Marathon Petroleum Company LP

401 Water Quality Certification for Canton Treated Effluent Line and Outfall Structure Project (COWL Project)

Stark County, Ohio

November 2015

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Stark County, Ohio

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List of Acronyms and Abbreviations

CFR	Code of Federal Regulations
DNR	Department of Natural Resources
EPA	Environmental Protection Agency
ESA	Endangered Species Act
F	Fahrenheit
FACW	Facultative Wet
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
GPS	Global Positioning System
HDD	horizontal directional drilled
HDPE	high-density polyethylene
HHEI	Headwater Habitat Evaluation Index
HUC	Hydrologic Unit Code
ID	identification
IR	infrared
MPC	Marathon Petroleum Company, LP
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetland Inventory
OAC	Ohio Administrative Code
OBL	Obligate
OHWM	Ordinary High Water Mark
O&M	Operation and Maintenance
ORAM	Ohio Rapid Assessment Method

ORC	Ohio Revised Code
PCN	Pre-Construction Notification
PDOP	Position Dilution of Precision
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub/shrub
QHEI	Qualitative Habitat Evaluation Index
ROW	right-of-way
SWPPP	Storm Water Pollution Prevention Plan
TDS	Total Dissolved Solids
USACE	U. S. Army Corps of Engineers
USDA	U. S. Department of Agriculture
USEPA	U. S. Environmental Protection Agency
USFWS	U. S. Fish and Wildlife Service
USGS	U. S. Geological Survey
WQC	Water Quality Certification

1 Introduction

1.1 Project Background

Marathon Petroleum Company LP's (MPC) Canton, Ohio refinery water treatment plant currently operates under a National Pollutant Discharge Elimination System (NPDES) Permit issued by the Ohio Environmental Protection Agency (Ohio EPA) that allows it to discharge treated effluent into a small stream known as Hurford Run, a tributary to Nimishillen Creek. The Ohio EPA has announced new discharge limits associated with MPC's permit that will no longer render Hurford Run as a viable outfall location. MPC, in conjunction with the Ohio EPA, has developed a solution for relocating the outfall to a larger receiving waterbody, the Tuscarawas River. Relocation of the outfall will require MPC to construct, operate, and maintain approximately ten (10) miles of new high-density polyethylene (HDPE) pipeline to transport treated effluent from the refinery to the proposed outfall structure within the east bank of the Tuscarawas River (**Figure 1**).

This document provides the Ohio EPA with MPC's application for a 401 Water Quality Certification (401 WQC) for MPC's proposed Canton Treated Effluent Line and Outfall Structure Project (Project) to be constructed in Stark County, Ohio. **Table 1** includes site location information.

Table 1. Site Location Information

Location	Township/Range/Section	Latitude	Longitude	Hydrologic Unit Code (HUC)
Beginning Point	8N/8W/Section 19	40.771714	-81.418156	0504000105 (Nimishillen Creek)
Ending Point	9N/9W/Section 22	40.687125	-81.488820	0504000112 (Pigeon Run-Tuscarawas River)

1.2 Project Scope of Work

The Project entails the proposed construction, excavation, installation, and backfilling and restoration of disturbed areas, as well as operation, and maintenance of approximately 10 miles of new 18-inch diameter HDPE pipe to transport treated effluent from MPC's refinery in Canton, Ohio to the Tuscarawas River. Construction and installation of the pipeline includes the horizontal directional drill of Hurford Run. The Project also includes an outfall structure on the east bank of the Tuscarawas River immediately adjacent to an existing multi-pipeline corridor that crosses the Tuscarawas River. The proposed outfall structure pipeline will consist of one (1) 26-inch header

pipe with eight (8) diffuser nozzles sized to evenly distribute flow across each orifice and will be constructed within the east bank of the Tuscarawas River. The proposed HDPE pipeline and outfall structure do not cross the Tuscarawas River.

The proposed construction of the outfall structure includes installation of a temporary and partial river structural diversion (portadam), excavation, installation, backfilling, river bed and bank restoration with rock rip-rap, operation, and maintenance of a proposed outfall structure within the east bank of the Tuscarawas River for the purpose of discharging and mixing treated effluent which will be transported by the above referenced pipeline.

An operations facility (Hill Facility) will be constructed as part of the pipeline. The Hill Facility will function to bleed air from the line and serve as a receiving site for pipeline inspection tools. There are currently two proposed locations for the Hill Facility.

Access to the site is the following: beginning east of 2408 Gambrinus Avenue at MPC's refinery, proceed east crossing Hurford Run and turn due south, crossing Shepler Church Avenue, Beal Run, and Faircrest Street. After Faircrest Street, proceed west, crossing Sherman Church Avenue and immediately turn due south until crossing under the electric transmission lines. Then continue west for approximately 1 mile. Turn due south crossing Richville, Fohl, Gooding, Brinker, and Haut Streets. Turn due southwest crossing Beth Avenue, Hudson Road, and Shepler Church Avenue until the route terminates at the Tuscarawas River.

Per the schedule associated with the NPDES renewal and as outlined by Ohio EPA, construction will begin by January of 2016; however, the permitting process and field surveys began in 2014 to ensure all surveys are conducted during required survey seasons. Field surveys were completed from June 2 through June 5, and August 11, 2014 by ARCADIS biologists. Surveys included identification of jurisdictional "Waters of the U. S." (as outlined in the USACE Regulatory Program Regulations Section 33 CFR 328.2) that may be impacted by the proposed Project. Figures, a photographic log, and wetland and stream data sheets are provided in the attached appendices. Results of these field surveys are discussed in subsequent sections.

2 Stark County Demographics

In 2012, Stark County, Ohio had a total population of 375,000 — 193,000 (52 percent) females and 182,000 (48 percent) males. The median age was 41.6 years. Twenty-two percent of the population was under 18 years and 17 percent was 65 years and older. Census data regarding ethnic origins were analyzed and are shown in **Table 2**. English language usage was not included due to insufficient data.

Table 2. Race/Ethnic Estimates for Stark County, Ohio

Subject	Estimate	Percent
Total population	375,432	375,432
One race	363,312	96.8%
Two or more races	12,120	3.2%
White	332,438	88.5%
Black or African American	26,387	7.0%
American Indian and Alaska Native	388	0.1%
Asian	2,889	0.8%
Native Hawaiian and Other Pacific Islander	0	0.0%
Some other race	1,210	0.3%
White and Black or African American	7,850	2.1%
White and American Indian and Alaska Native	1,800	0.5%
White and Asian	1,092	0.3%
Black or African American and American Indian and Alaska Native	74	0.0%
Hispanic or Latino (of any race)	6,838	1.8%

Source: U.S. Census Bureau, 2012 American Community Survey

2.1 Income, Poverty, and Employment Estimates

In 2012 the median household income of households in Stark County, Ohio was $45,617. Fourteen percent of households had income below $15,000 a year and 4 percent had income over $150,000 or more. Stark County had a 15 percent poverty rate and 22 percent of related children under 18 were below the poverty level, compared with 7 percent of people over the age 65.

