FLOODWAY HABITAT MITIGATION PLAN

ELLIOTT DITCH – LEVEE REMEDIATION
ARCONIC LAFAYETTE OPERATIONS
3131 EAST MAIN STREET
LAFAYETTE, INDIANA 47905

Prepared for:

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CEC PROJECT 172-367.0043

OCTOBER 2019
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1.0 EXECUTIVE SUMMARY

Civil & Environmental Consultants, Inc (CEC), on behalf of Arconic Corporation (Arconic), is pleased to provide the Indiana Department of Natural Resources (INDR) this updated Floodway Habitat Mitigation Plan (HMP) previously approved as part of the Construction in a Floodway Permit (Permit) application submitted to the Indiana Department of Natural Resources (IDNR) in April 2019 (Application #: FW-29895). Arconic is in the process of obtaining the regulatory approvals to execute the next phase of the Elliott Ditch remediation project that includes the removal of PCB impacted sediment within and isolated soil along Elliott Ditch. The PCB impacts are associated with historic releases from Arconic Lafayette Operations (Facility) Outfall 001. An Interim Measures Work Plan (IMWP) for this phase of work (referred to as the 2020 IMWP in this submittal) was submitted to the Indiana Department of Environmental Management (IDEM) and United States Environmental Protection Agency (U.S. EPA), Region 5 in June 2020 for consideration and approval. A revised version of the IMWP was resubmitted in December 2020. The HMP previously incorporated anticipated downstream disturbances (i.e., total acreages) in the total compensatory mitigation calculation. Since the engineering design was not completed prior to the development of the initial HMP, estimates were provided. Arconic has since refined the total estimated disturbance footprints, as described in the 2020 IMWP, within the riparian corridor and has updated this HMP accordingly. Arconic intends to implement the HMP in accordance with the conditions outlined in the previously approved Permit application number FW-29895.

The excavation and removal of soil associated with the Elliott Ditch Levee IMWP impacted 1.07 acres of riparian forest in the floodway during the execution of the project from March 2020 through August 2020. The refined estimated disturbance footprint of the riparian forest for the next phase of work is 0.53 acres. To help restore the ecosystem function at the Site, this HMP proposes a 2:1 restoration mitigation (totaling 3.2 acres) immediately adjacent to Elliott Ditch. The HMP has been developed in accordance with the Indiana Natural Resources Commission Information Bulletin #17 (Fourth Amendment): Floodway Habitat Mitigation dated January 15, 2019 (Bulletin). This HMP identifies the mitigation area and lays out guidelines for the preparation of soil and planting of native trees, shrubs, forbs, and ground cover. The HMP identifies additional follow-up activities, in accordance with the Bulletin, to promote the success of Site restoration and enhancement efforts. These efforts include visits to the mitigation site and the submittal of monitoring reports to IDNR documenting the success of habitat restoration. Implementation of the approved HMP will help restore the loss of environmental benefit or ecological function from remedial activities.

2.0 INTRODUCTION

This HMP describes the mitigation approach to compensate for habitat impacts required as part of remedial activities being completed by Arconic along and within Elliott Ditch located in Lafayette, Indiana (i.e., Tippecanoe County) (see **Figures 1** and **2**). As provided in the IDNR Construction in a Floodway Assessment form submitted as part of application number FW-29895, the Levee Interim Measures (IM) project disturbed 4.67 acres in the floodway. Of the 4.67 acres, riparian habitat disturbance included 1.07 acres of non-wetland tree removal and 1.24 acres of successional habitat. The location of the levee project is depicted on Figure 1. As provided in the December 2020 IDNR Construction-in-a-Floodway Permit application, Arconic anticipates disturbing an additional 0.18 acres in the floodway in Reach 1 and 1.27 acres in the floodway in Reaches 2 and 3, for a total additional disturbance of 1.45 acres. Of the 1.45 acres, riparian habitat disturbance includes 0.53 acres of non-wetland tree removal and 0.6 acres of successional habitat. The anticipated areas in Reaches 2 and 3 that will be disturbed are depicted on Figure 2A and Figure 2B. The total unavoidable projected impact requiring mitigation is 1.60 acres (total acreage of non-wetland tree removal); therefore, the total compensatory 2:1 mitigation is 3.2 acres. This HMP includes the following components:

- Project background;
- Project objective;
- Mitigation site selection;
- Existing site conditions;
- Mitigation work plan;
- Maintenance plan;
- Success criteria; and,
- Monitoring plan.

