August Mack
ENVIRONMENTAL
4401 Rockside Road, Suite 300 ▪ Independence, OH 44131
augustmack.com

May 30, 2025

Christopher Biro
Ohio Environmental Protection Agency
Northeast District Office
2110 East Aurora Road
Twinsburg, Ohio 44087

Re: RCRA Facility Investigation Work Plan
Material Sciences Corporation
460 W Main Street
Canfield, Ohio 44406
OHD000810283
August Mack Project Number: JZ0412.372

Dear Mr. Biro,

On behalf of Material Sciences Corporation (MSC), August Mack Environmental, Inc. (August Mack) is submitting this Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan for the MSC Canfield property (Site) in Canfield, Ohio. This submittal was prepared in accordance with the Director's Final Findings and Orders, which were effective on December 31, 2024. This RFI Work Plan is intended to address data gaps identified during the Initial Site Investigation (ISI) and subsequent investigation activities to characterize the nature and extent of potential source areas and impacts.

This RFI Work Plan is proposing to collect soil, sediment, groundwater, and surface water at on and off-Site locations. The data collected from this investigation will be summarized in the RFI Report and incorporated into the overall remedial strategy for the Site. This RFI Work Plan discusses the investigation background, Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs), the proposed scope of work, and conclusions and timing.

INVESTIGATION BACKGROUND

The Site is a metal galvanizing and coil coating facility located in Canfield, Ohio and has been operating since the 1950s under various entities including Canfield Steel and

Pittsburgh Steel. MSC acquired the facility in 2013 and has operated the Site since then. In July 2024, brown liquid was visually observed in the ditch by a pedestrian on the bikeway. This brown liquid discharge was contained and collected; however, during the response efforts, residual impacts from historical facility operations were discovered in various media at multiple locations in and around the Site. MSC was issued a Notice of Violation (NOV) from the Ohio Environmental Protection Agency (EPA) in October 2024. The Site is currently undergoing RCRA Corrective Action (CA) through the RCRA FIRST pathway.

A list of investigation reports submitted to Ohio EPA since December 2024 is provided below, which is followed by a summary of those reports and the identified SWMUs and AOCs at the Site.

- Initial Site Investigation Report, dated December 12, 2024;
- Trichloroethene (TCE) Interim Measures (IM) Plan, dated January 14, 2025;
- Groundwater and Vapor Intrusion Investigation Report, dated February 24, 2025;
- TCE IM Implementation Report, dated March 31, 2025;
- Ditch IM Monitoring Plan, dated April 8, 2025; and
- Wetland and Downstream Sawmill Creek Sampling Work Plan, dated April 18, 2025

Initial Site Investigation Report, December 12, 2024

The ISI activities were performed based on the Ohio EPA approved Sampling and Analysis Plan (SAP) dated September 30, 2024. The ISI was a very broad assessment effort and focused on a large suite of chemicals (including those which are not currently or ever used at MSC). The ISI was initiated in October 2024, which included collecting a total of 248 soil samples and 24 grab groundwater samples across the Site, the adjacent ditch, adjacent wetland area, and within Sawmill Creek. The ISI results summarized in the report include the following:

- Semi-volatile organic compounds (SVOCs), zinc, hexavalent chromium, cadmium, total cyanide and/or arsenic were identified above applicable screening levels (SLs) in certain soil samples.
    - Arsenic was not identified as a Site contaminant of concern (COC), because there is no evidence that MSC has used arsenic at the Site and the concentrations are generally within background levels established in the Ohio EPA *Evaluation of Background Metal Soil Concentrations in Mahoning County* report.

- SVOCs, TCE, hexavalent chromium, lead, and/or zinc exceeded applicable SLs in certain grab groundwater.
- SVOCs, total cyanide, mercury, and/or zinc exceeded applicable SLs in certain surface water samples.

Based on the facility's historical Site usage and metal galvanizing/coating processes, the ISI results, and a Corrective Action Framework meeting with Ohio EPA in February 2025, the following compounds were identified as the primary Site COCs:

- Total cyanide
- Free cyanide
- Zinc
- Hexavalent Chromium
- TCE and breakdown products

Groundwater and Vapor Intrusion Investigation Report, dated February 24, 2025

Groundwater samples were collected from 15 monitoring wells (MW-1 through MW-15; installed as part of the ISI) in November 2024. Samples were collected via low-flow methodology and the following COCs were identified above applicable SLs:

- TCE, naphthalene, free cyanide, and/or metals were identified in groundwater from select monitoring wells.

Based on the elevated TCE concentrations identified on-Site, vapor intrusion (VI) samples were collected within Building 1. Five (5) indoor air (IA) and one (1) outdoor air (OA) samples were collected in December 2024. All IA and OA samples were below laboratory reporting limits, which indicates an incomplete VI exposure pathway.

TCE IM Implementation Report, dated March 31, 2025

Based on the TCE impacts identified in groundwater samples collected on-Site, and out of an abundance of caution, additional sampling was conducted east of the Site on the high school property. A TCE IM Plan was submitted on January 14, 2025, which was subsequently approved by Ohio EPA on February 4, 2025. The investigation was conducted in February 2025 and consisted of the following:

- Installation of eight (8) temporary piezometers to enable the collection of grab groundwater samples.
- Installation of 12 exterior soil gas (SGe) sampling points.
- Installation of two (2) sub-slab (SGss) ports to collect sub-slab air samples within two (2) structures on the high school property.

While TCE, cis-Dichloroethene (cis-DCE), and metals were identified in certain grab groundwater samples, the impacts were limited to two (2) locations on the bike path and were not detected on the high school property. Furthermore, the SGe and SGss results were below applicable SLs, which again indicates an incomplete VI exposure pathway, therefore no additional VI sampling was proposed.

Wetland and Downstream Sawmill Creek Sampling Work Plan, dated April 18, 2025

In an effort to further delineate known impacts and to understand potential exposure pathways, Ohio EPA requested expedited sampling in the adjacent wetland and downstream of Sawmill Creek. The sampling work plan was submitted, subsequently approved by Ohio EPA on April 30, 2025, and includes the following scope:

- Advance up to 19 locations within the wetland to characterize soil/sediment impacts, including
  - Eleven (11) locations on the perimeter of the wetland
  - Five (5) locations within the interior of the wetland
  - Three (3) locations adjacent to previous samples for vertical delineation
- Collect sediment and surface water samples from up to nine (9) downstream sampling locations within Sawmill Creek.
- All samples will be submitted for Total/Free cyanide, zinc, and hexavalent chromium.

August Mack began implementation of the approved work plan on May 15, 2025. As of the date of this submittal, the downstream and wetland samples have been collected and data is pending. The investigation results will be provided to Ohio EPA under a separate cover.

SWMUs and AOCs

In addition to the recent investigation activities, a Preliminary Assessment/Visual Site Inspection (PA/VSI) was previously conducted and was summarized in a March 19, 1993 report. The PA/VSI identified 12 SWMUs and no AOCs at the Site. During the PA/VSI, no releases to groundwater, surface water, air, and/or on-Site soils were documented. The 12 SWMUs are summarized below and depicted on **Figure 1**.

- SWMU-1: Satellite Accumulation Areas
  - 1A: Flammable Solids and Liquids
  - 1B: Waste Chrome Solids

  - 1C: Waste Cell Sludge
  - 1D: Waste Filter Sludge
  - 1E: Nonhazardous Waste Iron Phosphate Oily Sludge
  - 1F: Hazardous Waste Storage Shed[1]
- SWMU-2: Former Waste Chrome Solution Treatment Area
- SWMU-3: Sodium Carbonate Crystal Tray
- SWMU-4: Waste Filter Cake and Miscellaneous Floor Sweepings Accumulation Area
  - 4A: Past Location
  - 4B: Current Location
- SWMU-5: Waste Skimmed Oil Tanks
- SWMU-6: Waste Zinc Phosphate Solution and Rinse Water Tank Area
- SWMU-7: Former Waste Zinc Phosphate Solution and Rinse Water Tank Staging Area
- SWMU-8: Former Flammable Liquid Storage Shed
- SWMU-9: Storage Building
- SWMU-10: Former Container Accumulation Area
- SWMU-11: Main Building Former Nonhazardous Waste Accumulation Area
- SWMU-12: Roll Grindings Dust Collector
  - 12A: Past Location
  - 12B: Current Location

These 12 SWMUs will be assessed through sample data already collected during the ISI and/or sample locations designed to assess the AOCs detailed below.

Based on the recent investigation results and the historical SWMUs, August Mack has identified the following six (6) AOCs, which are depicted on **Figures 2A** and **2B**.

- AOC-1: Adjacent Ditch
- AOC-2: Wetland Area
- AOC-3: Sawmill Creek
- AOC-4: Sitewide Perched Water and Shallow Soil
- AOC-5: Sitewide Groundwater
- AOC-6: Building One

[1] SWMU 1F was not listed in the 1993 PA/VSI and was recently added based on current waste storage operations.

The AOCs were determined while developing a Conceptual Site Model (CSM), which evaluates contaminant transport and the associated risks to human health and the environment. The preliminary CSM includes a shallow perched water unit, AOC-4, (currently thought to be in the shallow backfill beneath the concrete), which is impacted with the brown liquid that contains cyanide, zinc, and hexavalent chromium. The shallow perched water unit is likely related to the historical operations and the former red and yellow stormwater lines; however, additional investigation is warranted to evaluate the contaminant transport mechanism and how it relates to the stormwater at the Site.

The Sitewide groundwater unit, AOC-5, is located deeper in the subsurface (approximately 20-feet below grade (ft bg)) and appears to be separated from the shallow perched water by the widespread fine-grained soils. The analytical results from the groundwater (mainly impacted with TCE) compared to the shallow perched water (mainly impacted with cyanide, zinc, or hexavalent chromium) further justifies this separation. This groundwater unit also warrants additional investigation within the building. The CSM will be updated and provided in the RFI Implementation Report following the proposed activities below.

RFI SCOPE OF WORK

AOC-1: Adjacent Ditch

A Ditch IM Work Plan was provided to the Ohio EPA on November 15, 2024, which was subsequently approved and implemented starting in November 2024. The Ditch IM liner is completed up to transect-1050 (T-1050). Due to the liner within the adjacent ditch, no additional investigation locations within AOC-1 are proposed; however, a watershed map will be prepared to help determine where and how stormwater enters the ditch. The watershed map will be utilized to identify areas that can cause or contribute to potential stormwater contamination. These areas will be investigated and mitigated where necessary to reduce potential impacted stormwater contamination in the adjacent ditch.

Additionally, certain investigation activities below (specifically Sitewide perched water) will provide additional information to evaluate the stormwater entering the adjacent ditch. After Ohio EPA approves releasing stormwater from the Adjacent Ditch, the Ditch IM Monitoring Plan, which was submitted on April 8, 2025 and subsequently approved on April 21, 2025, will be implemented.

AOC-2: Wetland Area

As discussed above, and in accordance with Ohio EPA requests to expedite certain activities, MSC submitted the *Wetland and Downstream Sawmill Creek Sampling Work Plan* on April 18, 2025 to further investigate the wetland area. As of the date of this submittal, the wetland sediment samples have been collected, the data is pending, and the results will be provided to Ohio EPA under separate cover. No additional sampling within the wetland is proposed herein.

AOC-3: Sawmill Creek

As discussed above, and in accordance with Ohio EPA requests to expedite certain activities, MSC submitted the *Wetland and Downstream Sawmill Creek Sampling Work Plan* on April 18, 2025 to further investigate Sawmill Creek. As of the date of this submittal, the downstream samples have been collected, the data is pending, and the results will be provided to Ohio EPA under separate cover.

In addition to those samples collected further downstream, August Mack proposes installing up to three (3) transects within Sawmill Creek from approximately T2-1950 to T2-2575. Samples will be collected in three (3) locations (northern bank, center, southern bank) across each transect at depths of 0-0.5-ft, 0.5-1.0 ft, 1.0-2.0-ft, 2.0-3.0-ft, and 3.0-4.0-ft[2] using a hand auger, and/or a slide hammer (as practicable, additional tools such as a trowel, shovel, etc. may be used to supplement the effort in order to collect the sample). Soil/sediment will be continuously logged and visually inspected (staining and/or odor). Upon completion of the sampling, locations will be backfilled with soil cuttings and/or bentonite. This scope of work will be contingent on gaining access to multiple private properties. Sample locations are provided on **Figure 3**. Details regarding location rationale, number of samples, and laboratory analysis are summarized in **Table 1** of **Attachment A.**

Ecological Assessment for Multiple AOCs (AOC-1, AOC-2, and AOC-3)

Integral Consulting Inc. (Integral) has conducted Level I and II Ecological Risk Assessments at/near the Site. Copies of these assessments are included as **Attachment B**. Additionally, Integral, August Mack, and Ohio EPA personnel conducted a Site visit to determine biological sampling recommendations (locations and methods) to support investigation at the Site. Integral's scope for this work is provided in **Attachment C**. The biological sampling is currently anticipated to take place in mid-July 2025. Scopes of

[2] The laboratory will initially analyze all intervals down to 2-ft; deeper intervals will be held at the laboratory and analyzed as necessary for vertical delineation.

work for additional ecological assessments will be provided following completion of the biological survey.

AOC-4: Sitewide Perched Water and Shallow Soil

Based on field observations, shallow perched water is believed to be located in the coarse-grained fill material located beneath the concrete at the Site. The shallow perched water is impacted with the brown liquid that contains cyanide, zinc, and hexavalent chromium. August Mack proposes to characterize and delineate the shallow perched water located in the coarse-grained fill material to evaluate the perched water concentrations and flow mechanisms.

August Mack proposes to install up to 24 shallow soil boring locations on-Site to further evaluate this perched water zone. The locations were proposed along transects, in proximity to the red and yellow lines, and at known areas where the perched water appears to surface. The soil borings will be advanced up to approximately five (5) ft bg by either hand auger, Geoprobe, shovel, or mini-excavator depending on location and/or access. Soil samples will be collected continuously in two-foot intervals from each location for the purpose of lithologic evaluation and headspace analysis utilizing a photoionization detector (PID).

The goal of these soil borings is to locate the shallow perched zone at the Site, which was not identified during ISI activities; therefore, these boreholes will be left open for up to 24-hours to allow for water to accumulate within the hole. If the perched water is present, one representative grab water sample will be collected using a bailer, peristaltic pump, or scoop sampler. When the perched water is present, pH concentrations will be field measured at each sampled location and the water samples will be analyzed on-Site for free cyanide with the Hach DR900.

Depending on the field results, additional shallow soil borings may be advanced to further delineate the impacted perched zone and evaluate the stormwater entering the adjacent ditch. Further, depending on field results, shallow soil samples will be collected to better understand shallow soil impacts. Historic sample locations are included on **Figure 4A** and the proposed shallow soil boring locations are depicted on **Figure 4B.** Details regarding location rationale, number of samples, and laboratory analysis are summarized in **Table 2** of **Attachment A.**

AOC-5: Sitewide Groundwater

During previous investigations, groundwater samples were collected both on- and off-Site from a combination of temporary sampling points and permanent monitoring wells, which identified TCE impacts. August Mack is proposing five (5) additional monitoring wells (MW-16 through MW-20) to define the extent of TCE impacts in groundwater. In preparation for monitoring wells, August Mack will install soil borings prior to well advancement. Soil samples will be collected continuously in two-foot intervals from the boring for the purpose of lithologic evaluation, headspace analysis utilizing a PID, and soil analytical samples. August Mack will utilize a drill rig equipped with 8.25-inch hollow stem augers to convert the soil boring locations into five monitoring wells (four monitoring wells will be installed within the footprint of Building One [AOC-6] and one monitoring well will be installed on the high school property). Proposed monitoring well locations are depicted on **Figure 4C** and details regarding location rationale, number of samples, and laboratory analysis are summarized in **Tables 3** and **4** of **Attachment A**.

Following well installation and development, the five (5) new monitoring wells will be allowed to equilibrate for at least two (2) weeks prior to sampling. Water level measurements within 0.01-feet will be collected from the monitoring wells prior to groundwater sampling. Following water level gauging, the entire monitoring well network will be sampled using low-flow sampling techniques in general accordance with U.S. EPA low-flow sampling procedures (U.S. EPA, 1996).

AOC-6: Building One

During the ISI, several borings were installed surrounding the building, but none were installed within the building due to access issues and the speed of the investigation. Additional investigation is needed to assess SWMUs, further delineate the TCE impacts, and determine the potential for perched water beneath Building One footprint. Soil boring and monitoring well locations are depicted on **Figure 4C** and details regarding location rationale, number of samples, and laboratory analysis are summarized in **Table 3** and **4** of **Attachment A.**

August Mack will utilize a Geoprobe direct-push drill rig to advance the locations to characterize conditions beneath Building One to a maximum depth of 28 ft bg. Soil samples will be collected continuously in two-foot intervals from each boring for the purpose of lithologic evaluation and headspace analysis utilizing a PID. At each location a maximum of two samples will be selected for laboratory analysis.

- 0-2 ft bg (or immediately below the concrete)

- Highest PID

One grab groundwater sample will be collected from each soil boring using a peristaltic pump with dedicated tubing. Field filtering techniques will be utilized where appropriate for sample collection. August Mack will utilize a drill rig equipped with 8.25-inch hollow stem augers to convert four of the soil boring locations into permanent monitoring wells, which is discussed above.

General Overall Procedures/Considerations

The following investigation activities will be implemented during sampling efforts associated with this RFI Work Plan:

- Private and public utility locating will be conducted to identify underground utilities prior to any drilling activities both on and off-Site.
- Non-disposable sampling equipment will be decontaminated between each soil boring and/or monitoring well.
- IDW will be properly containerized for characterization purposes and properly disposed.
- All samples will be transferred to clean, labeled sample containers (provided by the laboratory) and placed on ice in a cooler for preservation in the field.
- Quality Assurance/Quality Control (QA/QC) samples will also be collected during the RFI Work Plan at the minimum frequency described below:
    - One (1) duplicate sample per 10 samples
    - One (1) Matrix Spike/Matrix Spike Duplicate (MS/MSD) sample per 20 samples
    - One trip blank per cooler per day (for VOC samples only)
    - One (1) equipment blank (EB) and one rinse blank (RB) per event (as necessary).

CONCLUSIONS AND PROPOSED TIMELINE

Based on historical operations and the recent environmental investigation results, this RFI Work Plan is necessary to address data gaps and characterize the nature and extent of potential source areas and impacts. August Mack is proposing to collect multiple samples from various environmental media to better understand on- and near the Site and to further develop a CSM.

As MSC is currently working to finalize the Ditch IM to receive Ohio EPA approval to release stormwater from the Adjacent Ditch, this RFI Work Plan will be implemented in three distinct phases based on priority.

- **RFI Phase I** – The Ditch Interim Measure Plan was submitted, subsequently approved, and implemented at the Site. The Ditch IM liner is completed up to transect-1050 (T-1050) but not yet finished. In accordance with the Ohio EPA requirements, the Ditch IM can be finished and stormwater will be released once Free Cyanide on-top of the liner is equal to or less than 0.4 milligrams per liter [mg/L].

  Establishing the ditch watershed map and conducting the perched water investigation to identify areas that may potentially be contributing to stormwater contamination is paramount in order to reduce the stormwater contamination in the adjacent ditch and receive Ohio EPA approval to complete the Ditch IM. Based on this high priority determination, August Mack will conduct the proposed AOC-1 and AOC-4 investigations during the RFI Phase I. Depending on the field results, additional shallow soil borings may be advanced to further delineate the impacted perched zone and evaluate the stormwater entering the adjacent ditch. After Ohio EPA approves releasing stormwater from the Adjacent Ditch and the Ditch IM is finalized, the RFI Phase II will be conducted.

- **RFI Phase II** – Once the Ditch IM is finalized, MSC can focus resources on investigating AOC-3, AOC-5, and AOC-6. August Mack will initiate the soil, sediment, and groundwater samples described above.

- **RFI Phase III** – After the RFI Implementation Report is submitted, which will summarize RFI Phases I and II, any remaining data gaps will be investigated during the RFI Phase III. It is anticipated that MSC, August Mack, and Ohio EPA will continue to work collaboratively to confirm data gaps needs, ensure potential exposure pathways remain incomplete, and determine future investigation and/or interim measures for the Site.

The RFI Phases I and II will be summarized in an RFI Implementation Report, which will include but may not be limited to the following:

- Description of field activities;
- Potential modifications from the RFI Work Plan;

- Rationale for sampling efforts;
- Soil boring logs;
- Monitoring well diagrams;
- Low-flow sampling purge records;
- Tabulated analytical results;
- Figures showing sample locations; and
- Laboratory analytical reports

Should you have any questions or need any additional information, please do not hesitate to contact us,

Sincerely,

Brandon C. Lewis, CP, CHMM
Regional Director, Ohio Offices

Bryant Hoffer, LPG, CHMM
Senior Manager

FIGURES

9

8

1F

O

11

Cyanide Room

4B

10

7

4A

Oil Room

12A

Paint Vault

Maintenance Office

12B

2

Parts Room

3

1D

1C

Former Facility Drainage (Currently Abandoned) Known As Red Line

Basement

Facility Drainage (Currently Abandoned) Known As Yellow Line

6

Galvanizing Line

2

1B

Paint Line

1A

Paint Vault

5

1E

Loading Dock

Front Office

Solid Waste Management Unit Descriptions:

1	Satellite Accumulation Areas
1A	Flammable Solids and Liquids
1B	Waste Chrome Solids
1C	Waste Cell Sludge
1D	Waste Filter Sludge
1E	Nonhazardous Waste Iron Phosphate Oily Sludge
1F	Hazardous Waste Storage
2	Former Waste Chrome Solution Treatment Area
3	Sodium Carbonate Crystal Tray
4	Waste Filter Cake and Miscellaneous Floor Sweepings Accumulation Area
4A	Past Location
4B	Current Location
5	Waste Skimmed Oil Tanks
6	Waste Zinc Phosphate Solution and Rinse Water Tank Area
7	Former Waste Zinc Phosphate Solution and Rinse Water Tank Staging Area
8	Former Flammable Liquid Storage Shed
9	Storage Building
10	Former Container Accumulation Area
11	Main Building Former Nonhazardous Waste Accumulation Area
12	Roll Grindings Dust Collector
12A	Past Location
12B	Current Location

Subject Property

MH-R (Manhole Red)

MH-Y (Manhole Yellow)

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield
Solid Waste Management Unit (SWMU) Locations from 1993 Preliminary Assessment / Visual Site Inspection

460 West Main Street
Canfield, Ohio 44406

N

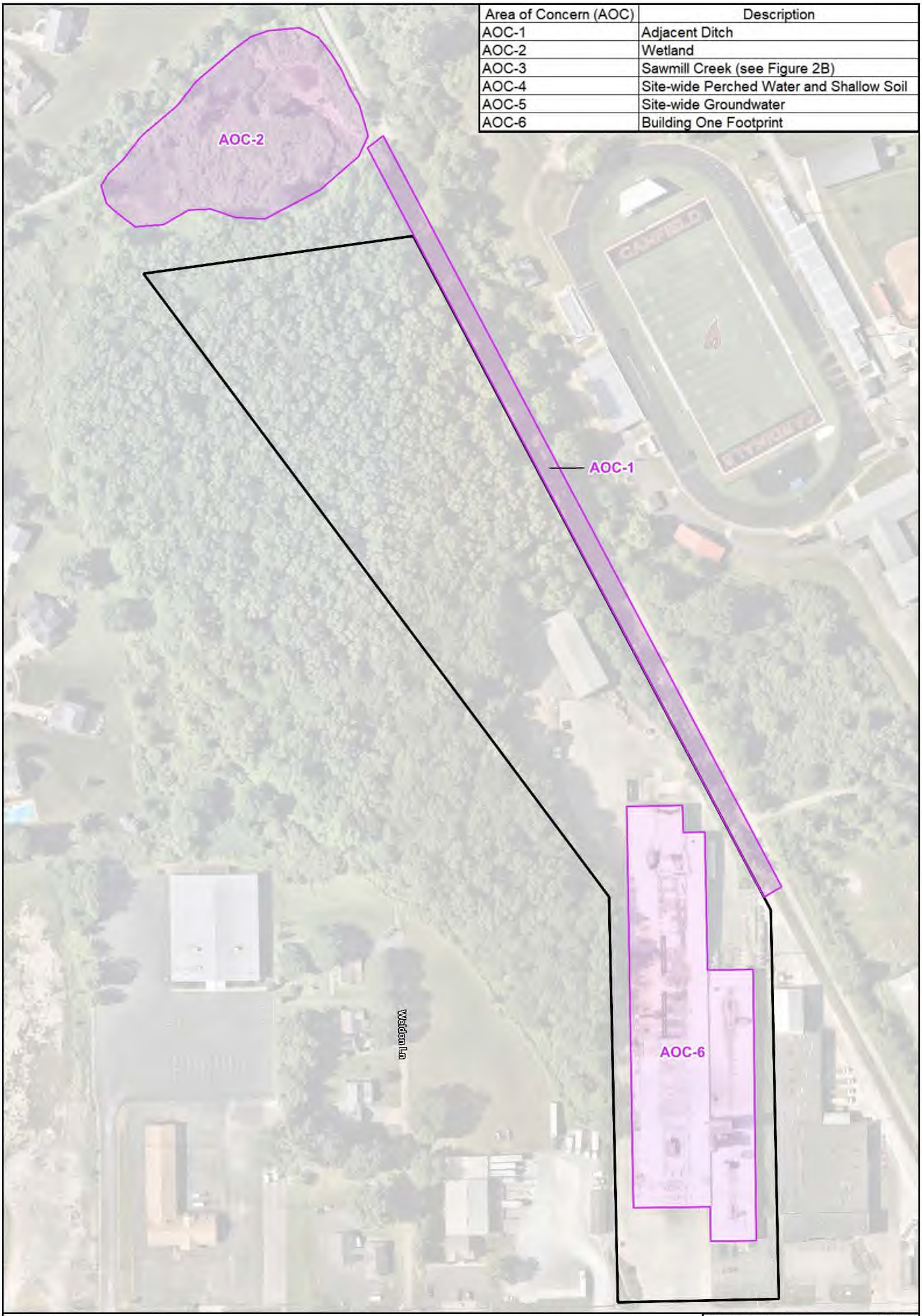
0 25 50 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229

August Mack
ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/23/2025
FIGURE: 1	SCALE: 1:750
	CREATED BY: CC

Area of Concern (AOC)	Description
AOC-1	Adjacent Ditch
AOC-2	Wetland
AOC-3	Sawmill Creek (see Figure 2B)
AOC-4	Site-wide Perched Water and Shallow Soil
AOC-5	Site-wide Groundwater
AOC-6	Building One Footprint



Subject Property
Area of Concern

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Areas of Concern

460 West Main Street
Canfield, Ohio 44406

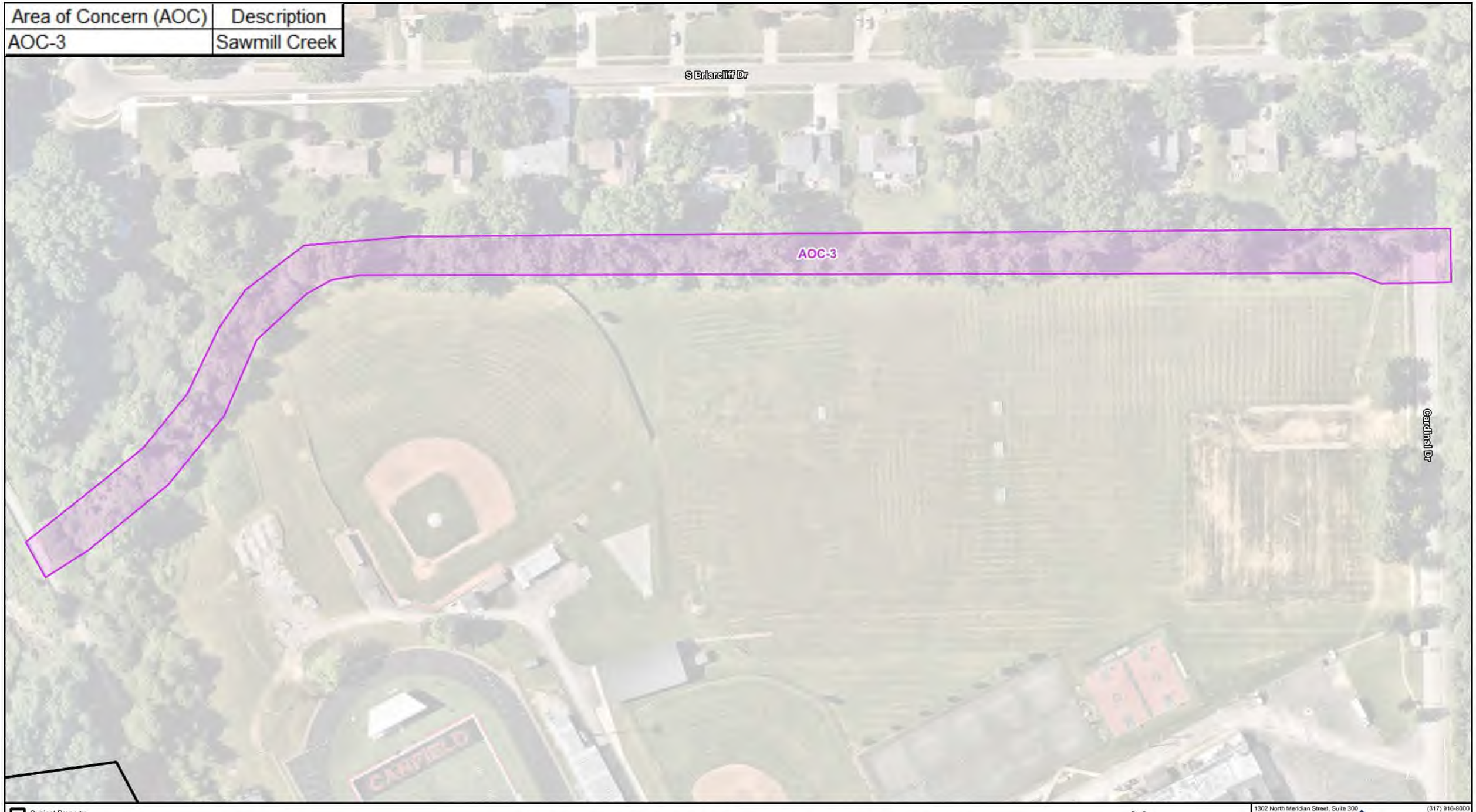
N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/23/2025
	SCALE: 1:1,500
FIGURE: 2A	CREATED BY: CC

Area of Concern (AOC)	Description
AOC-3	Sawmill Creek



Subject Property
Area of Concern

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation - Canfield

Areas of Concern

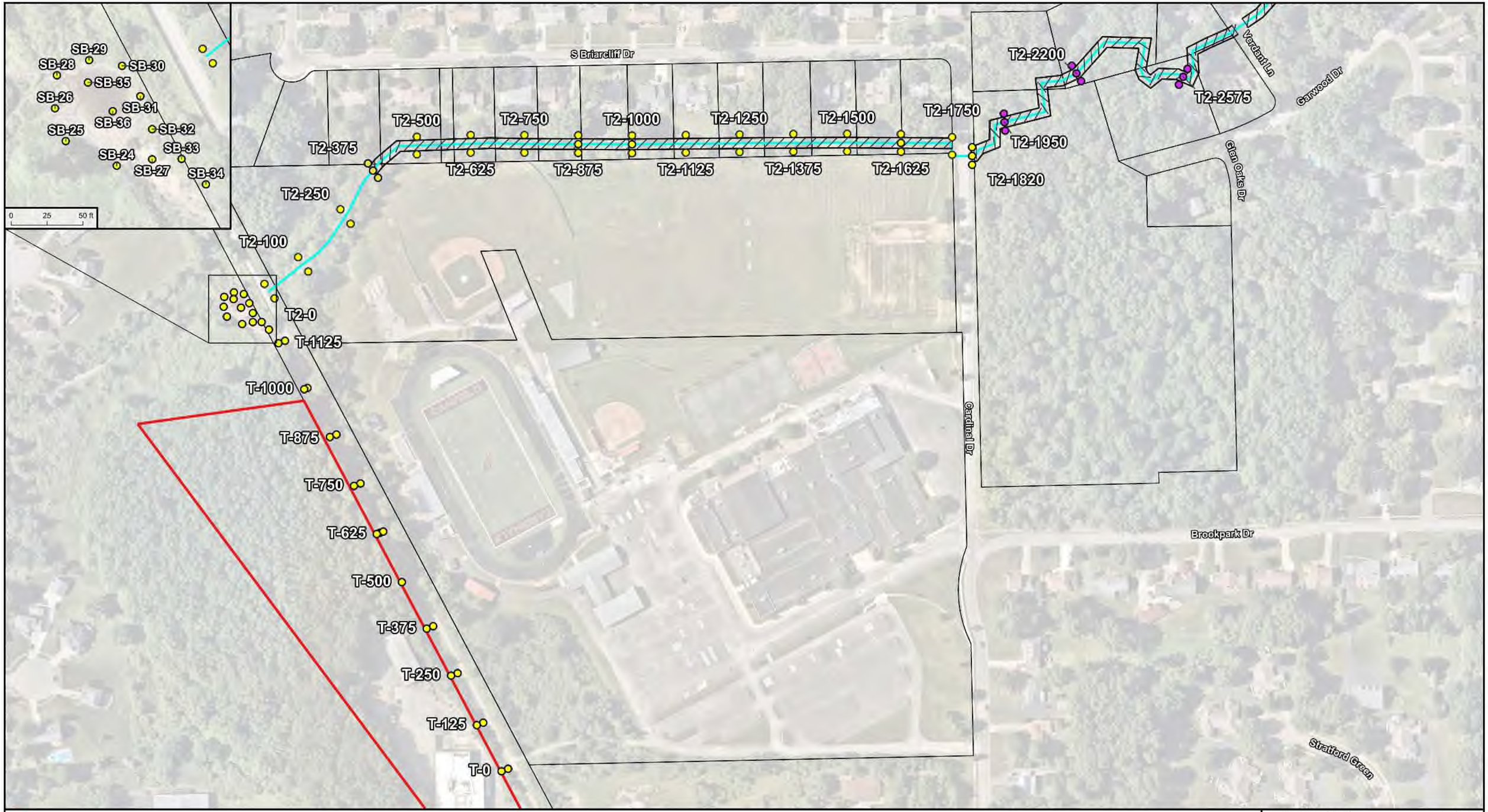
460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

1302 North Meridian Street, Suite 300
Indianapolis, Indiana 46202
(317) 916-8000
August Mack ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/19/2025
FIGURE: 2B	SCALE: 1:1,250
	CREATED BY: CC



Subject Property
Parcel Boundary
No Access
Sawmill Creek
Previous Sample Location
Proposed Sample Location
T-##: Transect ID Number

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation - Canfield

Proposed Sample Location Map - Sawmill Creek

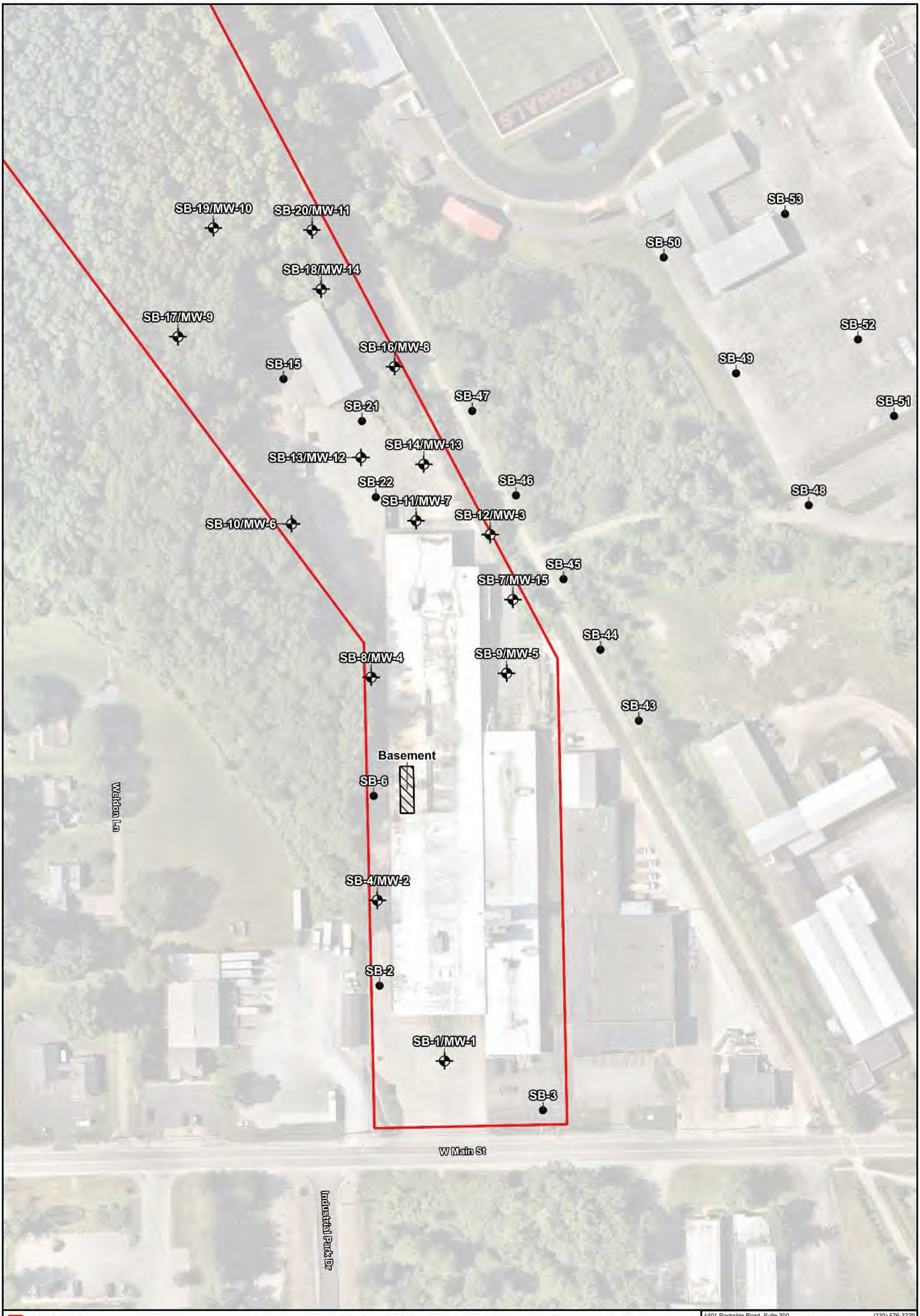
460 West Main Street
Canfield, Ohio 44406

N

0 100 200 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/20/2025
FIGURE: 3	SCALE: 1:2,500
	CREATED BY: CC



Subject Property
Existing Monitoring Well Location
Existing Soil Boring Location

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Historical Investigation Location Map

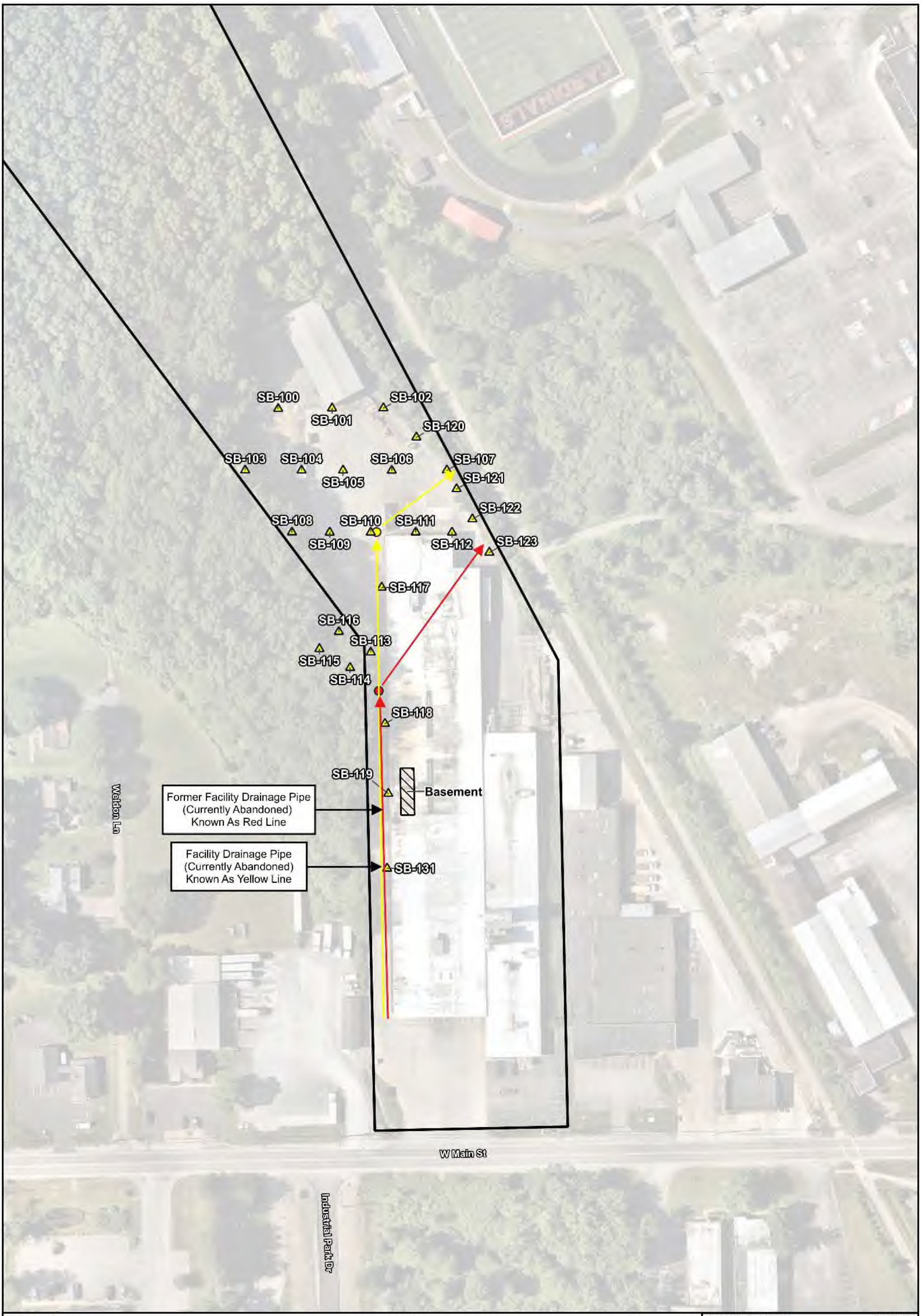
460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/23/2025
FIGURE: 4A	SCALE: 1:1,250
	CREATED BY: CC



Subject Property
Proposed Shallow Soil Boring Location
MH-R (Manhole Red)
MH-Y (Manhole Yellow)

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Proposed Shallow
Soil Boring Location Map

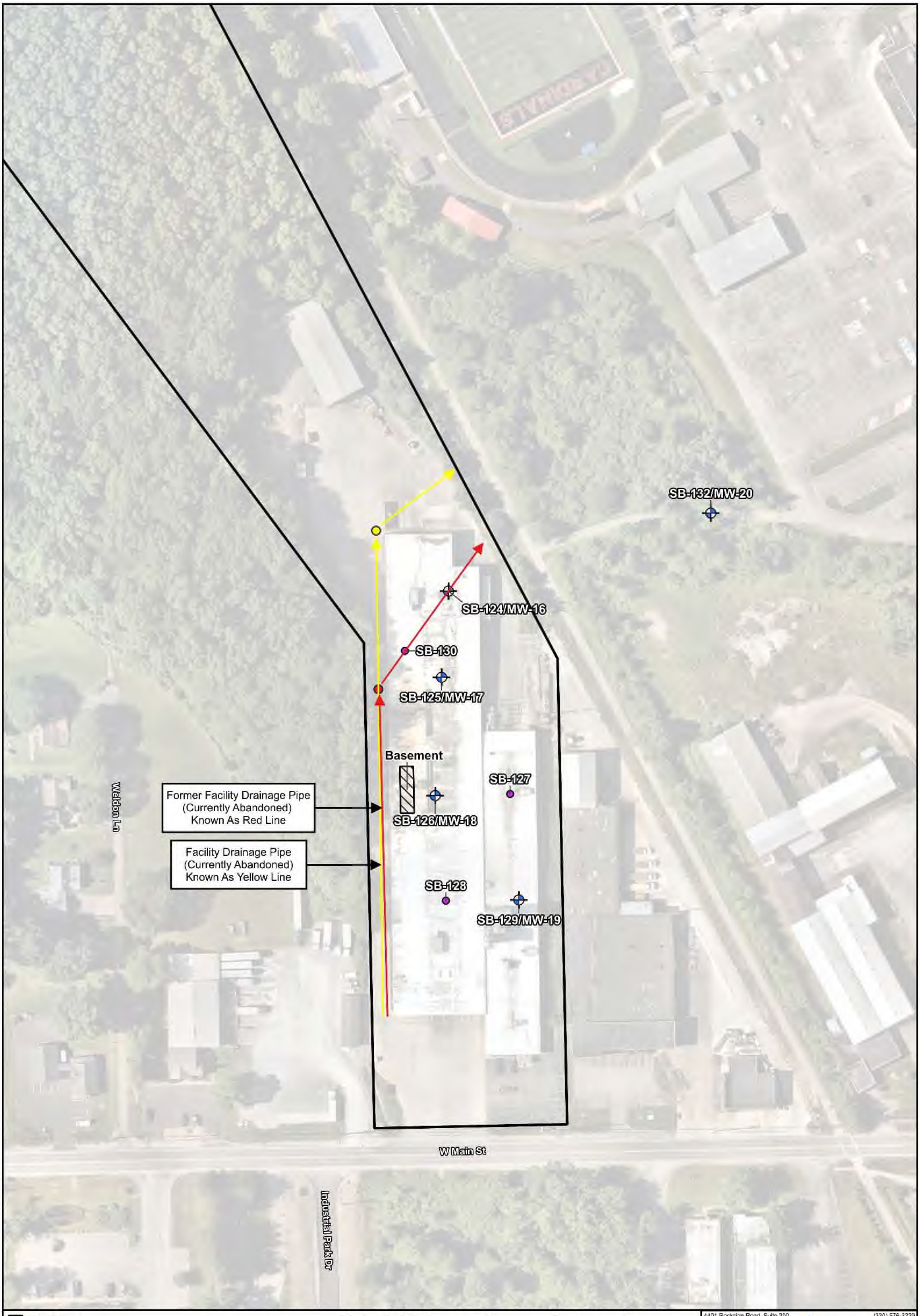
460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack
ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/23/2025
	SCALE: 1:1,250
FIGURE: 4B	CREATED BY: CC



Subject Property
Proposed Soil Boring Location
Proposed Monitoring Well Location
MH-R (Manhole Red)
MH-Y (Manhole Yellow)

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Proposed Soil Boring and Monitoring Well Location Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack Environmental

PROJECT NO.: JZ0412.372	DATE: 05/23/2025
	SCALE: 1:1,250
FIGURE: 4C	CREATED BY: CC

SB-19/MW-10
SB-20/MW-11
SB-18/MW-14
SB-17/MW-9
SB-16/MW-8
SB-15
SB-100
SB-101
SB-102
SB-47
SB-21
SB-120
SB-13/MW-12
SB-14/MW-13
SB-103
SB-104
SB-106
SB-107
SB-105
SB-121
SB-46
SB-11/MW-7
SB-109
SB-22
SB-122
SB-10/MW-6
SB-12/MW-3
SB-108
SB-110
SB-111
SB-112
SB-123
SB-117
SB-45
SB-7/MW-15
SB-124/MW-16
SB-116
SB-113
SB-44
SB-115
SB-9/MW-5
SB-114
SB-130
SB-8/MW-4
SB-125/MW-17
SB-43
SB-118
Basement
SB-119
SB-126/MW-18
SB-6
SB-127
SB-131
SB-4/MW-2
SB-128
SB-129/MW-19
SB-2
SB-1/MW-1
SB-3
SB-53
SB-50
SB-52
SB-49
SB-51
SB-132/MW-20
SB-48
Weldon Ln
W Main St
Industrial Park Dr

Subject Property
Proposed Shallow Soil Boring Location
Proposed Soil Boring Location
Proposed Monitoring Well Location
Existing Monitoring Well Location
Existing Soil Boring Location

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Proposed Sample Location Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JZ0412.372	DATE: 05/23/2025
	SCALE: 1:1,250
FIGURE: 4D	CREATED BY: CC

ATTACHMENT A

Sampling and Analysis Plan Tables

SAMPLING AND ANALYSIS PLAN
SAWMILL CREEK DATA GAPS

Location ID	Location Type	Location Details	Media	Sample Depths (ft bg)	Max # of Samples	Proposed Parameters: Soil:				Rationale
						Free CN	Total CN	CrVI	Zinc	
				Subtotals:	45	45	45	45	45	
T2-1950	Downstream	North Bank	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	Horizontally and vertically delineate downstream impacts. Deeper intervals may be placed on hold pending shallower results.
	Downstream	Stream Center	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
	Downstream	South Bank	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
T2-2200	Downstream	North Bank	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
	Downstream	Stream Center	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
	Downstream	South Bank	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
T2-2575	Downstream	North Bank	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
	Downstream	Stream Center	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	
	Downstream	South Bank	Sediment	0.0-0.5; 0.5-1.0; 1.0-2.0; 2.0-3.0; 3.0-4.0	5	5	5	5	5	

SAMPLING AND ANALYSIS PLAN
AOC-4 PERCHED WATER INVESTIGATION

Location ID	Location Type	Media	Target Boring Depth (ft bg)	Sample Depths (ft bg)	Max # of Water Samples	Proposed Analyzed Parameters: Water		Rationale
						Field Free CN	Field pH	
				Subtotals:	24	24	24	
SB-100	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-101	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-102	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-103	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-104	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-105	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-106	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-107	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-108	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-109	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-110	On-Site	Perched Water	5	0.0-5.0	1	1	1	

Vertically and horizontally delineate impacts and characterize shallow perched water.

SAMPLING AND ANALYSIS PLAN
AOC-4 PERCHED WATER INVESTIGATION

Location ID	Location Type	Media	Target Boring Depth (ft bg)	Sample Depths (ft bg)	Max # of Water Samples	Proposed Analyzed Parameters: Water		Rationale
						Field Free CN	Field pH	
				Subtotals:	24	24	24	
SB-111	On-Site	Perched Water	5	0.0-5.0	1	1	1	Vertically and horizontally delineate impacts and characterize shallow perched water.
SB-112	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-113	On-Site	Perched Water	5	0.0-5.0	1	1	1	Vertically and horizontally delineate impacts and characterize shallow perched water in low-lying area with upwelling west of Building One.
SB-114	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-115	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-116	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-117	On-Site	Perched Water	5	0.0-5.0	1	1	1	Vertically and horizontally delineate impacts and characterize shallow perched water.
SB-118	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-119	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-120	On-Site	Perched Water	5	0.0-5.0	1	1	1	
SB-121	On-Site	Perched Water	5	0.0-5.0	1	1	1	

SAMPLING AND ANALYSIS PLAN
AOC-4 PERCHED WATER INVESTIGATION

Location ID	Location Type	Media	Target Boring Depth (ft bg)	Sample Depths (ft bg)	Max # of Water Samples	Proposed Analyzed Parameters: Water		Rationale
						Field Free CN	Field pH	
				Subtotals:	24	24	24	
SB-122	On-Site	Perched Water	5	0.0-5.0	1	1	1	Vertically and horizontally delineate impacts and characterize shallow perched water.
SB-123	On-Site	Perched Water	5	0.0-5.0	1	1	1	

TABLE 3

SAMPLING AND ANALYSIS PLAN
SITEWIDE GROUNDWATER

Location ID	Location Type	Top of Well Screen (ft amsl)	Bottom of Well Screen (ft amsl)	Max # of Water Samples	Proposed Parameters: Water						Rationale
					CVOCs	Free CN	Total CN	CrVI	Zinc & Lead	Diss. Zinc & Lead	
			Subtotals:	17	17	17	17	17	17	17	
MW-1	Groundwater	1124.2	1114.2	1	1	1	1	1	1	1	Existing monitoring well network used to establish groundwater contamination extents, potentiometric surface, and groundwater flow direction.
MW-2	Groundwater	1122.5	1112.5	1	1	1	1	1	1	1	
MW-3	Groundwater	1117.7	1107.7	1	1	1	1	1	1	1	
MW-4	Groundwater	1119.6	1109.6	1	1	1	1	1	1	1	
MW-5	Groundwater	1121.0	1111.0	1	1	1	1	1	1	1	
MW-6	Groundwater	1119.3	1109.3	1	1	1	1	1	1	1	
MW-7	Groundwater	1117.5	1107.5	1	1	1	1	1	1	1	
MW-8	Groundwater	1119.8	1109.8	1	1	1	1	1	1	1	
MW-9	Groundwater	1119.4	1109.4	1	1	1	1	1	1	1	
MW-10	Groundwater	1117.8	1107.8	1	1	1	1	1	1	1	
MW-11	Groundwater	1113.8	1103.8	1	1	1	1	1	1	1	
MW-12	Groundwater	1118.9	1108.9	1	1	1	1	1	1	1	
MW-13	Groundwater	1118.8	1108.8	1	1	1	1	1	1	1	
MW-14	Groundwater	1116.6	1106.6	1	1	1	1	1	1	1	
MW-15	Groundwater	1119.0	1109.0	1	1	1	1	1	1	1	
MW-16	Groundwater	TBD (GW Interface)	TBD (GW Interface)	1	1	1	1	1	1	1	Monitoring wells proposed to be installed within Building One footprint to characterize the nature and extent of contaminated groundwater.
MW-17	Groundwater	TBD (GW Interface)	TBD (GW Interface)	1	1	1	1	1	1	1	
MW-18	Groundwater	TBD (GW Interface)	TBD (GW Interface)	1	1	1	1	1	1	1	
MW-19	Groundwater	TBD (GW Interface)	TBD (GW Interface)	1	1	1	1	1	1	1	
MW-20	Groundwater	TBD (GW Interface)	TBD (GW Interface)	1	1	1	1	1	1	1	Monitoring well proposed to be installed east of Building One to characterize the nature and extent of contaminated groundwater.

TABLE 4

SAMPLING AND ANALYSIS PLAN
BUILDING ONE INVESTIGATION

Location ID	Location Type	Media	Target Boring Depth (ft bg)	Sample Depths (ft bg)	Max # of Soil Samples	Max # of Water Samples	Proposed Analyzed Parameters: Soil					Proposed Analyzed Parameters: Water							Rationale
							CVOCs	Free CN	Total CN	CrVI	Zinc	CVOCs	Free CN	Total CN	CrVI	Zinc	Diss. Zinc	Field pH	
				Subtotals:	17	8	17	17	17	17	17	8	8	8	8	8	8	8	
SB-124 (MW-16)	Building One Footprint	Surface and Subsurface Soil	28	0.0-2.0; High pH/PID	2	NA	2	2	2	2	2	NA	NA	NA	NA	NA	NA	NA	Vertically and horizontally delineate impacts, characterize shallow perched water and shallow soil, and characterize groundwater contamination within the Building One footprint.
SB-125 (MW-17)	Building One Footprint	Surface and Subsurface Soil	28	0.0-2.0; High pH/PID	2	NA	2	2	2	2	2	NA	NA	NA	NA	NA	NA	NA	
SB-126 (MW-18)	Building One Footprint	Surface and Subsurface Soil	28	0.0-2.0; High pH/PID	2	NA	2	2	2	2	2	NA	NA	NA	NA	NA	NA	NA	
SB-127(-GW)	Building One Footprint	Surface and Subsurface Soil & Grab GW	28	0.0-2.0; High pH/PID	2	1	2	2	2	2	2	1	1	1	1	1	1	1	
SB-128(-GW)	Building One Footprint	Surface and Subsurface Soil & Grab GW	28	0.0-2.0; High pH/PID	2	1	2	2	2	2	2	1	1	1	1	1	1	1	
SB-129 (MW-19)	Building One Footprint	Surface and Subsurface Soil	28	0.0-2.0; High pH/PID	2	NA	2	2	2	2	2	NA	NA	NA	NA	NA	NA	NA	
SB-130(-GW)	Building One Footprint	Surface and Subsurface Soil & Grab GW	28	0.0-2.0; High pH/PID	2	1	2	2	2	2	2	1	1	1	1	1	1	1	Vertically and horizontally delineate impacts, characterize shallow perched water and shallow soil, characterize groundwater contamination, and characterize potential contamination from SWMU-2 area.
SB-131	Building One Footprint	Surface and Subsurface Soil	5	0.0-2.0; High pH/PID	2	NA	2	2	2	2	2	NA	NA	NA	NA	NA	NA	NA	
SB-132 (MW-20)	East of Buiding One	Surface and Subsurface Soil	28	High pH/PID	1	NA	1	1	1	1	1	NA	NA	NA	NA	NA	NA	NA	Evaluate soils from monitoring well installation for waste characterization and disposal.
MW-16	Building One Footprint	Groundwater	28	GW Interface	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	Evaluate groundwater conditions within the building footprint, determine potentiometric surface and groundwater flow directions.
MW-17	Building One Footprint	Groundwater	28	GW Interface	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	
MW-18	Building One Footprint	Groundwater	28	GW Interface	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	
MW-19	Building One Footprint	Groundwater	28	GW Interface	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	
MW-20	East of Building One	Groundwater	28	GW Interface	NA	1	NA	NA	NA	NA	NA	1	1	1	1	1	1	1	Evaluate groundwater conditions east of the building footprint, determine potentiometric surface and groundwater flow directions.

ATTACHMENT B

Level I and Level II Ecological Risk Assessments

Level I Ecological Risk Assessment

Material Sciences Corporation Parcel and Adjacent Wetland, Canfield, Ohio

Prepared for
August Mack Environmental
7830 North Central Drive, Suite B
Lewis Center, OH 43035

Prepared by

Integral Consulting Inc.
8742 E. Washington, # 115
Chagrin Falls, OH 44022

May 2025

CONTENTS

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

August Mack	August Mack Environmental
EPA	U.S. Environmental Protection Agency
Integral	Integral Consulting Inc.
MAD Scientist	MAD Scientist Associates LLC
MSC	Material Sciences Corporation
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method
RCRA	Resource Conservation and Recovery Act
RSL	regional screening level
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

Integral Consulting Inc. (Integral) has prepared this Level I ecological risk assessment on behalf of August Mack Environmental (August Mack) for the Material Sciences Corporation (MSC) parcel and adjacent wetland in Canfield, Ohio (Figures 1 and 2). The MSC parcel is located at 460 West Main St. The adjacent wetland is located north of the facility on parcels owned by the Mill Creek Metroparks. For the purposes of this Level I ecological risk assessment, the term "site" refers to the MSC parcel and the term "assessment area" refers to the MSC parcel and a portion of the adjacent wetland (Figure 3).

MSC operates a metal plating facility that specializes in electro galvanizing, chemical coating, and painting. In July 2024, an incident occurred at the site that prompted additional investigation and interim remediation of chemicals along the Adjacent Ditch.[1]

This Level I ecological risk assessment has been conducted to support the investigation and remediation efforts in the assessment area. A Level I ecological risk assessment is a scoping level assessment that is used to evaluate whether significant ecological resources are present (or could be present) in the assessment area and whether site releases of chemicals have occurred. This report follows the Ohio Environmental Protection Agency (Ohio EPA) guidance and report outline (Ohio EPA 2018).

[1] https://www.mscresponse.com/

2 EXISTING DATA SUMMARY

In accordance with Ohio EPA guidance (Ohio EPA 2018), this assessment was based on existing data, including the August Mack *Initial Site Investigation Report* (August Mack 2024), assessment area photos, aerial imagery, and a site visit, which included a habitat evaluation and a wetland delineation.

2.1 ASSESSMENT AREA LOCATION

The MSC site is located in Mahoning County at 460 West Main Street, Canfield, Ohio (centered at 41.027837, –80.777932) and is bordered to the north and east by the Mill Creek Metroparks bikeway, to the west by Hometown Produce Company and the Mill Creek Metroparks property, and to the south by Route 224 Main Street (Figure 3). The 13.4-acre assessment area includes a 4.9-acre facility/engineered area, approximately 6 acres of terrestrial forested habitat, approximately 0.3 acres of scrub shrub habitat, approximately 0.6 acres of stream, and approximately 1.6 acres of wetland habitat (Figure 4).

2.2 SITE HISTORY

The MSC Canfield facility building was constructed in 1950 for the Life Time Products Corporation, Coated Steel Division (Ohio EPA and MSC 2024). Manufacturing operations included surface coating, machining, spray painting, and metal fabricating (Ohio EPA and MSC 2024). In the 1950s or 1960s, the facility became known as Canfield Steel, which was purchased by Pittsburgh Steel Corporation in 1968 to form the Pittsburgh-Canfield Corporation. The facility was acquired in 2013 by New Star Metals, a predecessor to MSC.[2] The facility is still operational.

2.3 LAND AND WATER USES

The developed portions of the assessment area are approximately 4.9 acres of the southern portion of the site that includes facility buildings, paved parking areas, and gravel access areas. The southern building is used for offices and for production. The northern building is used for storage. Trucks use the docking area in the southwestern portion of the property.

Approximately 6 acres of the site consist of undeveloped forested upland habitat. The upland habitat within the assessment area abuts the Hometown Produce Company and additional forested upland habitat owned by Mill Creek Metroparks to the west of the assessment area.

[2] The facility also previously operated as the Canfield Coating Company.

Two ditches are present on the MSC parcel—the unnamed ditch to the west of the facility and Adjacent Ditch to the east of the facility. Water from both ditches flows north to a wetland and feeds into Sawmill Creek. The water level in the wetland is controlled by a gated culvert that allows water to pass under the bikeway into Sawmill Creek. A Level I ecological risk assessment for the Sawmill Creek is presented separately.

MSC does not expect changes to land or water uses in the assessment area.

2.4 KNOWN OR SUSPECTED HAZARDOUS SUBSTANCE RELEASES

In 1992, the U.S. Environmental Protection Agency (EPA) issued a preliminary assessment/ visual site inspection assessment report in response to a permit application. Of the 12 solid waste management units identified, EPA recommended that the former waste chromate solution treatment area undergo closure under the Resource Conservation and Recovery Act (RCRA). Documentation was not available to indicate the solid waste management unit locations, potential overlap with the current assessment area, or any implemented actions.

In 2008, Ohio EPA reached a settlement with Canfield Metal Coating Corporation for past hazardous waste violations and issued an administrative consent order[3] for violations that occurred at 460 West Main Street in Canfield. The settlement included a $10,300 penalty paid to the state's hazardous waste cleanup fund and the Ohio EPA Clean Diesel School Bus Program.

In 2024, MSC and state and local agencies responded to a report of the release of process fluids into Adjacent Ditch. MSC, the Ohio EPA, and the Cardinal Joint Fire Department collected and contained the fluid as part of an emergency response. However, during the emergency response, the responders observed conditions that indicated some fluid had leaked from the facility over a period of several years and required additional emergency response actions. As part of the emergency response, Ohio EPA approved a plan to line the adjacent ditch to prevent contact of surface water with impacted sediments.

2.5 CHEMICALS OF INTEREST

August Mack conducted groundwater, soil,[4] and surface water sampling in 2024 to investigate the nature and extent of chemicals present in the site and assessment area. Sample-specific results are presented in Attachment A and in the *Initial Site Investigation Report* (August Mack 2024). Surface water and soil data from August Mack (2024) indicated that primary chemicals

[3] https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/32/pdf/Signed%20DFFO.web.Canfield%20Metal%20Coating%20Corp.%2009.03.08.pdf

[4] The initial sampling classified all solids samples as soil. However, for the purposes of the ecological risk assessment, solids within the wetland and ditch areas are considered to be sediment.

of concern in the assessment area were cyanide, zinc, hexavalent chromium, and trichloroethene, as follows:

- **Soil/Sediment**[5]
  - Hexavalent chromium and zinc in sediment within the Adjacent Ditch exceeded the EPA residential regional screening level (RSL).
  - Total cyanide in sediment within the Adjacent Ditch exceeded the EPA industrial RSL.
  - Total cyanide and zinc in the wetland sediment exceeded the EPA residential RSL.
  - Arsenic in Adjacent Ditch sediment and wetland sediment exceeded residential and/or industrial RSLs, but has not historically been used at the site and concentrations are generally consistent with background concentrations.
  - Other chemicals in Adjacent Ditch that exceeded the 2024 EPA residential RSLs for soil were benzo[*a*]pyrene and benzo[*b*]fluoranthene.
  - Other chemicals in the Adjacent Ditch and/or the wetland that exceeded the 2024 EPA industrial RSLs for soil were benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, dibenz[*a,h*] anthracene, cadmium, and lead.
  - High pH (8.3 to 11.7) was measured within the Adjacent Ditch.
- **Surface Water**
  - Zinc in the Adjacent Ditch exceeded the Ohio River Basin Human Health Tier 1 Criteria for non-drinking surface water.
  - Other chemicals that exceeded Ohio River Basin Human Health Tier 1 Criteria for non-drinking surface water were mercury, benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, benzo[*k*]fluoranthene, and indeno[1,2,3-*cd*]pyrene.

2.6 THREATENED AND ENDANGERED SPECIES

Integral requested information from the U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR) on the presence and distribution of threatened and/or endangered species in the assessment area. The information obtained from this request is included in Attachment B.[6]

Based on the information received, the assessment area is located within the range of four federally listed species: tricolored bat (*Perimyotis subflavus*, state endangered), northern long-

[5] These data were not compared to ecological toxicity benchmarks in August Mack (2024).

[6] The ODNR environmental review has not been received at the time of this report.

eared bat (*Myotis septentrionalis*, federally threatened and state endangered), Indiana bat (*M. sodalis*, federally and state endangered), and little brown bat (*M. lucifugus*, state endangered). USFWS has previously stated that Indiana bats are assumed to be present in Ohio during the summer wherever suitable habitat occurs unless a presence/absence survey has been performed to document their absence (USFWS 2007).

In addition to the four bat species, the monarch butterfly (*Danaus plexippus*) is a candidate federally listed species that may be present in the area.

3 SITE VISIT SUMMARY

Integral and MAD Scientist Associates LLC (MAD Scientist) conducted a site visit on November 21, 2024. Integral identified type and extent of habitat, species present in the assessment area or in the vicinity, and/or signs of ecological use. A photo log is included as Attachment C, and the Ecological Scoping Checklist is provided in Attachment D. MAD Scientist conducted a wetland delineation and an assessment of wetland quality using the Ohio Rapid Assessment Method (ORAM, version 5.0) from Ohio EPA (2001). The wetland delineation report is included as Attachment E.

3.1 ECOLOGICAL AND HABITAT FEATURES

Approximately 4.9 acres (37 percent) of the assessment area includes developed and engineered areas, which include paved parking lots, facility buildings, and gravel areas. No vegetation or wildlife was observed in this area.

Terrestrial wooded habitat makes up 6 acres (45 percent) of the assessment area. This deciduous forested habitat is dominated by oaks (*Quercus* spp.), hickories (*Carya* spp.), and maples (*Acer* spp.). The mature trees have a typical diameter at breast height of 12 in. During the site visit, squirrels were observed, and deer signs (game paths prints, tree bark scraping at approximately 3 to 4 ft above ground surface indicating rutting) were noted in the forested area. Birds seen or heard during the site visit included American crow, song sparrow, northern cardinal, swamp sparrow, and blue jay.

Near the bikeway, approximately 0.3 acres of scrub shrub habitat (2 percent) is characterized by shrubs, grasses, and poison ivy.

Approximately 1.6 acres (12 percent) of the assessment area is wetland habitat. The wetland was delineated by MAD Scientist on November 21, 2024, and is classified as a palustrine emergent wetland.[7] Water level in the wetland is controlled by a water control structure at the base of the culvert located under the bikeway. The water control structure appears to be located on the Mill Creek Metroparks property. The wetland is dominated by invasive species including stands of *Phragmites australis* and reed canary grass. Other typical wetland vegetation observed included *Carex* species. When present, this vegetation was dense and tall (greater than 5 ft). A shrub buffer along the southeastern edge of the wetland includes red-osier dogwood, bush honeysuckle, and multiflora rose.

Approximately 0.6 acres (4 percent) of the assessment area is a ditch, which, based on shape and alignment, appears to have been straightened. No water was present in the ditch during

[7] The acreage presented in the wetland delineation (Attachment E) is larger than the acreage presented in this report because it includes a large portion of the wetland that is located outside of the assessment area.

the site visit, which occurred after a ditch bypass had been installed as part of the emergency response actions. The area along the bikeway includes grasses and poison ivy.

Vegetation conditions observed in the assessment area were characteristic of the fall season. Because the site visit occurred in late November, many understory trees and emergent vegetation had senesced or died back.

3.2 ECOLOGICALLY IMPORTANT SPECIES/HABITATS

No rare, threatened, or endangered species were observed during the site visit.

The wetland is classified as a category 2 wetland and has an ORAM score of 47 (Attachment E). Category 2 wetlands "...support moderate wildlife habitat, or hydrological or recreational functions," and are "...generally without the presence of, or habitat for, rare, T&E species" (Ohio EPA 2001). During the site visit, Integral observed standing snags and dead trees, which may be suitable habitat for threatened or endangered bat species (see Section 2.6).

3.3 EXPOSURE PATHWAYS

Ecological stressors may potentially be present in soil, surface water, and sediment throughout the assessment area. The evaluation of potential harm is provided in Attachment F.

4 RECOMMENDATIONS

Based upon the known release of hazardous substances that were detected in Adjacent Ditch and the wetland area, Integral recommends a Level II ecological risk assessment to screen for potential risk to ecological receptors.

5 REFERENCES

August Mack. 2024. Initial site investigation report. Material Sciences Corporation. August Mack Environmental. December 12.

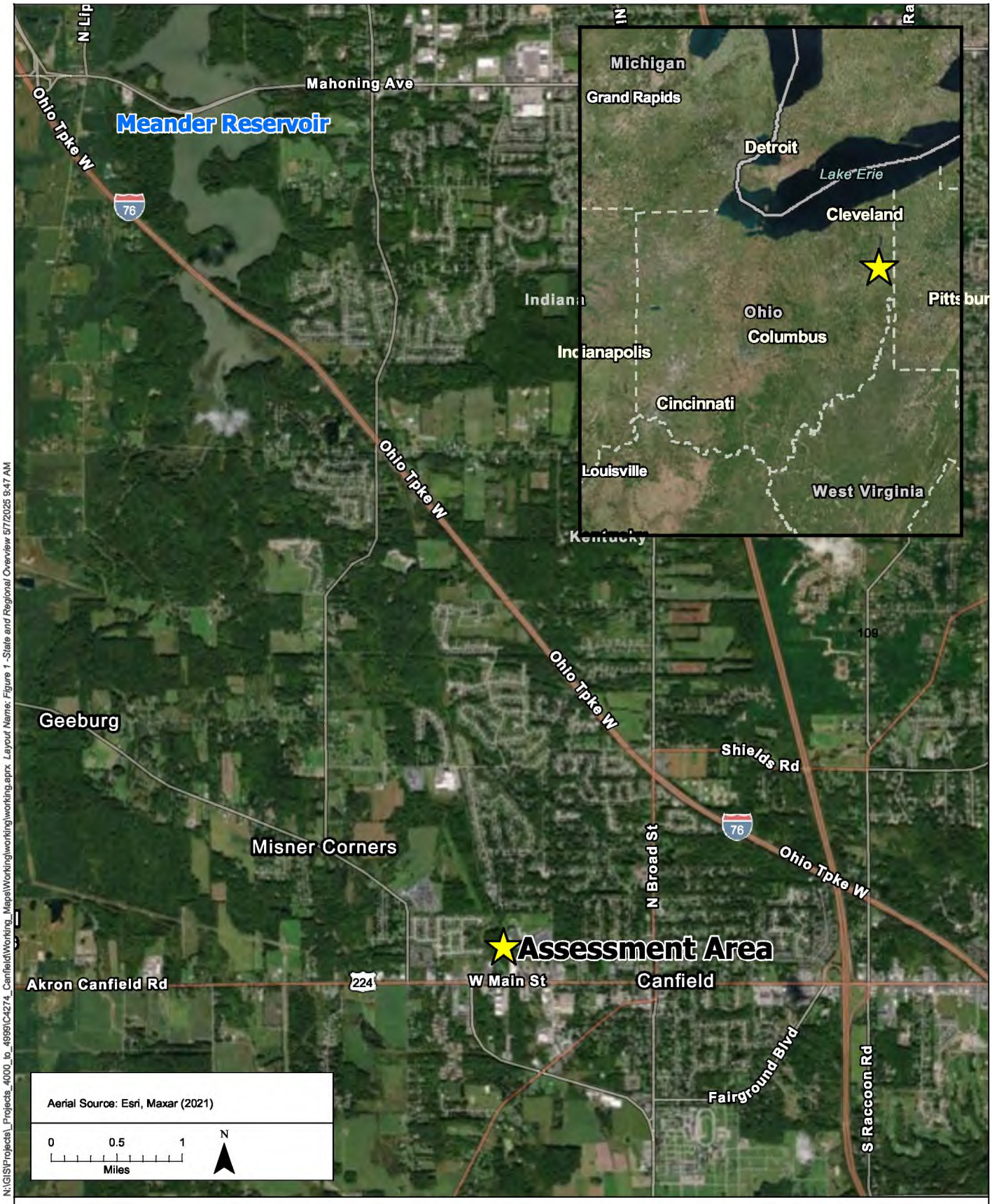
Ohio EPA. 2018. Ecological risk assessment guidance document. Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization Assessment, Remediation and Corrective Action Section. July.

Ohio EPA. 2001. Ohio rapid assessment method for wetlands. Version 5.0 Final. Ohio Environmental Protection Agency. Columbus, Ohio.

Ohio EPA and MSC. 2024. Directors final findings and orders in the matter of Material Sciences Corporation. Ohio Environmental Protection Agency and Material Sciences Corporation. December 31.

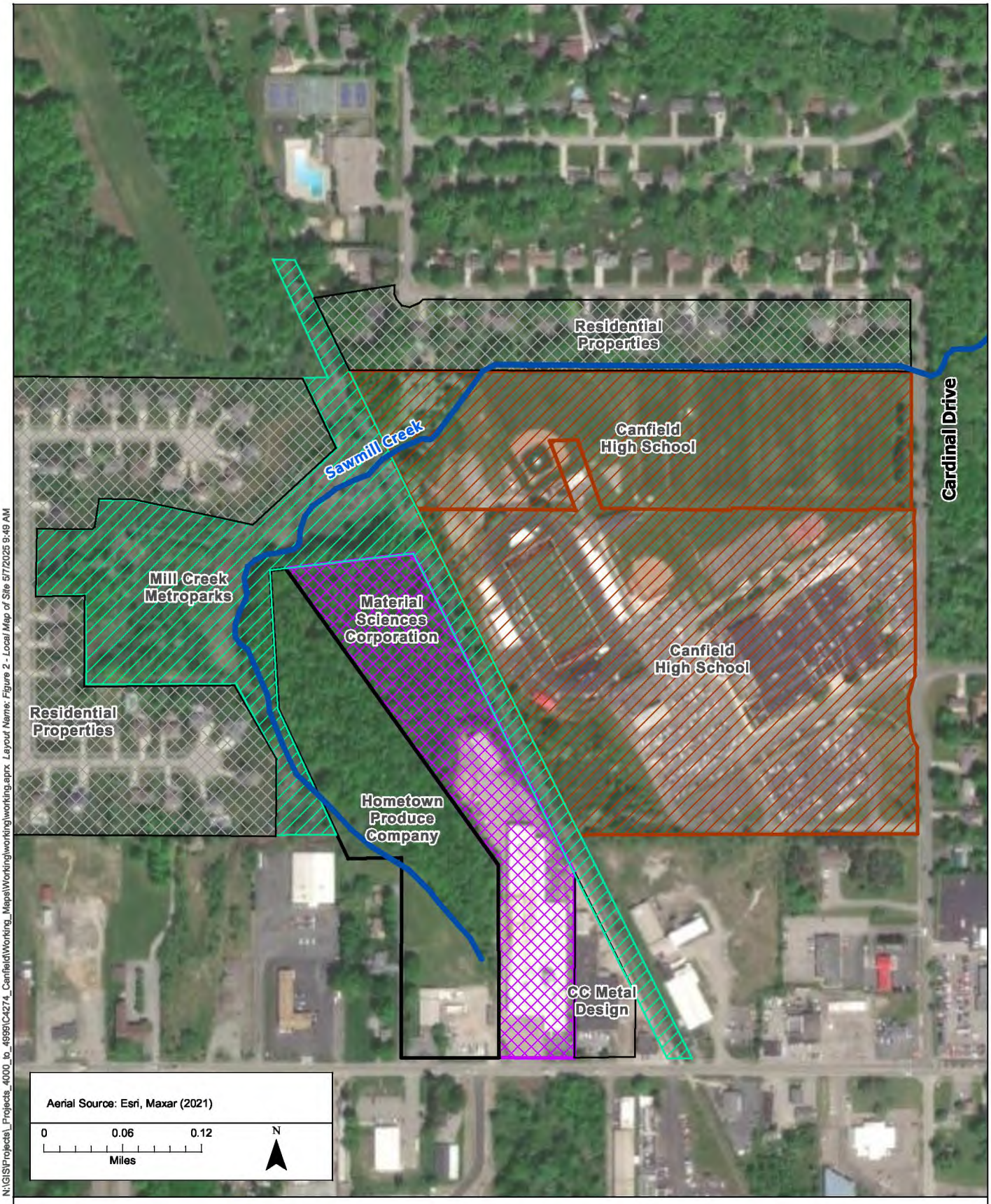
USFWS. 2007. Biological opinion on the Ohio Department of Transportation's statewide transportation program for the federally listed endangered Indiana bat (*Myotis sodalis*). Submitted to the Federal Highway Administration. U.S. Fish and Wildlife Service. January 26.

