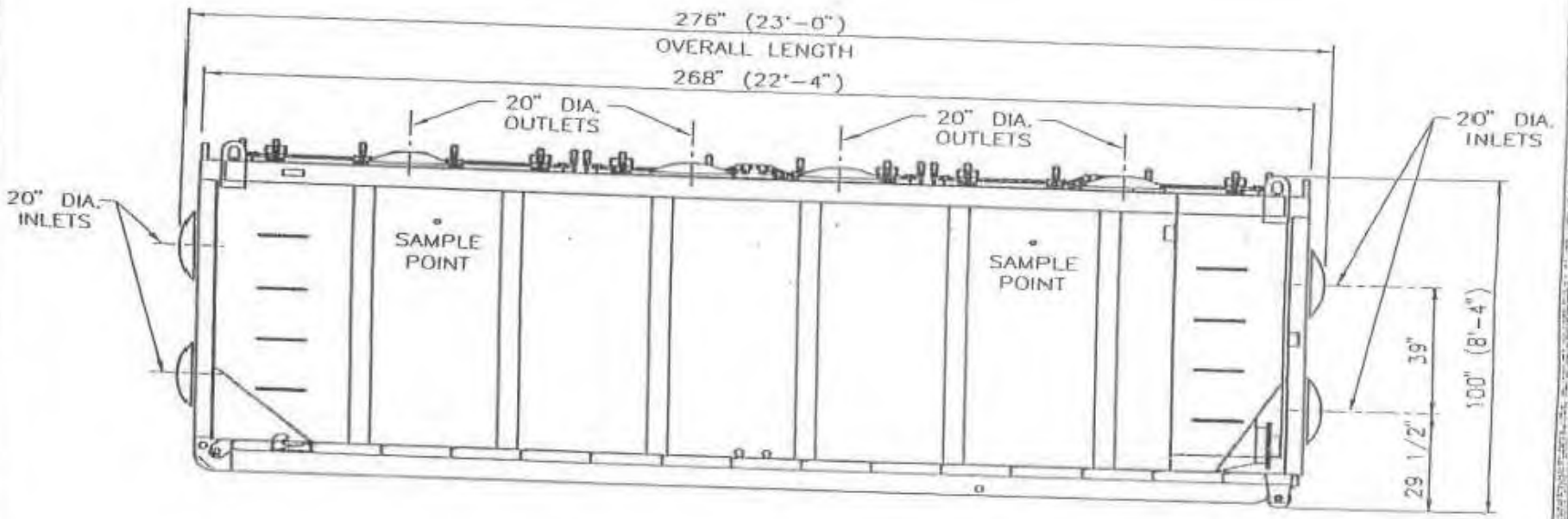

VaporPac 10
Front

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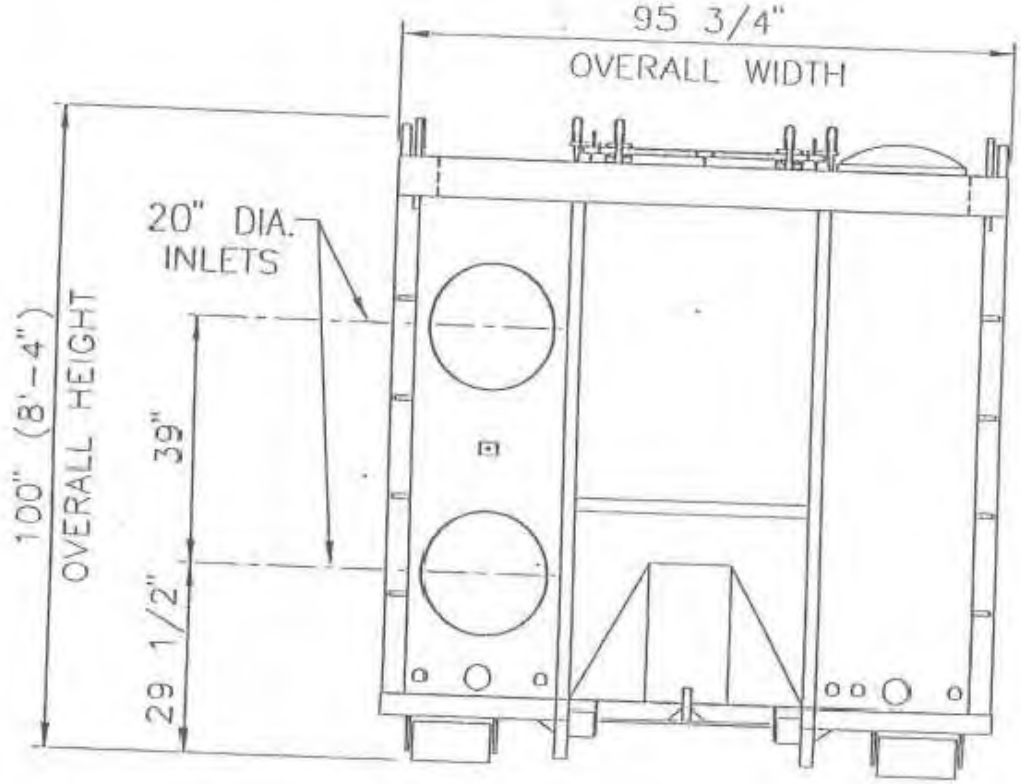