In 2012, 57 percent of the population aged 16 and over were employed; 37 percent were not currently in the labor force. Eighty-four percent of the people employed were private wage and salary workers; 11 percent were federal, state, or local government workers; and 5 percent were self-employed in their own (not incorporated) business. Industries for the civilian population aged 16 and older are shown in **Table 3**.

Table 3. Occupations for Civilian Employed Population Aged 16 and Over in Stark County, Ohio

Industry	Percent of the Labor Force
Management, business, science, and arts occupations	30.6
Service occupations	20.1
Sales and office occupations	24.7
Natural resources, construction, and maintenance occupations	8.1
Production, transportation, and material moving occupations	16.7

Source: U.S. Census Bureau, 2012 American Community Survey

3 Anti-degradation Analysis and Alternatives Comparison

MPC considered three alternatives for the proposed Project. The selected route was chosen based on environmental impacts and capital costs. The anti-degradation analysis and alternatives comparison is discussed in the following paragraphs. The outfall to the Tuscarawas River was initially proposed by Ohio EPA in preparation for renewal of the current NPDES permit 3IG00000*LD for discharge to Hurford Run. Based on analysis of reasonable potential, Ohio EPA documented a need for more stringent limits for chlorine, selenium, and dissolved solids for the existing discharge to Hurford Run.

The preferred alternative proposed for this 401 WQC and anti-degradation addendum is the construction of a new discharge pipeline to utilize the permitted assimilative capacity in the Tuscarawas River. The other two alternatives evaluated included a shorter discharge pipeline to Nimishillen Creek less than two miles from the refinery (minimal degradation alternative) or the addition of treatment to meet the current annual loading permit limits for Hurford Run (non-degradation alternative). For the minimal degradation alternative, MPC negotiated with Ohio EPA and performed an analysis that was used to derive limits that were issued in the current permit as an alternative to the discharge to the Tuscarawas River. The current Project was selected as the preferred alternative since current waste stream analysis demonstrates that discharge to Nimishillen Creek has a higher potential to cause a violation of water quality standards (based on the permit limits) than discharge to the larger Tuscarawas River.

3.1 Costs and Reliability

The preferred alternative has a projected cost of approximately $32 million in capital expenses and an estimated annual Operation and Maintenance (O&M) cost of $250,000 to $500,000. Though

the cost of the pipeline is over $32 million in capital expense, it will provide a long-term reliable discharge location into a stream with significantly more assimilative capacity than Hurford Run. The treatment alternatives to reduce concentrations at the Hurford Run discharge point have similar capital costs, but significantly greater long-term operating costs than the discharge to the Tuscarawas River. Additional treatment for total dissolved solids (TDS) involves either distillation or membrane filtration, both of which creates increased waste transfer to other media and has high energy resource costs.

The minimal degradation alternative is to construct a shorter pipeline to Nimishillen Creek. The final construction cost for this discharge line requires additional treatment for selenium at approximately $20.5 million and pipeline cost over $19.9 million. O&M cost for this alternative is estimated at $1.8 million annually for the life of the system. The higher risk of violation of permit limits in Nimishillen Creek for TDS is also an issue for this alternative. The non-degradation alternative includes evaluation of treatment technologies to meet the limits in Hurford Run. Implementation of those treatments has a range of costs between $20 million (for selenium alone) and $60 million (for selenium and TDS reduction), and an annual O&M cost of $2 million.

The reliability of the preferred alternative is greater than the reliability of either the minimal or non-degradation alternatives. For longer pipeline route (preferred alternative), the greatest risk is a pipeline break or pump station failure which could be repaired in a relatively short time during which discharge to the current location might be required. The reliability of the minimal degradation alternative (shorter pipeline route) is similar and proportional to the preferred alternative, but the risk of violation is higher due to the lower assimilative capacity of Nimishillen Creek relative to the Tuscarawas River. The non-degradation alternative (treatment) has the highest risk of violation due to the low assimilative capacity of Hurford Run.

3.2 Socio-economic and Environmental Comparison and Constraints

The important social and economic benefit to the region will be the continued successful operation of the Canton Refinery. The refinery plays a role in energy independence by providing a facility for refining petroleum products, which provide a broad, if not quantifiable, benefit. Additionally, the construction of this new pipeline will provide jobs for the area, both in construction and for supply of the materials, to build the pipeline and pump station. Approximately 50 temporary jobs will be created by the construction of the pipeline. There are no anticipated long-term losses of social or economic benefit related to the Project beyond the burden that the Project cost has on MPC resources. The design has included provision to avoid interferences with the uses of the Tuscarawas River and the adjacent Towpath Trail.

There are no anticipated changes to impacts on human health for any of the alternatives discussed above. By relocating the discharge, Ohio EPA expects to improve the aquatic life use attainment

of Hurford Run, which will increase the value of this water source. The redirection of the current Hurford Run loading is not projected to create any conditions in the Tuscarawas River that would have an impact on aquatic life or other uses of the river at that location. All the possible alternatives are geared toward improving aquatic life use attainment in Hurford Run; however, the preferred alternative has the highest success potential at improving that resource since discharge removal will be complete except in a contingency outfall when pipeline repair may be required.

The design of the pipeline discharge to the Tuscarawas River has been developed specifically to avoid wetland impacts along the route and create a final discharge point that does not interfere with any uses of the receiving water. The modeling analysis performed by Ohio EPA supports the position that the discharge will have no impact on aquatic life in the Tuscarawas River. There will be some impact during construction that will require mitigation of stream and wetland crossings along the ten-mile pipeline route. The mitigation required through the Section 404 and 401 permitting process will assure that those losses are short-term and appropriate environmental benefits will be restored.

During Project planning for the preferred alternative, the standard ROW width of 90 feet was assessed for ecological impacts. It was determined that a 75-foot ROW in areas of ecological resources would still meet the Project objectives and, at the same time, minimize impacts in these ecologically sensitive areas. The 75-foot width will still allow the construction of the new pipeline to occur safely and allow enough visibility of the ROW. In addition to the chosen ROW width, several wetlands and streams along the construction area may potentially be avoided and Best Management Practices will be utilized to minimize wetland and stream impacts associated with the Project. Cost and constructability is not significantly different between utilizing a 75-foot and 90-foot ROW; therefore, MPC has chosen to utilize a 75-foot ROW to minimize impacts to all jurisdictional areas; however, MPC plans to add additional temporary workspace in adjacent upland areas to accommodate construction activities associated with boring locations.

The outfall design alternative uses orifice sizing to distribute flow rate rather than relying on the back pressure of the tideflex gates to even the flow out across the diffuser. The Alternative 2 outfall design has simple low-maintenance stainless steel screens around the orifices to keep fauna out of the pipe and prevent large debris from being pushed into the diffuser. Small solids and other materials will readily be cleaned out of the orifices because of the head pressure of the upstream pipeline.