FIGURES



integral consulting inc.

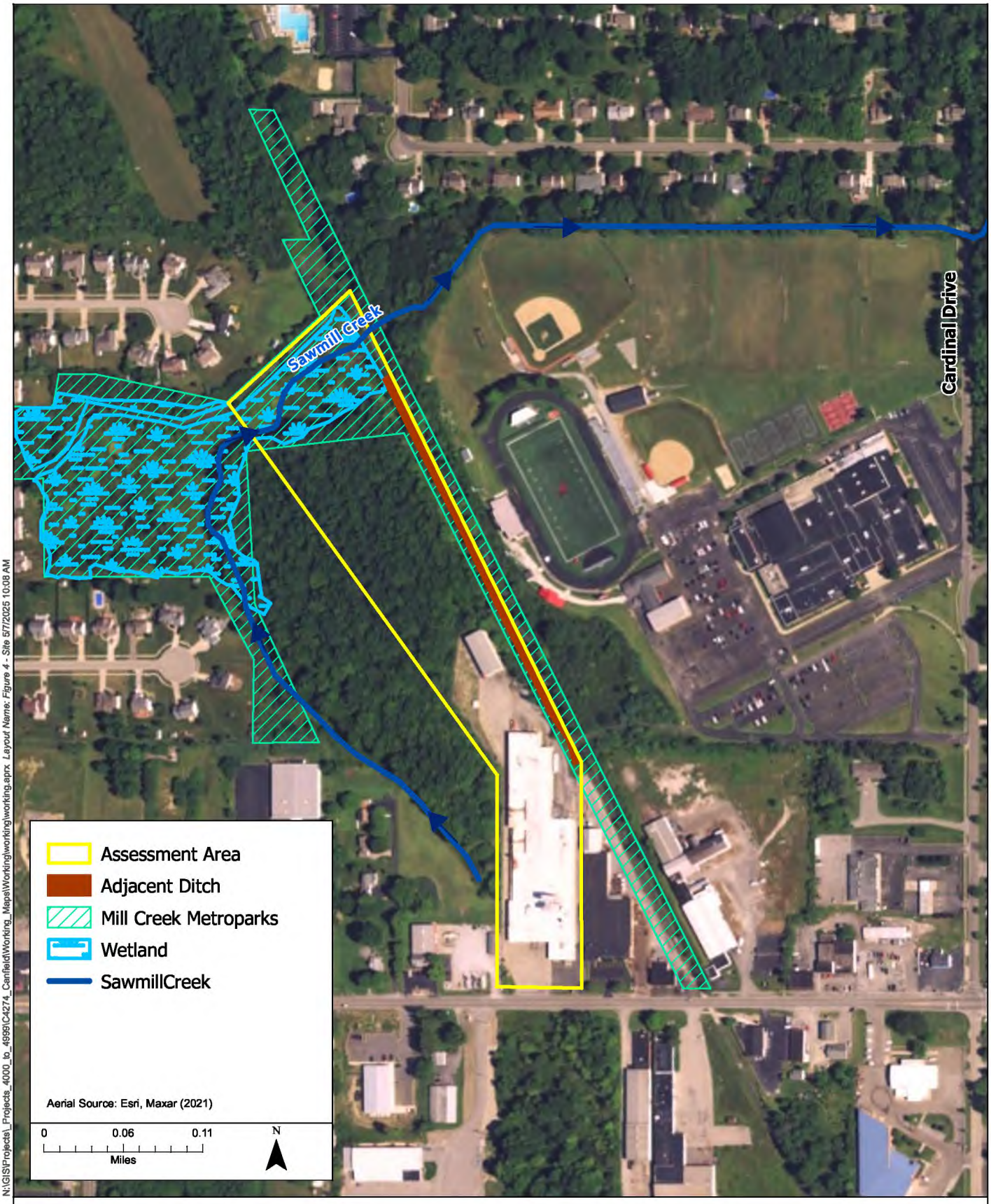
Figure 1. Regional Map of Assessment Area
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 2 - Local Map of Site 5/7/2025 9:49 AM

integral consulting inc.

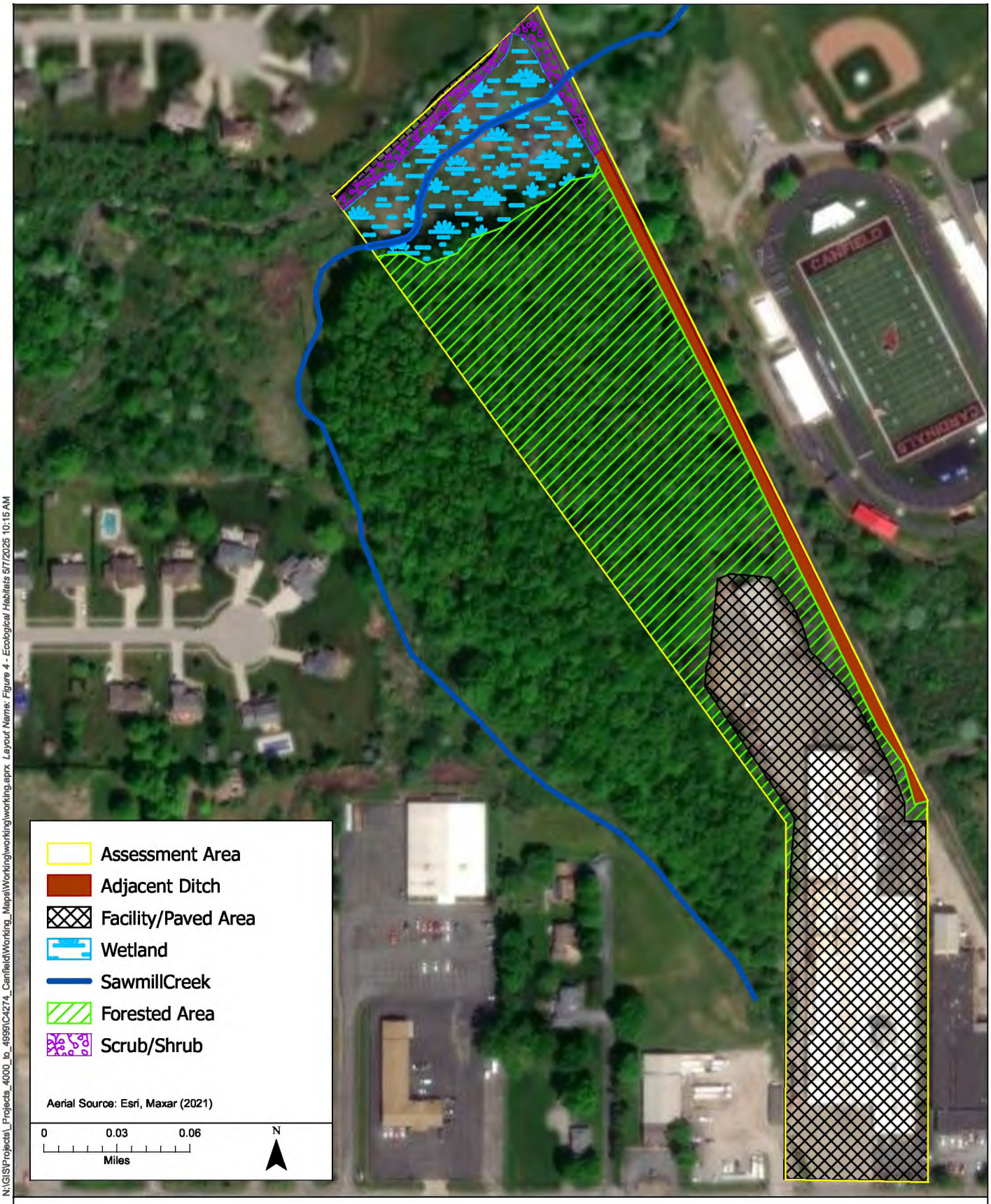
Figure 2. Local Map of Assessment Area and Adjacent Properties
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 4 - Site 5/7/2025 10:08 AM

integral consulting inc.

Figure 3. Assessment Area Features
MSC Parcel and Wetland
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 4 - Ecological Habitats 5/7/2025 10:15 AM

integral consulting inc.

Figure 4. Ecological Habitats within Assessment Area
Canfield, Ohio

Attachment A

Extent of Hazardous Substances in the Assessment Area

U.S. EPA 2024 RSLs	INDUSTRIAL SOIL RSLs (**)
Metals	
Arsenic (As)	3
All Other Analyzed Metals	Varies
Cyanide	
Total Cyanide (CN)	15

Abbreviations & Notes:

RSLs = Regional Screening Levels

U.S. EPA = United States Environmental Protection Agency

All results and U.S. EPA Screening Levels are reported in milligrams per kilogram (mg/kg). Compounds not listed were identified below applicable RSLs.

U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update.

RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).

The following denote the color of screening level exceedances:

** = At or Above U.S. EPA 2024 Industrial Soil RSLs

SB-19		
Depth (feet):	6.0-8.0	14.0-16.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	13.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.670	<0.710

SB-20		
Depth (feet):	4.0-6.0	14.0-16.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	12.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.510	<0.710

SB-16		
Depth (feet):	4.0-6.0	12.0-14.0
Sample Date:	10/14/2024	10/14/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	11.0 **	15.0 **
PCBs	<RSLs	<RSLs
Total CN	5.2	<0.490

SB-21		
Depth (feet):	12.0-14.0	16.0-18.0
Sample Date:	10/16/2024	10/16/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	12.0 **
PCBs	<RSLs	<RSLs
Total CN	0.630	<0.710

SB-14			
Depth (feet):	6.0-8.0	12.0-14.0	18.0-20.0
Sample Date:	10/21/2024	10/21/2024	10/21/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	17.0 **	15.0 **	11.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	1.0	<0.550	<0.650

SB-17		
Depth (feet):	10.0-12.0	14.0-16.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	13.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.550	<0.660

SB-11		
Depth (feet):	20.0-22.0	22.0-24.0
Sample Date:	10/17/2024	10/17/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	16.0 **	12.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.520	<0.410

SB-10		
Depth (feet):	4.0-6.0	10.0-12.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	16.0 **	14.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.670	<0.620

SB-12/SB-12B				
Depth (feet):	4.0-6.0	6.0-8.0	14.0-16.0	18.0-20.0
Sample Date:	10/21/2024	10/21/2024	10/21/2024	10/21/2024
Parameters				
VOCs	<RSLs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs	<RSLs
As	12.0 **	16.0 **	14.0 **	13.0 **
PCBs	<RSLs	<RSLs	<RSLs	<RSLs
Total CN	81.0 **	2.1	<0.510	<0.500

SB-13			
Depth (feet):	14.0-16.0	16.0-18.0	18.0-20.0
Sample Date:	10/16/2024	10/16/2024	10/16/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	23.0 **	11.0 **	17.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.610	<0.660	<0.480

SB-7			
Depth (feet):	10.0-12.0	16.0-18.0	18.0-20.0
Sample Date:	10/22/2024	10/22/2024	10/22/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	16.0 **	11.0 **	14.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.610	<0.530	<0.530

SB-22			
Depth (feet):	4.0-6.0	12.0-14.0	18.0-20.0
Sample Date:	10/16/2024	10/16/2024	10/16/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	15.0 **	16.0 **	12.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.650	<0.630	<0.690

SB-9		
Depth (feet):	22.0-24.0	30.0-32.0
Sample Date:	10/17/2024	10/17/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	12.0 **	10.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.450	<0.460

SB-8		
Depth (feet):	12.0-14.0	20.0-22.0
Sample Date:	10/17/2024	10/17/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	9.6 **	17.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.430	<0.470

SB-6			
Depth (feet):	8.0-10.0	12.0-14.0	18.0-20.0
Sample Date:	10/18/2024	10/18/2024	10/18/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	29.0 **	12.0 **	12.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	0.450	0.570	<0.420

SB-4		
Depth (feet):	8.0-10.0	16.0-18.0
Sample Date:	10/18/2024	10/18/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	14.0 **	18.0
PCBs	<RSLs	<RSLs
Total CN	<0.450	<0.560

SB-1		
Depth (feet):	4.0-6.0	18.0-20.0
Sample Date:	10/18/2024	10/18/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	13.0 **	14.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.620	<0.500

SB-2			
Depth (feet):	6.0-8.0	10.0-12.0	16.0-18.0
Sample Date:	10/21/2024	10/21/2024	10/21/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	13.0 **	13.0 **	17.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.660	<0.640	<0.570

SB-3			
Depth (feet):	6.0-8.0	10.0-12.0	16.0-18.0
Sample Date:	10/22/2024	10/22/2024	10/22/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	17.0 **	16.0 **	13.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.590	<0.590	<0.660

SB-19, SB-20, SB-17, SB-18, SB-16, SB-15, SB-21, SB-13, SB-14, SB-10, SB-22, SB-11, SB-12, SB-7, SB-8, SB-9, SB-6, SB-4, SB-2, SB-1, SB-3

Wilson Ln

W Main St

Subject Property

Soil Sample

Material Sciences Corporation
Canfield

On-Site Soil Borings - Soil Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

Nearmap Aerial Imagery:
June 15, 2024

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372

DATE: 12/12/2024

SCALE: 1:1,000

FIGURE: 3

CREATED BY: CC

U.S. EPA 2024 RSLs	RESIDENT SOIL RSLs (*)	INDUSTRIAL SOIL RSLs (**)
Semi-Volatile Organic Compounds (sVOCs)		
Benzo(a)pyrene (BaP)	0.11	2
Benzo(b)fluoranthene (BbF)	1.1	21
Dibenz(a,h)anthracene (DBA)	0.11	2
Metals		
Arsenic (As)	0.68	3
Cadmium (Cd)	0.71	10
Chromium (Hexavalent) (Cr(VI))	0.3	6
Lead	200	800
Zinc (Zn)	2,300	35,000
Cyanide		
Total Cyanide (CN)	2.3	15

Abbreviations & Notes:

BRL = Below Laboratory Reporting Limits

RSLs = Regional Screening Levels

U.S. EPA = United States Environmental Protection Agency

Other analyzed compounds not listed were detected at concentrations below applicable RSLs (<RSLs).

Results and U.S. EPA Screening Levels are reported in milligrams per kilogram (mg/kg).

U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update

RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).

The following denote the color of screening level exceedances:

* = At or Above U.S. EPA 2024 Resident Soil RSLs

** = At or Above U.S. EPA 2024 Industrial Soil RSLs

SB-35			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.220 *	0.110 *	<0.067
BbF	0.430	0.220	0.074
DBA	0.045	<0.052	<0.067
As	6.9 **	12.0 **	9.2 **
Cd	0.520	0.460	0.250
Cr(VI)	<6.0 E	<0.28	<2.3 E
Pb	29.0	32.0	24.0
Zn	21,000 *	1,500	1,200
Cyanide (Total)	860 **	14.0 *	8.5 *

SB-29			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.110 *	0.120 *	0.019
BbF	0.250	0.260	0.036
DBA	<0.094	<0.077	<0.053
As	7.3 **	9.2 **	5.6 **
Cd	0.500	0.500	0.170
Cr(VI)	<1.6 E	<1.4 E	<1.9 E
Pb	27.0	42.0	14.0
Zn	4,700 *	170	69.0
Cyanide (Total)	450 **	220 **	6.6 *

SB-30			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.230 *	0.066	0.023
BbF	0.420	0.110	0.042
DBA	0.047	<0.057	<0.050
As	7.0 **	9.2 **	8.3 **
Cd	0.430	0.240	0.240
Cr(VI)	<2.8 E	<2.0 E	<0.19
Pb	23.0	370 *	19.0
Zn	22,000 *	300	230
Cyanide (Total)	320 **	28.0 **	24.0 **

SB-31			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.480 *	0.087	0.030
BbF	0.960	0.150	0.057
DBA	0.088	<0.058	<0.073
As	8.2 **	11.0 **	10.0 **
Cd	0.350	0.320	0.140
Cr(VI)	<2.7 E	<2.2 E	<2.5 E
Pb	23.0	31.0	18.0
Zn	9,500 *	600	320
Cyanide (Total)	690 **	37.0 **	17.0 **

SB-28			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.230 *	0.033	0.018
BbF	0.460	0.065	0.031
DBA	0.042	<0.056	<0.049
As	8.7 **	6.6 **	11.0 **
Cd	0.420	0.440	0.064
Cr(VI)	<3.7 E	<1.9 E	<0.17
Pb	28.0	31.0	11.0
Zn	2,300 *	240	45.0
Cyanide (Total)	270 **	9.0 *	6.9 *

SB-26			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.270 *	0.035	<0.050
BbF	0.550	0.055	<0.050
DBA	0.058	<0.058	<0.050
As	12.0 **	6.0 **	7.8 **
Cd	0.480	0.250	0.100
Cr(VI)	<3.5 E	<2.1 E	<0.88 E
Pb	30.0	28.0	9.9
Zn	2,300 *	99.0	60.0
Cyanide (Total)	380 **	20.0 **	9.9 *

SB-36			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.410 *	0.370 *	0.051
BbF	0.820	0.780	0.087
DBA	0.083	0.078	<0.051
As	8.1 **	11.0 **	7.5 **
Cd	0.430	0.380	0.230
Cr(VI)	<2.3 E	<2.1 E	<0.15
Pb	26.0	27.0	21.0
Zn	20,000 *	810	290
Cyanide (Total)	700 **	6.5 *	<6.0 E

SB-32			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.350 *	0.310 *	0.040
BbF	0.750	0.560	0.082
DBA	0.072	0.053	<0.057
As	7.5 **	12.0 **	9.4 **
Cd	0.310	0.370	0.098
Cr(VI)	<2.2 E	<2.1 E	<2.1 E
Pb	25.0	32.0	17.0
Zn	21,000 *	1,700	790
Cyanide (Total)	700 **	260 **	60.0 **

SB-33			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.470 *	0.120 *	<0.048
BbF	1.1 *	0.200	<0.048
DBA	0.097	0.020	<0.048
As	11.0 **	14.0 **	11.0 **
Cd	0.390	0.120	0.078
Cr(VI)	<4.1 E	0.250	<0.17
Pb	29.0	15.0	13.0
Zn	7,600 *	280	190
Cyanide (Total)	390 **	36.0 **	8.1 *

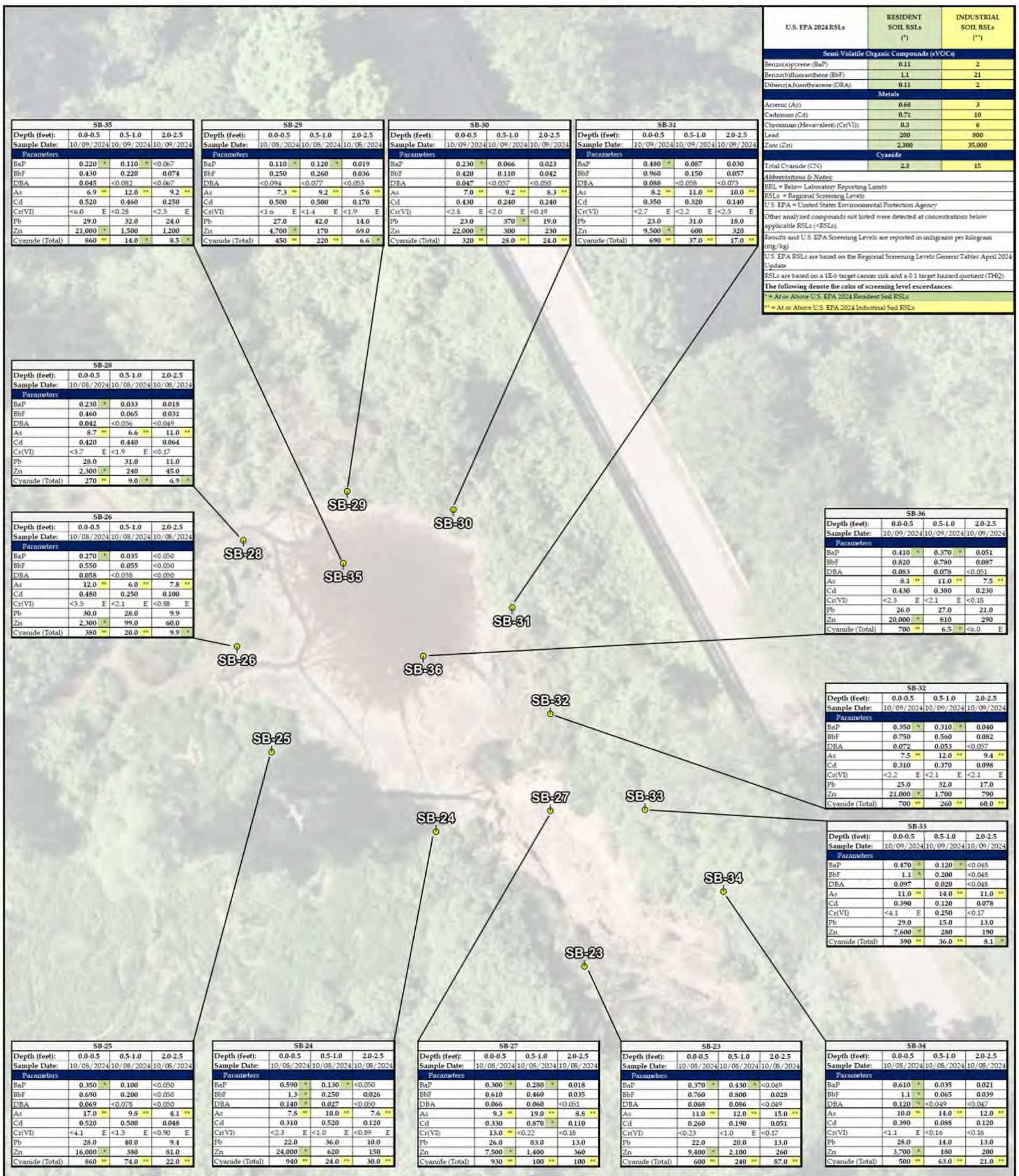
SB-25			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.350 *	0.100	<0.050
BbF	0.690	0.200	<0.050
DBA	0.069	<0.078	<0.050
As	17.0 **	9.8 **	4.1 **
Cd	0.520	0.500	0.048
Cr(VI)	<4.1 E	<1.3 E	<0.90 E
Pb	28.0	40.0	9.4
Zn	16,000 *	380	81.0
Cyanide (Total)	860 **	74.0 **	22.0 **

SB-24			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.590 *	0.130 *	<0.050
BbF	1.3 *	0.250	0.026
DBA	0.140 *	0.027	<0.050
As	7.8 **	10.0 **	7.6 **
Cd	0.310	0.520	0.120
Cr(VI)	<2.3 E	<1.0 E	<0.89 E
Pb	22.0	36.0	10.0
Zn	24,000 *	620	150
Cyanide (Total)	940 **	24.0 **	30.0 **

SB-27			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.300 *	0.280 *	0.018
BbF	0.610	0.460	0.035
DBA	0.066	0.060	<0.051
As	9.3 **	19.0 **	8.8 **
Cd	0.330	0.870 *	0.110
Cr(VI)	13.0 **	<0.22	<0.15
Pb	26.0	83.0	13.0
Zn	7,500 *	1,400	360
Cyanide (Total)	930 **	100 **	100 **

SB-23			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.370 *	0.430 *	<0.049
BbF	0.760	0.800	0.028
DBA	0.068	0.086	<0.049
As	11.0 **	12.0 **	15.0 **
Cd	0.260	0.190	0.051
Cr(VI)	<0.23	<1.0 E	<0.17
Pb	22.0	20.0	13.0
Zn	9,400 *	2,100	260
Cyanide (Total)	600 **	240 **	87.0 **

SB-34			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.610 *	0.035	0.021
BbF	1.1 *	0.065	0.039
DBA	0.120 *	<0.049	<0.047
As	10.0 **	14.0 **	12.0 **
Cd	0.390	0.088	0.120
Cr(VI)	<1.1 E	<0.16	<0.16
Pb	28.0	14.0	13.0
Zn	3,700 *	180	200
Cyanide (Total)	500 **	63.0 **	21.0 **



Soil Sample

Nearmap Aerial Imagery: June 15, 2024

Material Sciences Corporation Canfield

Surface Water Feature - Soil Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 10 20 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229

August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/10/2024
	SCALE: 1:250
FIGURE: 5	CREATED BY: CC

Transect 1125	East Bank			Center	West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/03/2024	10/06/2024	10/06/2024	10/03/2024	10/03/2024	10/06/2024
Parameters						
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.560	<0.048	<0.047	0.220	0.088	0.018
BaP	0.750 *	<0.048	0.018	0.310 *	0.110 *	0.018
BbF	1.3 *	0.031	0.038	0.640	0.210	0.031
DBA	0.150 *	<0.048	<0.047	0.069	<0.052	<0.049
IP	0.470	0.017	0.015	0.240	0.090	0.015
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	13.0 **	25.0 **	13.0 **	9.9 **	11.0 **	14.0 **
Cd	0.320	0.051	0.061	0.260	0.200	0.130
Cr(VI)	<0.200	<0.170	<0.170 E	<2.1 E	<0.18	<0.18
Cu	26.0	19.0	15.0	3.3	11.0	17.0
Zn	740	270	600	4,500 *	660	160
Cyanide (Total)	140 **	16.0 **	18.0 **	570 **	66.0 **	<17 E

Transect 1100 SS#5/5N		
Depth (feet):	0.0-0.5	2.0-2.5
Sample Date:	07/26/2024	08/06/2024
Parameters		
VOCs	NA	NA
BaA	NA	NA
BaP	NA	NA
BbF	NA	NA
DBA	NA	NA
IP	NA	NA
PCBs	NA	NA
As	16.0 **	13.0 **
Cd	0.610	0.550
Cr(VI)	NA	NA
Cu	16.0	15.0
Zn	550	360
Cyanide (Total)	89.0 **	38.0 **

Transect 1000	East Bank	Center			West Bank	
Depth (feet):	0.0-0.5	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5
Sample Date:	10/03/2024	10/03/2024	10/06/2024	10/06/2024	10/09/2024	10/06/2024
Parameters						
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.620	0.060	0.036	0.150	0.110	<0.045
BaP	0.680 *	0.067	0.029	0.130 *	0.140 *	<0.045
BbF	1.3 *	0.120	0.042	0.170	0.220	<0.045
DBA	0.140 *	<0.051	<0.0o4	0.036	<0.054	<0.045
IP	0.380	0.046	<0.0o4	0.055	0.110	<0.045
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	9.7 **	15.0 **	28.0 **	11.0 **	9.3 **	15.0 **
Cd	1.0 *	0.180	0.270	0.067	0.310	0.730
Cr(VI)	<2.2 E	<0.18	<0.22	<0.84 E	<0.330	<0.16
Cu	27.0	1.9	26.0	16.0	15.0	17.0
Zn	140	6,600 *	160	95.0	280	75.0
Cyanide (Total)	29.0 **	1.9	11.0 *	21.0 **	370 **	6.3 *

U.S. EPA 2024 RSLs	RESIDENT SOIL RSLs (*)	INDUSTRIAL SOIL RSLs (**)
Semi-Volatile Organic Compounds (sVOCs)		
Benzo(a)anthracene (BaA)	1.1	21
Benzo(a)pyrene (BaP)	0.11	2
Benzo(b)fluoranthene (BbF)	1.1	21
Dibenz(a,h)anthracene (DBA)	0.11	2
Indeno(1,2,3-cd)pyrene (IP)	1.1	21
Metals		
Arsenic (As)	0.68	3
Cadmium (Cd)	0.71	10
Chromium (Hexavalent) (Cr(VI))	0.3	6
Copper (Cu)	310	4,700
Zinc (Zn)	2,300	35,000
Cyanide		
Total Cyanide (CN)	2.3	15

Abbreviations & Notes:

BRL = Below Laboratory Reporting Limits; PCB = Polychlorinated Biphenyls

RSLs = Regional Screening Levels; VOCs = Volatile Organic Compounds

U.S. EPA = United States Environmental Protection Agency

Other analyzed compounds not listed were detected at concentrations below applicable RSLs (<RSLs).

Results and U.S. EPA Screening Levels are reported in milligrams per kilogram (mg/kg).

U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update.

RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).

The following denote the color of screening level exceedances:

* = At or Above U.S. EPA 2024 Resident Soil RSLs

** = At or Above U.S. EPA 2024 Industrial Soil RSLs

Transect 875	East Bank			Center	SS#@/SS#4N		West Bank		
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/03/2024	10/03/2024	10/03/2024	07/24/2024	08/06/2024	10/03/2024	10/03/2024	10/06/2024
Parameters									
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
BaA	0.037	<0.048	0.210	0.027	NA	NA	0.270	<0.045	<0.039
BaP	0.038	<0.048	0.170 *	0.017	NA	NA	0.350 *	<0.045	<0.039
BbF	0.056	0.017	0.240	0.029	NA	NA	0.660	0.013	0.014
DBA	<0.047	<0.048	0.038	<0.049	NA	NA	0.069	<0.045	<0.039
IP	0.018	<0.048	0.100	<0.049	NA	NA	0.230	<0.045	<0.039
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
As	9.8 **	20.0 **	11.0 **	16.0 **	13.0 **	11.0 **	12.0 **	12.0 **	14.0 **
Cd	0.230	0.078	0.060	<0.53	0.550	0.570	0.380	0.100	<0.46
Cr(VI)	<0.16	<0.17	<0.17	<0.18	NA	NA	<1.0 E	<0.16	<0.14
Cu	15.0	19.0	16.0	11.0	2.8	16.0	31.0	19.0	17.0
Zn	75.0	68.0	66.0	820	10,000 *	440	430	93.0	62.0
Cyanide (Total)	1.4	1.8	14.0 *	170 **	1,900 **	79.0 **	23.0 **	4.0 *	5.4 *

Transect 750	East Bank			West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5
Sample Date:	10/03/2024	10/05/2024	10/05/2024	10/03/2024	10/05/2024
Parameters					
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.290	0.035	0.061	0.660	<0.047
BaP	0.400 *	0.031	0.046	0.940 *	<0.047
BbF	0.760	0.050	0.084	1.9 *	0.017
DBA	0.068	<0.050	<0.051	0.130 *	<0.047
IP	0.190	0.018	0.031	0.550	<0.047
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	13.0 **	13.0 **	14.0 **	12.0 **	21.0 **
Cd	0.440	0.130	0.120	0.540	<0.5o
Cr(VI)	<2.3 E	<0.15	<0.18	<2.1 E	<0.1o
Cu	27.0	20.0	20.0	24.0	24.0
Zn	420	110	140	1,200	210
Cyanide (Total)	20.0 **	<15 E	<35 E	83.0 **	52.0 **

Transect 670 SS#3/SS#3N		
Depth (feet):	0.0-0.5	2.0-2.5
Sample Date:	07/24/2024	08/05/2024
Parameters		
VOCs	NA	NA
BaA	NA	NA
BaP	NA	NA
BbF	NA	NA
DBA	NA	NA
IP	NA	NA
PCBs	NA	NA
As	11.0 **	19.0 **
Cd	0.530	0.460
Cr(VI)	NA	NA
Cu	2.6	17.0
Zn	6,200 *	460
Cyanide (Total)	990 **	41.0 **

Transect 625	East Bank			Center			West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5
Sample Date:	10/05/2024	10/05/2024	10/05/2024	10/30/2024	10/05/2024	10/05/2024	10/05/2024	10/05/2024
Parameters								
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.210	0.039	0.018	<0.16	0.021	<0.045	0.510	0.081
BaP	0.260 *	0.033	0.019	0.060	0.018	0.019	0.790 *	0.083
BbF	0.470	0.060	0.030	0.120	0.050	0.027	1.6 *	0.160
DBA	0.055	<0.051	<0.049	<0.16 E	<0.050	<0.045	0.110 *	0.030
IP	0.190	0.025	<0.049	<0.16	<0.050	0.017	0.470	0.064
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	11.0 **	14.0 **	13.0 **	15.0 **	16.0 **	17.0 **	14.0 **	17.0 **
Cd	0.410	0.160	0.130	0.290	0.310	0.150	0.530	<0.55
Cr(VI)	2.4 *	<0.15	<0.17	<1.9 E	<0.15	0.330 *	<2.3 E	<0.16
Cu	26.0	23.0	28.0	3.7	33.0	18.0	11.0	21.0
Zn	210	230	160	12,000 *	550	860	3,700 *	68.0
Cyanide (Total)	10.0 *	40.0 **	7.3 *	160 **	12.0 *	3.2 *	740 **	78.0 **

Transect 500	East Bank	West Bank		
Depth (feet):	0.0-0.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/03/2024	10/05/2024	10/05/2024
Parameters				
VOCs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.5 *	0.470	<0.052	0.046
BaP	2.2 **	0.640 *	<0.052	0.058
BbF	4.3 *	1.4 *	<0.052	0.110
DBA	0.330 *	0.110 *	<0.052	<0.051
IP	1.2 *	0.350	<0.052	0.051
PCBs	<RSLs	<RSLs	<RSLs	<RSLs
As	11.0 **	14.0 **	13.0 **	11.0 **
Cd	0.900 *	0.600	0.140	<0.63
Cr(VI)	<2.2 E	<2.2 E	<0.18	<0.18
Cu	27.0	17.0	11.0	17.0
Zn	3,400 *	2,600 *	600	130
Cyanide (Total)	370 **	540 **	2.8 *	14.0 *

Transect 375	East Bank			SS#2/2N		West Bank		
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/04/2024	10/04/2024	07/24/2024	08/06/2024	10/03/2024	10/04/2024	10/04/2024
Parameters								
VOCs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
BaA	2.3 *	0.140	0.400	NA	NA	2.1 *	0.150	0.059
BaP	3.3 **	0.140 *	0.310 *	NA	NA	3.2 **	0.150 *	0.063
BbF	4.9 *	0.220	0.440	NA	NA	6.6 *	0.220	0.099
DBA	0.450 *	0.032	0.067	NA	NA	0.420 *	<0.051	<0.052
IP	1.9 *	0.097	0.210	NA	NA	1.7 *	0.110	0.054
PCBs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
As	14.0 **	15.0 **	14.0 **	11.0 **	9.8 **	12.0 **	12.0 **	14.0 **
Cd	0.790 *	0.210	0.120	0.650	0.580	0.750 *	0.140	0.410
Cr(VI)	<1.3 E	0.280	<0.20	NA	NA	<2.4 E	<0.19	<0.15
Cu	11.0	25.0	20.0	3.2	19.0	12.0	16.0	20.0
Zn	10,000 *	460	330	19,000 *	140	6,200 *	310	630
Cyanide (Total)	1,200 **	<32 E	<36 E	2,500 **	14.0 *	1,300 **	49.0 **	<36 E

Transect 250	East Bank		Center	West Bank		
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/04/2024	10/03/2024	10/03/2024	10/04/2024	10/04/2024
Parameters						
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.6 *	0.170	2.2 *	2.4 *	0.075	0.120
BaP	2.0 *	0.190 *	3.2 **	3.3 **	0.130 *	0.120 *
BbF	4.0 *	0.350	5.3 *	5.6 *	0.120	0.190
DBA	0.260 *	<0.051	0.410 *	0.420 *	<0.055	<0.052
IP	0.800	0.130	1.6 *	1.8 *	0.053	0.081
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	13.0 **	12.0 **	11.0 **	13.0 **	16.0 **	12.0 **
Cd	0.500	0.250	0.570	0.920 *	0.210	0.350
Cr(VI)	<1.9 E	<0.18	<2.2 E	<2.4 E	<0.19	<0.15
Cu	4.2	22.0	2.5	31.0	8.3	60.0
Zn	4,400 *	430	5,800 *	3,100 *	2,400 *	370
Cyanide (Total)	1,400 **	240 **	710 **	1,300 **	45.0 **	32.0 **

Transect 190 SS#1 / Outfall-3-N		
Depth (feet):	0.0-0.5	2.0-2.5
Sample Date:	07/26/2024	08/06/2024
Parameters		
VOCs	NA	NA
BaA	NA	NA
BaP	NA	NA
BbF	NA	NA
DBA	NA	NA
IP	NA	NA
PCBs	NA	NA
As	10.0 **	17.0 **
Cd	0.920 *	0.450
Cr(VI)	NA	NA
Cu	4.6	21.0
Zn	20,000 *	230
Cyanide (Total)	3,700 **	36.0 **

Transect 125	East Bank		Center	West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/02/2024	10/03/2024	10/03/2024	10/02/2024	10/04/2024
Parameters					
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.2 *	1.3 *	1.9 *	1.4 *	0.420
BaP	1.3 *	1.3 *	2.0 *	1.4 *	0.430 *
BbF	2.1 *	1.8 *	4.2 *	2.3 *	0.580
DBA	0.240 *	0.190 *	0.310 *	0.200 *	0.081
IP	0.850	0.690	1.1 *	0.780	0.220
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	32.0 **	12.0 **	12.0 **	11.0 **	9.4 **
Cd	1.0 *	1.2 *	0.670	0.620	1.9 *
Cr(VI)	<0.97 E	<0.15	<2.1 E	<1.0 E	<0.17
Cu	800 *	22.0	4.7	28.0	20.0
Zn	5,200 *	850	6,700 *	3,100 *	510
Cyanide (Total)	240 **	14.0 *	790 **	610 **	63.0 **

OUTFALL #2 - N	
Depth (feet):	2.0-2.5
Sample Date:	08/06/2024
Parameters	
VOCs	NA
BaA	NA
BaP	NA
BbF	NA
DBA	NA
IP	NA
PCBs	<RSLs
As	12.0 **
Cd	0.630
Cr(VI)	NA
Cu	19.0
Zn	1,300
Cyanide (Total)	220 **

OUTFALL #1 - S	
Depth (feet):	2.0-2.5
Sample Date:	08/06/2024
Parameters	
VOCs	NA
BaA	NA
BaP	NA
BbF	NA
DBA	NA
IP	NA
PCBs	NA
As	24.0 **
Cd	0.810 *
Cr(VI)	NA
Cu	34.0
Zn	220
Cyanide (Total)	1.2

Transect 0	East Bank		Center	West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/02/2024	10/02/2024	10/02/2024	10/02/2024	10/02/2024
Parameters					
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.2 *	0.240	1.3 *	0.720	11.0 *
BaP	1.3 *	0.310 *	1.5 *	0.970 *	12.0 **
BbF	2.0 *	0.530	3.0 *	1.5 *	23.0 **
DBA	0.210 *	0.059	0.260 *	0.140 *	1.8 *
IP	0.800	0.210	1.2 *	0.610	4.6 *
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	16.0 **	15.0 **	13.0 **	11.0 **	15.0 **
Cd	0.410	0.190	0.460	0.420	0.400
Cr(VI)	<1.0 E	0.190	<0.18	<0.58 E	<0.17
Cu	30.0	23.0	39.0	35.0	30.0
Zn	140	75.0	120	150	190
Cyanide (Total)	1.5	<0.63	2.3 *	2.0	<30 E

Transect (-290) BKGRND	
Depth (feet):	0.0-0.5
Sample Date:	07/24/2024
Parameters	
VOCs	NA
BaA	NA
BaP	NA
BbF	NA
DBA	NA
IP	NA
PCBs	NA
As	13.0 **
Cd	0.600
Cr(VI)	NA
Cu	67.0
Zn	160
Cyanide (Total)	3.8 *

T-1125
SS-5
SS-5N
T-1000
T-875
SS-4
SS-4N
T-750
SS-3
SS-3N
T-625
T-500
SS-2
SS-2N
T-375
T-250
Outfall-3-N
SS-1
T-125
Outfall-2-N
Outfall-1-S
T-0
Bkgrnd
Weldon Ln

Subject Property

Ditch Excavation Area

Soil Sample

Nearmap Aerial Imagery: June 15, 2024

Material Sciences Corporation
Canfield

Adjacent Ditch - Soil Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372 | DATE: 12/11/2024

FIGURE: 6 | SCALE: 1:1,250 | CREATED BY: CC

OHIO EPA NON-DRINKING SURFACE WATER HUMAN HEALTH CRITERIA	
Semi-Volatile Organic Compounds (sVOCs)	
Benzo(a)anthracene (BaA)	0.013
Benzo(a)pyrene (BaP)	0.0013
Benzo(b)fluoranthene (BbF)	0.013
Benzo(k)fluoranthene (BkF)	0.130
Indeno(1,2,3-cd)pyrene (IP)	0.013
Metals	
Mercury	0.012
Zinc (Zn) (Dissolved [Zn)(d)]	26000
Cyanide	
Total Cyanide (CN)	NE
Free Cyanide (CN)	400

Abbreviations & Notes:

NE = Not Established; PCBs = Polychlorinated Biphenyls; VOCs = Volatile Organic Compounds

U.S. EPA = United States Environmental Protection Agency

The higher of the two values between original sample and duplicate sample is posted if a compound exceeds OH EPA Surface Water.

Results and Screening Levels are reported in micrograms per liter (ug/L). Analyzed compounds not listed were not detected above Ohio EPA Surface Water Criteria (<SurfCrit).

Per the U.S. EPA's RSL User's Guide, the chemical abstract services number (CAS#) for total cyanide is based on free cyanide toxicity. Since cyanide speciation was performed as part of Site investigation, the total cyanide OH EPA Surface Water Criteria is listed as NE and free cyanide results are compared to the OH EPA Surface Water Criteria.

The following denote the color of screening level exceedances:

^ = At or Above Ohio EPA Non-Drinking Surface Water Human Health Criteria

Transect 750 Center	
Depth (feet):	**Surface**
Sample Date:	10/07/2024
Parameters	
VOCs	<SurfCrit
BaA	<0.065
BaP	<0.17
BbF	**0.160** ^
BkF	<0.13
IP	<0.13
PCBs	<SurfCrit
Hg	<0.13
Zn	**3,200**
Zn	**2,700**
Total CN	**840**
Free CN	**46.0**

Transect 500 Center	
Depth (feet):	**Surface**
Sample Date:	10/07/2024
Parameters	
VOCs	<SurfCrit
BaA	**0.250** ^
BaP	**0.240** ^
BbF	**0.430** ^
BkF	**0.160** ^
IP	**0.160** ^
PCBs	<SurfCrit
Hg	**1.2** ^
Zn	**69,000** ^
Zn(d)	**19,000**
Total CN	**2,000**
Free CN	**94.0**

Transect 375 Center / SW-DUP-1	
Depth (feet):	**Surface**
Sample Date:	10/07/2024
Parameters	
VOCs	<SurfCrit
BaA	**0.340** ^
BaP	**0.580** ^
BbF	**1.3** ^
BkF	**0.410** ^
IP	**0.540** ^
PCBs	<SurfCrit
Hg	<0.200
Zn	**28,000** ^
Zn(d)	**970**
Total CN	**4,900**
Free CN	**83.0**

T-750

T-500

T-375

Weldon Ln

Subject Property

Surface Water Sample

Nearmap Aerial Imagery: June 15, 2024

Material Sciences Corporation Canfield

Adjacent Ditch - Surface Water Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229

August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/11/2024
	SCALE: 1:1,250
FIGURE: 8	CREATED BY: CC

SB-29-SW	
Depth (feet):	Surface
Sample Date:	10/25/2024
Parameters	
VOCs	<SurfCrit
BaA	0.190 ^
BaP	0.320 ^
BbF	0.600 ^
BkF	0.180 ^
IP	0.240 ^
Metals	<SurfCrit
PCBs	<SurfCrit
Total CN	8,100
Free CN	130

SB-36-SW	
Depth (feet):	Surface
Sample Date:	10/25/2024
Parameters	
VOCs	<SurfCrit
BaA	<0.065
BaP	<0.17
BbF	<0.15
BkF	<0.13
IP	<0.13
Metals	<SurfCrit
PCBs	<SurfCrit
Total CN	2,400
Free CN	130

OHIO EPA
NON-DRINKING
SURFACE WATER
HUMAN HEALTH CRITERIA

Semi-Volatile Organic Compounds (sVOCs)	
Benzo(a)anthracene (BaA)	0.013
Benzo(a)pyrene (BaP)	0.0013
Benzo(b)fluoranthene (BbF)	0.013
Benzo(k)fluoranthene (BkF)	0.130
Indeno(1,2,3-cd)pyrene (IP)	0.013
Cyanide	
Total Cyanide (CN)	NE
Free Cyanide (CN)	400

Abbreviations & Notes:

NE = Not Established; PCBs = Polychlorinated Biphenyls; VOCs = Volatile Organic Compounds

U.S. EPA = United States Environmental Protection Agency

Results and Screening Levels are reported in micrograms per liter (ug/L). Analyzed compounds not listed were not detected above Ohio EPA Surface Water Criteria (<SurfCrit).

Per the U.S. EPA's RSL User's Guide, the chemical abstract services number (CAS#) for total cyanide is based on free cyanide toxicity. Since cyanide speciation was performed as part of Site investigation, the total cyanide OH EPA Surface Water Criteria is listed as NE and free cyanide results are compared to the OH EPA Surface Water Criteria.

The following denote the color of screening level exceedances:

^ = At or Above Ohio EPA Non-Drinking Surface Water Human Health Criteria

SB-29
SB-30
SB-28
SB-35
SB-31
SB-26
SB-36
SB-32
SB-25
SB-27
SB-33
SB-24
SB-34
SB-23

Soil Boring Location

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Surface Water Feature -
Surface Water Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 10 20 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/11/2024
	SCALE: 1:250
FIGURE: 9	CREATED BY: CC

Attachment B

Letters to and from USFWS and ODNR, Responding to Queries about Threatened and Endangered Species

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mahoning County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office

of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider

implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey

effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

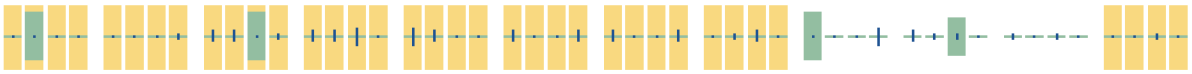
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Bald Eagle
Non-BCC
Vulnerable



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Belted Kingfisher *Megaceryle alcyon* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Jul 25

Blue-winged Warbler *Vermivora cyanoptera* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Meadowlark *Sturnella magna* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rose-breasted Grosbeak *Pheucticus ludovicianus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 15 to Jul 31
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

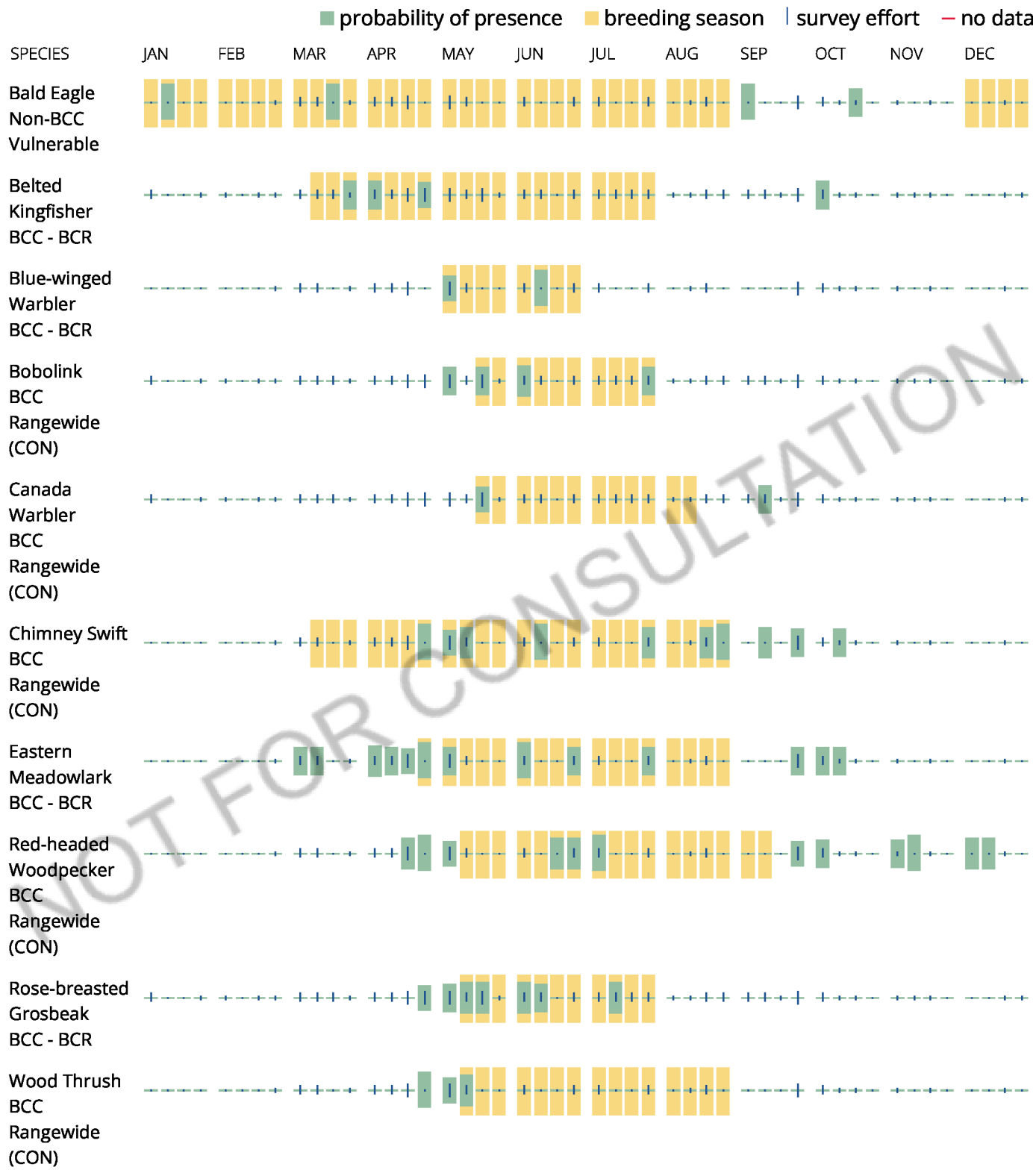
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are

based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds

are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation

measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Ohio Department of Natural Resources
Divisions of Wildlife and Natural Areas & Preserves
Ohio Natural Heritage Program
2045 Morse Road Bldg. G-3 • Columbus, OH 43229-6693
Email: NHDRequest@dnr.ohio.gov • Voicemail: 614-265-6818

Ohio Natural Heritage Data Request

DNR 5203 (R0824)

Ohio Natural Heritage Database (ONHD) stand-alone data requests are processed for projects that meet one of these criteria:

- Academic research projects
- Other non-development or non-construction projects

Search results include records for state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations.

If your project meets none of these criteria and you are requesting ONHD data for ORAM verification, please fill out and sign this form and submit it for ODNR Environmental Review as instructed at ohiodnr.gov/environmentalreview

Data within the project site will automatically be searched. Data within an additional 1-mile radius of the project site may be provided upon request. Because the ONHD contains sensitive information, it is our policy to provide only the data needed to complete your specific project.

Results are listed in a letter format and include a shapefile/map. Data requests will be completed within approximately 30 days. There is currently no charge to process requests.

INSTRUCTIONS

- Please complete all fields on this form.
- Submit a map detailing your project site boundaries. Please include at least one digital map (shapefile, .kmz, or .gdb) or allow extra time for processing.
- If you have questions, please visit ohiodnr.gov/onhd before submitting your request.
- Sign this form (required) and email with other attachments to NHDRequest@dnr.ohio.gov.

DATE:		**COMPANY NAME:**	
NAME OF PERSON RESPONSE LETTER SHOULD BE ADDRESSED TO:			
STREET ADDRESS:			
CITY:		**STATE:**	**ZIP:**
PHONE:		**E-MAIL ADDRESS:**	
PROJECT NAME:			
SITE ADDRESS:			
SITE COUNTY:		**CITY/VILLAGE/TOWNSHIP:**	
SITE LATITUDE:		**SITE LONGITUDE:**	

BRIEF DESCRIPTION OF WORK TO BE PERFORMED AT THE PROJECT SITE:

HOW DO YOU WANT YOUR DATA REPORTED? *CHOOSE ONE:*

☐ **DIGITAL SHAPEFILE** ☐ **PDF MAP**

Both formats provide the same data. If you request a digital shapefile, we will send you a letter with a list of species/features found and a shapefile of record locations and details. The PDF Map is only recommended for those who cannot use digital map data. With the PDF option we will send you a letter with a list of species/features found and a map showing their location. It may take longer to fill your request if you choose the PDF Map.

The standard data we search includes state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations within 1 mile of your project area boundaries (as specified on the map/shapefile you attach to this request). We provide a list of the above species and features found within 1 mile of your project area and may provide specific locations for these and other features that occur within or adjacent to your project area.

PLEASE LIST ANY INFORMATION *IN ADDITION TO THIS* THAT YOU REQUIRE:

HOW WILL THIS INFORMATION BE USED?

The chief of the Division of Wildlife has determined that the release of the ONHD data you have requested could be detrimental to the conservation of a species or unique natural feature. Pursuant to section 1531.04 of the Ohio Revised Code, this information is not subject to section 149.43 of the Revised Code. By signing below, you certify that the data provided will not be disclosed, published, or distributed beyond the scope of your project.

SIGNATURE: Cristal Reagh _____ **DATE:** _____

Integral Consulting Inc.
8742 E. Washington St.
Suite 115
Chagrin Falls, OH 44022

telephone: 303.404.2944
www.integral-corp.com

May 9, 2025

Project No. C4274

Office of Real Estate & Land Management
Ohio Department of Natural Resources
2045 Morse Road, E-2
Columbus, OH 43229
environmentalreviewrequest@dnr.ohio.gov

Submitted via email

Subject: **MSC Site, Canfield, Mahoning County, Ohio Environmental Review Request**

To Whom It May Concern:

Per your email request, Integral Consulting Inc. (Integral) is submitting this request for an environmental review of the Site located at and adjacent to 460 W. Main St, Canfield, Mahoning County, Ohio (approximately centered on 41.027837°, -80.777932° in WGS 84). The Site boundaries are provided in the attached shapefile. The subject area includes an on-site area (including Material Sciences Corporation parcel and portions of the Mill Creek Metroparks parcel) and an off-site area (including additional parcels along Sawmill Creek). This request includes both Material Sciences Corporation (MSC) parcel and wetland and portions of Sawmill Creek in order to consolidate requests for the environmental review. The on-site MSC parcel and wetland habitat includes approximately 4.9 acres of developed/industrial areas, 6.0 acres of upland forest, 1.6 acres of wetland, and 0.5 acres of a ditch.

The environmental review will be used to support the wetland delineation, ORAM form completion, and ecological risk assessment associated with the spill and response activities at the site.[1] Investigation and remedial actions led by August Mack (on behalf of Material Sciences Corporation) will be conducted in close coordination with Ohio EPA under the RCRA program.

This letter constitutes Integral's fulfillment of required information to complete ODNR's environmental review request. If there is additional information that would prove helpful, please do not hesitate to reach out.

[1] https://www.mscresponse.com/

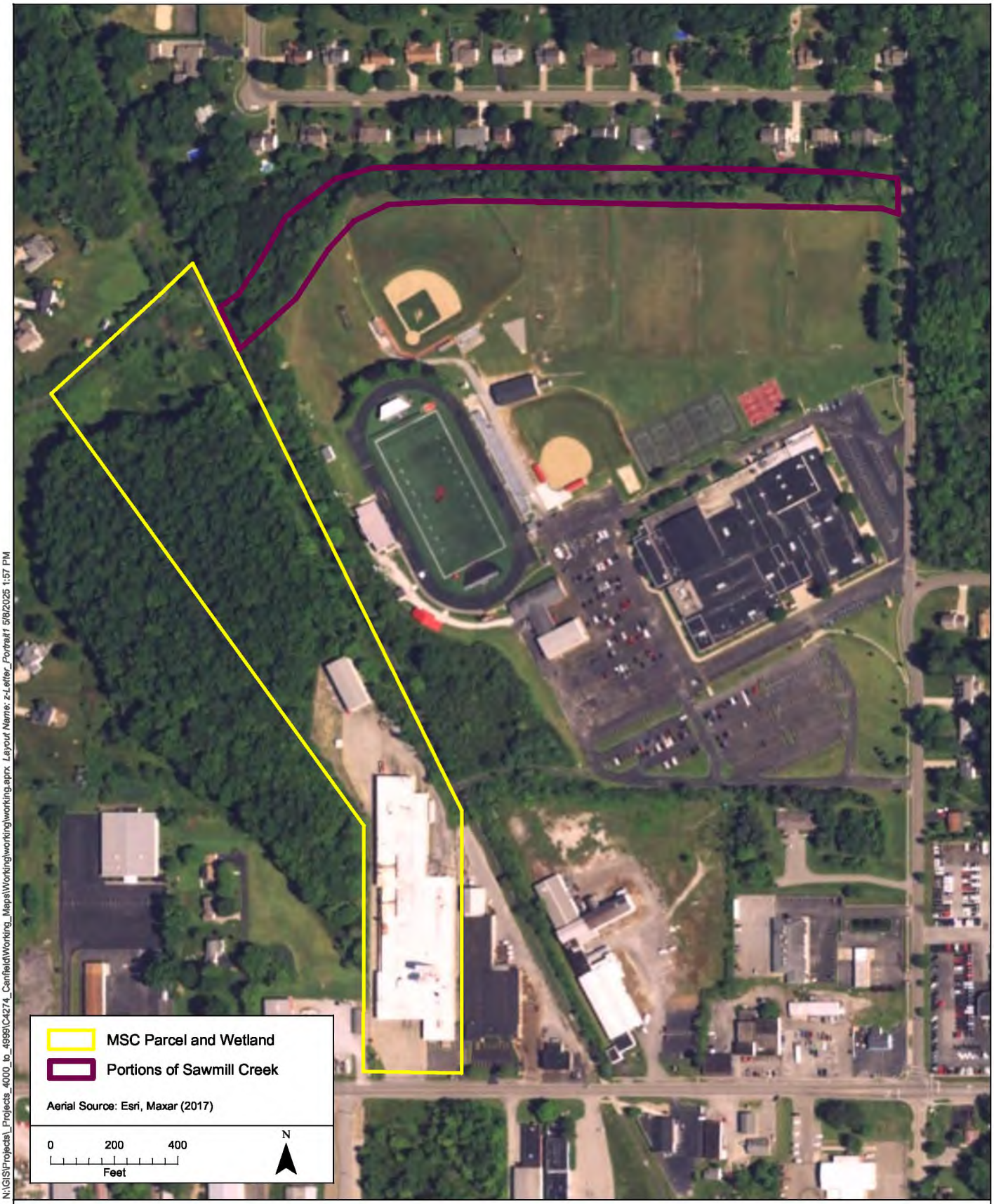
Thank you for your consideration of our request. We look forward to hearing from you.

Sincerely,

Cristal Reagh

Cristal Reagh
Scientist

Enclosure: Shapefile



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: z-Letter_Portrait1 5/8/2025 1:57 PM

integral consulting inc.

Figure 1.
Site Boundaries
Material Science Corporation
Canfield OH

Outlook

Confirmation Receipt for ODNR Environmental Review Request Submission

From EnvironmentalReviewRequest@dnr.ohio.gov <EnvironmentalReviewRequest@dnr.ohio.gov>
Date Fri 5/9/2025 1:14 PM
To Cristal Reagh <creagh@integral-corp.com>

[CAUTION: External email. Think before you click links or open attachments.]

Thank you for contacting the Ohio Department of Natural Resources. This email is your receipt that we have received your message and/or project review request.
We aim to provide a completed Environmental Review comment letter within 45-60 calendar days, however, during periods of high volume or other extenuating circumstances, it may be longer. If you have any questions please contact Mike.Pettegrew@dnr.ohio.gov

Attachment C

November 2024 Photo Log

File Name: IMG_0575
Date/Time: 2024:11:21 14:03:27
Latitude:
Longitude:
Description: Staging area and mobile treatment units

File Name: IMG_0576
Date/Time: 2024:11:21 14:03:36
Latitude:
Longitude:
Description: Material Sciences Corporation facility (looking toward Main St.)

File Name: IMG_0578
Date/Time: 2024:11:21 14:07:24
Latitude:
Longitude:
Description: Forest area near temporary access road with erosion control measures and material stockpiles adjacent to leaf-littered ground and mature trees.

File Name: IMG_0579
Date/Time: 2024:11:21 14:07:25
Latitude:
Longitude:
Description: Temporary access road (walking north).

File Name: IMG_0580
Date/Time: 2024:11:21 14:07:27
Latitude:
Longitude:
Description: Personnel walking along temporary access road.

File Name: IMG_0582
Date/Time: 2024:11:21 14:07:33
Latitude:
Longitude:
Description: Wooded area with felled trees and accumulated debris adjacent to sediment management activities.

File Name: IMG_0584
Date/Time: 2024:11:21 14:08:16
Latitude:
Longitude:
Description: Temporary mud matting through upland forested area (ditch and temporary fencing along right side of photo).

File Name: IMG_0585
Date/Time: 2024:11:21 14:10:08
Latitude:
Longitude:
Description: Gravel access road looking south towards staged roll off boxes. Facility is in far background.

File Name: IMG_0587
Date/Time: 2024:11:21 14:10:12
Latitude:
Longitude:
Description: Temporary fenced boundary along bikeway, with flagged markers indicating designated areas for sampling in Adjacent Ditch.

File Name: IMG_0588
Date/Time: 2024:11:21 14:13:20
Latitude:
Longitude:
Description: Temporary gravel access road, water bypass pump, wetland area.

File Name: IMG_0591
Date/Time: 2024:11:21 14:15:36
Latitude:
Longitude:
Description: Outlet of ditch bypass, vegetation.

File Name: IMG_0592
Date/Time: 2024:11:21 14:17:26
Latitude:
Longitude:
Description: Wetland area with visible vegetation and leaf litter.

File Name: IMG_0594
Date/Time: 2024:11:21 14:17:35
Latitude:
Longitude:
Description: Scrub/shrub habitat near wetland.

File Name: IMG_0596
Date/Time: 2024:11:21 14:17:41
Latitude:
Longitude:
Description: Gravel access road, bypass pumps, sediment control measures, and adjacent vegetation.

File Name: IMG_0597
Date/Time: 2024:11:21 14:17:47
Latitude:
Longitude:
Description: Outlet of bypass pump near wetland.

File Name: IMG_0598
Date/Time: 2024:11:21 14:20:31
Latitude:
Longitude:
Description: Adjacent Ditch (looking south toward facility). Bypass pool in foreground.

File Name: IMG_0599
Date/Time: 2024:11:21 14:20:32
Latitude:
Longitude:
Description: Temporary dam to collect water from Adjacent Ditch.

File Name: IMG_0604
Date/Time: 2024:11:21 14:23:00
Latitude:
Longitude:
Description: Bypass pump in foreground, roll off boxes staging area in background.

File Name: IMG_0608
Date/Time: 2024:11:21 14:24:22
Latitude:
Longitude:
Description: Upland forest and scrub/shrub habitat.

File Name: IMG_0610
Date/Time: 2024:11:21 14:24:41
Latitude:
Longitude:
Description: Leaf litter.

File Name: IMG_0614
Date/Time: 2024:11:21 14:31:22
Latitude:
Longitude:
Description: Forested upland

File Name: IMG_0617
Date/Time: 2024:11:21 14:31:30
Latitude:
Longitude:
Description: Forested upland with property boundary marker.

File Name: IMG_0621
Date/Time: 2024:11:21 14:32:41
Latitude: 41.02905556
Longitude: -80.77842778
Description: Metal mesh debris observed on leaf-covered ground in upland area.

File Name: IMG_0622
Date/Time: 2024:11:21 14:32:59
Latitude: 41.02909444
Longitude: -80.77841111
Description: Brambles between forest and wetland habitat.

File Name: IMG_0625
Date/Time: 2024:11:21 14:43:40
Latitude: 41.02926389
Longitude: -80.77828333
Description: Deer path through wetland.

File Name: IMG_0626
Date/Time: 2024:11:21 14:43:48
Latitude: 41.02926667
Longitude: -80.77828333
Description: Vegetation in wetland (foreground), forested upland (background), looking south.

File Name: IMG_0628
Date/Time: 2024:11:21 14:44:25
Latitude: 41.02928611
Longitude: -80.77829722
Description: Vegetation in wetland.

File Name: IMG_0635
Date/Time: 2024:11:21 14:47:36
Latitude: 41.02935278
Longitude: -80.77825833
Description: Vegetation in wetland.

File Name: IMG_0638
Date/Time: 2024:11:21 14:49:30
Latitude: 41.02936667
Longitude: -80.77820556
Description: Vegetation in wetland.

File Name: IMG_0642
Date/Time: 2024:11:21 14:51:31
Latitude: 41.02936111
Longitude: -80.77831944
Description: Wetland habitat.

File Name: IMG_0649
Date/Time: 2024:11:21 14:58:10
Latitude: 41.02945
Longitude: -80.77842778
Description: Animal scat and leaf litter in wetland area.

File Name: IMG_0652
Date/Time: 2024:11:21 14:59:07
Latitude: 41.029475
Longitude: -80.77838056
Description: Wetland transition to upland forest.

File Name: IMG_0653
Date/Time: 2024:11:21 14:59:10
Latitude: 41.02948056
Longitude: -80.77838056
Description: Standing snag in wetland.

File Name: IMG_0655
Date/Time: 2024:11:21 14:59:29
Latitude: 41.02950278
Longitude: -80.77828889
Description: Standing snag and large woody debris in wetland.

File Name: IMG_0659
Date/Time: 2024:11:21 15:02:26
Latitude: 41.02962778
Longitude: -80.77830556
Description: Channels with standing water in wetland area.

File Name: IMG_0662
Date/Time: 2024:11:21 15:03:51
Latitude: 41.02949444
Longitude: -80.77849444
Description: Deer print in sediment in wetland area.

File Name: IMG_0665
Date/Time: 2024:11:21 15:04:11
Latitude: 41.02949444
Longitude: -80.77847222
Description: Vegetation in wetland area.

File Name: IMG_0670
Date/Time: 2024:11:21 15:07:51
Latitude: 41.0294
Longitude: -80.778625
Description: Wildlife path through wetland.

File Name: IMG_0672
Date/Time: 2024:11:21 15:16:27
Latitude: 41.02926389
Longitude: -80.77902222
Description: Access from wetlands to northern bike trail. Large *Phragmites* stands in background.

File Name: IMG_0673
Date/Time: 2024:11:21 15:16:29
Latitude: 41.02915278
Longitude: -80.77883056
Description: Open channel in wetland.

File Name: IMG_0674
Date/Time: 2024:11:21 15:16:34
Latitude: 41.02915278
Longitude: -80.77880833
Description: Open channel in wetland.

File Name: IMG_0675
Date/Time: 2024:11:21 15:18:32
Latitude: 41.02916667
Longitude: -80.778625
Description: Wetland area.

File Name: IMG_0677
Date/Time: 2024:11:21 15:19:23
Latitude: 41.02905556
Longitude: -80.778525
Description: Tree base with moss.

File Name: IMG_0682
Date/Time: 2024:11:21 15:26:28
Latitude: 41.02893056
Longitude: -80.77808333
Description: Tree with fungal growth and signs of rutting.

File Name: IMG_0684
Date/Time: 2024:11:21 15:27:01
Latitude: 41.02899167
Longitude: -80.77799167
Description: Forested habitat.

File Name: IMG_0688
Date/Time: 2024:11:21 15:27:41
Latitude: 41.02901944
Longitude: -80.77808333
Description: Forested habitat.

File Name: IMG_0694
Date/Time: 2024:11:21 15:29:56
Latitude: 41.02911389
Longitude: -80.77801389
Description: Foreground tree trunk with surrounding leaf litter and debris, adjacent to wetland vegetation and temporary construction materials within the site boundary near containment efforts.

File Name: IMG_0705
Date/Time: 2024:11:21 15:32:45
Latitude: 41.02970833
Longitude: -80.77796111
Description: Concrete structure between wetland and bikeway.

File Name: IMG_0706
Date/Time: 2024:11:21 15:32:52
Latitude: 41.02968611
Longitude: -80.77796111
Description: Wetland area.

File Name: IMG_0707
Date/Time: 2024:11:21 15:32:54
Latitude: 41.02969444
Longitude: -80.77795278
Description: Wetland area.

File Name: IMG_0711
Date/Time: 2024:11:21 15:34:31
Latitude: 41.02963889
Longitude: -80.77806111
Description: Sediment control measures around perimeter of standing water portion of wetland.

File Name: IMG_0713
Date/Time: 2024:11:21 15:34:35
Latitude: 41.02961389
Longitude: -80.778075
Description: Sediment control measures around perimeter of standing water portion of wetland.

File Name: IMG_0714
Date/Time: 2024:11:21 15:34:39
Latitude: 41.02960833
Longitude: -80.778075
Description: Sediment control measures around perimeter of standing water portion of wetland.

File Name: IMG_0715
Date/Time: 2024:11:21 15:34:41
Latitude: 41.02959722
Longitude: -80.77808333
Description: Wetland habitat.

File Name: IMG_0718
Date/Time: 2024:11:21 15:37:57
Latitude: 41.02982222
Longitude: -80.77794722
Description: Vegetation on bikeway berm.

File Name: IMG_0719
Date/Time: 2024:11:21 15:38:37
Latitude: 41.02986389
Longitude: -80.77798333
Description: Looking from bikeway berm towards wetland. Water control structure in mid-photo.

File Name: IMG_0720
Date/Time: 2024:11:21 15:38:47
Latitude: 41.02986111
Longitude: -80.77799167
Description: Wetland with water control structure in foreground and sediment control coir log and *Phragmites* stands in background.

File Name: IMG_0724
Date/Time: 2024:11:21 15:39:00
Latitude: 41.02988056
Longitude: -80.77798333
Description: View of wetland area (looking west).

File Name: IMG_0725
Date/Time: 2024:11:21 15:40:16
Latitude: 41.02950556
Longitude: -80.77767222
Description: View of bypassed Adjacent Ditch (looking upstream).

Attachment D

Ecological Scoping Checklist

Level I Attachment B
Ecological Scoping Checklist

Part 1			
SITE INFORMATION			
Site Name: Canfield Site		Date: 11/21/24	
Personnel: Jen Lyndall (Integral, lead) and Lindsay Hanna (MAD Scientist)		Time Arrived: 13:31	
(Identify team leader)		Time Departed: 16:25	
Site Address: 460 W. Main St, Canfield, OH 44406			
Site Location:	Latitude: 41.027837	Longitude: -80.777932	
Site Size (acres): Approx. 13.4 acres			
Weather Conditions (note any unusual conditions): Cloudy, scattered snow.			

Land uses at and adjacent to the site: (Circle all that apply and record at or adjacent)			
Residential Adjacent	Commercial	Recreational Adjacent	Industrial At/Adjacent
Agricultural	Urban	Green-Space/ Undeveloped At/adjacent	Other:_____

Note: This checklist provides a suggested format. The format may be altered to fit the needs of the site; however, all pertinent information should be presented.

Part 2		
CONTAMINANTS OF INTEREST		
Contaminants of Interest and *Ecological Stressors* (Types, names including CASRN, classes, or specific *hazardous substances* and non-chemical stressors either known or suspected)	Onsite (O) or Adjacent (A) to the site	Media (soil, sediment, wetland, surface water, ground water (seeps/springs))
Benzo(a)pyrene	Onsite, adjacent	soil, surface water
Benzo(b)fluoranthene	Onsite, adjacent	soil, surface water
Arsenic	Onsite. adjacent	soil
Cyanide	Onsite, adjacent	soil
Benzo(a)anthrecene	Onsite	surface water
Benzo(k)fluoranthene	Onsite	surface water
Indeno(1,2,3-cd)pyrene	Onsite	surface water
Mercury	Onsite	surface water
Zinc	Onsite, adjacent	soil, surface water
Dibenz(a,h)anthracene	Onsite, adjacent	soil
Chromium	Onsite, adjacent	soil

Part 3

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS/HABITAT

Terrestrial – Wooded 45 % of site

Dominant vegetation (circle one):
Coniferous Deciduous Mixed

Dominant tree diameter
diameter at breast height (*dbh*): ____ (inches)

Evidence/observation of wildlife*: squirrels, deer, birds

Terrestrial - Shrub/scrub/grasses 2 % of site

Dominant vegetation (circle one):
shrub/scrub grasses

vegetation density: Dense, Patchy, Sparse
Prominent height of shrub/scrub (<2', 2' to 5', >5')
Prominent height of grasses/herbs (<2', 2' to 5', >5')
Evidence/observation of wildlife*: birds

Terrestrial - Ruderal/Engineered 37 % of site

Dominant vegetation/surfaces (circle one):
Landscaped Agricultural Bare ground
Parking lot Artificial surfaces
Dominant vegetation height (0', >0' - 2', 2' - 5', >5')
Vegetation Density: Dense Patchy Sparse
Evidence/observation of wildlife*:
Bird calls

Aquatic - Non-Flowing (Lentic) ____% of site

Type: Lake Pond Vernal Pool Lagoon
Engineered** Impoundment Reservoir
Water source: Surface water Ground water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands
Bottom Substrate***:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of wildlife*:

Aquatic - Flowing (Lotic) 4 % of site
Aquatic Life Use Designation (if available) _____
Type: River Stream Intermittent Stream
Ditch
Water source: Surface Water Ground Water
Industrial discharge (seeps /springs)
Storm water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate**:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of Wildlife*: Ditch bypassed during site visit

Aquatic - Wetlands 12 % of site
Size 1.6 (acres)
Obvious or designated wetland: (Yes / No)
Water source: Surface Water Ground Water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate***: muck
Vegetation: Submerged Emergent Floating

Evidence/Observation of Wildlife*: Deer tracks, birds

* Wildlife includes: macroinvertebrates, reptiles, amphibians, birds, mammals, and fish.
** Engineered can mean any surface water body that has been artificially created or significantly altered.
*** Bottom substrate types include but not limited to: cobble, gravel, sand, silt, clay, muck, artificial (*e.g.*, concrete).

Part 4
Ecologically Important Resources Observed

Attachment E

Wetland Delineation Report

JURISDICTIONAL WATERS AND ISOLATED WETLANDS REPORT:

Mill Creek Metropark and Adjacent Area
Canfield, Ohio 44406

December 11, 2024

Prepared for:

Integral Consulting, Inc.
8472 E. Washington St. #115
Chagrin Falls, OH 44023

Prepared by:

MAD SCIENTIST ASSOCIATES LLC

Specialists in
Ecological & Wetland Consulting

253 North State Street, Suite 101 Westerville, Ohio 43081 (614) 818-9156 Fax (614) 818-9157 www.madscientistassociates.net

TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

LIST OF APPENDICES

Appendix

EXECUTIVE SUMMARY

Integral Consulting, Inc. (Integral) contracted MAD Scientist Associates, LLC (MAD) to investigate and assess aquatic resources across a ~5-acre area located to the northwest of the Material Sciences Corporation building at 460 W. Main St, Canfield, Mahoning County, Ohio (hereafter referred to as the Delineation Area). The Delineation Area is centered approximately on the following coordinates: 41.027837°, -80.777932° (WGS 84). The primary objectives of this study were to identify the boundaries of any Jurisdictional Waters (*i.e.*, non-Isolated Wetlands, streams) or Isolated Wetlands and evaluate their quality using methods developed by the Ohio Environmental Protection Agency (Ohio EPA).