2.1 Background

Arconic has unilaterally decided to remediate PCB impacted sediment and isolated soil in Reaches 1 through 3 of Elliott Ditch. The 2020 IMWP has been prepared to address the safe movement and disposal of these materials, as well as restoration activities. The Project is being performed as part of Resource Conservation and Recovery Act (RCRA) Corrective Action administered by the Indiana Department of Environmental Management (IDEM) Office of Land Quality (OLQ) with coordinated approval from the United States Environmental Protection Agency (U.S. EPA), Region 5. Regulatory approval of the 2020 IMWP is currently pending. Clearing of brush/trees and the installation of site improvements (i.e., access roads, decontamination pads, etc.) will be performed to facilitate access and support the successful execution of the Project. Approximately 7,725 cubic yards (cy) of sediment from within Elliott Ditch will be removed for off-site disposal and replaced with clean fill material to match the natural stream gradient. In addition,

approximately 2,950 cy of soil along Elliott Ditch will be removed for off-site disposal and replaced with clean fill material, installed in 9 inch lifts and compacted to 95 percent standard proctor, to match pre-excavation conditions. Sediment and soil removal will be completed within the county drainage easement, which extends 75 feet from the top of the ditch banks.

Unavoidable impacts to the riparian habitat will be required to support the successful execution of the Project. Arconic proposes that the mitigation site to compensate for this removal be located within the regulated floodway of Elliott Ditch. Another consideration that was evaluated as part of selecting the mitigation site was the presence of an existing City of Lafayette sanitary sewer easement which does not allow tree planting to be completed.

2.2 Objective

The objective of this HMP is to identify the efforts that will be taken to restore the riparian habitat of Elliott Ditch from approximately Concord Road (near Outfall 001) to the 9th Street crossing after completion of the Project. The HMP has been prepared specifically to satisfy the IDNR habitat mitigation requirements as outlined in the *Indiana Natural Resources Commission Information Bulletin #17 (Fourth Amendment): Floodway Habitat Mitigation* dated January 15, 2019 (Bulletin).

2.3 Site Selection

Arconic is committed to performing mitigation activities upon successful completion of the Project. Arconic has identified a 9.1 acre area which will be utilized to accommodate the mitigation footprint (i.e., 3.2 acres)[1]. The use of this area is contingent upon property owner approval and acceptance by the Tippecanoe County Drainage Board and City of Lafayette. The latter approval is required since a portion of the targeted mitigation area resides within the drainage easement under control of the drainage board, and due to the presence of a sanitary sewer paralleling Elliott Ditch.

[1] In the October 2019 version of the HMP, Arconic identified a 13.0 acre area to accommodate the mitigation footprint. Per the request of Tippecanoe County, this footprint was decreased in order to accommodate Tippecanoe County's proposed capital improvement project which includes the installation of a two-stage ditch.

3.0 EXISTING SITE CONDITIONS

The proposed mitigation area is located along the left descending bank of Elliott Ditch (east/south bank), a tributary to Wea Creek, which is a tributary to the Wabash River within the Middle Wabash – Little Vermillion watershed (HUC 05120108) downstream of Lafayette, Indiana. The ditch is identified as a regulated drain until the 9th Street crossing, slightly more than 1.60 miles downstream of Facility Outfall 001. The Tippecanoe County Drainage Board maintains the regulated drains within the county, subject to Indiana Code (IC) 36-9-27. Regulated drains include an easement that typically extends 75-feet from the top of each bank. These easements are intended to provide access for maintenance activities to support proper functionality of the drain. The proposed mitigation site consists of a built environment that has undergone disturbances during establishment of the Elliott Ditch levee, municipal construction, and anthropogenic activities. These activities have ultimately led to a low-quality, riparian habitat consisting largely of pioneer plant species. The proposed mitigation site is depicted on **Figure 3**.

The floodway forest strata at the mitigation site are currently dominated by box elder (*Acer negundo*), eastern white pine (*Pinus strobus*), Amur honeysuckle (*Lonicera maackii)*, and wild ginger (*Asarum canadense*). Non-dominant species include honeysuckle (*Lonicera maackii*), white avens (*Geum canadense*), perennial ryegrass (*Lolium perenne*), Virginia creeper (*Parthenocissus quinquefolia*), poison ivy (*Toxicodendron radicans*), giant ragweed (*Ambrosia trifida*), and Frank's sedge (*Carex frankii*). Representative photographs of current site conditions have been provided in **Appendix A**.