4 Methodology

Prior to conducting field surveys, ARCADIS conducted a “desktop assessment” of the project route using U. S. Department of Agriculture (USDA) soil surveys, infrared (IR) photography, 2010 Bing aerial imagery, U. S. Geological Survey (USGS) topographic maps, and U. S. Fish and

Wildlife Service (USFWS) National Wetland Inventory (NWI) datasets. This review allowed for preliminary identification of wetlands and provided an understanding of the ecology, land use, and general setting of the site.

The proposed Project route was surveyed using the methodology outlined in the 1987 USACE Wetland Delineation Manual; specifically, the methods outlined in Section D, subsection 2, for on-site inspections were used to determine the presence or absence of jurisdictional areas. The USACE Regional Supplement for the Eastern Mountains Piedmont Region (Version 2.0) also was utilized during field surveys (2012). The Project route was determined by overlaying engineered project plans onto 1:24,000 USGS topographic maps using GIS software. The Project route was examined, in general, for indications of wetland soils, vegetation, and hydrology.

In addition to assessing boundaries of jurisdictional areas, the wetlands and streams were assessed to meet the Ohio EPA standards. In an effort to provide a measure of functional capacity for each wetland, the Ohio Rapid Assessment Method for Wetlands Version 5.0 (ORAM) was conducted. For streams, the Qualitative Habitat Evaluation Index (QHEI) and the Headwater Habitat Evaluation Index (HHEI) were conducted. QHEI is a physical habitat index designed to provide an empirical, quantified evaluation of the general lotic macrohabitat characteristics that are important to fish communities. QHEI addresses habitat in larger streams which have the potential for many aquatic species to be present that have a drainage larger than one square mile. HHEI is a physical index that evaluates substrate types, maximum depth, and channel width. HHEI addresses small stream habitat which has less water and less biological diversity, and generally a watershed less than or equal to 20 square miles.

Each wetland and other water feature in the Project area was assigned a unique identification (ID) number. ID numbers were created in consecutive order.

The proposed Project route was traversed and information characterizing vegetation communities was recorded. Representative observation points were selected among the different vegetation types. A list of dominant species from the general area surrounding the observation points, as well as the plants' stratum and wetland indicator status, were recorded on the wetland determination data sheets (**Appendix B**). Plant wetland indicator status was determined using the USACE 2014 Regional Wetland Plant List for the Eastern Mountains and Piedmont Region. Wetland hydrologic indicators and soil profile characteristics (15-inch maximum depth) for each observation point were also examined and recorded on the wetland data sheets. Hydric soils were assumed to be present at observation points if: 1) all dominant species had an indicator status of Obligate (OBL); and 2) all dominant species had an indicator status of OBL or Facultative Wet (FACW), and the wetland boundary was abrupt, or if mineral soils had a matrix chroma of 2 or less in mottled soils or a matrix chroma of 1 or less in un-mottled soils (WTI 1995). Information about the proposed

Project route also was obtained through inspection of the USDA soil surveys for Stark County, Ohio.

A minimum of two soil pits were dug at each potential site (a wetland and upland pit) except where hydric soils were assumed due to the presence of standing water in excess of 2 feet. Each pit was examined for the presence of hydric soil indicators. Additional pits were dug as necessary to more accurately determine the extent of wetland boundaries.

Other water features were identified by the presence of a defined bed and bank, and evidence of an Ordinary High Water Mark (OHWM). A QHEI or HHEI datasheet was completed for these water features. The information recorded on this feature included water flow, bank slope, bank height, substrate characteristics, presence of wildlife, associated vegetation, and percent of canopy cover. The data sheets are provided in **Appendix D**.

4.1 Wetlands

Wetlands are defined by the USACE (33 CFR 328.3, 1986) and the U. S. Environmental Protection Agency (USEPA) (40 CFR 230.3, 1980) as "areas that are inundated or saturated by surface or groundwater 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." Many wetlands and other aquatic features, including ephemeral, intermittent, and perennial streams, are considered waters of the U. S. by the USACE and these "jurisdictional" areas are protected under Section 404 of the Clean Water Act.

4.1.1 Wetland Classification

During field surveys, wetlands were classified using the Cowardin classification system (Cowardin et al. 1979). The wetlands can be classified into three main groups: palustrine emergent (PEM), palustrine scrub/shrub (PSS), and palustrine forested (PFO). Descriptions of each wetland type are below.

- PEM wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants. All water regimes are included except subtidal and irregularly exposed water bodies.
- PSS wetlands include areas dominated by woody vegetation less than six meters (20 feet) tall. Vegetation species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes except subtidal are included.

- PFO wetlands are characterized by woody vegetation that is six meters tall or taller. All water regimes are included except subtidal. These wetlands contain less than five percent herbaceous vegetation (Cowardin et al. 1979).

4.2 GPS Collection

All GPS data were edited for errors and clipped to the Project area boundary. All wetlands and other water features were recorded using a differential Global Positioning System (GPS) device. The GPS was programmed to only record points with a minimum of four satellites and a Position Dilution of Precision (PDOP) value no greater than 6.0. Wetland features were demarked by collecting GPS position points along the Project route. All wetlands and other water features also were photographed. A complete photographic log of the areas is included in **Appendix A**.

4.3 Preliminary Jurisdictional Determination

The jurisdictional status of the wetlands and other water features is generally based on the feature being adjacent to or having an obvious hydrologic connection to a known or traditional jurisdictional waterway or wetland. For the purpose of this analysis, all named waterways and their tributaries were considered traditional and jurisdictional, as were all wetlands associated with a spring, seep, or other natural hydrological sources. If a wetland was separated from a named waterway or other water feature determined to be jurisdictional by the method mentioned previously by a berm, roadway, railway, or other man-made feature, it was considered adjacent and jurisdictional even if a culvert or other surface connection is not observed. Wetlands and other water features that fell within 1,000 feet of named waterways or tributaries to named waterways also were considered adjacent. If no hydrologic connection (current or historical) was observed or could be identified on topographical maps or from ground truething, then the wetland was considered non-jurisdictional and documented as isolated.

Wetland F is located in a horse pasture that does not have a discernible connection to another waterway. Wetlands E and P are located in the middle of agricultural fields and no channel was observed to provide a hydrological connection to a named waterway or tributary to a named waterway. Any connections from these wetlands to Waters of the U.S. would be provided by sheet flow over land and not through a channel with a defined bed and bank. All other identified wetlands have a significant nexus to Hurford Run or the Tuscarawas River. An Isolated Wetlands Permit is being submitted concurrently with this 401 WQC application.