Field work was completed by MAD on November 21, 2024. Wetlands were identified and delineated at the Delineation Area. One (1) identified wetland feature (Wetlands A) amounted to approximately 6.92 acres across the Delineation Area. The wetland was scored using the Ohio Rapid Assessment Method (ORAM, version 5.0) and received a score of 47. This classifies Wetland A as a Category 2 wetland.

All jurisdictional and isolated surface water features identified in this report are regulated by the Ohio EPA or the United States Army Corps of Engineers (USACE). Permits from one or both these agencies may be required if impacts (*e.g.*, placement of fill material) are proposed for the identified features. The permit(s) needed are dependent on the acreage of impact and the type of wetlands or streams affected. The determination of jurisdictional status must be verified by the USACE.

According to the USFWS Information for Planning and Consultation (IPaC) resource list, there is one (1) T&E species—the Indiana Bat—that could be potentially impacted in the project vicinity. However, no critical habitat for either species is found at the Delineation Area. Four bat species are listed as state and/or federally threatened or endangered in Ohio. Specifically, tricolored bats (state endangered), northern long-eared bats (state E, federally threatened), Indiana bats (state and federally E) and little brown bats (state E) are listed and protected. Before any tree clearing occurs, correspondence with ODNR and/or USFWS should take place to avoid take of T&E species or their habitat. MAD is also currently awaiting results from the ODNR Natural Heritage Database to confirm whether any additional listed species may be present in the area and will submit the findings as an addendum to this report once a response is received.

JURISDICTIONAL WATERS AND ISOLATED WETLANDS REPORT
Mill Creek Metropark and Adjacent Area
MAHONING COUNTY, OHIO

1 INTRODUCTION

Integral Consulting, Inc. (Integral) hired MAD Scientist Associates, LLC (MAD) to investigate and assess aquatic resources across a ~5-acre area located the northwest of the Material Sciences Corporation building at 460 W. Main St, Canfield, Mahoning County, Ohio (hereafter referred to as the Delineation Area). The Delineation Area is centered approximately on the following coordinates: 41.027837°, -80.777932° (WGS 84). The Delineation Area is located on the Mill Creek Metroparks parcel to the northwest of Material Sciences Corporation (Figures 1 and 2).

A Jurisdictional Waters and Isolated Wetlands Investigation (full wetland delineation) was completed at the Delineation Area. The primary objectives of this study were to identify the boundaries of Jurisdictional Waters (*i.e.*, non-Isolated Wetlands, streams) or Isolated Wetlands and evaluate their quality using methods developed by the Ohio Environmental Protection Agency (Ohio EPA).

1.1 General Site Description

The Delineation Area and its aquatic resources fall within the Middle Meander Creek watershed (12-digit HUC: 050301030702). The Delineation Area slopes from 1119 feet above mean sea level (AMSL) in the southern forested portion to 1112 feet AMSL in the northern emergent portion, before rising back to 1116 feet AMSL in the north along the bike path. The forested portion is dominated by pin oak (*Quercus palustris*). At the time of the Delineation Area visit, there was no understory based on the late fall timing. North of the forest, the Delineation Area opens up into an emergent wetland dominated by invasive species including giant reed (*Phragmites australis*) and reed canarygrass (*Phalaris arundinacea*). Shrub species including red-osier dogwood (*Cornus sericea*) and bush honeysuckle (*Lonicera* spp.) were located along the border between the forest and the wetland in the eastern portion of the Delineation Area. One stream flowing west to east (Sawmill Creek) and a ditch flowing south to north, were observed flowing into and across Wetland A, converging in the eastern edge of the wetland before flowing offsite to the north. All

water flows offsite to the northeast through a culvert with a water control structure. General site photographs are presented in Appendix A.

1.2 Wetland Definition and Authority

The United States Army Corps of Engineers (USACE) uses the following definition of wetlands:

> *Those 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 generally include swamps, marshes, bogs, and similar areas.*

As a result of a 2001 Supreme Court decision (Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers, 531 U.S. 159 [2001]) further defined by a 2023 Supreme Court decision (Sackett et ux. V. Environmental Protection Agency et. al., 598 U.S.___[2023]) , the USACE no longer regulates Isolated Wetlands (those with no discernible surface connection to streams or rivers). In Ohio, this regulatory authority has been assumed by the Ohio EPA through its Isolated Wetlands Permit program.

Because Site conditions suggest that wetlands are present and federal and state regulations control the discharge of fill materials in such areas, the presence and extent of these wetlands has been determined.

2 OBJECTIVES

The primary objectives of this study were to determine the presence and quality of Jurisdictional Waters (non-Isolated Wetlands, streams) and Isolated Wetlands on the Delineation Area, mark their boundaries, and evaluate the habitat quality of each feature.

3 METHODS

This Jurisdictional Waters and Isolated Wetlands study consisted of two phases: (1) a review of the existing general literature via a desktop review and (2) a field investigation to "ground truth" existing data on the presence and extent of Jurisdictional Waters and Isolated Wetlands. Wetlands were identified according to the methods presented in the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory, 1987; henceforth referred to as the 1987 Manual) and the

Northcentral and Northeast Regional Supplement Version 2.0 (USACE, 2012). If a wetland (either isolated or non-isolated) or stream was found, its extent was subsequently determined by defining its boundary. The methods and materials used are described in greater detail in the following sections.

3.1 Literature Review

The following data sources were reviewed and used as supplemental information on the vegetation, soils, hydrology, and land use cover types of the Delineation Area:

- Google Earth Library. 2024. USGS Topographic Maps. Warren, OH quadrangle.
- Google Earth Pro aerial photographs. 2024.
- Ohio Geographically Referenced Information Program (OGRIP). 2012. High Resolution Orthoimagery.
- OGRIP. 2012. LiDAR.
- Ohio Department of Natural Resources (ODNR). 2024. Natural Heritage Database.
- U.S. Department of Agriculture. 2024. Web Soil Survey 3.4.0 Soil Conservation Service, http://websoilsurvey.nrcs.usda.gov/ app/WebSoilSurvey.aspx.
- U.S. Department of Homeland Security. 2023. Flood Insurance Rate Map (FIRM) Panel 39099C0194D (effective as of 11/18/2009). Federal Emergency Management Agency.
- U.S. Fish and Wildlife Service, 2024. National Wetland Inventory (NWI) map layer for the Warren, OH quadrangle. Google Earth Pro.

3.2 Site Investigation for Wetlands

Field work was completed by MAD's Team, comprised of Certified Wetland Delineator, Lindsay Hanna on November 21, 2024. Weather conditions during field work were cold and snowy with 0.21 inches of precipitation throughout the day.

During field activities, the Team examined and evaluated the vegetation, soils, and hydrologic features of the Delineation Area to determine the presence of wetland conditions. Where wetlands were found, their boundaries were delineated. Throughout the Delineation Area, the Team recorded data on the three wetland parameters (vegetation, soils, and hydrology) within representative wetland and adjacent upland sample plots. The classification schemes of Cowardin *et al.* (1979) and Dahl *et al.* (2015) were used to generally describe wetland community types.

3.2.1 Vegetation

Plants that occur in wetlands (hydrophytes) must have specific physiological and morphological adaptations that allow them to germinate and survive under saturated or anaerobic conditions. The ability of plants to withstand the stresses presented by these conditions varies. This has led to the categorization of plants into indicator status groups by the USACE and the United States Fish and Wildlife Service (USFWS). These groupings (obligate, OBL; facultative wetland, FACW; facultative, FAC; facultative upland, FACU; and upland, UPL) reflect the estimated probability of occurrence in wetlands for each species. Table 1 presents the categories and their definitions.

TABLE 1. PLANT INDICATOR STATUS CATEGORIES (Lichvar *et al.*, 2016)

Indicator Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	Plants that occur almost always (estimated probability >99%) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1%) in non-wetlands. Examples: *Spartina alterniflora, Taxodium distichum.*
Facultative Wetland	FACW	Plants that occur usually (estimated probability >67% to 99%) in wetlands, but also occur (estimated probability 1% to 33%) in non-wetlands. Examples: *Fraxinus pennsylvanica, Cornus sericea.*
Facultative Plants	FAC	Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands. Examples: *Gleditsia triacanthos, Smilax rotundifolia.*
Facultative Upland	FACU	Plants that occur sometimes (estimated probability 1% to <33%) in wetlands but occur more often (estimated probability >67% to 99%) in non-wetlands. Examples: *Quercus rubra, Potentilla arguta.*
Obligate Upland Plants	UPL	Plants that occur rarely (estimated probability <1%) in wetlands but occur almost always (estimated probability >99%) in non-wetlands under natural conditions. Examples: *Pinus echinata, Bromus mollis.*

In each sample plot, herbaceous species within a 5-foot radius of the plot center, woody shrubs and saplings within a 15-foot radius, and tree and vine species within a 30-foot radius of the plot center were identified and recorded. The indicator status of the dominant species was then used to determine the presence of wetland vegetation. If more than 50% of the dominant species in a sample plot consisted of plants with an indicator status of OBL, FACW, or FAC for the Northcentral and Northeast Region (USACE, 2010), the plot was considered to contain wetland vegetation. If this criterion was not met, alternative metrics defined in the Northcentral and

Northeast Regional Supplement were used to confirm the presence or absence of hydrophytic vegetation.

3.2.2 Soils

For the hydric soils parameter to be satisfied, soils must be saturated, flooded, or ponded for a sufficient portion of the growing season to develop anaerobic conditions in the upper layers of the soil profile (USDA, 2010). The Soil Conservation Service (SCS—now called the Natural Resource Conservation Service, NRCS) and the National Technical Committee for Hydric Soils, have compiled a list of hydric soils of the United States (USDA, 2015). This list identifies the NRCS-mapped soil series that meet hydric soil criteria. However, since upland soils may have hydric soil inclusions, and hydric soils may contain pockets of upland soils, field examination of soils is an important component of the field investigation.

Under saturated, reducing (anaerobic) conditions, hydric soils exhibit characteristics that allow them to be distinguished from drier, upland soils. These include high organic matter content, accumulation of sulfidic material, green- or blue-gray color formation (gleied soils), redoximorphic features (such as mottling, sometimes associated with oxidized root zones), and dark or gray (low value or chroma) soils.

During the Delineation Area investigation, sampling was accomplished by using a spade shovel to observe soils to a depth of at least 30 centimeters. All soils were examined for hydric indicators and data were recorded in the field. Soil colors were identified using a Munsell Soil Color Chart (Kollmorgen, 1992).

3.2.3 Hydrology

Hydrology is the single-most important determinant of the establishment and maintenance of specific types of wetlands and wetland processes (Mitsch and Gosselink, 1993). Although water must be present for wetlands to exist, it need not be present throughout the entire year. Wetland hydrology is considered to be present when an area is inundated either permanently or periodically at mean water depths less than 6.6 feet or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation (Environmental Laboratory, 1987). In Mahoning County, Ohio, the average growing season extends from April through October (USDA-NRCS, 2020).

Indicators of hydrologic conditions that occur in wetlands include, but are not limited to, drainage patterns, drift lines, sediment deposition, watermarks, stream gauge data and flood predictions, historic records, visual observation of saturated soils, and visual observation of inundation (Environmental Laboratory, 1987). These indicators, plus others, such as dry algae on bare soil, water-stained leaves, or oxidized zones along live root channels (forming mottles), were documented at each sampling plot where found.

Where positive indicators of wetland hydrology were observed, it was assumed that wetland hydrology was present for a significant period during the growing season. Table 2 summarizes the hydrologic regimes and associated probability of the presence of wetlands, as presented in the 1987 Manual.

3.2.4 Wetland Delineation

Vegetation, soil, and hydrology were examined at each sample plot, and field data forms were completed to document existing conditions. At locations where all three wetland parameters were satisfied, or under normal circumstances would have been satisfied, a positive wetland determination was made. After evaluating all sample plots, a boundary determination was made where a distinct transition from wetland to upland was observed. Where ambiguous, the boundaries were marked accordingly, using pink flagging tape. This boundary was then extended around areas with similar vegetation, soils, and hydrology indicators to encompass the entire wetland.

If any of the three wetland parameters failed to be satisfied, the area was considered an upland (non-wetland) community, unless it was significantly disturbed. Disturbed areas may lack field indicators of one or more of the wetland parameters, due to recent changes. These can include both wetlands and non-wetlands that have been modified by human activity (*e.g.*, clearing of original vegetation, filling, excavation, or construction), or natural events (*e.g.*, mudslides, fire, and beaver dam construction).

During the investigation, the Team took photographs to document the wetland and sample plot locations, and wetland boundaries were logged and mapped using a hand-held Trimble GeoExplorer 6000XH GPS unit. This unit is capable of sub-foot accuracy, with differential correction (post-processing) for improved accuracy. The precision of GPS data is subject to variation in canopy cover, atmospheric interference, and satellite configuration.

TABLE 2: NON-TIDAL HYDROLOGIC REGIMES AND THEIR ASSOCIATION WITH WETLAND HYDROLOGY

Degree of Inundation or Saturation	Duration of Inundation or Saturation*	Comments
Permanently inundated	100%	Inundation >6.6 ft mean water depth - deepwater wetland present (aquatic habitat)
Semi-permanently to nearly permanently inundated or saturated	>75 - <100%	Inundation defined as ≤ 6.6 ft mean water depth - wetland present
Regularly inundated or saturated	>25 - 75%	Areas with these hydrologic characteristics are usually wetlands
Seasonally inundated or saturated	>12.5 - 25%	Wetlands often present when these hydrologic characteristics exist
Irregularly inundated or saturated	≥ 5 - 12.5%	Many areas having these hydrologic characteristics are not wetlands
Intermittently or never inundated or saturated	<5%	Areas with these hydrologic characteristics are not wetlands

*Refers to duration of inundation and/or soil saturation during the growing season.
SOURCES: Adapted from Clark and Benforado (1981), and Environmental Laboratory (1987).

3.2.5 Wetland Assessment

To document the relative quality of the wetlands at the Delineation Area, the Ohio Rapid Assessment Method (ORAM, version 5.0) for wetlands was used to score the wetland and assign it to a wetland category (Ohio EPA, 2001). This method was developed by the Ohio EPA to evaluate flood/storm water control; water quality improvement; natural biological support; and overall and specific habitat values for Ohio wetlands. The qualitative portion of the ORAM also addresses the statewide scarcity of particular types of wetlands and the potential presence of Threatened or Endangered (T&E) species.

The Ohio EPA ranks wetlands as Category 1, 2, or 3, depending on their relative quality (based on size, habitat value, etc.), with Category 3 representing the highest quality wetlands in Ohio.

4 RESULTS

The literature findings and field observations have confirmed the presence of one (1) wetland within Delineation Area boundaries. These findings are discussed in greater detail in the following sections.

4.1 Literature Findings

Based on literature review, the Delineation Area contains a riverine (RuB) system mapped on the National Wetland Inventory. In addition, a palustrine forested (PFO) wetland is mapped offsite to the west of the Delineation Area (NWI; Figure 3). The wetland portion of the Delineation Area is located within 0.2% Annual Chance Flood Hazard area according to the Federal Emergency Management Agency (FEMA; Appendix B).

The UDSA-NRCS soil survey (Appendix C) indicates that the following soils are located onsite:

- Marengo silty clay loam (Mn)
- Rittman silt loam, 2 to 6 percent slopes (RsC2)

Marengo silty clay loam, which comprises the wetland area onsite, is considered hydric, while Rittman silt loam, which is located along the southern forested edge of the Delineation Area, is not considered hydric.

According to the USFWS Information for Planning and Consultation (IPaC) resource list and ODNR state listings, all counties in Ohio lie within the range of four rare Threatened and Endangered (T&E) bat species: Indiana bat (*Myotis sodalis;* federally and state endangered); northern long-eared bat (*Myotis septentrionalis;* federally threatened, state endangered), tricolored bat (*Perimyotis subflavus;* state endangered), and little brown bat (*Myotis lucifugus;* state endangered). In Ohio, these bats are assumed present wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. The USFWS also states that if a federal nexus exists for the project (*i.e.*, if federal permits are required to construct at the Site), "no tree clearing should occur on any portion of the project area until consultation under Section 7 of the Endangered Species Act (ESA), between the USFWS and the federal action agency, is completed."

Besides bats, the monarch butterfly (*Danaus plexippus*), a candidate species, is listed in the preliminary IPaC for this Delineation Area. Given their preferred habitat requirements, it is not expected that this species has great potential to be impacted onsite. Additionally, MAD has submitted a request for review from the ODNR Natural Heritage Database to confirm whether any additional listed species may be present in the area and will submit the findings as an addendum

to this report once a response is received. Agency response letters, including recommendations for avoidance and impact minimization, can be viewed in Appendix D.

4.2 Site Findings

A Jurisdictional Waters and Isolated Wetland investigation with field mapping was completed during the Delineation Area visits on November 21, 2024. Field tasks included documentation of general conditions, such as existing plant communities and the locations, sizes, and quality of all wetlands and streams. The findings are summarized in the following sections.

4.2.1 General Observations

The forested portion of the Delineation Area is dominated by pin oak. At the time of the Delineation Area visit, there was no understory based on the late fall timing. North of the forest, the Delineation Area opens up into an emergent wetland dominated by invasive species such as giant reed and reed canarygrass. Shrub species including red-osier dogwood and bush honeysuckle were located along the border between the forest and the wetland in the eastern portion of the Delineation Area. One stream flowing west to east (Sawmill Creek) and a ditch flowing south to north, were observed flowing into and across Wetland A, converging in the eastern edge of the wetland before flowing offsite to the north. All water flows offsite to the northeast through a culvert with a water control structure.

4.2.2 Wetlands

One (1) wetland—Wetland A—was delineated within the Delineation Area (Figure 4). The wetland is summarized in Table 3.

TABLE 3: WETLAND SUMMARY TABLE

Location ID	Size	Isolated/ Non-isolated*	Vegetation Type(s)	Cowardin *et al.* (1979) Classification	ORAM Score	Category**
Wetland A	6.92	Non-isolated	Emergent	PEM	47	2
				Category 2 Total Acreage		*6.92*

*Determination on isolation status, category must be verified by USACE and Ohio EPA, respectively.
**Ohio EPA requires that the higher Category be assigned for "gray zone" scores unless a lower category is substantiated through completion of a more detailed study such as a Vegetation Index of Biotic Integrity (VIBI) assessment.

Based on Delineation Area observations and literature review, Wetland A contains a surface water connection with a Water of the U.S., meaning it is most likely jurisdictional. Sample plot and ORAM data forms for this wetland are provided in Appendices E and F, respectively.

Wetland A Detailed Description

Wetland A totals approximately 6.92 acres onsite, located along the floodplain of Sawmill Creek. The wetland feature predominantly consists of emergent hydrophytic vegetation that is dominated by invasive reed canary grass and giant reed. A shrub buffer of red-osier dogwood is located along the southeastern edge of the wetland, and a few pin oak snags were observed within the wetland. Wetland hydrology indicators for the wetland include oxidized rhizospheres on living roots, saturation visible on aerial imagery, geomorphic position, and passage of the FAC-neutral test. Hydric soil indicators exhibited within Wetland A include a depleted matrix (F3).

Wetland A received an ORAM score of 47 overall, with poor individual metric scores for buffers, habitat development, and vegetation community. Wetland A is situated along the northwestern boundary of the Delineation Area, bordered by residential development to the north, east, and west, with a buffer of forested area to the south. The wetland has a number of hydrology inputs and appears to be largely unimpacted in its hydrology and substrate. However, the wetland is dominated by invasive species and contains moderate wildlife habitat.

4.2.4 Threatened and Endangered Species

The USFWS IPaC list indicates that there are the Indiana Bat was the only T&E species that could be present in the project vicinity. These can be found in the preliminary agency review in Appendix D. The monarch butterfly (*Danaus plexippus*), a candidate species, is also listed in the preliminary IPaC for this Delineation Area. Given the preferred habitat requirements of all three species, it is not expected that they have great potential to be impacted onsite.

Overall, four bat species—tricolored bats (State E), northern long-eared bats (State E and federally T), Indiana bats (State and Federally E) and little brown bats (State E)—are listed and protected in all Ohio counties. Should removal of any potential roost trees be necessary, agency correspondence with ODNR and USFWS should take place. A seasonal tree clearing window may be permissible, which recommends tree removal between October 1 and March 31, when these bats would likely not be present. The USFWS also states that if a federal nexus exists for the project (*i.e.,* if federal

permits are required to construct at the Site), "no tree clearing should occur on any portion of the project area until consultation under Section 7 of the Endangered Species Act (ESA), between the USFWS and the federal action agency, is completed." MAD is also currently awaiting results from the ODNR Natural Heritage Database to confirm whether any additional listed species may be present in the area and will submit the findings as an addendum to this report once a response is received.

5 SUMMARY & CONCLUSIONS

Wetlands: One wetland (Wetland A) was mapped and assessed at the Delineation Area. The total onsite wetland area is approximately 6.92 acres. The wetland was scored per the scoring boundary guidelines presented in the ORAM manual. Wetlands A was categorized as a Category 2 Wetland with an ORAM score of 47. Category 2 wetlands, meanwhile, are defined as those wetlands that "...support moderate wildlife habitat, or hydrological or recreational functions," and as wetlands which are "...dominated by native species but generally without the presence of, or habitat for, rare, T&E species; and wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions" (Ohio EPA, 2001).

Threatened and Endangered Species: The USFWS indicate that there is one (1) listed T&E species that could be present in the project vicinity, along with the monarch butterfly (a candidate species). These findings can be viewed in Appendix D. In addition, tricolored bats (state E), northern long-eared bats (state E and federally T), Indiana bats (state and federally E) and little brown bats (state E) are listed and protected in all Ohio counties. Before any tree clearing takes place, especially if there is a federal nexus for the Site, correspondence with USFWS should occur to follow recommendations for avoidance of take of T&E species or their habitat. A request for a Delineation Area review has been submitted to the Ohio Natural Heritage Database, but a response has not been received by MAD at the time of writing this report.

LITERATURE CITED

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish & Wildlife Service. FWS/OBS-79/31. 103 pp.

Dahl, T.E., Dick, T., Swords, J., and B.O. Wilen. 2015. Data Collection Requirements and Procedures for Mapping Wetland, Deepwater and Related Habitats of the United States (Version 2). USFWS Division of Habitat and Resource Conservation, National Standards and Support Team. Madison, WI. 92 pp.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report. Y-87-1. U.S. Army Engineers Waterways Experiment Station. Vicksburg, MS.

Google Earth Library. 2024. USGS Topographic Maps. Ashland, OH quadrangle. Based on U.S. Geological Survey 7.5 Minute topographic map series.

Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2016. The National Wetland Plant List: 2016 update of wetland ratings. Phytoneuron 2016-30: 1–17. Published 28 April 2016. ISSN 2153 733X

Kollmorgen. 1975. Munsell Soil Color Charts. Kollmorgen Corp. Baltimore, MD.

Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands. Second Edition. Van Nostrand Reinhold. New York. 722 pp.

Ohio EPA. 2001. Ohio Rapid Assessment Method for Wetlands. Version 5.0 Final. Ohio Environmental Protection Agency. Columbus, Ohio.

Ohio EPA. 2020. Field Methods for Evaluating Primary Headwater Streams in Ohio. Version 4.1. Ohio EPA Division of Surface Water, Columbus, Ohio. 130 pp.

U. S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development.

USDA. 1995. Soil Survey of Mahoning County, Ohio. Soil Conservation Service in cooperation with Ohio Department of Natural Resources Division of Lands and Soil and Ohio Agricultural Research and Development Center.

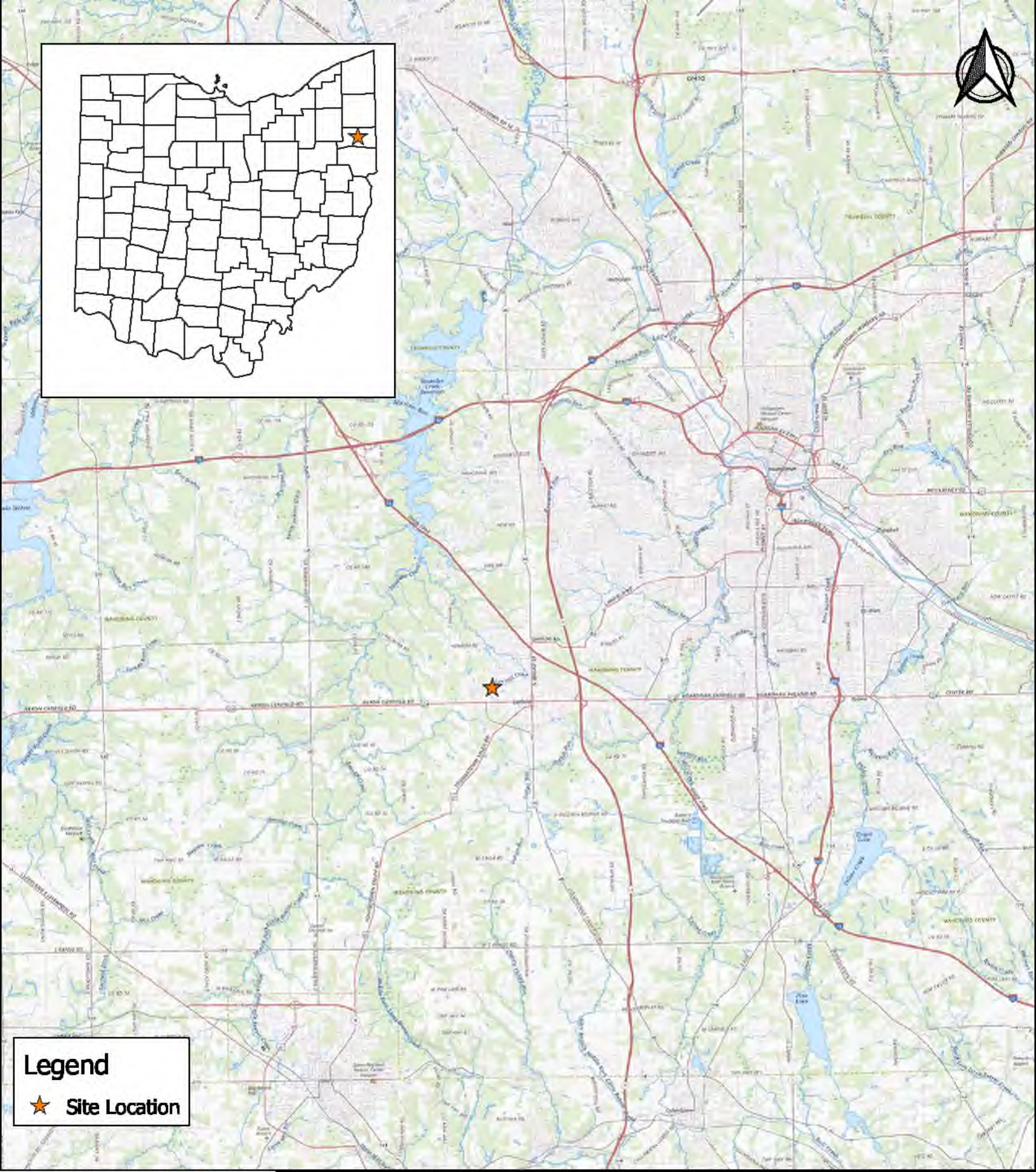
USDA. 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. Natural Resources Conservation Service. U.S. Dept. of Agriculture. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.) in cooperation with the National Technical Committee for Hydric Soils.

USDA. 2024. Web Soil Survey 3.4.0 Soil Conservation Service http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed September 11, 2024.

USDA-NRCS. 2024. National Water & Climate Center. https://efotg.sc.egov.usda.gov/treemenuFS.aspx. Accessed September 15, 2024.

USFWS. 2024. National Wetland Inventory Map. Olivesburg, OH Quadrangle. U.S. Fish and Wildlife Service. Google Earth Pro. Accessed October 25, 2024.

FIGURES



MAD SCIENTIST ASSOCIATES LLC

Figure 1. Site Location
Integral Consulting, Canfield Site
Canfield, Ohio

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

MAD SCIENTIST ASSOCIATES LLC

Figure 2. Site Aerial
Integral Consulting, Canfield Site
Canfield, Ohio

250 0 250 500 750 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

MAD SCIENTIST ASSOCIATES LLC

Figure 3. NWI-Mapped Waters
Integral Consulting, Canfield Site
Canfield, Ohio

250 0 250 500 750 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery
NWI-Mapped Imagery

MAD SCIENTIST ASSOCIATES LLC

Figure 4. Wetland Boundary
Integral Consulting, Canfield Site
Canfield, Ohio

100 0 100 200 300 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

APPENDIX A

Photographs

MAD SCIENTIST ASSOCIATES LLC

Photo Locations
Integral Consulting, Canfield Site
Canfield, Ohio

50 0 50 100 150 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

Photograph 1. Soil at sample point TP-1

Photograph 2. North view from TP-1.

Photograph 3. East view from TP-1.

Photograph 4. South view from TP-1.

Photograph 5. West view from TP-1.

Photograph 6. View of TP-1, facing northwest.

Photograph 7. Soil at sample point TP-2.

Photograph 8. Oxidized rhizospheres in lower soil layers at TP-2.

Photograph 9. North view from TP-2.

Photograph 10. East view from TP-2.

Photograph 11. South view from TP-2.

Photograph 12. West view from TP-2.

Photograph 13. Wetland edge on southeast side, facing south downstream.

Photograph 14. Wetland A interior facing northwest from southeast edge.

Photograph 15. Temporary disturbed area for response action within Wetland A.

Photograph 16. Wetland edge west of TP-1 facing northeast.

Photograph 17. Wetland interior facing west from edge.

Photograph 18. North view of Wetland A interior.

Photograph 19. East view of Wetland A interior.

Photograph 20. South view of Wetland A interior.

Photograph 21. West view of Wetland A interior.

Photograph 22. Upland edge of Wetland A, facing south.

APPENDIX B

FEMA Floodplain Map

National Flood Hazard Layer FIRMette

FEMA

80°46'59"W 41°1'56"N

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

1:6,000

80°46'21"W 41°1'28"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 Cross Sections with 1% Annual Chance
- 17.5 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.

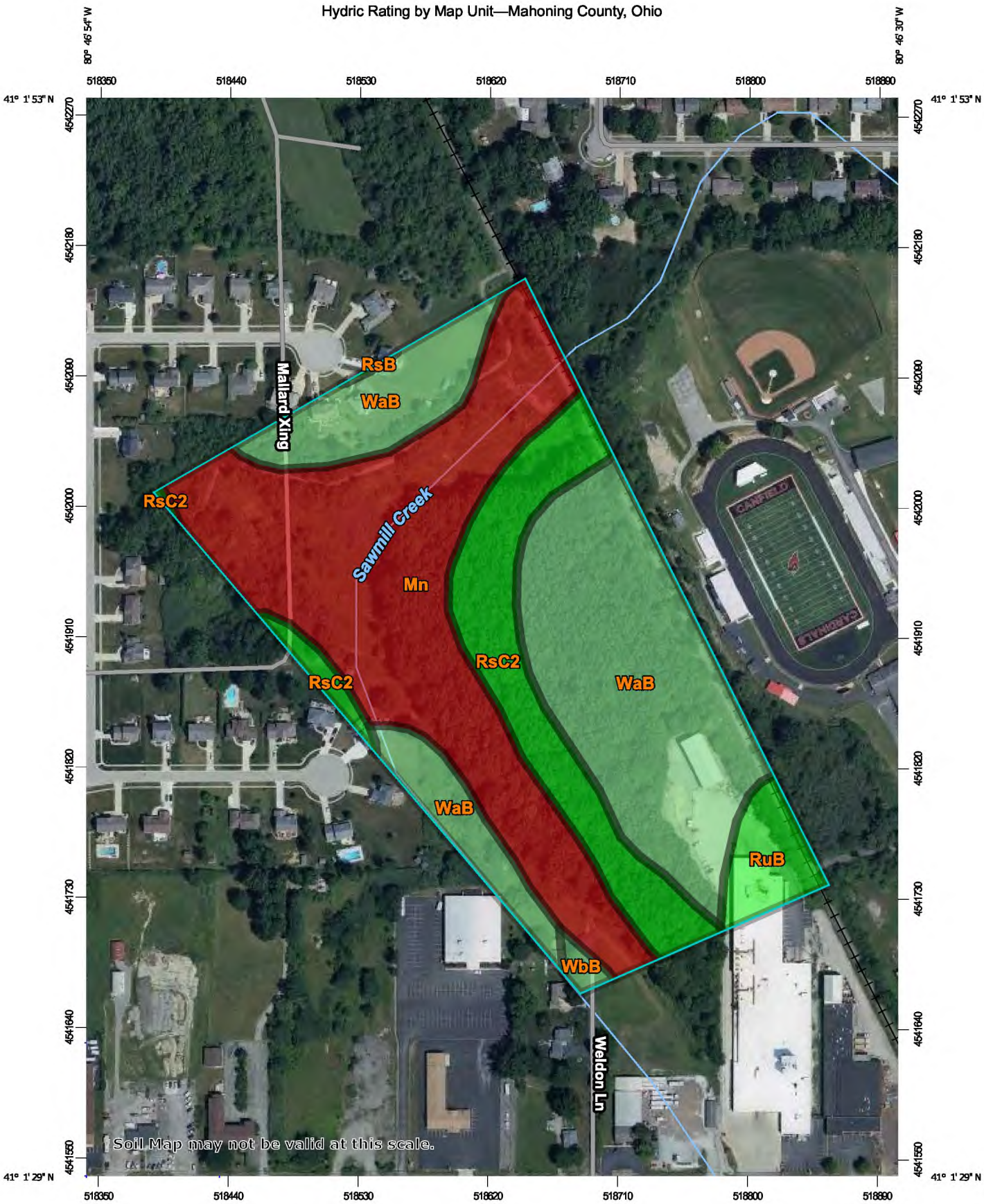
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/3/2024 at 3:22 PM** 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.

APPENDIX C

Web Soil Survey – Hydric Rating Map



Map Scale: 1:3,630 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Mahoning County, Ohio
Survey Area Data: Version 22, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2020—Aug 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Mn	Marengo silty clay loam	100	10.7	39.2%
RsB	Rittman silt loam, 2 to 6 percent slopes	0	0.0	0.1%
RsC2	Rittman silt loam, 6 to 12 percent slopes, eroded	0	4.4	16.2%
RuB	Rittman-Urban land complex, 2 to 6 percent slopes	0	1.1	4.1%
WaB	Wadsworth silt loam, 2 to 6 percent slopes	8	10.9	39.7%
WbB	Wadsworth-Urban land complex, 2 to 6 percent slopes	5	0.2	0.7%
Totals for Area of Interest			**27.4**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

APPENDIX D

State & Federal Agency Correspondence

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mahoning County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can**only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species.Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the"Supplemental Information on Migratory Birds and Eagles"

Additional information can be found using the following links:

- Eagle Managementhttps://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles"specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence(■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

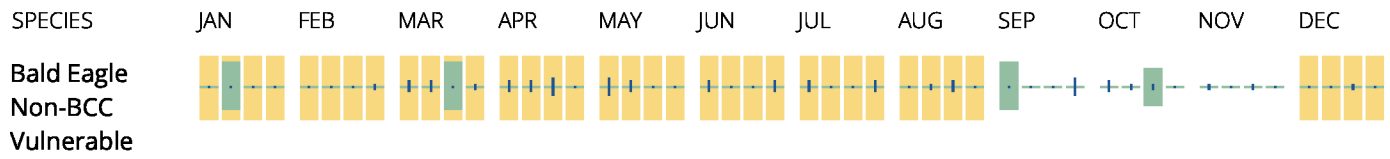
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

probability of presence breeding season | survey effort – no data



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles"

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Managementhttps://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birdshttps://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQbelow. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit theE-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be foundbelow.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Belted Kingfisher *Megaceryle alcyon* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Jul 25

Blue-winged Warbler Vermivora cyanoptera — Breeds May 1 to Jun 30
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Eastern Meadowlark Sturnella magna — Breeds Apr 25 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rose-breasted Grosbeak Pheucticus ludovicianus — Breeds May 15 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles"specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence(■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

probability of presence breeding season survey effort no data

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary.Additional measures orpermits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PSS1C

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX E

Wetland Delineation Sample Plot Data Forms

Background Information

Name:
Date:
Affiliation:
Address:
Phone Number:
e-mail address:
Vegetation Communit(ies):
HGM Class(es):
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Lat/Long or UTM Coordinate	
USGS Quad Name	
County	
Township	
Section and Subsection	
Hydrologic Unit Code	
Site Visit	
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	

Name of Wetland:	
Wetland Size (acres, hectares):	

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Comments, Narrative Discussion, Justification of Category Changes:

Final score :	**Category:**

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.		
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.		
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.		
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.		
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site:	Rater(s):	Date:

Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☐ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☐ <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☐ Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☐ filling/grading
- ☐ road bed/RR track
- ☐ dredging
- ☐ other_____

Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
- ☐ grazing
- ☐ clearcutting
- ☐ selective cutting
- ☐ woody debris removal
- ☐ toxic pollutants
- ☐ shrub/sapling removal
- ☐ herbaceous/aquatic bed removal
- ☐ sedimentation
- ☐ dredging
- ☐ farming
- ☐ nutrient enrichment

subtotal this page

last revised 1 February 2001 jjm

Site:	Rater(s):	Date:

subtotal first page

Metric 5. Special Wetlands.

max 10 pts. subtotal

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

max 20 pts. subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [ ] Vegetated hummucks/tussucks
- [ ] Coarse woody debris >15cm (6in)
- [ ] Standing dead >25cm (10in) dbh
- [ ] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size		
	Metric 2. Buffers and surrounding land use		
	Metric 3. Hydrology		
	Metric 4. Habitat		
	Metric 5. Special Wetland Communities		
	Metric 6. Plant communities, interspersion, microtopography		
	TOTAL SCORE		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.


MAD
SCIENTIST
ASSOCIATES LLC

Attachment F

Evaluation of Potential Ecological Harm

Level I Attachment C

EVALUATION OF POTENTIAL ECOLOGICAL HARM		Y	N	U
Are ecological stressors present or potentially present in:				
a	Soil	X		
b	Surface Water	X		
c	Sediment	X		
d	Ground Water			X
e	Other (biotic media)			X
f	Are important ecological resources located at, or in the locality of the site?			X

"Y" = yes; "N" = No, "U" = Unknown (counts as a "Y")

When answering the above questions, consider the following:

X Known or suspected presence of ecological stressors stored, used or manufactured at the site.
X Ability of ecological stressors to migrate from one medium to another.
X The mobility of the various media.
X Transfer of contaminants through food webs and uptake of chemicals by organisms.
X The presence of important ecological resources, including surface waters on or in the locality of the site.

(a) If "Y" or "U" boxes in Attachment C are checked for row f and any other row, then a recommendation to move to Level II should be made for an assessment of the appropriate aquatic and/or terrestrial habitat. In completing this attachment, a lack of knowledge, presence of high uncertainty, or any "unknown" circumstances should be tabulated as a "U".

(b) If all of the "No" boxes in Attachment C are checked, or if only row f, or only rows a through e are checked “No”, then the site is highly unlikely to present significant risks to important ecological receptors and a recommendation for no further ecological investigations should be made.

Level II Ecological Risk Assessment

Material Sciences Corporation Parcel and Adjacent Wetland, Canfield, Ohio

Prepared for

August Mack Environmental
7830 North Central Drive, Suite B
Lewis Center, OH 43035

Prepared by

Integral Consulting Inc.
8742 E. Washington, #115
Chagrin Falls, OH 44022

May 2025

CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

August Mack	August Mack Environmental
COPEC	chemical of potential ecological concern
CSM	conceptual site model
Eco-SSL	ecological soil screening level
EDR	Environmental Data Resources, Inc.
EPA	U.S. Environmental Protection Agency
GIS	geographic information system
Integral	Integral Consulting Inc.
MAD Scientist	MAD Scientist Associates LLC
MSC	Material Sciences Corporation
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
ORAM	Ohio Rapid Assessment Method
PBT	persistent, bioaccumulative, and toxic
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
RSL	regional screening level
TEC	threshold effect concentration
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION AND BACKGROUND

Integral Consulting Inc. (Integral) has prepared this Level II ecological risk assessment on behalf of August Mack Environmental (August Mack) for the Material Sciences Corporation (MSC) parcel and adjacent wetland in Canfield, Ohio (Figures 1 and 2). For the purposes of this Level II ecological risk assessment, the term "site" refers to the MSC parcel and the term "assessment area" refers to the MSC parcel and a portion of the adjacent wetland (Figure 3). This assessment follows the completion of a Level I ecological risk assessment (Integral 2025).

The site is located in Mahoning County at 460 West Main Street, Canfield, Ohio (centered at 41.027837, –80.777932) and is bordered to the north and east by the Mill Creek Metroparks Bikeway, to the west by Hometown Produce Company and Mill Creek Metroparks property, and to the south by Route 224 Main Street (Figure 3). The 13.4-acre assessment area includes a 4.9-acre facility/engineered area, approximately 6 acres of terrestrial forested habitat, approximately 0.3 acres of scrub-shrub habitat, approximately 0.6 acres of stream, and approximately 1.6 acres of wetland habitat (Figure 4).

- **Facility/engineered area:** MSC operates the facility in the southern 4.9 acres of the assessment area. This area includes paved parking areas, some gravel access areas, and the facility buildings. The southern building includes offices and operations, while the northern building includes storage. Trucks use the docking area in the southwestern portion of the property.
- **Terrestrial habitat:** Approximately 6.3 acres of the assessment area consists of undeveloped forested upland habitat and scrub-shrub habitat.
- **Aquatic habitat:** Aquatic habitat in the assessment area includes two ditches and a wetland. The unnamed ditch runs to the west of the facility and Adjacent Ditch is located to the east of the facility. Water from both ditches flows north to a wetland and feeds into Sawmill Creek. Water level in the wetland is controlled by a gated culvert, located on Mill Creek Metroparks property, which allows water to pass under the bikeway as Sawmill Creek. An ecological risk assessment for Sawmill Creek is presented under separate cover.

In July 2024, an incident occurred at the facility that prompted additional investigation and interim remediation of chemicals along the Adjacent Ditch.[1] As part of that investigation, the Ohio Environmental Protection Agency (Ohio EPA) requires an evaluation of potential ecological risk assessment within the assessment area. This Level II ecological risk assessment builds on the previous scoping analysis presented in the Level I ecological risk assessment (Integral 2025). A Level II ecological risk assessment is a screening level assessment that is used to evaluate whether chemicals present from the site may pose risk to

[1] https://www.mscresponse.com/.

ecological resources in the assessment area. This report follows the Ohio EPA guidance and report outline (Ohio EPA 2018).

In accordance with Ohio EPA guidance (Ohio EPA 2018), this assessment was based on existing data, including the *Initial Site Investigation Report* (August Mack 2024), assessment area photos, aerial imagery, and a site visit, which included an evaluation of habitat type and extent, observations of species present, signs of ecological use, and a wetland delineation. In addition, the following documents, maps, or other publications were reviewed in the preparation of this report:

- Environmental Data Resources, Inc. (EDR), The EDR Aerial Photo Decade Package, Inquiry Number 7821917.5, dated November 14, 2024
- EDR, The EDR-City Directory Image Report, Inquiry Number 7821917.8, dated November 18, 2024
- EDR, The EDR Radius Map with GeoCheck, Inquiry Number 07821917.2r, dated November 14, 2024
- EDR, Certified Sanborn Map Report, Inquiry Number 7821917.3, dated November 14, 2024
- Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Maps
- U.S. Department of Agriculture, Soil Conservation Service, Soil Surveys
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory database, http://www.fws.gov/wetlands/Data/Mapper.html
- U.S. Geological Survey, Topographic Maps
- U.S. Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Map.

1.1 SITE HISTORY

The MSC Canfield facility building was constructed in 1950 for the Life Time Products Corporation, Coated Steel Division (Ohio EPA and MSC 2024). Manufacturing operations included surface coating, machining, spray painting, and metal fabricating (Ohio EPA and MSC 2024). In the 1950s or 1960s, the facility became known as Canfield Steel, which was purchased by Pittsburgh Steel Corporation in 1968 to form the Pittsburgh-Canfield Corporation. The facility was acquired in 2013 by New Star Metals, a predecessor to MSC.[2] The facility is still operational.

[2] The facility also previously operated as the Canfield Coating Company.

The coating and electro galvanizing processes use multiple solvents and metals, and the facility is classified as a large quantity generator (EPA ID: OHD000810283). During normal operations, waste is disposed of offsite at an appropriate disposal facility.[3] Chemicals listed on the Toxic Release Inventory forms are cyanide, xylene, ethylbenzene, methyl isobutyl ketone, *n*-butyl alcohol, 1,2,4-trimethylbenzene, nitric acid, phosphoric acid, sodium hydroxide, toluene, and methyl ethyl ketone.

The facility operates under an approved 80 percent synthetic minor air permit (OH0000000250030020).[4]

1.2 HISTORICAL REGULATORY STATUS

In 1992, the U.S. Environmental Protection Agency (EPA) issued a preliminary assessment/ visual site inspection assessment report in response to a permit application. Of the 12 solid waste management units identified, EPA recommended that the former waste chromate solution treatment area undergo closure under the Resource Conservation and Recovery Act (RCRA). Documentation was not available to indicate the solid waste management unit locations, potential overlap with the current assessment area, or any implemented actions.

In 2008, Ohio EPA reached a settlement with Canfield Metal Coating Corporation for past hazardous waste violations and issued an administrative consent order[5] for violations that occurred at 460 West Main Street in Canfield. The settlement included a $10,300 penalty of which $8,240 was deposited into the state's hazardous waste cleanup fund and the remainder was contributed to the Ohio EPA Clean Diesel School Bus Program.

The facility had three informal violations in 2022 related to waste storage and disposal. All violations were corrected before the next inspection.

The facility has not had any air permit violations in the last 5 years.[6]

1.3 CURRENT REGULATORY STATUS

In July 2024, MSC and state and local agencies responded to a report of a release of process fluids in the Adjacent Ditch. During the initial response, personnel observed conditions that indicated some fluid had leaked from the facility into groundwater and sediment of the Adjacent Ditch. It is unclear how long the release had occurred. Emergency response was

[3] https://enviro.epa.gov/facts/tri/ef-facilities/#/Water/44406CNFLD460WE.
[4] https://enviro.epa.gov/envirofacts/icis-air/plant?handlerId=OH0000000250030020.
[5] https://dam.assets.ohio.gov/image/upload/epa.ohio.gov/Portals/32/pdf/Signed%20DFFO.web.Canfield%20Metal%20Coating%20Corp.%2009.03.08.pdf.
[6] https://echo.epa.gov/detailed-facility-report?fid=110000389561.

immediately initiated, in close coordination with Ohio EPA and other agencies. Initial sampling indicated the presence of "residual byproducts from the metal coating process, including elevated levels of sodium hydroxide, zinc, chromium and cyanide."[7] The emergency response included placing temporary fencing; sealing drains, pipes, and manholes; bypassing the adjacent ditch; extracting potentially contaminated water; and placing a liner in the ditch to prevent contact of surface water with impacted sediment.

The site was transferred into the RCRA program to address potential longer-term investigation and remediation following the completed emergency interim response. Ohio EPA issued an administrative consent order on December 31, 2024, to conduct corrective actions necessary at the site.

August Mack conducted an initial site investigation to analyze chemical concentrations at the site and throughout the assessment area, specifically in groundwater, soil, and surface water samples. The results are summarized in August Mack (2024). Selected figures from that report are reproduced in Attachment A. Surface water and soil data from August Mack (2024) indicated that the primary chemicals of concern in the assessment area were cyanide, zinc, hexavalent chromium, and trichloroethene, as follows:[8]

- **Soil/Sediment**
  - Hexavalent chromium and zinc in sediment within the Adjacent Ditch exceeded the EPA residential regional screening level (RSL).
  - Total cyanide in sediment within the Adjacent Ditch exceeded the EPA industrial RSL.
  - Total cyanide and zinc in the wetland sediment exceeded the EPA residential RSL.
  - Arsenic in Adjacent Ditch sediment and wetland sediment exceeded residential and/or industrial RSLs, but has not historically been used at the site and concentrations are generally consistent with background concentrations.
  - Other chemicals in Adjacent Ditch that exceeded the 2024 EPA residential RSLs for soil were benzo[*a*]pyrene and benzo[*b*]fluoranthene.
  - Other chemicals in the Adjacent Ditch and/or the wetland that exceeded the 2024 EPA industrial regional soil screening levels included benzo[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, dibenz[*a,h*] anthracene, cadmium, and lead.
  - High pH (8.3 to 11.7) was measured within the Adjacent Ditch.

[7] https://www.mscresponse.com/.
[8] These data were not compared to ecological toxicity benchmarks in August Mack (2024).

- **Surface Water**
  - Zinc in the Adjacent Ditch exceeded the Ohio River Basin Human Health Tier 1 Criteria for non-drinking surface water.
  - Other chemicals that exceeded Ohio River Basin Human Health Tier 1 Criteria for non-drinking surface water were mercury, benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, benzo[*k*]fluoranthene, and indeno[1,2,3-*cd*]pyrene.

Ohio EPA approved a ditch lining plan, which will separate stormwater flow within the ditch from potential subsurface groundwater impacts and eliminate the direct contact potential of the ditch soils to both human and ecological sensitive receptors.

1.4 LEVEL I REPORT

The Level I ecological risk assessment report (Integral 2025) indicates that there are chemicals of interest[9] detected in environmental media in the assessment area that have the potential to pose a risk to ecological receptors. Integral (2025) concluded that:

- Chemicals were present in groundwater, soil, sediment,[10] and surface water in the assessment area (August Mack 2024).
- Ecological habitat (including habitats that may be used by threatened and endangered species) is present in the assessment area.
- Signs of relevant ecological receptors were observed during the site visit, but the timing of the observations (i.e., November) prohibited a full ecological characterization.
- Wetlands are present, of moderate quality, and dominated by invasive species.

Because site-related chemicals were detected in environmental media that may be used by ecological receptors, the Level I ecological risk assessment concluded that a Level II ecological risk assessment was needed.

[9] The term "chemical of interest" is used in Level I ecological risk assessment in accordance with Ohio EPA guidance (Ohio EPA 2018). Chemicals of interest are screened in the Level II ecological risk assessment to determine if they are chemicals of potential ecological concern (COPECs).
[10] The initial sampling classified all solids samples as soil. However, for the purposes of the ecological risk assessment, solids collected from within the wetland and ditch areas are considered to be sediment.

2 SITE SURVEY AND DESCRIPTION

A detailed site survey was conducted on November 21, 2024, to gather qualitative and semiquantitative data necessary for identifying relevant and complete exposure pathways in the assessment area. The site survey included geographic information system (GIS) mapping and analysis, confirmation of habitat, wetland delineation, wetland quality assessment using the Ohio Rapid Assessment Method (ORAM), terrestrial receptor inventory based on visual observations, and an avian inventory using the Merlin Bird Identification application (Merlin Bird ID 2024). A photo log is provided in Attachment B, the ecological scoping checklist is provided in Attachment C, and the wetland delineation report is provided in Attachment D. Observations from each of the main habitat areas are described below.

- **Facility/Engineered Area**: Approximately 4.9 acres (37 percent) of the assessment area consists of developed and engineered areas, which include paved parking lots, facility buildings, and gravel areas. No vegetation or wildlife was observed in this area.
- **Terrestrial Habitat**: Terrestrial wooded habitat makes up 6.0 acres (45 percent) of the assessment area. This deciduous forested habitat is dominated by oak (*Quercus* spp.), hickory (*Carya* spp.), and maple (*Acer* spp.). The mature trees have a typical diameter at breast height of 12 in. During the site visit, squirrels were observed, and deer signs (game paths, prints, tree bark scraping at approximately 3 to 4 ft above ground surface indicating rutting) were noted. Birds seen or heard during the site visit, included American crow, song sparrow, northern cardinal, swamp sparrow, and blue jay.

  Approximately 0.3 acres (2 percent) along the bike trail is scrub-shrub habitat. The area along the bikeway includes grasses and poison ivy.
- **Aquatic Habitat:** Aquatic habitat in the assessment area includes wetland and ditches.
  - Wetland: Approximately 1.6 acres (12 percent) of the assessment area is wetland habitat. The wetland was delineated by MAD Scientist Associates LLC (MAD Scientist) on November 21, 2024, and is classified as a palustrine emergent wetland.[11] The wetland area includes a large open water portion, some small (6–12 in. wide and less than 12 in. deep) open channels, and areas with submerged and emergent vegetation. The wetland is dominated by invasive species including stands of *Phragmites australis* and reed canary grass. Other typical wetland vegetation observed included *Carex* species. When present, this vegetation was dense and tall (greater than 5 ft). A shrub buffer along the southeastern edge of the wetland includes red-osier dogwood, bush honeysuckle, and multiflora rose.
  - Ditches: Approximately 0.6 acres (4 percent) of the assessment area is a ditch, which based on shape and alignment, appears to have been straightened. No

[11] The acreage presented the wetland delineation (Attachment D) is larger than the acreage presented in this report because it includes a large portion of the wetland that is located to the west of the assessment area (i.e., upstream).

standing water was present in the ditch during the site visit, which occurred after a ditch bypass had been installed as part of the emergency response actions.

Vegetation conditions observed in the assessment area were characteristic of the fall season. Because the site visit occurred in late November, many understory trees and emergent vegetation had senesced or died back.

3 LEVEL II SCREENING RESULTS

This Level II ecological risk assessment identified the environmental media of interest in the assessment area and then identified chemicals of potential ecological concern (COPECs) as those present at concentrations above ecotoxicological benchmarks. The results of the COPEC screening and assessment area investigation were used to develop a conceptual site model (CSM), including the identification of relevant and complete exposure pathways, ecological receptors of interest, and candidate assessment endpoints. The results of each of these steps are detailed in the following sections.

3.1 ENVIRONMENTAL MEDIA

Consistent with Ohio EPA guidance (Ohio EPA 2018), environmental media of interest for the ecological risk assessment are surface soil, surface sediment, and surface water. The initial investigation evaluated chemical concentrations in groundwater, surface soil/sediment, subsurface soil/sediment, and surface water (August Mack 2024). Although some chemicals have been detected in groundwater and subsurface soil, ecological receptors would not come into contact with these environmental media (discussed in more detail in Section 3.3.1) and do not require further evaluation in this ecological risk assessment.

The relevant environmental media for ecological risk assessment vary between terrestrial and aquatic exposure areas.

- Terrestrial exposure area including the upland forested habitat
  - Surface soil (0–1.2 m below ground surface) based on the depth of burrowing mammals[12]
  - Wildlife tissue from food items (i.e., invertebrates and plants that live in soil).
- Aquatic exposure area including the wetland habitat and the Adjacent Ditch
  - Surface water
  - Surface sediment (0–15 cm) based on the bioactive zone as specified in Ohio EPA (2018)
  - Wildlife tissue from food items (i.e., invertebrates and plants that live in the wetland).

[12] This Ohio EPA (2018)-recommended surface soil depth is based on burrowing mammals. This depth is highly conservative because most mammals burrow to substantially shallower depths. If a Level III ecological risk assessment is conducted, the depth of surface soil may be updated based on mammals observed in the assessment area.

3.2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN

The analytical chemistry results were screened against relevant ecotoxicological benchmarks to identify COPECs for each environmental medium. The screening process followed the procedure in Ohio EPA (2018) except that chemical screening compared to background concentrations was not conducted because few background samples were available. Any chemical that met one or both of the following criteria was not of ecological concern and therefore was removed from further evaluation:

- The maximum detected concentration is less than the ecotoxicological screening benchmark.
- The maximum detection limit of a nondetected chemical is less than its screening benchmark.

A chemical was retained as a COPEC for further evaluation if it met one or both of the following criteria:

- The maximum detected concentration exceeds the screening benchmark.
- Ohio EPA (2018) defines the chemical as persistent, bioaccumulative, and toxic (PBT).

Ohio EPA (2018) also allows removal of a detected chemical if it is present at a low frequency of detection (<5 percent). This criterion did not apply to the screening evaluation for soil or surface water because the site-specific data set contained fewer than 20 samples within the assessment area boundary. More than 20 surface water samples were collected, however, so the chemicals detected in less than 5 percent of sediment samples were excluded as COPECs.

3.2.1 Surface Soil

Chemicals detected in soil were compared to screening values following the hierarchy in Ohio EPA (2018):

- EPA's ecological soil screening levels (Eco-SSLs)[13]
- Preliminary remediation goals for ecological endpoints (Efroymson et al. 1997).

When soil screening benchmarks were unavailable from these two sources, Integral used screening values from the EPA Region 4 soil screening values for hazardous waste sites (Table 3 in USEPA 2018). The soil COPEC screening is summarized in Table 1.

[13] https://www.epa.gov/chemical-research/interim-ecological-soil-screening-level-documents. The lowest (i.e., most conservative) of the chemical-specific bird or mammal Eco-SSLs or the USEPA (2018) soil screening benchmarks were used to select the soil COPECs, if available.

Three metals were identified as COPECs in soil (Table 2). Chromium and zinc exceeded their relevant soil screening values, and lead is a PBT chemical.

3.2.2 Surface Water

Chemicals detected in surface water were compared to the outside mixing zone maximum chemical criteria presented in OAC 3745-1-35. Metals with hardness-dependent criteria were evaluated based on a water hardness value of 200 mg/L, which is representative of aquatic systems in the area that ranged from 140 to 330 mg/L (Ohio EPA 1996). For surface water screening, total and dissolved analytical results for metals were screened separately. The surface water COPEC screening is summarized in Table 3.

Integral identified 14 metals and polycyclic aromatic hydrocarbons (PAHs) were identified as COPECs in surface water samples (Table 2). Arsenic, barium, hexavalent chromium, copper, selenium, zinc, benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*ghi*]perylene, benzo[*a*]fluoranthene, indeno[1,2,3-*cd*]pyrene, and cyanide exceed the relevant screening values. Lead and mercury were identified as COPECs because they are PBT compounds (Table 2).

3.2.3 Surface Sediment

Chemicals detected in sediment were compared to the consensus-based threshold effect concentrations (TECs) from MacDonald et al. (2000) in accordance with OEPA (2018). TECs are available only for select metals and PAHs. When sediment screening benchmarks were not available in MacDonald et al. (2000), Integral used the EPA Region 4 sediment screening values for hazardous waste sites: non-narcotic modes of action (Table 2a in USEPA 2018). The soil COPEC screening is summarized in Table 4.

Integral identified 23 COPECs in sediment samples including metals, PAHs, polychlorinated biphenyls (PCBs),[14] and semivolatile organic compounds because of either exceedances of the screening value or their status as PBT compounds (Table 2).

3.3 CONCEPTUAL SITE MODEL

A CSM provides a framework for understanding how COPECs interact with the environment by defining the source, release and transport mechanisms, exposure routes, and potential ecological receptors. It helps identify areas where exposure may occur and informs risk assessment and management decisions. CSMs are dynamic tools that evolve over time, incorporating new data through an iterative process to refine the understanding of chemical behavior and ecological risk.

[14] PCBs were evaluated as total PCB Aroclors where applicable.

Figure 5 presents the preliminary CSM, which illustrates the relationships between potentially affected environmental media (i.e., soil, surface water, sediment, tissue) and major ecological receptor groups (i.e., communities of invertebrates, plants, birds, and mammals) that may be exposed to COPECs in these media via direct contact, incidental ingestion, or dietary ingestion.

3.3.1 Relevant and Complete Exposure Pathways

An exposure pathway is considered complete if an ecological receptor could contact one or more COPECs in one or more environmental media via one or more exposure routes (e.g., ingestion).

The relevant and complete exposure pathways for the assessment area are presented in the CSM in Figure 5. Terrestrial receptors may be exposed to chemicals through direct contact (i.e., dermal exposure), incidental ingestion of soil, or dietary exposure through the ingestion of plants, terrestrial invertebrates, and small mammals that have accumulated chemicals in their tissues. Similarly, aquatic receptors may be exposed to chemicals by direct contact with environmental media (i.e., skin contact or respiration [gills]), incidental ingestion, or dietary exposure. The relevant and complete exposure pathways for the assessment area are presented in the CSM in Figure 5. Aquatic receptors may be exposed to chemicals by direct contact (i.e., skin contact or respiration through gills) with environmental media, incidental ingestion, or dietary exposure. Wildlife exposure to surface soil, sediment, and surface water via direct contact are complete pathways but are likely to be insignificant based on the duration of exposure; dietary exposures are considered to be a more significant exposure pathway for wildlife. Amphibian exposures to chemicals via surface soil and sediment ingestion is considered a complete exposure pathway, but ingestion is incidental and therefore would not be a significant pathway. The fish that are likely to be present in the assessment area may encounter sediment, resulting in a complete exposure pathway, but this exposure pathway is considered insignificant because these fish species are not bottom dwellers so contact with sediment would be variable. The CSM will be updated based on any additional biological data that is collected in the assessment area.

3.3.2 Selected Ecological Receptors

Ecological data from the site survey and publicly available information were used to identify potential ecological receptors of interest in the assessment area. Ecological receptors are defined as those observed or potentially present in habitats within the assessment area. Receptors are populations, communities, and/or relevant trophic guilds that are sensitive and/or susceptible to toxic effects from exposure to COPECs. These receptors have been well-researched and have large toxicity data sets available in the peer-reviewed literature and guidance. Integral selected ecological receptors after consideration of potentially threatened and endangered species, species observed in the assessment area, and species known to be present in the vicinity of the assessment area.

3.3.2.1 Threatened and Endangered Species

Integral requested information from USFWS and the Ohio Department of Natural Resources (ODNR) on the presence and distribution of threatened and/or endangered species in the assessment area. The information obtained from this request is included in Attachment E.[15]

Based on the information received, the assessment area is located within the range of four federally listed species: tricolored bat (*Perimyotis subflavus*, state endangered), northern long-eared bat (*Myotis septentrionalis*, federally threatened and state endangered), Indiana bat (*M. sodalis*, federally and state endangered), and little brown bat (*M. lucifugus*, state endangered). USFWS has previously stated that Indiana bats are assumed to be present in Ohio during the summer wherever suitable habitat occurs unless a presence/absence survey has been performed to document their absence (USFWS 2007).

In addition to the four bat species, the monarch butterfly (*Danaus plexippus*) is a candidate federally listed species that may be present in the area.

No threatened or endangered species were observed during the site visit. However, because presence/absence surveys have not been conducted for threatened or endangered species in the assessment area, their potential use of the assessment area cannot be ruled out.

The focus of the risk assessment is on ecological receptors that are likely to use the assessment area, with the expectation that protection of those ecological receptors will also be protective of the habitat that potentially could be used by threatened and endangered species.

3.3.2.2 Selected Ecological Receptors

Section 2 provides summaries of the species that were observed in the assessment area in November 2024. Due to the timing of the site visit, this should be considered an initial species list and not a comprehensive list of ecological receptors in the assessment area. The selection of ecological receptors focuses on those with complete exposure pathways and those that are representative of key feeding guilds. It is not feasible or necessary to evaluate risk for every species that may use the assessment area, so surrogate species are used to represent different avian and mammalian feeding guilds.

Terrestrial receptors in the assessment area may include terrestrial plants, soil invertebrates (e.g., earthworms), birds, and mammals. In this Level II risk assessment Integral selected the following terrestrial ecological receptors:

- Soil invertebrate community, represented by earthworms

[15] The ODNR environmental review has not been received at the time of this report.

- Small terrestrial wildlife species with restricted home ranges and high incidental soil ingestion rates including:
  - American robin (avian omnivore)
  - American woodcock (avian invertivore)
  - Short-tailed shrew (mammalian invertivore).
- A top avian and mammalian carnivore that feeds on small mammals (to address the Ohio EPA [2018] requirement based on the presence of at least one PBT compound):
  - Red-tailed hawk (avian carnivore)
  - Red fox (mammalian carnivore).

Earthworms, birds, and mammals are the focus of this evaluation because these receptors provide a comprehensive assessment of chemical exposure and risk. Terrestrial plants are generally less sensitive to many chemicals, particularly metals, compared to earthworms, which serve as a key indicator of soil contamination. Moreover, birds and mammals represent higher trophic levels and potential bioaccumulation pathways, ensuring that the assessment captures risks across the terrestrial food web.

Aquatic receptors in the assessment area may include aquatic vegetation, macroinvertebrates, amphibians, and fish communities. Because the Adjacent Ditch is currently bypassed, these ecological receptors are not using the ditch as aquatic habitat and, therefore, would not be exposed to any potential chemicals. In this Level II aquatic risk assessment, Integral selected the following aquatic ecological receptors:

- Aquatic vegetation community
- Invertebrate community
- Fish community
- Amphibian community
- Small semiaquatic wildlife species with restricted home ranges and high incidental sediment ingestion rates including:
  - Mallard (avian omnivore)
  - Heron (avian piscivore)
  - Muskrat (mammalian herbivore)
  - Mink (mammalian piscivore).

Aquatic vegetation, invertebrates, fish, amphibians, birds, and mammals are the focus of this evaluation because these receptors provide a comprehensive assessment of chemical exposure and risk.

3.3.3 Candidate Assessment Endpoints

Assessment endpoints represent an expression of the key ecological resources to be protected from harm. They generally reflect sensitive populations, communities, or trophic guilds. Ecological resources should have relevance, be susceptible to the stressors of concern, have biological, social, and/or economic value, and be applicable to risk management goals. Candidate assessment endpoints would be used in the Level III evaluation to evaluate the targeted resource groups in the terrestrial and aquatic exposure areas. The selected assessment endpoints are as follows:

- Soil invertebrate community structure and function
- Terrestrial and semiaquatic avian abundance
- Terrestrial and semiaquatic mammalian abundance
- Aquatic vegetation community structure and function
- Benthic invertebrate community structure and function
- Fish community structure and function
- Amphibian community structure and function.

These assessment endpoints may be updated if a Level III ecological risk assessment is conducted.

4 CONCLUSIONS AND RECOMMENDATIONS

This Level II ecological risk assessment was based on a CSM that includes the identified environmental media (soil, sediment, surface water, and tissue), complete exposure pathways, and environmental receptors of interest. COPECs were identified by screening maximum detected concentrations in each environmental medium against ecological screening benchmarks. Chemicals that exceeded the screening values and those identified as PBT compounds were retained as COPECs for further evaluation. The Level II ecological risk assessment could not rule out the potential for adverse ecological risk due to the presence of multiple COPECs at concentrations that exceeded screening thresholds, indicating the potential for risk in surface soil, surface sediment, and surface water.

Interim remedial actions are already under way at the site; however, we recommend that a Level III ecological assessment be conducted to evaluate site-specific risk to determine the adequacy of the interim actions and determine if additional action is warranted. Additional data collection efforts may be needed to provide a more intensive habitat and biological evaluation and to collect additional background data.

5 REFERENCES

August Mack. 2024. Initial site investigation report. Material Sciences Corporation. August Mack Environmental. December 12.

Efroymson, R.A., G.W. Suter II, B.E. Sample, and D.S. Jones. 1997. Preliminary remediation goals for ecological endpoints. ES/ER/TM-162/R2. Available at https://rais.ornl.gov/documents/tm162r2.pdf. Oak Ridge National Laboratory, Oak Ridge, Tennessee. August.

Integral. 2025. Level I ecological risk assessment. Material Sciences Corporation parcel and adjacent wetland, Canfield, Ohio. Prepared for August Mack Environmental. Integral Consulting Inc., Chagrin Falls, OH. February.

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. *Arch. Environ. Contam. Toxicol.* 39:20-31.

Merlin Bird ID. 2024. https://merlin.allaboutbirds.org/. Cornell Lab of Ornithology, Ithaca, NY.

Ohio EPA. 1996. Biological and water quality study of the Mahoning River Basin. Ashtabula, Columbiana, Portage, Mahoning, Stark, and Trumbull Counties (Ohio), Lawrence and Mercer Counties (Pennsylvania). OEPA Technical Report MAS/1995-12-14. Volume I. State of Ohio Environmental Protection Agency, Division of Surface Water, Monitoring and Assessment Section; Nonpoint Source Program; and Northeast District Office. May 1.

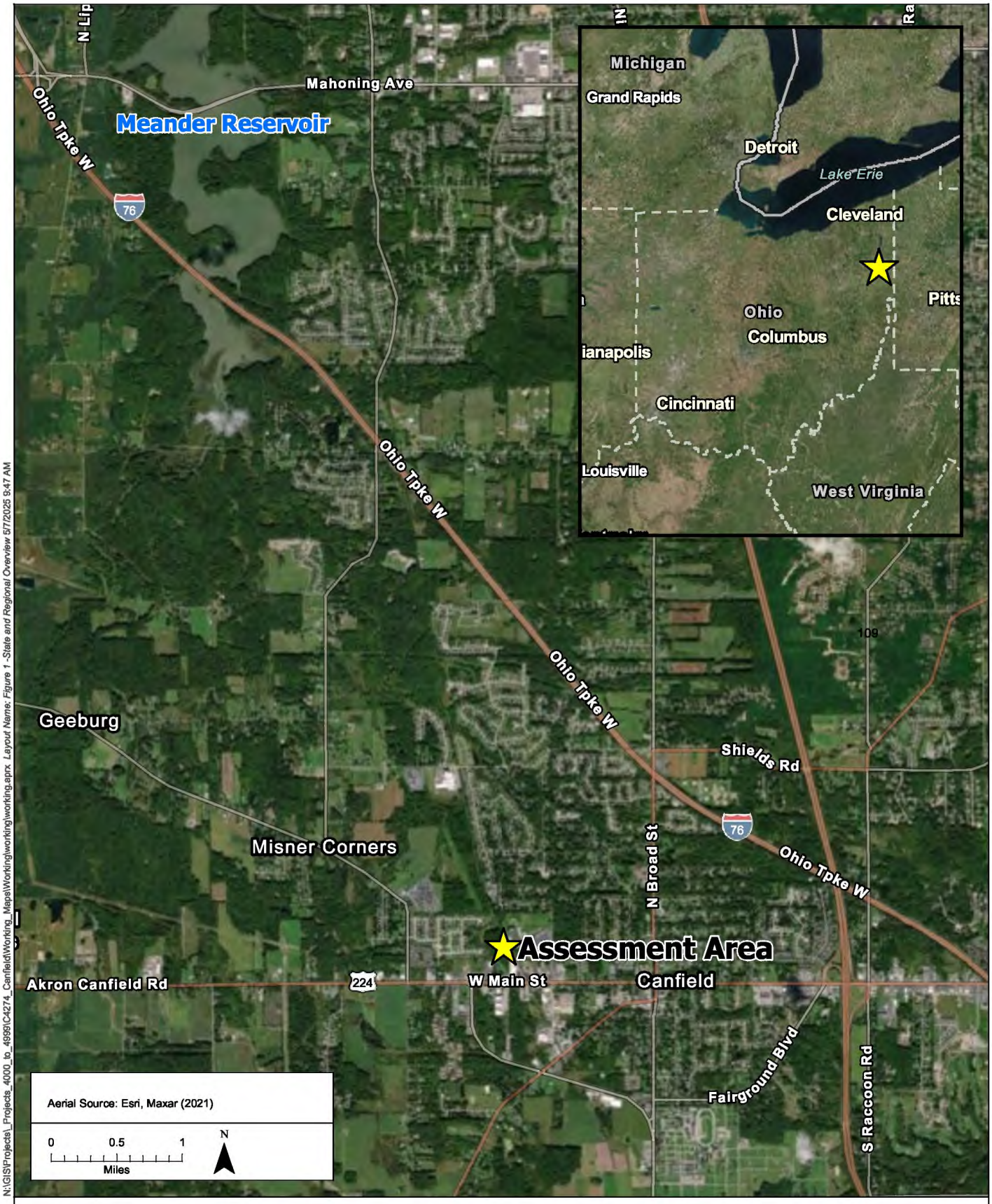
Ohio EPA. 2018. Ecological risk assessment guidance document. Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization Assessment, Remediation and Corrective Action Section. July.

Ohio EPA and MSC. 2024. Directors final findings and orders in the matter of Material Sciences Corporation. Ohio Environmental Protection Agency and Material Sciences Corporation. December 31.

USEPA. 2018. Region 4 ecological risk assessment supplemental guidance. March Update. Available at: https://www.epa.gov/sites/default/files/2018-03/documents/era_regional_supplemental_guidance_report-march-2018_update.pdf. U.S. Environmental Protection Agency.

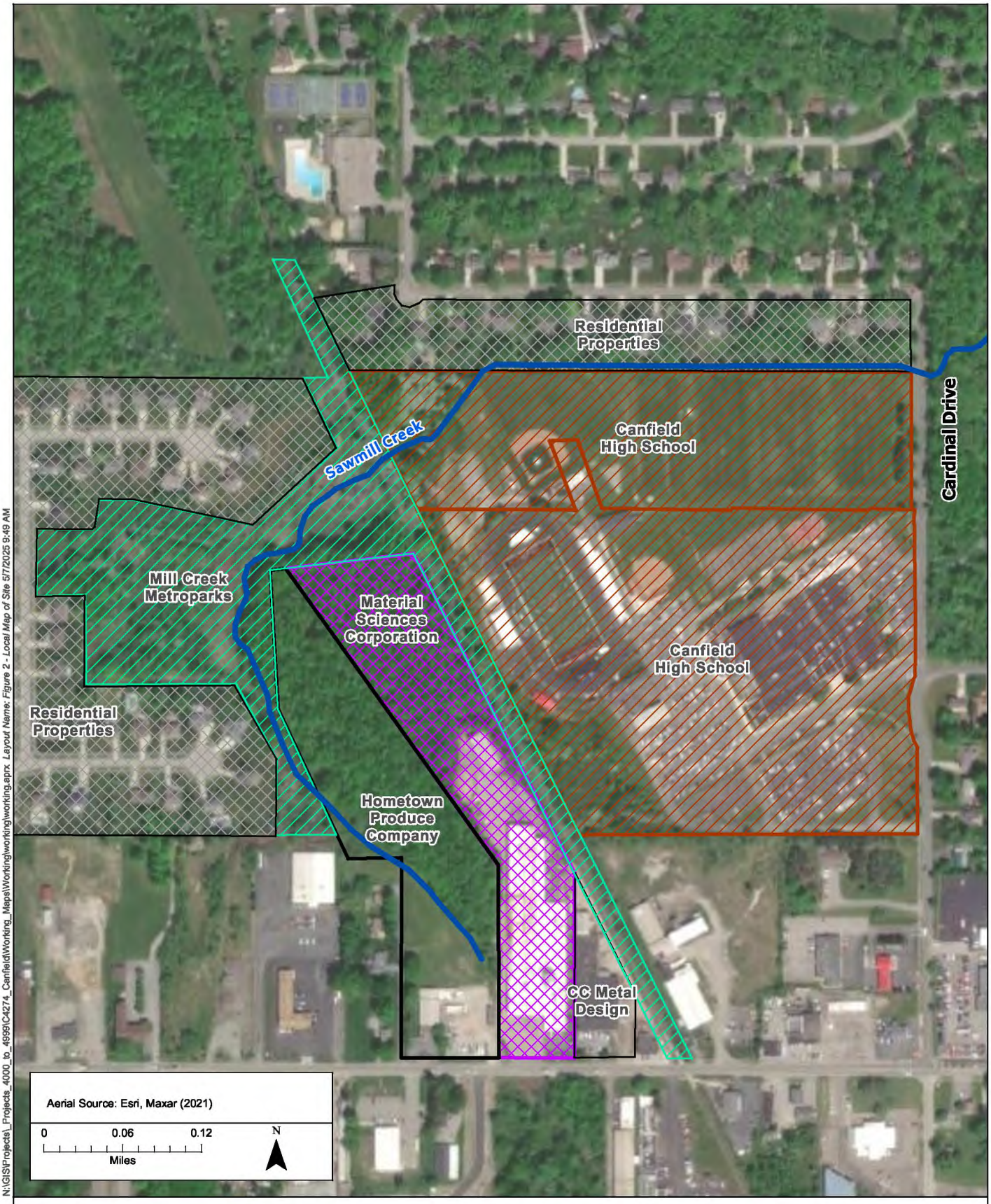
USFWS. 2007. Biological opinion on the Ohio Department of Transportation's Statewide Transportation Program for the federally listed endangered Indiana bat (*Myotis sodalis*). Submitted to the Federal Highway Administration. January 26.

