ITEM 5

Proposed Project Antidegradation Analysis

5.0 ANTIDEGRADATION ANALYSIS

5.1 Project Description

Marathon Pipe Line LLC (MPL) is proposing to (1) construct approximately 50 miles of petroleum pipeline from Cadiz to Canton, Ohio, and (2) remove approximately 4.1 miles of Marathon Petroleum Company's (MPC) Breezehill pipeline, an inactive, purged 4-inch gas line in Stark County. Both of these activities are considered components of the overall Cornerstone Pipeline Project. The proposed 50-mile petroleum line traverses portions of Harrison, Carroll, Tuscarawas, and Stark counties (from south to north). The proposed pipeline will be composed of two sizes with 16-inch diameter pipe from Cadiz (Mile Post 0.0) to East Sparta (Mile Post 41.5) and 8-inch diameter pipe from East Sparta to Canton (Mile Post 50.1). The proposed Breezehill pipeline removal component of this project is located entirely within Stark County and its southern end is located at Mile Post 46.05 of the proposed Cornerstone Pipeline and continues north for approximately 4.1 miles to its terminus within MPC's Canton refinery, running parallel to and in close proximity to the Cornerstone Pipeline alignment.

5.1.1 Preferred Design

The following discussion addresses construction plans under the Preferred Design. The pipeline will be installed in accordance with best available technology for the industry, applicable local, state, and federal regulations, applicable permits, and landowner requirements. To reduce the risk of damage caused by third parties, the pipeline will be installed to depths protective of these interests. Soil cover placed over the top of the pipe will meet or exceed the requirements as specified in 49 C.F.R. § 195.248. MPL will follow an established plan for equipment crossings. Soil erosion and sediment control practices will be utilized throughout all earth-disturbing activities, as required. MPL will test the completed pipeline by hydrostatic testing to ensure that there are no leaks or defects in the pipeline.

After installation and pre-start up testing, the pipeline system will be operated by MPL in a safe, efficient, and environmentally responsible manner. The following procedures and practices are examples of practices/procedures that will be utilized to accomplish this task.

Remote and Continuous Monitoring: The pipeline will be continuously monitored from MPL's state-of-the-art Pipeline Operations Center. This facility is located in Findlay, Ohio and is operated by a highly trained staff 24 hours per day, 365 days per year. Important information such as pump and valve status, pipeline pressures and flow rates, and other data are updated every 5 to 10 seconds via satellite and fiber optics communication equipment. The pipeline can be shut down immediately should conditions warrant immediate action.

Aerial Surveillance: MPL conducts weekly aerial inspections (twice what is required by 49 CFR Part 195).

Inline Inspection: MPL employs numerous techniques and inspection devices to test the integrity of its pipelines, including use of assorted in-line inspection tools to determine whether geometric deformations such as dents or ovality exist in the pipe. Other tools test for coating defects and metal loss.

The methods/techniques discussed below apply to the installation of the proposed pipeline. A set of the typical drawings depicting construction methods to be utilized and their accompanying Best Management Practices (BMPs) for soil erosion and sedimentation control is included in Item 6.

Wetland Crossing Techniques: The construction right-of-way (ROW) will be narrowed down from 90 feet to 75 feet at all wetland crossings in order to minimize the temporary impacts resulting from installation of the Cornerstone Pipeline. Prior to trenching activities in a wetland, the top 6 to 10 inches of topsoil from the excavation area will be segregated (see Drawing 1647-100-DG-7541 in Item 6). After placement of backfill is complete, the segregated topsoil will be reapplied over the pipeline trench and the area will be recontoured to pre-construction contours and elevations, and restored in accordance with the project's Storm Water Pollution Prevention Plan (SWPPP). Depth to the top of the installed pipe located within wetlands will be a minimum of 48 inches below ground surface.

Removal of the Breezehill pipe will follow a similar process of segregation of topsoil from the excavation area, removal of the purged pipe and backfilling with subsoil prior to replacing the segregated topsoil. The trench area will be recontoured to pre-construction contours and elevations, and restored in accordance with the project's SWPPP. The details provided below, to include references to the various typical drawings for crossing methods for both wetland and stream crossings, apply to both the installation of the proposed Cornerstone pipeline and removal of the inactive Breezehill pipeline. The only exception to this statement is that trench plugs will not be installed in the Breezehill trench after removal of the pipeline.