5 Wetland Results

The Project is required to construct approximately 10 miles of new HDPE pipeline to transport treated effluent from the Canton refinery to the proposed outfall structure within the east bank of

the Tuscarawas River to remain in compliance with the new Ohio EPA discharge limits. The proposed Project route was chosen based on the relative environmental impacts, costs, and constructability. The excavation and backfilling of the pipe trench associated with the construction and installation of approximately 10 miles of proposed new 18-inch diameter HDPE pipeline will traverse 18 jurisdictional wetlands. The pipe will be installed 3 feet below all jurisdictional wetlands via a 30-42 inch wide trench per typical drawings CO-36-008. Eighteen (18) jurisdictional wetlands were identified within the survey area. All wetland impacts will be limited to the 75-foot ROW and designated workspace. MPC has chosen to utilize the smallest ROW possible to minimize impacts to all jurisdictional areas; however, some additional temporary workspace in adjacent upland areas to accommodate construction activities associated with boring locations is required. **Figures 1** through **27** (delineation features) illustrate the wetland boundaries and data points, and **Figures 1** through **26** (photo location maps) provide photo location points for the proposed pipeline centerline and proposed pipeline ROW boundary.

Impacts to emergent (PEM) wetlands will be avoided if possible. If impacts are unavoidable, they will be temporary. The primary impacts to wetlands will be associated with the construction of the new pipeline ROW. Project construction in forested (PFO) and shrub/scrub (PSS) wetlands will convert forested wetlands to herbaceous wetlands. The wetlands delineated in the Project area have been classified as PFO, PSS, or PEM. No Category 3 wetlands will be impacted by the HDPE pipeline installation. Construction equipment will operate on equipment mats during construction activities in the identified wetland areas. The topsoil within each wetland area will be segregated and placed separately to avoid co-mingling of the subsoil unless the topsoil is too saturated to segregate. All wetland areas will be returned to pre-construction contours during final cleanup of the pipeline construction corridor. The construction corridor within the wetland areas will be allowed to re-vegetate naturally; however, trees will not be allowed to regrow within the limits of the permanent ROW.

A summary of wetland areas along the proposed pipeline ROW from the Canton Refinery to the Tuscarawas River is provided in **Table 4**. **Table 4** shows estimated impacts for the Minimal Degradation Alternative that is discussed in Section 2. More details of each wetland can be found on the wetland and ORAM data sheets provided in **Appendix B and C**, respectively. Each wetland data sheet represents a data point within the Project area. Refer to **Figures 1** through **27** (delineation features) for data point locations and **Figures 1** through **26** (photo location maps) for photo location points, as well as **Appendix A** for a photographic log of the entire proposed pipeline route.

Table 4. Wetland Area Impacts

Wetland	Type	Impact (acres)		Excavated Soil (cu. yds.)	ORAM Category(Score)	Latitude	Longitude
		Temporary	Conversion				
Wetland A	PFO	-	0.019	35.0	1 (23)	40.76512	-81.40994
	PEM	0.029	-	6.4		40.76514	-81.40983
Wetland B	PEM	0.107	-	223.9	2-modified (37)	40.74577	-81.42054
Wetland C	PEM	0.059	-	86.8	2-modified (41)	40.76355	-81.41057
Wetland D	PSS	-	0.027	39.1	1 (27)	40.75954	-81.41386
Wetland E	PEM	0.045	-	23.3	1 (21)	40.75218	-81.41448
Wetland F	PEM	0.168	-	0	1 (25)	40.75024	-81.41451
Wetland G	PUB	0.00	-	0	1 (26)	40.74907	-81.41658
Wetland H	PEM	0.051	-	59.5	2-modified (41)	40.73667	-81.43646
Wetland I	PEM	0.001	-	0	1 (34)	40.72890	-81.43846
Wetland J	PEM	0.042	-	61.7	1 (31)	40.72827	-81.43983
Wetland K	PEM	0.114	-	169.2	2 (46)	40.72730	-81.43968
Wetland L	PSS	-	0.005	0	2-modified (41)	40.69210	-81.45154
Wetland M	PEM	0.023	-	19.8	1 (33.5)	40.73618	-81.43671
Wetland N	PEM	0.028	-	39.85	1 (27.5)	40.70698	-81.44132

Wetland	Type	Impact (acres)		Excavated Soil (cu. yds.)	ORAM Category(Score)	Latitude	Longitude
		Temporary	Conversion				
Wetland O	PEM	0.00	-	0	2 (50.5)	40.68871	-81.46023
Wetland P	PEM	0.134	-	116.56	1 (21.5)	40.68723	-81.46413
Wetland Q	PEM	0.005	-	0	2-modified (34)	40.68665	-81.46669
Wetland R	PEM	0.00	-	0	1 (34)	40.68505	-81.47335
Total		**0.806**	**0.051**	**881.2**			

5.1 Stream Results

Stream assessments were also conducted along the proposed route of the new HDPE pipeline in the Nimishillen Creek and Tuscarawas River watersheds to assess the jurisdictional status of the streams and quality of stream habitat that may be encountered during pipeline construction. A habitat assessment was completed on streams that met jurisdictional criteria. The excavation and backfilling of the pipe trench associated with the construction and installation of approximately 10 miles of proposed new 18-inch diameter HDPE pipeline will cross 25 streams, 18 which are considered jurisdictional. The pipe will be installed five feet below all streams via a 30-42 inch wide trench, per typical drawing CO-36-008, with the exception of Stream 1 (Hurford Run), which will be horizontal directional drilled (HDD). All stream impacts will be temporary with the exception of the location on the east bank of the Tuscarawas River where the outfall structure will be installed and Stream 18 where a road will be installed for access to the Hill Facility. All stream impacts will be limited to the 75-foot ROW, 30-42 inch wide trench, and designated workspace. **Figures 1** through **27** (delineation features) illustrate the stream boundaries and data points, and **Figures 1** through **26** (photo location maps) provide photo location points for the proposed pipeline centerline and proposed pipeline ROW boundary.

The primary impacts to streams will be associated with the construction of the new pipeline ROW. The jurisdictional streams delineated in the Project area have been scored based on the Ohio EPA QHEI or HHEI. A summary of stream crossings along the proposed pipeline ROW from the Canton Refinery to the Tuscarawas River are provided in **Table 5**. **Table 5** shows estimated impacts for the ROW as discussed in Section 2. More details of each jurisdictional stream can be

found on the QHEI and HHEI data sheets provided in **Appendix D**. Refer to **Figures 1** through **27** (delineation features) for stream feature and **Figures 1** through **26** (photo location maps) for photo point locations, as well as **Appendix A** for a photographic log of the entire proposed pipeline route.