FIGURES



integral consulting inc.

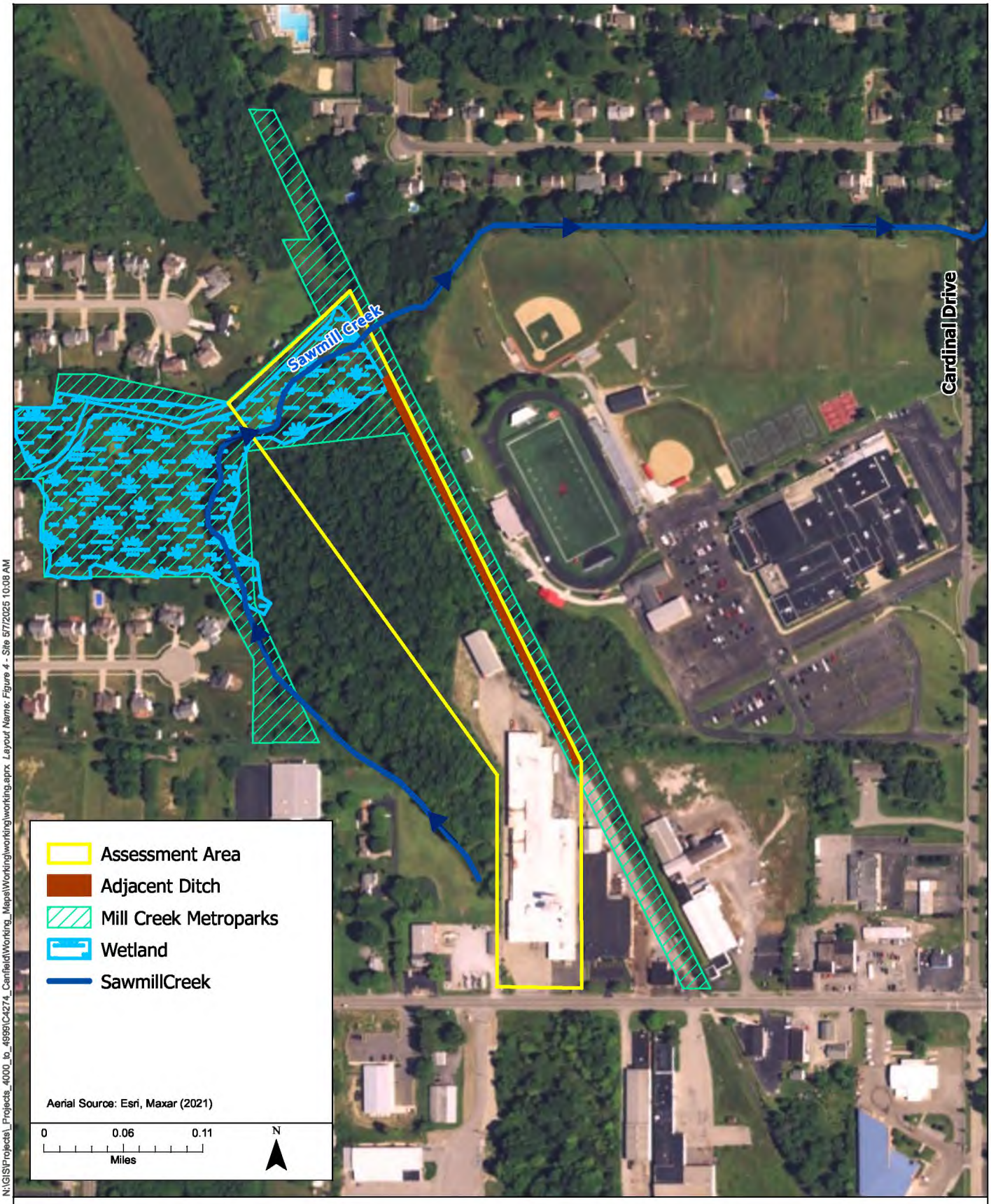
Figure 1. Regional Map of Assessment Area
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 2 - Local Map of Site 5/7/2025 9:49 AM

integral consulting inc.

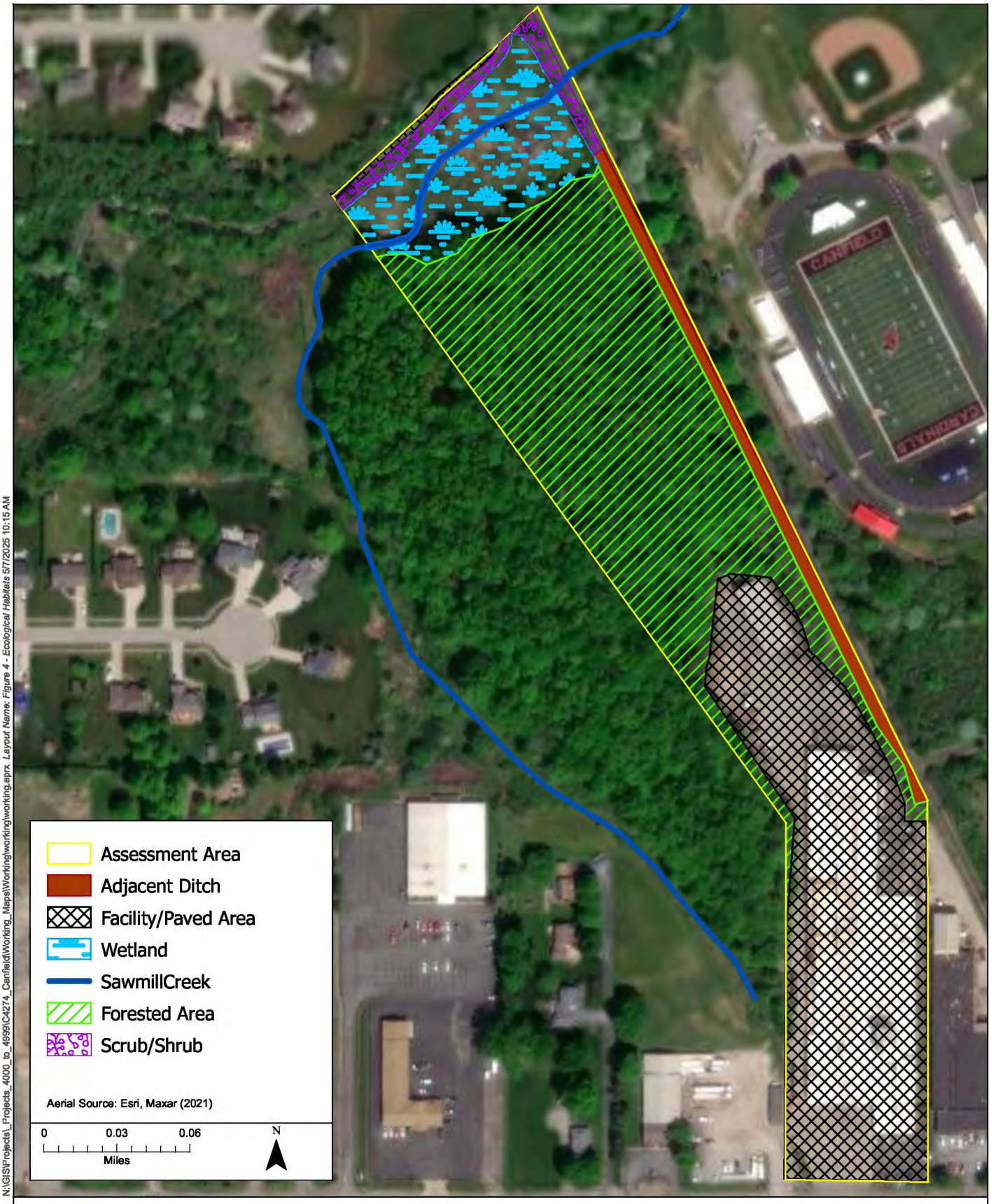
Figure 2. Local Map of Assessment Area and Adjacent Properties
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 4 - Site 5/7/2025 10:08 AM

integral consulting inc.

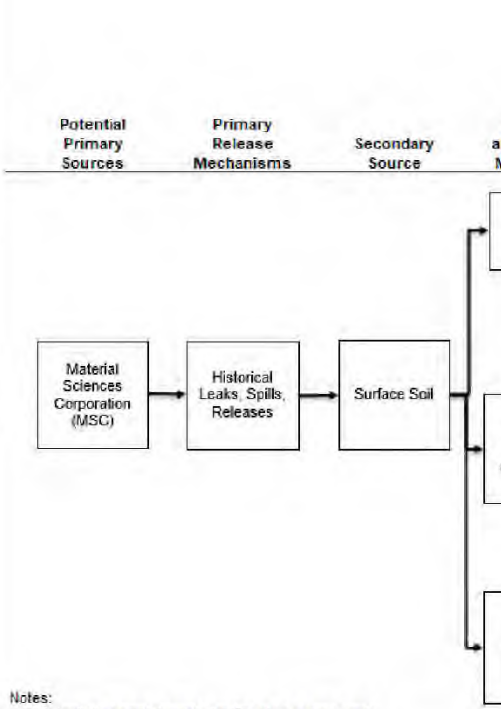
Figure 3. Assessment Area Features
MSC Parcel and Wetland
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 4 - Ecological Habitats 5/7/2025 10:15 AM

integral consulting inc.

Figure 4. Ecological Habitats within Assessment Area
Canfield, Ohio



		Potentially Exposed Ecological Receptors						
		Terrestrial			Aquatic			
Exposure Media	Exposure Route	Vegetation	Invertebrates	Wildlife	Vegetation	Invertebrates	Amphibians	Fish
Subsurface Soil	Ingestion	NA	NA	NA	NA	NA	NA	NA
	Direct Contact	NA	NA	NA	NA	NA	NA	NA
Surface Soil	Ingestion	NA	●	●	NA	NA	◍	NA
	Direct Contact	●	●	◍	NA	NA	◍	NA
Sediment	Ingestion	NA	NA	●	NA	●	◍	NA
	Direct Contact	NA	NA	◍	●	●	●	◍
Surface Water	Ingestion	NA	NA	●	NA	NA	NA	NA
	Direct Contact	NA	NA	◍	●	NA	●	●
Tissue	Ingestion	NA	NA	●	NA	NA	NA	NA

Notes:
● Potenitally complete and significant exposure route
◍ Exposure route potentially complete but insignificant
NA Not Applicable - receptor is not potentially exposed via this pathway

integral

Figure 5. Conceptual Site Model
MSC Parcel and Adjacent Wetland
Canfield, Ohio

TABLES

Table 1. COPEC Screening for Surface Soil

Chemical	CAS Number	FOD	Maximum Detected Concentration	Maximum Reporting Limit	Location of Maximum Detected Concentration (mg/kg)	Screening Value (mg/kg)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Metals										
Arsenic	7440-38-2	9 / 9	19	2.7	SS #3 - N	43	EPA EcoSSLs	No	No	BSV
Cadmium	7440-43-9	0 / 9		0.92		0.36	EPA EcoSSLs	No	No	ND2
Chromium	7440-47-3	9 / 9	95	1.8	SS #1	23	EPA EcoSSLs	No	Yes	ASV
Copper	7440-50-8	5 / 9	19	4.6	SS #2 - N	28	EPA EcoSSLs	No	No	BSV
Lead	7439-92-1	9 / 9	47	1.8	SS #1	11	EPA EcoSSLs	Yes	Yes	PBT
Mercury	7439-97-6	0 / 9		0.22		0.013	Efroymsen et al. (1997)	Yes	No	ND2
Nickel	7440-02-0	5 / 9	29	7.3	SS #4 - N	130	EPA EcoSSLs	No	No	BSV
Silver	7440-22-4	0 / 9		1.8		4.2	EPA EcoSSLs	No	No	ND1
Zinc	7440-66-6	9 / 9	20,000	180	SS #1	46	EPA EcoSSLs	No	Yes	ASV
Physico-chemical Measurements										
Total Cyanide	57-12-5	9 / 9	3,700	230	SS #1			No	No	NSV

Source:

Efroymson, R.A., G.W. Suter II, B.E. Sample, and D.S. Jones. 1997. Preliminary remediation goals for ecological endpoints. ES/ER/TM-162/R2. Available at https://rais.ornl.gov/documents/tm162r2.pdf. Oak Ridge National Laboratory, Oak Ridge, Tennessee. August.

Notes:

Highlighted chemicals are retained as sediment COPECs for further evaluation.
COPEC = chemical of potential ecological concern
EcoSSL = ecological soil screen level
EPA = U.S. Environmental Protection Agency
FOD = frequency of detection
PBT = persistent, bioaccumulative, toxic

[a] Persistent, bioaccumulative, and toxic pollutant as identified in OEPA (2018)

[b] Reason for selection or deletion

Selection reason : **ASV**: Maximum detected concentration is above the screening value; **PBT**: chemical is detected and listed as persistent, bioaccumulative, and toxic.

Deletion reason : **BSV**: maximum detected concentration falls below screening value; **NSV**: chemical detected but no screening value available (see Uncertainty Analysis); **ND1**: chemical not detected and reporting limit falls below screening value; **ND2**: chemical not detected but reporting limit exceeds screening value (see Uncertainty Analysis).

Table 2. COPEC Summary

COPEC	Sediment	Soil	Surface Water
Metals			
Arsenic	X		X
Barium	X		X
Cadmium	X		
Chromium	X	X	
Chromium(VI)			X
Copper	X		X
Lead	X	X	X
Mercury	X		X
Selenium	X		X
Silver	X		
Zinc	X	X	X
PAHs			
Anthracene	X		
Benzo[a]anthracene	X		X
Benzo[a]pyrene	X		X
Benzo[ghi]perylene			X
Benzo[k]fluoranthene			X
Chrysene	X		
Dibenz[a,h]anthracene	X		
Fluoranthene	X		
Fluorene	X		
Indeno[1,2,3-cd]pyrene			X
Naphthalene	X		
Phenanthrene	X		
Pyrene	X		
PCBs			
Total PCB Aroclors (ND=0)	X		
Physico-chemical Measurements			
Free Cyanide			X
Semivolatile Organic Compounds			
Benzaldehyde	X		
Phenol	X		

Notes:
COPEC = chemical of potential ecological concern
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl

Table 3. COPEC Screening for Surface Water

Chemical	Fraction	CAS Number	FOD	Maximum Detected Concentration (µg/L)		Maximum Reporting Limit (µg/L)	Location of Maximum Detected Concentration	Screening Value (µg/L)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Metals												
Arsenic	D	7440-38-2	4 / 6	210		15	T500-C-SW; T500-C-SW	340	Rule 3745-1-35 OMZM	No	No	BSV
Arsenic	T	7440-38-2	6 / 6	600		75	T500-C-SW; T500-C-SW	340	Rule 3745-1-35 OMZM	No	Yes	ASV
Barium	D	7440-39-3	6 / 6	650		200	T500-C-SW; T500-C-SW	220	USEPA (2018)	No	Yes	ASV
Barium	T	7440-39-3	6 / 6	1,800		200	T500-C-SW; T500-C-SW	220	USEPA (2018)	No	Yes	ASV
Cadmium	D	7440-43-9	1 / 6	5	J	5	T500-C-SW; T500-C-SW	9.3	Rule 3745-1-35 OMZM	No	No	BSV
Cadmium	T	7440-43-9	3 / 6	6.7	J	25	T500-C-SW; T500-C-SW	9.9	Rule 3745-1-35 OMZM	No	No	BSV
Chromium	D	7440-47-3	6 / 6	250		10	T500-C-SW; T500-C-SW	1,000	Rule 3745-1-35 OMZM	No	No	BSV
Chromium	T	7440-47-3	6 / 6	620		10	T500-C-SW; T500-C-SW	3,200	Rule 3745-1-35 OMZM	No	No	BSV
Chromium(VI)	D	18540-29-9	0 / 6			1,000		11	USEPA (2024)	No	No	ND2
Chromium(VI)	T	18540-29-9	1 / 6	1,000	J	1,000	T500-C-SW	11	USEPA (2024)	No	Yes	ASV
Copper	D	7440-50-8	4 / 6	310		25	T500-C-SW; T500-C-SW	26	Rule 3745-1-35 OMZM	No	Yes	ASV
Copper	T	7440-50-8	6 / 6	710		130	T500-C-SW; T500-C-SW	27	Rule 3745-1-35 OMZM	No	Yes	ASV
Lead	D	7439-92-1	3 / 6	210		10	T500-C-SW; T500-C-SW	230	Rule 3745-1-35 OMZM	Yes	Yes	PBT
Lead	T	7439-92-1	5 / 6	730		50	T500-C-SW; T500-C-SW	300	Rule 3745-1-35 OMZM	Yes	Yes	PBT
Mercury	D	7439-97-6	1 / 6	0.52		0.2	T500-C-SW; T500-C-SW	1.4	Rule 3745-1-35 OMZM	Yes	Yes	PBT
Mercury	T	7439-97-6	1 / 6	1.2		0.2	T500-C-SW; T500-C-SW	1.7	Rule 3745-1-35 OMZM	Yes	Yes	PBT
Selenium	D	7782-49-2	1 / 6	20	J	20	T500-C-SW; T500-C-SW	5	USEPA (2003)	No	Yes	ASV
Selenium	T	7782-49-2	2 / 6	51	J	100	T500-C-SW; T500-C-SW	5	USEPA (2003)	No	Yes	ASV
Silver	D	7440-22-4	0 / 6			10		3.2	USEPA (2024)	No	No	ND2
Silver	T	7440-22-4	0 / 6			10		3.2	USEPA (2024)	No	No	ND2
Zinc	D	7440-66-6	6 / 6	19,000		50	T500-C-SW; T500-C-SW	210	Rule 3745-1-35 OMZM	No	Yes	ASV
Zinc	T	7440-66-6	6 / 6	69,000		250	T500-C-SW; T500-C-SW	220	Rule 3745-1-35 OMZM	No	Yes	ASV
PAHs												
2-Methylnaphthalene	T	91-57-6	0 / 6			0.22		4.7	USEPA (2018)	No	No	ND1
Acenaphthene	T	83-32-9	0 / 6			0.22		38	USEPA (2003)	No	No	ND1
Acenaphthylene	T	208-96-8	0 / 6			0.22		4,840	USEPA (2003)	No	No	ND1
Anthracene	T	120-12-7	0 / 6			0.22		0.035	USEPA (2003)	No	No	ND2
Benzo[a]anthracene	T	56-55-3	3 / 6	0.34		0.22	T375-C-SW	0.025	USEPA (2003)	No	Yes	ASV
Benzo[a]pyrene	T	50-32-8	3 / 6	0.58		0.22	T375-C-SW	0.014	USEPA (2003)	No	Yes	ASV
Benzo[b]fluoranthene	T	205-99-2	4 / 6	1.3		0.22	T375-C-SW	9.07	USEPA (2003)	No	No	BSV
Benzo[ghi]perylene	T	191-24-2	3 / 6	0.74		0.22	T375-C-SW	0.012	USEPA (2018)	No	Yes	ASV
Benzo[k]fluoranthene	T	207-08-9	3 / 6	0.41		0.22	T375-C-SW	0.06	USEPA (2018)	No	Yes	ASV
Chrysene	T	218-01-9	4 / 6	0.71		0.22	T375-C-SW	4.7	USEPA (2018)	No	No	BSV
Dibenz[a,h]anthracene	T	53-70-3	0 / 6			0.22		0.012	USEPA (2018)	No	No	ND2
Fluoranthene	T	206-44-0	4 / 6	1.1		0.22	T375-C-SW	1.9	USEPA (2003)	No	No	BSV
Fluorene	T	86-73-7	0 / 6			0.22		19	USEPA (2003)	No	No	ND1
Indeno[1,2,3-cd]pyrene	T	193-39-5	3 / 6	0.54		0.22	T375-C-SW	0.012	USEPA (2018)	No	Yes	ASV
Naphthalene	T	91-20-3	1 / 6	0.22	J	0.22	SB-36-SW	13	USEPA (2003)	No	No	BSV
Phenanthrene	T	85-01-8	3 / 6	0.31		0.22	T375-C-SW			No	No	NSV
Pyrene	T	129-00-0	5 / 6	0.92		0.22	T375-C-SW	4.6	USEPA (2018)	No	No	BSV
PCBs												
Aroclor 1016	T	12674-11-2	0 / 6			0.5				Yes	No	ND3
Aroclor 1221	T	11104-28-2	0 / 6			0.5				Yes	No	ND3
Aroclor 1232	T	11141-16-5	0 / 6			0.5				Yes	No	ND3

Table 3. COPEC Screening for Surface Water

Chemical	Fraction	CAS Number	FOD	Maximum Detected Concentration (µg/L)		Maximum Reporting Limit (µg/L)	Location of Maximum Detected Concentration	Screening Value (µg/L)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Aroclor 1242	T	53469-21-9	0 / 6			0.5				Yes	No	ND3
Aroclor 1248	T	12672-29-6	0 / 6			0.5				Yes	No	ND3
Aroclor 1254	T	11097-69-1	0 / 6			0.5				Yes	No	ND3
Aroclor 1260	T	11096-82-5	0 / 6			0.5				Yes	No	ND3
Aroclor 1262	T	37324-23-5	0 / 6			0.5				Yes	No	ND3
Aroclor 1268	T	11100-14-4	0 / 6			0.5				Yes	No	ND3
Total PCB Aroclors (ND=0)	T	1336-36-3	0 / 6			0.5		0.00012	USEPA (2018)	Yes	No	PBT
Pesticides												
Atrazine	T	1912-24-9	0 / 6			2.2		0.03	USEPA (2018)	No	No	ND2
Carbazole	T	86-74-8	0 / 6			1.1		4	USEPA (2018)	No	No	ND1
Phenols												
2-Chlorophenol	T	95-57-8	0 / 6			1.1		18	USEPA (2018)	No	No	ND1
Pentachlorophenol	T	87-86-5	0 / 6			11		14	Rule 3745-1-35 OMZM	Yes	No	ND1
Physico-chemical Measurements												
Free Cyanide	T	57-12-5	6 / 6	130		6	SB-29-SW; SB-36-SW	5.2	USEPA (2024)	No	Yes	ASV
Total Cyanide	T	57-12-5	6 / 6	8,100		500	SB-29-SW			No	No	NSV
Semivolatile Organic Compounds												
1,1'-Biphenyl	T	92-52-4	0 / 6			1.1		6.5	USEPA (2018)	No	No	ND1
2,2'-Oxybis(1-chloropropane)	T	108-60-1	0 / 6			1.1				No	No	ND3
2,4,5-Trichlorophenol	T	95-95-4	0 / 6			5.4		1.9	USEPA (2018)	No	No	ND2
2,4,6-Trichlorophenol	T	88-06-2	0 / 6			5.4		4.9	USEPA (2003)	No	No	ND2
2,4-Dichlorophenol	T	120-83-2	0 / 6			2.2		11	USEPA (2018)	No	No	ND1
2,4-Dimethylphenol	T	105-67-9	0 / 6			2.2		15	USEPA (2018)	No	No	ND1
2,4-Dinitrophenol	T	51-28-5	0 / 6			11		71	USEPA (2018)	No	No	ND1
2,6-Dinitrotoluene	T	606-20-2	0 / 6			5.4		81	USEPA (2018)	No	No	ND1
2-Chloronaphthalene	T	91-58-7	0 / 6			1.1		0.396	USEPA (2003)	No	No	ND2
2-Methylphenol	T	95-48-7	0 / 6			1.1		67	USEPA (2018)	No	No	ND1
2-Nitroaniline	T	88-74-4	0 / 6			2.2		17	USEPA (2018)	No	No	ND1
2-Nitrophenol	T	88-75-5	0 / 6			2.2		73	USEPA (2018)	No	No	ND1
3 & 4-Methylphenol (m,p-Cresols)	T	65794-96-9	1 / 6	2.2	J	2.2	T375-C-SW			No	No	NSV
3,3'-Dichlorobenzidine	T	91-94-1	0 / 6			5.4		4.5	USEPA (2018)	No	No	ND2
3-Nitroaniline	T	99-09-2	0 / 6			2.2				No	No	ND3
4,6-Dinitro-O-cresol	T	534-52-1	0 / 6			5.4		23	USEPA (2003)	No	No	ND1
4-Bromophenyl-phenylether	T	101-55-3	0 / 6			2.2		1.5	USEPA (2018)	No	No	ND2
4-Chloro-3-methylphenol	T	59-50-7	0 / 6			2.2		1	USEPA (2018)	No	No	ND2
4-Chloroaniline	T	106-47-8	0 / 6			2.2		0.8	USEPA (2018)	No	No	ND2
4-Chlorophenyl-phenyl ether	T	7005-72-3	0 / 6			2.2				No	No	ND3
4-Nitroaniline	T	100-01-6	0 / 6			2.2				No	No	ND3
4-Nitrophenol	T	100-02-7	0 / 6			11		58	USEPA (2018)	No	No	ND1
Acetophenone	T	98-86-2	0 / 6			1.1				No	No	ND3
Benzaldehyde	T	100-52-7	0 / 6			2.2		143	USEPA (2018)	No	No	ND1
Butyl benzyl phthalate	T	85-68-7	0 / 6			2.2		23	USEPA (2018)	No	No	ND1
Caprolactam	T	105-60-2	0 / 6			5.4				No	No	ND3
Di-n-butyl phthalate	T	84-74-2	0 / 6			5.4		9.7	USEPA (2003)	No	No	ND1
Di-n-octylphthalate	T	117-84-0	0 / 6			2.2		215	USEPA (2018)	No	No	ND1

Table 3. COPEC Screening for Surface Water

Chemical	Fraction	CAS Number	FOD	Maximum Detected Concentration (µg/L)		Maximum Reporting Limit (µg/L)	Location of Maximum Detected Concentration	Screening Value (µg/L)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Dibenzofuran	T	132-64-9	0 / 6			1.1		4	USEPA (2003)	No	No	ND1
Diethyl phthalate	T	84-66-2	0 / 6			5.4		110	USEPA (2003)	No	No	ND1
Dimethyl phthalate	T	131-11-3	0 / 6			2.2		1,100	USEPA (2018)	No	No	ND1
Hexachlorobenzene	T	118-74-1	0 / 6			0.22		0.0003	USEPA (2003)	Yes	No	ND2
Hexachlorobutadiene	T	87-68-3	0 / 6			1.1		0.053	USEPA (2003)	Yes	No	ND2
Hexachlorocyclopentadiene	T	77-47-4	0 / 6			11		77	USEPA (2003)	No	No	ND1
Hexachloroethane	T	67-72-1	0 / 6			1.1		8	USEPA (2003)	No	No	ND1
Isophorone	T	78-59-1	0 / 6			1.1		920	USEPA (2003)	No	No	ND1
Methyl Acetate	T	79-20-9	0 / 6			50				No	No	ND3
N-Nitrosodi-n-propylamine	T	621-64-7	0 / 6			1.1				No	No	ND3
N-Nitrosodiphenylamine	T	86-30-6	0 / 6			1.1		25	USEPA (2018)	No	No	ND1
Nitrobenzene	T	98-95-3	0 / 6			1.1		220	USEPA (2003)	No	No	ND1
Phenol	T	108-95-2	0 / 6			1.1		180	USEPA (2003)	No	No	ND1
Bis(2-chloroethoxy)methane	T	111-91-1	0 / 6			1.1				No	No	ND3
Bis(2-ethylhexyl)phthalate	T	117-81-7	1 / 6	5.4	J	5.4	T375-C-SW	8	USEPA (2018)	No	No	BSV
Volatile Organic Compounds												
1,1,1-Trichloroethane	T	71-55-6	0 / 6			5		76	USEPA (2018)	No	No	ND1
1,1,2,2-Tetrachloroethane	T	79-34-5	0 / 6			5		200	USEPA (2018)	No	No	ND1
1,1,2-Trichloro-1,2,2-trifluoroethane	T	76-13-1	0 / 6			5				No	No	ND3
1,1,2-Trichloroethane	T	79-00-5	0 / 6			5		730	USEPA (2018)	No	No	ND1
1,1-Dichloroethane	T	75-34-3	0 / 6			5		410	USEPA (2018)	No	No	ND1
1,1-Dichloroethene	T	75-35-4	0 / 6			5		130	USEPA (2018)	No	No	ND1
1,2,4-Trichlorobenzene	T	120-82-1	0 / 6			5		130	USEPA (2018)	No	No	ND1
1,2-Dibromo-3-chloropropane	T	96-12-8	0 / 6			10				No	No	ND3
1,2-Dibromoethane	T	106-93-4	0 / 6			5				No	No	ND3
1,2-Dichlorobenzene	T	95-50-1	0 / 6			5		23	USEPA (2018)	No	No	ND1
1,2-Dichloroethane	T	107-06-2	0 / 6			5		2,000	USEPA (2018)	No	No	ND1
1,2-Dichloropropane	T	78-87-5	0 / 6			5		520	USEPA (2018)	No	No	ND1
1,3-Dichlorobenzene	T	541-73-1	0 / 6			5		22	USEPA (2018)	No	No	ND1
1,4-Dichlorobenzene	T	106-46-7	0 / 6			5		9.4	USEPA (2018)	No	No	ND1
2,4-Dinitrotoluene	T	121-14-2	0 / 6			5.4		44	USEPA (2018)	No	No	ND1
2-Butanone	T	78-93-3	1 / 6	10	J	50	T500-C-SW	22,000	USEPA (2018)	No	No	BSV
2-Hexanone	T	591-78-6	0 / 6			50		99	USEPA (2018)	No	No	ND1
4-Methyl-2-pentanone	T	108-10-1	0 / 6			50		170	USEPA (2018)	No	No	ND1
Acetone	T	67-64-1	2 / 6	32	J	50	T500-C-SW	1,700	USEPA (2003)	No	No	BSV
Benzene	T	71-43-2	0 / 6			5		114	USEPA (2003)	No	No	ND1
Bis(2-chloroethyl)ether	T	111-44-4	0 / 6			1.1		19,000	USEPA (2003)	No	No	ND1
Bromodichloromethane	T	75-27-4	0 / 6			5		340	USEPA (2018)	No	No	ND1
Bromoform	T	75-25-2	0 / 6			5		230	USEPA (2003)	No	No	ND1
Bromomethane	T	74-83-9	0 / 6			5		16	USEPA (2018)	No	No	ND1
Carbon Tetrachloride	T	56-23-5	0 / 6			5		77	USEPA (2018)	No	No	ND1
Carbon disulfide	T	75-15-0	0 / 6			5		15	USEPA (2003)	No	No	ND1
Chlorobenzene	T	108-90-7	0 / 6			5		47	USEPA (2003)	No	No	ND1
Chloroethane	T	75-00-3	0 / 6			5				No	No	ND3
Chloroform	T	67-66-3	0 / 6			5		140	USEPA (2003)	No	No	ND1

Table 3. COPEC Screening for Surface Water

Chemical	Fraction	CAS Number	FOD	Maximum Detected Concentration (µg/L)	Maximum Reporting Limit (µg/L)	Location of Maximum Detected Concentration	Screening Value (µg/L)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Chloromethane	T	74-87-3	0 / 6		5				No	No	ND3
Cyclohexane	T	110-82-7	0 / 6		5		158	USEPA (2018)	No	No	ND1
Dibromochloromethane	T	124-48-1	0 / 6		5		320	USEPA (2018)	No	No	ND1
Dichlorodifluoromethane	T	75-71-8	0 / 6		5				No	No	ND3
Ethylbenzene	T	100-41-4	0 / 6		5		14	USEPA (2003)	No	No	ND1
Isopropylbenzene	T	98-82-8	0 / 6		5		4.8	USEPA (2018)	No	No	ND2
Methyl tert-butyl ether	T	1634-04-4	0 / 6		5		730	USEPA (2018)	No	No	ND1
Methylcyclohexane	T	108-87-2	0 / 6		5		52	USEPA (2018)	No	No	ND1
Methylene Chloride	T	75-09-2	0 / 6		25		940	USEPA (2003)	No	No	ND1
Styrene	T	100-42-5	0 / 6		5		32	USEPA (2003)	No	No	ND1
Tetrachloroethene	T	127-18-4	0 / 6		5		45	USEPA (2003)	No	No	ND1
Toluene	T	108-88-3	0 / 6		5		253	USEPA (2003)	No	No	ND1
Trichloroethylene	T	79-01-6	0 / 6		5		47	USEPA (2003)	No	No	ND1
Trichlorofluoromethane	T	75-69-4	0 / 6		5				No	No	ND3
Vinyl Chloride	T	75-01-4	0 / 6		5		930	USEPA (2003)	No	No	ND1
Xylenes, Total	T	1330-20-7	0 / 6		10		27	USEPA (2018)	No	No	ND1
cis-1,2-Dichloroethene	T	156-59-2	0 / 6		5				No	No	ND3
cis-1,3-Dichloropropene	T	10061-01-5	0 / 6		5				No	No	ND3
trans-1,2-Dichloroethene	T	156-60-5	0 / 6		5				No	No	ND3
trans-1,3-Dichloropropene	T	10061-02-6	0 / 6		5				No	No	ND3

Sources:

USEPA. 2003. Region 5 RCRA ecological screening levels. U.S. Environmental Protection Agency. August 22.

USEPA. 2018. Region 4 ecological risk assessment supplemental guidance. March Update. Available at: https://www.epa.gov/sites/default/files/2018-03/documents/era_regional_supplemental_guidance_report-march-2018_update.pdf. U.S. Environmental Protection Agency.

USEPA 2024. National recommeded water quality criteria - Aquatic life criteria table. Available at: www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table#table. Last updated on October 9, 2024. U.S. Environmental Protection Agency.

Notes:

Highlighted chemicals are retained as sediment COPECs for further evaluation
COPEC = chemical of potential ecological concern
D = dissolved
FOD = frequency of detection
OMZM = outside mixing zone maximum
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
PBT = persistent, bioaccumulative, toxic
T = total

Data Qualifier:
J = estimated concentration

[a] Persistent, bioaccumulative, and toxic pollutant as identified in Ohio EPA (2018).

[b] Reason for selection or deletion:
Selection reason: **ASV**: maximum detected concentration is above the screening value; **PBT**: chemical is detected and listed as PBT.
Deletion reason: **BSV**: maximum detected concentration falls below screening value; **NSV**: chemical detected but no screening value available (see Uncertainty Analysis); **ND1**: chemical not detected and reporting limit falls below screening value; **ND2**: chemical not detected but reporting limit exceeds screening value (see Uncertainty Analysis); **ND3**: chemical not detected and lacks screening value.

Table 4. COPEC Screening for Surface Sediment

Chemical	CAS Number	FOD	Maximum Detected Concentration (mg/kg)		Maximum Reporting Limit (mg/kg)	Location of Maximum Detected Concentration	Screening Value (mg/kg)	Screening Value Source	OEPA SRV [a]	PBT (Yes/No) [b]	COPEC (Yes/No)	Reason for Selection or Deletion [c]
Metals												
Arsenic	7440-38-2	47 / 47	32		4.3	T125-E-0.0	9.79	MacDonald et al. (2000)	25	No	Yes	ASV
Barium	7440-39-3	47 / 47	160		51	T125-C-0.0; T375-E-0.0	20	USEPA (2018)	190	No	Yes	ASV
Cadmium	7440-43-9	46 / 47	1		3.2	T1000-E-0.0; T125-E-0.0	0.99	MacDonald et al. (2000)	0.79	No	Yes	ASV
Chromium	7440-47-3	47 / 47	340		2.6	T125-E-0.0	43.4	MacDonald et al. (2000)	29	No	Yes	ASV
Chromium(VI)	18540-29-9	2 / 47	18	J	34	SB-27-0				No	No	FOD
Copper	7440-50-8	42 / 47	800		16	T125-E-0.0	31.6	MacDonald et al. (2000)	32	No	Yes	ASV
Lead	7439-92-1	47 / 47	71		6.5	T125-E-0.0	35.8	MacDonald et al. (2000)	47	Yes	Yes	PBT
Mercury	7439-97-6	42 / 47	0.19	J	0.32	SB-26-0	0.18	MacDonald et al. (2000)	0.12	Yes	Yes	PBT
Selenium	7782-49-2	29 / 47	5.1	J	5.8	SB-34-0; T375-E-0.0; T875-W-0.0	0.72	USEPA (2018)	1.7	No	Yes	ASV
Silver	7440-22-4	17 / 47	2.6	J	2.6	SB-24-0; T125-E-0.0; T500-W-0.0; T875-C-0.0; T875-W-0.0	1	USEPA (2018)	0.43	No	Yes	ASV
Zinc	7440-66-6	47 / 47	33,000		600	SB-32-0	121	MacDonald et al. (2000)	160	No	Yes	ASV
PAHs												
2-Methylnaphthalene	91-57-6	30 / 30	1.6		0.25	T250-C-0.0				No	No	NSV
Acenaphthene	83-32-9	21 / 47	0.2		0.25	T125-W-0.0				No	No	NSV
Acenaphthylene	208-96-8	22 / 47	0.27		0.25	TO-E-0.0; T1000-E-0.0				No	No	NSV
Anthracene	120-12-7	39 / 47	0.51		0.25	T250-W-0.0	0.0572	MacDonald et al. (2000)		No	Yes	ASV
Benzo[a]anthracene	56-55-3	46 / 47	2.4		0.25	T250-W-0.0	0.108	MacDonald et al. (2000)		No	Yes	ASV
Benzo[a]pyrene	50-32-8	47 / 47	3.3		0.25	T250-W-0.0; T375-E-0.0	0.15	MacDonald et al. (2000)		No	Yes	ASV
Benzo[b]fluoranthene	205-99-2	47 / 47	6.6		0.25	T375-W-0.0				No	No	NSV
Benzo[g,h,i]perylene	191-24-2	45 / 47	2.3		0.25	T375-E-0.0				No	No	NSV
Benzo[k]fluoranthene	207-08-9	46 / 47	2.3		0.25	T250-C-0.0				No	No	NSV
Chrysene	218-01-9	46 / 47	3.9		0.25	T250-W-0.0	0.166	MacDonald et al. (2000)		No	Yes	ASV
Dibenz[a,h]anthracene	53-70-3	40 / 47	0.45		0.25	T375-E-0.0	0.033	MacDonald et al. (2000)		No	Yes	ASV
Fluoranthene	206-44-0	47 / 47	7.5		0.25	T250-W-0.0	0.423	MacDonald et al. (2000)		No	Yes	ASV
Fluorene	86-73-7	21 / 47	0.18	J	0.25	T125-C-0.0	0.0774	MacDonald et al. (2000)		No	Yes	ASV
Indeno[1,2,3-cd]pyrene	193-39-5	45 / 47	1.9		0.25	T375-E-0.0				No	No	NSV
Naphthalene	91-20-3	41 / 47	0.98		0.25	T250-C-0.0	0.176	MacDonald et al. (2000)		No	Yes	ASV
Phenanthrene	85-01-8	47 / 47	3.1		0.25	T250-C-0.0	0.204	MacDonald et al. (2000)		No	Yes	ASV
Pyrene	129-00-0	47 / 47	5.7		0.25	T250-W-0.0	0.195	MacDonald et al. (2000)		No	Yes	ASV
PCBs												
Aroclor 1016	12674-11-2	0 / 30			0.086					Yes	No	ND3
Aroclor 1221	11104-28-2	0 / 30			0.086					Yes	No	ND3
Aroclor 1232	11141-16-5	0 / 30			0.086					Yes	No	ND3
Aroclor 1242	53469-21-9	6 / 30	0.12		0.086	T125-C-0.0				Yes	Yes	PBT
Aroclor 1248	12672-29-6	4 / 30	0.083	J	0.086	T250-W-0.0; T500-W-0.0				Yes	Yes	PBT
Aroclor 1254	11097-69-1	6 / 30	0.086	J	0.086	T250-C-0.0				Yes	Yes	PBT
Aroclor 1260	11096-82-5	1 / 30	0.086	J	0.086	T250-E-0.0_20241003				Yes	Yes	PBT
Aroclor 1262	37324-23-5	0 / 30			0.086					Yes	No	ND3
Aroclor 1268	11100-14-4	0 / 30			0.086					Yes	No	ND3
Total PCB Aroclors (ND=0)	1336-36-3	12 / 30	0.16	J	0.5	T125-C-0.0	0.0598	MacDonald et al. (2000)		Yes	Yes	PBT
Pesticides												
Atrazine	1912-24-9	0 / 30			2.1		0.0003	Ohio EPA (2018)		No	No	ND2

Table 4. COPEC Screening for Surface Sediment

Chemical	CAS Number	FOD	Maximum Detected Concentration (mg/kg)		Maximum Reporting Limit (mg/kg)	Location of Maximum Detected Concentration	Screening Value (mg/kg)	Screening Value Source	OEPA SRV [a]	PBT (Yes/No) [b]	COPEC (Yes/No)	Reason for Selection or Deletion [c]
Carbazole	86-74-8	24 / 30	0.58		0.62	T250-W-0.0				No	No	NSV
Phenols												
2-Chlorophenol	95-57-8	0 / 30			0.62		0.055	Ohio EPA (2018)		No	No	ND2
Pentachlorophenol	87-86-5	0 / 30			1.7		0.01	Ohio EPA (2018)		Yes	No	ND2
Estimated Free Cyanide in Soil (Leachate mg/L x 20) = mg/kg of Soil		30 / 30	0.17		0.006	SB-35-0				No	No	NSV
Total Cyanide		47 / 47	1,400		220	T250-E-0.0_20241003				No	No	NSV
1,1'-Biphenyl	92-52-4	3 / 30	0.62	J	0.62	T1000-W-0.0; T1125-E-0.0; T125-E-0.0; T250-C-0.0; T625-E-0.0; T750-W-0.0; T750-W-0.0; T875-W-0.0				No	No	NSV
Semivolatile Organic Compounds												
2,2'-Oxybis(1-chloropropane)	108-60-1	0 / 30			0.62					No	No	ND3
2,4,5-Trichlorophenol	95-95-4	0 / 30			0.93		0.034	Ohio EPA (2018)		No	No	ND2
2,4,6-Trichlorophenol	88-06-2	0 / 30			0.93		0.089	Ohio EPA (2018)		No	No	ND2
2,4-Dichlorophenol	120-83-2	0 / 30			0.93					No	No	ND3
2,4-Dimethylphenol	105-67-9	0 / 30			0.93		0.039	Ohio EPA (2018)		No	No	ND2
2,4-Dinitrophenol	51-28-5	0 / 30			2.1		0.223	Ohio EPA (2018)		No	No	ND2
2,6-Dinitrotoluene	606-20-2	0 / 30			1.2		0.296	Ohio EPA (2018)		No	No	ND2
2-Chloronaphthalene	91-58-7	0 / 30			0.62					No	No	ND3
2-Methylphenol	95-48-7	0 / 30			1.2		0.119	Ohio EPA (2018)		No	No	ND2
2-Nitroaniline	88-74-4	0 / 30			1.2					No	No	ND3
2-Nitrophenol	88-75-5	0 / 30			0.62		0.168	Ohio EPA (2018)		No	No	ND2
3 & 4-Methylphenol (m,p-Cresols)	65794-96-9	10 / 30	2.5		2.5	T1125-E-0.0				No	No	NSV
3,3'-Dichlorobenzidine	91-94-1	0 / 30			0.93		0.031	Ohio EPA (2018)		No	No	ND2
3-Nitroaniline	99-09-2	0 / 30			1.2					No	No	ND3
4,6-Dinitro-O-cresol	534-52-1	0 / 30			2.1		1.477	Ohio EPA (2018)		No	No	ND2
4-Bromophenyl-phenylether	101-55-3	0 / 30			0.62					No	No	ND3
4-Chloro-3-methylphenol	59-50-7	0 / 30			0.93		0.005	Ohio EPA (2018)		No	No	ND2
4-Chloroaniline	106-47-8	0 / 30			0.93		0.0009	Ohio EPA (2018)		No	No	ND2
4-Chlorophenyl-phenyl ether	7005-72-3	0 / 30			0.62					No	No	ND3
4-Nitroaniline	100-01-6	0 / 30			1.2					No	No	ND3
4-Nitrophenol	100-02-7	0 / 30			2.1		0.153	Ohio EPA (2018)		No	No	ND2
Acetophenone	98-86-2	2 / 30	0.62	J	0.62	T250-C-0.0				No	No	NSV
Benzaldehyde	100-52-7	6 / 30	2.1	J	2.1	T250-C-0.0	0.059	USEPA (2018)		No	Yes	ASV
Butyl benzyl phthalate	85-68-7	1 / 30	0.93	J	0.93	T250-W-0.0				No	No	FOD
Caprolactam	105-60-2	0 / 30			2.1					No	No	ND3
Di-n-butyl phthalate	84-74-2	0 / 30			0.93					No	No	ND3
Di-n-octylphthalate	117-84-0	0 / 30			0.93					No	No	ND3
Dibenzofuran	132-64-9	16 / 30	0.55		0.62	T250-C-0.0				No	No	NSV
Diethyl phthalate	84-66-2	0 / 30			0.93					No	No	ND3
Dimethyl phthalate	131-11-3	0 / 30			0.93					No	No	ND3
Hexachlorobenzene	118-74-1	0 / 30			0.25		0.02	Ohio EPA (2018)		Yes	No	ND2
Hexachlorobutadiene	87-68-3	0 / 30			0.62					Yes	No	ND3
Hexachlorocyclopentadiene	77-47-4	0 / 30			2.1		0.0065	Ohio EPA (2018)		No	No	ND2

Table 4. COPEC Screening for Surface Sediment

Chemical	CAS Number	FOD	Maximum Detected Concentration (mg/kg)		Maximum Reporting Limit (mg/kg)	Location of Maximum Detected Concentration	Screening Value (mg/kg)	Screening Value Source	OEPA SRV [a]	PBT (Yes/No) [b]	COPEC (Yes/No)	Reason for Selection or Deletion [c]
Hexachloroethane	67-72-1	0 / 30			0.62					No	No	ND3
Isophorone	78-59-1	1 / 30	0.62	J	0.62	TO-C-0.0; TO-W-0.0; T1000-C-0.0; T1125-E-0.0; T1125-W-0.0; T375-E-0.0				No	No	FOD
Methyl Acetate	79-20-9	2 / 30	0.043	J	0.043	TO-C-0.0				No	No	NSV
N-Nitrosodi-n-propylamine	621-64-7	0 / 30			0.62					No	No	ND3
N-Nitrosodiphenylamine	86-30-6	0 / 30			0.62					No	No	ND3
Nitrobenzene	98-95-3	0 / 30			0.62					No	No	ND3
Phenol	108-95-2	4 / 30	0.62	J	0.62	T250-C-0.0	0.175	USEPA (2018)		No	Yes	ASV
Bis(2-Chloroethoxy)methane	111-91-1	0 / 30			0.62					No	No	ND3
bis(2-Ethylhexyl)phthalate	117-81-7	14 / 30	0.93		0.93	T250-C-0.0				No	No	NSV
Volatile Organic Compounds												
1,1,1-Trichloroethane	71-55-6	0 / 30			0.0085					No	No	ND3
1,1,2,2-Tetrachloroethane	79-34-5	0 / 30			0.0085					No	No	ND3
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1	0 / 30			0.0085					No	No	ND3
1,1,2-Trichloroethane	79-00-5	0 / 30			0.0085					No	No	ND3
1,1-Dichloroethane	75-34-3	0 / 30			0.0085					No	No	ND3
1,1-Dichloroethene	75-35-4	0 / 30			0.0085					No	No	ND3
1,2,4-Trichlorobenzene	120-82-1	0 / 30			0.0085					No	No	ND3
1,2-Dibromo-3-chloropropane	96-12-8	0 / 30			0.017					No	No	ND3
1,2-Dibromoethane	106-93-4	0 / 30			0.0085					No	No	ND3
1,2-Dichlorobenzene	95-50-1	0 / 30			0.0085					No	No	ND3
1,2-Dichloroethane	107-06-2	0 / 30			0.0085					No	No	ND3
1,2-Dichloropropane	78-87-5	0 / 30			0.0085					No	No	ND3
1,3-Dichlorobenzene	541-73-1	0 / 30			0.0085					No	No	ND3
1,4-Dichlorobenzene	106-46-7	0 / 30			0.0085					No	No	ND3
2,4-Dinitrotoluene	121-14-2	0 / 30			1.2		0.29	Ohio EPA (2018)		No	No	ND2
2-Butanone	78-93-3	3 / 30	0.034	J	0.034	T625-W-0.0				No	No	NSV
2-Hexanone	591-78-6	0 / 30			0.034					No	No	ND3
4-Methyl-2-pentanone	108-10-1	0 / 30			0.034					No	No	ND3
Acetone	67-64-1	4 / 30	0.068		0.043	T125-C-0.0				No	No	NSV
Benzene	71-43-2	0 / 30			0.0085					No	No	ND3
Bis(2-chloroethyl)ether	111-44-4	0 / 30			0.62					No	No	ND3
Bromodichloromethane	75-27-4	0 / 30			0.0085		0.21	Ohio EPA (2018)		No	No	ND1
Bromoform	75-25-2	0 / 30			0.0085		0.142	Ohio EPA (2018)		No	No	ND1
Bromomethane	74-83-9	0 / 30			0.0085		0.0065	Ohio EPA (2018)		No	No	ND2
Carbon Tetrachloride	56-23-5	0 / 30			0.0085					No	No	ND3
Carbon disulfide	75-15-0	1 / 30	0.0085	J	0.0085	T125-C-0.0				No	No	FOD
Chlorobenzene	108-90-7	0 / 30			0.0085					No	No	ND3
Chloroethane	75-00-3	0 / 30			0.0085					No	No	ND3
Chloroform	67-66-3	0 / 30			0.0085					No	No	ND3
Chloromethane	74-87-3	0 / 30			0.0085					No	No	ND3
Cyclohexane	110-82-7	0 / 30			0.017					No	No	ND3
Dibromochloromethane	124-48-1	0 / 30			0.0085		0.198	Ohio EPA (2018)		No	No	ND1
Dichlorodifluoromethane	75-71-8	0 / 30			0.0085					No	No	ND3

Table 4. COPEC Screening for Surface Sediment

Chemical	CAS Number	FOD	Maximum Detected Concentration (mg/kg)		Maximum Reporting Limit (mg/kg)	Location of Maximum Detected Concentration	Screening Value (mg/kg)	Screening Value Source	OEPA SRV [a]	PBT (Yes/No) [b]	COPEC (Yes/No)	Reason for Selection or Deletion [c]
Ethylbenzene	100-41-4	0 / 30			0.0085					No	No	ND3
Isopropylbenzene	98-82-8	0 / 30			0.0085					No	No	ND3
Methyl tert-butyl ether	1634-04-4	0 / 30			0.0085					No	No	ND3
Methylcyclohexane	108-87-2	0 / 30			0.017					No	No	ND3
Methylene Chloride	75-09-2	0 / 30			0.043					No	No	ND3
Styrene	100-42-5	0 / 30			0.0085					No	No	ND3
Tetrachloroethene	127-18-4	1 / 30	0.0085		0.0085	T250-C-0.0; T500-E-0.0				No	No	FOD
Toluene	108-88-3	1 / 30	0.0085	J	0.0085	T250-C-0.0				No	No	FOD
Trichloroethylene	79-01-6	0 / 30			0.0085					No	No	ND3
Trichlorofluoromethane	75-69-4	0 / 30			0.0085					No	No	ND3
Vinyl Chloride	75-01-4	0 / 30			0.0085					No	No	ND3
Xylenes, Total	1330-20-7	0 / 30			0.017					No	No	ND3
cis-1,2-Dichloroethene	156-59-2	0 / 30			0.0085					No	No	ND3
cis-1,3-Dichloropropene	10061-01-5	0 / 30			0.0085					No	No	ND3
trans-1,2-Dichloroethene	156-60-5	0 / 30			0.0085					No	No	ND3
trans-1,3-Dichloropropene	10061-02-6	0 / 30			0.0085					No	No	ND3

Sources:

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. *Arch. Environ. Contam. Toxicol*. 39:20-31.
Ohio EPA. 2018. Ecological risk assessment guidance document. Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization Assessment, Remediation and Corrective Action Section. July.
Agency.

Notes:

Highlighted chemicals are retained as sediment COPECs for further evaluation
COPEC = chemical of potential ecological concern
FOD = frequency of detection
Ohio EPA = Ohio Environmental Protection Agency
PAH = polycyclic aromatic hydrocarbon
PCB = polychlorinated biphenyl
PBT = persistent, bioaccumulative, toxic
SRV = sediment reference value

Data Qualifier:
J = estimated concentration

[a] Ohio-specific SRVs for Erie-Ontario Lake Plain (Ohio EPA 2018).
[b] Persistent, bioaccumulative, and toxic pollutant as identified in Ohio EPA (2018).
[c] Reason for selection or deletion:
Selection reason: **ASV**: maximum detected concentration is above the screening value; **PBT**: chemical is detected and listed as PBT.
Deletion reason: **BSV**: maximum detected concentration falls below screening value; **NSV**: chemical detected but no screening value available (see Uncertainty Analysis); **FOD:** chemical was detected but the frequency of detection was <5%; **ND1**: chemical not detected and reporting limit falls below screening value; **ND2**: chemical not detected but reporting limit exceeds screening value (see Uncertainty Analysis); **ND3**: chemical not detected and lacks screening value.

Attachment A

Extent of Hazardous Substances

U.S. EPA 2024 RSLs	INDUSTRIAL SOIL RSLs (**)
Metals	
Arsenic (As)	3
All Other Analyzed Metals	Varies
Cyanide	
Total Cyanide (CN)	15

Abbreviations & Notes:

RSLs = Regional Screening Levels

U.S. EPA = United States Environmental Protection Agency

All results and U.S. EPA Screening Levels are reported in milligrams per kilogram (mg/kg). Compounds not listed were identified below applicable RSLs.

U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update.

RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).

The following denote the color of screening level exceedances:

** = At or Above U.S. EPA 2024 Industrial Soil RSLs

SB-19		
Depth (feet):	6.0-8.0	14.0-16.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	13.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.670	<0.710

SB-20		
Depth (feet):	4.0-6.0	14.0-16.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	12.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.510	<0.710

SB-16		
Depth (feet):	4.0-6.0	12.0-14.0
Sample Date:	10/14/2024	10/14/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	11.0 **	15.0 **
PCBs	<RSLs	<RSLs
Total CN	5.2	<0.490

SB-21		
Depth (feet):	12.0-14.0	16.0-18.0
Sample Date:	10/16/2024	10/16/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	12.0 **
PCBs	<RSLs	<RSLs
Total CN	0.630	<0.710

SB-14			
Depth (feet):	6.0-8.0	12.0-14.0	18.0-20.0
Sample Date:	10/21/2024	10/21/2024	10/21/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	17.0 **	15.0 **	11.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	1.0	<0.550	<0.650

SB-17		
Depth (feet):	10.0-12.0	14.0-16.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	15.0 **	13.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.550	<0.660

SB-11		
Depth (feet):	20.0-22.0	22.0-24.0
Sample Date:	10/17/2024	10/17/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	16.0 **	12.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.520	<0.410

SB-10		
Depth (feet):	4.0-6.0	10.0-12.0
Sample Date:	10/15/2024	10/15/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	16.0 **	14.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.670	<0.620

SB-12/SB-12B				
Depth (feet):	4.0-6.0	6.0-8.0	14.0-16.0	18.0-20.0
Sample Date:	10/21/2024	10/21/2024	10/21/2024	10/21/2024
Parameters				
VOCs	<RSLs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs	<RSLs
As	12.0 **	16.0 **	14.0 **	13.0 **
PCBs	<RSLs	<RSLs	<RSLs	<RSLs
Total CN	81.0 **	2.1	<0.510	<0.500

SB-13			
Depth (feet):	14.0-16.0	16.0-18.0	18.0-20.0
Sample Date:	10/16/2024	10/16/2024	10/16/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	23.0 **	11.0 **	17.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.610	<0.660	<0.480

SB-7			
Depth (feet):	10.0-12.0	16.0-18.0	18.0-20.0
Sample Date:	10/22/2024	10/22/2024	10/22/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	16.0 **	11.0 **	14.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.610	<0.530	<0.530

SB-22			
Depth (feet):	4.0-6.0	12.0-14.0	18.0-20.0
Sample Date:	10/16/2024	10/16/2024	10/16/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	15.0 **	16.0 **	12.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.650	<0.630	<0.690

SB-9		
Depth (feet):	22.0-24.0	30.0-32.0
Sample Date:	10/17/2024	10/17/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	12.0 **	10.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.450	<0.460

SB-8		
Depth (feet):	12.0-14.0	20.0-22.0
Sample Date:	10/17/2024	10/17/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	9.6 **	17.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.430	<0.470

SB-6			
Depth (feet):	8.0-10.0	12.0-14.0	18.0-20.0
Sample Date:	10/18/2024	10/18/2024	10/18/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	29.0 **	12.0 **	12.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	0.450	0.570	<0.420

SB-4		
Depth (feet):	8.0-10.0	16.0-18.0
Sample Date:	10/18/2024	10/18/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	14.0 **	18.0
PCBs	<RSLs	<RSLs
Total CN	<0.450	<0.560

SB-1		
Depth (feet):	4.0-6.0	18.0-20.0
Sample Date:	10/18/2024	10/18/2024
Parameters		
VOCs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs
As	13.0 **	14.0 **
PCBs	<RSLs	<RSLs
Total CN	<0.620	<0.500

SB-2			
Depth (feet):	6.0-8.0	10.0-12.0	16.0-18.0
Sample Date:	10/21/2024	10/21/2024	10/21/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	13.0 **	13.0 **	17.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.660	<0.640	<0.570

SB-3			
Depth (feet):	6.0-8.0	10.0-12.0	16.0-18.0
Sample Date:	10/22/2024	10/22/2024	10/22/2024
Parameters			
VOCs	<RSLs	<RSLs	<RSLs
sVOCs	<RSLs	<RSLs	<RSLs
As	17.0 **	16.0 **	13.0 **
PCBs	<RSLs	<RSLs	<RSLs
Total CN	<0.590	<0.590	<0.660

SB-19, SB-20, SB-17, SB-18, SB-16, SB-15, SB-21, SB-13, SB-14, SB-10, SB-22, SB-11, SB-12, SB-7, SB-8, SB-9, SB-6, SB-4, SB-2, SB-1, SB-3

Wilson Ln

W Main St

Subject Property

Soil Sample

Material Sciences Corporation
Canfield

On-Site Soil Borings - Soil Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

Nearmap Aerial Imagery:
June 15, 2024

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372

DATE: 12/12/2024

SCALE: 1:1,000

FIGURE: 3

CREATED BY: CC

U.S. EPA 2024 RSLs	RESIDENT SOIL RSLs (*)	INDUSTRIAL SOIL RSLs (**)
Semi-Volatile Organic Compounds (sVOCs)		
Benzo(a)pyrene (BaP)	0.11	2
Benzo(b)fluoranthene (BbF)	1.1	21
Dibenz(a,h)anthracene (DBA)	0.11	2
Metals		
Arsenic (As)	0.68	3
Cadmium (Cd)	0.71	10
Chromium (Hexavalent) (Cr(VI))	0.3	6
Lead	200	800
Zinc (Zn)	2,300	35,000
Cyanide		
Total Cyanide (CN)	2.3	15

Abbreviations & Notes:

BRL = Below Laboratory Reporting Limits

RSLs = Regional Screening Levels

U.S. EPA = United States Environmental Protection Agency

Other analyzed compounds not listed were detected at concentrations below applicable RSLs (<RSLs).

Results and U.S. EPA Screening Levels are reported in milligrams per kilogram (mg/kg).

U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update

RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).

The following denote the color of screening level exceedances:

* = At or Above U.S. EPA 2024 Resident Soil RSLs

** = At or Above U.S. EPA 2024 Industrial Soil RSLs

SB-35			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.220 *	0.110 *	<0.067
BbF	0.430	0.220	0.074
DBA	0.045	<0.052	<0.067
As	6.9 **	12.0 **	9.2 **
Cd	0.520	0.460	0.250
Cr(VI)	<6.0 E	<0.28	<2.3 E
Pb	29.0	32.0	24.0
Zn	21,000 *	1,500	1,200
Cyanide (Total)	860 **	14.0 *	8.5 *

SB-29			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.110 *	0.120 *	0.019
BbF	0.250	0.260	0.036
DBA	<0.094	<0.077	<0.053
As	7.3 **	9.2 **	5.6 **
Cd	0.500	0.500	0.170
Cr(VI)	<1.6 E	<1.4 E	<1.9 E
Pb	27.0	42.0	14.0
Zn	4,700 *	170	69.0
Cyanide (Total)	450 **	220 **	6.6 *

SB-30			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.230 *	0.066	0.023
BbF	0.420	0.110	0.042
DBA	0.047	<0.057	<0.050
As	7.0 **	9.2 **	8.3 **
Cd	0.430	0.240	0.240
Cr(VI)	<2.8 E	<2.0 E	<0.19
Pb	23.0	370 *	19.0
Zn	22,000 *	300	230
Cyanide (Total)	320 **	28.0 **	24.0 **

SB-31			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.480 *	0.087	0.030
BbF	0.960	0.150	0.057
DBA	0.088	<0.058	<0.073
As	8.2 **	11.0 **	10.0 **
Cd	0.350	0.320	0.140
Cr(VI)	<2.7 E	<2.2 E	<2.5 E
Pb	23.0	31.0	18.0
Zn	9,500 *	600	320
Cyanide (Total)	690 **	37.0 **	17.0 **

SB-28			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.230 *	0.033	0.018
BbF	0.460	0.065	0.031
DBA	0.042	<0.056	<0.049
As	8.7 **	6.6 **	11.0 **
Cd	0.420	0.440	0.064
Cr(VI)	<3.7 E	<1.9 E	<0.17
Pb	28.0	31.0	11.0
Zn	2,300 *	240	45.0
Cyanide (Total)	270 **	9.0 *	6.9 *

SB-26			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.270 *	0.035	<0.050
BbF	0.550	0.055	<0.050
DBA	0.058	<0.058	<0.050
As	12.0 **	6.0 **	7.8 **
Cd	0.480	0.250	0.100
Cr(VI)	<3.5 E	<2.1 E	<0.88 E
Pb	30.0	28.0	9.9
Zn	2,300 *	99.0	60.0
Cyanide (Total)	380 **	20.0 **	9.9 *

SB-36			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.410 *	0.370 *	0.051
BbF	0.820	0.780	0.087
DBA	0.083	0.078	<0.051
As	8.1 **	11.0 **	7.5 **
Cd	0.430	0.380	0.230
Cr(VI)	<2.3 E	<2.1 E	<0.15
Pb	26.0	27.0	21.0
Zn	20,000 *	810	290
Cyanide (Total)	700 **	6.5 *	<6.0 E

SB-32			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.350 *	0.310 *	0.040
BbF	0.750	0.560	0.082
DBA	0.072	0.053	<0.057
As	7.5 **	12.0 **	9.4 **
Cd	0.310	0.370	0.098
Cr(VI)	<2.2 E	<2.1 E	<2.1 E
Pb	25.0	32.0	17.0
Zn	21,000 *	1,700	790
Cyanide (Total)	700 **	260 **	60.0 **

SB-33			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/09/2024	10/09/2024	10/09/2024
Parameters			
BaP	0.470 *	0.120 *	<0.048
BbF	1.1 *	0.200	<0.048
DBA	0.097	0.020	<0.048
As	11.0 **	14.0 **	11.0 **
Cd	0.390	0.120	0.078
Cr(VI)	<4.1 E	0.250	<0.17
Pb	29.0	15.0	13.0
Zn	7,600 *	280	190
Cyanide (Total)	390 **	36.0 **	8.1 *

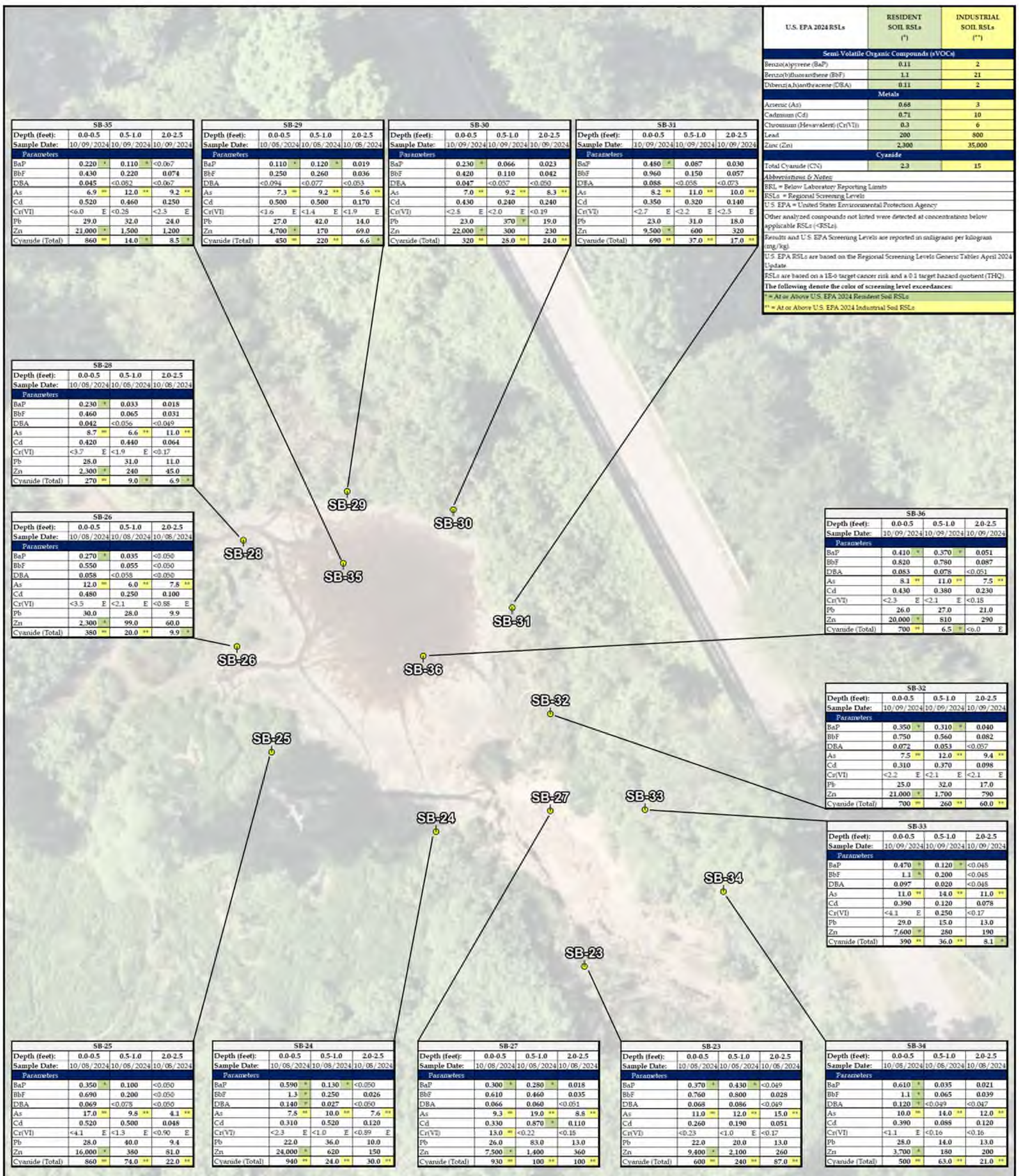
SB-25			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.350 *	0.100	<0.050
BbF	0.690	0.200	<0.050
DBA	0.069	<0.078	<0.050
As	17.0 **	9.8 **	4.1 **
Cd	0.520	0.500	0.048
Cr(VI)	<4.1 E	<1.3 E	<0.90 E
Pb	28.0	40.0	9.4
Zn	16,000 *	380	81.0
Cyanide (Total)	860 **	74.0 **	22.0 **

SB-24			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.590 *	0.130 *	<0.050
BbF	1.3 *	0.250	0.026
DBA	0.140 *	0.027	<0.050
As	7.8 **	10.0 **	7.6 **
Cd	0.310	0.520	0.120
Cr(VI)	<2.3 E	<1.0 E	<0.89 E
Pb	22.0	36.0	10.0
Zn	24,000 *	620	150
Cyanide (Total)	940 **	24.0 **	30.0 **

SB-27			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.300 *	0.280 *	0.018
BbF	0.610	0.460	0.035
DBA	0.066	0.060	<0.051
As	9.3 **	19.0 **	8.8 **
Cd	0.330	0.870 *	0.110
Cr(VI)	13.0 **	<0.22	<0.15
Pb	26.0	83.0	13.0
Zn	7,500 *	1,400	360
Cyanide (Total)	930 **	100 **	100 **

SB-23			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.370 *	0.430 *	<0.049
BbF	0.760	0.800	0.028
DBA	0.068	0.086	<0.049
As	11.0 **	12.0 **	15.0 **
Cd	0.260	0.190	0.051
Cr(VI)	<0.23	<1.0 E	<0.17
Pb	22.0	20.0	13.0
Zn	9,400 *	2,100	260
Cyanide (Total)	600 **	240 **	87.0 **

SB-34			
Depth (feet):	0.0-0.5	0.5-1.0	2.0-2.5
Sample Date:	10/08/2024	10/08/2024	10/08/2024
Parameters			
BaP	0.610 *	0.035	0.021
BbF	1.1 *	0.065	0.039
DBA	0.120 *	<0.049	<0.047
As	10.0 **	14.0 **	12.0 **
Cd	0.390	0.088	0.120
Cr(VI)	<1.1 E	<0.16	<0.16
Pb	28.0	14.0	13.0
Zn	3,700 *	180	200
Cyanide (Total)	500 **	63.0 **	21.0 **



Soil Sample

Nearmap Aerial Imagery: June 15, 2024

Material Sciences Corporation Canfield

Surface Water Feature - Soil Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 10 20 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229

August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/10/2024
	SCALE: 1:250
FIGURE: 5	CREATED BY: CC

Transect 1125	East Bank			Center	West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/03/2024	10/06/2024	10/06/2024	10/03/2024	10/03/2024	10/06/2024
Parameters						
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.560	<0.048	<0.047	0.220	0.088	0.018
BaP	0.750 *	<0.048	0.018	0.310 *	0.110 *	0.018
BbF	1.3 *	0.031	0.038	0.640	0.210	0.031
DBA	0.150 *	<0.048	<0.047	0.069	<0.052	<0.049
IP	0.470	0.017	0.015	0.240	0.090	0.015
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	13.0 **	25.0 **	13.0 **	9.9 **	11.0 **	14.0 **
Cd	0.320	0.051	0.061	0.260	0.200	0.130
Cr(VI)	<0.200	<0.170	<0.170 E	<2.1 E	<0.18	<0.18
Cu	26.0	19.0	15.0	3.3	11.0	17.0
Zn	740	270	600	4,500 *	660	160
Cyanide (Total)	140 **	16.0 **	18.0 **	570 **	66.0 **	<17 E

Transect 1100 SS#5/5N		
Depth (feet):	0.0-0.5	2.0-2.5
Sample Date:	07/26/2024	08/06/2024
Parameters		
VOCs	NA	NA
BaA	NA	NA
BaP	NA	NA
BbF	NA	NA
DBA	NA	NA
IP	NA	NA
PCBs	NA	NA
As	16.0 **	13.0 **
Cd	0.610	0.550
Cr(VI)	NA	NA
Cu	16.0	15.0
Zn	550	360
Cyanide (Total)	89.0 **	38.0 **

Transect 1000	East Bank	Center			West Bank	
Depth (feet):	0.0-0.5	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5
Sample Date:	10/03/2024	10/03/2024	10/06/2024	10/06/2024	10/09/2024	10/06/2024
Parameters						
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.620	0.060	0.036	0.150	0.110	<0.045
BaP	0.680 *	0.067	0.029	0.130 *	0.140 *	<0.045
BbF	1.3 *	0.120	0.042	0.170	0.220	<0.045
DBA	0.140 *	<0.051	<0.0o4	0.036	<0.054	<0.045
IP	0.380	0.046	<0.0o4	0.055	0.110	<0.045
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	9.7 **	15.0 **	28.0 **	11.0 **	9.3 **	15.0 **
Cd	1.0 *	0.180	0.270	0.067	0.310	0.730
Cr(VI)	<2.2 E	<0.18	<0.22	<0.84 E	<0.330	<0.16
Cu	27.0	1.9	26.0	16.0	15.0	17.0
Zn	140	6,600 *	160	95.0	280	75.0
Cyanide (Total)	29.0 **	1.9	11.0 *	21.0 **	370 **	6.3 *

U.S. EPA 2024 RSLs	RESIDENT SOIL RSLs (*)	INDUSTRIAL SOIL RSLs (**)
Semi-Volatile Organic Compounds (sVOCs)		
Benzo(a)anthracene (BaA)	1.1	21
Benzo(a)pyrene (BaP)	0.11	2
Benzo(b)fluoranthene (BbF)	1.1	21
Dibenz(a,h)anthracene (DBA)	0.11	2
Indeno(1,2,3-cd)pyrene (IP)	1.1	21
Metals		
Arsenic (As)	0.68	3
Cadmium (Cd)	0.71	10
Chromium (Hexavalent) (Cr(VI))	0.3	6
Copper (Cu)	310	4,700
Zinc (Zn)	2,300	35,000
Cyanide		
Total Cyanide (CN)	2.3	15

Abbreviations & Notes:

BRL = Below Laboratory Reporting Limits; PCB = Polychlorinated Biphenyls

RSLs = Regional Screening Levels; VOCs = Volatile Organic Compounds

U.S. EPA = United States Environmental Protection Agency

Other analyzed compounds not listed were detected at concentrations below applicable RSLs (<RSLs).

Results and U.S. EPA Screening Levels are reported in milligrams per kilogram (mg/kg).

U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update.

RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).