As part of investigation activities completed prior the preparation of the 2020 IMWP, soil borings were advanced along the levee, as well as at upland locations downstream, to assess soil conditions. Sediment poling within Elliott Ditch was also completed to assess the locations and overall thickness of sediment deposits. Organic material and silty loam was typically present at 0.0 to 0.5-feet below grade. Under this horizon, the majority of soils consist of an aggregate of clay loam, silty clay, and clay with sand. Between 0.5 and 4.0-feet below grade, soils were typically reddish brown or brown to dark brown in color, moderately to very plastic with fine granular structure. Very plastic, black clay with sand was present at some locations along the levee at depths between 2.5 and 4.0-feet below grade. While most samples had gravel content less than 15-percent, isolated horizons less than 0.5-feet in thickness were identified containing greater than 60-percent gravel.

Finally, the City of Lafayette maintains and operates a sanitary sewer along the Elliott Ditch levee. The sanitary sewer line parallels Elliott Ditch in the uplands along the left descending bank and includes a 30-foot easement.

4.0 MITIGATION PLAN

The HMP proposes the restoration and enhancement of 3.0 acres of floodway forest immediately adjacent to Elliott Ditch. As previously stated, Arconic has identified a 9.1 acre area which will be utilized to accommodate the current known mitigation footprint. **Figure 3** depicts the 9.1 acre footprint identified for restoration and enhancement activities. The HMP recognizes avoidance of impact as the most effective method of mitigating against environmental impact to the Site. Effort will be made to protect existing habitat and reduce impacts to riparian habitat in the area both during planning and execution of remedial activities. Components of the HMP include site preparation, groundcover seeding and species, shrub/tree planting and species, schedule for implementation, protection measures, and reporting.

4.1 Site Preparation

Prior to mitigation planting activities, the soil will be tilled to a depth of 8-inches to improve aeration, infiltration of precipitation, and reduce runoff in the targeted area. Topsoil containing sufficient organic material will be imported and spread over the mitigation area and tilled into the subsurface material, if necessary. Soil amendments (e.g. nitrolized tree bark, organic compost) will be added in approved proportions and tilled into the soil to a depth of up to one-foot across the disturbed mitigation area, if necessary.

An approved erosion and sedimentation control plan will be prepared and implemented to reduce excess runoff and reduce erosion to the mitigation site, and reduce the potential for sedimentation to Elliott Ditch or other nearby tributaries. Engineering controls such as silt fencing installation and sowing temporary seed/mulch on exposed surfaces will be completed, as necessary.

4.2 Understory Herbaceous Seeding - Groundcover

Following soil layer preparation, the mitigation area will be seeded with grasses and herbaceous plants native to Indiana and included in the United States Department of Agriculture (USDA) Plants database specific to Tippecanoe County. A seed mixture will be used that includes at least ten species of grasses, sedges, and wildflowers identified in **Table 1** provided below. Seeds will be mixed proportionally to ensure that no one species will dominate the understory. Fertilizers will not be used. Areas that are broadcast-seeded will be lightly raked after spread to ensure purchase of seed in soil. Rate of application will be completed as determined by the seed provided.

Table 1 Plant Species List - Herbaceous			
Scientific Name	**Common Name**	**Strata**	**Indicator Status**
Allium cernuum	Nodding Wild Onion	Wildflower	FACU
Amphicarpaea bracteata	Hog Peanut	Wildflower	FAC
Aquilegia canadensis	Wild Columbine	Wildflower	FAC
Carex blanda	Eastern Woodland Sedge	Sedge	FAC
Carex vulpinoida	Fox Sedge	Sedge	OBL
Geranium maculatum	Wild Geranium	Wildflower	FACU
Heliopsis helianthoides	Smooth Oxeye	Wildflower	FACU
Impatiens capensis	Orange Jewelweed	Wildflower	FACW
Juncus tenuis	Poverty Rush	Rush	FAC
Solidago gigantea	Late Goldenrod	Wildflower	FACW
Vernonia gigantea	Ironweed	Wildflower	FAC
Vernonia missurica	Missouri Ironweed	Wildflower	FACU
Plant Species List - Groundcover			
Schizachyrium scoparium	Little Bluestem	Grass	FACU
Elymus virginicus	Virginia Wildrye	Grass	FACW
Andropogon gerardii	Big Bluestem	Grass	FAC
Dichanthelium latifolium	Broad-leaved Panicgrass	Grass	FACU
Dichanthelium dichotomum	Cypress Panicgrass	Grass	FAC
Desmodium canescens	Hoary tick trefoil	Grass	UPL
Panicum Virgatum	Switch Grass	Grass	FAC
- Note: Equivalent native species may be substituted based upon availability and IDNR Approval			