Table 5. Stream Impacts

Stream	Flow Regime	Habitat Evaluation Index Score	Jurisdictional	Affected Linear Footage	Excavation Amount (Cu. yds.)	Latitude	Longitude	Impact Type
Stream 1	Perennial	QHEI – 57	Y	0	0	40.76845	-81.41163	Temporary
Stream 2	Intermittent	QHEI – 59	Y	38.24	106.2	40.76385	-81.41066	Temporary
Ditch 1	Ephemeral	-	N	5.64	15.7	40.75693	-81.41442	Temporary
Stream 3	Ephemeral	HHEI - 38	Y	7.86	21.8	40.74521	-81.42062	Temporary
Stream 4	Ephemeral	HHEI – 29	Y	8.51	23.6	40.74296	-81.43562	Temporary
Stream 5 Up	Intermittent	HHEI – 58	Y	9.18	25.5	40.74004	-81.43550	Temporary
Stream 5 Down	Intermittent	HHEI – 58	Y	10.09	28.0	40.73917	-81.43561	Temporary
Stream 6	Intermittent	HHEI – 18	Y	0.0	0.0	40.73525	-81.43835	-
Stream 7	Intermittent	HHEI - 66	Y	18.48	51.3	40.73524	-81.43806	Temporary
Stream 8	Ephemeral	HHEI - 38	Y	20.10	55.8	40.72903	-81.43843	Temporary
Stream 9	Intermittent	QHEI – 56.5	Y	8.59	23.9	40.72874	-81.43951	Temporary
Stream 10	Ephemeral	HHEI - 27	Y	33.68	93.6	40.70828	-81.44135	Temporary
Stream 11	Ephemeral	HHEI - 38	Y	19.28	53.6	40.70034	-81.44621	Temporary
Stream 12	Intermittent	HHEI - 49	Y	0.0	0.0	40.70059	-81.44636	-
Stream 13	Ephemeral	HHEI - 35	Y	6.78	18.8	40.69779	-81.44783	Temporary
Stream 14	Intermittent	QHEI – 63.5	Y	23.23	64.5	40.69180	-81.45187	Temporary
Stream 15	Perennial	QHEI – 66.5	Y	36.01	100.0	40.68811	-81.46140	Temporary
Stream 16	Intermittent	QHEI - 54	Y	21.70	60.3	40.68453	-81.47391	Temporary
Stream 17	Perennial	QHEI - 70	Y	28.23	78.4	40.68716	-81.48911	Temporary

Stream	Flow Regime	Habitat Evaluation Index Score	Jurisdictional	Affected Linear Footage	Excavation Amount (Cu. yds.)	Latitude	Longitude	Impact Type
Stream 18	Intermittent	HHEI - 18	Y	15.0	0.0	40.68699	-81.48551	Permanent
Total				**310.59**	**821.0**			

5.2 Wetland and Stream Construction Methodology

The following sections describe the construction methodology that will be used in wetland and stream areas. Typical construction drawings are included in **Appendix F**. In addition, the plan and profile drawings for the outfall structure are included in **Appendix G**.

5.2.1 Wetlands

The construction corridor will be graded up to 10 feet of the wetland and temporary erosion control structures (silt fence, straw bales, and equipment mats) will be installed. Emergent wetlands will be mowed/cleared, and all forested and shrub/scrub wetlands will have trees/shrubs removed directly over the pipe trench location. The pipe trench will be excavated using the conventional open ditch lay method (separating topsoil where practical in upland areas) and temporary trench plugs (foam plugs and/or sand bags) will be installed as needed to maintain hydrology. Construction crews will lower and install the fused/welded pipe and permanently install trench plugs. The pipe trench will then be backfilled with subsoil and the segregated topsoil that was placed in an upland area will be re-distributed. The trenched area will be returned to original contours. Temporary erosion control structures will be maintained during each phase of construction, but the equipment mats will be removed during final site cleanup.

Operation of construction equipment in wetlands will be limited to the activities described above and will be conducted on the travel lane surface provided by the equipment mats. The equipment mats will also prevent compaction of saturated soils and will assist in maintaining the integrity of the wetland. The topsoil will be stripped to the typical one foot depth in wetlands where hydrologic conditions permit this practice. The excavated pipe trench will be the only disturbed area in wetlands/saturated soils. There will be no overall grading within a wetland. No temporary and/or extra workspaces will be located in areas that have been delineated as a wetland.

5.2.2 Streams

The construction corridor and temporary workspaces will be cleared and graded to within 25 feet of the top bank. Woody vegetation that is greater than one (1) inch diameter will be cut and cleared by hand on stream banks, and removed to an upland area, and temporary sedimentation control structures (rock/flume crossings, silt fence, straw bales, and equipment mats) will be installed. The segment of pipe that will be used in the stream crossing will be constructed in the adjacent temporary workspace. The pipe trench across the stream will be excavated and the segment of pipe installed within 48 hours (an additional 24 hours may be required if rock is encountered). Within this same time period, the stream will be backfilled with clean washed rock and the stream banks will be returned to pre-construction contours and blended with the adjacent banks. All temporary erosion control structures will be re-installed and the rock/flume bridges will be removed during final cleanup. These methods will be implemented at all stream crossings, except Stream 1 (Hurford Run), which will be crossed via HDD.

5.2.3 Additional Construction Methodology Descriptions

The following paragraphs provide details on construction methods discussed in Sections 4.2.1 and 4.2.2.

<u>Open Cut Method</u>

Construction methods at waterbody crossings may vary with the characteristics of the waterbody encountered. Intermediate waterbodies (between 10 and 100 feet wide at the water's edge) and minor channels (less than 10 feet wide at the water's edge) will be crossed by the open cut/conventional lay method. The crossing of flowing streams will be accomplished by open trench excavation with equipment operating from the banks, when practical. Temporary bridges will be installed during clearing and grading. Track backhoe-type excavators will be used to open a trench across the channel. Once the trench has been excavated across the waterbody, soft plugs will be installed on either side of the stream to prevent sedimentation of the stream from the excavated trench.

During these operations, flow will be maintained at all stream crossings. Trench spoil will be placed on the bank above the high water mark for use as backfill. A prefabricated segment of pipe will be placed below scour depth. All open-cut waterbody crossings will be backfilled with a minimum of five (5) feet of coverage, including drains and roadside ditches. Once the trench is backfilled, the banks will be stabilized, which could include seeding and/or the installation of riprap materials. Excavated spoil will be stockpiled at least 25 feet from the edge of the waterbody, and appropriate erosion control devices will be installed. Excavated material not required for backfill will be removed and disposed of at an upland site. Construction activities will

be scheduled so that the pipeline trench is excavated immediately prior to pipe-laying activities. The duration of all waterbody crossings will be limited to the least amount of time practical.

Horizontal Directional Drill Method

The proposed pipeline crossing at Stream 1 (Hurford Run) will be installed using the HDD technique. Non-toxic drilling mud will be utilized which will substantially reduce or eliminate potential impacts to waterbodies. HDD is an advanced boring method to install pipelines beneath large waterbodies, wetlands, and features requiring special attention due to environmental and logistical concerns.

Flume Crossing Method

The flume crossing method consists of temporarily directing the flow of water through one or more sandbagged flume pipes placed over the excavated area. This method allows for the trench to remain open for the flow of clean water over the excavated trench. Once the trench has been excavated across the waterbody, soft plugs will be installed on either side of the stream to prevent sedimentation of the stream from the excavated trench.