The following denote the color of screening level exceedances:

* = At or Above U.S. EPA 2024 Resident Soil RSLs

** = At or Above U.S. EPA 2024 Industrial Soil RSLs

Transect 875	East Bank			Center	SS#@/SS#4N		West Bank		
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/03/2024	10/03/2024	10/03/2024	07/24/2024	08/06/2024	10/03/2024	10/03/2024	10/06/2024
Parameters									
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
BaA	0.037	<0.048	0.210	0.027	NA	NA	0.270	<0.045	<0.039
BaP	0.038	<0.048	0.170 *	0.017	NA	NA	0.350 *	<0.045	<0.039
BbF	0.056	0.017	0.240	0.029	NA	NA	0.660	0.013	0.014
DBA	<0.047	<0.048	0.038	<0.049	NA	NA	0.069	<0.045	<0.039
IP	0.018	<0.048	0.100	<0.049	NA	NA	0.230	<0.045	<0.039
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
As	9.8 **	20.0 **	11.0 **	16.0 **	13.0 **	11.0 **	12.0 **	12.0 **	14.0 **
Cd	0.230	0.078	0.060	<0.53	0.550	0.570	0.380	0.100	<0.46
Cr(VI)	<0.16	<0.17	<0.17	<0.18	NA	NA	<1.0 E	<0.16	<0.14
Cu	15.0	19.0	16.0	11.0	2.8	16.0	31.0	19.0	17.0
Zn	75.0	68.0	66.0	820	10,000 *	440	430	93.0	62.0
Cyanide (Total)	1.4	1.8	14.0 *	170 **	1,900 **	79.0 **	23.0 **	4.0 *	5.4 *

Transect 750	East Bank			West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5
Sample Date:	10/03/2024	10/05/2024	10/05/2024	10/03/2024	10/05/2024
Parameters					
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.290	0.035	0.061	0.660	<0.047
BaP	0.400 *	0.031	0.046	0.940 *	<0.047
BbF	0.760	0.050	0.084	1.9 *	0.017
DBA	0.068	<0.050	<0.051	0.130 *	<0.047
IP	0.190	0.018	0.031	0.550	<0.047
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	13.0 **	13.0 **	14.0 **	12.0 **	21.0 **
Cd	0.440	0.130	0.120	0.540	<0.5o
Cr(VI)	<2.3 E	<0.15	<0.18	<2.1 E	<0.1o
Cu	27.0	20.0	20.0	24.0	24.0
Zn	420	110	140	1,200	210
Cyanide (Total)	20.0 **	<15 E	<35 E	83.0 **	52.0 **

Transect 670 SS#3/SS#3N		
Depth (feet):	0.0-0.5	2.0-2.5
Sample Date:	07/24/2024	08/05/2024
Parameters		
VOCs	NA	NA
BaA	NA	NA
BaP	NA	NA
BbF	NA	NA
DBA	NA	NA
IP	NA	NA
PCBs	NA	NA
As	11.0 **	19.0 **
Cd	0.530	0.460
Cr(VI)	NA	NA
Cu	2.6	17.0
Zn	6,200 *	460
Cyanide (Total)	990 **	41.0 **

Transect 625	East Bank			Center			West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5
Sample Date:	10/05/2024	10/05/2024	10/05/2024	10/30/2024	10/05/2024	10/05/2024	10/05/2024	10/05/2024
Parameters								
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	0.210	0.039	0.018	<0.16	0.021	<0.045	0.510	0.081
BaP	0.260 *	0.033	0.019	0.060	0.018	0.019	0.790 *	0.083
BbF	0.470	0.060	0.030	0.120	0.050	0.027	1.6 *	0.160
DBA	0.055	<0.051	<0.049	<0.16 E	<0.050	<0.045	0.110 *	0.030
IP	0.190	0.025	<0.049	<0.16	<0.050	0.017	0.470	0.064
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	11.0 **	14.0 **	13.0 **	15.0 **	16.0 **	17.0 **	14.0 **	17.0 **
Cd	0.410	0.160	0.130	0.290	0.310	0.150	0.530	<0.55
Cr(VI)	2.4 *	<0.15	<0.17	<1.9 E	<0.15	0.330 *	<2.3 E	<0.16
Cu	26.0	23.0	28.0	3.7	33.0	18.0	11.0	21.0
Zn	210	230	160	12,000 *	550	860	3,700 *	68.0
Cyanide (Total)	10.0 *	40.0 **	7.3 *	160 **	12.0 *	3.2 *	740 **	78.0 **

Transect 500	East Bank	West Bank		
Depth (feet):	0.0-0.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/03/2024	10/05/2024	10/05/2024
Parameters				
VOCs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.5 *	0.470	<0.052	0.046
BaP	2.2 **	0.640 *	<0.052	0.058
BbF	4.3 *	1.4 *	<0.052	0.110
DBA	0.330 *	0.110 *	<0.052	<0.051
IP	1.2 *	0.350	<0.052	0.051
PCBs	<RSLs	<RSLs	<RSLs	<RSLs
As	11.0 **	14.0 **	13.0 **	11.0 **
Cd	0.900 *	0.600	0.140	<0.63
Cr(VI)	<2.2 E	<2.2 E	<0.18	<0.18
Cu	27.0	17.0	11.0	17.0
Zn	3,400 *	2,600 *	600	130
Cyanide (Total)	370 **	540 **	2.8 *	14.0 *

Transect 375	East Bank			SS#2/2N		West Bank		
Depth (feet):	0.0-0.5	2.0-2.5	4.0-4.5	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/04/2024	10/04/2024	07/24/2024	08/06/2024	10/03/2024	10/04/2024	10/04/2024
Parameters								
VOCs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
BaA	2.3 *	0.140	0.400	NA	NA	2.1 *	0.150	0.059
BaP	3.3 **	0.140 *	0.310 *	NA	NA	3.2 **	0.150 *	0.063
BbF	4.9 *	0.220	0.440	NA	NA	6.6 *	0.220	0.099
DBA	0.450 *	0.032	0.067	NA	NA	0.420 *	<0.051	<0.052
IP	1.9 *	0.097	0.210	NA	NA	1.7 *	0.110	0.054
PCBs	<RSLs	<RSLs	<RSLs	NA	NA	<RSLs	<RSLs	<RSLs
As	14.0 **	15.0 **	14.0 **	11.0 **	9.8 **	12.0 **	12.0 **	14.0 **
Cd	0.790 *	0.210	0.120	0.650	0.580	0.750 *	0.140	0.410
Cr(VI)	<1.3 E	0.280	<0.20	NA	NA	<2.4 E	<0.19	<0.15
Cu	11.0	25.0	20.0	3.2	19.0	12.0	16.0	20.0
Zn	10,000 *	460	330	19,000 *	140	6,200 *	310	630
Cyanide (Total)	1,200 **	<32 E	<36 E	2,500 **	14.0 *	1,300 **	49.0 **	<36 E

Transect 250	East Bank		Center	West Bank		
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	0.0-0.5	2.0-2.5	4.0-4.5
Sample Date:	10/03/2024	10/04/2024	10/03/2024	10/03/2024	10/04/2024	10/04/2024
Parameters						
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.6 *	0.170	2.2 *	2.4 *	0.075	0.120
BaP	2.0 *	0.190 *	3.2 **	3.3 **	0.130 *	0.120 *
BbF	4.0 *	0.350	5.3 *	5.6 *	0.120	0.190
DBA	0.260 *	<0.051	0.410 *	0.420 *	<0.055	<0.052
IP	0.800	0.130	1.6 *	1.8 *	0.053	0.081
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	13.0 **	12.0 **	11.0 **	13.0 **	16.0 **	12.0 **
Cd	0.500	0.250	0.570	0.920 *	0.210	0.350
Cr(VI)	<1.9 E	<0.18	<2.2 E	<2.4 E	<0.19	<0.15
Cu	4.2	22.0	2.5	31.0	8.3	60.0
Zn	4,400 *	430	5,800 *	3,100 *	2,400 *	370
Cyanide (Total)	1,400 **	240 **	710 **	1,300 **	45.0 **	32.0 **

Transect 190 SS#1 / Outfall-3-N		
Depth (feet):	0.0-0.5	2.0-2.5
Sample Date:	07/26/2024	08/06/2024
Parameters		
VOCs	NA	NA
BaA	NA	NA
BaP	NA	NA
BbF	NA	NA
DBA	NA	NA
IP	NA	NA
PCBs	NA	NA
As	10.0 **	17.0 **
Cd	0.920 *	0.450
Cr(VI)	NA	NA
Cu	4.6	21.0
Zn	20,000 *	230
Cyanide (Total)	3,700 **	36.0 **

Transect 125	East Bank		Center	West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/02/2024	10/03/2024	10/03/2024	10/02/2024	10/04/2024
Parameters					
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.2 *	1.3 *	1.9 *	1.4 *	0.420
BaP	1.3 *	1.3 *	2.0 *	1.4 *	0.430 *
BbF	2.1 *	1.8 *	4.2 *	2.3 *	0.580
DBA	0.240 *	0.190 *	0.310 *	0.200 *	0.081
IP	0.850	0.690	1.1 *	0.780	0.220
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	32.0 **	12.0 **	12.0 **	11.0 **	9.4 **
Cd	1.0 *	1.2 *	0.670	0.620	1.9 *
Cr(VI)	<0.97 E	<0.15	<2.1 E	<1.0 E	<0.17
Cu	800 *	22.0	4.7	28.0	20.0
Zn	5,200 *	850	6,700 *	3,100 *	510
Cyanide (Total)	240 **	14.0 *	790 **	610 **	63.0 **

OUTFALL #2 - N	
Depth (feet):	2.0-2.5
Sample Date:	08/06/2024
Parameters	
VOCs	NA
BaA	NA
BaP	NA
BbF	NA
DBA	NA
IP	NA
PCBs	<RSLs
As	12.0 **
Cd	0.630
Cr(VI)	NA
Cu	19.0
Zn	1,300
Cyanide (Total)	220 **

OUTFALL #1 - S	
Depth (feet):	2.0-2.5
Sample Date:	08/06/2024
Parameters	
VOCs	NA
BaA	NA
BaP	NA
BbF	NA
DBA	NA
IP	NA
PCBs	NA
As	24.0 **
Cd	0.810 *
Cr(VI)	NA
Cu	34.0
Zn	220
Cyanide (Total)	1.2

Transect 0	East Bank		Center	West Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/02/2024	10/02/2024	10/02/2024	10/02/2024	10/02/2024
Parameters					
VOCs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
BaA	1.2 *	0.240	1.3 *	0.720	11.0 *
BaP	1.3 *	0.310 *	1.5 *	0.970 *	12.0 **
BbF	2.0 *	0.530	3.0 *	1.5 *	23.0 **
DBA	0.210 *	0.059	0.260 *	0.140 *	1.8 *
IP	0.800	0.210	1.2 *	0.610	4.6 *
PCBs	<RSLs	<RSLs	<RSLs	<RSLs	<RSLs
As	16.0 **	15.0 **	13.0 **	11.0 **	15.0 **
Cd	0.410	0.190	0.460	0.420	0.400
Cr(VI)	<1.0 E	0.190	<0.18	<0.58 E	<0.17
Cu	30.0	23.0	39.0	35.0	30.0
Zn	140	75.0	120	150	190
Cyanide (Total)	1.5	<0.63	2.3 *	2.0	<30 E

Transect (-290) BKGRND	
Depth (feet):	0.0-0.5
Sample Date:	07/24/2024
Parameters	
VOCs	NA
BaA	NA
BaP	NA
BbF	NA
DBA	NA
IP	NA
PCBs	NA
As	13.0 **
Cd	0.600
Cr(VI)	NA
Cu	67.0
Zn	160
Cyanide (Total)	3.8 *

T-1125
SS-5
SS-5N
T-1000
T-875
SS-4
SS-4N
T-750
SS-3
SS-3N
T-625
T-500
SS-2
SS-2N
T-375
T-250
Outfall-3-N
SS-1
T-125
Outfall-2-N
Outfall-1-S
T-0
Bkgrnd
Weldon Ln

Subject Property

Ditch Excavation Area

Soil Sample

Nearmap Aerial Imagery: June 15, 2024

Material Sciences Corporation
Canfield

Adjacent Ditch - Soil Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372 | DATE: 12/11/2024

FIGURE: 6 | SCALE: 1:1,250 | CREATED BY: CC

OHIO EPA NON-DRINKING SURFACE WATER HUMAN HEALTH CRITERIA	
Semi-Volatile Organic Compounds (sVOCs)	
Benzo(a)anthracene (BaA)	0.013
Benzo(a)pyrene (BaP)	0.0013
Benzo(b)fluoranthene (BbF)	0.013
Benzo(k)fluoranthene (BkF)	0.130
Indeno(1,2,3-cd)pyrene (IP)	0.013
Metals	
Mercury	0.012
Zinc (Zn) (Dissolved [Zn)(d)]	26000
Cyanide	
Total Cyanide (CN)	NE
Free Cyanide (CN)	400

Abbreviations & Notes:

NE = Not Established; PCBs = Polychlorinated Biphenyls; VOCs = Volatile Organic Compounds

U.S. EPA = United States Environmental Protection Agency

The higher of the two values between original sample and duplicate sample is posted if a compound exceeds OH EPA Surface Water.

Results and Screening Levels are reported in micrograms per liter (ug/L). Analyzed compounds not listed were not detected above Ohio EPA Surface Water Criteria (<SurfCrit).

Per the U.S. EPA's RSL User's Guide, the chemical abstract services number (CAS#) for total cyanide is based on free cyanide toxicity. Since cyanide speciation was performed as part of Site investigation, the total cyanide OH EPA Surface Water Criteria is listed as NE and free cyanide results are compared to the OH EPA Surface Water Criteria.

The following denote the color of screening level exceedances:

^ = At or Above Ohio EPA Non-Drinking Surface Water Human Health Criteria

Transect 750 Center	
Depth (feet):	**Surface**
Sample Date:	10/07/2024
Parameters	
VOCs	<SurfCrit
BaA	<0.065
BaP	<0.17
BbF	**0.160** ^
BkF	<0.13
IP	<0.13
PCBs	<SurfCrit
Hg	<0.13
Zn	**3,200**
Zn	**2,700**
Total CN	**840**
Free CN	**46.0**

Transect 500 Center	
Depth (feet):	**Surface**
Sample Date:	10/07/2024
Parameters	
VOCs	<SurfCrit
BaA	**0.250** ^
BaP	**0.240** ^
BbF	**0.430** ^
BkF	**0.160** ^
IP	**0.160** ^
PCBs	<SurfCrit
Hg	**1.2** ^
Zn	**69,000** ^
Zn(d)	**19,000**
Total CN	**2,000**
Free CN	**94.0**

Transect 375 Center / SW-DUP-1	
Depth (feet):	**Surface**
Sample Date:	10/07/2024
Parameters	
VOCs	<SurfCrit
BaA	**0.340** ^
BaP	**0.580** ^
BbF	**1.3** ^
BkF	**0.410** ^
IP	**0.540** ^
PCBs	<SurfCrit
Hg	<0.200
Zn	**28,000** ^
Zn(d)	**970**
Total CN	**4,900**
Free CN	**83.0**

T-750

T-500

T-375

Weldon Ln

Subject Property

Surface Water Sample

Nearmap Aerial Imagery: June 15, 2024

Material Sciences Corporation Canfield

Adjacent Ditch - Surface Water Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 50 100 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229

August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/11/2024
	SCALE: 1:1,250
FIGURE: 8	CREATED BY: CC

SB-29-SW	
Depth (feet):	Surface
Sample Date:	10/25/2024
Parameters	
VOCs	<SurfCrit
BaA	0.190 ^
BaP	0.320 ^
BbF	0.600 ^
BkF	0.180 ^
IP	0.240 ^
Metals	<SurfCrit
PCBs	<SurfCrit
Total CN	8,100
Free CN	130

SB-36-SW	
Depth (feet):	Surface
Sample Date:	10/25/2024
Parameters	
VOCs	<SurfCrit
BaA	<0.065
BaP	<0.17
BbF	<0.15
BkF	<0.13
IP	<0.13
Metals	<SurfCrit
PCBs	<SurfCrit
Total CN	2,400
Free CN	130

OHIO EPA
NON-DRINKING
SURFACE WATER
HUMAN HEALTH CRITERIA

Semi-Volatile Organic Compounds (sVOCs)	
Benzo(a)anthracene (BaA)	0.013
Benzo(a)pyrene (BaP)	0.0013
Benzo(b)fluoranthene (BbF)	0.013
Benzo(k)fluoranthene (BkF)	0.130
Indeno(1,2,3-cd)pyrene (IP)	0.013
Cyanide	
Total Cyanide (CN)	NE
Free Cyanide (CN)	400

Abbreviations & Notes:

NE = Not Established; PCBs = Polychlorinated Biphenyls; VOCs = Volatile Organic Compounds

U.S. EPA = United States Environmental Protection Agency

Results and Screening Levels are reported in micrograms per liter (ug/L). Analyzed compounds not listed were not detected above Ohio EPA Surface Water Criteria (<SurfCrit).

Per the U.S. EPA's RSL User's Guide, the chemical abstract services number (CAS#) for total cyanide is based on free cyanide toxicity. Since cyanide speciation was performed as part of Site investigation, the total cyanide OH EPA Surface Water Criteria is listed as NE and free cyanide results are compared to the OH EPA Surface Water Criteria.

The following denote the color of screening level exceedances:

^ = At or Above Ohio EPA Non-Drinking Surface Water Human Health Criteria

SB-29
SB-30
SB-28
SB-35
SB-31
SB-26
SB-36
SB-32
SB-25
SB-27
SB-33
SB-24
SB-34
SB-23

Soil Boring Location

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation
Canfield

Surface Water Feature -
Surface Water Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 10 20 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/11/2024
	SCALE: 1:250
FIGURE: 9	CREATED BY: CC

Attachment B

November 2024 Photo Log

File Name: IMG_0575
Date/Time: 2024:11:21 14:03:27
Latitude:
Longitude:
Description: Staging area and mobile treatment units

File Name: IMG_0576
Date/Time: 2024:11:21 14:03:36
Latitude:
Longitude:
Description: Material Sciences Corporation facility (looking toward Main St.)

File Name: IMG_0578
Date/Time: 2024:11:21 14:07:24
Latitude:
Longitude:
Description: Forest area near temporary access road with erosion control measures and material stockpiles adjacent to leaf-littered ground and mature trees.

File Name: IMG_0579
Date/Time: 2024:11:21 14:07:25
Latitude:
Longitude:
Description: Temporary access road (walking north).

File Name: IMG_0580
Date/Time: 2024:11:21 14:07:27
Latitude:
Longitude:
Description: Personnel walking along temporary access road.

File Name: IMG_0582
Date/Time: 2024:11:21 14:07:33
Latitude:
Longitude:
Description: Wooded area with felled trees and accumulated debris adjacent to sediment management activities.

File Name: IMG_0584
Date/Time: 2024:11:21 14:08:16
Latitude:
Longitude:
Description: Temporary mud matting through upland forested area (ditch and temporary fencing along right side of photo).

File Name: IMG_0585
Date/Time: 2024:11:21 14:10:08
Latitude:
Longitude:
Description: Gravel access road looking south towards staged roll off boxes. Facility is in far background.

File Name: IMG_0587
Date/Time: 2024:11:21 14:10:12
Latitude:
Longitude:
Description: Temporary fenced boundary along bikeway, with flagged markers indicating designated areas for sampling in Adjacent Ditch.

File Name: IMG_0588
Date/Time: 2024:11:21 14:13:20
Latitude:
Longitude:
Description: Temporary gravel access road, water bypass pump, wetland area.

File Name: IMG_0591
Date/Time: 2024:11:21 14:15:36
Latitude:
Longitude:
Description: Outlet of ditch bypass, vegetation.

File Name: IMG_0592
Date/Time: 2024:11:21 14:17:26
Latitude:
Longitude:
Description: Wetland area with visible vegetation and leaf litter.

File Name: IMG_0594
Date/Time: 2024:11:21 14:17:35
Latitude:
Longitude:
Description: Scrub/shrub habitat near wetland.

File Name: IMG_0596
Date/Time: 2024:11:21 14:17:41
Latitude:
Longitude:
Description: Gravel access road, bypass pumps, sediment control measures, and adjacent vegetation.

File Name: IMG_0597
Date/Time: 2024:11:21 14:17:47
Latitude:
Longitude:
Description: Outlet of bypass pump near wetland.

File Name: IMG_0598
Date/Time: 2024:11:21 14:20:31
Latitude:
Longitude:
Description: Adjacent Ditch (looking south toward facility). Bypass pool in foreground.

File Name: IMG_0599
Date/Time: 2024:11:21 14:20:32
Latitude:
Longitude:
Description: Temporary dam to collect water from Adjacent Ditch.

File Name: IMG_0604
Date/Time: 2024:11:21 14:23:00
Latitude:
Longitude:
Description: Bypass pump in foreground, roll off boxes staging area in background.

File Name: IMG_0608
Date/Time: 2024:11:21 14:24:22
Latitude:
Longitude:
Description: Upland forest and scrub/shrub habitat.

File Name: IMG_0610
Date/Time: 2024:11:21 14:24:41
Latitude:
Longitude:
Description: Leaf litter.

File Name: IMG_0614
Date/Time: 2024:11:21 14:31:22
Latitude:
Longitude:
Description: Forested upland

File Name: IMG_0617
Date/Time: 2024:11:21 14:31:30
Latitude:
Longitude:
Description: Forested upland with property boundary marker.

File Name: IMG_0621
Date/Time: 2024:11:21 14:32:41
Latitude: 41.02905556
Longitude: -80.77842778
Description: Metal mesh debris observed on leaf-covered ground in upland area.

File Name: IMG_0622
Date/Time: 2024:11:21 14:32:59
Latitude: 41.02909444
Longitude: -80.77841111
Description: Brambles between forest and wetland habitat.

File Name: IMG_0625
Date/Time: 2024:11:21 14:43:40
Latitude: 41.02926389
Longitude: -80.77828333
Description: Deer path through wetland.

File Name: IMG_0626
Date/Time: 2024:11:21 14:43:48
Latitude: 41.02926667
Longitude: -80.77828333
Description: Vegetation in wetland (foreground), forested upland (background), looking south.

File Name: IMG_0628
Date/Time: 2024:11:21 14:44:25
Latitude: 41.02928611
Longitude: -80.77829722
Description: Vegetation in wetland.

File Name: IMG_0635
Date/Time: 2024:11:21 14:47:36
Latitude: 41.02935278
Longitude: -80.77825833
Description: Vegetation in wetland.

File Name: IMG_0638
Date/Time: 2024:11:21 14:49:30
Latitude: 41.02936667
Longitude: -80.77820556
Description: Vegetation in wetland.

File Name: IMG_0642
Date/Time: 2024:11:21 14:51:31
Latitude: 41.02936111
Longitude: -80.77831944
Description: Wetland habitat.

File Name: IMG_0649
Date/Time: 2024:11:21 14:58:10
Latitude: 41.02945
Longitude: -80.77842778
Description: Animal scat and leaf litter in wetland area.

File Name: IMG_0652
Date/Time: 2024:11:21 14:59:07
Latitude: 41.029475
Longitude: -80.77838056
Description: Wetland transition to upland forest.

File Name: IMG_0653
Date/Time: 2024:11:21 14:59:10
Latitude: 41.02948056
Longitude: -80.77838056
Description: Standing snag in wetland.

File Name: IMG_0655
Date/Time: 2024:11:21 14:59:29
Latitude: 41.02950278
Longitude: -80.77828889
Description: Standing snag and large woody debris in wetland.

File Name: IMG_0659
Date/Time: 2024:11:21 15:02:26
Latitude: 41.02962778
Longitude: -80.77830556
Description: Channels with standing water in wetland area.

File Name: IMG_0662
Date/Time: 2024:11:21 15:03:51
Latitude: 41.02949444
Longitude: -80.77849444
Description: Deer print in sediment in wetland area.

File Name: IMG_0665
Date/Time: 2024:11:21 15:04:11
Latitude: 41.02949444
Longitude: -80.77847222
Description: Vegetation in wetland area.

File Name: IMG_0670
Date/Time: 2024:11:21 15:07:51
Latitude: 41.0294
Longitude: -80.778625
Description: Wildlife path through wetland.

File Name: IMG_0672
Date/Time: 2024:11:21 15:16:27
Latitude: 41.02926389
Longitude: -80.77902222
Description: Access from wetlands to northern bike trail. Large *Phragmites* stands in background.

File Name: IMG_0673
Date/Time: 2024:11:21 15:16:29
Latitude: 41.02915278
Longitude: -80.77883056
Description: Open channel in wetland.

File Name: IMG_0674
Date/Time: 2024:11:21 15:16:34
Latitude: 41.02915278
Longitude: -80.77880833
Description: Open channel in wetland.

File Name: IMG_0675
Date/Time: 2024:11:21 15:18:32
Latitude: 41.02916667
Longitude: -80.778625
Description: Wetland area.

File Name: IMG_0677
Date/Time: 2024:11:21 15:19:23
Latitude: 41.02905556
Longitude: -80.778525
Description: Tree base with moss.

File Name: IMG_0682
Date/Time: 2024:11:21 15:26:28
Latitude: 41.02893056
Longitude: -80.77808333
Description: Tree with fungal growth and signs of rutting.

File Name: IMG_0684
Date/Time: 2024:11:21 15:27:01
Latitude: 41.02899167
Longitude: -80.77799167
Description: Forested habitat.

File Name: IMG_0688
Date/Time: 2024:11:21 15:27:41
Latitude: 41.02901944
Longitude: -80.77808333
Description: Forested habitat.

File Name: IMG_0694
Date/Time: 2024:11:21 15:29:56
Latitude: 41.02911389
Longitude: -80.77801389
Description: Foreground tree trunk with surrounding leaf litter and debris, adjacent to wetland vegetation and temporary construction materials within the site boundary near containment efforts.

File Name: IMG_0705
Date/Time: 2024:11:21 15:32:45
Latitude: 41.02970833
Longitude: -80.77796111
Description: Concrete structure between wetland and bikeway.

File Name: IMG_0706
Date/Time: 2024:11:21 15:32:52
Latitude: 41.02968611
Longitude: -80.77796111
Description: Wetland area.

File Name: IMG_0707
Date/Time: 2024:11:21 15:32:54
Latitude: 41.02969444
Longitude: -80.77795278
Description: Wetland area.

File Name: IMG_0711
Date/Time: 2024:11:21 15:34:31
Latitude: 41.02963889
Longitude: -80.77806111
Description: Sediment control measures around perimeter of standing water portion of wetland.

File Name: IMG_0713
Date/Time: 2024:11:21 15:34:35
Latitude: 41.02961389
Longitude: -80.778075
Description: Sediment control measures around perimeter of standing water portion of wetland.

File Name: IMG_0714
Date/Time: 2024:11:21 15:34:39
Latitude: 41.02960833
Longitude: -80.778075
Description: Sediment control measures around perimeter of standing water portion of wetland.

File Name: IMG_0715
Date/Time: 2024:11:21 15:34:41
Latitude: 41.02959722
Longitude: -80.77808333
Description: Wetland habitat.

File Name: IMG_0718
Date/Time: 2024:11:21 15:37:57
Latitude: 41.02982222
Longitude: -80.77794722
Description: Vegetation on bikeway berm.

File Name: IMG_0719
Date/Time: 2024:11:21 15:38:37
Latitude: 41.02986389
Longitude: -80.77798333
Description: Looking from bikeway berm towards wetland. Water control structure in mid-photo.

File Name: IMG_0720
Date/Time: 2024:11:21 15:38:47
Latitude: 41.02986111
Longitude: -80.77799167
Description: Wetland with water control structure in foreground and sediment control coir log and *Phragmites* stands in background.

File Name: IMG_0724
Date/Time: 2024:11:21 15:39:00
Latitude: 41.02988056
Longitude: -80.77798333
Description: View of wetland area (looking west).

File Name: IMG_0725
Date/Time: 2024:11:21 15:40:16
Latitude: 41.02950556
Longitude: -80.77767222
Description: View of bypassed Adjacent Ditch (looking upstream).

Attachment C

Ecological Scoping Checklist

Level I Attachment B
Ecological Scoping Checklist

Part 1			
SITE INFORMATION			
Site Name: Canfield Site		Date: 11/21/24	
Personnel: Jen Lyndall (Integral, lead) and Lindsay Hanna (MAD Scientist)		Time Arrived: 13:31	
(Identify team leader)		Time Departed: 16:25	
Site Address: 460 W. Main St, Canfield, OH 44406			
Site Location:	Latitude: 41.027837	Longitude: -80.777932	
Site Size (acres): Approx. 13.4 acres			
Weather Conditions (note any unusual conditions): Cloudy, scattered snow.			

Land uses at and adjacent to the site: (Circle all that apply and record at or adjacent)			
Residential Adjacent	Commercial	Recreational Adjacent	Industrial At/Adjacent
Agricultural	Urban	Green-Space/ Undeveloped At/adjacent	Other:_____

Note: This checklist provides a suggested format. The format may be altered to fit the needs of the site; however, all pertinent information should be presented.

Part 2		
CONTAMINANTS OF INTEREST		
Contaminants of Interest and *Ecological Stressors* (Types, names including CASRN, classes, or specific *hazardous substances* and non-chemical stressors either known or suspected)	Onsite (O) or Adjacent (A) to the site	Media (soil, sediment, wetland, surface water, ground water (seeps/springs))
Benzo(a)pyrene	Onsite, adjacent	soil, surface water
Benzo(b)fluoranthene	Onsite, adjacent	soil, surface water
Arsenic	Onsite. adjacent	soil
Cyanide	Onsite, adjacent	soil
Benzo(a)anthrecene	Onsite	surface water
Benzo(k)fluoranthene	Onsite	surface water
Indeno(1,2,3-cd)pyrene	Onsite	surface water
Mercury	Onsite	surface water
Zinc	Onsite, adjacent	soil, surface water
Dibenz(a,h)anthracene	Onsite, adjacent	soil
Chromium	Onsite, adjacent	soil

Part 3

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS/HABITAT

Terrestrial – Wooded 45 % of site

Dominant vegetation (circle one):
Coniferous Deciduous Mixed

Dominant tree diameter
diameter at breast height (*dbh*): ____ (inches)

Evidence/observation of wildlife*: squirrels, deer, birds

Terrestrial - Shrub/scrub/grasses 2 % of site

Dominant vegetation (circle one):
shrub/scrub grasses

vegetation density: Dense, Patchy, Sparse
Prominent height of shrub/scrub (<2', 2' to 5', >5')
Prominent height of grasses/herbs (<2', 2' to 5', >5')
Evidence/observation of wildlife*: birds

Terrestrial - Ruderal/Engineered 37 % of site

Dominant vegetation/surfaces (circle one):
Landscaped Agricultural Bare ground
Parking lot Artificial surfaces
Dominant vegetation height (0', >0' - 2', 2' - 5', >5')
Vegetation Density: Dense Patchy Sparse
Evidence/observation of wildlife*:
Bird calls

Aquatic - Non-Flowing (Lentic) ____% of site

Type: Lake Pond Vernal Pool Lagoon
Engineered** Impoundment Reservoir
Water source: Surface water Ground water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands
Bottom Substrate***:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of wildlife*:

Aquatic - Flowing (Lotic) 4 % of site
Aquatic Life Use Designation (if available) _____
Type: River Stream Intermittent Stream
Ditch
Water source: Surface Water Ground Water
Industrial discharge (seeps /springs)
Storm water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate**:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of Wildlife*: Ditch bypassed during site visit

Aquatic - Wetlands 12 % of site
Size 1.6 (acres)
Obvious or designated wetland: (Yes / No)
Water source: Surface Water Ground Water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate***: muck
Vegetation: Submerged Emergent Floating

Evidence/Observation of Wildlife*: Deer tracks, birds

* Wildlife includes: macroinvertebrates, reptiles, amphibians, birds, mammals, and fish.
** Engineered can mean any surface water body that has been artificially created or significantly altered.
*** Bottom substrate types include but not limited to: cobble, gravel, sand, silt, clay, muck, artificial (*e.g.*, concrete).

Part 4
Ecologically Important Resources Observed

Attachment D

Wetland Delineation Report

JURISDICTIONAL WATERS AND ISOLATED WETLANDS REPORT:

Mill Creek Metropark and Adjacent Area
Canfield, Ohio 44406

December 11, 2024

Prepared for:

Integral Consulting, Inc.
8472 E. Washington St. #115
Chagrin Falls, OH 44023

Prepared by:

MAD SCIENTIST ASSOCIATES LLC

Specialists in
Ecological & Wetland Consulting

253 North State Street, Suite 101 Westerville, Ohio 43081 (614) 818-9156 Fax (614) 818-9157 www.madscientistassociates.net

TABLE OF CONTENTS

LIST OF TABLES

Table

LIST OF FIGURES

Figure

LIST OF APPENDICES

Appendix

EXECUTIVE SUMMARY

Integral Consulting, Inc. (Integral) contracted MAD Scientist Associates, LLC (MAD) to investigate and assess aquatic resources across a ~5-acre area located to the northwest of the Material Sciences Corporation building at 460 W. Main St, Canfield, Mahoning County, Ohio (hereafter referred to as the Delineation Area). The Delineation Area is centered approximately on the following coordinates: 41.027837°, -80.777932° (WGS 84). The primary objectives of this study were to identify the boundaries of any Jurisdictional Waters (*i.e.*, non-Isolated Wetlands, streams) or Isolated Wetlands and evaluate their quality using methods developed by the Ohio Environmental Protection Agency (Ohio EPA).

Field work was completed by MAD on November 21, 2024. Wetlands were identified and delineated at the Delineation Area. One (1) identified wetland feature (Wetlands A) amounted to approximately 6.92 acres across the Delineation Area. The wetland was scored using the Ohio Rapid Assessment Method (ORAM, version 5.0) and received a score of 47. This classifies Wetland A as a Category 2 wetland.

All jurisdictional and isolated surface water features identified in this report are regulated by the Ohio EPA or the United States Army Corps of Engineers (USACE). Permits from one or both these agencies may be required if impacts (*e.g.*, placement of fill material) are proposed for the identified features. The permit(s) needed are dependent on the acreage of impact and the type of wetlands or streams affected. The determination of jurisdictional status must be verified by the USACE.

According to the USFWS Information for Planning and Consultation (IPaC) resource list, there is one (1) T&E species—the Indiana Bat—that could be potentially impacted in the project vicinity. However, no critical habitat for either species is found at the Delineation Area. Four bat species are listed as state and/or federally threatened or endangered in Ohio. Specifically, tricolored bats (state endangered), northern long-eared bats (state E, federally threatened), Indiana bats (state and federally E) and little brown bats (state E) are listed and protected. Before any tree clearing occurs, correspondence with ODNR and/or USFWS should take place to avoid take of T&E species or their habitat. MAD is also currently awaiting results from the ODNR Natural Heritage Database to confirm whether any additional listed species may be present in the area and will submit the findings as an addendum to this report once a response is received.

JURISDICTIONAL WATERS AND ISOLATED WETLANDS REPORT
Mill Creek Metropark and Adjacent Area
MAHONING COUNTY, OHIO

1 INTRODUCTION

Integral Consulting, Inc. (Integral) hired MAD Scientist Associates, LLC (MAD) to investigate and assess aquatic resources across a ~5-acre area located the northwest of the Material Sciences Corporation building at 460 W. Main St, Canfield, Mahoning County, Ohio (hereafter referred to as the Delineation Area). The Delineation Area is centered approximately on the following coordinates: 41.027837°, -80.777932° (WGS 84). The Delineation Area is located on the Mill Creek Metroparks parcel to the northwest of Material Sciences Corporation (Figures 1 and 2).

A Jurisdictional Waters and Isolated Wetlands Investigation (full wetland delineation) was completed at the Delineation Area. The primary objectives of this study were to identify the boundaries of Jurisdictional Waters (*i.e.*, non-Isolated Wetlands, streams) or Isolated Wetlands and evaluate their quality using methods developed by the Ohio Environmental Protection Agency (Ohio EPA).

1.1 General Site Description

The Delineation Area and its aquatic resources fall within the Middle Meander Creek watershed (12-digit HUC: 050301030702). The Delineation Area slopes from 1119 feet above mean sea level (AMSL) in the southern forested portion to 1112 feet AMSL in the northern emergent portion, before rising back to 1116 feet AMSL in the north along the bike path. The forested portion is dominated by pin oak (*Quercus palustris*). At the time of the Delineation Area visit, there was no understory based on the late fall timing. North of the forest, the Delineation Area opens up into an emergent wetland dominated by invasive species including giant reed (*Phragmites australis*) and reed canarygrass (*Phalaris arundinacea*). Shrub species including red-osier dogwood (*Cornus sericea*) and bush honeysuckle (*Lonicera* spp.) were located along the border between the forest and the wetland in the eastern portion of the Delineation Area. One stream flowing west to east (Sawmill Creek) and a ditch flowing south to north, were observed flowing into and across Wetland A, converging in the eastern edge of the wetland before flowing offsite to the north. All

water flows offsite to the northeast through a culvert with a water control structure. General site photographs are presented in Appendix A.

1.2 Wetland Definition and Authority

The United States Army Corps of Engineers (USACE) uses the following definition of wetlands:

> *Those 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 generally include swamps, marshes, bogs, and similar areas.*

As a result of a 2001 Supreme Court decision (Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers, 531 U.S. 159 [2001]) further defined by a 2023 Supreme Court decision (Sackett et ux. V. Environmental Protection Agency et. al., 598 U.S.___[2023]) , the USACE no longer regulates Isolated Wetlands (those with no discernible surface connection to streams or rivers). In Ohio, this regulatory authority has been assumed by the Ohio EPA through its Isolated Wetlands Permit program.

Because Site conditions suggest that wetlands are present and federal and state regulations control the discharge of fill materials in such areas, the presence and extent of these wetlands has been determined.

2 OBJECTIVES

The primary objectives of this study were to determine the presence and quality of Jurisdictional Waters (non-Isolated Wetlands, streams) and Isolated Wetlands on the Delineation Area, mark their boundaries, and evaluate the habitat quality of each feature.

3 METHODS

This Jurisdictional Waters and Isolated Wetlands study consisted of two phases: (1) a review of the existing general literature via a desktop review and (2) a field investigation to "ground truth" existing data on the presence and extent of Jurisdictional Waters and Isolated Wetlands. Wetlands were identified according to the methods presented in the 1987 USACE Wetlands Delineation Manual (Environmental Laboratory, 1987; henceforth referred to as the 1987 Manual) and the

Northcentral and Northeast Regional Supplement Version 2.0 (USACE, 2012). If a wetland (either isolated or non-isolated) or stream was found, its extent was subsequently determined by defining its boundary. The methods and materials used are described in greater detail in the following sections.

3.1 Literature Review

The following data sources were reviewed and used as supplemental information on the vegetation, soils, hydrology, and land use cover types of the Delineation Area:

- Google Earth Library. 2024. USGS Topographic Maps. Warren, OH quadrangle.
- Google Earth Pro aerial photographs. 2024.
- Ohio Geographically Referenced Information Program (OGRIP). 2012. High Resolution Orthoimagery.
- OGRIP. 2012. LiDAR.
- Ohio Department of Natural Resources (ODNR). 2024. Natural Heritage Database.
- U.S. Department of Agriculture. 2024. Web Soil Survey 3.4.0 Soil Conservation Service, http://websoilsurvey.nrcs.usda.gov/ app/WebSoilSurvey.aspx.
- U.S. Department of Homeland Security. 2023. Flood Insurance Rate Map (FIRM) Panel 39099C0194D (effective as of 11/18/2009). Federal Emergency Management Agency.
- U.S. Fish and Wildlife Service, 2024. National Wetland Inventory (NWI) map layer for the Warren, OH quadrangle. Google Earth Pro.

3.2 Site Investigation for Wetlands

Field work was completed by MAD's Team, comprised of Certified Wetland Delineator, Lindsay Hanna on November 21, 2024. Weather conditions during field work were cold and snowy with 0.21 inches of precipitation throughout the day.

During field activities, the Team examined and evaluated the vegetation, soils, and hydrologic features of the Delineation Area to determine the presence of wetland conditions. Where wetlands were found, their boundaries were delineated. Throughout the Delineation Area, the Team recorded data on the three wetland parameters (vegetation, soils, and hydrology) within representative wetland and adjacent upland sample plots. The classification schemes of Cowardin *et al.* (1979) and Dahl *et al.* (2015) were used to generally describe wetland community types.

3.2.1 Vegetation

Plants that occur in wetlands (hydrophytes) must have specific physiological and morphological adaptations that allow them to germinate and survive under saturated or anaerobic conditions. The ability of plants to withstand the stresses presented by these conditions varies. This has led to the categorization of plants into indicator status groups by the USACE and the United States Fish and Wildlife Service (USFWS). These groupings (obligate, OBL; facultative wetland, FACW; facultative, FAC; facultative upland, FACU; and upland, UPL) reflect the estimated probability of occurrence in wetlands for each species. Table 1 presents the categories and their definitions.

TABLE 1. PLANT INDICATOR STATUS CATEGORIES (Lichvar *et al.*, 2016)

Indicator Category	Indicator Symbol	Definition
Obligate Wetland Plants	OBL	Plants that occur almost always (estimated probability >99%) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1%) in non-wetlands. Examples: *Spartina alterniflora, Taxodium distichum.*
Facultative Wetland	FACW	Plants that occur usually (estimated probability >67% to 99%) in wetlands, but also occur (estimated probability 1% to 33%) in non-wetlands. Examples: *Fraxinus pennsylvanica, Cornus sericea.*
Facultative Plants	FAC	Plants with a similar likelihood (estimated probability 33% to 67%) of occurring in both wetlands and non-wetlands. Examples: *Gleditsia triacanthos, Smilax rotundifolia.*
Facultative Upland	FACU	Plants that occur sometimes (estimated probability 1% to <33%) in wetlands but occur more often (estimated probability >67% to 99%) in non-wetlands. Examples: *Quercus rubra, Potentilla arguta.*
Obligate Upland Plants	UPL	Plants that occur rarely (estimated probability <1%) in wetlands but occur almost always (estimated probability >99%) in non-wetlands under natural conditions. Examples: *Pinus echinata, Bromus mollis.*

In each sample plot, herbaceous species within a 5-foot radius of the plot center, woody shrubs and saplings within a 15-foot radius, and tree and vine species within a 30-foot radius of the plot center were identified and recorded. The indicator status of the dominant species was then used to determine the presence of wetland vegetation. If more than 50% of the dominant species in a sample plot consisted of plants with an indicator status of OBL, FACW, or FAC for the Northcentral and Northeast Region (USACE, 2010), the plot was considered to contain wetland vegetation. If this criterion was not met, alternative metrics defined in the Northcentral and

Northeast Regional Supplement were used to confirm the presence or absence of hydrophytic vegetation.

3.2.2 Soils

For the hydric soils parameter to be satisfied, soils must be saturated, flooded, or ponded for a sufficient portion of the growing season to develop anaerobic conditions in the upper layers of the soil profile (USDA, 2010). The Soil Conservation Service (SCS—now called the Natural Resource Conservation Service, NRCS) and the National Technical Committee for Hydric Soils, have compiled a list of hydric soils of the United States (USDA, 2015). This list identifies the NRCS-mapped soil series that meet hydric soil criteria. However, since upland soils may have hydric soil inclusions, and hydric soils may contain pockets of upland soils, field examination of soils is an important component of the field investigation.

Under saturated, reducing (anaerobic) conditions, hydric soils exhibit characteristics that allow them to be distinguished from drier, upland soils. These include high organic matter content, accumulation of sulfidic material, green- or blue-gray color formation (gleied soils), redoximorphic features (such as mottling, sometimes associated with oxidized root zones), and dark or gray (low value or chroma) soils.

During the Delineation Area investigation, sampling was accomplished by using a spade shovel to observe soils to a depth of at least 30 centimeters. All soils were examined for hydric indicators and data were recorded in the field. Soil colors were identified using a Munsell Soil Color Chart (Kollmorgen, 1992).

3.2.3 Hydrology

Hydrology is the single-most important determinant of the establishment and maintenance of specific types of wetlands and wetland processes (Mitsch and Gosselink, 1993). Although water must be present for wetlands to exist, it need not be present throughout the entire year. Wetland hydrology is considered to be present when an area is inundated either permanently or periodically at mean water depths less than 6.6 feet or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation (Environmental Laboratory, 1987). In Mahoning County, Ohio, the average growing season extends from April through October (USDA-NRCS, 2020).

Indicators of hydrologic conditions that occur in wetlands include, but are not limited to, drainage patterns, drift lines, sediment deposition, watermarks, stream gauge data and flood predictions, historic records, visual observation of saturated soils, and visual observation of inundation (Environmental Laboratory, 1987). These indicators, plus others, such as dry algae on bare soil, water-stained leaves, or oxidized zones along live root channels (forming mottles), were documented at each sampling plot where found.

Where positive indicators of wetland hydrology were observed, it was assumed that wetland hydrology was present for a significant period during the growing season. Table 2 summarizes the hydrologic regimes and associated probability of the presence of wetlands, as presented in the 1987 Manual.

3.2.4 Wetland Delineation

Vegetation, soil, and hydrology were examined at each sample plot, and field data forms were completed to document existing conditions. At locations where all three wetland parameters were satisfied, or under normal circumstances would have been satisfied, a positive wetland determination was made. After evaluating all sample plots, a boundary determination was made where a distinct transition from wetland to upland was observed. Where ambiguous, the boundaries were marked accordingly, using pink flagging tape. This boundary was then extended around areas with similar vegetation, soils, and hydrology indicators to encompass the entire wetland.

If any of the three wetland parameters failed to be satisfied, the area was considered an upland (non-wetland) community, unless it was significantly disturbed. Disturbed areas may lack field indicators of one or more of the wetland parameters, due to recent changes. These can include both wetlands and non-wetlands that have been modified by human activity (*e.g.*, clearing of original vegetation, filling, excavation, or construction), or natural events (*e.g.*, mudslides, fire, and beaver dam construction).

During the investigation, the Team took photographs to document the wetland and sample plot locations, and wetland boundaries were logged and mapped using a hand-held Trimble GeoExplorer 6000XH GPS unit. This unit is capable of sub-foot accuracy, with differential correction (post-processing) for improved accuracy. The precision of GPS data is subject to variation in canopy cover, atmospheric interference, and satellite configuration.

TABLE 2: NON-TIDAL HYDROLOGIC REGIMES AND THEIR ASSOCIATION WITH WETLAND HYDROLOGY

Degree of Inundation or Saturation	Duration of Inundation or Saturation*	Comments
Permanently inundated	100%	Inundation >6.6 ft mean water depth - deepwater wetland present (aquatic habitat)
Semi-permanently to nearly permanently inundated or saturated	>75 - <100%	Inundation defined as ≤ 6.6 ft mean water depth - wetland present
Regularly inundated or saturated	>25 - 75%	Areas with these hydrologic characteristics are usually wetlands
Seasonally inundated or saturated	>12.5 - 25%	Wetlands often present when these hydrologic characteristics exist
Irregularly inundated or saturated	≥ 5 - 12.5%	Many areas having these hydrologic characteristics are not wetlands
Intermittently or never inundated or saturated	<5%	Areas with these hydrologic characteristics are not wetlands

*Refers to duration of inundation and/or soil saturation during the growing season.
SOURCES: Adapted from Clark and Benforado (1981), and Environmental Laboratory (1987).

3.2.5 Wetland Assessment

To document the relative quality of the wetlands at the Delineation Area, the Ohio Rapid Assessment Method (ORAM, version 5.0) for wetlands was used to score the wetland and assign it to a wetland category (Ohio EPA, 2001). This method was developed by the Ohio EPA to evaluate flood/storm water control; water quality improvement; natural biological support; and overall and specific habitat values for Ohio wetlands. The qualitative portion of the ORAM also addresses the statewide scarcity of particular types of wetlands and the potential presence of Threatened or Endangered (T&E) species.

The Ohio EPA ranks wetlands as Category 1, 2, or 3, depending on their relative quality (based on size, habitat value, etc.), with Category 3 representing the highest quality wetlands in Ohio.

4 RESULTS

The literature findings and field observations have confirmed the presence of one (1) wetland within Delineation Area boundaries. These findings are discussed in greater detail in the following sections.

4.1 Literature Findings

Based on literature review, the Delineation Area contains a riverine (RuB) system mapped on the National Wetland Inventory. In addition, a palustrine forested (PFO) wetland is mapped offsite to the west of the Delineation Area (NWI; Figure 3). The wetland portion of the Delineation Area is located within 0.2% Annual Chance Flood Hazard area according to the Federal Emergency Management Agency (FEMA; Appendix B).

The UDSA-NRCS soil survey (Appendix C) indicates that the following soils are located onsite:

- Marengo silty clay loam (Mn)
- Rittman silt loam, 2 to 6 percent slopes (RsC2)

Marengo silty clay loam, which comprises the wetland area onsite, is considered hydric, while Rittman silt loam, which is located along the southern forested edge of the Delineation Area, is not considered hydric.

According to the USFWS Information for Planning and Consultation (IPaC) resource list and ODNR state listings, all counties in Ohio lie within the range of four rare Threatened and Endangered (T&E) bat species: Indiana bat (*Myotis sodalis;* federally and state endangered); northern long-eared bat (*Myotis septentrionalis;* federally threatened, state endangered), tricolored bat (*Perimyotis subflavus;* state endangered), and little brown bat (*Myotis lucifugus;* state endangered). In Ohio, these bats are assumed present wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. The USFWS also states that if a federal nexus exists for the project (*i.e.*, if federal permits are required to construct at the Site), "no tree clearing should occur on any portion of the project area until consultation under Section 7 of the Endangered Species Act (ESA), between the USFWS and the federal action agency, is completed."

Besides bats, the monarch butterfly (*Danaus plexippus*), a candidate species, is listed in the preliminary IPaC for this Delineation Area. Given their preferred habitat requirements, it is not expected that this species has great potential to be impacted onsite. Additionally, MAD has submitted a request for review from the ODNR Natural Heritage Database to confirm whether any additional listed species may be present in the area and will submit the findings as an addendum

to this report once a response is received. Agency response letters, including recommendations for avoidance and impact minimization, can be viewed in Appendix D.

4.2 Site Findings

A Jurisdictional Waters and Isolated Wetland investigation with field mapping was completed during the Delineation Area visits on November 21, 2024. Field tasks included documentation of general conditions, such as existing plant communities and the locations, sizes, and quality of all wetlands and streams. The findings are summarized in the following sections.

4.2.1 General Observations

The forested portion of the Delineation Area is dominated by pin oak. At the time of the Delineation Area visit, there was no understory based on the late fall timing. North of the forest, the Delineation Area opens up into an emergent wetland dominated by invasive species such as giant reed and reed canarygrass. Shrub species including red-osier dogwood and bush honeysuckle were located along the border between the forest and the wetland in the eastern portion of the Delineation Area. One stream flowing west to east (Sawmill Creek) and a ditch flowing south to north, were observed flowing into and across Wetland A, converging in the eastern edge of the wetland before flowing offsite to the north. All water flows offsite to the northeast through a culvert with a water control structure.

4.2.2 Wetlands

One (1) wetland—Wetland A—was delineated within the Delineation Area (Figure 4). The wetland is summarized in Table 3.

TABLE 3: WETLAND SUMMARY TABLE

Location ID	Size	Isolated/ Non-isolated*	Vegetation Type(s)	Cowardin *et al.* (1979) Classification	ORAM Score	Category**
Wetland A	6.92	Non-isolated	Emergent	PEM	47	2
				Category 2 Total Acreage		*6.92*

*Determination on isolation status, category must be verified by USACE and Ohio EPA, respectively.
**Ohio EPA requires that the higher Category be assigned for "gray zone" scores unless a lower category is substantiated through completion of a more detailed study such as a Vegetation Index of Biotic Integrity (VIBI) assessment.

Based on Delineation Area observations and literature review, Wetland A contains a surface water connection with a Water of the U.S., meaning it is most likely jurisdictional. Sample plot and ORAM data forms for this wetland are provided in Appendices E and F, respectively.

Wetland A Detailed Description

Wetland A totals approximately 6.92 acres onsite, located along the floodplain of Sawmill Creek. The wetland feature predominantly consists of emergent hydrophytic vegetation that is dominated by invasive reed canary grass and giant reed. A shrub buffer of red-osier dogwood is located along the southeastern edge of the wetland, and a few pin oak snags were observed within the wetland. Wetland hydrology indicators for the wetland include oxidized rhizospheres on living roots, saturation visible on aerial imagery, geomorphic position, and passage of the FAC-neutral test. Hydric soil indicators exhibited within Wetland A include a depleted matrix (F3).

Wetland A received an ORAM score of 47 overall, with poor individual metric scores for buffers, habitat development, and vegetation community. Wetland A is situated along the northwestern boundary of the Delineation Area, bordered by residential development to the north, east, and west, with a buffer of forested area to the south. The wetland has a number of hydrology inputs and appears to be largely unimpacted in its hydrology and substrate. However, the wetland is dominated by invasive species and contains moderate wildlife habitat.

4.2.4 Threatened and Endangered Species

The USFWS IPaC list indicates that there are the Indiana Bat was the only T&E species that could be present in the project vicinity. These can be found in the preliminary agency review in Appendix D. The monarch butterfly (*Danaus plexippus*), a candidate species, is also listed in the preliminary IPaC for this Delineation Area. Given the preferred habitat requirements of all three species, it is not expected that they have great potential to be impacted onsite.

Overall, four bat species—tricolored bats (State E), northern long-eared bats (State E and federally T), Indiana bats (State and Federally E) and little brown bats (State E)—are listed and protected in all Ohio counties. Should removal of any potential roost trees be necessary, agency correspondence with ODNR and USFWS should take place. A seasonal tree clearing window may be permissible, which recommends tree removal between October 1 and March 31, when these bats would likely not be present. The USFWS also states that if a federal nexus exists for the project (*i.e.,* if federal

permits are required to construct at the Site), "no tree clearing should occur on any portion of the project area until consultation under Section 7 of the Endangered Species Act (ESA), between the USFWS and the federal action agency, is completed." MAD is also currently awaiting results from the ODNR Natural Heritage Database to confirm whether any additional listed species may be present in the area and will submit the findings as an addendum to this report once a response is received.

5 SUMMARY & CONCLUSIONS

Wetlands: One wetland (Wetland A) was mapped and assessed at the Delineation Area. The total onsite wetland area is approximately 6.92 acres. The wetland was scored per the scoring boundary guidelines presented in the ORAM manual. Wetlands A was categorized as a Category 2 Wetland with an ORAM score of 47. Category 2 wetlands, meanwhile, are defined as those wetlands that "...support moderate wildlife habitat, or hydrological or recreational functions," and as wetlands which are "...dominated by native species but generally without the presence of, or habitat for, rare, T&E species; and wetlands which are degraded but have a reasonable potential for reestablishing lost wetland functions" (Ohio EPA, 2001).

Threatened and Endangered Species: The USFWS indicate that there is one (1) listed T&E species that could be present in the project vicinity, along with the monarch butterfly (a candidate species). These findings can be viewed in Appendix D. In addition, tricolored bats (state E), northern long-eared bats (state E and federally T), Indiana bats (state and federally E) and little brown bats (state E) are listed and protected in all Ohio counties. Before any tree clearing takes place, especially if there is a federal nexus for the Site, correspondence with USFWS should occur to follow recommendations for avoidance of take of T&E species or their habitat. A request for a Delineation Area review has been submitted to the Ohio Natural Heritage Database, but a response has not been received by MAD at the time of writing this report.

LITERATURE CITED

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Fish & Wildlife Service. FWS/OBS-79/31. 103 pp.

Dahl, T.E., Dick, T., Swords, J., and B.O. Wilen. 2015. Data Collection Requirements and Procedures for Mapping Wetland, Deepwater and Related Habitats of the United States (Version 2). USFWS Division of Habitat and Resource Conservation, National Standards and Support Team. Madison, WI. 92 pp.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual, Technical Report. Y-87-1. U.S. Army Engineers Waterways Experiment Station. Vicksburg, MS.

Google Earth Library. 2024. USGS Topographic Maps. Ashland, OH quadrangle. Based on U.S. Geological Survey 7.5 Minute topographic map series.

Lichvar, R.W., M. Butterwick, N.C. Melvin, and W.N. Kirchner. 2016. The National Wetland Plant List: 2016 update of wetland ratings. Phytoneuron 2016-30: 1–17. Published 28 April 2016. ISSN 2153 733X

Kollmorgen. 1975. Munsell Soil Color Charts. Kollmorgen Corp. Baltimore, MD.

Mitsch, W.J. and J.G. Gosselink. 1993. Wetlands. Second Edition. Van Nostrand Reinhold. New York. 722 pp.

Ohio EPA. 2001. Ohio Rapid Assessment Method for Wetlands. Version 5.0 Final. Ohio Environmental Protection Agency. Columbus, Ohio.

Ohio EPA. 2020. Field Methods for Evaluating Primary Headwater Streams in Ohio. Version 4.1. Ohio EPA Division of Surface Water, Columbus, Ohio. 130 pp.

U. S. Army Corps of Engineers. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development.

USDA. 1995. Soil Survey of Mahoning County, Ohio. Soil Conservation Service in cooperation with Ohio Department of Natural Resources Division of Lands and Soil and Ohio Agricultural Research and Development Center.

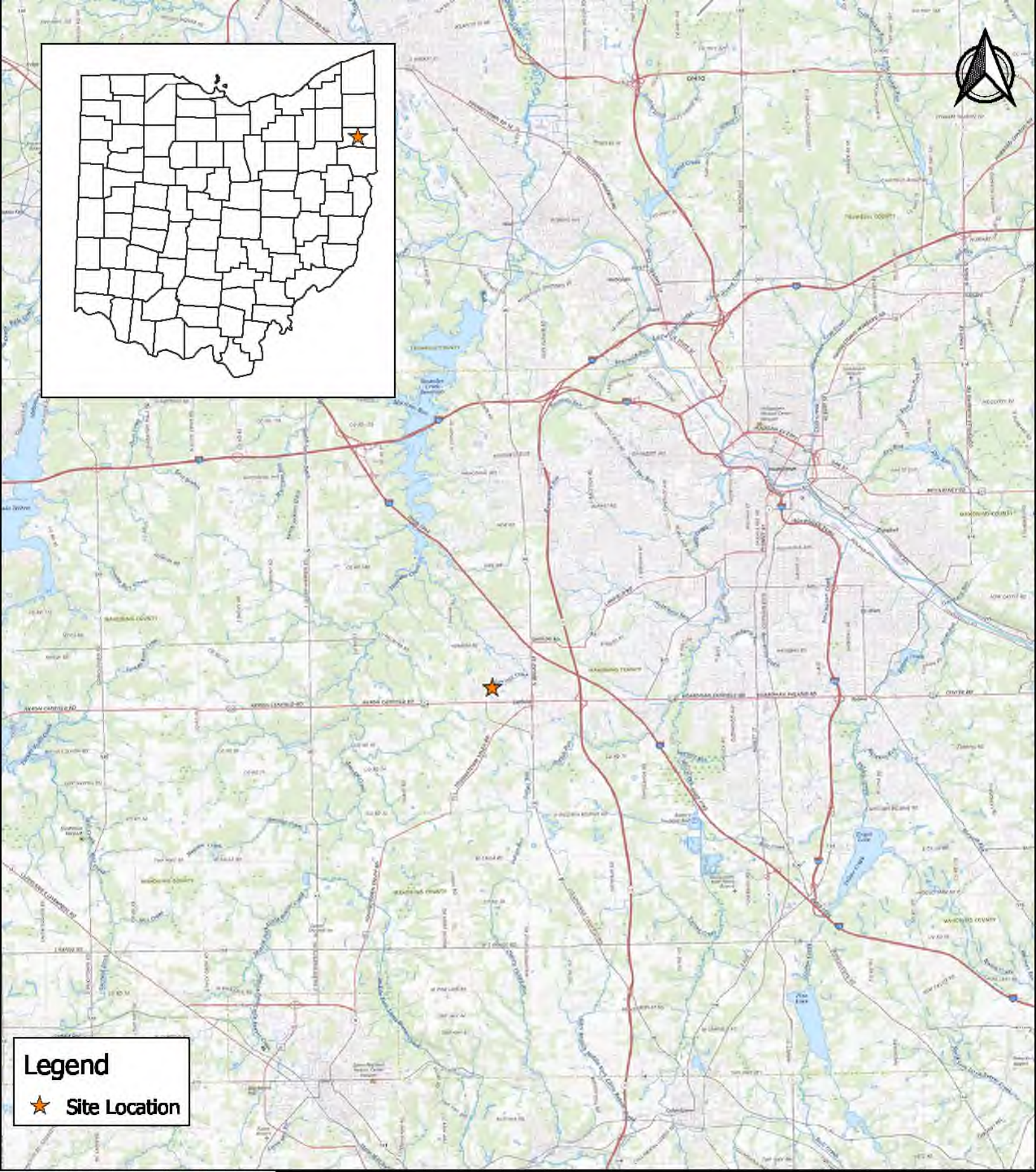
USDA. 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. Natural Resources Conservation Service. U.S. Dept. of Agriculture. L.M. Vasilas, G.W. Hurt, and C.V. Noble (eds.) in cooperation with the National Technical Committee for Hydric Soils.

USDA. 2024. Web Soil Survey 3.4.0 Soil Conservation Service http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed September 11, 2024.

USDA-NRCS. 2024. National Water & Climate Center. https://efotg.sc.egov.usda.gov/treemenuFS.aspx. Accessed September 15, 2024.

USFWS. 2024. National Wetland Inventory Map. Olivesburg, OH Quadrangle. U.S. Fish and Wildlife Service. Google Earth Pro. Accessed October 25, 2024.

FIGURES



MAD SCIENTIST ASSOCIATES LLC

Figure 1. Site Location
Integral Consulting, Canfield Site
Canfield, Ohio

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

MAD SCIENTIST ASSOCIATES LLC

Figure 2. Site Aerial
Integral Consulting, Canfield Site
Canfield, Ohio

250 0 250 500 750 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

MAD SCIENTIST ASSOCIATES LLC

Figure 3. NWI-Mapped Waters
Integral Consulting, Canfield Site
Canfield, Ohio

250 0 250 500 750 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery
NWI-Mapped Imagery

MAD SCIENTIST ASSOCIATES LLC

Figure 4. Wetland Boundary
Integral Consulting, Canfield Site
Canfield, Ohio

100 0 100 200 300 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

APPENDIX A

Photographs

MAD SCIENTIST ASSOCIATES LLC

Photo Locations
Integral Consulting, Canfield Site
Canfield, Ohio

50 0 50 100 150 ft

Created by: Lindsay Hanna
Date: December 2, 2024

Data Sources: Google Satellite Imagery

Photograph 1. Soil at sample point TP-1

Photograph 2. North view from TP-1.

Photograph 3. East view from TP-1.

Photograph 4. South view from TP-1.

Photograph 5. West view from TP-1.

Photograph 6. View of TP-1, facing northwest.

Photograph 7. Soil at sample point TP-2.

Photograph 8. Oxidized rhizospheres in lower soil layers at TP-2.

Photograph 9. North view from TP-2.

Photograph 10. East view from TP-2.

Photograph 11. South view from TP-2.

Photograph 12. West view from TP-2.

Photograph 13. Wetland edge on southeast side, facing south downstream.

Photograph 14. Wetland A interior facing northwest from southeast edge.

Photograph 15. Temporary disturbed area for response action within Wetland A.

Photograph 16. Wetland edge west of TP-1 facing northeast.

Photograph 17. Wetland interior facing west from edge.

Photograph 18. North view of Wetland A interior.

Photograph 19. East view of Wetland A interior.

Photograph 20. South view of Wetland A interior.

Photograph 21. West view of Wetland A interior.

Photograph 22. Upland edge of Wetland A, facing south.

APPENDIX B

FEMA Floodplain Map

National Flood Hazard Layer FIRMette

FEMA

80°46'59"W 41°1'56"N

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

1:6,000

80°46'21"W 41°1'28"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 Cross Sections with 1% Annual Chance
- 17.5 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.

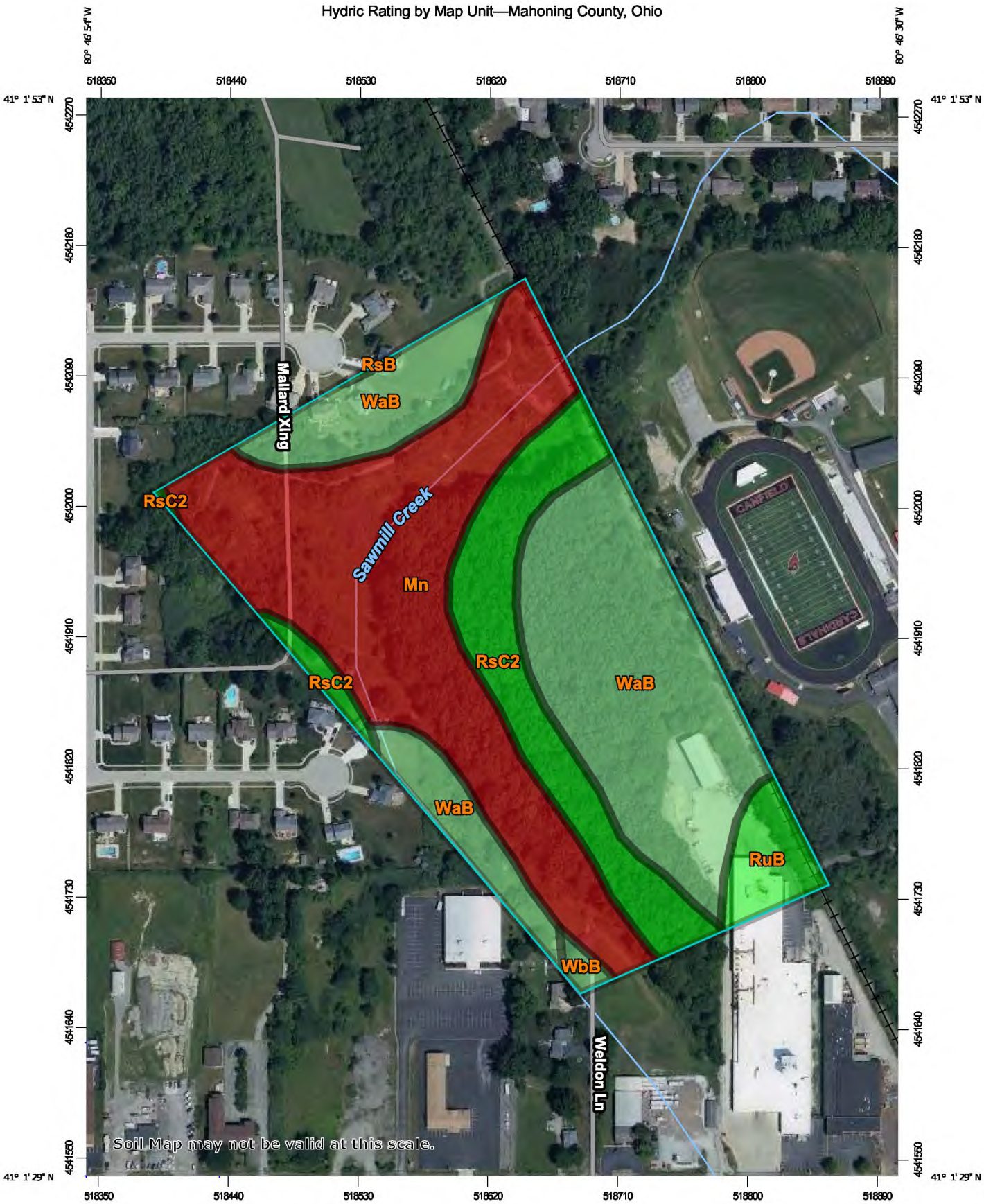
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/3/2024 at 3:22 PM** 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.

APPENDIX C

Web Soil Survey – Hydric Rating Map



Map Scale: 1:3,630 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Mahoning County, Ohio
Survey Area Data: Version 22, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2020—Aug 10, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Mn	Marengo silty clay loam	100	10.7	39.2%
RsB	Rittman silt loam, 2 to 6 percent slopes	0	0.0	0.1%
RsC2	Rittman silt loam, 6 to 12 percent slopes, eroded	0	4.4	16.2%
RuB	Rittman-Urban land complex, 2 to 6 percent slopes	0	1.1	4.1%
WaB	Wadsworth silt loam, 2 to 6 percent slopes	8	10.9	39.7%
WbB	Wadsworth-Urban land complex, 2 to 6 percent slopes	5	0.2	0.7%
Totals for Area of Interest			**27.4**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

APPENDIX D

State & Federal Agency Correspondence

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mahoning County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104

Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can**only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species.Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the"Supplemental Information on Migratory Birds and Eagles"

Additional information can be found using the following links:

- Eagle Managementhttps://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles"specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence(■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

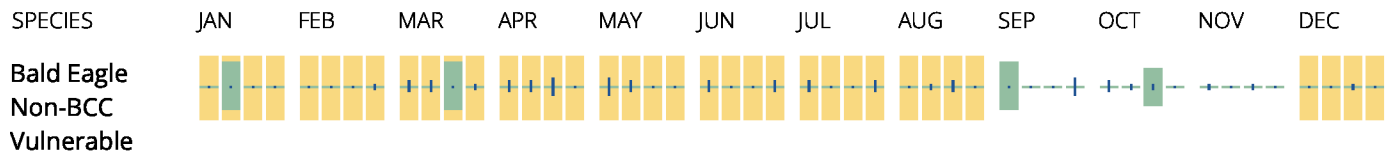
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

probability of presence breeding season | survey effort – no data



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles"

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Managementhttps://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birdshttps://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQbelow. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit theE-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be foundbelow.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Belted Kingfisher *Megaceryle alcyon* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Jul 25

Blue-winged Warbler Vermivora cyanoptera — Breeds May 1 to Jun 30
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Canada Warbler Cardellina canadensis — Breeds May 20 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Eastern Meadowlark Sturnella magna — Breeds Apr 25 to Aug 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rose-breasted Grosbeak Pheucticus ludovicianus — Breeds May 15 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Wood Thrush Hylocichla mustelina — Breeds May 10 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles"specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence(■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season ( )
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

probability of presence breeding season survey effort no data

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary.Additional measures orpermits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PSS1C

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

APPENDIX E

Wetland Delineation Sample Plot Data Forms

Background Information

Name:
Date:
Affiliation:
Address:
Phone Number:
e-mail address:
Vegetation Communit(ies):
HGM Class(es):
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.

Lat/Long or UTM Coordinate	
USGS Quad Name	
County	
Township	
Section and Subsection	
Hydrologic Unit Code	
Site Visit	
National Wetland Inventory Map	
Ohio Wetland Inventory Map	
Soil Survey	
Delineation report/map	

Name of Wetland:	
Wetland Size (acres, hectares):	

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.

Comments, Narrative Discussion, Justification of Category Changes:

Final score :	**Category:**

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. *Areas with a high degree of hydrologic interaction should be scored as a single wetland.* In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.		
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human-induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.		
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.		
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.		
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature *and* by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis*, or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	NO Go to Question 8b

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	NO Complete Quantitative Rating

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	0ak Opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Site:	Rater(s):	Date:

Metric 1. Wetland Area (size).

max 6 pts. subtotal

Select one size class and assign score.

- ☐ >50 acres (>20.2ha) (6 pts)
- ☐ 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- ☐ 10 to <25 acres (4 to <10.1ha) (4 pts)
- ☐ 3 to <10 acres (1.2 to <4ha) (3 pts)
- ☐ 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- ☐ 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- ☐ <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

max 14 pts. subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- ☐ WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- ☐ MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- ☐ NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- ☐ VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- ☐ VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- ☐ LOW. Old field (>10 years), shrub land, young second growth forest. (5)
- ☐ MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- ☐ HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

max 30 pts. subtotal

3a. Sources of Water. Score all that apply.

- ☐ High pH groundwater (5)
- ☐ Other groundwater (3)
- ☐ Precipitation (1)
- ☐ Seasonal/Intermittent surface water (3)
- ☐ Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- ☐ 100 year floodplain (1)
- ☐ Between stream/lake and other human use (1)
- ☐ Part of wetland/upland (e.g. forest), complex (1)
- ☐ Part of riparian or upland corridor (1)

3c. Maximum water depth. Select only one and assign score.

- ☐ >0.7 (27.6in) (3)
- ☐ 0.4 to 0.7m (15.7 to 27.6in) (2)
- ☐ <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- ☐ Semi- to permanently inundated/saturated (4)
- ☐ Regularly inundated/saturated (3)
- ☐ Seasonally inundated (2)
- ☐ Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- ☐ None or none apparent (12)
- ☐ Recovered (7)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ ditch
- ☐ tile
- ☐ dike
- ☐ weir
- ☐ stormwater input
- ☐ point source (nonstormwater)
- ☐ filling/grading
- ☐ road bed/RR track
- ☐ dredging
- ☐ other_____

Metric 4. Habitat Alteration and Development.

max 20 pts. subtotal

4a. Substrate disturbance. Score one or double check and average.

- ☐ None or none apparent (4)
- ☐ Recovered (3)
- ☐ Recovering (2)
- ☐ Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- ☐ Excellent (7)
- ☐ Very good (6)
- ☐ Good (5)
- ☐ Moderately good (4)
- ☐ Fair (3)
- ☐ Poor to fair (2)
- ☐ Poor (1)

4c. Habitat alteration. Score one or double check and average.

- ☐ None or none apparent (9)
- ☐ Recovered (6)
- ☐ Recovering (3)
- ☐ Recent or no recovery (1)

Check all disturbances observed

- ☐ mowing
- ☐ grazing
- ☐ clearcutting
- ☐ selective cutting
- ☐ woody debris removal
- ☐ toxic pollutants
- ☐ shrub/sapling removal
- ☐ herbaceous/aquatic bed removal
- ☐ sedimentation
- ☐ dredging
- ☐ farming
- ☐ nutrient enrichment

subtotal this page

last revised 1 February 2001 jjm

Site:	Rater(s):	Date:

subtotal first page

Metric 5. Special Wetlands.

max 10 pts. subtotal

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Prairies (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 1 Qualitative Rating (-10)

Metric 6. Plant communities, interspersion, microtopography.

max 20 pts. subtotal

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer to Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [ ] Vegetated hummucks/tussucks
- [ ] Coarse woody debris >15cm (6in)
- [ ] Standing dead >25cm (10in) dbh
- [ ] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's vegetation and is of high quality

Narrative Description of Vegetation Quality

low	Low spp diversity and/or predominance of nonnative or disturbance tolerant native species
mod	Native spp are dominant component of the vegetation, although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generally w/o presence of rare threatened or endangered spp
high	A predominance of native species, with nonnative spp and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

End of Quantitative Rating. Complete Categorization Worksheets.

ORAM Summary Worksheet

		circle answer or insert score	Result
Narrative Rating	Question 1 Critical Habitat	YES NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES NO	If yes, Category 1.
	Question 6. Bogs	YES NO	If yes, Category 3.
	Question 7. Fens	YES NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size		
	Metric 2. Buffers and surrounding land use		
	Metric 3. Hydrology		
	Metric 4. Habitat		
	Metric 5. Special Wetland Communities		
	Metric 6. Plant communities, interspersion, microtopography		
	TOTAL SCORE		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	NO	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over-categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	NO	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	NO	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1-54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	Category 2	Category 3

End of Ohio Rapid Assessment Method for Wetlands.


MAD
SCIENTIST
ASSOCIATES LLC

Attachment E

Letters to and from USFWS and ODNR, Responding to Queries about Threatened and Endangered Species

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mahoning County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office

of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider

implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey

effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

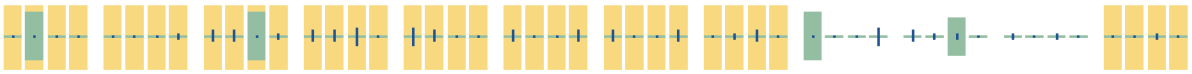
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

▪ probability of presence ▪ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Bald Eagle
Non-BCC
Vulnerable



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply). To see a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Belted Kingfisher *Megaceryle alcyon* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 15 to Jul 25

Blue-winged Warbler *Vermivora cyanoptera* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Aug 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Meadowlark *Sturnella magna* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Apr 25 to Aug 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rose-breasted Grosbeak *Pheucticus ludovicianus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 15 to Jul 31
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

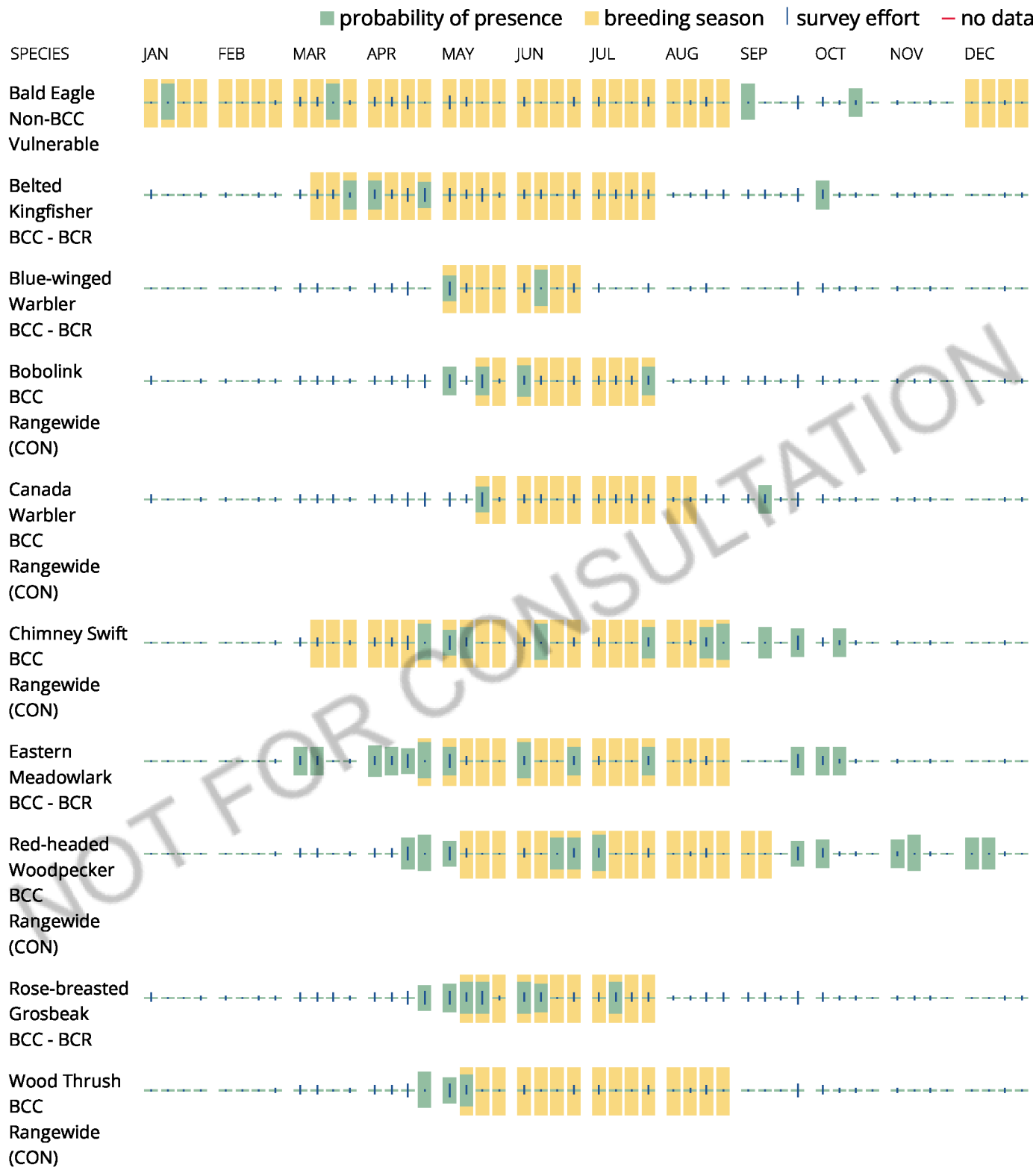
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are

based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds

are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);

2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation

measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE

R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Ohio Department of Natural Resources
Divisions of Wildlife and Natural Areas & Preserves
Ohio Natural Heritage Program
2045 Morse Road Bldg. G-3 • Columbus, OH 43229-6693
Email: NHDRequest@dnr.ohio.gov • Voicemail: 614-265-6818

Ohio Natural Heritage Data Request

DNR 5203 (R0824)

Ohio Natural Heritage Database (ONHD) stand-alone data requests are processed for projects that meet one of these criteria:

- Academic research projects
- Other non-development or non-construction projects

Search results include records for state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations.