Specific wetland crossing details and erosion control measures will be provided in the project's SWPPP. Drawing 1647-100-DG-7541 in Item 6 shows the crossing method diagrammatically and with construction procedure notes addressing specific requirements to be met. The duration of installation-related disturbance within wetlands will be minimized. Installation equipment operating in wetland areas will be limited to that needed to clear the ROW, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the ROW to pre-construction contours. To minimize soil compaction and rutting in wetlands, timber mats (e.g., prefabricated equipment mats) will be used to stabilize the ROW. All equipment working in or passing through a wetland will traverse the wetland on timber mats. MPL will attempt to use no more than two layers of prefabricated equipment mats to stabilize the ROW. All prefabricated equipment mats will be removed upon completion of installation and final grading. Temporary erosion and sediment control measures will be installed to prevent upland sediment from entering the wetland, as detailed in the SWPPP and shown in drawing 1647-100-DG-7541 (Item 6). All other installation equipment shall use access roads located in upland areas to the maximum extent practicable.

For each wetland crossed by the Cornerstone Pipeline, a permanent foam trench plug will be installed at the base of slopes near the wetland/upland interface, at each point of entry or exit (see Drawing 1647-100-DG-7541, Item 6). The foam trench plug (see drawing 1647-100-DG-7575 for details on the foam trench plug) will seal the trench and maintain the hydrologic condition of the wetland by preventing the possibility of water draining out of the wetland via the trench, i.e., preventing a "French drain" effect. For spoil placement control, and as appropriate, MPL will utilize sediment filter devices to prevent any release of spoil from the ROW.

Within wetlands, MPL will not use rock, soil imported from outside the wetland, tree stumps, brush, or riprap to stabilize the ROW.

Stream Crossing Techniques: The construction ROW will be narrowed down from 90 feet to 75 feet at all stream crossings in order to minimize the temporary impacts resulting from pipeline installation. MPL will install the pipeline through the project area streams utilizing open-cut, dam and pump, or dam and flume methods (see Item 6, 1647-100-DG-7542, 1647-100-DG-7543, and 1647-100-DG-7545 for typical drawings for each of these stream crossing techniques). Stream crossing methods are briefly described below. Construction methods at waterbody crossings will vary with the characteristics of the waterbody encountered. For example, it is anticipated that many of the small, ephemeral tributaries crossed by the

ROW will be dry or have no significant flow during installation, which will allow the use of open-cut methods of construction through the stream. MPL's Environmental Inspector, on a site-specific basis during installation, will have the flexibility to determine stream-crossing methods based on stream conditions. Construction activities will be scheduled so that the pipeline trench is excavated immediately prior to pipe laying activities.

Specific erosion control measures and stream restoration methods will be provided in MPL's SWPPP, and are also shown on the typical drawings mentioned above (Item 6). Due to site-specific conditions such as difficult terrain, extra temporary workspace may be required on one or both sides of a waterbody crossing, regardless of the crossing method used. Excavation, pipeline installation, and backfilling across the waterbody and banks will be completed as quickly as practicable, typically within 48 to 72 hours. Spoil materials excavated from the trench in the stream will be stockpiled outside of the stream channel and typically 25 feet landward of top-of-bank. However, should constructability issues require the setback to be reduced; the minimum setback would be 15 feet and must be approved by the Environmental Inspector. Silt fencing will be installed along the waterward edges of all stockpiled spoil materials, as shown in the typical drawings in Item 6. Depth to the top of the installed pipe located within streams will be a minimum of 48 inches in non-bedrock bottom streams and a minimum of 18 inches in bedrock bottom streams. Crossing methods are described in the following subsections. Excavated material not required for backfill will be removed and disposed of at an upland site and outside of the flood plain.

Current construction plans do not include an identified need to conduct blasting in the known bedrock bottomed streams in order to facilitate pipe installation. However, if onsite investigations of individual stream crossings were to identify a need to blast, blasting would occur approximately one week in advance of installing the stream crossing.