Upon installation of the pipeline and backfilling of the trench, the sandbagged flumes will be removed; temporary stabilization of the stream banks will be completed at that time.

Dam and Pump Method

The dam and pump crossing method consists of installing temporary dams upstream and downstream of a proposed crossing. The dams are typically constructed of sandbags and plastic sheeting. Following installation of the dams, pumps are used to dewater the area to be excavated and to transport the stream flow around the construction work area.

5.3 Soil Series

Table 6 and the following paragraphs describe the soil series that are located along the proposed pipeline route.

Table 6. Project Area Soil Series

Stark County, Ohio (OH151)	
Map Unit Symbol	**Map Unit Name**
BoB	Bogart silt loam, 2 to 6 percent slopes
BoC	Bogart silt loam, 6 to 12 percent slopes
CdB	Canfield silt loam, 2 to 6 percent slopes
CdC	Canfield silt loam, 6 to 12 percent slopes
CdC2	Canfield silt loam, 6 to 12 percent slopes, moderately eroded
CoD2	Chili gravelly loam, 12 to 18 percent slopes, moderately eroded
CoE2	Chili gravelly loam, 18 to 25 percent slopes, moderately eroded
CpB	Chili silt loam, 2 to 6 percent slopes
FcA	Fitchville silt loam, 0 to 2 percent slopes
FcB	Fitchville silt loam, 2 to 6 percent slopes
GdC	Gilpin silt loam, 6 to 12 percent slopes
GfB	Glenford silt loam, 2 to 6 percent slopes
GfC	Glenford silt loam, 6 to 12 percent slopes
GfD2	Glenford silt loam, 12 to 18 percent slopes, moderately eroded
KeD2	Keene silt loam, 12 to 18 percent slopes, moderately eroded
LcE2	Licking silt loam, 12 to 25 percent slopes, moderately eroded
LoB	Loudonville silt loam, 2 to 6 percent slopes
LoD2	Loudonville silt loam, 12 to 18 percent slopes, moderately eroded
Ly	Luray silt loam
MsB	Muskingum silt loam, 2 to 6 percent slopes
MsD	Muskingum silt loam, 12 to 18 percent slopes
MvE	Muskingum and Gilpin silt loams, 18 to 25 percent slopes

Stark County, Ohio (OH151)	
Map Unit Symbol	**Map Unit Name**
MvF	Muskingum and Gilpin silt loams, 25 to 35 percent slopes
ReA	Ravenna silt loam, 0 to 2 percent slopes
Sb	Sebring silt loam
Sh	Shoals silt loam
Sl	Sloan silt loam
SoF	Strip mine spoil, sandstone and shale materials, steep
SsC	Strip mine spoil, acid clay shale materials, undulating
SsE	Strip mine spoil, acid clay shale materials, rolling
StC	Strip mine spoil, nonacid materials, undulating
Ur	Urban land
Wd	Wayland silt loam
WrA	Wheeling silt loam, 0 to 2 percent slopes
WrB	Wheeling silt loam, 2 to 6 percent slopes
WsD2	Wheeling soils, 12 to 18 percent slopes, moderately eroded
WuB	Wooster silt loam, 2 to 6 percent slopes
WuC	Wooster silt loam, 6 to 12 percent slopes
WuC2	Wooster silt loam, 6 to 12 percent slopes, moderately eroded
WuD2	Wooster silt loam, 12 to 18 percent slopes, moderately eroded
WuE2	Wooster silt loam, 18 to 25 percent slopes, moderately eroded

Bogart silt loam [BoB, BoC] (fine-loamy, mixed, active, mesic Aquic Hapludalfs)

The Bogart series consists of very deep, moderately well drained soils that formed in stratified outwash deposits on terraces, beach ridges, and outwash plains. Permeability is moderate or moderately rapid in the solum and rapid in the substratum. The potential for surface runoff is medium. Slopes range from 0 to 12 percent. Mean annual precipitation is about 35 inches, and mean annual temperature is about 51 degrees F. About one-half of these soils are used mainly for

cultivation of corn, oats and mixed hay; about one-fourth is forested with sugar maple, beech, and oak the dominant species. The remaining one-fourth is used for pasture or for nonagricultural purposes.

Canfield silt loam [CdB, CdC, CdC2] (fine-loamy, mixed, active, mesic Aquic Fragiudalfs)

The Canfield series consists of very deep, moderately well drained soils formed in Wisconsinan age till on till plains. In some pedons there is a thin loess mantle. Saturated hydraulic conductivity is moderately high above the fragipan and moderately low in the fragipan and substratum. Slopes range from 0 to 35 percent. Mean annual precipitation is about 42 inches, and mean annual temperature is about 48 degrees F. Most areas are cultivated. Principal crops are corn, soybeans, small grain and hay. Steeper slopes are commonly in pasture or woodland.

Chili gravelly loam / Chili silt loam [CoD2, CoE2, CpB] (fine-loamy, mixed, active, mesic Typic Hapludalfs)

The Chili series consists of very deep, well drained soils on outwash plains, terraces, kames, and beach ridges. They formed in Wisconsinan age outwash deposits, mainly of non-calcareous sandstone and shale with a large amount of quartz gravel. Commonly, the outwash is mantled with silt. Permeability is moderately rapid in the subsoil and rapid in the substratum. The potential for surface runoff is negligible to high. Slopes range from 0 to 70 percent. Mean annual precipitation is about 37 inches, and mean annual temperature is about 51 degrees F. Most areas having less than 12 percent slopes are cleared and used for general farming, specialty crops, or pasture. Principal crops are corn, oats, wheat, and mixed hay. Steeper areas are mostly wooded.

Fitchville silt loam [FcA, FcB] (fine-silty, mixed, superactive, mesic Aeric Endoaqualfs)

The Fitchville series consists of very deep, somewhat poorly drained soils formed in stratified Wisconsinan age glaciolacustrine sediments on lake plains and slackwater terraces. Permeability is moderate in the surface, moderately slow in the subsoil and moderate or moderately slow in the substratum. The potential for surface runoff is low to high. Slopes range from 0 to 12 percent. The mean annual precipitation is about 39 inches, and the mean annual temperature is about 51 degrees F. Most areas of Fitchville soils have been cleared. Some of the cleared areas are used for permanent pasture, but most are used for cultivated crops with corn, oats, wheat, soybeans, and mixed hay. Some areas are still wooded. Sugar maple, beech, red oak, pin oak, elm, and hickory are the main tree species.

Gilpin silt loam [GdC] (fine-loamy, mixed, active, mesic Typic Hapludults)

The Gilpin series consists of moderately deep, well drained soils formed in residuum of nearly horizontal interbedded shale, siltstone, and some sandstone of the Allegheny Plateau. They are on gently sloping to steep, convex, dissected uplands. Slopes range from 0 to 70 percent. Permeability is moderate. The potential for surface runoff is negligible to high. Mean annual precipitation is 43 inches, and mean annual air temperature is 51 degrees F. Gilpin soils are mainly used for cropland and pasture. Wooded areas are in mixed hardwoods, mainly oaks.