If your project meets none of these criteria and you are requesting ONHD data for ORAM verification, please fill out and sign this form and submit it for ODNR Environmental Review as instructed at ohiodnr.gov/environmentalreview

Data within the project site will automatically be searched. Data within an additional 1-mile radius of the project site may be provided upon request. Because the ONHD contains sensitive information, it is our policy to provide only the data needed to complete your specific project.

Results are listed in a letter format and include a shapefile/map. Data requests will be completed within approximately 30 days. There is currently no charge to process requests.

INSTRUCTIONS

- Please complete all fields on this form.
- Submit a map detailing your project site boundaries. Please include at least one digital map (shapefile, .kmz, or .gdb) or allow extra time for processing.
- If you have questions, please visit ohiodnr.gov/onhd before submitting your request.
- Sign this form (required) and email with other attachments to NHDRequest@dnr.ohio.gov.

DATE:		**COMPANY NAME:**	
NAME OF PERSON RESPONSE LETTER SHOULD BE ADDRESSED TO:			
STREET ADDRESS:			
CITY:		**STATE:**	**ZIP:**
PHONE:		**E-MAIL ADDRESS:**	
PROJECT NAME:			
SITE ADDRESS:			
SITE COUNTY:		**CITY/VILLAGE/TOWNSHIP:**	
SITE LATITUDE:		**SITE LONGITUDE:**	

BRIEF DESCRIPTION OF WORK TO BE PERFORMED AT THE PROJECT SITE:

HOW DO YOU WANT YOUR DATA REPORTED? *CHOOSE ONE:*

☐ **DIGITAL SHAPEFILE** ☐ **PDF MAP**

Both formats provide the same data. If you request a digital shapefile, we will send you a letter with a list of species/features found and a shapefile of record locations and details. The PDF Map is only recommended for those who cannot use digital map data. With the PDF option we will send you a letter with a list of species/features found and a map showing their location. It may take longer to fill your request if you choose the PDF Map.

The standard data we search includes state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations within 1 mile of your project area boundaries (as specified on the map/shapefile you attach to this request). We provide a list of the above species and features found within 1 mile of your project area and may provide specific locations for these and other features that occur within or adjacent to your project area.

PLEASE LIST ANY INFORMATION *IN ADDITION TO THIS* THAT YOU REQUIRE:

HOW WILL THIS INFORMATION BE USED?

The chief of the Division of Wildlife has determined that the release of the ONHD data you have requested could be detrimental to the conservation of a species or unique natural feature. Pursuant to section 1531.04 of the Ohio Revised Code, this information is not subject to section 149.43 of the Revised Code. By signing below, you certify that the data provided will not be disclosed, published, or distributed beyond the scope of your project.

SIGNATURE: Cristal Reagh _____ **DATE:** _____

Integral Consulting Inc.
8742 E. Washington St.
Suite 115
Chagrin Falls, OH 44022

telephone: 303.404.2944
www.integral-corp.com

May 9, 2025

Project No. C4274

Office of Real Estate & Land Management
Ohio Department of Natural Resources
2045 Morse Road, E-2
Columbus, OH 43229
environmentalreviewrequest@dnr.ohio.gov

Submitted via email

Subject: **MSC Site, Canfield, Mahoning County, Ohio Environmental Review Request**

To Whom It May Concern:

Per your email request, Integral Consulting Inc. (Integral) is submitting this request for an environmental review of the Site located at and adjacent to 460 W. Main St, Canfield, Mahoning County, Ohio (approximately centered on 41.027837°, -80.777932° in WGS 84). The Site boundaries are provided in the attached shapefile. The subject area includes an on-site area (including Material Sciences Corporation parcel and portions of the Mill Creek Metroparks parcel) and an off-site area (including additional parcels along Sawmill Creek). This request includes both Material Sciences Corporation (MSC) parcel and wetland and portions of Sawmill Creek in order to consolidate requests for the environmental review. The on-site MSC parcel and wetland habitat includes approximately 4.9 acres of developed/industrial areas, 6.0 acres of upland forest, 1.6 acres of wetland, and 0.5 acres of a ditch.

The environmental review will be used to support the wetland delineation, ORAM form completion, and ecological risk assessment associated with the spill and response activities at the site.[1] Investigation and remedial actions led by August Mack (on behalf of Material Sciences Corporation) will be conducted in close coordination with Ohio EPA under the RCRA program.

This letter constitutes Integral's fulfillment of required information to complete ODNR's environmental review request. If there is additional information that would prove helpful, please do not hesitate to reach out.

[1] https://www.mscresponse.com/

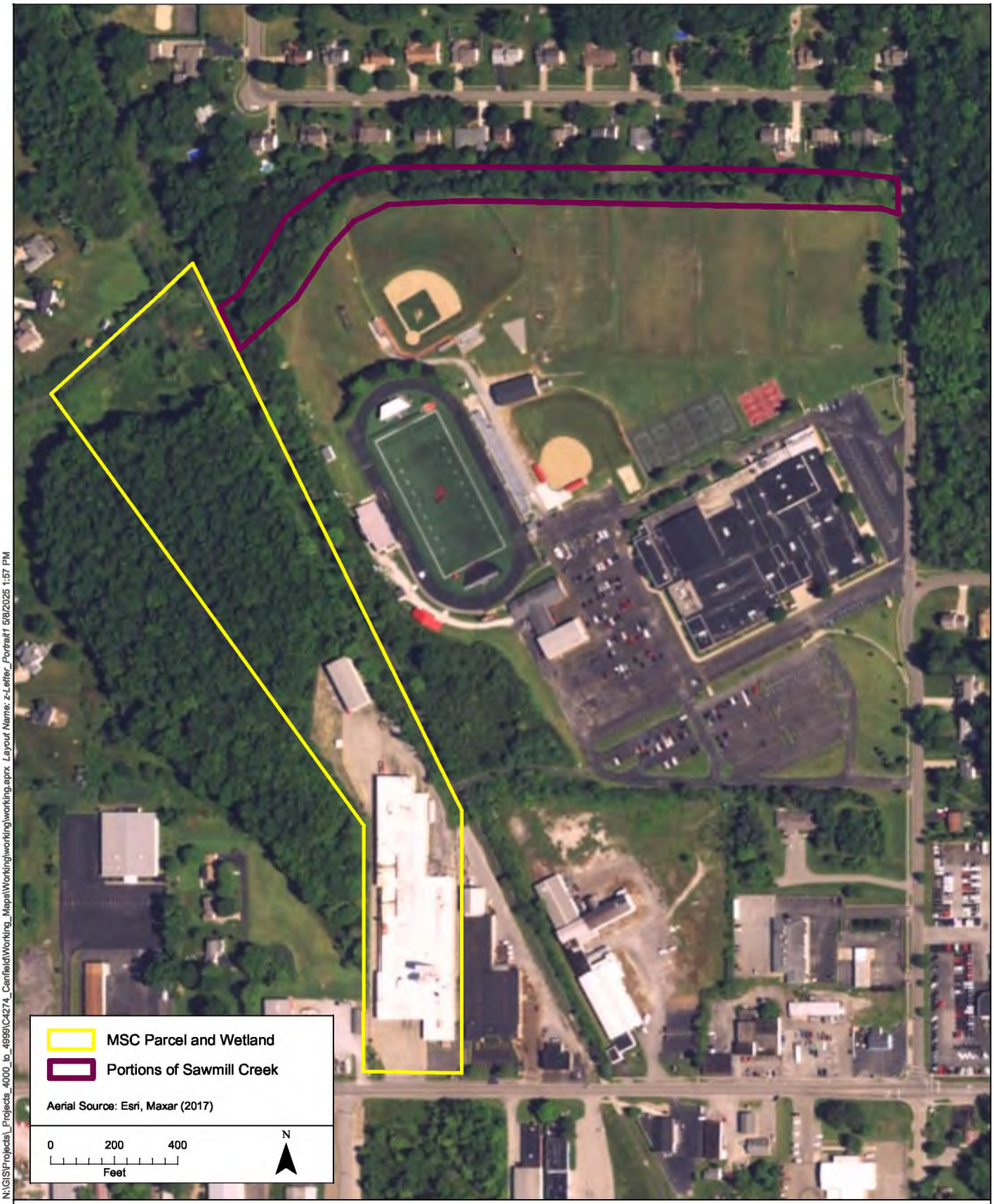
Thank you for your consideration of our request. We look forward to hearing from you.

Sincerely,

Cristal Reagh

Cristal Reagh
Scientist

Enclosure: Shapefile



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: z-Letter_Portrait1 5/8/2025 1:57 PM

integral consulting inc.

Figure 1.
Site Boundaries
Material Science Corporation
Canfield OH

Outlook

Confirmation Receipt for ODNR Environmental Review Request Submission

From EnvironmentalReviewRequest@dnr.ohio.gov <EnvironmentalReviewRequest@dnr.ohio.gov>
Date Fri 5/9/2025 1:14 PM
To Cristal Reagh <creagh@integral-corp.com>

[CAUTION: External email. Think before you click links or open attachments.]

Thank you for contacting the Ohio Department of Natural Resources. This email is your receipt that we have received your message and/or project review request.
We aim to provide a completed Environmental Review comment letter within 45-60 calendar days, however, during periods of high volume or other extenuating circumstances, it may be longer. If you have any questions please contact Mike.Pettegrew@dnr.ohio.gov

Level I Ecological Risk Assessment

Sawmill Creek, Canfield, Ohio

Prepared for
August Mack Environmental
7830 North Central Drive, Suite B
Lewis Center, OH 43035

Prepared by

Integral Consulting Inc.
8742 E. Washington, #115
Chagrin Falls, OH 44022

May 2025

CONTENTS

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

August Mack	August Mack Environmental
EPA	U.S. Environmental Protection Agency
Integral	Integral Consulting Inc.
MSC	Material Sciences Corporation
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION

Integral Consulting Inc. (Integral) has prepared this Level I ecological risk assessment on behalf of August Mack Environmental (August Mack) for a portion of Sawmill Creek in Canfield, Ohio (Figures 1 and 2).

Material Sciences Corporation (MSC) operates a metal plating facility, at 460 West Main St., which specializes in electro galvanizing, chemical coating, and painting. In July 2024, an incident occurred at the facility that prompted additional investigation and interim remediation of chemicals within the MSC parcel and along Adjacent Ditch.[1] This Level I ecological risk assessment has been conducted to support the investigation and remediation efforts that may be necessary downstream of the MSC facility in Sawmill Creek. For the purposes of this Level I ecological risk assessment, the term "site" refers to the MSC parcel and the term "assessment area" refers to the portion of Sawmill Creek (including its riparian floodplain) from the Mill Creek Metroparks bikeway to Cardinal Drive (Figure 3). This risk assessment complements the MSC parcel and adjacent wetland Level I ecological risk assessment (Integral 2025).

A Level I ecological risk assessment is a scoping level assessment that is used to evaluate whether significant ecological resources are present (or could be present) in the assessment area and whether site releases of chemicals have occurred. This report follows the Ohio Environmental Protection Agency (Ohio EPA) guidance and report outline (Ohio EPA 2018).

[1] https://www.mscresponse.com/

2 EXISTING DATA SUMMARY

In accordance with Ohio EPA guidance (Ohio EPA 2018), this assessment was based on existing data, including the August Mack Initial Site Investigation Report (August Mack 2024), photos of the assessment area, aerial imagery, and a site visit, which included a habitat evaluation.

2.1 ASSESSMENT AREA LOCATION

The assessment area is located in Mahoning County, Canfield, Ohio (centered at 41.03069444, –80.7745944) from the Mill Creek Metroparks Bikeway to Cardinal Drive (Figure 3). Sawmill Creek is bordered to the north by residential properties and to the south by the Cardinal High School athletic fields. The 3.6-acre assessment area includes approximately 1 acre of forested habitat, 2.5 acres of residential yards, 0.1 acres of scrub-shrub habitat, and <0.1 acres of stream habitat (Figure 4).

2.2 SITE HISTORY

The MSC Canfield facility building was constructed in 1950 for the Life Time Products Corporation, Coated Steel Division (Ohio EPA and MSC 2024). Manufacturing operations included surface coating, machining, spray painting, and metal fabricating (Ohio EPA and MSC 2024). In the 1950s or 1960s, the facility became known as Canfield Steel, which was purchased by Pittsburgh Steel Corporation in 1968 to form the Pittsburgh-Canfield Corporation. The facility was acquired in 2013 by New Star Metals, a predecessor to MSC.[2] The facility is still operational.

2.3 ASSESSMENT AREA LAND AND WATER USES

The assessment area includes Sawmill Creek and the riparian floodplain. The terrestrial portion of the assessment area includes undeveloped forested habitat and residential lawns and borders the high school baseball and soccer fields.

Sawmill Creek enters the assessment area through a culvert under the bikeway and joins an unnamed ditch that runs along the eastern side of the bikeway on school property. The creek flows to the east until it enters a culvert under Cardinal Drive.

There are three footbridges across the creek that allow access between the residential neighborhood and the high school.

[2] The facility also previously operated as the Canfield Coating Company.

MSC does not expect changes to land or water uses in Sawmill Creek or the adjacent floodplain.

2.4 KNOWN OR SUSPECTED HAZARDOUS SUBSTANCE RELEASES

In 2024, MSC and state and local agencies responded to a report of a release of process fluids into Adjacent Ditch. MSC, the Ohio EPA, and the Cardinal Joint Fire Department collected and contained the fluid as part of an emergency response. However, during the emergency response, the responders observed conditions that indicated some fluid had leaked from the facility over a period of several years and required additional emergency response actions. The initial investigation conducted as part of the emergency response indicated that some chemicals from the site may have migrated into Adjacent Ditch and the wetland before entering the assessment area.

2.5 CHEMICALS OF INTEREST

In 2024, August Mack conducted soil[3] and surface water sampling to investigate the nature and extent of chemicals present in the downstream portion of Sawmill Creek. Sample-specific results are presented in Attachment A and in the Initial Site Investigation Report (August Mack 2024). Surface water and soil data from August Mack (2024) indicated the following:[4]

- Primary chemicals of concern in the assessment area were cyanide, zinc, hexavalent chromium, and trichloroethene.
- Chemicals that exceeded the U.S. Environmental Protection Agency (EPA) residential regional screening levels (RSLs) for soil were cyanide, zinc, hexavalent chromium, benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, dibenz[*a,h*]anthracene, and indeno[1,2,3-*cd*]pyrene.
- Benzo[*b*]fluoranthene exceeded the Ohio River Basin Human Health Tier I Criteria for non-drinking water.
- Arsenic in the downstream portion of Sawmill Creek exceeded the residential and industrial RSLs for soil but has not historically been used at the site.

2.6 THREATENED AND ENDANGERED SPECIES

Integral requested information from the U.S. Fish and Wildlife Service (USFWS) and Ohio Department of Natural Resources (ODNR) on the presence and distribution of threatened

[3] The initial sampling classified all solids samples as soil. However, for the purposes of the ecological risk assessment, solids within the Sawmill Creek area are considered to be sediment.
[4] These data were not compared to ecological toxicity benchmarks in August Mack (2024).

and/or endangered species in the assessment area. The information obtained from this request is included in Attachment B.[5]

Based on the information received, the assessment area is located within the range of four federally listed species: tricolored bat (*Perimyotis subflavus*, state endangered), northern long-eared bat (*Myotis septentrionalis*, federally threatened and state endangered), Indiana bat (*M. sodalis*, federally and state endangered), and little brown bat (*M. lucifugus*, state endangered). USFWS has previously stated that Indiana bats are assumed to be present in Ohio during the summer wherever suitable habitat occurs unless a presence/absence survey has been performed to document their absence (USFWS 2007).

In addition to the four bat species, the monarch butterfly (*Danaus plexippus*) is a candidate federally listed species that may be present in the area.

[5] The ODNR environmental review has not been received at the time of this report.

3 SITE VISIT SUMMARY

Integral and August Mack conducted a site visit on April 2, 2025. Integral identified type and extent of habitat, species present in the assessment area or in the vicinity, and/or signs of ecological use. A photo log is included as Attachment C, and the ecological scoping checklist is provided in Attachment D.

3.1 ECOLOGICAL AND HABITAT FEATURES

Terrestrial wooded habitat makes up 1 acre (27 percent) of the assessment area. This deciduous forested habitat is dominated by oaks (*Quercus* spp.), hickories (*Carya* spp.), and maples (*Acer* spp.). The mature trees have a typical diameter at breast height of 6–8 in. Squirrels and deer signs (game paths, prints) were noted in the forested area. Birds seen or heard during the site visit included northern cardinal, American robin, and mallard.

Residential yards are present in 2.5 acres (68 percent) of the assessment area. In some portions of the assessment area, mowed lawns extend to the edge of the creek bank, while in others there are limited areas of juvenile and mature trees and shrubs. Along the high school, there are pine trees planted in a row next to the baseball field. A few small burrows were observed along the southern bank of the creek.

The Sawmill Creek channel is less than 0.1 acres (approximately 1,750 linear feet) and makes up 2 percent of the assessment area. The creek ranges in width from 1 to 4 ft and is generally shallow, ranging from 6 to 12 in. depth throughout the assessment area. Large boulders and concrete debris are scattered around the upstream culvert. There is a moderate degree of embeddedness in the substrate of the creek, which is dominated by cobble at the western extent of the assessment area and by silt and muck at the eastern extent of the assessment area. Debris was observed throughout the assessment area.

The stream banks show substantial signs of erosion with undercutting and incision. Along the western portion of the assessment area, the banks range from 1 to 7 ft higher in elevation than the creek channel. In this area, there are a number of mature trees with exposed roots due to the bank undercutting. Towards the eastern extent of the assessment area, the banks are lower in elevation.

Approximately 175 ft upstream of Cardinal Drive, there was a debris pile that appeared to be a remnant beaver dam.

Vegetation conditions observed in the assessment area were characteristic of the spring season. Because the site visit occurred in early April, many understory trees and emergent vegetation had not yet leafed out.

3.2 ECOLOGICALLY IMPORTANT SPECIES/HABITATS

No rare, threatened, or endangered species were observed during the site visit.

3.3 EXPOSURE PATHWAYS

Ecological stressors may potentially be present in floodplain soil, surface water, and sediment throughout Sawmill Creek assessment area. The evaluation of potential harm is provided in Attachment E.

4 RECOMMENDATIONS

Based upon the known release of hazardous substances that were detected in Adjacent Ditch and the wetland area, Integral recommends a Level II ecological risk assessment to screen for potential risk to ecological receptors.

5 REFERENCES

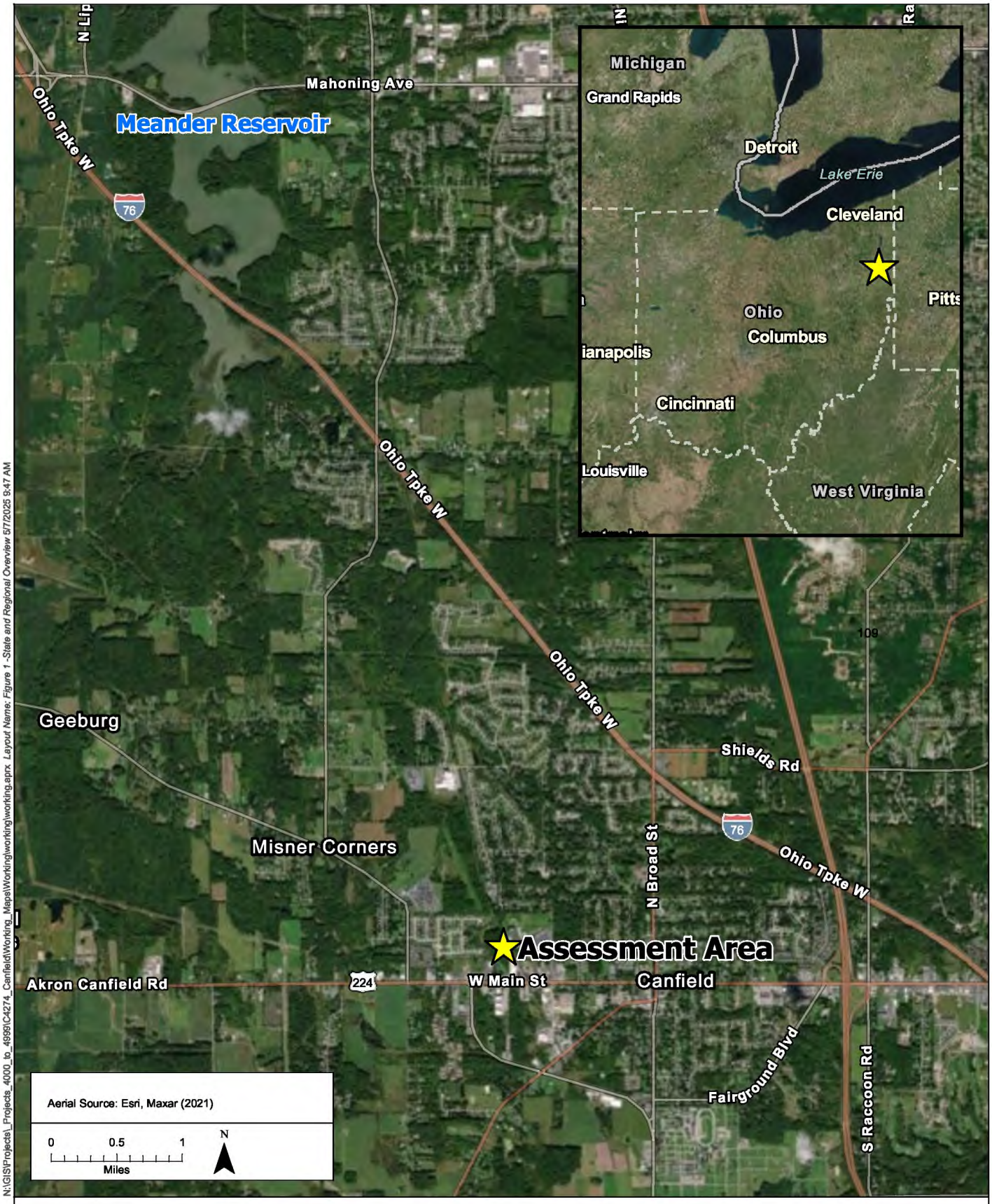
August Mack. 2024. Initial site investigation report. Material Sciences Corporation. August Mack Environmental. December 12.

Ohio EPA. 2018. Ecological risk assessment guidance document. Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization Assessment, Remediation and Corrective Action Section. July.

Ohio EPA and MSC. 2024. Directors final findings and orders in the matter of Material Sciences Corporation. Ohio Environmental Protection Agency and Material Sciences Corporation. December 31.

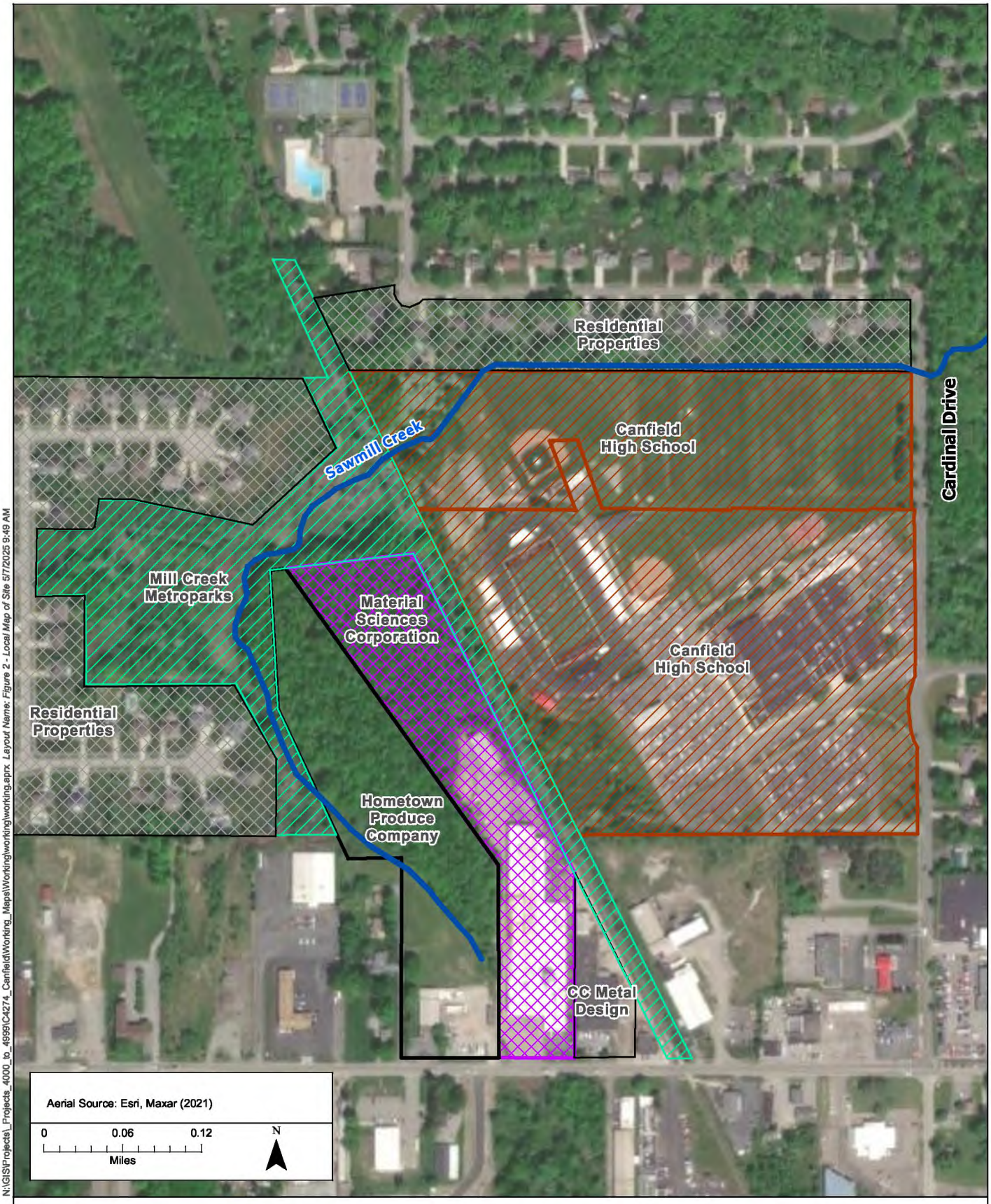
USFWS. 2007. Biological opinion on the Ohio Department of Transportation's Statewide Transportation Program for the federally listed endangered Indiana bat (*Myotis sodalis*). Submitted to the Federal Highway Administration. U.S. Fish and Wildlife Service. January 26.

FIGURES



integral consulting inc.

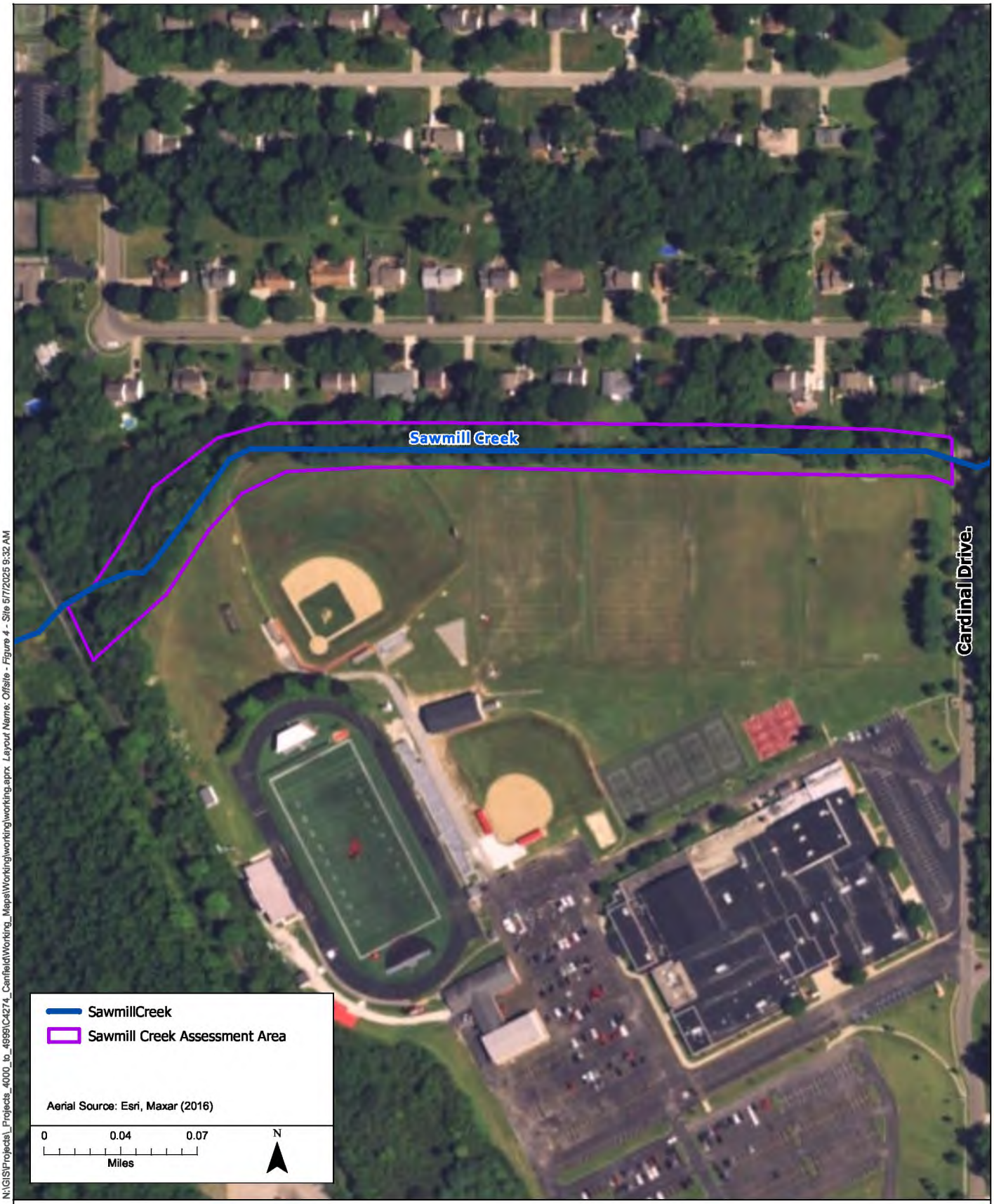
Figure 1. Regional Map of Assessment Area
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 2 - Local Map of Site 5/7/2025 9:49 AM

integral consulting inc.

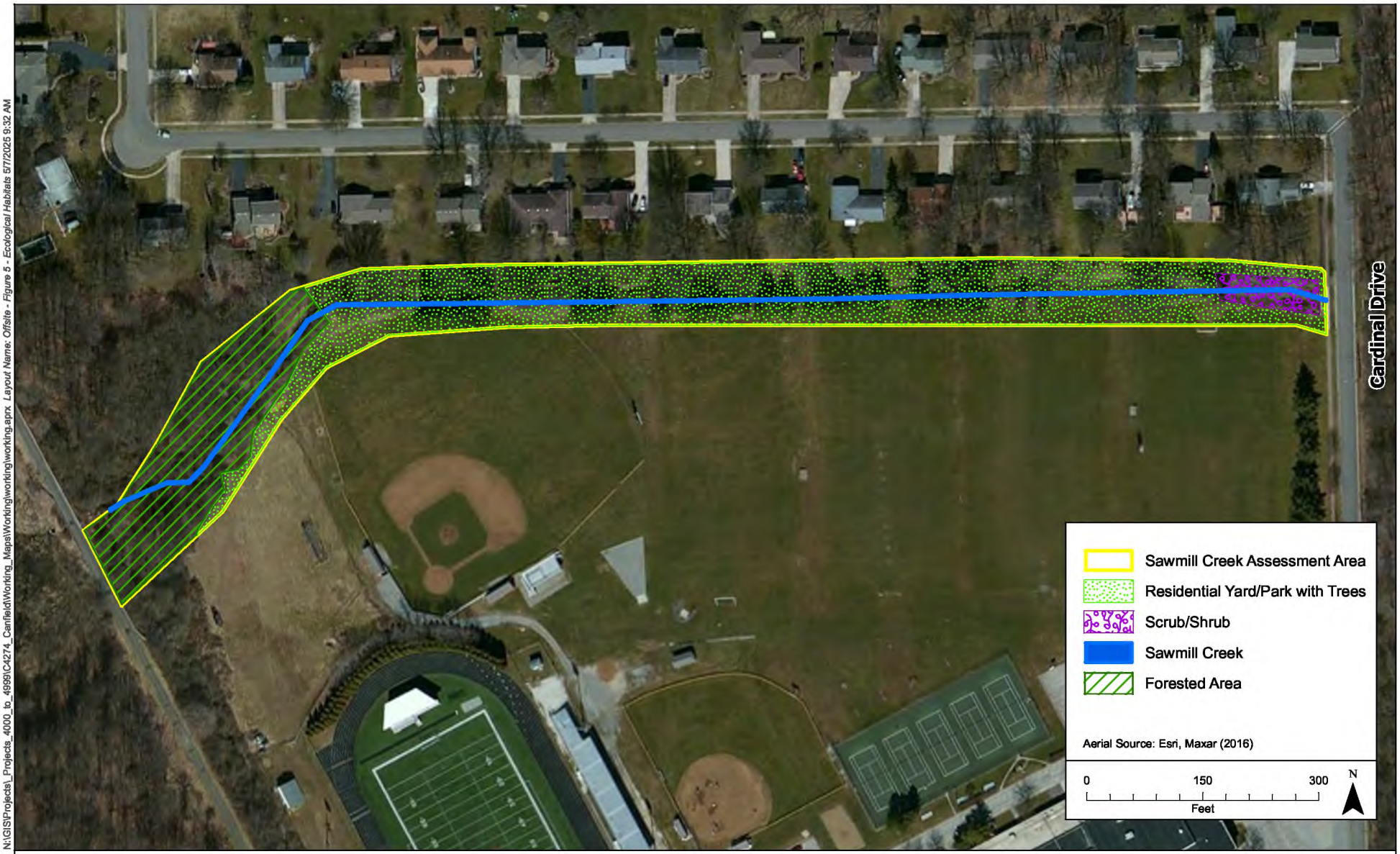
Figure 2. Local Map of Assessment Area and Adjacent Properties
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Offsite - Figure 4 - Site 5/7/2025 9:32 AM

integral consulting inc.

Figure 3. Assessment Area Features
Sawmill Creek
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Offsite - Figure 5 - Ecological Habitats 5/7/2025 9:32 AM

integral consulting inc.

Figure 4. Ecological Habitats within Assessment Area
Sawmill Creek
Canfield, Ohio

Attachment A

Extent of Hazardous Substances in the Assessment Area

Transect 100	North Bank		South Bank	
Depth (feet):	0.0-0.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/25/2024	10/25/2024	10/25/2024	10/28/2024
Parameters				
BaA	1.5 *	0.740	0.850 *	<0.852
BaP	1.9 *	0.910 *	1.0 *	<0.852
BbF	2.9 *	1.3 *	1.6 *	<0.852
DBA	0.310 *	0.140 *	0.160 *	<0.852
IP	1.2 *	0.590	<0.852	
As	13.0 *	11.0 *	14.0 *	
Cr IV	<0.180	0.220	<0.320	
Zn	1,200	1,000	55.0	
Total CN	7.7 *	130 *	0.660	

Transect 375	North Bank		Center		South Bank	
Depth (feet):	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/25/2024	10/25/2024	10/25/2024	10/25/2024	10/25/2024	10/25/2024
Parameters						
BaA	0.370	0.210	0.300	<0.020		
BaP	0.730 *	0.270 *	0.430 *	0.021		
BbF	1.1 *	0.450	0.770	0.035		
DBA	0.140 *	0.064	0.120 *	<0.020		
IP	0.560	0.250	0.370	0.016		
As	9.9 *	12.0 *	12.0 *	5.3 *		
Cr IV	<0.170	<0.200	<0.260	<0.150		
Zn	740	2,800 *	4,800 *	140		
Total CN	57.0 *	190 *	270 *	40.0 *		

Transect 625	North Bank		South Bank	
Depth (feet):	0.0-0.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/24/2024	10/24/2024	10/24/2024	
Parameters				
BaA	0.039	0.320	0.024	
BaP	0.050	0.330 *	0.026	
BbF	0.078	0.530	0.044	
DBA	<0.021	0.060	<0.018	
IP	0.036	0.230	0.020	
As	16.0 *	9.8 *	13.0 *	
Cr IV	<0.190	<0.180	<0.170	
Zn	130	1,300 *	140	
Total CN	11.0 *	21.0 *	26.0 *	

Transect 875	North Bank		Center		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	1.0-1.5	0.0-0.5	1.5-2.0	
Sample Date:	10/23/2024	10/24/2024	10/24/2024	10/23/2024	10/23/2024	
Parameters						
BaA	<0.020	<0.020	<0.019	0.550	0.024	
BaP	<0.028	<0.018	<0.018	0.740 *	0.020	
BbF	<0.036	<0.018	0.016	1.2 *	0.041	
DBA	<0.030	<0.020	<0.019	0.110 *	<0.019	
IP	<0.036	<0.018	<0.018	0.400	0.017	
As	13.0 *	11.0 *	14.0 *	11.0 *	19.0 *	
Cr IV	<0.190	<0.180	<0.170	<0.210	<0.179	
Zn	160	68.0	120	1,300 *	53.0	
Total CN	24.0 *	1.1	1.3	160 *	8.2 *	

Transect 1125	North Bank		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/21/2024	10/21/2024	10/21/2024	10/21/2024
Parameters				
BaA	0.650	0.022	0.590	0.026
BaP	0.910 *	0.024	0.800 *	0.034
BbF	1.6 *	0.041	1.5 *	0.050
DBA	0.130 *	<0.019	0.140 *	<0.019
IP	0.520	<0.815	0.600	0.021
As	13.0 *	16.0 *	13.0 *	11.0 *
Cr IV	<0.250	<0.180	<0.240	<0.170
Zn	1,300 *	90.0	1,900 *	73.0
Total CN	<42.0	230 *	49.0 *	240 *

Transect 1375	North Bank		South Bank/DUP-2	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/22/2024	10/22/2024	10/22/2024	10/22/2024
Parameters				
BaA	0.550	0.069	0.020	<0.019
BaP	0.810 *	0.094	0.024	<0.015
BbF	1.3 *	0.140	0.046	<0.016
DBA	0.140 *	<0.019	<0.020	<0.019
IP	0.590	0.057	0.022	<0.016
As	14.0 *	17.0 *	14.0 *	11.0 *
Cr IV	<0.260	<0.170	<0.150	<0.170
Zn	3,700 *	77.0	150	72.0
Total CN	350 *	5.9 *	21.0 *	1.6

Transect 1625	North Bank		Center		South Bank / DUP-3	
Depth (feet):	0.0-0.5	2.0-2.5	2.0-2.5	0.0-0.5	2.0-2.5	
Sample Date:	10/23/2024	10/23/2024	10/23/2024	10/22/2024	10/23/2024	
Parameters						
BaA	0.210	<0.020	<0.020	0.390	0.029	
BaP	0.280	<0.018	<0.018	0.350 *	0.036	
BbF	0.520	<0.018	<0.018	1.0	0.069	
DBA	0.061	<0.020	<0.020	0.087	0.020	
IP	0.240	<0.018	<0.018	0.420	0.027	
As	9.9 *	50.0 *	7.5 *	12.0 *	8.6 *	
Cr IV	<0.248	<0.180	<0.190	<0.180	<0.170	
Zn	2,300 *	58.0	58.0	1,200	58.0	
Total CN	220 *	3.9 *	150 *	37.0 *	1.2	

U.S. EPA 2024 RSLs	RESIDENT SOIL RSLs (*)
Semi-Volatile Organic Compounds (sVOCs)	
Benzo(a)anthracene (BaA)	1.1
Benzo(a)pyrene (BaP)	0.11
Benzo(b)fluoranthene (BbF)	1.1
Dibenz(a,h)anthracene (DBA)	0.11
Indeno(1,2,3-cd)pyrene (IP)	1.1
All Other Analyzed sVOCs	Varies
Metals	
Arsenic (As)	0.68
Chromium (Hexavalent) (CrVI)	0.3
Zinc (Zn)	2,300
All Other Analyzed Metals	Varies
Cyanide	
Free Cyanide (CN)	NE
Total Cyanide (CN)	2.3

Abbreviations & Notes:
BRL = Below Laboratory Reporting Limits
RSLs = Regional Screening Levels
U.S. EPA = United States Environmental Protection Agency
All results and U.S. EPA Screening Levels are reported as milligrams per kilogram (mg/kg).
U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update.
RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).
The following denote the ratio of screening level exceedances:
* = At or Above U.S. EPA's 2024 Resident Soil RSLs

Transect 0	North Bank		South Bank/ DUP-7	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/28/2024	10/28/2024	10/28/2024	10/28/2024
Parameters				
BaA	0.100	<0.053	<0.049	<0.045
BaP	0.130 *	<0.053	<0.049	<0.045
BbF	0.210	<0.053	<0.049	<0.045
DBA	0.033	<0.053	<0.049	<0.045
IP	0.095	<0.053	<0.049	<0.045
As	17.0 *	11.0 *	18.0 *	28.0 *
Cr IV	<0.410	0.940 *	1.8 *	<0.480
Zn	2,100	68.0	100	65.0
Total CN	230 *	1.1	89.0 *	1.6

Transect 250	North Bank / DUP-6		South Bank
Depth (feet):	0.0-0.5	1.0-1.5	0.0-0.5
Sample Date:	10/23/2024	10/23/2024	10/23/2024
Parameters			
BaA	2.0 *	0.027	0.410
BaP	2.9 *	0.034	0.460 *
BbF	3.8 *	0.057	0.620
DBA	0.480 *	<0.018	0.081
IP	1.7 *	0.025	0.310
As	13.0 *	15.0 *	12.0 *
Cr IV	<0.240	<0.170	<0.160
Zn	4,100 *	86.0	230
Total CN	170 *	31.0 *	33.0 *

Transect 500	North Bank		South Bank / DUP-5	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/24/2024	10/25/2024	10/24/2024	10/25/2024
Parameters				
BaA	0.862	<0.020	0.130	<0.020
BaP	0.972 *	<0.018	0.150 *	<0.018
BbF	0.100	<0.016	0.210	<0.016
DBA	<0.020	<0.020	0.030	<0.020
IP	0.053	<0.016	0.086	<0.016
As	11.0 *	6.0 *	15.0 *	15.0 *
Cr IV	<0.150	<0.150	<0.150	<0.150
Zn	260	61.0	680	60.0
Total CN	31.0 *	<0.720	57.0 *	<0.780

Transect 750	North Bank / DUP-4		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/24/2024	10/24/2024	10/24/2024	10/24/2024
Parameters				
BaA	1.5 *	<0.019	0.600	0.025
BaP	1.4 *	<0.018	0.640 *	0.028
BbF	2.0 *	<0.315	0.740	0.045
DBA	0.210 *	<0.019	0.084	<0.018
IP	0.880	<0.019	0.320	0.019
As	12.0 *	7.7 *	12.0 *	16.0 *
Cr IV	0.470 *	<0.170	<8.300	<0.170
Zn	220	78.0	870	80.0
Total CN	72.0 *	0.750	110 *	4.9 *

Transect 1000	North Bank		Center		South Bank / DUP-1	
Depth (feet):	0.0-0.5	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5	
Sample Date:	10/21/2024	10/21/2024	10/21/2024	10/21/2024	10/21/2024	
Parameters						
BaA	0.033	1.4 *	0.024	0.980	0.092	
BaP	0.045	1.7 *	0.032	1.1 *	0.120 *	
BbF	0.081	2.4 *	0.360	2.1 *	0.160	
DBA	<0.020	0.280 *	<0.019	0.190 *	0.027	
IP	0.026	1.1 *	0.020	0.780	0.070	
As	13.0 *	27.0 *	13.0 *	10.0 *	11.0 *	
Cr IV	<0.190	<0.170	<8.180	<0.150	<0.220	
Zn	71.0	730 *	66.0	500 *	86.0	
Total CN	9.2 *	250 *	29.0 *	89.0 *	93.0 *	

Transect 1250	North Bank		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/22/2024	10/22/2024	10/21/2024	10/22/2024
Parameters				
BaA	0.510	<0.019	0.690	0.170
BaP	0.620 *	<0.017	0.920 *	0.230 *
BbF	1.2 *	<0.015	1.6 *	0.310
DBA	0.100	<0.019	0.150 *	0.045
IP	0.510	<0.015	0.650	0.130
As	11.0 *	9.5 *	11.0 *	12.0 *
Cr IV	<0.210	<8.150	1.7 *	<0.150
Zn	1,400 *	71.0	4,300 *	130
Total CN	220 *	29.0 *	<47.0	43.0 *

Transect 1500	North Bank		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/22/2024	10/22/2024	10/22/2024	10/22/2024
Parameters				
BaA	0.060	<0.018	<0.018	<0.019
BaP	1.1 *	<0.017	<0.017	<0.018
BbF	1.6 *	0.020	<0.014	<0.015
DBA	0.140 *	<0.018	<0.018	<0.019
IP	0.680	<0.014	<0.014	<0.015
As	9.7 *	13.0 *	11.0 *	13.0 *
Cr IV	<0.200	<8.178	<0.170	<0.170
Zn	1,100 *	66.0	50.0	61.0
Total CN	120 *	3.2 *	7.0 *	<0.550

Transect 1750	North Bank	South Bank
Depth (feet):	0.0-0.5	0.0-0.5
Sample Date:	10/25/2024	10/25/2024
Parameters		
BaA	0.850	0.420
BaP	1.2 *	0.530 *
BbF	1.6 *	0.790
DBA	0.190 *	0.096
IP	0.850	0.350
As	11.0 *	7.3 *
Cr IV	0.460 *	0.490 *
Zn	230	220
Total CN	15.0 *	2.2

Transect 1820	North Bank	Center	South Bank	
Depth (feet):	0.0-0.5	1.0-1.5	0.0-0.5	2.0-2.5
Sample Date:	10/23/2024	10/23/2024	10/23/2024	10/23/2024
Parameters				
BaA	4.9 *	0.610	0.570	0.190
BaP	5.5 *	0.530 *	0.710 *	0.170 *
BbF	7.7 *	0.780	1.0	0.250
DBA	0.930 *	0.077	0.100	0.036
IP	3.3 *	0.280	0.420	0.080
As	7.8 *	16.0 *	16.0 *	12.0 *
Cr IV	<0.220	<0.170	<0.170	<0.170
Zn	160	92.0	150	61.0
Total CN	11.0 *	1.5	1.4	<0.560

S Briarcliff Dr

Cardinal Dr

T2-0 T2-100 T2-250 T2-375 T2-500 T2-625 T2-750 T2-875 T2-1000 T2-1125 T2-1250 T2-1375 T2-1500 T2-1625 T2-1750 T2-1820

Subject Property
Sawmill Creek
Soil Sample

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation - Canfield

Sawmill Creek -
Soil Analytical Results Map

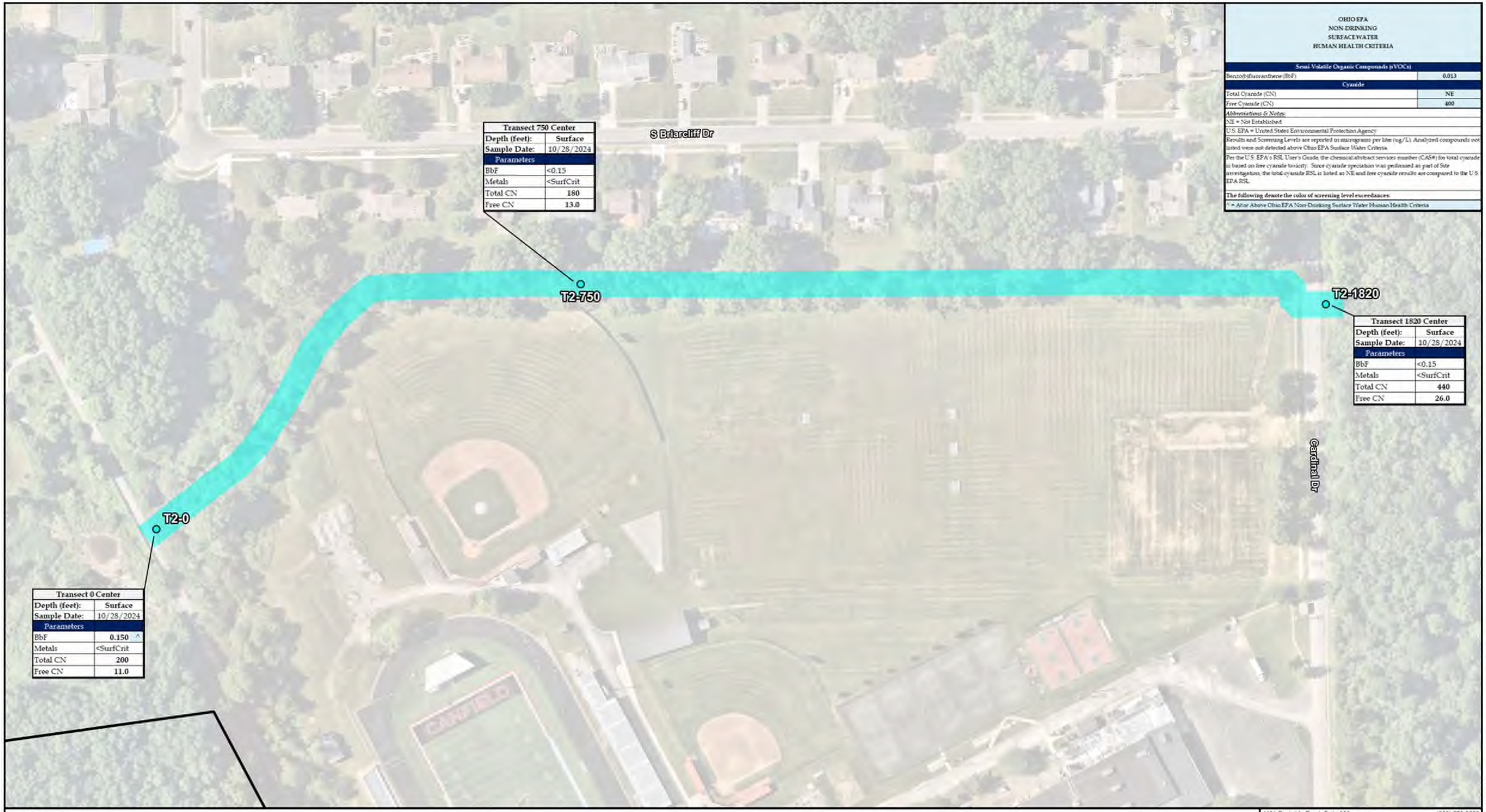
460 West Main Street
Canfield, Ohio 44406

N

0 75 150 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372 | DATE: 12/12/2024
FIGURE: 7 | SCALE: 1:1,500
CREATED BY: CC



Transect 750 Center	
Depth (feet):	Surface
Sample Date:	10/28/2024
Parameters	
BbF	<0.15
Metals	<SurfCrit
Total CN	**180**
Free CN	**13.0**

Transect 1820 Center	
Depth (feet):	Surface
Sample Date:	10/28/2024
Parameters	
BbF	<0.15
Metals	<SurfCrit
Total CN	**440**
Free CN	**26.0**

Transect 0 Center	
Depth (feet):	Surface
Sample Date:	10/28/2024
Parameters	
BbF	**0.150** ^
Metals	<SurfCrit
Total CN	**200**
Free CN	**11.0**

OHIO EPA
NON-DRINKING
SURFACEWATER
HUMAN HEALTH CRITERIA

Semi-Volatile Organic Compounds (sVOCs)	
Benzo(b)fluoranthene (BbF)	0.013
Cyanide	
Total Cyanide (CN)	NE
Free Cyanide (CN)	400

Abbreviations & Notes:

NE = Not Established

U.S. EPA = United States Environmental Protection Agency

Results and Screening Levels are reported in micrograms per liter (ug/L). Analyzed compounds not listed were not detected above Ohio EPA Surface Water Criteria.

Per the U.S. EPA's RSL User's Guide, the chemical abstract services number (CAS#) for total cyanide is based on free cyanide toxicity. Since cyanide speciation was performed as part of Site investigation, the total cyanide RSL is listed as NE and free cyanide results are compared to the U.S. EPA RSL.

The following denote the color of screening level exceedances:

^ = Altor Above Ohio EPA Non-Drinking Surface Water Human Health Criteria

Subject Property

Sawmill Creek

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation - Canfield

Sawmill Creek - Surface Water
Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 75 150 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/12/2024
	SCALE: 1:1,500
FIGURE: 10	CREATED BY: CC

Attachment B

Letters to and from USFWS and ODNR, Responding to Queries about Threatened and Endangered Species

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mahoning County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does

not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the

Department of Interior U.S. Fish and Wildlife Service (FWS). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The FWS interprets the MBTA to prohibit incidental take.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements

may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to

avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under

Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe

wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Ohio Department of Natural Resources
Divisions of Wildlife and Natural Areas & Preserves
Ohio Natural Heritage Program
2045 Morse Road Bldg. G-3 • Columbus, OH 43229-6693
Email: NHDRequest@dnr.ohio.gov • Voicemail: 614-265-6818

Ohio Natural Heritage Data Request

DNR 5203 (R0824)

Ohio Natural Heritage Database (ONHD) stand-alone data requests are processed for projects that meet one of these criteria:

- Academic research projects
- Other non-development or non-construction projects

Search results include records for state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations.

If your project meets none of these criteria and you are requesting ONHD data for ORAM verification, please fill out and sign this form and submit it for ODNR Environmental Review as instructed at ohiodnr.gov/environmentalreview

Data within the project site will automatically be searched. Data within an additional 1-mile radius of the project site may be provided upon request. Because the ONHD contains sensitive information, it is our policy to provide only the data needed to complete your specific project.

Results are listed in a letter format and include a shapefile/map. Data requests will be completed within approximately 30 days. There is currently no charge to process requests.

INSTRUCTIONS

- Please complete all fields on this form.
- Submit a map detailing your project site boundaries. Please include at least one digital map (shapefile, .kmz, or .gdb) or allow extra time for processing.
- If you have questions, please visit ohiodnr.gov/onhd before submitting your request.
- Sign this form (required) and email with other attachments to NHDRequest@dnr.ohio.gov.

DATE:		**COMPANY NAME:**	
NAME OF PERSON RESPONSE LETTER SHOULD BE ADDRESSED TO:			
STREET ADDRESS:			
CITY:		**STATE:**	**ZIP:**
PHONE:		**E-MAIL ADDRESS:**	
PROJECT NAME:			
SITE ADDRESS:			
SITE COUNTY:		**CITY/VILLAGE/TOWNSHIP:**	
SITE LATITUDE:		**SITE LONGITUDE:**	

BRIEF DESCRIPTION OF WORK TO BE PERFORMED AT THE PROJECT SITE:

HOW DO YOU WANT YOUR DATA REPORTED? *CHOOSE ONE:*

☐ **DIGITAL SHAPEFILE** ☐ **PDF MAP**

Both formats provide the same data. If you request a digital shapefile, we will send you a letter with a list of species/features found and a shapefile of record locations and details. The PDF Map is only recommended for those who cannot use digital map data. With the PDF option we will send you a letter with a list of species/features found and a map showing their location. It may take longer to fill your request if you choose the PDF Map.

The standard data we search includes state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations within 1 mile of your project area boundaries (as specified on the map/shapefile you attach to this request). We provide a list of the above species and features found within 1 mile of your project area and may provide specific locations for these and other features that occur within or adjacent to your project area.

PLEASE LIST ANY INFORMATION *IN ADDITION TO THIS* THAT YOU REQUIRE:

HOW WILL THIS INFORMATION BE USED?

The chief of the Division of Wildlife has determined that the release of the ONHD data you have requested could be detrimental to the conservation of a species or unique natural feature. Pursuant to section 1531.04 of the Ohio Revised Code, this information is not subject to section 149.43 of the Revised Code. By signing below, you certify that the data provided will not be disclosed, published, or distributed beyond the scope of your project.

SIGNATURE: Cristal Reagh _____ **DATE:** _____

Integral Consulting Inc.
8742 E. Washington St.
Suite 115
Chagrin Falls, OH 44022

telephone: 303.404.2944
www.integral-corp.com

May 9, 2025

Project No. C4274

Office of Real Estate & Land Management
Ohio Department of Natural Resources
2045 Morse Road, E-2
Columbus, OH 43229
environmentalreviewrequest@dnr.ohio.gov

Submitted via email

Subject: **MSC Site, Canfield, Mahoning County, Ohio Environmental Review Request**

To Whom It May Concern:

Per your email request, Integral Consulting Inc. (Integral) is submitting this request for an environmental review of the Site located at and adjacent to 460 W. Main St, Canfield, Mahoning County, Ohio (approximately centered on 41.027837°, -80.777932° in WGS 84). The Site boundaries are provided in the attached shapefile. The subject area includes an on-site area (including Material Sciences Corporation parcel and portions of the Mill Creek Metroparks parcel) and an off-site area (including additional parcels along Sawmill Creek). This request includes both Material Sciences Corporation (MSC) parcel and wetland and portions of Sawmill Creek in order to consolidate requests for the environmental review. The on-site MSC parcel and wetland habitat includes approximately 4.9 acres of developed/industrial areas, 6.0 acres of upland forest, 1.6 acres of wetland, and 0.5 acres of a ditch.

The environmental review will be used to support the wetland delineation, ORAM form completion, and ecological risk assessment associated with the spill and response activities at the site.[1] Investigation and remedial actions led by August Mack (on behalf of Material Sciences Corporation) will be conducted in close coordination with Ohio EPA under the RCRA program.

This letter constitutes Integral's fulfillment of required information to complete ODNR's environmental review request. If there is additional information that would prove helpful, please do not hesitate to reach out.

[1] https://www.mscresponse.com/

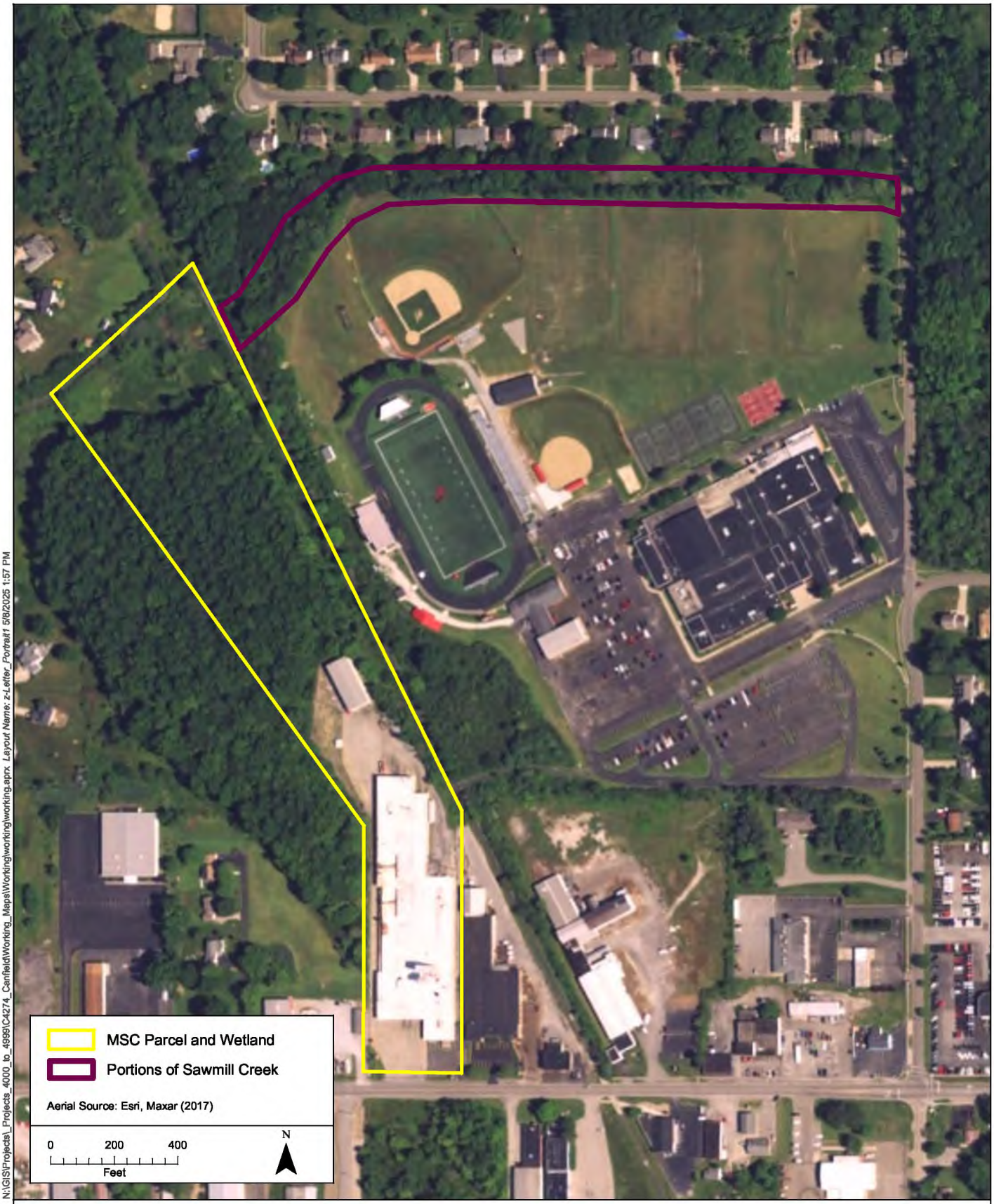
Thank you for your consideration of our request. We look forward to hearing from you.

Sincerely,

Cristal Reagh

Cristal Reagh
Scientist

Enclosure: Shapefile



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: z-Letter_Portrait1 5/8/2025 1:57 PM

integral consulting inc.

Figure 1.
Site Boundaries
Material Science Corporation
Canfield OH

Outlook

Confirmation Receipt for ODNR Environmental Review Request Submission

From EnvironmentalReviewRequest@dnr.ohio.gov <EnvironmentalReviewRequest@dnr.ohio.gov>
Date Fri 5/9/2025 1:14 PM
To Cristal Reagh <creagh@integral-corp.com>

[CAUTION: External email. Think before you click links or open attachments.]

Thank you for contacting the Ohio Department of Natural Resources. This email is your receipt that we have received your message and/or project review request.
We aim to provide a completed Environmental Review comment letter within 45-60 calendar days, however, during periods of high volume or other extenuating circumstances, it may be longer. If you have any questions please contact Mike.Pettegrew@dnr.ohio.gov

Attachment C

April 2025 Photo Log

File Name: IMG_1109
DateTime: 2025:04:01 10:37:15
Latitude: 41.03008611
Longitude: -80.77742778
Description: Floodplain soil including deer tracks and leaf litter.

File Name: IMG_1115
DateTime: 2025:04:01 10:40:57
Latitude: 41.0299
Longitude: -80.77776389
Description: Shallow creek that runs along the high school to the west of the trail.

File Name: IMG_1117
DateTime: 2025:04:01 10:44:34
Latitude: 41.03011389
Longitude: -80.77787778
Description: Dilapidated wooden footbridge that crosses over the high school creek. Facing the culvert under the trail.

File Name: IMG_1118
DateTime: 2025:04:01 10:44:43
Latitude: 41.02989444
Longitude: -80.77777222
Description: Debris and rocks at base of culvert beneath the bike trail.

File Name: IMG_1119
DateTime: 2025:04:01 10:46:21
Latitude: 41.03001111
Longitude: -80.77769444
Description: Sawmill creek near culvert. Large rocks, small cobbles, miscellaneous debris, and floodplain characterized by erosion with exposed roots on southern bank.

File Name: IMG_1120
DateTime: 2025:04:01 10:46:31
Latitude: 41.02998333
Longitude: -80.77774722
Description: Sawmill Creek looking downstream.

File Name: IMG_1121
DateTime: 2025:04:01 10:46:32
Latitude: 41.02997222
Longitude: -80.77773333
Description: Sawmill Creek looking upstream.

File Name: IMG_1123
DateTime: 2025:04:01 10:47:05
Latitude: 41.029975
Longitude: -80.77771111
Description: Clear, shallow Sawmill Creek with visible rocky substrate.

File Name: IMG_1125
DateTime: 2025:04:01 10:49:33
Latitude: 41.03001111
Longitude: -80.77771667
Description: Sawmill Creek facing downstream.

File Name: IMG_1127
DateTime: 2025:04:01 10:49:38
Latitude: 41.02998611
Longitude: -80.77771111
Description: Sawmill Creek facing downstream, connected floodplain on northern bank, substantial erosion and undercutting on southern bank.

File Name: IMG_1128
DateTime: 2025:04:01 10:49:42
Latitude: 41.02998333
Longitude: -80.77771111
Description: Debris along southern eroded bank.

File Name: IMG_1135
DateTime: 2025:04:01 10:51:50
Latitude: 41.02995
Longitude: -80.77763333
Description: Dense thicket of leafless shrubs and trees with visible ground littered with dry leaves observed in a wooded area during late winter or early spring.

File Name: IMG_1136
DateTime: 2025:04:01 10:51:51
Latitude: 41.02995278
Longitude: -80.77759444
Description: Dense understory vegetation and leafless deciduous trees with scattered fallen branches are present in a woodland area during early spring.

File Name: IMG_1137
DateTime: 2025:04:01 10:52:32
Latitude: 41.030125
Longitude: -80.77733611
Description: Creek and floodplain facing north.

File Name: IMG_1139
DateTime: 2025:04:01 10:52:44
Latitude: 41.03012778
Longitude: -80.77738056
Description: Undercutting and exposed tree roots.

File Name: IMG_1140
DateTime: 2025:04:01 10:53:34
Latitude: 41.03019722
Longitude: -80.77731389
Description: Sawmill Creek and floodplain facing north.

File Name: IMG_1141
DateTime: 2025:04:01 10:53:40
Latitude: 41.03019722
Longitude: -80.77729722
Description: Overhanging vegetation along floodplain.

File Name: IMG_1143
DateTime: 2025:04:01 10:54:51
Latitude: 41.03026944
Longitude: -80.77705278
Description: Floodplain of Sawmill Creek (facing downstream).

File Name: IMG_1144
DateTime: 2025:04:01 10:54:54
Latitude: 41.03027778
Longitude: -80.77706944
Description: Floodplain of Sawmill Creek (facing upstream).

File Name: IMG_1156
DateTime: 2025:04:01 11:12:52
Latitude: 41.03080833
Longitude: -80.77648889
Description: Sawmill Creek floodplain and creek. Residential area in background.

File Name: IMG_1157
DateTime: 2025:04:01 11:12:55
Latitude: 41.03068611
Longitude: -80.77651944
Description: Riparian zone adjacent to Sawmill Creek.

File Name: IMG_1159
DateTime: 2025:04:01 11:13:28
Latitude: 41.03062778
Longitude: -80.77629722
Description: A wooden footbridge with rusted metal railings spanning Sawmill Creek.

File Name: IMG_1161
DateTime: 2025:04:01 11:13:40
Latitude: 41.03065556
Longitude: -80.77632778
Description: View of northern floodplain from footbridge.

File Name: IMG_1163
DateTime: 2025:04:01 11:13:50
Latitude: 41.03066389
Longitude: -80.77629722
Description: Looking upstream from footbridge. Pine needles scattered along floodplain.

File Name: IMG_1166
DateTime: 2025:04:01 11:14:32
Latitude: 41.03063889
Longitude: -80.77628333
Description: Base of footbridge with erosion.

File Name: IMG_1169
DateTime: 2025:04:01 11:14:37
Latitude: 41.03064722
Longitude: -80.77626667
Description: The ground surface in a forested area is covered with dry pine needles, numerous pinecones, small patches of grass, and a few scattered sticks.

File Name: IMG_1170
DateTime: 2025:04:01 11:15:06
Latitude: 41.03064444
Longitude: -80.77610833
Description: A burrow entrance surrounded by dry leaves and pine needles is observed on the forest floor.

File Name: IMG_1171
DateTime: 2025:04:01 11:15:09
Latitude: 41.03065556
Longitude: -80.77608611
Description: Sawmill Creek floodplain with exposed roots.

File Name: IMG_1172
DateTime: 2025:04:01 11:15:21
Latitude: 41.03063333
Longitude: -80.77604722
Description: Sawmill Creek and a residential area in the background.

File Name: IMG_1173
DateTime: 2025:04:01 11:17:07
Latitude: 41.03067778
Longitude: -80.77584167
Description: Sawmill Creek, looking upstream.

File Name: IMG_1174
DateTime: 2025:04:01 11:17:10
Latitude: 41.03068611
Longitude: -80.77581667
Description: Sawmill Creek, looking downstream near 452 Briarcliff.

File Name: IMG_1175
DateTime: 2025:04:01 11:17:14
Latitude: 41.03068056
Longitude: -80.77583333
Description: Sawmill Creek (looking upstream) and floodplain. Fencing near high school baseball field in background.

File Name: IMG_1176
DateTime: 2025:04:01 11:17:16
Latitude: 41.03067778
Longitude: -80.775825
Description: Sawmill Creek (looking downstream) and floodplain. Fencing near high school baseball field in background.

File Name: IMG_1178
DateTime: 2025:04:01 11:18:21
Latitude: 41.03068889
Longitude: -80.77576389
Description: Sawmill Creek and floodplain.

File Name: IMG_1179
DateTime: 2025:04:01 11:18:24
Latitude: 41.03068889
Longitude: -80.77566667
Description: Sawmill Creek and floodplain. Residential area in background.

File Name: IMG_1180
DateTime: 2025:04:01 11:19:23
Latitude: 41.03062778
Longitude: -80.77514722

Description: An exposed animal burrow.

File Name: IMG_1181
DateTime: 2025:04:01 11:19:34
Latitude: 41.03062778
Longitude: -80.77512222
Description: Potential burrow, exposed tree roots, scattered pine needles, fallen leaves, and several pinecones.

File Name: IMG_1182
DateTime: 2025:04:01 11:19:43
Latitude: 41.03064444
Longitude: -80.77510833
Description: A black culvert pipe is situated on the bank of a shallow, leaf-littered stream flowing through a residential area with sparsely vegetated ground and overhanging deciduous trees.

File Name: IMG_1183
DateTime: 2025:04:01 11:20:00
Latitude: 41.030625
Longitude: -80.77505556
Description: A small drainage pipe discharges into a shallow, leaf-strewn creek with overhanging trees and residential structures visible in the background.

File Name: IMG_1185
DateTime: 2025:04:01 11:20:21
Latitude: 41.030625
Longitude: -80.77499444
Description: A small animal burrow entrance surrounded by pine needles and pinecones is observed on the forest floor, with visible tree roots and minimal vegetation.

File Name: IMG_1186
DateTime: 2025:04:01 11:20:37
Latitude: 41.03063611
Longitude: -80.77485556
Description: Footbridge #2 (foreground) and Footbridge #3 (background).

File Name: IMG_1187
DateTime: 2025:04:01 11:21:52
Latitude: 41.03064444
Longitude: -80.77456667
Description: Shallow and narrow section of Sawmill Creek. Grass next to residential area.

File Name: IMG_1189
DateTime: 2025:04:01 11:22:18
Latitude: 41.03064722
Longitude: -80.77440556
Description: Sawmill Creek floodplain (looking downstream).

File Name: IMG_1190
DateTime: 2025:04:01 11:22:36
Latitude: 41.03063889
Longitude: -80.77427778
Description: Sawmill Creek.

File Name: IMG_1191
DateTime: 2025:04:01 11:23:04
Latitude: 41.03065556
Longitude: -80.77411667
Description: Sawmill Creek.

File Name: IMG_1192
DateTime: 2025:04:01 11:23:31
Latitude: 41.03071111
Longitude: -80.77406389
Description: Sawmill Creek (looking downstream)

File Name: IMG_1193
DateTime: 2025:04:01 11:24:28
Latitude: 41.03054444
Longitude: -80.77350556
Description: Sawmill Creek (looking upstream)

File Name: IMG_1194
DateTime: 2025:04:01 11:24:31
Latitude: 41.03060556
Longitude: -80.77349167
Description: Debris in Sawmill Creek.

File Name: IMG_1195
DateTime: 2025:04:01 11:24:34
Latitude: 41.03063611
Longitude: -80.77348333
Description: Substrate in Sawmill Creek.

File Name: IMG_1196
DateTime: 2025:04:01 11:25:48
Latitude: 41.03069722
Longitude: -80.77281944
Description: Footbridge #4 (looking upstream).

File Name: IMG_1197
DateTime: 2025:04:01 11:25:50
Latitude: 41.03068889
Longitude: -80.77281944
Description: Northern stream bank and floodplain.

File Name: IMG_1198
DateTime: 2025:04:01 11:25:53
Latitude: 41.03068056
Longitude: -80.77281111
Description: Sawmill Creek (looking downstream).

File Name: IMG_1199
DateTime: 2025:04:01 11:26:29
Latitude: 41.03058889
Longitude: -80.77268333
Description: Sawmill Creek (looking downstream).

File Name: IMG_1200
DateTime: 2025:04:01 11:26:45
Latitude: 41.03059444
Longitude: -80.77253056
Description: Debris along floodplain.

File Name: IMG_1202
DateTime: 2025:04:01 11:28:26
Latitude: 41.03044167
Longitude: -80.77231667
Description: A black corrugated plastic drainage pipe discharges into Sawmill Creek.

File Name: IMG_1203
DateTime: 2025:04:01 11:28:28
Latitude: 41.03049444
Longitude: -80.772225
Description: Culvert under Cardinal Road.

File Name: IMG_1208
DateTime: 2025:04:01 11:32:46
Latitude: 41.03052222
Longitude: -80.77262222
Description: Floodplain (looking upstream) from high school soccer fields.

Attachment D

Ecological Scoping Checklist

Level I Attachment B
Ecological Scoping Checklist

Part 1			
SITE INFORMATION			
Site Name: Sawmill Creek		Date: 04/02/25	
Personnel: Jen Lyndall (Integral, lead) and Elisabeth Webber (August Mack) (Identify team leader)		Time Arrived: 10:27 Time Departed: 11:50	
Site Address: Canfield, OH 44406			
Site Location:	Latitude: 41.03069444	Longitude: -80.7745944	
Site Size (acres): Approx. 3.6 acres			
Weather Conditions (note any unusual conditions): Cloudy, scattered snow.			
Land uses at and adjacent to the site: (Circle all that apply and record at or adjacent)			
Residential Adjacent	Commercial	Recreational Adjacent	Industrial
Agricultural	Urban	Green-Space/ Undeveloped At/adjacent	Other:_____

Note: This checklist provides a suggested format. The format may be altered to fit the needs of the site; however, all pertinent information should be presented.