VaporPac 10
Side

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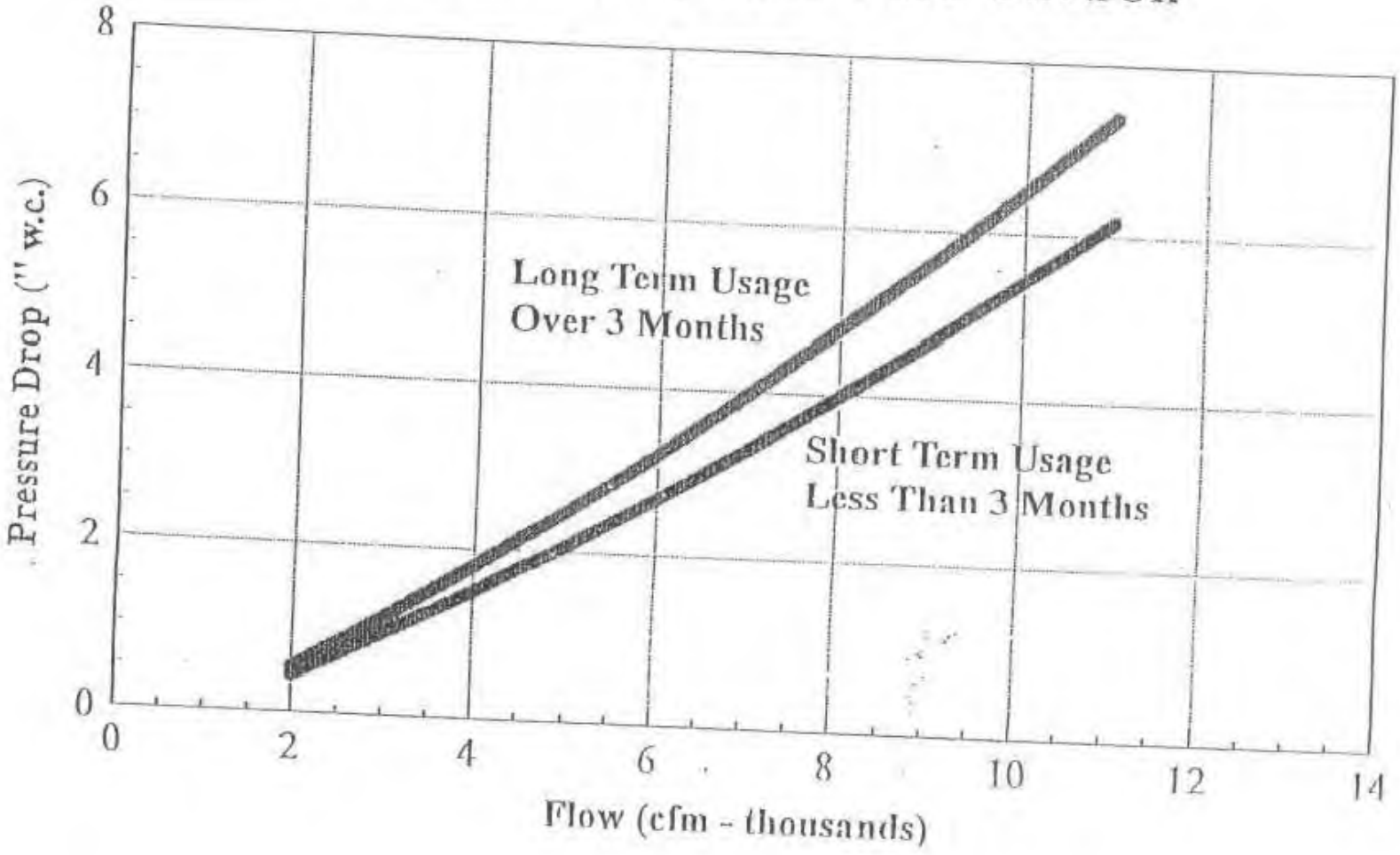
Vapor-Pac 10 Pressure Drop

Single Bed Flow, BPL 4x10 Carbon



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SALES SPECIFICATION SH

VPR 4x

Granular Reactivated Car

Test	Specification		Calgon Carbon Test Method
	Min	Max	
BUTANE ACTIVITY, wt%	21.4	-	TM-36 or ASTM D 5742
ASH, wt%	-	10	TM-5
MOISTURE, wt%, as packed	-	2	TM-1 or ASTM D 2867
US SIEVE SERIES			
- 10	-	5	TM-8

This activated carbon product is not for use in potable water or food grade applications

Calgon Carbon Corporation's activated carbon products are continuously being improved and changes may have taken place since this publication went to press. (DS-810-08/1996)