Glenford silt loam [GfB, GfC, GfD2] (fine-silty, mixed, superactive, mesic Aquic Hapludalfs)

The Glenford series consists of very deep, moderately well drained soils formed in stratified Wisconsinan age glaciolacustrine or stream sediments on lake plains, stream terraces, and outwash plains and terraces. Permeability is moderate or moderately slow in the upper part of the subsoil and moderately slow in the lower part of the subsoil and the substratum. The potential for surface runoff ranges from low to very high. Slopes range from 0 to 25 percent. The mean annual precipitation is about 36 inches, and the mean annual temperature is about 50 degrees F. Most areas have been cleared and used for cropland or permanent pasture. Corn, small grains, and hay are the principal crops. Some areas are still in woodland. Many areas near cities are in nonagricultural uses.

Keene silt loam [KeD2] (fine-silty, mixed, superactive, mesic Aquic Hapludalfs)

The Keene series consists of deep or very deep, moderately well drained soils formed in a mantle of silty material up to 36 inches in thickness and in residuum weathered mainly from Pennsylvanian acid shale, siltstone, coal underclay, and some strata of limestone on uplands. Permeability is moderate or moderately slow in the upper silty material and is moderately slow or slow in the lower material. The potential for surface runoff is medium to high. Slopes range from 1 to 25 percent. Mean annual precipitation is about 40 inches, and mean annual temperature is about 53 degrees F. Most areas are cropped. Corn, mixed hay, and wheat are the principal crops. More sloping areas are in forage for hay or pasture, or in woodland.

Licking silt loam [LcE2] (fine, mixed, active, mesic Aquic Hapludalfs)

The Licking series consists of very deep, moderately well drained soils that formed in a mantle of silty material over clayey lacustrine sediments. Permeability is moderately slow in the upper part of the solum and slow in the lower part. Index surface runoff is medium to very high. These soils are on terraces and have slopes ranging from 0 to 25 percent. Mean annual precipitation is about 40 inches, and mean annual temperature is 53 degrees F. Most areas are used for pasture, meadow, and cultivated crops.

Loudonville silt loam [LoB, LoD2] (fine-loamy, mixed, active, mesic Ultic Hapludalfs)

The Loudonville series consists of moderately deep well drained soils formed in loamy till and underlain by sandstone or siltstone within a depth of 20 to 40 inches. These soils have moderate permeability. The potential for surface runoff is very low to high depending on slope. Slopes range from 0 to 70 percent. Mean annual precipitation is about 37 inches, and mean annual temperature is about 51 degrees F. Most areas on slopes less than 18 percent are cleared and used for cultivated crops. Corn, small grains, and mixed hay are principal crops. Some areas are pastured. Orchards are common, especially in areas within a few miles of Lake Erie. Many areas are in nonagricultural uses.

Luray silt loam [Ly] (fine-silty, mixed, superactive, mesic Typic Argiaquolls)

The Luray series consists of very deep, very poorly drained soils formed in silty lacustrine material or slack water sediments. These soils are on lake plains, terraces, outwash plains, and some local areas on till plains. Saturated hydraulic conductivity is moderately high. Permeability is moderately slow. The potential for surface runoff is negligible to medium. Slopes range from 0 to 2 percent. Mean annual precipitation is about 37 inches, and mean annual air temperature is about 51 degrees F. More than half of the Luray soils are cultivated. Corn, soybeans, wheat, oats, and mixed hay are the principal crops. Some areas are pastured and some are wooded.

Muskingum silt loam [MsB, MsD, MvE, MvF] (*fine-loamy, mixed, semiactive, mesic Typic Dystrudepts*)

The Muskingum series consists of moderately deep, well drained, moderately permeable soils formed in residuum weathered from interbedded siltstone, sandstone and shale. These soils are in rugged topography on dissected plateaus. Slopes range from 2 to 75 percent. Mean annual precipitation ranges from 35 to 55 inches and mean annual air temperature is about 53 degrees F. Gentle slopes are used for growing corn, wheat and hay. Most areas are in mixed forest of oaks, yellow poplar, hickory and maple.

Ravenna silt loam [ReA] (fine-loamy, mixed, active, mesic Aeric Fragiaqualfs)

The Ravenna series consists of very deep, somewhat poorly drained soils formed in Wisconsinan age till on till plains. Many pedons have a thin loess mantle or other silty material. Permeability is moderate above the fragipan and slow in the fragipan. The potential for surface runoff is negligible to high. Slopes range from 0 to 15 percent. Mean annual precipitation is about 37 inches, and mean annual temperature is about 51 degrees F. Most areas are in cropland. Corn, oats, wheat, and mixed hay are principal crops. Some areas are used for pasture and a few are wooded.

Sebring silt loam [Sb] (fine-silty, mixed, superactive, mesic Typic Endoaqualfs)

The Sebring series consists of very deep, poorly drained soils formed in stratified Wisconsinan age glaciolacustrine sediments on lake plains and slackwater terraces. Permeability is moderately slow in the subsoil and moderate or moderately slow in the substratum. The potential for surface runoff is negligible to low. Slopes range from 0 to 2 percent. Mean annual precipitation is about 36 inches, and mean annual temperature is about 50 degrees F. Slightly more than half of this soil has been cleared, but because of wetness, most areas are used for pasture. Some areas are cultivated, with corn, oats and mixed hay being the main crops. Pin oak and swamp white oak are the dominant tree species in wooded areas.

Shoals silt loam [Sh,] (fine-loamy, mixed, superactive, nonacid, mesic Fluventic Endoaquepts)

The Shoals series consists of very deep, somewhat poorly drained soils that formed in alluvium on flood plains. Permeability is moderate in the solum and moderate or moderately rapid in the substratum. Potential for surface runoff is negligible or very low. Slopes range from 0 to 2 percent. Mean annual precipitation is about 42 inches, and mean annual temperature is about 52 degrees F. These areas are mainly used to grow corn and soybeans. Some areas are used for forest or pasture.

Sloan silt loam [Sl] (fine-loamy, mixed, superactive, mesic Fluvaquentic Endoaquolls)

The Sloan series consists of very deep, very poorly drained soils formed in loamy alluvium on flood plains. Potential for surface runoff is negligible to medium. These soils are subject to flooding from late fall to spring. Slopes range from 0 to 2 percent. Mean annual precipitation is about 36 inches, and mean annual temperature is about 51 degrees F. A large part of these areas is artificially drained and cultivated. Corn and soybeans are the principal crops with small acreages of hay, oats, and vegetables. Other areas, especially on the flood plains of the smaller streams, are used for permanent pasture or woodland.