Part 2		
CONTAMINANTS OF INTEREST		
Contaminants of Interest and *Ecological Stressors* (Types, names including CASRN, classes, or specific *hazardous substances* and non-chemical stressors either known or suspected)	Onsite (O) or Adjacent (A) to the site	Media (soil, sediment, wetland, surface water, ground water (seeps/springs))
Benzo(a)pyrene	Onsite, adjacent	soil
Benzo(b)fluoranthene	Onsite, adjacent	soil, surface water
Arsenic	Onsite, adjacent	soil
Cyanide	Onsite, adjacent	soil
Benzo(a)anthrecene	Onsite, adjacent	soil
Dibenz(a,h)anthracene	Onsite, adjacent	soil
Indeno(1,2,3-cd)pyrene	Onsite, adjacent	soil
Chromium	Onsite, adjacent	soil
Zinc	Onsite adjacent	soil

Part 3

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS/HABITAT a,

Terrestrial – Wooded _27___%of site

Dominant vegetation (circle one):
Coniferous Deciduous Mixed

Dominant tree diameter
diameter at breast height (*dbh*): ____ (inches)

Evidence/observation of wildlife*: squirrels, deer, birds

Terrestrial - Shrub/scrub/grasses __3__% of site

Dominant vegetation (circle one):
shrub/scrub grasses

vegetation density: Dense, Patchy, Sparse
Prominent height of shrub/scrub (<2', 2' to 5', >5')
Prominent height of grasses/herbs (<2', 2' to 5', >5')
Evidence/observation of wildlife*:

Terrestrial - Ruderal/Engineered 68___% of site

Dominant vegetation/surfaces (circle one):
Landscaped Agricultural Bare ground
Parking lot Artificial surfaces
Dominant vegetation height (0', >0' - 2', 2' - 5', >5')
Vegetation Density: Dense Patchy Sparse
Evidence/observation of wildlife*:
Bird calls, squirrels

Aquatic - Non-Flowing (Lentic) ____% of site

Type: Lake Pond Vernal Pool Lagoon
Engineered** Impoundment Reservoir
Water source: Surface water Ground water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands
Bottom Substrate***:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of wildlife*:

Aquatic - Flowing (Lotic) _2___% of site

Aquatic Life Use Designation (if available) _____
Type: River Stream Intermittent Stream
Ditch
Water source: Surface Water Ground Water
Industrial discharge (seeps /springs)
Storm water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate**:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of Wildlife*:Bird calls, deer sign

Aquatic - Wetlands ____% of site

Size _____ (acres)
Obvious or designated wetland: (Yes / No)
Water source: Surface Water Ground Water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate***:
Vegetation: Submerged Emergent Floating

Evidence/Observation of Wildlife*:

* Wildlife includes: macroinvertebrates, reptiles, amphibians, birds, mammals, and fish.
** Engineered can mean any surface water body that has been artificially created or significantly altered.
*** Bottom substrate types include but not limited to: cobble, gravel, sand, silt, clay, muck, artificial (*e.g.*, concrete).

Part 4
Ecologically Important Resources Observed

Attachment E

Evaluation of Potential Ecological Harm

Level I Attachment C

EVALUATION OF POTENTIAL ECOLOGICAL HARM		Y	N	U
Are ecological stressors present or potentially present in:				
a	Soil	X		
b	Surface Water	X		
c	Sediment	X		
d	Ground Water			X
e	Other (biotic media)			X
f	Are important ecological resources located at, or in the locality of the site?			X

"Y" = yes; "N" = No, "U" = Unknown (counts as a "Y")

When answering the above questions, consider the following:

X Known or suspected presence of ecological stressors stored, used or manufactured at the site.
X Ability of ecological stressors to migrate from one medium to another.
X The mobility of the various media.
X Transfer of contaminants through food webs and uptake of chemicals by organisms.
X The presence of important ecological resources, including surface waters on or in the locality of the site.

(a) If "Y" or "U" boxes in Attachment C are checked for row f and any other row, then a recommendation to move to Level II should be made for an assessment of the appropriate aquatic and/or terrestrial habitat. In completing this attachment, a lack of knowledge, presence of high uncertainty, or any "unknown" circumstances should be tabulated as a "U".

(b) If all of the "No" boxes in Attachment C are checked, or if only row f, or only rows a through e are checked “No”, then the site is highly unlikely to present significant risks to important ecological receptors and a recommendation for no further ecological investigations should be made.

Level II Ecological Risk Assessment

Sawmill Creek, Canfield, Ohio

Prepared for
August Mack Environmental
7830 North Central Drive, Suite B
Lewis Center, OH 43035

Prepared by

Integral Consulting Inc.
8742 E. Washington, #115
Chagrin Falls, OH 44022

May 2025

CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

August Mack	August Mack Environmental
COPEC	chemicals of potential ecological concern
CSM	conceptual site model
EDR	Environmental Data Resources, Inc.
EPA	U.S. Environmental Protection Agency
Integral	Integral Consulting Inc.
MSC	Material Sciences Corporation
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
PBT	persistent, bioaccumulative, toxic
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
RCRA	Resource Conservation and Recovery Act
TEC	threshold effect concentration
USFWS	U.S. Fish and Wildlife Service

1 INTRODUCTION AND BACKGROUND

Integral Consulting Inc. (Integral) has prepared this Level II ecological risk assessment on behalf of August Mack Environmental (August Mack) for a portion of Sawmill Creek in Canfield, Ohio (Figures 1 and 2).

The assessment area is located in Mahoning County, Canfield, Ohio (centered at 41.03069444, –80.7745944) and includes the portion of Sawmill Creek (including its riparian floodplain) from the Mill Creek Metroparks bikeway to Cardinal Drive (Figure 2). The creek is bordered to the north by residential properties and to the south by the Cardinal High School athletic fields. The 3.6-acre assessment area includes approximately 1 acre of forested habitat, 2.5 acres of residential yards, 0.1 acres of scrub-shrub habitat, and less than 0.1 acres of stream habitat (Figure 3).

- **Terrestrial habitat:** Approximately 3.5 acres of the Sawmill Creek assessment area consists of forested upland habitat, residential riparian zones, and scrub-shrub habitat.
- **Aquatic habitat:** Within the assessment area, Sawmill Creek flows from the Mill Creek Metroparks bikeway in a northeasterly direction along the northern border of the Canfield High School parcel.

In July 2024, an incident occurred at the Material Sciences Corporation (MSC) facility—upstream of the assessment area—that prompted additional investigation and interim remediation of chemicals along the Adjacent Ditch.[1] As part of that investigation, the Ohio Environmental Protection Agency (Ohio EPA) requires an evaluation of potential ecological risk at the site and the assessment area.

This Level II ecological risk assessment builds on the previous scoping analysis presented in the Level I ecological risk assessment (Integral 2025). A Level II ecological risk assessment is a screening level assessment that is used to evaluate whether chemicals present at the site may pose risk to ecological resources in the Sawmill Creek assessment area. This report follows the Ohio EPA guidance and report outline (Ohio EPA 2018). For the purposes of this Level II ecological risk assessment, the term "site" refers to the MSC parcel and the term "assessment area" refers to the portion of Sawmill Creek from the bikeway to Cardinal Drive (Figure 3).

In accordance with Ohio EPA guidance (Ohio EPA 2018), this assessment was based on existing data, including the Initial Site Investigation Report (August Mack 2024), assessment area photos, aerial imagery, and a site visit, which included an evaluation of habitat type and extent, observations of species present, and signs of ecological use in the assessment area. In

[1] https://www.mscresponse.com/

addition, the following documents, maps, or other publications were reviewed in the preparation of this report:

- Environmental Data Resources, Inc. (EDR), The EDR Aerial Photo Decade Package, Inquiry Number 7821917.5, dated November 14, 2024
- EDR, The EDR-City Directory Image Report, Inquiry Number 7821917.8, dated November 18, 2024
- EDR, The EDR Radius Map with GeoCheck, Inquiry Number 07821917.2r, dated November 14, 2024
- EDR, Certified Sanborn Map Report, Inquiry Number 7821917.3, dated November 14, 2024
- Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Maps
- U.S. Department of Agriculture, Soil Conservation Service, Soil Surveys
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory database, http://www.fws.gov/wetlands/Data/Mapper.html.
- U.S. Geological Survey, Topographic Maps
- U.S. Department of the Interior, Fish and Wildlife Service, National Wetlands Inventory Map.

1.1 SITE HISTORY

The MSC Canfield facility building was constructed in 1950 for the Life Time Products Corporation, Coated Steel Division (Ohio EPA and MSC 2024). Manufacturing operations included surface coating, machining, spray painting, and metal fabricating (Ohio EPA and MSC 2024). In the 1950s or 1960s, the facility became known as Canfield Steel, which was purchased by Pittsburgh Steel Corporation in 1968 to form the Pittsburgh-Canfield Corporation. The facility was acquired in 2013 by New Star Metals, a predecessor to MSC.[2] The facility is still operational.

The coating and electro galvanizing processes use multiple solvents and metals, and the facility is classified as a large quantity generator (EPA ID: OHD000810283). During normal operations, waste is disposed of offsite at an appropriate disposal facility.[3] Chemicals listed on the Toxic Release Inventory forms are cyanide, xylene, ethylbenzene, methyl isobutyl ketone, n-butyl alcohol, 1,2,4-trimethylbenzene, nitric acid, phosphoric acid, sodium hydroxide, toluene, and methyl ethyl ketone.

[2] The facility also previously operated as the Canfield Coating Company.
[3] https://enviro.epa.gov/facts/tri/ef-facilities/#/Water/44406CNFLD460WE

The facility operates under an approved 80 percent synthetic minor air permit (OH0000000250030020).[4]

1.2 HISTORICAL REGULATORY STATUS

There have been no historical regulatory actions in the assessment area.

1.3 CURRENT REGULATORY STATUS

In July 2024, MSC and state and local agencies responded to a report of a release of process fluids in the Adjacent Ditch. During the initial response, personnel observed conditions that indicated some fluid had leaked from the facility into groundwater and sediment of the Adjacent Ditch. It is unclear how long the release had occurred. Emergency response was immediately initiated, in close coordination with Ohio EPA and other agencies. Initial sampling indicated the presence of "residual byproducts from the metal coating process, including elevated levels of sodium hydroxide, zinc, chromium and cyanide."[5] The emergency response included placing temporary fencing; sealing drains, pipes, and manholes; bypassing the adjacent ditch; extracting potentially contaminated water; and placing a liner in the ditch to prevent contact of surface water with impacted sediments.

The site was transferred into the Resource Conservation and Recovery Act (RCRA) program to address potential longer-term investigation and remediation following the completed emergency interim response. Ohio EPA issued an administrative consent order on December 31, 2024, to conduct corrective actions necessary at the site.

August Mack conducted an initial site investigation to analyze chemical concentrations at the site and throughout the assessment area, specifically in groundwater, soil, and surface water samples. The results are summarized in August Mack (2024). Selected figures from that report are reproduced in Attachment A. Surface water and sediment data from August Mack (2024) indicated the following:

- Primary chemicals of concern in the assessment area were cyanide, zinc, hexavalent chromium, and trichloroethene.
- Chemicals that exceeded the EPA residential regional screening levels (RSLs) for soil were cyanide, zinc, hexavalent chromium, benz[*a*]anthracene, benzo[*a*]pyrene, benzo[*b*]fluoranthene, dibenz[*a,h*]anthracene, and indeno[1,2,3-*cd*]pyrene.
- Benzo[*b*]fluoranthene exceeded the Ohio River Basin Human Health Tier I Criteria for non-drinking water.

[4] https://enviro.epa.gov/envirofacts/icis-air/plant?handlerId=OH0000000250030020
[5] https://www.mscresponse.com/

- Arsenic in the downstream portion of Sawmill Creek exceeded the residential and industrial RSLs for soil, but has not historically been used at the site.

1.4 LEVEL I REPORT

The Level I ecological risk assessment report (Integral 2025) indicates that there are chemicals of interest detected in environmental media in the assessment area that have the potential to pose a risk to ecological receptors. Chemicals of interest identified in the Level I ecological risk assessment are screened in the Level II ecological risk assessment to determine if they are chemicals of potential ecological concern (COPECs). Integral (2025) concluded that:

- Chemicals were present in sediment[6] and surface water in the assessment area (August Mack 2024).
- Ecological habitat (including habitat that may be used by threatened and endangered species) is present in the assessment area.
- Signs of relevant ecological receptors were observed in the assessment area, but the timing of the site visit prohibited a full ecological characterization.

Because site-related chemicals were detected in environmental media that may be used by ecological receptors, the Level I ecological risk assessment concluded that a Level II ecological risk assessment was needed.

[6] The initial sampling classified all solids samples as soil. However, for the purposes of the ecological risk assessment, solids within the wetland and ditch areas are considered to be sediment.

2 SITE SURVEY AND DESCRIPTION

A detailed site survey was conducted on April 2, 2025, to gather qualitative and semiquantitative data necessary for identifying relevant and complete exposure pathways in the Sawmill Creek assessment area. The site survey included GIS mapping and analysis, confirmation of habitat within the assessment area, terrestrial receptor inventory based on visual observations, and an avian inventory using the Merlin app. Site habitats are summarized in Figure 4, a photo log is provided in Attachment B, and the ecological scoping checklist is provided in Attachment C. Observations from each of the main habitat areas are described below.

Terrestrial wooded habitat makes up 1 acre (27 percent) of the assessment area. This deciduous forested habitat is dominated by oaks (*Quercus* spp.), hickories (*Carya* spp.), and maples (*Acer* spp.). The mature trees have a typical diameter at breast height of 6–8 in. Squirrels and deer signs (game paths, prints) were noted in the forested area. Birds seen or heard during the site visit included northern cardinal, American robin, and mallard.

Residential yards are present in 2.5 acres (68 percent) of the assessment area. In some portions of the assessment area, mowed lawns extend to the edge of the creek bank, while in others there are limited areas of juvenile and mature trees and shrubs. Along the high school, there are pine trees planted in a row next to the baseball field. A few small burrows were observed along the southern bank of the creek.

Approximately 0.1 acres (3 percent) of scrub-shrub habitat is present at the eastern extent of the assessment area near the culvert under Cardinal Drive. Additionally, approximately 175 ft upstream of Cardinal Drive, there was a debris pile that appeared to be a remnant beaver dam.

This portion of Sawmill Creek is less than 0.1 acres (approximately 1,750 linear feet) and makes up 2 percent of the assessment area. The creek ranges in width from 1 to 4 ft and is generally shallow, ranging from 6 to 12 in. throughout the assessment area. Large boulders and concrete debris are scattered around the upstream culvert. There is a moderate degree of embeddedness in the substrate of the creek, which is dominated by cobble at the western extent of the assessment area and by silt and muck at the eastern extent of the assessment area. Debris was observed throughout the assessment area.

The streambanks show substantial signs of erosion with undercutting and incision. Along the western portion of the assessment area, the banks range from 1 to 7 ft higher in elevation than the creek channel. In this area, there are a number of mature trees with exposed roots due to the undercutting banks. Towards the eastern extent of the assessment area, the banks are lower in elevation.

Vegetation conditions observed in the assessment area were characteristic of the spring season. Because the site visit occurred in early April, many understory trees and emergent vegetation had not yet leafed out.

3 LEVEL II SCREENING RESULTS

This Level II ecological risk assessment identified the environmental media of interest in the assessment area and then identified COPECs as those present at concentrations above ecotoxicological benchmarks. The results of the COPEC screening and investigation were used to develop a conceptual site model (CSM), including the identification of relevant and complete exposure pathways, ecological receptors of interest, and candidate assessment endpoints. The results of each of these steps are detailed in the following sections.

3.1 ENVIRONMENTAL MEDIA

Consistent with Ohio EPA guidance (Ohio EPA 2018), environmental media of interest for the ecological risk assessment are surface soil, surface sediment, and surface water. The initial investigation of the facility evaluated chemical concentrations in groundwater, surface soil and sediment, subsurface soil and sediment, and surface water; however, the evaluation of the assessment area was limited to sediment and surface water (August Mack 2024) so this Level II ecological risk assessment is limited to the aquatic exposure area in Sawmill Creek. The relevant environmental media for the ecological risk assessment are:

- Surface water
- Surface sediment (0–15 cm) based on the bioactive zone as defined in Ohio EPA (2018)
- Wildlife tissue from food items (e.g., invertebrates).

3.2 CHEMICALS OF POTENTIAL ECOLOGICAL CONCERN

The analytical chemistry results were screened against relevant ecotoxicological benchmarks to identify COPECs for each environmental medium. Soil data were not available for the assessment area so were not screened for this assessment. The screening process followed the procedure in Ohio EPA (2018). Any chemical that met one or both of the following criteria was not of ecological concern and therefore was removed from further evaluation:

- The maximum detected concentration is less than the ecotoxicological screening benchmark.
- The maximum detection limit of a nondetected chemical is less than its screening benchmark.

A chemical was retained as a COPEC for further evaluation if it met one or both of the following criteria:

- The maximum detected concentration exceeds the screening benchmark.

- Ohio EPA (2018) defines the chemical as persistent, bioaccumulative, and toxic (PBT).

Ohio EPA (2018) also allows removal of a detected chemical if it is present at a low frequency of detection (<5 percent). This criterion did not apply to the screening evaluation for surface water because the Sawmill Creek-specific data set contained fewer than 20 samples within the assessment boundary. No chemicals were excluded as a COPEC in sediment samples due to their frequency of detection.

3.2.1 Surface Water

Chemicals detected in surface water were compared to the outside mixing zone maximum chemical criteria presented in OAC 3745-1-35. Metals with hardness-dependent criteria were evaluated based on a water hardness value of 200 mg/L, which is representative of aquatic systems in the area that ranged from 140 to 330 mg/L (Ohio EPA 1996). For surface water screening, total and dissolved analytical results for metals were screened separately. The surface water COPEC screening is summarized in Table 3.

Integral identified free cyanide as a COPEC in surface water samples (Table 2). Free cyanide exceeds the relevant screening values.

3.2.2 Surface Sediment

Chemicals detected in sediment were compared to the consensus-based threshold effect concentrations (TECs) from MacDonald et al. (2000) in accordance with Ohio EPA (2018). TECs are available only for select metals and PAHs. When sediment screening benchmarks were not available in MacDonald et al. (2000), Integral used the EPA Region 4 sediment screening values for hazardous waste sites: non-narcotic modes of action (Table 2a in USEPA 2018).

Integral identified 16 COPECs in sediment samples including metals and PAHs because of either exceedances of the screening value or their status as PBT compounds (Table 2).

3.3 CONCEPTUAL SITE MODEL

A CSM provides a framework for understanding how COPECs interact with the environment by defining the source, release and transport mechanisms, exposure routes, and potential ecological receptors. It helps identify areas where exposure may occur and informs risk assessment and management decisions. CSMs are dynamic tools that evolve over time, incorporating new data through an iterative process to refine the understanding of chemical behavior and ecological risk.

Figure 5 presents the preliminary CSM, which illustrates the relationships between potentially affected environmental media (i.e., surface water, sediment, tissue) and major ecological

receptor groups (i.e., communities of invertebrates, plants, birds, and mammals) that may be exposed to COPECs in these media via direct contact, incidental ingestion, or dietary ingestion.

3.3.1 Relevant and Complete Exposure Pathways

An exposure pathway is considered complete if an ecological receptor could contact one or more COPECs in one or more environmental media via one or more exposure routes (e.g., ingestion).

The relevant and complete exposure pathways for the assessment area are presented in the CSM in Figure 5. Aquatic receptors may be exposed to chemicals by direct contact (i.e., skin contact or respiration through gills) with environmental media, incidental ingestion, or dietary exposure. Wildlife exposure to sediment and surface water via direct contact are complete pathways but are likely to be insignificant based on the duration of exposure; dietary exposures are considered to be a more significant exposure pathway for wildlife. Amphibian exposures to chemicals via sediment ingestion is considered a complete exposure pathway, but ingestion is incidental and therefore would not be a significant pathway. The fish that are likely to be present in the assessment area may encounter sediment, resulting in a complete exposure pathway, but this exposure pathway is considered insignificant because these fish species are not bottom dwellers so contact with sediment would be variable. The CSM will be updated based on any additional biological data that is collected in the assessment area.

3.3.2 Selected Ecological Receptors

Ecological data from the site survey and publicly available information were used to identify potential ecological receptors of interest in the assessment area. Ecological receptors are defined as those observed or potentially present in habitats in the assessment area. Receptors of interest are populations, communities, and/or relevant trophic guilds that are sensitive and/or susceptible to toxic effects from exposure to COPECs. These receptors have been well-researched and have large toxicity data sets available in the peer-reviewed literature and guidance. Integral selected ecological receptors after consideration of potentially threatened and endangered species, species observed in the assessment area, and species known to be present in the vicinity of the assessment area.

3.3.2.1 Threatened and Endangered Species

Integral requested information from the U.S. Fish and Wildlife Service (UFWS) and the Ohio Department of Natural Resources (ODNR) on the presence and distribution of threatened and/or endangered species in the assessment area. The information obtained from this

request is included in Attachment D.[7] Integral also requested an ODNR environmental review, which has not been received from the agency at the time of this report.

Based on the information received, the assessment area is located within the range of four federally listed species: tricolored bat (*Perimyotis subflavus*, state endangered), northern long-eared bat (*Myotis septentrionalis*, federally threatened and state endangered), Indiana bat (*M. sodalis*, federally and state endangered), and little brown bat (*M. lucifugus*, state endangered). USFWS has previously stated that Indiana bats are assumed to be present in Ohio during the summer wherever suitable habitat occurs unless a presence/absence survey has been performed to document their absence (USFWS 2007).

In addition to the four bat species, the monarch butterfly (*Danaus plexippus*) is a candidate federally listed species that may be present in the area.

No threatened or endangered species were observed during the site visit. However, because presence/absence surveys have not been conducted for threatened or endangered species in the assessment area, their potential use of the assessment area cannot be ruled out.

The focus of the risk assessment is on ecological receptors that are likely to use the assessment area, with the expectation that protection of those ecological receptors will also be protective of the habitat that could be used by potentially threatened and endangered species.

3.3.2.2 Selected Ecological Receptors

Section 2 provides summaries of the assessment area observations in April 2025. Due to the timing of the site visit, this should be considered an initial species list and not a comprehensive list of assessment area ecological receptors. The selection of ecological receptors focuses on those with complete exposure pathways and those that are representative of key feeding guilds. It is not feasible to evaluate risk for every species that may use the assessment area, so surrogate species are used to represent different avian and mammalian feeding guilds.

Aquatic receptors in Sawmill Creek may include aquatic vegetation, macroinvertebrates, amphibians, and fish communities. In this Level II aquatic risk assessment, Integral selected the following aquatic ecological receptors:

- Aquatic vegetation community
- Invertebrate community
- Fish community
- Amphibian community

[7] The ODNR environmental review has not been received at the time of this report.

- Small semiaquatic wildlife species with restricted home ranges and high incidental sediment ingestion rates including:
  - Mallard (avian omnivore)
  - Heron (avian piscivore)
  - Muskrat (mammalian herbivore)
  - Mink (mammalian piscivore).

Aquatic vegetation, invertebrates, fish, amphibians, birds, and mammals are the focus of this evaluation because these receptors provide a comprehensive assessment of chemical exposure and risk.

3.3.3 Candidate Assessment Endpoints

Assessment endpoints represent an expression of the key ecological resources to be protected from harm. They generally reflect sensitive populations, communities, or trophic guilds. Ecological resources should have relevance, be susceptible to the stressors of concern, have biological, social, and/or economic value, and be applicable to the risk management goals for the assessment area. Candidate assessment endpoints would be used in the Level III evaluation to evaluate the targeted resource groups in the aquatic exposure areas. The selected assessment endpoints are as follows:

- Semiaquatic avian abundance
- Semiaquatic mammalian abundance
- Aquatic vegetation community structure and function
- Benthic invertebrate community structure and function
- Fish community structure and function
- Amphibian community structure and function.

These assessment endpoints may be updated if a Level III ecological risk assessment is conducted.

4 CONCLUSIONS AND RECOMMENDATIONS

This Level II ecological risk assessment was based on a CSM that includes the identified environmental media (sediment, surface water, and tissue), complete exposure pathways, and environmental receptors of interest. COPECs were identified by screening maximum detected concentrations in each environmental medium against ecological screening benchmarks. Chemicals that exceeded the screening values and those identified as PBT compounds were retained as COPECs for further evaluation. The Level II ecological risk assessment could not rule out the potential for adverse ecological risk due to the presence of multiple COPECs at concentrations that exceeded screening thresholds, indicating the potential for risk in surface sediment and surface water.

Interim remedial actions are already under way at the site; however, we recommend that a Level III ecological assessment be conducted to evaluate site-specific risk to determine the adequacy of the interim actions and determine if additional action is warranted. Additional data collection efforts may be needed to provide a more intensive habitat and biological evaluation, to collect additional soil and sediment data, and to collect additional background data.

5 REFERENCES

Integral. 2025. Level I Ecological Risk Assessment. Material Sciences Corporation Site, Canfield, Ohio. Prepared for August Mack Environmental. February. Integral Consulting Inc., Chagrin Falls, OH.

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. *Archives of Environmental Contamination and Toxicology* 39:20–31.

Ohio EPA. 1996. Biological and Water Quality Study of the Mahoning River Basin. Ashtabula, Columbiana, Portage, Mahoning, Stark, and Trumbull Counties (Ohio), Lawrence and Mercer Counties (Pennsylvania). OEPA Technical Report MAS/1995-12-14. Volume I. State of Ohio Environmental Protection Agency, Division of Surface Water, Monitoring and Assessment Section; Nonpoint Source Program; and Northeast District Office. May 1.

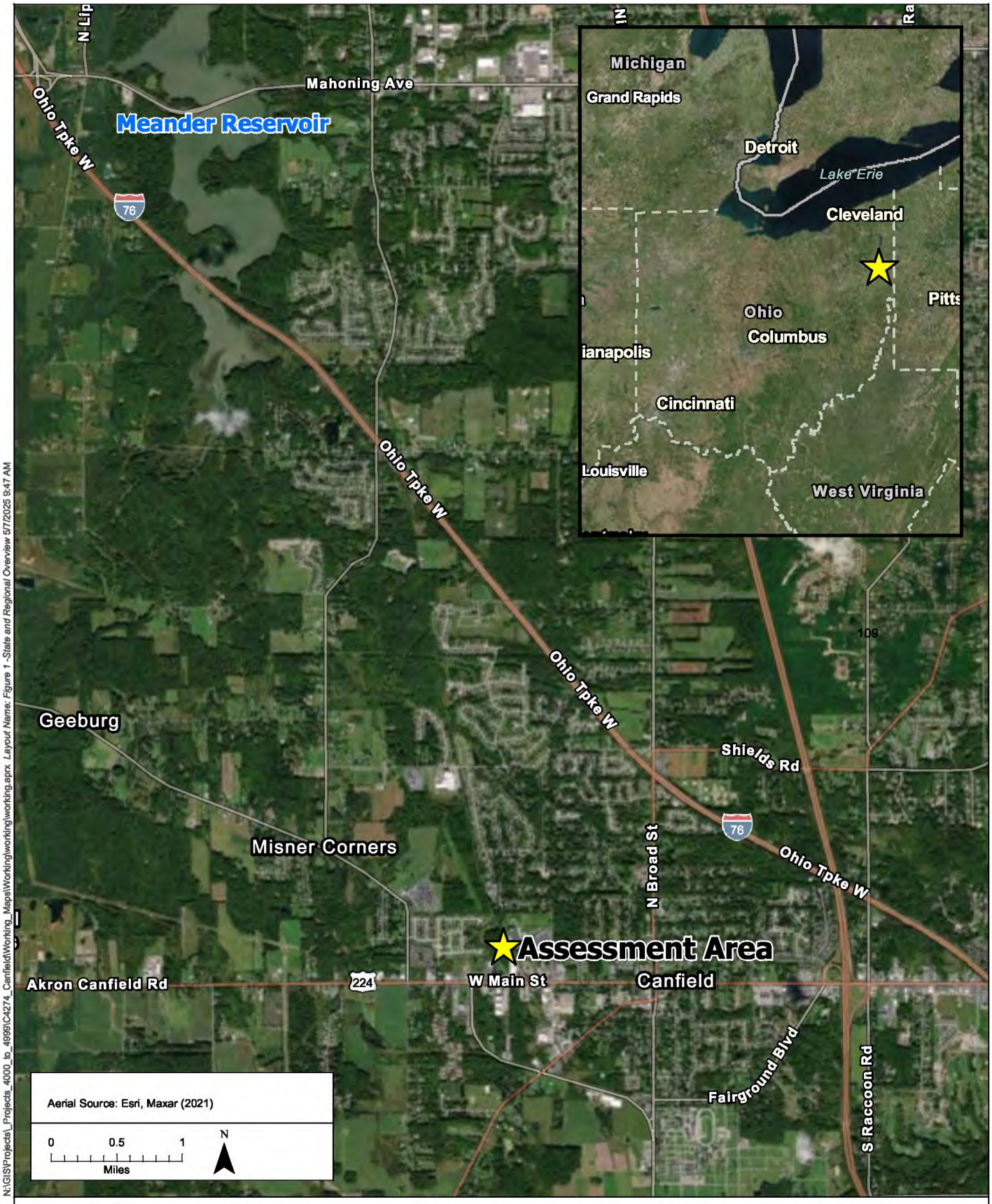
Ohio EPA. 2018. Ecological risk assessment guidance document. Ohio Environmental Protection Agency. July.

Ohio EPA and MSC. 2024. Directors Final Findings and Orders in the matter of Material Sciences Corporation. Ohio Environmental Protection Agency and Material Sciences Corporation. December 31.

USEPA. 2018. Region 4 Ecological Risk Assessment Supplemental Guidance. March Update. Available at: https://www.epa.gov/sites/default/files/2018-03/documents/era_regional_supplemental_guidance_report-march-2018_update.pdf

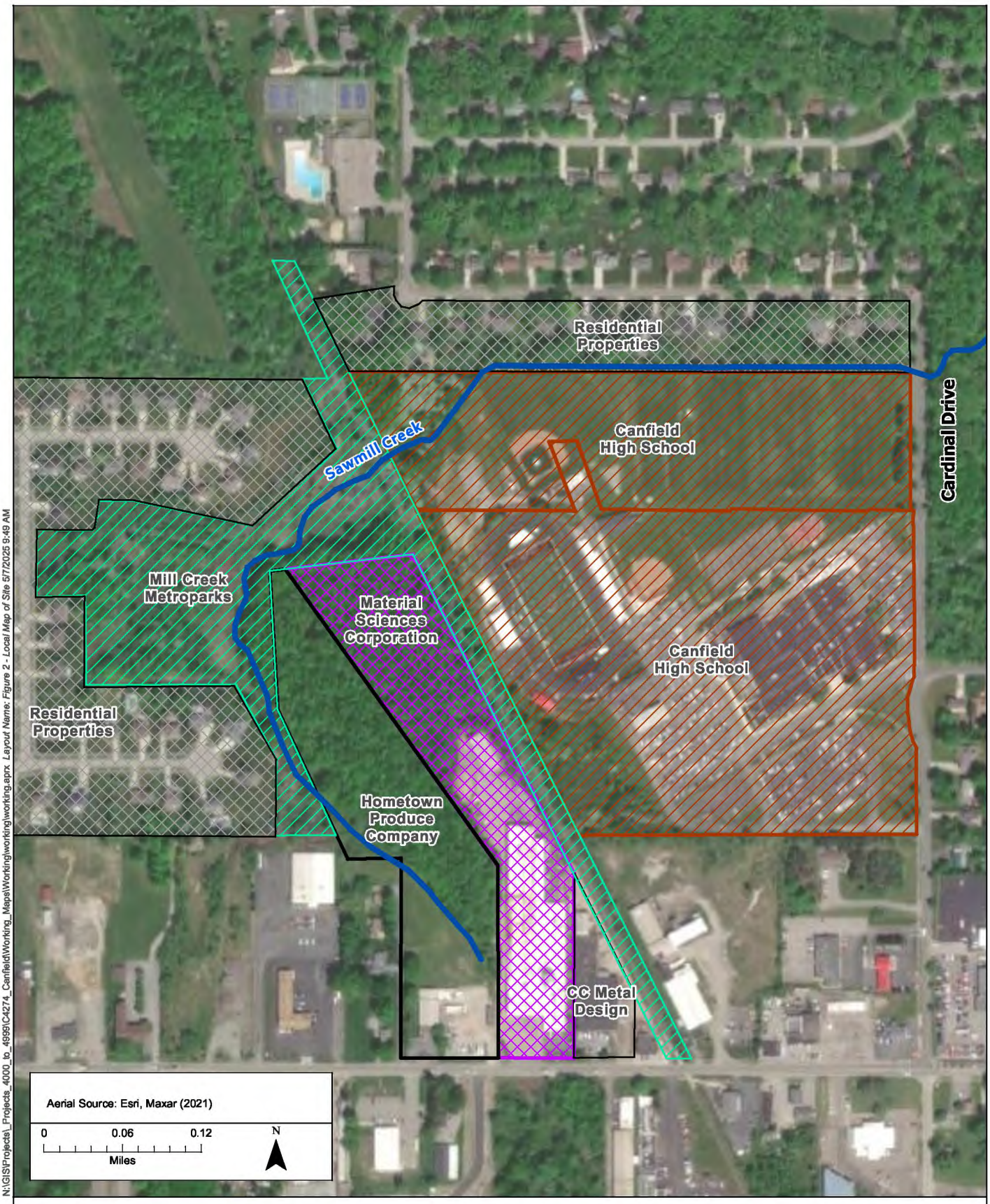
USFWS. 2007. Biological Opinion on the Ohio Department of Transportation's Statewide Transportation Program for the Federally listed Endangered Indiana Bat (*Myotis sodalis*). Submitted to the Federal Highway Administration. January 26.

FIGURES



integral consulting inc.

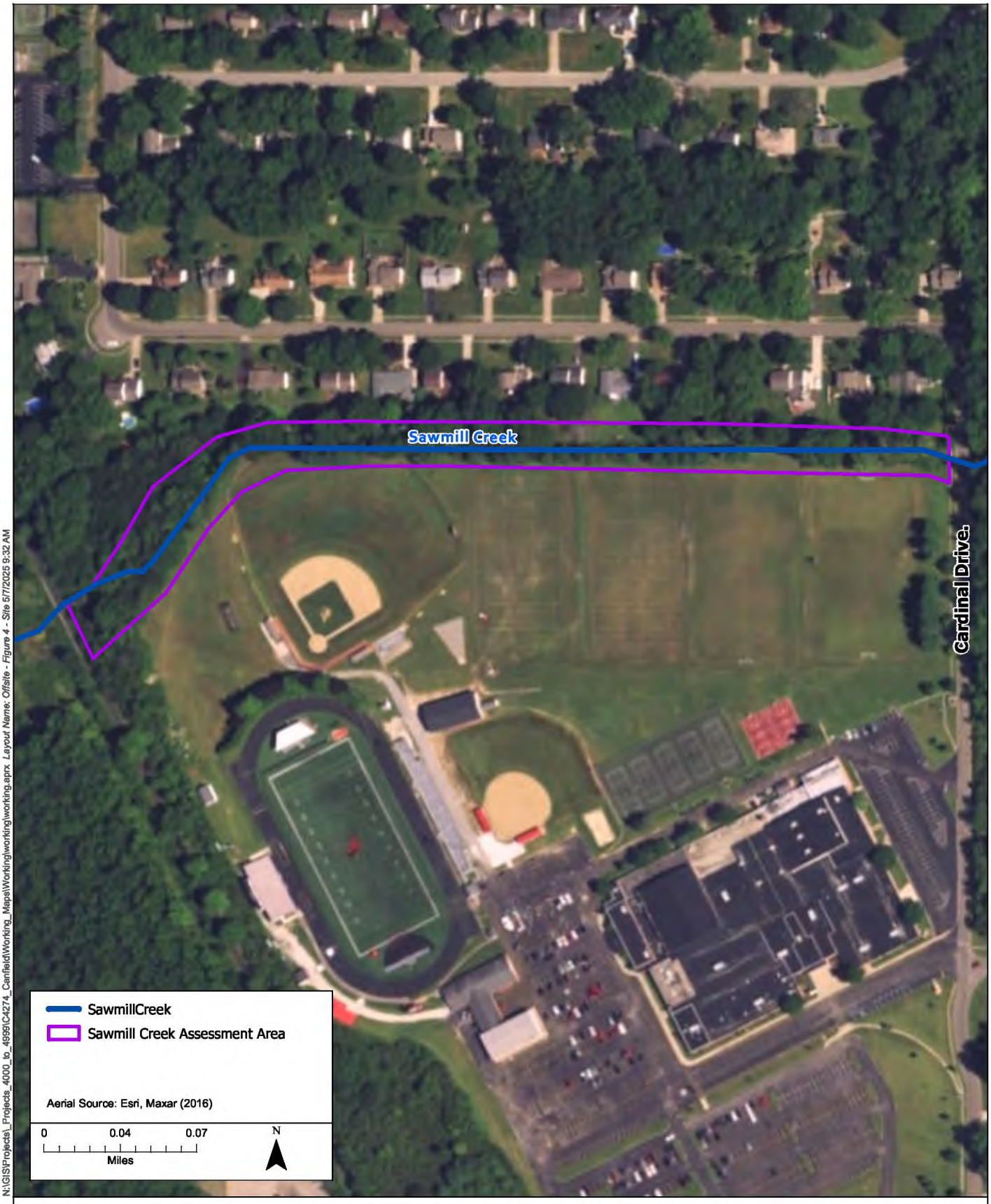
Figure 1 - Regional Map of Assessment Area
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Figure 2 - Local Map of Site 5/7/2025 9:49 AM

integral consulting inc.

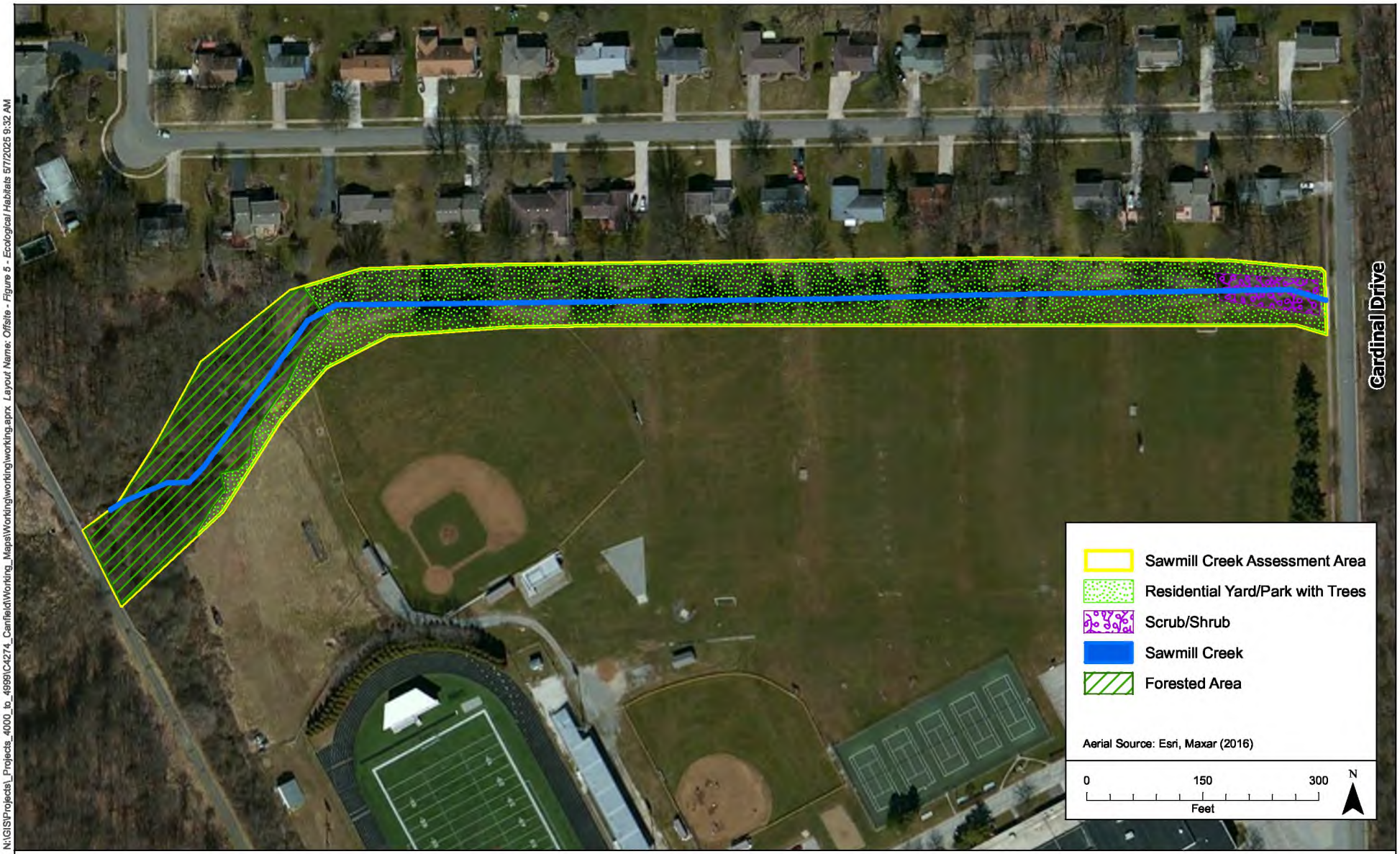
Figure 2 - Local Map of Assessment Area and Adjacent Properties
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Offsite - Figure 4 - Site 5/7/2025 9:32 AM

integral consulting inc.

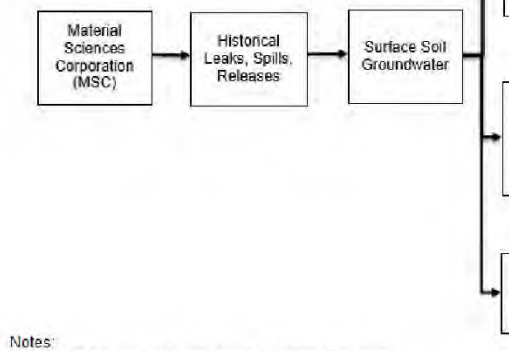
Figure 3 -Assessment Area Features
Sawmill Creek
Canfield, Ohio



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: Offsite - Figure 5 - Ecological Habitats 5/7/2025 9:32 AM

integral consulting inc.

Figure 4 - Ecological Habitats within Assessment Area.
Sawmill Creek
Canfield, Ohio



		Potentially Exposed Ecological Receptors						
		Terrestrial			Aquatic			
Exposure Media	Exposure Route	Vegetation	Invertebrates	Wildlife	Vegetation	Invertebrates	Amphibians	Fish
Soil	Ingestion	NA	NA	NA	NA	NA	NA	NA
	Direct Contact	NA	NA	NA	NA	NA	NA	NA
Sediment	Ingestion	NA	NA	●	NA	●	◍	NA
	Direct Contact	NA	NA	◍	●	●	●	◍
Surface Water	Ingestion	NA	NA	●	NA	NA	NA	NA
	Direct Contact	NA	NA	◍	●	NA	●	●
Tissue	Ingestion	NA	NA	●	NA	NA	NA	NA

Notes:
● Potentially complete and significant exposure route
◍ Exposure route potentially complete but insignificant
NA Not Applicable - receptor is not potentially exposed via this pathway

integral

Figure 5 – Conceptual Site Model
Sawmill Creek Assessment Area
Canfield, Ohio

Tables

Table 1. COPEC Summary

COPEC	Sediment	Surface Water
Metals		
Arsenic	x	
Barium	x	
Lead	x	
Mercury	x	
Selenium	x	
Zinc	x	
PAHs		
Anthracene	x	
Benzo[a]anthracene	x	
Benzo[a]pyrene	x	
Chrysene	x	
Dibenz[a,h]anthracene	x	
Fluoranthene	x	
Fluorene	x	
Naphthalene	x	
Phenanthrene	x	
Pyrene	x	
Physico-chemical Measurements		
Free Cyanide		x

Notes:
COPEC = chemical of potential ecological concern
PAH = polycyclic aromatic hydrocarbon

Table 2. COPEC Screening for Surface Water

Chemical	Fraction	CAS Number	FOD	Maximum Detected Concentration (µg/L)		Maximum Reporting Limit (µg/L)	Location of Maximum Detected Concentration	Screening Value (µg/L)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Metals												
Arsenic	D	7440-38-2	0 / 4			15		340	Rule 3745-1-35 (OMZM)	No	No	ND1
Arsenic	T	7440-38-2	0 / 4			15		340	Rule 3745-1-35 (OMZM)	No	No	ND1
Barium	D	7440-39-3	4 / 4	70	J	200	T2-1820-C-SW; T2-1820-C-SW	220	USEPA (2018)	No	No	BSV
Barium	T	7440-39-3	4 / 4	73	J	200	T2-1820-C-SW; T2-1820-C-SW	220	USEPA (2018)	No	No	BSV
Cadmium	D	7440-43-9	0 / 4			5		9.3	Rule 3745-1-35 (OMZM)	No	No	ND1
Cadmium	T	7440-43-9	0 / 4			5		9.9	Rule 3745-1-35 (OMZM)	No	No	ND1
Chromium	D	7440-47-3	3 / 4	10	J	10	T2-1820-C-SW; T2-1820-C-SW	1000	Rule 3745-1-35 (OMZM)	No	No	BSV
Chromium	T	7440-47-3	3 / 4	10	J	10	T2-1820-C-SW; T2-1820-C-SW	3200	Rule 3745-1-35 (OMZM)	No	No	BSV
Chromium (VI)	D	18540-29-9	0 / 4			20		11	USEPA (2024)	No	No	ND2
Chromium (VI)	T	18540-29-9	0 / 4			20		11	USEPA (2024)	No	No	ND2
Copper	D	7440-50-8	0 / 4			25		26	Rule 3745-1-35 (OMZM)	No	No	ND1
Copper	T	7440-50-8	0 / 4			25		27	Rule 3745-1-35 (OMZM)	No	No	ND1
Lead	D	7439-92-1	0 / 4			10		230	Rule 3745-1-35 (OMZM)	Yes	No	ND1
Lead	T	7439-92-1	0 / 4			10		300	Rule 3745-1-35 (OMZM)	Yes	No	ND1
Mercury	D	7439-97-6	0 / 4			0.2		1.4	Rule 3745-1-35 (OMZM)	Yes	No	ND1
Mercury	T	7439-97-6	0 / 4			0.2		1.7	Rule 3745-1-35 (OMZM)	Yes	No	ND1
Selenium	D	7782-49-2	0 / 4			20		5	USEPA (2003)	No	No	ND2
Selenium	T	7782-49-2	0 / 4			20		5	USEPA (2003)	No	No	ND2
Silver	D	7440-22-4	0 / 4			10		3.2	USEPA (2024)	No	No	ND2
Silver	T	7440-22-4	0 / 4			10		3.2	USEPA (2024)	No	No	ND2
Zinc	D	7440-66-6	2 / 4	50		50		210	Rule 3745-1-35 (OMZM)	No	No	BSV
Zinc	T	7440-66-6	3 / 4	130		50	T2-750-C-SW; T2-750-C-SW	220	Rule 3745-1-35 (OMZM)	No	No	BSV
PAHs												
Acenaphthene	T	83-32-9	0 / 4			0.2		38	USEPA (2003)	No	No	ND1
Acenaphthylene	T	208-96-8	0 / 4			0.2		4840	USEPA (2003)	No	No	ND1
Anthracene	T	120-12-7	0 / 4			0.2		0.035	USEPA (2003)	No	No	ND2
Benzo[a]anthracene	T	56-55-3	0 / 4			0.2		0.025	USEPA (2003)	No	No	ND2
Benzo[a]pyrene	T	50-32-8	0 / 4			0.2		0.014	USEPA (2003)	No	No	ND2
Benzo[b]fluoranthene	T	205-99-2	1 / 4	0.2	J	0.2	T2-0-C-SW	9.07	USEPA (2003)	No	No	BSV
Benzo[ghi]perylene	T	191-24-2	0 / 4			0.2		0.012	USEPA (2018)	No	No	ND2
Benzo[k]fluoranthene	T	207-08-9	0 / 4			0.2		0.06	USEPA (2018)	No	No	ND2
Chrysene	T	218-01-9	0 / 4			0.2		4.7	USEPA (2018)	No	No	ND1
Dibenz[a,h]anthracene	T	53-70-3	0 / 4			0.2		0.012	USEPA (2018)	No	No	ND2
Fluoranthene	T	206-44-0	1 / 4	0.21		0.2	T2-0-C-SW	1.9	USEPA (2003)	No	No	BSV
Fluorene	T	86-73-7	0 / 4			0.2		19	USEPA (2003)	No	No	ND1
Indeno[1,2,3-cd]pyrene	T	193-39-5	0 / 4			0.2		0.012	USEPA (2018)	No	No	ND2
Naphthalene	T	91-20-3	1 / 4	1.6		0.2	T2-0-C-SW	13	USEPA (2003)	No	No	BSV
Phenanthrene	T	85-01-8	1 / 4	0.2	J	0.2	T2-0-C-SW			No	No	NSV
Pyrene	T	129-00-0	1 / 4	0.2	J	0.2	T2-0-C-SW	4.6	USEPA (2018)	No	No	BSV

Table 2. COPEC Screening for Surface Water

Chemical	Fraction	CAS Number	FOD	Maximum Detected Concentration (µg/L)	Maximum Reporting Limit (µg/L)	Location of Maximum Detected Concentration	Screening Value (µg/L)	Screening Value Source	PBT (Yes/No) [a]	COPEC (Yes/No)	Reason for Selection or Deletion [b]
Physico-chemical Measurements											
Free Cyanide	T	57-12-5	4 / 4	26	6	T2-1820-C-SW	5.2	USEPA (2024)	No	Yes	ASV
Total Cyanide	T	57-12-5	4 / 4	440	10	T2-1820-C-SW			No	No	NSV

Sources:

USEPA. 2003. Region 5 RCRA ecological screening levels. U.S. Environmental Protection Agency. August 22.

USEPA. 2018. Region 4 ecological risk assessment supplemental guidance. March Update. Available at: https://www.epa.gov/sites/default/files/2018-03/documents/era_regional_supplemental_guidance_report-march-2018_update.pdf. U.S. Environmental Protection Agency.

USEPA 2024. National recommended water quality criteria - Aquatic life criteria table. Available at: www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table#table. Last updated on October 9, 2024. U.S. Environmental Protection Agency.

Notes:

Highlighted chemicals are retained as sediment COPECs for further evaluation

COPEC = chemical of potential ecological concern

D = dissolved

FOD = frequency of detection

Ohio EPA = Ohio Environmental Protection Agency

OMZM = outside mixing zone maximum

PAH = polycyclic aromatic hydrocarbon

PBT = persistent, bioaccumulative, and toxic

PCB = polychlorinated biphenyl

T = total

Data Qualifier:

J = estimated concentration

[a] Persistent, bioaccumulative, and toxic pollutant as identified in Ohio EPA (2018)

[b] Reason for selection or deletion

Selection reason: **ASV**: maximum detected concentration is above the screening value; **PBT**: chemical is detected and listed as persistent, bioaccumulative, and toxic

Deletion reason: **BSV**: maximum detected concentration falls below screening value; **NSV**: chemical detected but no screening value available (see Uncertainty Analysis); **ND1**: chemical not detected and reporting limit falls below screening value; **ND2**: chemical not detected but reporting limit exceeds screening value (see Uncertainty Analysis); **ND3**: chemical not detected and lacks screening value

Table 3. COPEC Screening for Surface Sediment

Chemical	CAS Number	FOD	Maximum Detected Concentration (mg/kg)		Maximum Reporting Limit (mg/kg)	Location of Maximum Detected Concentration	Screening Value (mg/kg)	Screening Value Source	Ohio EPA SRV [a]	PBT (Yes/No) [b]	COPEC (Yes/No)	Reason for Selection or Deletion [c]
Metals												
Arsenic	7440-38-2	41 / 41	27		2.9	T2-1000-C-0.0	9.79	MacDonald et al. 2000	25	No	Yes	ASV
Barium	7440-39-3	41 / 41	93		39	T2-0-S-0.0; T2-1500-S-0.0	20	EPA Region 4, 2018	190	No	Yes	ASV
Cadmium	7440-43-9	40 / 41	0.58	J	0.98	T2-375-S-0.0	0.99	MacDonald et al. 2000	0.79	No	No	BSV
Chromium	7440-47-3	41 / 41	40		2	T2-250-N-0.0	43.4	MacDonald et al. 2000	29	No	No	BSV
Chromium (VI)	18540-29-9	8 / 41	2.8	J	4.1	T2-1250-S-0.0		NSV		No	No	NSV
Copper	7440-50-8	41 / 41	20		4.9	T2-250-2-0.0; T2-625-N-0.0	31.6	MacDonald et al. 2000	32	No	No	BSV
Lead	7439-92-1	41 / 41	30		2	T2-250-N-0.0	35.8	MacDonald et al. 2000	47	Yes	Yes	PBT
Mercury	7439-97-6	23 / 41	0.22	J	0.23	T2-100-N-0.0	0.18	MacDonald et al. 2000	0.12	Yes	Yes	PBT
Selenium	7782-49-2	29 / 41	3.6	J	3.9	T2-250-N-0.0	0.72	EPA Region 4, 2018	1.7	No	Yes	ASV
Silver	7440-22-4	0 / 41			2		1	EPA Region 4, 2018	0.43	No	No	ND2
Zinc	7440-66-6	41 / 41	4800		38	T2-375-S-0.0	121	MacDonald et al. 2000	160	No	Yes	ASV
PAHs												
Acenaphthene	83-32-9	14 / 41	0.37		0.31	T2-1820-N-0.0		NSV		No	No	NSV
Acenaphthylene	208-96-8	10 / 41	0.31		0.31	T2-100-N-0.0; T2-875-S-0.0		NSV		No	No	NSV
Anthracene	120-12-7	30 / 41	1.3		0.31	T2-1820-N-0.0	0.0572	MacDonald et al. 2000		No	Yes	ASV
Benzo[a]anthracene	56-55-3	37 / 41	4.9		0.31	T2-1820-N-0.0	0.108	MacDonald et al. 2000		No	Yes	ASV
Benzo[a]pyrene	50-32-8	37 / 41	5.5		0.31	T2-1820-N-0.0	0.15	MacDonald et al. 2000		No	Yes	ASV
Benzo[b]fluoranthene	205-99-2	38 / 41	7.7		0.31	T2-1820-N-0.0		NSV		No	No	NSV
Benzo[ghi]perylene	191-24-2	34 / 41	4		0.31	T2-1820-N-0.0		NSV		No	No	NSV
Benzo[k]fluoranthene	207-08-9	36 / 41	3		0.31	T2-1820-N-0.0		NSV		No	No	NSV
Chrysene	218-01-9	37 / 41	6.6		0.31	T2-1820-N-0.0	0.166	MacDonald et al. 2000		No	Yes	ASV
Dibenz[a,h]anthracene	53-70-3	32 / 41	0.93		0.31	T2-1820-N-0.0	0.033	MacDonald et al. 2000		No	Yes	ASV
Fluoranthene	206-44-0	38 / 41	17		0.31	T2-1820-N-0.0	0.423	MacDonald et al. 2000		No	Yes	ASV
Fluorene	86-73-7	20 / 41	0.6		0.31	T2-1820-N-0.0	0.0774	MacDonald et al. 2000		No	Yes	ASV
Indeno[1,2,3-cd]pyrene	193-39-5	37 / 41	3.3		0.31	T2-1820-N-0.0		NSV		No	No	NSV
Naphthalene	91-20-3	20 / 41	0.31		0.31	T2-100-N-0.0	0.176	MacDonald et al. 2000		No	Yes	ASV
Phenanthrene	85-01-8	35 / 41	9.6		0.31	T2-1820-N-0.0	0.204	MacDonald et al. 2000		No	Yes	ASV
Pyrene	129-00-0	37 / 41	12		0.31	T2-1820-N-0.0	0.195	MacDonald et al. 2000		No	Yes	ASV
Physico-chemical measurements												
Total Cyanide		39 / 41	350		47	T2-1375-N-0.0		NSV		No	No	NSV

Sources:

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger. 2000. Development and evaluation of consensus-based sediment quality guidelines for freshwater ecosystems. *Arch. Environ. Contam. Toxicol*. 39:20-31.

Ohio EPA. 2018. Ecological risk assessment guidance document. Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization Assessment, Remediation and Corrective Action Section. July.

USEPA. 2018. Region 4 ecological risk assessment supplemental guidance. March Update. Available at: https://www.epa.gov/sites/default/files/2018-03/documents/era_regional_supplemental_guidance_report-march-2018_update.pdf. U.S. Environmental Protection Agency.

Notes:

Highlighted chemicals are retained as sediment COPECs for further evaluation

COPEC = chemical of potential ecological concern
FOD = frequency of detection
Ohio EPA = Ohio Environmental Protection Agency
PAH = polycyclic aromatic hydrocarbon

Data Qualifier:

J = estimated concentration

[a] Ohio-specific sediment reference values for Erie-Ontario Lake Plain (Ohio EPA 2018)
[b] Persistent, bioaccumulative, and toxic pollutant as identified in Ohio EPA (2018)
[c] Reason for selection or deletion

Table 3. COPEC Screening for Surface Sediment

Chemical	CAS Number	FOD	Maximum Detected Concentration (mg/kg)	Maximum Reporting Limit (mg/kg)	Location of Maximum Detected Concentration	Screening Value (mg/kg)	Screening Value Source	Ohio EPA SRV [a]	PBT (Yes/No) [b]	COPEC (Yes/No)	Reason for Selection or Deletion [c]

PBT = persistent, bioaccumulative, toxic
PCB = polychlorinated biphenyls
SRV = sediment reference value

Selection reason : **ASV**: maximum detected concentration is above the screening value; **PBT**: chemical is detected and listed as persistent, bioaccumulative, and toxic

Deletion reason : **BSV**: maximum detected concentration falls below screening value; **NSV**: chemical detected but no screening value available (see Uncertainty Analysis); **FOD:** chemical was detected but the frequency of detection was <5%; **ND1**: chemical not detected and RL falls below screening value; **ND2**: chemical not detected but RL exceeds screening value (see Uncertainty Analysis); **ND3**: chemical not detected and lacks screening value

Attachment A

Extent of Hazardous Substances in the Assessment Area

Transect 100	North Bank		South Bank	
Depth (feet):	0.0-0.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/25/2024	10/25/2024	10/25/2024	10/28/2024
Parameters				
BaA	1.5 *	0.740	0.850 *	<0.852
BaP	1.9 *	0.910 *	1.0 *	<0.852
BbF	2.9 *	1.3 *	1.6 *	<0.852
DBA	0.310 *	0.140 *	0.160 *	<0.852
IP	1.2 *	0.590	<0.852	
As	13.0 *	11.0 *	14.0 *	
Cr IV	<0.180	0.220	<0.320	
Zn	1,200	1,000	55.0	
Total CN	7.7 *	130 *	0.660	

Transect 375	North Bank		Center		South Bank	
Depth (feet):	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/25/2024	10/25/2024	10/25/2024	10/25/2024	10/25/2024	10/25/2024
Parameters						
BaA	0.370	0.210	0.300	<0.020		
BaP	0.730 *	0.270 *	0.430 *	0.021		
BbF	1.1 *	0.450	0.770	0.035		
DBA	0.140 *	0.064	0.120 *	<0.020		
IP	0.560	0.250	0.370	0.016		
As	9.9 *	12.0 *	12.0 *	5.3 *		
Cr IV	<0.170	<0.200	<0.260	<0.150		
Zn	740	2,800 *	4,800 *	140		
Total CN	57.0 *	190 *	270 *	40.0 *		

Transect 625	North Bank		South Bank	
Depth (feet):	0.0-0.5	0.0-0.5	0.0-0.5	2.0-2.5
Sample Date:	10/24/2024	10/24/2024	10/24/2024	
Parameters				
BaA	0.039	0.320	0.024	
BaP	0.050	0.330 *	0.026	
BbF	0.078	0.530	0.044	
DBA	<0.021	0.060	<0.018	
IP	0.036	0.230	0.020	
As	16.0 *	9.8 *	13.0 *	
Cr IV	<0.190	<0.180	<0.170	
Zn	130	1,300 *	140	
Total CN	11.0 *	21.0 *	26.0 *	

Transect 875	North Bank		Center		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	1.0-1.5	0.0-0.5	1.5-2.0	
Sample Date:	10/23/2024	10/24/2024	10/24/2024	10/23/2024	10/23/2024	
Parameters						
BaA	<0.020	<0.020	<0.019	0.550	0.024	
BaP	<0.028	<0.018	<0.018	0.740 *	0.020	
BbF	<0.036	<0.018	0.016	1.2 *	0.041	
DBA	<0.030	<0.020	<0.019	0.110 *	<0.019	
IP	<0.036	<0.018	<0.018	0.400	0.017	
As	13.0 *	11.0 *	14.0 *	11.0 *	19.0 *	
Cr IV	<0.190	<0.180	<0.170	<0.210	<0.179	
Zn	160	68.0	120	1,300 *	53.0	
Total CN	24.0 *	1.1	1.3	160 *	8.2 *	

Transect 1125	North Bank		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/21/2024	10/21/2024	10/21/2024	10/21/2024
Parameters				
BaA	0.650	0.022	0.590	0.026
BaP	0.910 *	0.024	0.800 *	0.034
BbF	1.6 *	0.041	1.5 *	0.050
DBA	0.130 *	<0.019	0.140 *	<0.019
IP	0.520	<0.815	0.600	0.021
As	13.0 *	16.0 *	13.0 *	11.0 *
Cr IV	<0.250	<0.180	<0.240	<0.170
Zn	1,300 *	90.0	1,900 *	73.0
Total CN	<42.0	230 *	49.0 *	240 *

Transect 1375	North Bank		South Bank/DUP-2	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/22/2024	10/22/2024	10/22/2024	10/22/2024
Parameters				
BaA	0.550	0.069	0.020	<0.019
BaP	0.810 *	0.094	0.024	<0.015
BbF	1.3 *	0.140	0.046	<0.016
DBA	0.140 *	<0.019	<0.020	<0.019
IP	0.590	0.057	0.022	<0.016
As	14.0 *	17.0 *	14.0 *	11.0 *
Cr IV	<0.260	<0.170	<0.150	<0.170
Zn	3,700 *	77.0	150	72.0
Total CN	350 *	5.9 *	21.0 *	1.6

Transect 1625	North Bank		Center		South Bank / DUP-3	
Depth (feet):	0.0-0.5	2.0-2.5	2.0-2.5	0.0-0.5	2.0-2.5	
Sample Date:	10/23/2024	10/23/2024	10/23/2024	10/22/2024	10/23/2024	
Parameters						
BaA	0.210	<0.020	<0.020	0.390	0.029	
BaP	0.280	<0.018	<0.018	0.350 *	0.036	
BbF	0.520	<0.018	<0.018	1.0	0.069	
DBA	0.061	<0.020	<0.020	0.087	0.020	
IP	0.240	<0.018	<0.018	0.420	0.027	
As	9.9 *	50.0 *	7.5 *	12.0 *	8.6 *	
Cr IV	<0.248	<0.180	<0.190	<0.180	<0.170	
Zn	2,300 *	58.0	58.0	1,200	58.0	
Total CN	220 *	3.9 *	150 *	37.0 *	1.2	

U.S. EPA 2024 RSLs	RESIDENT SOIL RSLs (*)
Semi-Volatile Organic Compounds (sVOCs)	
Benzo(a)anthracene (BaA)	1.1
Benzo(a)pyrene (BaP)	0.11
Benzo(b)fluoranthene (BbF)	1.1
Dibenz(a,h)anthracene (DBA)	0.11
Indeno(1,2,3-cd)pyrene (IP)	1.1
All Other Analyzed sVOCs	Varies
Metals	
Arsenic (As)	0.68
Chromium (Hexavalent) (CrVI)	0.3
Zinc (Zn)	2,300
All Other Analyzed Metals	Varies
Cyanide	
Free Cyanide (CN)	NE
Total Cyanide (CN)	2.3

Abbreviations & Notes:
BRL = Below Laboratory Reporting Limits
RSLs = Regional Screening Levels
U.S. EPA = United States Environmental Protection Agency
All results and U.S. EPA Screening Levels are reported as milligrams per kilogram (mg/kg).
U.S. EPA RSLs are based on the Regional Screening Levels Generic Tables April 2024 Update.
RSLs are based on a 1E-6 target cancer risk and a 0.1 target hazard quotient (THQ).
The following denote the ratio of screening level exceedances:
* = At or Above U.S. EPA's 2024 Resident Soil RSLs

Transect 0	North Bank		South Bank/ DUP-7	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/28/2024	10/28/2024	10/28/2024	10/28/2024
Parameters				
BaA	0.100	<0.053	<0.049	<0.045
BaP	0.130 *	<0.053	<0.049	<0.045
BbF	0.210	<0.053	<0.049	<0.045
DBA	0.033	<0.053	<0.049	<0.045
IP	0.095	<0.053	<0.049	<0.045
As	17.0 *	11.0 *	18.0 *	28.0 *
Cr IV	<0.410	0.940 *	1.8 *	<0.480
Zn	2,100	68.0	100	65.0
Total CN	230 *	1.1	89.0 *	1.6

Transect 250	North Bank / DUP-6		South Bank
Depth (feet):	0.0-0.5	1.0-1.5	0.0-0.5
Sample Date:	10/23/2024	10/23/2024	10/23/2024
Parameters			
BaA	2.0 *	0.027	0.410
BaP	2.9 *	0.034	0.460 *
BbF	3.8 *	0.057	0.620
DBA	0.480 *	<0.018	0.081
IP	1.7 *	0.025	0.310
As	13.0 *	15.0 *	12.0 *
Cr IV	<0.240	<0.170	<0.160
Zn	4,100 *	86.0	230
Total CN	170 *	31.0 *	33.0 *

Transect 500	North Bank		South Bank / DUP-5	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/24/2024	10/25/2024	10/24/2024	10/25/2024
Parameters				
BaA	0.862	<0.020	0.130	<0.020
BaP	0.972 *	<0.018	0.150 *	<0.018
BbF	0.100	<0.016	0.210	<0.016
DBA	<0.020	<0.020	0.030	<0.020
IP	0.053	<0.016	0.086	<0.016
As	11.0 *	6.0 *	15.0 *	15.0 *
Cr IV	<0.150	<0.150	<0.150	<0.150
Zn	260	61.0	680	60.0
Total CN	31.0 *	<0.720	57.0 *	<0.780

Transect 750	North Bank / DUP-4		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/24/2024	10/24/2024	10/24/2024	10/24/2024
Parameters				
BaA	1.5 *	<0.019	0.600	0.025
BaP	1.4 *	<0.018	0.640 *	0.028
BbF	2.0 *	<0.315	0.740	0.045
DBA	0.210 *	<0.019	0.084	<0.018
IP	0.880	<0.019	0.320	0.019
As	12.0 *	7.7 *	12.0 *	16.0 *
Cr IV	0.470 *	<0.170	<8.300	<0.170
Zn	220	78.0	870	80.0
Total CN	72.0 *	0.750	110 *	4.9 *

Transect 1000	North Bank		Center		South Bank / DUP-1	
Depth (feet):	0.0-0.5	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5	
Sample Date:	10/21/2024	10/21/2024	10/21/2024	10/21/2024	10/21/2024	
Parameters						
BaA	0.033	1.4 *	0.024	0.980	0.092	
BaP	0.045	1.7 *	0.032	1.1 *	0.120 *	
BbF	0.081	2.4 *	0.360	2.1 *	0.160	
DBA	<0.020	0.280 *	<0.019	0.190 *	0.027	
IP	0.026	1.1 *	0.020	0.780	0.070	
As	13.0 *	27.0 *	13.0 *	10.0 *	11.0 *	
Cr IV	<0.190	<0.170	<8.180	<0.150	<0.220	
Zn	71.0	730 *	66.0	500 *	86.0	
Total CN	9.2 *	250 *	29.0 *	89.0 *	93.0 *	

Transect 1250	North Bank		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/22/2024	10/22/2024	10/21/2024	10/22/2024
Parameters				
BaA	0.510	<0.019	0.690	0.170
BaP	0.620 *	<0.017	0.920 *	0.230 *
BbF	1.2 *	<0.015	1.6 *	0.310
DBA	0.100	<0.019	0.150 *	0.045
IP	0.510	<0.015	0.650	0.130
As	11.0 *	9.5 *	11.0 *	12.0 *
Cr IV	<0.210	<8.150	1.7 *	<0.150
Zn	1,400 *	71.0	4,300 *	130
Total CN	220 *	29.0 *	<47.0	43.0 *

Transect 1500	North Bank		South Bank	
Depth (feet):	0.0-0.5	2.0-2.5	0.0-0.5	2.0-2.5
Sample Date:	10/22/2024	10/22/2024	10/22/2024	10/22/2024
Parameters				
BaA	0.060	<0.018	<0.018	<0.019
BaP	1.1 *	<0.017	<0.017	<0.018
BbF	1.6 *	0.020	<0.014	<0.015
DBA	0.140 *	<0.018	<0.018	<0.019
IP	0.680	<0.014	<0.014	<0.015
As	9.7 *	13.0 *	11.0 *	13.0 *
Cr IV	<0.200	<8.178	<0.170	<0.170
Zn	1,100 *	66.0	50.0	61.0
Total CN	120 *	3.2 *	7.0 *	<0.550

Transect 1750	North Bank	South Bank
Depth (feet):	0.0-0.5	0.0-0.5
Sample Date:	10/25/2024	10/25/2024
Parameters		
BaA	0.850	0.420
BaP	1.2 *	0.530 *
BbF	1.6 *	0.790
DBA	0.190 *	0.096
IP	0.850	0.350
As	11.0 *	7.3 *
Cr IV	0.460 *	0.490 *
Zn	230	220
Total CN	15.0 *	2.2

Transect 1820	North Bank	Center	South Bank	
Depth (feet):	0.0-0.5	1.0-1.5	0.0-0.5	2.0-2.5
Sample Date:	10/23/2024	10/23/2024	10/23/2024	10/23/2024
Parameters				
BaA	4.9 *	0.610	0.570	0.190
BaP	5.5 *	0.530 *	0.710 *	0.170 *
BbF	7.7 *	0.780	1.0	0.250
DBA	0.930 *	0.077	0.100	0.036
IP	3.3 *	0.280	0.420	0.080
As	7.8 *	16.0 *	16.0 *	12.0 *
Cr IV	<0.220	<0.170	<0.170	<0.170
Zn	160	92.0	150	61.0
Total CN	11.0 *	1.5	1.4	<0.560

S Briarcliff Dr

Cardinal Dr

T2-0 T2-100 T2-250 T2-375 T2-500 T2-625 T2-750 T2-875 T2-1000 T2-1125 T2-1250 T2-1375 T2-1500 T2-1625 T2-1750 T2-1820

Subject Property
Sawmill Creek
Soil Sample

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation - Canfield

Sawmill Creek -
Soil Analytical Results Map

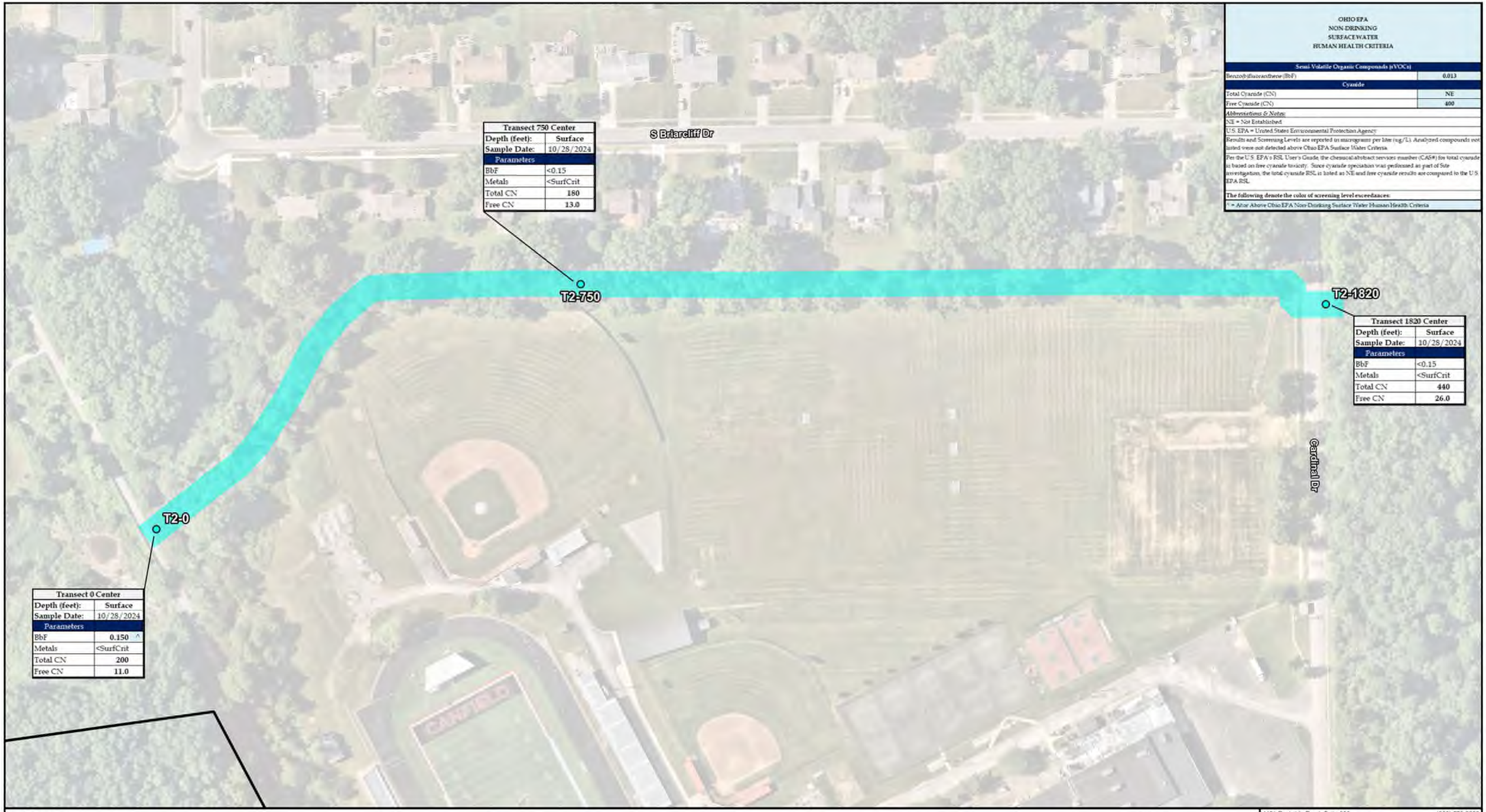
460 West Main Street
Canfield, Ohio 44406

N

0 75 150 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372 | DATE: 12/12/2024
FIGURE: 7 | SCALE: 1:1,500
CREATED BY: CC



Transect 750 Center	
Depth (feet):	Surface
Sample Date:	10/28/2024
Parameters	
BbF	<0.15
Metals	<SurfCrit
Total CN	**180**
Free CN	**13.0**

Transect 1820 Center	
Depth (feet):	Surface
Sample Date:	10/28/2024
Parameters	
BbF	<0.15
Metals	<SurfCrit
Total CN	**440**
Free CN	**26.0**

Transect 0 Center	
Depth (feet):	Surface
Sample Date:	10/28/2024
Parameters	
BbF	**0.150** ^
Metals	<SurfCrit
Total CN	**200**
Free CN	**11.0**

OHIO EPA
NON-DRINKING
SURFACEWATER
HUMAN HEALTH CRITERIA

Semi-Volatile Organic Compounds (sVOCs)	
Benzo(b)fluoranthene (BbF)	0.013
Cyanide	
Total Cyanide (CN)	NE
Free Cyanide (CN)	400

Abbreviations & Notes:

NE = Not Established

U.S. EPA = United States Environmental Protection Agency

Results and Screening Levels are reported in micrograms per liter (ug/L). Analyzed compounds not listed were not detected above Ohio EPA Surface Water Criteria.

Per the U.S. EPA's RSL User's Guide, the chemical abstract services number (CAS#) for total cyanide is based on free cyanide toxicity. Since cyanide speciation was performed as part of Site investigation, the total cyanide RSL is listed as NE and free cyanide results are compared to the U.S. EPA RSL.