When seeding along a slope of 3:1 or steeper, additional measures will be used to help establish vegetation. Soil will be stabilized with biodegradable erosion control blankets (i.e., net free or loose woven netting), or a bonded fiber hydro-mulch if seeding occurs during the dormant season.

4.3 Understory Shrub and Tree Planting

Woody plants will be selected and placed in accordance with IDNR's Bulletin to ensure the diversity and ecological function of the mitigation area. To promote the future development of the riparian forest in the floodway, woody vegetation will be randomly placed rather than planted in rows to simulate natural stocking. Key principals include: a minimum of five canopy tree species, four shrub species, and one non-canopy tree species with no one species accounting for more than 20-percent of planted individuals. A maximum of one maple species will be planted and a minimum of two hard mast species will be planted. Spacing will follow the guidelines as established by IDNR.

Species will be selected from a list of approved plants native to Indiana and having been verified by voucher as present in Tippecanoe County per the USDA database. A list of woody plant species

is found in **Table 2** provided below. Plants will be selected and distributed per the planting principles included in Section VII.B of the Bulletin. Site selection will also be considered when placing plants (e.g. facultative upland (FACU) plants will be plated in the floodway furthest from Elliott Ditch, facultative wetland (FACW) will be placed in the wettest areas of floodway). Contingency plantings are not considered appropriate due to the potential effect on spacing.

Table 2

Woody Plant Species List - Trees

Scientific Name	Common Name	Strata	Coefficient of Conservatism	Indicator Status
Acer saccharinum	Silver Maple	Large Canopy Tree	6	FACW
Acer rubrum	Red Maple	Large Canopy Tree	5	FAC
Aesculus glabra	Buckeye	Large Understory Tree	5	FACU
Carpinus caroliniana	American Hornbeam	Medium Understory Tree	5	FAC
Carya cordiformis	Bitternut hickory	Large Canopy Tree	5	FACU
Celtis occidentalis	Hackberry	Large Canopy Tree	3	FACU
Cornus dummondii	Roughleaf Dogwood	Large Canopy Tree	2	FAC
Fagus grandifolia	American Beech	Large Canopy Tree	8	FACU
Fraxinus pennsylvanica	Green Ash	Tree	1	FACW
Ilex verticillata	Common Winterberry	Medium Canopy Tree	8	FACW
Juglans nigra	Black Walnut	Large Canopy Tree	2	FACU
Morus rubra	Red Mullberry	Medium Understory Tree	4	FACU
Platanus occidentalis	Sycamore	Large Canopy Tree	3	FACW
Quercus Alba	White Oak	Large Canopy Tree	5	FAC
Quercus macrocarpa	Bur Oak	Small Canopy Tree	5	FACU
Quercus muehlenbergii	Chinkapin oak	Medium to Large Canopy Tree	4	FACU
Quercus palustris	Pin Oak	Small Canopy Tree	3	FACW
Quercus rubra	Northern Red Oak	Large Canopy Tree	4	FACU
Robinia pseudoacacia	Black locust	Tree	1	FAC
Sassafras albidum	Sassafras	Medium Understory Tree	1	FACU
Thuja occidentais	White Cedar	Tree	10	FACW
Tilia americana	American Basswood	Large Canopy Tree	5	FACU
Woody Plant Species List - Shrubs				
Cephalanthus occidentalis	Buttonbush	Shrub	5	OBL
Cornus drummondii	Gray Dogwood	Shrub	2	FAC
Cornus obliqua	Pale Dogwood	Shrub	5	FACW
Corylus americana	American Hazlenut	Shrub	4	FACU
Hydrangea arborescens	Wild Hydrangea	Shrub	7	FAC
Ilex verticillata	Winterberry	Shrub	8	FACW
Populus deltoides	Eastern Cottonwood	Medium Shrub	1	FAC
Prunus serotina	Black Cherry	Medium Shrub	1	FACU
Ptelea trifoliata	Common Hop-Tree	Medium Shrub	4	FACU
- Note: Equivalent native species may be substituted based upon availability and IDNR Approval				

4.4 Schedule

In accordance with the IDNR Permit approval number FW-29895-0, Arconic will begin implementation of the HMP by the end of fall 2021. Soil preparation will be accomplished during drier conditions (i.e., late spring or summer). If soil preparation is completed in the spring, native and annual groundcover seeding will be completed simultaneously. However, if soil preparation occurs in summer or fall, the native groundcover will be postponed until the following spring. Trees/shrub planting will be completed during the first dormant season following soil preparation and native/annual ground cover seeding.