Wayland silt loam [Wd] (fine-silty, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts)

The Wayland series consists of very deep, poorly drained and very poorly drained, nearly level soils formed in recent alluvium. These soils are in low areas or slackwater areas on flood plains. Saturated hydraulic conductivity is moderately high or high in the mineral soil. The potential for surface runoff is negligible to very high. Slopes range from 0 through 3 percent. Mean annual temperature is about 46 degrees F and mean annual precipitation is about 42.5 inches. Native vegetation is red maple, alder, willow, and other trees tolerant of wet sites. Some areas have been cleared and drained, and are used for growing pasture or crops.

Wheeling silt loam [WrA, WrB, WsD2] (fine-loamy, mixed, active, mesic Ultic Hapludalfs)

The Wheeling series consists of very deep, well drained soils with moderate permeability. These soils formed in silty or loamy alluvial materials on river terraces. The potential for surface runoff potential is low to medium. Slopes are dominantly 0 to 8 percent, but range to 55 percent. The mean annual precipitation is about 43 inches and the mean annual temperature is about 52 degrees F. Many areas of Wheeling soils along the Ohio River are used for industrial and residential sites. General and specialized farm crops are grown in some areas, including corn, wheat, soybean, clover, alfalfa, melons, tomatoes, and potatoes. Wooded acreage is limited to the steeper slopes.

Wooster silt loam [WuB, WuC, WuC2, WuD2, WuE2] (*fine-loamy, mixed, active, mesic Oxyaquic Fragiudalfs)*

The Wooster series consists of deep, well drained soils formed in low-lime loamy glacial till with a thin loess mantle in some places. Permeability is moderate above the fragipan and moderately slow in the fragipan. Runoff is medium to very rapid. Slopes range from 2 to 50 percent. Mean annual precipitation is about 36 inches, and mean annual temperature is 51 degrees F. Most areas with slopes less than l8 percent are cultivated. Corn, oats, wheat, mixed hay, and pasture are the principal crops. Sizeable areas are used for woodland, habitat for wildlife, sites for buildings, and recreation uses.

5.4 Hydrology

The Project is located within the 100-year floodplain of Hurford Run and the Tuscarawas River (beginning and end points). Multiple streams cross the proposed pipeline ROW where adjacent wetlands are present. Additional details on the Project area hydrology can be found on the wetland delineation and stream data sheets located in **Appendix B and D**, respectively and the photographic log in **Appendix A**.

6 Mitigation

Avoidance and minimization measures to avoid and/or minimize impacts to waters of the U. S. were employed throughout the planning process for the Project. In addition, MPL utilizes well established conservation measures to limit impacts and allow fast revegetation (e.g. narrowing workspaces, segregating topsoil, limiting traffic in wetlands, matting, and monitoring). The project would result in the conversion of approximately 0.019 acres of forested wetlands and 0.032 acres of shrub/scrub wetlands to herbaceous wetlands within the proposed pipeline ROW for a total of 0.051 acres. These impacts were determined to be unavoidable. Temporary impacts to herbaceous wetlands total 0.8 acre. Unavoidable impacts to wetlands (temporary and conversion)

will be mitigated through on site restoration at a 1:1 ratio. Impacted wetlands will be monitored until 80 percent vegetation is achieved.

7 Cultural Resources

An archeological survey was completed by URS in September and October 2014 to determine if the proposed project would impact culturally significant items. A report summarizing cultural resource findings has been filed with the Ohio Historic Preservation Agency and they have concurred with the findings (**Appendix E).**

8 Threatened and Endangered Species

The Endangered Species Act (ESA) provides a program for the protection and conservation of threatened and endangered plants and wildlife. The ESA prohibits any action that will result in a "taking" of listed species, or adversely affects critical habitats. Likewise, import, export, interstate, and foreign commerce of listed species are prohibited. In addition, Section 7 of the ESA requires all federal agencies, in consultation with and with the assistance of the Secretary of the Interior, to ensure that their actions will not likely jeopardize the continued existence of a threatened and endangered species, or result in destruction or adverse modification of a critical habitat of a species.

To address these requirements, ARCADIS biologists conducted background research to determine the potential for rare species occurrence in the Project area. **Table 7** provides a list of federally threatened and endangered species of potential occurrence in Stark County, Ohio.

Table 7. Federally Threatened and Endangered Species of Potential Occurrence in Stark County, OH

Species	Status	Habitat
Indiana Bat (*Myotis sodalis*)	Endangered	Caves, mines (hibernacula); small stream corridors with well-developed riparian woods; upland forests (foraging).
Northern Long-eared Bat (*Myotis septentrionalis*)	Proposed as Endangered	Caves, mines (hibernacula); surrounding wooded areas in autumn. During late spring and summer roosts and forages in upland forests.

In addition to conducting background research, consultation letters were sent to the USFWS and OH DNR on March 21, 2014. Response letters from each of these agencies are provided in **Appendix E**.

During field surveys, ARCADIS biologists conducted a habitat assessment for each of the species in **Table 7**. There is potential habitat for the Indiana bat, northern long-eared bat and freshwater mussel species. A freshwater mussel survey was completed in the Tuscarawas River from September 9 through 11, 2014. No federally-listed species were identified during this freshwater mussel survey. A copy of Ohio DNR's concurrence email is included in **Appendix E**. Additionally, all proposed tree clearing will be conducted during the winter months (November through February); therefore, impacts to Indiana and northern long-eared bats will be avoided (see attached USFWS email in **Appendix E**).

9 National Pollutant Discharge Elimination System

Section 402 of the Clean Water Act authorizes the NPDES permit program and provides the basic structure for regulating the discharge of pollutants from point sources into waters of the U. S. For construction projects that disturb more than one acre where discharges will reach waters of the U. S., a Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented under the EPA's NPDES permit. A SWPPP will be prepared in accordance with good engineering practices and will identify potential sources of pollution that may reasonably be expected to affect the quality of the storm water discharges during the construction of the Project. The SWPPP will describe and ensure implementation of practices that will be used to reduce pollutants in storm water discharges. The SWPPP will be updated as necessary, and a copy will be maintained at the construction site. The final plan will be retained at the MPC office for at least three years after final stabilization has occurred.

10 Pre-construction Notification and Isolated Wetlands Permit

When a project is planned in Ohio that will result in minimal impacts to a wetland, stream, river, lake, or other water of the U. S., the USACE must issue a Nationwide Permit. As such, a Pre-construction Notification (PCN) has been submitted to the USACE Huntington District (ID: LRG-2015-160) and a permit has been issued (**Appendix E**).

11 Section 408 – Levee

There are no levees that will be impacted as part of this project.

12 Floodplain / Floodway

Federal Emergency Management Agency (FEMA) floodplain maps were referenced to determine the presence of floodplains within the Project area. According to these resources, the area in the vicinity of Hurford Run and the Tuscarawas River (beginning and ending points) are located within the 100-year floodplain. Stark County floodplain permitting will be conducted concurrently with the 401.

13 Wild and Scenic Rivers

A review of the Ohio Wild and Scenic Rivers Program was conducted. The Tuscarawas River is not listed as a state scenic river in Ohio.

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