Prior to any blasting activities, MPL's construction contractor will conduct a detailed review of the route to identify locations where specialized equipment or blasting may be required to install the pipeline. Blasting will be minimized to the extent possible during construction. If rock is encountered that requires blasting, the contractor will use blasting techniques in compliance with all state and federal regulations governing the use of explosives. The contractor will test drill stream crossings to determine if rock exists. If any streams and/or wetland areas require blasting to perform the ditch excavation, the drilling contractor will calculate the required drill pattern and shot factor to achieve the desired energy ratio needed to break the rock and excavate the ditch. The drill pattern and shot factor may be adjusted on a site-specific basis to compensate for different geologic conditions or the presence of sensitive areas. Each blast will be monitored by a licensed blaster or other person experienced in monitoring blasts using a seismograph machine. Seismographs at creeks are placed on the creek banks to increase accuracy and likelihood of proper coupling of the geophone (seismograph sensor); three seismographs are used at each blasting site. It is not anticipated that the rock encountered in this area of Ohio will fracture in such a way as to cause any kind of stream flow displacement. Following each blast, the area will be examined for signs of ground cracking/fracturing of underlying bedrock. The drill pattern and/or shot factor will be adjusted to minimize or eliminate stream flow displacement. The success of this proposed methodology is supported by the 48 excavated stream crossings for Marathon's OWC Pipeline Replacement project in Central Kentucky which covered approximately 27 miles of the pipeline in Jessamine, Fayette, and Clark counties (Corps ID #LRL-2010-963-jea; KDEP AI Nos. 112091, 1076, and 79703). Installation of the pipeline for that project was completed and during construction 48 of the streams crossed required blasting of the underlying rock prior to being excavated. None of these streams experienced any loss of flow as a result of blasting and installation of the replacement pipeline.

Potential impacts on surface water resources during construction activities would include: temporary increases in TSS concentrations and increased sedimentation during stream crossings; temporary to long

term decrease in bank stability and resultant increase in TSS concentrations from bank erosion as vegetation removed from banks during construction is re-establishing; and temporary degradation of surface water quality and alteration of aquatic habitat from blasting activities, if needed within or adjacent to stream channels.

Open-Cut Crossings (1647-100-DG-7542): For the open-cut method of pipeline installation, a trackhoe is generally used because of its versatility and efficiency. The crossing of flowing streams will be accomplished by open trench excavation with equipment operating from the banks, when practical. The initial stage of open-cut installation involves bank excavation using conventional ditch and grading equipment. Excavation of banks is generally governed by three factors: the design grade of the crossing, bank soil condition, and the type of available earth moving equipment.

With the open-cut method, downstream flow rates will be maintained at all times to protect aquatic life and prevent the interruption of existing downstream uses. Pipeline trenches at the banks will be backfilled with stable materials as soon as practicable, so as to reduce erosion of fine materials from the trench adjacent to the channel. During installation, MPL will minimize siltation and suspended sediment releases into watercourses. The original trench material will be used to backfill the trench providing the material is suitable for use as backfill. MPL will not place fill in the stream channel with the exception of clean aggregate, stone, or rock. Detailed procedures for minimizing soil and erosion at waterbodies will be outlined in the project's SWPPP.

Dam and Pump Crossings (1647-100-DG-7543): The dam and pump method is a system that carries stream water across the dry excavated trench. Dams are created and installed in the streams by the placement of sandbags, clean rock, or inflatable bladders, as most appropriate for site-specific conditions, upstream and downstream of the installation site to prevent stream water from entering the ditch. Stream water is then pumped from above the upstream dam to below the downstream dam. This system provides adequate stream flow to support aquatic life and prevents the interruption of downstream uses.

After pumps are installed and functioning, the pipeline trench is excavated. Water encountered during excavation is removed and discharged into an upland area or filtering device in such a manner that no heavily silt-laden water will enter the stream or any wetlands (see 1647-100-DG-7563 and 1647-100-DG-7564, Item 6). As soon as practicable after the pipe is laid, pipe trenches at the banks are backfilled with stable materials to reduce erosion of fine materials from the trench adjacent to the channel. A typical drawing of this stream crossing method is provided in Item 6 (1647-100-DG-7543).