4.5 Protection of the Mitigation Site

Arconic does not have the authority to record restrictive covenants on the private properties identified for potential mitigation without consent from the various owners. As discussed with IDNR in a phone call on February 14, 2020, if restrictive covenants are not able to be administered, Arconic will perform the following:

- Signage will be installed at each property where the mitigation is completed for a minimum of three years. The signage will include language identifying the location as a mitigation site, and will prohibit mowing and spraying. After three years, assuming success criteria have been satisfied, signage will be removed.
- Maintain Access & Use Agreements with the various property owners in order to perform the required monitoring and maintenance activities until success criteria have been achieved.
- Provide letters to each of the impacted property owners in advance of the mitigation explaining the intent of the mitigation is to return the riparian corridor back to an acceptable habitat, as defined by IDNR, through the implementation of the HMP. The letter will also explain restrictions associated with the mitigation.

4.6 Reporting

A report documenting the successful implementation of the HMP will be submitted to IDNR within 60 days after the completion of the work. Items to be included in the report include:

- Summary of field activities;
- An as-built survey of the mitigation area;
- List of planted species including stem counts;
- Seed application rates;
- Photographic documentation; and,
- Proposed monitoring points for IDNR's consideration.

5.0 MAINTENANCE PLAN

Maintenance will be conducted on an as needed basis based upon findings from regular site visits (i.e., semi-annual) performed as part of the Monitoring Plan. Maintenance activities may include:

- Reseeding or replanting;
- Watering;
- Control of invasive species; and,
- Erosion repair.

Completed maintenance activities will be disclosed to IDNR during annual reporting (see **Section 6**).

6.0 SUCCESS CRITERIA

Non-wetland forest mitigation success will be measured based upon percent survival of planted trees and shrubs (75-percent per acre). Total vegetation cover criteria includes 80-percent cover, and of the 80-percent, 75-percent being of native species. In addition, erosion/sedimentation will be evaluated and corrected, as necessary. The mitigation site will be evaluated against this criteria on an annual basis for a minimum of three years, or until the success criteria are satisfied. After three years, assuming success criteria have been satisfied, monitoring will be terminated.

7.0 MONITORING PLAN

Mitigation success will be assessed by the execution of a monitoring plan for three years. An annual monitoring report based upon routine site visits will document progress toward meeting the success criteria. Elements of the monitoring report are defined in Section IX of the Bulletin. The monitoring report will be submitted to the IDNR every year for three years after a full growing season elapses. Monitoring reports will continue on an annual basis should monitoring continue beyond three years until year five. In the event that mitigation is determined to not have been successful after year five, another mitigation plan will be submitted that includes an extended monitoring period along with corrective actions. Success of mitigation will be based on the criteria listed above and further defined in Section IX.B of the Bulletin.

7.1 Woody Plant Survival

Woody plant species will be monitored through stem counts within one, surveyed permanent rectangular plot. The plot will be approximately 0.1 acres, and a comprehensive list of woody species observed will be maintained.

7.2 Groundcover Establishment

Percentage of groundcover will be evaluated within the surveyed permanent rectangular plot identified in **Section 6.1**. Observed species within the plot will be identified and assigned a standard Daubenmire percent cover class, or a similar approach will be completed. A comprehensive list of herbaceous species observed will be maintained.

7.3 Overall Site Development

During monitoring visits, the mitigation site will be inspected for:

- Areas of erosion;
- Instability;
- Presence of invasive species;
- Vandalism; and,
- Trash dumping.

Photographic documentation will be completed of overall site conditions and plant communities.

7.4 SCHEDULE

Monitoring will include a minimum of two visits per year (i.e., one in the late spring/ early summer, and one in the late summer/early fall). Monitoring will begin in the first growing season following planting activities. Monitoring will be conducted for three years, or until the performance standards have been met and the project has received release from IDNR.