The following denote the color of screening level exceedances:

^ = Altor Above Ohio EPA Non-Drinking Surface Water Human Health Criteria

Subject Property

Sawmill Creek

Nearmap Aerial Imagery:
June 15, 2024

Material Sciences Corporation - Canfield

Sawmill Creek - Surface Water
Analytical Results Map

460 West Main Street
Canfield, Ohio 44406

N

0 75 150 ft

4401 Rockside Road, Suite 300
Independence, Ohio 44131
(330) 576-3229
August Mack ENVIRONMENTAL

PROJECT NO.: JY2380.372	DATE: 12/12/2024
	SCALE: 1:1,500
FIGURE: 10	CREATED BY: CC

Attachment B

April 2025 Photo Log

File Name: IMG_1109
DateTime: 2025:04:01 10:37:15
Latitude: 41.03008611
Longitude: -80.77742778
Description: Floodplain soil including deer tracks and leaf litter.

File Name: IMG_1115
DateTime: 2025:04:01 10:40:57
Latitude: 41.0299
Longitude: -80.77776389
Description: Shallow creek that runs along the high school to the west of the trail.

File Name: IMG_1117
DateTime: 2025:04:01 10:44:34
Latitude: 41.03011389
Longitude: -80.77787778
Description: Dilapidated wooden footbridge that crosses over the high school creek. Facing the culvert under the trail.

File Name: IMG_1118
DateTime: 2025:04:01 10:44:43
Latitude: 41.02989444
Longitude: -80.77777222
Description: Debris and rocks at base of culvert beneath the bike trail.

File Name: IMG_1119
DateTime: 2025:04:01 10:46:21
Latitude: 41.03001111
Longitude: -80.77769444
Description: Sawmill creek near culvert. Large rocks, small cobbles, miscellaneous debris, and floodplain characterized by erosion with exposed roots on southern bank.

File Name: IMG_1120
DateTime: 2025:04:01 10:46:31
Latitude: 41.02998333
Longitude: -80.77774722
Description: Sawmill Creek looking downstream.

File Name: IMG_1121
DateTime: 2025:04:01 10:46:32
Latitude: 41.02997222
Longitude: -80.77773333
Description: Sawmill Creek looking upstream.

File Name: IMG_1123
DateTime: 2025:04:01 10:47:05
Latitude: 41.029975
Longitude: -80.77771111
Description: Clear, shallow Sawmill Creek with visible rocky substrate.

File Name: IMG_1125
DateTime: 2025:04:01 10:49:33
Latitude: 41.03001111
Longitude: -80.77771667
Description: Sawmill Creek facing downstream.

File Name: IMG_1127
DateTime: 2025:04:01 10:49:38
Latitude: 41.02998611
Longitude: -80.77771111
Description: Sawmill Creek facing downstream, connected floodplain on northern bank, substantial erosion and undercutting on southern bank.

File Name: IMG_1128
DateTime: 2025:04:01 10:49:42
Latitude: 41.02998333
Longitude: -80.77771111
Description: Debris along southern eroded bank.

File Name: IMG_1135
DateTime: 2025:04:01 10:51:50
Latitude: 41.02995
Longitude: -80.77763333
Description: Dense thicket of leafless shrubs and trees with visible ground littered with dry leaves observed in a wooded area during late winter or early spring.

File Name: IMG_1136
DateTime: 2025:04:01 10:51:51
Latitude: 41.02995278
Longitude: -80.77759444
Description: Dense understory vegetation and leafless deciduous trees with scattered fallen branches are present in a woodland area during early spring.

File Name: IMG_1137
DateTime: 2025:04:01 10:52:32
Latitude: 41.030125
Longitude: -80.77733611
Description: Creek and floodplain facing north.

File Name: IMG_1139
DateTime: 2025:04:01 10:52:44
Latitude: 41.03012778
Longitude: -80.77738056
Description: Undercutting and exposed tree roots.

File Name: IMG_1140
DateTime: 2025:04:01 10:53:34
Latitude: 41.03019722
Longitude: -80.77731389
Description: Sawmill Creek and floodplain facing north.

File Name: IMG_1141
DateTime: 2025:04:01 10:53:40
Latitude: 41.03019722
Longitude: -80.77729722
Description: Overhanging vegetation along floodplain.

File Name: IMG_1143
DateTime: 2025:04:01 10:54:51
Latitude: 41.03026944
Longitude: -80.77705278
Description: Floodplain of Sawmill Creek (facing downstream).

File Name: IMG_1144
DateTime: 2025:04:01 10:54:54
Latitude: 41.03027778
Longitude: -80.77706944
Description: Floodplain of Sawmill Creek (facing upstream).

File Name: IMG_1156
DateTime: 2025:04:01 11:12:52
Latitude: 41.03080833
Longitude: -80.77648889
Description: Sawmill Creek floodplain and creek. Residential area in background.

File Name: IMG_1157
DateTime: 2025:04:01 11:12:55
Latitude: 41.03068611
Longitude: -80.77651944
Description: Riparian zone adjacent to Sawmill Creek.

File Name: IMG_1159
DateTime: 2025:04:01 11:13:28
Latitude: 41.03062778
Longitude: -80.77629722
Description: A wooden footbridge with rusted metal railings spanning Sawmill Creek.

File Name: IMG_1161
DateTime: 2025:04:01 11:13:40
Latitude: 41.03065556
Longitude: -80.77632778
Description: View of northern floodplain from footbridge.

File Name: IMG_1163
DateTime: 2025:04:01 11:13:50
Latitude: 41.03066389
Longitude: -80.77629722
Description: Looking upstream from footbridge. Pine needles scattered along floodplain.

File Name: IMG_1166
DateTime: 2025:04:01 11:14:32
Latitude: 41.03063889
Longitude: -80.77628333
Description: Base of footbridge with erosion.

File Name: IMG_1169
DateTime: 2025:04:01 11:14:37
Latitude: 41.03064722
Longitude: -80.77626667
Description: The ground surface in a forested area is covered with dry pine needles, numerous pinecones, small patches of grass, and a few scattered sticks.

File Name: IMG_1170
DateTime: 2025:04:01 11:15:06
Latitude: 41.03064444
Longitude: -80.77610833
Description: A burrow entrance surrounded by dry leaves and pine needles is observed on the forest floor.

File Name: IMG_1171
DateTime: 2025:04:01 11:15:09
Latitude: 41.03065556
Longitude: -80.77608611
Description: Sawmill Creek floodplain with exposed roots.

File Name: IMG_1172
DateTime: 2025:04:01 11:15:21
Latitude: 41.03063333
Longitude: -80.77604722
Description: Sawmill Creek and a residential area in the background.

File Name: IMG_1173
DateTime: 2025:04:01 11:17:07
Latitude: 41.03067778
Longitude: -80.77584167
Description: Sawmill Creek, looking upstream.

File Name: IMG_1174
DateTime: 2025:04:01 11:17:10
Latitude: 41.03068611
Longitude: -80.77581667
Description: Sawmill Creek, looking downstream near 452 Briarcliff.

File Name: IMG_1175
DateTime: 2025:04:01 11:17:14
Latitude: 41.03068056
Longitude: -80.77583333
Description: Sawmill Creek (looking upstream) and floodplain. Fencing near high school baseball field in background.

File Name: IMG_1176
DateTime: 2025:04:01 11:17:16
Latitude: 41.03067778
Longitude: -80.775825
Description: Sawmill Creek (looking downstream) and floodplain. Fencing near high school baseball field in background.

File Name: IMG_1178
DateTime: 2025:04:01 11:18:21
Latitude: 41.03068889
Longitude: -80.77576389
Description: Sawmill Creek and floodplain.

File Name: IMG_1179
DateTime: 2025:04:01 11:18:24
Latitude: 41.03068889
Longitude: -80.77566667
Description: Sawmill Creek and floodplain. Residential area in background.

File Name: IMG_1180
DateTime: 2025:04:01 11:19:23
Latitude: 41.03062778
Longitude: -80.77514722

Description: An exposed animal burrow.

File Name: IMG_1181
DateTime: 2025:04:01 11:19:34
Latitude: 41.03062778
Longitude: -80.77512222
Description: Potential burrow, exposed tree roots, scattered pine needles, fallen leaves, and several pinecones.

File Name: IMG_1182
DateTime: 2025:04:01 11:19:43
Latitude: 41.03064444
Longitude: -80.77510833
Description: A black culvert pipe is situated on the bank of a shallow, leaf-littered stream flowing through a residential area with sparsely vegetated ground and overhanging deciduous trees.

File Name: IMG_1183
DateTime: 2025:04:01 11:20:00
Latitude: 41.030625
Longitude: -80.77505556
Description: A small drainage pipe discharges into a shallow, leaf-strewn creek with overhanging trees and residential structures visible in the background.

File Name: IMG_1185
DateTime: 2025:04:01 11:20:21
Latitude: 41.030625
Longitude: -80.77499444
Description: A small animal burrow entrance surrounded by pine needles and pinecones is observed on the forest floor, with visible tree roots and minimal vegetation.

File Name: IMG_1186
DateTime: 2025:04:01 11:20:37
Latitude: 41.03063611
Longitude: -80.77485556
Description: Footbridge #2 (foreground) and Footbridge #3 (background).

File Name: IMG_1187
DateTime: 2025:04:01 11:21:52
Latitude: 41.03064444
Longitude: -80.77456667
Description: Shallow and narrow section of Sawmill Creek. Grass next to residential area.

File Name: IMG_1189
DateTime: 2025:04:01 11:22:18
Latitude: 41.03064722
Longitude: -80.77440556
Description: Sawmill Creek floodplain (looking downstream).

File Name: IMG_1190
DateTime: 2025:04:01 11:22:36
Latitude: 41.03063889
Longitude: -80.77427778
Description: Sawmill Creek.

File Name: IMG_1191
DateTime: 2025:04:01 11:23:04
Latitude: 41.03065556
Longitude: -80.77411667
Description: Sawmill Creek.

File Name: IMG_1192
DateTime: 2025:04:01 11:23:31
Latitude: 41.03071111
Longitude: -80.77406389
Description: Sawmill Creek (looking downstream)

File Name: IMG_1193
DateTime: 2025:04:01 11:24:28
Latitude: 41.03054444
Longitude: -80.77350556
Description: Sawmill Creek (looking upstream)

File Name: IMG_1194
DateTime: 2025:04:01 11:24:31
Latitude: 41.03060556
Longitude: -80.77349167
Description: Debris in Sawmill Creek.

File Name: IMG_1195
DateTime: 2025:04:01 11:24:34
Latitude: 41.03063611
Longitude: -80.77348333
Description: Substrate in Sawmill Creek.

File Name: IMG_1196
DateTime: 2025:04:01 11:25:48
Latitude: 41.03069722
Longitude: -80.77281944
Description: Footbridge #4 (looking upstream).

File Name: IMG_1197
DateTime: 2025:04:01 11:25:50
Latitude: 41.03068889
Longitude: -80.77281944
Description: Northern stream bank and floodplain.

File Name: IMG_1198
DateTime: 2025:04:01 11:25:53
Latitude: 41.03068056
Longitude: -80.77281111
Description: Sawmill Creek (looking downstream).

File Name: IMG_1199
DateTime: 2025:04:01 11:26:29
Latitude: 41.03058889
Longitude: -80.77268333
Description: Sawmill Creek (looking downstream).

File Name: IMG_1200
DateTime: 2025:04:01 11:26:45
Latitude: 41.03059444
Longitude: -80.77253056
Description: Debris along floodplain.

File Name: IMG_1202
DateTime: 2025:04:01 11:28:26
Latitude: 41.03044167
Longitude: -80.77231667
Description: A black corrugated plastic drainage pipe discharges into Sawmill Creek.

File Name: IMG_1203
DateTime: 2025:04:01 11:28:28
Latitude: 41.03049444
Longitude: -80.772225
Description: Culvert under Cardinal Road.

File Name: IMG_1208
DateTime: 2025:04:01 11:32:46
Latitude: 41.03052222
Longitude: -80.77262222
Description: Floodplain (looking upstream) from high school soccer fields.

Attachment C

Ecological Scoping Checklist

Level I Attachment B
Ecological Scoping Checklist

Part 1			
SITE INFORMATION			
Site Name: Sawmill Creek		Date: 04/02/25	
Personnel: Jen Lyndall (Integral, lead) and Elisabeth Webber (August Mack) (Identify team leader)		Time Arrived: 10:27 Time Departed: 11:50	
Site Address: Canfield, OH 44406			
Site Location:	Latitude: 41.03069444	Longitude: -80.7745944	
Site Size (acres): Approx. 3.6 acres			
Weather Conditions (note any unusual conditions): Cloudy, scattered snow.			
Land uses at and adjacent to the site: (Circle all that apply and record at or adjacent)			
Residential Adjacent	Commercial	Recreational Adjacent	Industrial
Agricultural	Urban	Green-Space/ Undeveloped At/adjacent	Other:_____

Note: This checklist provides a suggested format. The format may be altered to fit the needs of the site; however, all pertinent information should be presented.

Part 2		
CONTAMINANTS OF INTEREST		
Contaminants of Interest and *Ecological Stressors* (Types, names including CASRN, classes, or specific *hazardous substances* and non-chemical stressors either known or suspected)	Onsite (O) or Adjacent (A) to the site	Media (soil, sediment, wetland, surface water, ground water (seeps/springs))
Benzo(a)pyrene	Onsite, adjacent	soil
Benzo(b)fluoranthene	Onsite, adjacent	soil, surface water
Arsenic	Onsite, adjacent	soil
Cyanide	Onsite, adjacent	soil
Benzo(a)anthrecene	Onsite, adjacent	soil
Dibenz(a,h)anthracene	Onsite, adjacent	soil
Indeno(1,2,3-cd)pyrene	Onsite, adjacent	soil
Chromium	Onsite, adjacent	soil
Zinc	Onsite adjacent	soil

Part 3

SPECIFIC EVALUATION OF ECOLOGICAL RECEPTORS/HABITAT a,

Terrestrial – Wooded _27___%of site

Dominant vegetation (circle one):
Coniferous Deciduous Mixed

Dominant tree diameter
diameter at breast height (*dbh*): ____ (inches)

Evidence/observation of wildlife*: squirrels, deer, birds

Terrestrial - Shrub/scrub/grasses __3__% of site

Dominant vegetation (circle one):
shrub/scrub grasses

vegetation density: Dense, Patchy, Sparse
Prominent height of shrub/scrub (<2', 2' to 5', >5')
Prominent height of grasses/herbs (<2', 2' to 5', >5')
Evidence/observation of wildlife*:

Terrestrial - Ruderal/Engineered 68___% of site

Dominant vegetation/surfaces (circle one):
Landscaped Agricultural Bare ground
Parking lot Artificial surfaces
Dominant vegetation height (0', >0' - 2', 2' - 5', >5')
Vegetation Density: Dense Patchy Sparse
Evidence/observation of wildlife*:
Bird calls, squirrels

Aquatic - Non-Flowing (Lentic) ____% of site

Type: Lake Pond Vernal Pool Lagoon
Engineered** Impoundment Reservoir
Water source: Surface water Ground water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands
Bottom Substrate***:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of wildlife*:

Aquatic - Flowing (Lotic) _2___% of site

Aquatic Life Use Designation (if available) _____
Type: River Stream Intermittent Stream
Ditch
Water source: Surface Water Ground Water
Industrial discharge (seeps /springs)
Storm water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate**:
Vegetation: Submerged Emergent Floating
Wetland Present: (Yes/No)
Evidence/Observation of Wildlife*:Bird calls, deer sign

Aquatic - Wetlands ____% of site

Size _____ (acres)
Obvious or designated wetland: (Yes / No)
Water source: Surface Water Ground Water
Industrial discharge Surface water runoff
Discharge Point: Surface water Ground water
Wetlands Impoundment
Bottom Substrate***:
Vegetation: Submerged Emergent Floating

Evidence/Observation of Wildlife*:

* Wildlife includes: macroinvertebrates, reptiles, amphibians, birds, mammals, and fish.
** Engineered can mean any surface water body that has been artificially created or significantly altered.
*** Bottom substrate types include but not limited to: cobble, gravel, sand, silt, clay, muck, artificial (*e.g.*, concrete).

Part 4
Ecologically Important Resources Observed

Attachment D

Letters to and from USFWS and ODNR, Responding to Queries about Threatened and Endangered Species

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Mahoning County, Ohio

Local office

Ohio Ecological Services Field Office

(614) 416-8993
(614) 416-8994

4625 Morse Road, Suite 104
Columbus, OH 43230-8355

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does

not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your "IPaC PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the

Department of Interior U.S. Fish and Wildlife Service (FWS). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The FWS interprets the MBTA to prohibit incidental take.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements

may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to

avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under

Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

RIVERINE
R4SBC

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe

wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Ohio Department of Natural Resources
Divisions of Wildlife and Natural Areas & Preserves
Ohio Natural Heritage Program
2045 Morse Road Bldg. G-3 • Columbus, OH 43229-6693
Email: NHDRequest@dnr.ohio.gov • Voicemail: 614-265-6818

Ohio Natural Heritage Data Request

DNR 5203 (R0824)

Ohio Natural Heritage Database (ONHD) stand-alone data requests are processed for projects that meet one of these criteria:

- Academic research projects
- Other non-development or non-construction projects

Search results include records for state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations.

If your project meets none of these criteria and you are requesting ONHD data for ORAM verification, please fill out and sign this form and submit it for ODNR Environmental Review as instructed at ohiodnr.gov/environmentalreview

Data within the project site will automatically be searched. Data within an additional 1-mile radius of the project site may be provided upon request. Because the ONHD contains sensitive information, it is our policy to provide only the data needed to complete your specific project.

Results are listed in a letter format and include a shapefile/map. Data requests will be completed within approximately 30 days. There is currently no charge to process requests.

INSTRUCTIONS

- Please complete all fields on this form.
- Submit a map detailing your project site boundaries. Please include at least one digital map (shapefile, .kmz, or .gdb) or allow extra time for processing.
- If you have questions, please visit ohiodnr.gov/onhd before submitting your request.
- Sign this form (required) and email with other attachments to NHDRequest@dnr.ohio.gov.

DATE:		**COMPANY NAME:**	
NAME OF PERSON RESPONSE LETTER SHOULD BE ADDRESSED TO:			
STREET ADDRESS:			
CITY:		**STATE:**	**ZIP:**
PHONE:		**E-MAIL ADDRESS:**	
PROJECT NAME:			
SITE ADDRESS:			
SITE COUNTY:		**CITY/VILLAGE/TOWNSHIP:**	
SITE LATITUDE:		**SITE LONGITUDE:**	

BRIEF DESCRIPTION OF WORK TO BE PERFORMED AT THE PROJECT SITE:

HOW DO YOU WANT YOUR DATA REPORTED? *CHOOSE ONE:*

☐ **DIGITAL SHAPEFILE** ☐ **PDF MAP**

Both formats provide the same data. If you request a digital shapefile, we will send you a letter with a list of species/features found and a shapefile of record locations and details. The PDF Map is only recommended for those who cannot use digital map data. With the PDF option we will send you a letter with a list of species/features found and a map showing their location. It may take longer to fill your request if you choose the PDF Map.

The standard data we search includes state and federal listed plants and animals, high-quality plant communities, geologic features, and breeding animal concentrations within 1 mile of your project area boundaries (as specified on the map/shapefile you attach to this request). We provide a list of the above species and features found within 1 mile of your project area and may provide specific locations for these and other features that occur within or adjacent to your project area.

PLEASE LIST ANY INFORMATION *IN ADDITION TO THIS* THAT YOU REQUIRE:

HOW WILL THIS INFORMATION BE USED?

The chief of the Division of Wildlife has determined that the release of the ONHD data you have requested could be detrimental to the conservation of a species or unique natural feature. Pursuant to section 1531.04 of the Ohio Revised Code, this information is not subject to section 149.43 of the Revised Code. By signing below, you certify that the data provided will not be disclosed, published, or distributed beyond the scope of your project.

SIGNATURE: Cristal Reagh _____ **DATE:** _____

Integral Consulting Inc.
8742 E. Washington St.
Suite 115
Chagrin Falls, OH 44022

telephone: 303.404.2944
www.integral-corp.com

May 9, 2025

Project No. C4274

Office of Real Estate & Land Management
Ohio Department of Natural Resources
2045 Morse Road, E-2
Columbus, OH 43229
environmentalreviewrequest@dnr.ohio.gov

Submitted via email

Subject: **MSC Site, Canfield, Mahoning County, Ohio Environmental Review Request**

To Whom It May Concern:

Per your email request, Integral Consulting Inc. (Integral) is submitting this request for an environmental review of the Site located at and adjacent to 460 W. Main St, Canfield, Mahoning County, Ohio (approximately centered on 41.027837°, -80.777932° in WGS 84). The Site boundaries are provided in the attached shapefile. The subject area includes an on-site area (including Material Sciences Corporation parcel and portions of the Mill Creek Metroparks parcel) and an off-site area (including additional parcels along Sawmill Creek). This request includes both Material Sciences Corporation (MSC) parcel and wetland and portions of Sawmill Creek in order to consolidate requests for the environmental review. The on-site MSC parcel and wetland habitat includes approximately 4.9 acres of developed/industrial areas, 6.0 acres of upland forest, 1.6 acres of wetland, and 0.5 acres of a ditch.

The environmental review will be used to support the wetland delineation, ORAM form completion, and ecological risk assessment associated with the spill and response activities at the site.[1] Investigation and remedial actions led by August Mack (on behalf of Material Sciences Corporation) will be conducted in close coordination with Ohio EPA under the RCRA program.

This letter constitutes Integral's fulfillment of required information to complete ODNR's environmental review request. If there is additional information that would prove helpful, please do not hesitate to reach out.

[1] https://www.mscresponse.com/

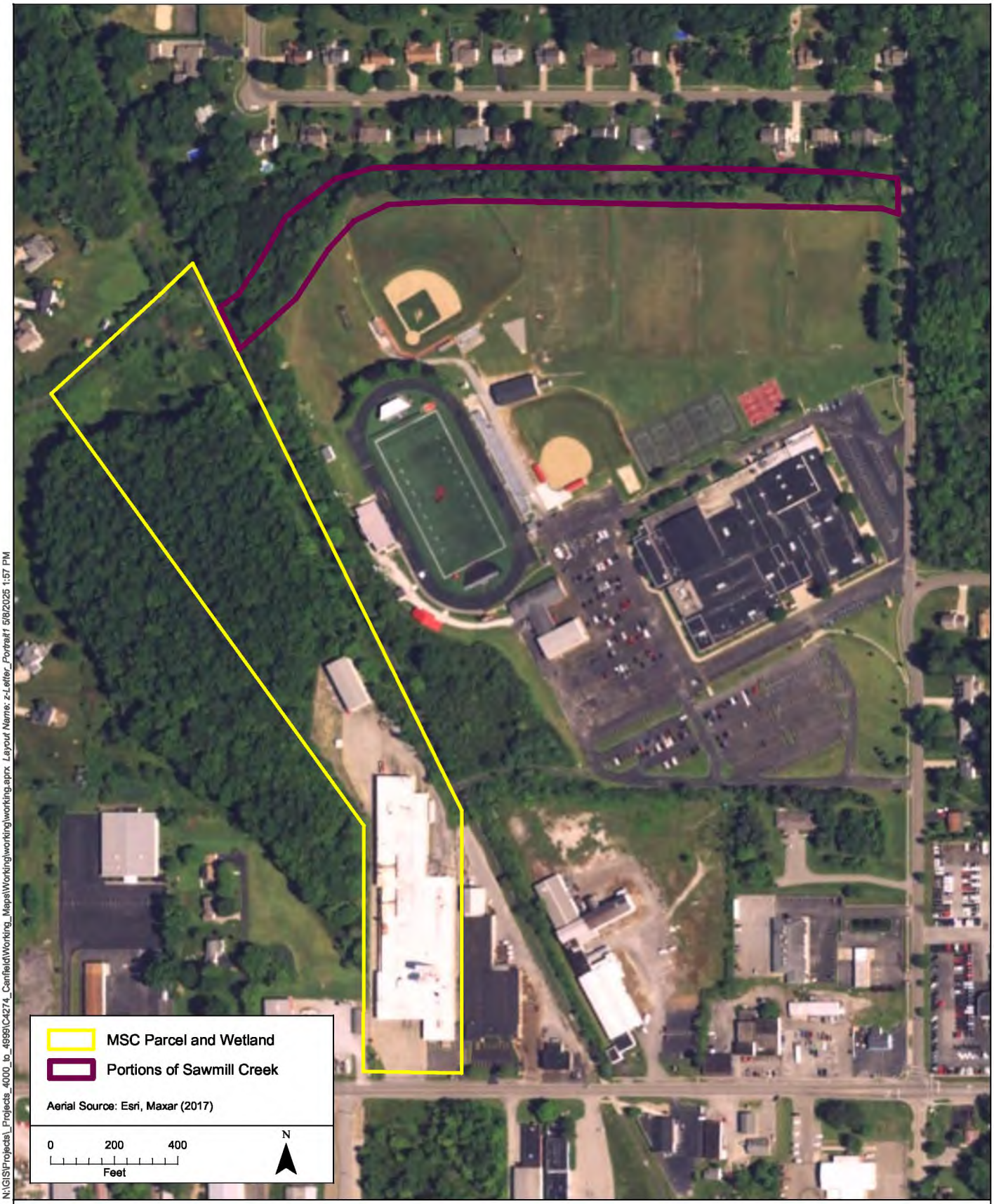
Thank you for your consideration of our request. We look forward to hearing from you.

Sincerely,

Cristal Reagh

Cristal Reagh
Scientist

Enclosure: Shapefile



N:\GIS\Projects_Projects_4000_to_4999\C4274_Canfield\Working_Maps\Working\working\working.aprx Layout Name: z-Letter_Portrait1 5/8/2025 1:57 PM

integral consulting inc.

Figure 1.
Site Boundaries
Material Science Corporation
Canfield OH

Outlook

Confirmation Receipt for ODNR Environmental Review Request Submission

From EnvironmentalReviewRequest@dnr.ohio.gov <EnvironmentalReviewRequest@dnr.ohio.gov>
Date Fri 5/9/2025 1:14 PM
To Cristal Reagh <creagh@integral-corp.com>

[CAUTION: External email. Think before you click links or open attachments.]

Thank you for contacting the Ohio Department of Natural Resources. This email is your receipt that we have received your message and/or project review request.
We aim to provide a completed Environmental Review comment letter within 45-60 calendar days, however, during periods of high volume or other extenuating circumstances, it may be longer. If you have any questions please contact Mike.Pettegrew@dnr.ohio.gov

ATTACHMENT C

Integral's Biological Sampling Scope of Work

MAD SCIENTIST ASSOCIATES LLC

WETLAND & STREAMS | ECOLOGICAL STUDIES | ENVIRONMENTAL EDUCATION | RESTORATION

May 30, 2025

Ohio EPA, Division of Surface Water
c/o Kelsey Heyob, Credible Data Coordinator
50 W. Town Street, Suite 700
Columbus, Ohio 43215

Subject: Ohio EPA Qualified Data Collector Level 3 Study Plan for Sawmill Creek located within the watershed designated as Hydrologic Unit Code (HUC) number 050301030702 (Erie/Ontario Lake Hills & Plains) in the Mahoning River Basin (lower)

Dear Ms. Heyob,

Please find enclosed a Qualified Data Collector (QDC) Level 3 Project Study Plan (PSP) titled "2025 Sawmill Creek Fish, Macroinvertebrate, & Habitat Surveys" provided by MAD Scientist Associates (MAD). This PSP is being submitted to share the stream assessment data at the Level 3 standard with the Credible Data Program so that it can be utilized by the EPA and our client, Integral Solutions. The purpose of the work is to evaluate the current condition of this site related to a release of materials like zinc and hexavalent chromium upstream near the Material Sciences Corporation facility.

Sawmill Creek will be assessed using Index of Biotic Integrity (IBI), Invertebrate Community Index (ICI), and Qualitative Habitat Evaluation Index (QHEI) sampling methods and analyses. Results will be provided on the field forms and summarized in an excel table. They will also be shared with our client to assist the firm in assessing the current attainment status of Sawmill Creek.

If you have any questions regarding this plan, please call us at (614) 818-9156 (office). You can also e-mail questions or comments to Jenna@madscientistassociates.net. Thank you for your consideration of this plan. We hope to hear from you soon.

Best Regards,

Jenna Roller-Knapp
ESII, Aquatic Ecologist

Corbin Binkley
ESI, Ichthyologist

enclosures

253 North State Street, Suite 101 Westerville, Ohio 43081 (614) 818-9156 Fax (614) 818-9157 www.madscientistassociates.net

Project Study Plan for 2025 Sawmill Creek Fish, Macroinvertebrate and Habitat Assessment

Sawmill Creek

Mahoning County, OH

prepared for

Ohio EPA, Division of Surface Water
Standards & Technical Support Section
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, Ohio 43216-1049

prepared by

MAD SCIENTIST ASSOCIATES LLC

Specialists in
Ecological & Wetland Consulting

Level 3 Project Study Plan: 2025 Sawmill Creek Fish, Macroinvertebrate & Habitat Surveys Study

(1) Objectives: The objective of the proposed study is to evaluate the current health and condition of the fish and macroinvertebrate community and stream habitat in Sawmill Creek. The health of the fish and macroinvertebrate assemblages in Sawmill Creek will be assessed using Ohio EPA's Index of Biotic Integrity (IBI) for fish, Invertebrate Community Index (ICI) for macroinvertebrates, and Qualitative Habitat Evaluation Index (QHEI) for habitat. Results of this study will be utilized by August Mack, Integral Consulting, Inc., and EPA to document biological community health and stream attainment status, especially in comparison of any deviation from the full attainment status of this EPA reference site in 2013.

(2) Non-point/Point Sources: A 2024 release from the upstream Material Sciences Corporation facility resulted in the migration of material including zinc and hexavalent chromium, with cyanide as the marker, in the ground and surface water near the facility in Sawmill Creek. During a May 2025 site visit, EPA recommended this location in Sawmill Creek to characterize the potential impact downstream in Sawmill Creek. There is historical data here, therefore this survey serves as a current comparison to the historical data. Figures 1-2 display the HUC8 and HUC12 of the proposed survey location and the upstream release location.

The Ohio EPA's report (published 2018) titled "*Biological and Water Quality Study of the Lower Mahoning River Watershed, 2011 and 2013*" indicates the suggested aquatic life use (ALU) designation for Sawmill Creek at river mile 0.90 was warmwater habitat. When the site was sampled in 2013, the narrative evaluation for fish was "good" with an IBI score of 40 and total of 13 species present. The QHEI score was 67.0. The ICI score was not calculated, but there were 43 total taxa collected using the qualitative method with 10 Ephemeroptera, Plecoptera and Trichoptera (EPT), 12 sensitive taxa and 3 coldwater taxa. Overall full attainment was met.

According to the 2011 National Land Cover Database, approximately 3.4% of the local upstream watershed relative to the proposed sampling location is classified as row crop land use. Deciduous forest land cover comprises 26.6% of the upstream watershed area. Pasture/hay land use makes up 4.9% of the watershed area land use. Most notably, land classified as low, medium, and high intensity development represent a combined 38.3% of the watershed area land use. Lands classified as developed, open space represent 22.0% of the upstream watershed area. The remaining approximately 5 percent of the upstream watershed area is comprised of a multitude of other land use classifications in much smaller proportions (USEPA, 2019). Potential point and non-point sources (Mahoning County Auditor's office, 2025) can be seen in Figure 3.

Table 1. Potential Sources of Pollution

Potential Sources of Pollution	
Point Sources	**Nonpoint Sources**
MSC chemical release	Agricultural runoff
Combined sewer overflows	Highway runoff
Storm sewer outfalls	Sedimentation
Septic systems	Urban runoff
NPDES permitted facilities	Industrial runoff

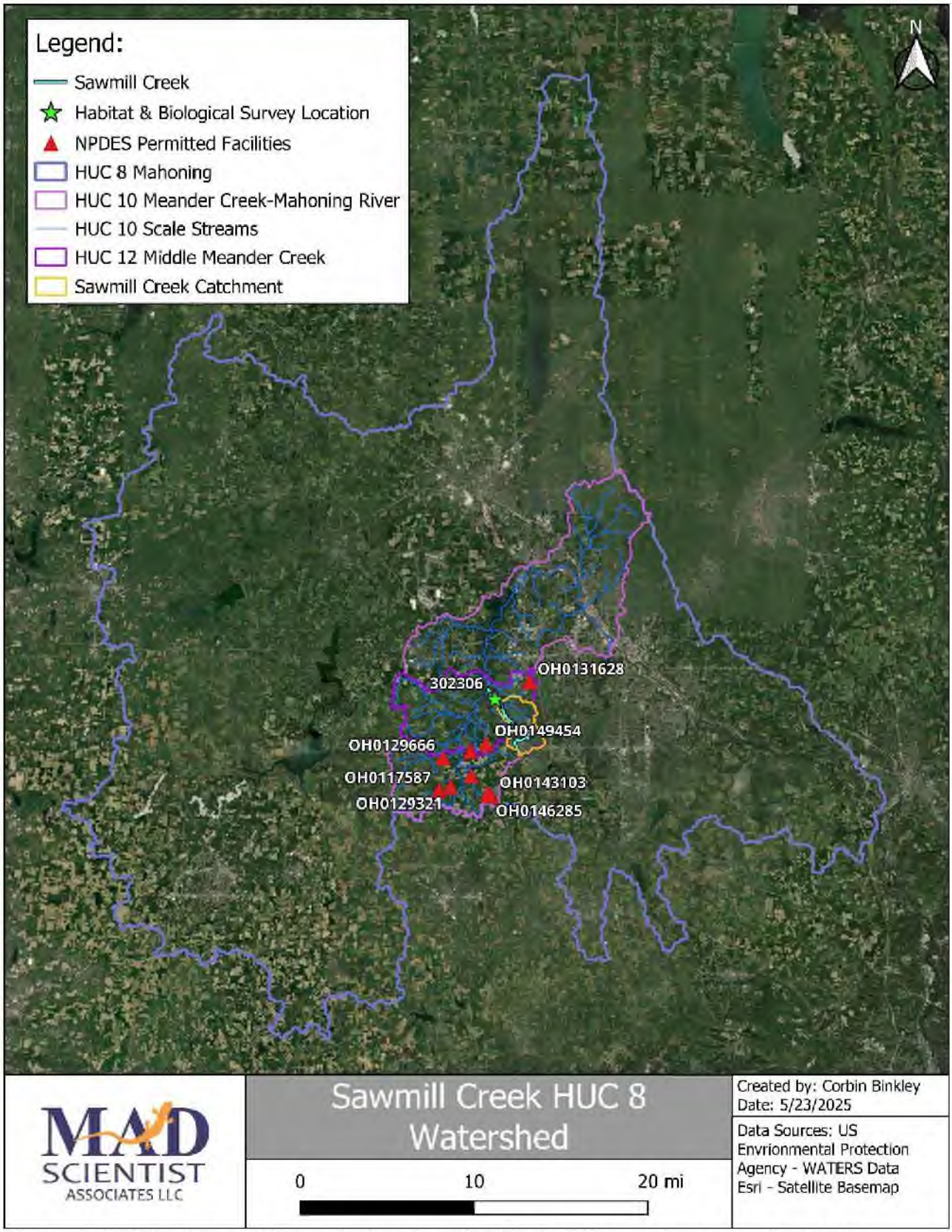


Figure 1. HUC8 of Sawmill Creek showing NPDES facilities and proposed survey area.

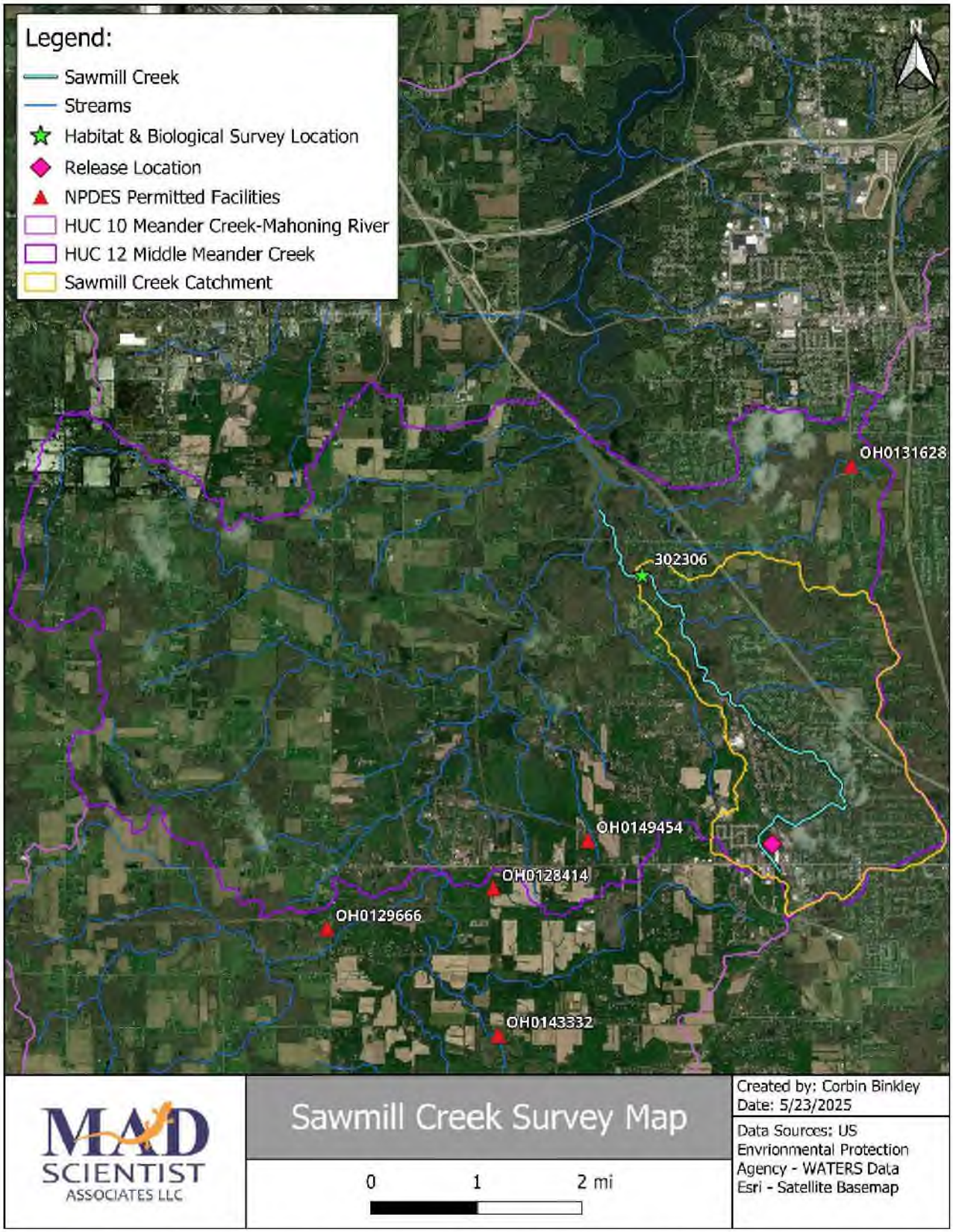


Figure 2. HUC12 of Sawmill Creek showing the NPDES facilities, 2024 release location and proposed survey location.

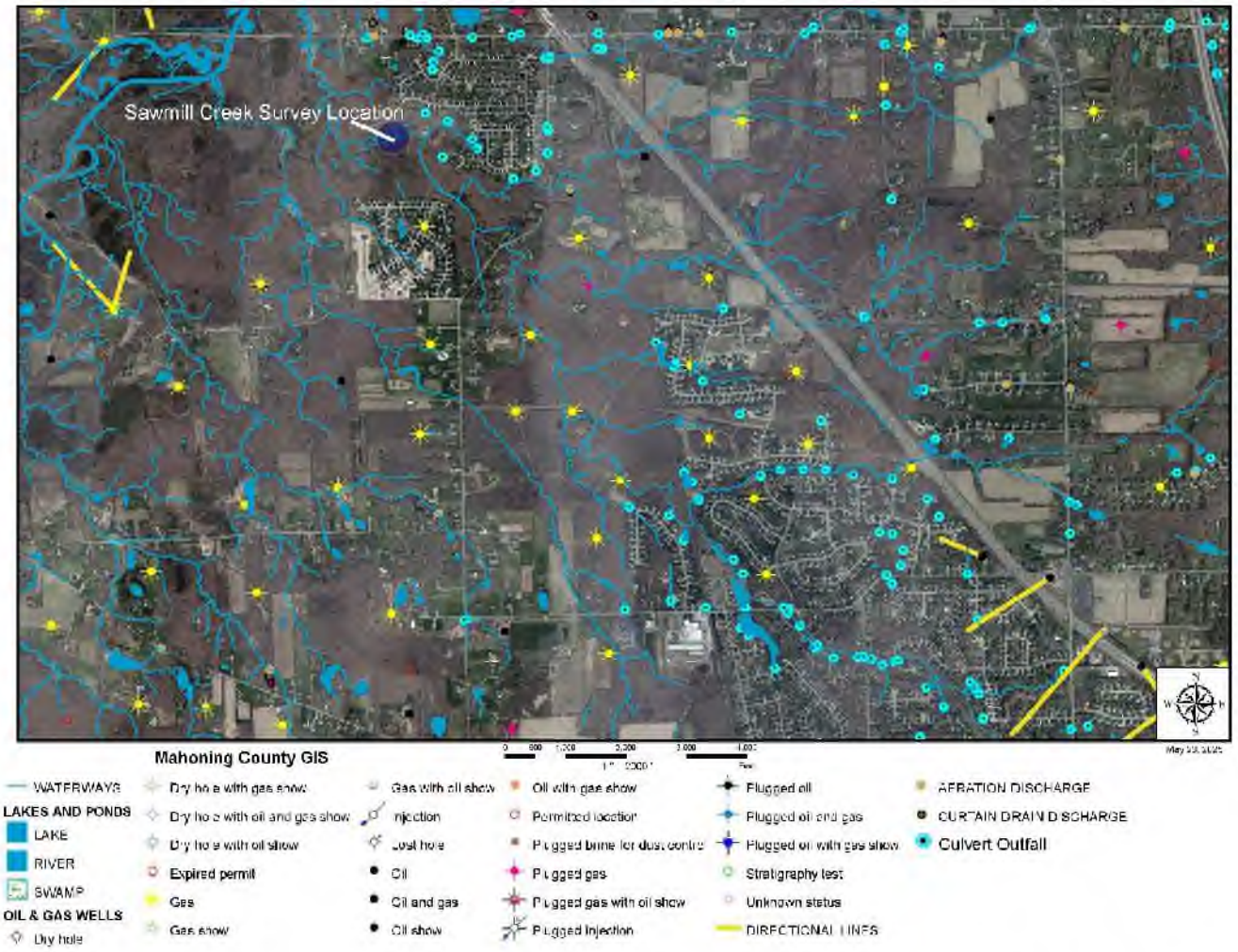


Figure 3. Potential Pollution Sources in Sawmill Creek near the Proposed survey (Mahoning County Auditor's office, 2025).

(3) Parameters Covered: Stream habitat quality will be evaluated using QHEI assessment in Sawmill Creek. This evaluation includes substrate, instream cover, channel morphology, riparian development, pool/glide features, and riffle/run features will be assessed along at least a 150-meter section of each stream.

Quantitative fish sampling will occur at the study location using wading methods. Fish collection using electrofishing will result in specimens identified to species level, weighed, counted, and examined for deformities, erosions, lesions, and tumors (DELT anomalies). Data will be recorded on Ohio EPA Fish Data Sheets or an equivalent form.

Macroinvertebrates quantitative and qualitative sampling will be conducted to collect the diversity of taxa present in Sawmill Creek. Vouchers will be collected and counted. Taxa will be noted as EPT, tolerant, sensitive, coldwater, etc. for the ICI metric.

(4) Methods: The Qualitative Headwater Evaluation Index (QHEI) will be used to assess both streams' habitat health. A 150-meter section or greater of stream that best represents the average stream conditions will be selected for the QHEI. To conduct the habitat assessment, MAD will walk the length of the stream reach and make note of their characteristics to complete the QHEI data forms in the field.

Fish sampling in Sawmill Creek will be conducted by electrofishing, using wading techniques described in *Ohio EPA's Biological Criteria for the Protection of Aquatic Life, Volume III* (1987a) and a long-line electrofishing unit. This long-line unit consists of 200 meters of cable connected to a 1750-watt generator, producing 125 or 250 volts of pulsed DC output. Starting from the downstream end of the sampling reach, MAD will work in the upstream direction using the anode net of the long-line electrofishing unit to thoroughly cover all habitat types and retrieve fish. Assist netters will follow closely behind to capture the stunned fish. Captured fish will be deposited into an aerated live well for containment until they can be sorted, counted, and subsequently released unless kept as physical vouchers for laboratory identification. Photos will be taken to record species present focused on identifiable features. Vouchers of species preserved in formalin will be returned to the lab. Data will be entered into excel spreadsheet to calculate an IBI score.

Macroinvertebrates will be collected following EPA Volume III: Standard Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities (Biological Criteria: Volume III; Ohio EPA 1987b). MAD will sample macroinvertebrates using quantitative Hester Dendy (HD) set out to be colonized for a six-week period. Two HD samplers are planned to be installed in case the initial one is lost due to vandalism, burial, washout, etc. Qualitative methods using a D-frame dip net will be used to sample all habitat types and handpicking rocks and vegetation when HD is retrieved. HD sampling is typically conducted at sites with greater than 20 square miles drainage areas, and Sawmill Creek is only approximately 5.56 sq. mi; however, EPA has expressed the desire to have quantitative ICI data at this stream as well. MAD will set the HDs in runs with water with flow of at least 0.3 feet/second. Flow will be recorded when the HDs are picked up, placed in plastic containers while still submersed and preserved with formalin. Midwest Biodiversity Institute (MBI) will identify macroinvertebrates to furthest taxonomic resolution and data will be used to calculate an ICI score and provide a narrative rating.

(5) Flow Methods: MAD will use a Global Water flow probe to record stream flow.

(6) Sampling Location: One stream segment of Sawmill Creek is to be sampled under this PSP. Specific location information is detailed in Table 2 and Figure 4.

Table 2. Sawmill Creek Stream Sampling Location Information for Sawmill Creek located at 0.90 river mile and EPA Station Code 302306.

Stream	Drainage Area (mi^2)	River Code	Stream Order	Latitude, Longitude	USGS HUC 8 Number	General location	USGS HUC 8 Name
Sawmill Creek	5.56	18-017-000	3	41.064400°, -80.800700°	5030103	North of Sawmill Creek Preserve	Mahoning

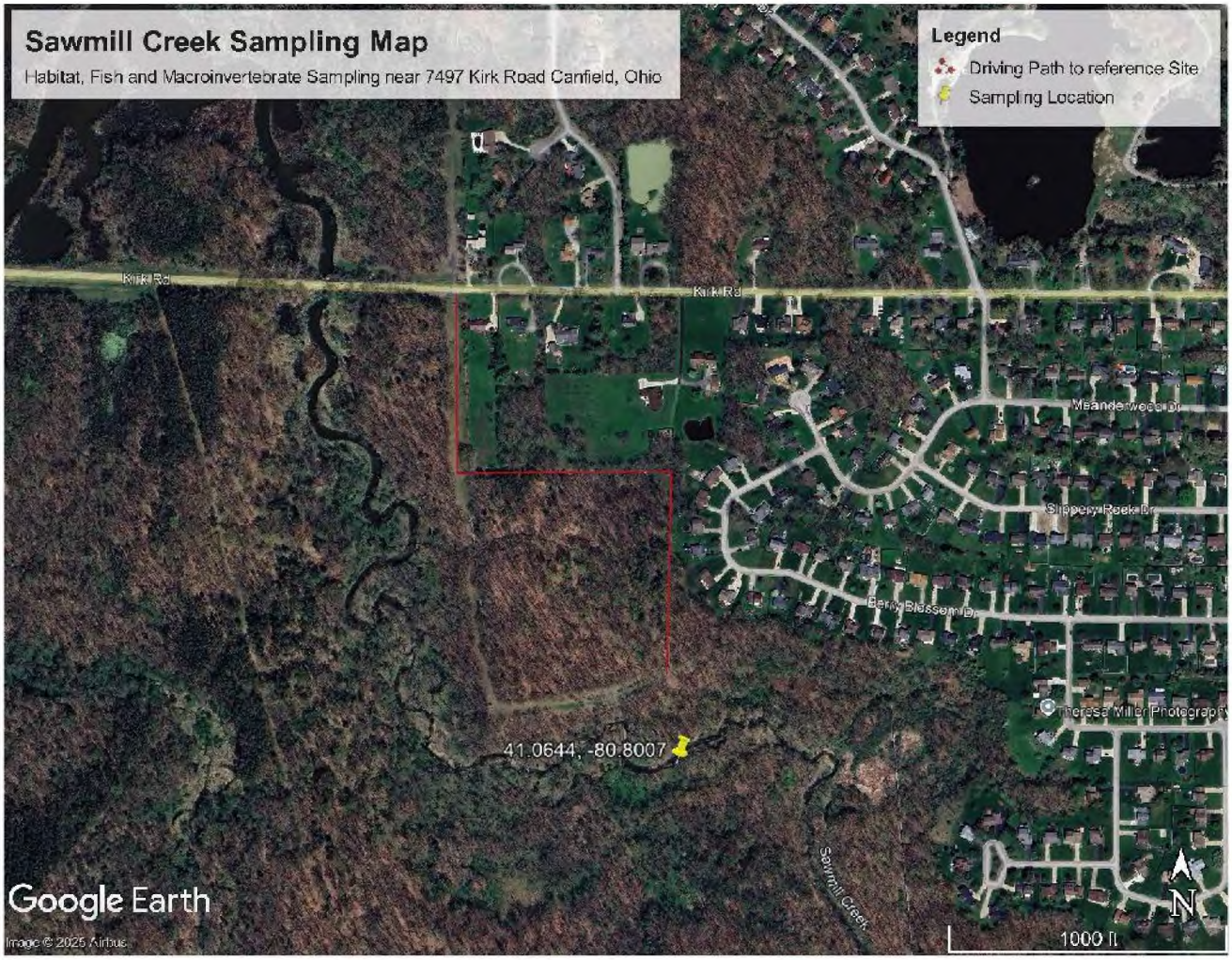


Figure 4. Sawmill Creek Map showing Proposed Habitat and Biological Sampling Locations

(7) Schedule: Sampling will be conducted during normal flow events, between June 15 and October 15, 2025 for fish and habitat data and June 15 to September 30, 2025 for macroinvertebrate data to provide an indication of the water quality conditions that are generally present in the stream. We tentatively are planning for sampling in July to replicate the sampling dates of the reference data collected in mid-July 2013. Normal

water conditions will be determined based on National Weather Service local rainfall data. Sampling dates will be avoided when it has rained within 24 hours. There are no nearby USGS stream gauges to provide data relevant to the water level in Sawmill Creek. After the report is reviewed by Integral Consulting, data will be submitted to EPA within one year of collection.

(8) QA/QC: Quality assurance and quality control of sampling and analysis methods for habitat and fish will follow *Ohio EPA's Biological Criteria for the Protection of Aquatic Life, Volume II* (1987, with updates) and *Volume III* (1987a) and the QHEI Manual (Ohio EPA, 2006). QA/QC of sampling and analysis methods for macroinvertebrate sampling will adhere to the general principles described in Ohio EPA's "Surface Water Field Sampling Manual for water quality parameters and flows" (Ohio EPA, 2009) and Biological Criteria: Vol III (Ohio EPA, 1987b).

Subsamples of difficult-to-identify fish species will be brought back to the laboratory for verification, and if necessary, sent to The Ohio State University Museum of Biological Diversity for verification by the Curator and/or Associate Curator of Fish. Voucher specimens will be collected as described in Section 14 and preserved following methods outlined in *Ohio EPA's Biological Criteria for the Protection of Aquatic Life* (1987a). Photographic vouchers will be taken to clearly show features that allow definitive identification of the species depicted.

(9) Work Products: By early 2026, MAD will digitally provide biological sampling results including stream habitat narrative and QHEI scores, fish IBI data, macroinvertebrate ICI data and an assessment of whether the sampled stream segment meets its ALU designation and attainment status. Attachments including maps and photos will be provided.

This data is also intended to be applied toward QDC renewal data for Corbin Binkley (QDC L3 Habitat and Fish) and Jenna Roller-Knapp (QDC L3 Macroinvertebrate).

(10) Qualified Data Collectors:

Jennifer Roller-Knapp, Lead Project Manager
QDC #01167 with Ohio EPA Level 3 in Benthic Macroinvertebrate Assessment-Collection and Data Evaluation only (Attachment A) **Note that certification is expired but recertification materials have been submitted, and the review is pending.*
MAD Scientist Associates
253 N. State Street, Suite 101
Westerville, OH 43081
Jenna@madscientistassociates.net
(614) 818-9156

Corbin Binkley
QDC #01608 with Ohio EPA Level 3 in Fish Community Biology - Headwater & Wading Only (Attachment A)
MAD Scientist Associates
253 N. State Street, Suite 101
Westerville, OH 43081
Corbin@madscientistassociates.net
(614) 818-9156

Jack Freda
QDC # 00838 Ohio EPA Level 3 in Benthic Macroinvertebrate Assessment- Collection identification and Data Evaluation (Attachment A)
Midwest Biodiversity Institute
4673 Northwest Pkwy
Hilliard, OH 43026
Jfreda@mwbinst.com
(614) 457-6000

Marty Knapp
QDC # 00300 Ohio EPA Level 3 in Benthic Macroinvertebrate Assessment- Collection identification and Data Evaluation (Attachment A)
Midwest Biodiversity Institute
4673 Northwest Pkwy
Hilliard, OH 43026
mknapp@mwbinst.com
(614) 457-6000

Corbin Binkley will be responsible for leading the fish and QHEI sampling in Sawmill Creek and identification of fish species. Jenna Roller-Knapp will be responsible for the macroinvertebrate collection and analysis. Identification of macroinvertebrates will be contracted to Midwest Biodiversity Institute located in Hilliard, Ohio. At least one intern and/or technician will assist with fish, macroinvertebrate, and habitat sampling.

(12) Contract Laboratories:

Macroinvertebrates will be identified by a Level 3 QDC in macroinvertebrate identification at Midwest Biodiversity Institute.

Midwest Biodiversity Institute
4673 Northwest Pkwy
Hilliard, OH 43026
Contact: Chris Yoder
Cyoder@mwbinst.com
(614) 457-6000

Any fish that cannot be positively identified in the field or MAD Scientist Associates laboratory will be sent to The Ohio State University Museum of Biological Diversity for verification by the Director, Associate Curator or Sampling Coordinator of Fish:

Dr. Marymegan Daly, Director/ Mr. Marc Kibbey, Associate Curator/ Brian Zimmerman, Sampling Coordinator
OSU Museum of Biological Diversity
1315 Kinnear Road
Columbus, OH 43212
(614) 292-7873

(12) Scientific Collector's Permit: Mark Dilley holds Scientific Collector's Permit (Permit No. SC220007) for collection of wildlife in Ohio. MAD Scientist Associates staff, Corbin Binkley and Jenna Roller-Knapp are listed as sub-permittees. A copy is provided as Attachment B.

(13) Digital Photograph Catalog: A digital photograph catalog of all sampling locations will be maintained for ten (10) years and will include photographs of the specific sampling locations.

Printed Name/Signature: Mark A. Dilley Mark A. Dilley Date: 05/30/2025

(14) Voucher Specimen Statement: MAD Scientist Associates will maintain a fish and macroinvertebrate voucher collection that includes two physical specimens or appropriate photo-vouchers of each fish species collected during the course of biological sampling from the specified study location.

Printed Name/Signature: Corbin Binkley Corbin Binkley Date: 05/30/2025

Printed Name/Signature: Jenna Roller-Knapp Jenna L Roller-Knapp Date: 05/30/2025

(15) Sample Location Statement:

MAD will maintain and make available to the director, for each sampling location, the name of the water body sampled, the sampling location latitude and longitude, the sampling location river mile where possible or practicable, general location information, the USGS HUC 8 number and name, and the purpose for data collection at each sampling location.

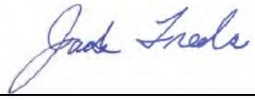
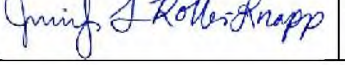
Printed Name/Signature: Jenna Roller-Knapp Jenna L Roller-Knapp Date: 05/30/2025

(16) Additional L3 Data Collector Statement:

MAD and MBI are aware of the qualified data collector's responsibilities for the data (including vouchers, photos, and site information).

Name	QDC Number	Attest	Date
Corbin Binkley	01608		5/30/25
Jack Freda	00838		5/30/25
Marty Knapp	00300		5/30/25
Jenna Roller-Knapp	01167		5/30/25

(17) I have not been convicted of or plead guilty to a violation of section 2911.21 of the Revised Code (Criminal Trespass) or a substantially similar municipal ordinance within the previous five years.

Name	QDC Number	Attest	Date
Corbin Binkley	01608		5/30/25
Jack Freda	00838		5/30/25
Marty Knapp	00300		5/30/25
Jenna Roller-Knapp	01167		5/30/25

References

Mahoning County Auditor's Office. 2025. GIS Public Viewer Version 2.9. https://gisapp.mahoningcountyoh.gov/mahgis/#

Ohio Environmental Protection Agency. 2018. Biological and Water Quality Study of the Lower Mahoning River Watershed, 2011 and 2013. Ohio EPA. Division of Surface Water.

Ohio Environmental Protection Agency (1987a). *Biological Criteria for the Protection of Aquatic Life: Volume II. User's Manual for Biological Field Assessment of Ohio Surface Waters* (Updated January 1988; September 1989; November 2006; August 2008). Columbus, OH: Division of Water Quality Monitoring and Assessment.

Ohio Environmental Protection Agency (1987b). *Biological Criteria for the Protection of Aquatic Life: Volume III. Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities* (Updated September 1989; March 2001; November 2006; and August 2008). Columbus, OH: Division of Water Quality Monitoring and Assessment.

United States Environmental Protection Agency. 2019. NHDPlus Watershed Report. National Land Cover Dataset. 2011. https://watersgeo.epa.gov/watershedreport/?reachcode=05030103000266&measure=

Attachment A: QDC Certificates

CERTIFIED MAIL

Effective Date: 5/15/2024
Expiration Date: 5/14/2026

Corbin Binkley
253 North State Street
Westerville, OH 43081

Re: Qualified Data Collector Approval, Surface Water Credible Data Program

Dear Corbin:

The Division of Surface Water Credible Data Program has reviewed your Qualified Data Collector (QDC) application. Pursuant to Ohio Revised Code (ORC) 6111.53 and Ohio Administrative Code (OAC) 3745-4-03, you are approved as a QDC for the following level and specialty:

Level:	**3**
Specialty:	**Fish Community Biology - Headwater & Wading Only**
QDC number:	**01608**

Please use this QDC number on all correspondence, study plans, etc. submitted to Ohio EPA.

As noted at the top of this letter, this status is effective as of the date of this letter and expires two years from that date. You may now submit study plans to the Credible Data Program.

A renewal application must be submitted in accordance with OAC 3745-4-03 (C). As provided in this rule, renewal of status is contingent upon active participation in the Credible Data Program at the designated level and specialty. Active participation means that the QDC has participated in activities under this program at the level and specialty of the applicant's QDC certification during the period the applicant's certification was valid, including the submission of data approved at the appropriate level, collected under an approved project study plan. Lack of such participation will prevent you from renewing your status, but you may re-apply for initial QDC status.

As a reminder, your status is contingent upon the absence of any trespassing violation (within the previous five years) by you or any person sampling under your supervision. Always obtain landowner permission prior to sampling.

Additionally, collection (and retention) of aquatic biological samples (this includes fish, macroinvertebrates, mollusks, and shells) requires a collector's permit from the Ohio Department of Natural Resources/Division of Wildlife. Obtain this permit prior to collection of any biological samples.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Treasurer of the State of Ohio", which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship.

Notice of the filing of the appeal must be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address: 30 E. Broad Street, 4th Floor, Columbus, OH 43215.

Sincerely,

Anne M. Vogel

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

2/14/2022

Effective Date: 2/8/2022
Expiration Date: 2/7/2025

Jennifer Roller-Knapp
609 Northridge Road
Columbus, OH 43214

Re: Qualified Data Collector Renewal, Surface Water Credible Data Program

Dear Jennifer:

The Division of Surface Water Credible Data Program has automatically renewed your Qualified Data Collector (QDC) status based on your recent data and project study plan submittals. Pursuant to Ohio Revised Code (ORC) 6111.53 and Ohio Administrative Code (OAC) 3745-4-03, your status as a QDC has been renewed for the following level and specialty:

Level:	**3**
Specialty:	**Benthic Macroinvertebrate Assessment - Collection and Data Evaluation Only**
QDC number:	**01167**

Please continue to use this QDC number on all correspondence, study plans, etc. submitted to Ohio EPA.

As noted at the top of this letter, this status was effective as of the date of your initial data submittal and expires three years from that date. You may continue to submit data and new study plans to the Program.

A renewal application must be submitted in accordance with OAC 3745-4-03 (C). As provided in this rule, renewal of status is contingent upon active participation in the Volunteer Monitoring Program at the designated level and specialty. Lack of such participation will prevent you from renewing your status, but you may re apply for initial QDC status.

As a reminder, your status is contingent upon the absence of any trespassing violation (within the previous five years) by you or any person sampling under your supervision. Always obtain land owner permission prior to sampling.

Additionally, collection (and retention) of aquatic biological samples (this includes fish,

macroinvertebrates, mollusks, and shells) requires a collector's permit from the Ohio Department of Natural Resources/Division of Wildlife. Obtain this permit prior to collection of any biological samples.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Treasurer of the State of Ohio", which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship.

Notice of the filing of the appeal must be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address: 30 E. Broad Street, 4th Floor, Columbus, OH 43215.

Sincerely,

Laurie A. Stevenson

Laurie A.
Stevenson Director

Ohio EPA 11/01/2024

Entered Director's Journal

Environmental Protection Agency

EPA.Ohio.gov

Mike DeWine, *Governor* Jon Husted, *Lt. Governor* Anne M. Vogel, *Director*

I certify this to be a true and accurate copy of the official documents as filed in the records of the Ohio Environmental Protection Agency.

By: _____ Date: 11/01/2024

Effective Date: 11/1/2024
Expiration Date: 10/31/2027

Martin J Knapp
4673 Northwest Parkway
Hilliard, OH 43026

Re: Qualified Data Collector Renewal, Surface Water Credible Data Program

Dear Martin:

The Division of Surface Water Credible Data Program has automatically renewed your Qualified Data Collector (QDC) status based on your recent data and project study plan submittals. Pursuant to Ohio Revised Code (ORC) 6111.53 and Ohio Administrative Code (OAC) 3745-4-03, your status as a QDC has been renewed for the following level and specialty:

Level:	**3**
Specialty:	**Benthic Macroinvertebrate Assessment - Sample Collection, Identification, and Data Evaluation**
QDC number:	**00300**

Please continue to use this QDC number on all correspondence, study plans, etc. submitted to Ohio EPA.

As noted at the top of this letter, this status was effective as of the date of your initial data submittal and expires three years from that date. You may continue to submit data and new study plans to the Program.

As provided in OAC 3745-4-03 (C)(3), renewal of status is contingent upon active participation in the Program at the designated level and specialty. Lack of such participation will prevent you from renewing your status, but you may re- apply for initial QDC status.

As a reminder, your status is contingent upon the absence of any trespassing violation (within the previous five years) by you or any person sampling under your supervision. Always obtain landowner permission prior to sampling.

Additionally, collection (and retention) of aquatic biological samples (this includes fish,

50 W Town Street
Suite 700
Columbus, Ohio 43215 U.S.A.

614 | 644 3020
epa.ohio.gov

macroinvertebrates, mollusks, and shells) requires a collector's permit from the Ohio Department of Natural Resources/Division of Wildlife. Obtain this permit prior to collection of

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Treasurer of the State of Ohio", which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship.

Notice of the filing of the appeal must be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address: 30 E. Broad Street, 4th Floor, Columbus, OH 43215.

Sincerely,

Anne M Vogel

Anne M. Vogel

Ohio Environmental Protection Agency
EPA.Ohio.gov
Mike DeWine, *Governor* Jon Husted, *Lt. Governor* Anne M. Vogel, *Director*

CERTIFIED MAIL

Effective Date: 1/11/2024
Expiration Date: 1/10/2027

Jack T Freda
4316 Stone Bridge Green
Hilliard, OH 43026

Re: Qualified Data Collector Renewal, Surface Water Credible Data Program

Dear Jack:

The Division of Surface Water Credible Data Program has automatically renewed your Qualified Data Collector (QDC) status based on your recent data and project study plan submittals. Pursuant to Ohio Revised Code (ORC) 6111.53 and Ohio Administrative Code (OAC) 3745-4-03, your status as a QDC has been renewed for the following level and specialty:

Level:	**3**
Specialty:	**Benthic Macroinvertebrate Assessment - Sample Collection, Identification, and Data Evaluation**
QDC number:	**00838**

Please continue to use this QDC number on all correspondence, study plans, etc. submitted to Ohio EPA.

As noted at the top of this letter, this status was effective as of the date of your initial data submittal and expires three years from that date. You may continue to submit data and new study plans to the Program.

As provided in OAC 3745-4-03 (C)(3), renewal of status is contingent upon active participation in the Program at the designated level and specialty. Lack of such participation will prevent you from renewing your status, but you may re- apply for initial QDC status.

As a reminder, your status is contingent upon the absence of any trespassing violation (within the previous five years) by you or any person sampling under your supervision. Always obtain landowner permission prior to sampling.

Additionally, collection (and retention) of aquatic biological samples (this includes fish, macroinvertebrates, mollusks, and shells) requires a collector's permit from the Ohio Department of Natural Resources/Division

of Wildlife. Obtain this permit prior to collection of any biological samples.

You are hereby notified that this action of the Director is final and may be appealed to the Environmental Review Appeals Commission pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. The appeal must be filed with the Commission within thirty (30) days after notice of the Director's action. The appeal must be accompanied by a filing fee of $70.00, made payable to "Treasurer of the State of Ohio", which the Commission, in its discretion, may reduce if by affidavit you demonstrate that payment of the full amount of the fee would cause extreme hardship.

Notice of the filing of the appeal must be filed with the Director within three (3) days of filing with the Commission. Ohio EPA requests that a copy of the appeal be served upon the Ohio Attorney General's Office, Environmental Enforcement Section. An appeal may be filed with the Environmental Review Appeals Commission at the following address: 30 E. Broad Street, 4th Floor, Columbus, OH 43215.

Sincerely,

Anne M Vogel

Anne M. Vogel

Attachment B: Scientific Data Collector Permit

DIVISION OF WILDLIFE
Ohio Department of Natural Resources

Division of Wildlife Headquarters
2045 Morse Road. Bldg. G
Columbus, Ohio 43229-6693
1-800-WILDLIFE

Chief: Kendra S. Wecker

Scientific Collection

License Number: SC220007

Effective Date: 03/16/2023
Expiration Date: 03/15/2026

Permit Holder:

MARK DILLEY
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081

MAD SCIENTIST & ASSOCIATES, LLC
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081
COUNTY: FRANKLIN

Others authorized on permit: YES (See below)

The permittee is hereby granted permission to take, possess, and transport at any time and in any manner specimens of wild animals, subject to the conditions and restrictions listed below or any documents accompanying this permit.

The Chief of the Division of Wildlife will not issue permit for Dangerous Wild Animal (DWA) species (ORC 935.01) except native DWA, required for specific projects. The permit issued by the Chief does not relieve the permittee of any responsibility to obtain a permit pursuant to R.C. Chapter 935 except as specified for the animals and purposes permitted herein. The permittee must adhere to all additional requirements under R.C. Chapter 935.

THIS PERMIT IS RESTRICTED AS FOLLOWS:

All native freshwater mussels are protected in the State of Ohio (Section 1533.324 of the Ohio Revised Code). In addition, federally listed species are protected by the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Impacts to all freshwater mussels, including State and Federally protected mussels, and their habitats should be avoided and minimized to the maximum extent practicable. If impacts cannot be avoided, all streams which contain mussels or potential mussel habitat must be surveyed prior to any proposed stream disturbance following the Ohio Mussel Survey Protocol - April 2022 (link below).

https://ohiodnr.gov/static/documents/wildlife/permits/dow-protocol-ohio-mussel-survey.pdf

Mussel surveys are based on stream size and the potential presence of Federally Listed Species (FLS). Accordingly, for purposes of determining survey efforts, Ohio streams have been divided into the five categories listed below and are specifically named in Appendix A of the Ohio Mussel Survey Protocol:

-Unlisted: Streams not listed in the protocol with watersheds >5 mi2 with the potential for mussels.
-Group 1: Small to mid-sized streams, FLS not expected.
-Group 2: Small to mid-sized streams, FLS expected.
-Group 3: Large Rivers, FLS not expected.
-Group 4: Large Rivers, FLS expected.

This permit authorizes you and those working under your direct on-site supervision to work with freshwater mussels in Group 1 and 3 streams, including work with state-list designated endangered or threatened species (state-listed species). For work in Group 2 and 4 streams, a current federal permit for working with mussels is also required. All mussel surveyors in Ohio are required to be certified by the state of Ohio, and you may only work in the systems that you have been approved for (link below):

https://ohiodnr.gov/static/documents/wildlife/permits/dow-list-approved-mussel-surveyors.pdf

This permit allows you to collect specimens of freshwater mussels, including state-listed species for survey and inventory purposes, to add dead specimens of mussels salvaged during fieldwork to an approved repository, to continue to monitor mussel beds of mussels in Ohio, and to locate additional populations of mussel in Ohio. This permit does not authorize the use of lethal means.

DIVISION OF WILDLIFE
Ohio Department of Natural Resources

Division of Wildlife Headquarters
2045 Morse Road. Bldg. G
Columbus, Ohio 43229-6693
1-800-WILDLIFE

Chief: Kendra S. Wecker

Scientific Collection

License Number: SC220007

Effective Date: 03/16/2023
Expiration Date: 03/15/2026

Permit Holder:

MARK DILLEY
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081

MAD SCIENTIST & ASSOCIATES, LLC
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081
COUNTY: FRANKLIN

This permit is conditioned on the following requirements:

1. At least 15 days prior to the initiation of a mussel survey in Group 1 & 3 systems, please provide John Navarro (john.navarro@dnr.ohio.gov) with a study plan specifying the objectives, location, dates, and all other details, for Division of Wildlife review and approval. For mussel surveys in Group 2 & 4 systems, contact the USFWS (Angela Boyer at angela_boyer@fws.gov).

2. May only work in the systems that you have been approved for (Reconnaissance, Groups 1 & 3, Groups 2 & 4).

3. If approved, may collect mussels, including listed species, for survey and inventory. May also collect non-endangered fish. Sportfish greater than six (>6) inches must be immediately released.

4. At least 24 hours prior to collection activities, the permittee must contact the local wildlife officer (attachment) to advise locations and sampling duration (messages are acceptable). Permission must be obtained from private landowners.

5. Any and all work conducted on federally listed mussels, as well as identification of mussels, must be conducted by federal permittees following restrictions of a current Federal permit. Assistants are only permitted to work under the direct, on-site supervision of federal permittees.

6. Specimens may be temporarily held per guidelines outlined in the mussel protocol and released within 3 hours to the collection location. Live specimens must be maintained at the Columbus Zoo's Freshwater Mussel Conservation and Research Center.

7. All voucher specimens collected are to be deposited at The Ohio State University Museum of Biological Diversity, Cleveland Museum of Natural History, or the Cincinnati Museum Center, unless otherwise specified in the permit.

8. Collection is prohibited on Division of Wildlife property without explicit written permission from the Division of Wildlife. Sampling is further restricted in streams that may have federally listed mussels. See Appendix A of the Ohio Mussel Survey Protocol for locations of federally listed mussels.

9. Please notify John Navarro by email or phone at 614-265-6346 within 24-hours if a new location for a state-listed species is found.

10. A report of your mussel survey findings for Group 1 and 3 systems should be sent to John Navarro (john.navarro@dnr.state.oh.us) and for Group 2 and 4 streams should be sent to Angela Boyer (angela_boyer@fws.gov).

11. An annual electronic report must be submitted in the Wildlife Diversity Database Excel spreadsheet format to the Permit Coordinator at wildlife.permits@dnr.ohio.gov by March 15th of each year. The file may be downloaded from wildohio.gov or obtained from the Permit Coordinator.

Note that a separate permit under Section 10 of the Endangered Species Act (ESA) is necessary in the case where you might hold live federally listed species longer than 45 days. Permit requests under Section 10 of the ESA should be directed to U.S. Fish and Wildlife Service (USFWS) at https://fwsepermits.servicenowservices.com/fws. If you have

DIVISION OF WILDLIFE
Ohio Department of Natural Resources

Division of Wildlife Headquarters
2045 Morse Road. Bldg. G
Columbus, Ohio 43229-6693
1-800-WILDLIFE

Chief: Kendra S. Wecker

Scientific Collection

License Number: SC220007

Effective Date: 03/16/2023
Expiration Date: 03/15/2026

Permit Holder:

MARK DILLEY
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081

MAD SCIENTIST & ASSOCIATES, LLC
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081
COUNTY: FRANKLIN

questions about whether any proposed activities are covered under this authority or need any other assistance, please contact Angela Boyer at the USFWS, at (614) 416-8993, ext. 122, or angela_boyer@fws.gov.

12. Permittee may collect fish, aquatic macroinvertebrates, insects and salamanders for research and survey purposes. All non-target specimens must be immediately released. Specimens must be immediately released after identification unless required as voucher specimens.

13. Biosecurity measures must be taken at all times to minimize the potential transmission of diseases. Permittee must follow the Division of Wildlife Aquatic Disinfection Protocol for all work with aquatic species.

14. Permittee must contact the Division of Wildlife if previously undocumented aquatic invasive species are discovered. Contact John Navarro at (614) 265-6346 or john.navarro@dnr.ohio.gov with information. If grass carp, silver carp, big head carp or black carp are captured, please retain and contact Eric Weimer at (419)625-8062 or at eric.weimer@dnr.ohio.gov.

15. All cages or enclosures must prevent ingress or egress of wild animals, have appropriate food and water, maintain appropriate temperature and provide protection from the weather. Enclosures must allow the animal to maintain species-specific and/or taxa specific seasonal and biological functions (e.g. bats hibernating). No part of collection may be held at a private residence.

16. All voucher specimens collected are to be deposited at The Ohio State University Museum of Biological Diversity, Cleveland Museum of Natural History, or the Cincinnati Museum Center, unless otherwise specified in the permit.

Locations of Collecting:

Statewide

Equipment and method used in collection:

Electrofishing and funnel trap

Name and number of each species to be collected:

Insects, crayfish, mussels, amphibians, invertebrates, and fish (Determined)

NO ENDANGERED SPECIES OR AQUATIC NUISANCE SPECIES MAY BE TAKEN WITHOUT WRITTEN PERMISSION FROM THE CHIEF

DIVISION OF WILDLIFE
Ohio Department of Natural Resources

Division of Wildlife Headquarters
2045 Morse Road. Bldg. G
Columbus, Ohio 43229-6693
1-800-WILDLIFE

Chief: Kendra S. Wecker

Scientific Collection

License Number: SC220007

Effective Date: 03/16/2023
Expiration Date: 03/15/2026

Permit Holder:

MARK DILLEY
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081

MAD SCIENTIST & ASSOCIATES, LLC
253 N. STATE ST., SUITE 101
WESTERVILLE, OH 43081
COUNTY: FRANKLIN

SUB-PERMITTEES

Permit #SC220007 authorizes the following persons to conduct the activities listed on the permit, within the conditions and restrictions set forth. Each person must carry and exhibit upon request, a copy of the permit and this attachment when conducting any of the listed activities. The person named on the permit assumes full responsibility for the actions of the persons on this list and for completing and submitting all required reports.

- Adkins, Jenny
- Binkley, Corbin
- Coburn, Alan
- Duncan, Owen Julius
- Hanna, Lindsay
- Hribar, Daniel
- Nolan, Alexys
- Roller-Knapp, Jenna
- Smeenk, Nick
- Wright, Cody
- Zinsmeister, Ellie