Dam and Flume Crossing (1647-100-DG-7545): The dam and flume crossing method is a system of pipes installed in a stream to convey water across the excavated trench. The flume is supported by sandbags, clean rock, or inflatable bladders, as most appropriate for site-specific conditions, on both the upstream and downstream ends that channel water into the flume and prevent water from entering the ditch. The installation of the flume provides adequate stream flow to support aquatic life and prevents the interruption of downstream uses.

After the flume is installed, the pipeline trench is excavated. Water encountered during excavation is removed and discharged into an upland area or filtering device in such a manner that no heavily silt-laden water will enter the stream or any wetlands (see 1647-100-DG-7563 and 1647-100-DG-7564, Item 6). The pipe is then laid in the trench. The flume remains in place until after installation of the pipeline. A typical drawing of this stream crossing method is provided in Item 6 (1647-100-DG-7545).

Equipment Crossing Methods for Streams: Equipment crossings of streams will be accomplished using the most efficient and appropriate method. The applicant has developed three different types of equipment crossing methods for the onsite streams.

Equipment crossings will be installed during ROW clearing activities and will remain in place until the project is completed. Stream banks and channels will be regraded to pre-construction contours and elevations upon removal of the crossings.

Low-Water Crossing (1647-100-DG-7547): The low-water crossing is a culverted stream crossing (see typical drawing 1647-100-DG-7547 in Item 6). The number and size of pipes (i.e., culverts) will vary depending on site-specific conditions. During construction of the crossing, unstable and unconsolidated materials unsuitable for roadways may be excavated and replaced with riprap, crushed stone, or other stable road construction materials. Excess, unconsolidated materials excavated during construction will be disposed of outside of the floodplain.

Clear Span Bridge Crossing (1647-100-DG-7548): Bridged crossings will be constructed using prefabricated equipment mats, i.e., timber mats or steel bridge spans, e.g., flatbed railroad cars. The clear span bridges will not use in-stream support piers/columns. Details are provided in 1647-100-DG-7548 (Item 6).

Bridge Crossings with In-Stream Support (1647-100-DG-7549): At larger streams where a low-water crossing or a clear span bridge crossing are either not possible or not the best crossing method, bridged crossings utilizing in-stream support structures will be utilized. The bed of the bridge will be constructed using prefabricated equipment mats, i.e., timber mats or steel bridge spans (e.g., flatbed railroad cars). Details for this crossing method are provided in 1647-100-DG-7549 (Item 6).

5.1.2 Minimal Degradation Alternative

Under the Minimal Degradation Alternative, all of the information presented above is the same with the exception that four stream crossings and one wetland crossing are proposed to have the construction ROW further reduced to a maximum width of 50 ft instead of the 75 ft proposed for the Preferred Design. The streams and wetland chosen for further minimization were selected based on factors relating to technical feasibility of being able to narrow the construction ROW down 33% from the already narrowed 75-ft construction ROW on all other streams and wetlands.

The sites selected for additional minimization are:

Feature ID	Stream Name	County	Nearest Mile Post
Stream 7	Clear Fork	Harrison	5.2
Stream 140	UNT to Conotton Cr	Tuscarawas	31.3
Stream 141	Beggar Run	Tuscarawas	32.0
Stream 196	Domer Ditch	Stark	49.6
Wetland 141a		Stark	43.4

Trenching impacts at the five features above will be the same as under the Preferred Design; however, as noted above there will be a 33% reduction in the construction ROW width at each crossing which will further minimize water quality related impacts to each feature during construction.

5.1.3 Non-Degradation Alternative

Under the Non-Degradation Alternative there will be no surface impacts to wetlands and streams as a result of dredge and fill activities. All wetland and stream crossings by the pipeline would be completed using trenchless technologies, i.e., horizontal directional drilling (HDD) or horizontal boring. Equipment travel across the ROW would still need to cross streams and wetlands; however, such crossings would be

completed using only clear span bridges at streams and timber mat pads at wetlands. As a result of this limitation to clear span bridges there will be locations where a stream will be too large to allow for the use of a clear span bridge thus necessitating all equipment to remobilize out to access roads and public roads to travel around the stream in question adding considerable cost to the project construction, currently estimated at $500,000 per remobilization. While it is not possible at this time to know exactly which wetland or stream crossings would require a complete remobilization by the construction crews in order to get to the other side of the stream/wetland, a reasonable estimate of the minimum number of remobilizations that could be required can be obtained by using the eleven streams proposed for HDD crossings in the Preferred Design. Typically, the use of HDD was proposed for the larger streams and for streams located in a technically challenging physical location and as such they can be considered potential locations where a remobilization would be needed. Using this as an estimate of the minimal cost for remobilizations the added cost resulting from the Non-Degradation Alternative would be $5,500,000 just to move the construction equipment and crews down the ROW.