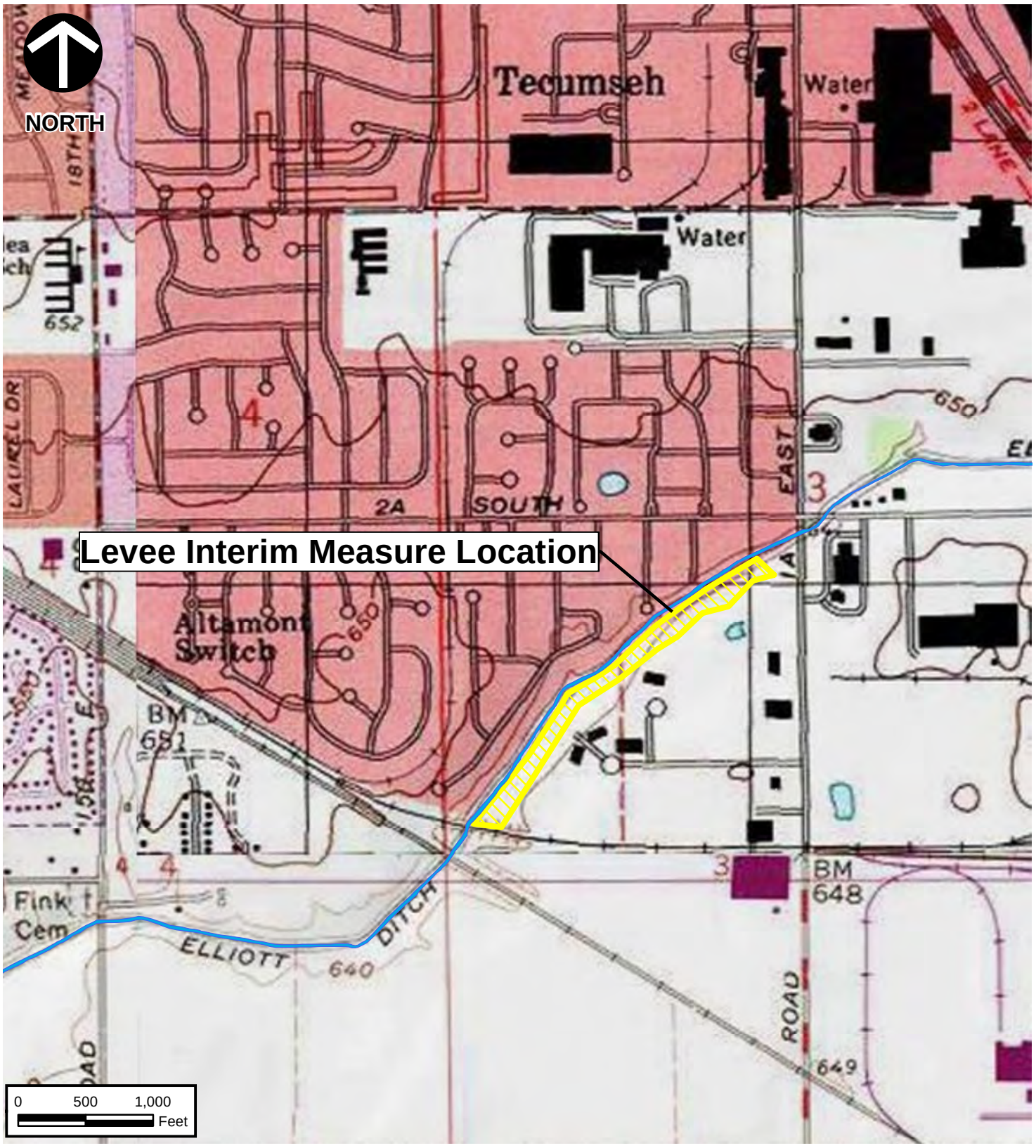
7.5 MONITORING REPORTING

Annual monitoring reports will be submitted to IDNR summarizing field data and will discuss project success against the criteria presented above. The annual report will be submitted by December 31 of the calendar year.

7.6 RELEASE FROM MONITORING

Once the performance standards are met, the project will be considered complete and Arconic will be released from further monitoring.

FIGURES



SOURCE: ESRI WORLD IMAGERY / ARCGIS MAP SERVICE: HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY. LAST ACCESSED: 9/3/2019
IMAGE DATE: 03/12/2011

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HABITAT MITIGATION PLAN
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ELLIOTT DITCH LEVEE SITE LOCATION MAP

DRAWN BY:	GDS	CHECKED BY:	GAW	APPROVED BY:	JMB*	FIGURE NO:	1
DATE:	SEPTEMBER 03, 2019	DWG SCALE:	1 " = 1,000 '	PROJECT NO:	172-367.0043		

Signature on File *

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IMAGE DATE: 03/12/2011

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ELLIOTT DITCH MITIGATION PLAN
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REACH 1 AND 2 - DISTURBED AREA LOCATIONS

DRAWN BY:	JRO	CHECKED BY:	JMB	APPROVED BY:	JMB*	FIGURE NO:	2A
DATE:	DECEMBER 15, 2020	DWG SCALE:	1 " = 300 '	PROJECT NO:	172-367.0043		

Signature on File *

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REACH 3 - DISTURBED AREA LOCATIONS

DRAWN BY:	JRO	CHECKED BY:	JMB	APPROVED BY:	JMB*	FIGURE NO:	2B
DATE:	DECEMBER 15, 2020	DWG SCALE:	1 " = 300 '	PROJECT NO:	172-367.0043		

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IMAGE DATE: 03/12/2011

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PROPOSED MITIGATION SITE

DRAWN BY:	KAM	CHECKED BY:	GAW	APPROVED BY:	JMB*	FIGURE NO:	3
DATE:	JANUARY 19, 2021	DWG SCALE:	1 " = 500 '	PROJECT NO:	172-367.0020		

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APPENDIX A – PHOTO LOG

SOURCE: ESRI WORLD IMAGERY / ARCGIS MAP SERVICE: HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY. LAST ACCESSED: 11/5/2020

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ELLIOTT DITCH REACHES 1-3 SEDIMENT AND SOIL
LAFAYETTE, INDIANA

REACH 1 PHOTO LOCATIONS

DRAWN BY:	JRO	CHECKED BY:	GAW	APPROVED BY:	JMB*	FIGURE NO:	8-2A
DATE:	NOVEMBER 05, 2020	DWG SCALE:	1 " = 400 '	PROJECT NO:	172-367.0043		

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REACH 2 PHOTO LOCATIONS

DRAWN BY:	JRO	CHECKED BY:	GAW	APPROVED BY:	JMB*	FIGURE NO:	8-2B
DATE:	NOVEMBER 05, 2020	DWG SCALE:	1 " = 400 '	PROJECT NO:	172-367.0043		

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REACH 3 PHOTO LOCATIONS

DRAWN BY:	JRO	CHECKED BY:	GAW	APPROVED BY:	JMB*	FIGURE NO:	8-2C
DATE:	NOVEMBER 05, 2020	DWG SCALE:	1 " = 400 '	PROJECT NO:	172-367.0043		

Signature on File *

\\SVR-KNOXVILLE\Projects\2017\172-367\-GIS\Maps\Task 0043 - Sediment Remediation IDNR Coordination\172-367.0043 ED R1-3 IDNR 8-2C.mxd - 11/5/2020 - 2:11:33 PM (jrickfordobrien)

Photo 1: Levee view from northeast extent, facing southwest (Location 1) (Photo Date: 3/21/19)

Photo 2: Elliott Ditch bank conditions, facing southwest (Location 1) (Photo Date: 3/21/19)

Photo 3: Levee/Elliott Ditch bank view, facing northeast (Location 2)* (Photo Date: 3/21/19)

Photo 4: Levee/Elliott Ditch bank view, facing southwest (Location 2)* (Photo Date: 3/21/19)

Note:
*Clearing and grubbing of this area was completed in March 2020 in accordance with approved IDNR Construction in a Floodway Permit (FW-29895-0). The area was stabilized after remedial activities with native grasses. Mitigation will be completed per the approved Floodway Habitat Mitigation Plan as part of Permit FW-29895-0.

Photo 5: Arconic Outfall 001, showing Elliott Ditch bank conditions, facing west (Location 3)* (Photo Date: 3/21/19)

Photo 6: Levee/Elliott Ditch bank view showing Outfall 001, facing southwest (Location 2)* (Photo Date: 3/21/19)

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Photo 7: Levee/Elliott Ditch bank conditions, facing northeast (Location 3)* (Photo Date: 3/21/19)

Photo 8: Levee conditions, facing east-northeast (Location 3)* (Photo Date: 3/21/19)

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Photo 9: Elliott Ditch conditions, facing southwest, downstream (Location 4) (Photo Date: 10/3/17)

Photo 10: Elliott Ditch conditions, longitudinal bar, facing southwest, downstream (Location 4) (Photo Date: 10/3/17)

Photo 11: Levee/Elliott Ditch bank conditions, facing northeast (Location 5)* (Photo Date: 3/21/19)

Photo 12: Levee/Elliott Ditch bank conditions, facing west (Location 5)* (Photo Date: 3/21/19)

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Photo 13: Levee conditions, facing northeast (Location 6)* (Photo Date: 3/21/19)

Photo 14: Levee/Elliott Ditch bank conditions, facing west (Location 6)* (Photo Date: 3/21/19)

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Photo 15: Levee/Elliott Ditch bank conditions, facing northeast (Location 7)* (Photo Date: 3/21/19)

Photo 16: Levee conditions, facing southwest (Location 7)* (Photo Date: 3/21/19)

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Photo 17: Elliott Ditch bank conditions, facing west (Location 7)* (Photo Date: 3/21/19)

Photo 18: Elliott Ditch bank conditions, facing west-northwest (Location 7)* (Photo Date: 3/21/19)

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Photo 19: Elliott Ditch conditions, facing northeast, upstream (Location 8) (Photo Date: 10/3/17)

Photo 20: Elliott Ditch conditions, facing southwest, downstream (Location 8) (Photo Date: 10/3/17)

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Photo 21: Levee conditions, facing northeast (Location 9)* (Photo Date: 3/21/19)

Photo 22: Levee conditions, facing southwest (Location 9)* (Photo Date: 3/21/19)

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Photo 23: Levee/Elliott Ditch bank conditions, facing west (Location 9)* (Photo Date: 3/21/19)

Photo 24: Levee conditions, facing northeast (Location 10)* (Photo Date: 3/21/19)

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Photo 25: Levee conditions, facing northeast (Location 10)* (Photo Date: 3/21/19)

Photo 26: Levee conditions, facing southwest (Location 10)* (Photo Date: 3/21/19)

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Photo 27: Levee/Elliott Ditch bank conditions, facing west (Location 10)* (Photo Date: 3/21/19)

Photo 28: Upland conditions (typical), facing east (Location 10)* (Photo Date: 3/21/19)

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Photo 29: Elliott Ditch conditions, facing northeast, upstream (Location 11) (Photo Date: 10/4/17)

Photo 30: Elliott Ditch conditions, facing southwest, downstream (Location 11) (Photo Date: 10/4/17)

Photo 31: Levee and upland conditions, facing northeast (Location 12)* (Photo Date: 3/21/19)

Photo 32: Levee/Elliott Ditch bank conditions, facing southwest (Location 12)* (Photo Date: 3/21/19)

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Photo 33: Elliott Ditch conditions, facing northeast, upstream (Location 13) (Photo Date: 10/4/17)

Photo 34: Elliott Ditch conditions, facing southwest, downstream (Location 13) (Photo Date: 10/4/17)

Photo 35: Elliott Ditch bank conditions, facing west (Location 14) (Photo Date: 7/8/20)

Photo 36: Elliott Ditch bank conditions, facing northeast (Location 15) (Photo Date: 7/8/20)

Photo 37: Elliott Ditch bank conditions, facing southwest (Location 16) (Photo Date: 10/28/20)

Photo 38: Elliott Ditch bank conditions, facing northeast (Location 16) (Photo Date: 10/28/20)

Photo 39: Elliott Ditch bank conditions, facing west (Location 17) (Photo Date: 10/28/20)

Photo 40: Elliott Ditch bank conditions, facing east (Location 17) (Photo Date: 10/28/20)

Photo 41: Elliott Ditch bank conditions, facing west (Location 18) (Photo Date: 10/28/20)

Photo 42: Elliott Ditch conditions, facing east, upstream (Location 19) (Photo Date: 10/28/20)

Photo 43: Elliott Ditch conditions, facing west, downstream (Location 19) (Photo Date: 10/28/20)

Photo 44: Elliott Ditch conditions (from 18th St. bridge), facing west, downstream (Location 20) (Photo Date: 10/28/20)

Photo 45: Elliott Ditch bank conditions, facing northeast (Location 21) (Photo Date: 10/28/20)

Photo 46: Elliott Ditch conditions facing northeast, upstream (Location 22) (Photo Date: 10/28/20)