5.2 Avoidance

From the inception of this project, MPL has implemented strategies aimed at avoidance and minimization of impacts to waters of the U.S. when designing/selecting the proposed pipeline alignment and evaluating potential constraints. This effort began in the conceptual and planning phases of the project and continued during the field investigations which examined a Survey Corridor 300 ft or greater in width, within which all wetlands, streams, protected species occurrences/habitat assessments, and cultural resources were identified. Using this baseline information along with engineering and logistical considerations MPL identified the most practicable alignment for the pipeline, avoiding where possible and practicable, waters of the U.S.

The selected alignment for the new pipeline reflects an accommodation of landowner concerns, locations of existing pipeline, input from all relevant state and federal agencies, and avoidance/minimization of significant adverse impacts to the waters of the U.S., protected species, and cultural resources. The start and end points of the pipeline alignment are required locations, with the start point being in Cadiz, Harrison County where the Cornerstone Pipeline will tie in to the MarkWest condensate stabilization facility to obtain the condensate liquids for delivery to MPC's Canton refinery and to Ohio River Pipe Line LLC's (ORPL) East Sparta tank farm. The route selection was also driven by the need to connect to the Utica East Ohio (UEO) Harrison Hub fractionation facility near Scio (Harrison County) to obtain more product for delivery by the Cornerstone Pipeline.

To facilitate pipeline construction (Cornerstone) or pipe removal (Breezehill) within waterbodies, Additional Temporary Work Space (ATWS), i.e., staging areas, are needed adjacent to waterbodies and in some cases wetlands, to assemble and fabricate the length of pipe necessary to complete the crossing (Cornerstone) and/or to stockpile excavated ditch spoil (Cornerstone and Breezehill). These work areas are in addition to the normal construction ROW. Wetlands and streams, if located within ATWS areas will be avoided, i.e., no dredge and fill activities will be permitted, any required equipment crossings of wetlands will be carried out on timber mats, and any required stream crossings will be completed through the use of installed bridges.

5.2.1 Preferred Design and Minimal Degradation Alternative

The proposed dredge and fill impacts are the same for both the Preferred Design and the Minimal Degradation Alternative for both construction of the Cornerstone Pipeline and removal of the Breezehill Pipeline.

Construction of the Cornerstone Pipeline: Of the 243 wetlands identified within the Survey Corridor, 176 are not impacted by dredge and fill activities associated with construction of the proposed new Cornerstone Pipeline. Of the 176 avoided wetlands, 15 are avoided by using Horizontal Directional Drilling (HDD) crossings to avoid surface impacts and 161 have been avoided by selective routing decisions. The avoided wetlands include three Category 3 wetlands that were avoided through specific reroutes designed subsequent to the ORAM evaluation identifying these three wetlands as Category 3, see Wetland Table in Item 2.

Stream dredge and fill impacts, as is the case with wetland impacts, are also temporary in nature. Avoidance and minimization of stream impacts is generally much more difficult than avoidance of wetlands due to their linear nature. Within the Survey Corridor 200 different streams were identified and evaluated. Ninety-nine stream crossings (i.e., temporary dredge and fill impacts) occur as a result of installation of the proposed Cornerstone Pipeline, while 101 streams are avoided. Forty-three of the crossings occur on ephemeral streams; 38 on intermittent streams, and 18 on perennial streams.

The use of HDD technology at multiple locations throughout the Cornerstone Pipeline project has provided additional avoidance of impacts to waters of the U.S. Of the 101 streams avoided, 11 (4 HHEI and 7 QHEI streams; see Stream Table in Item 2) are avoided through use of HDD.

Removal of the Breezehill Pipeline: The act of removing an existing pipeline, in this case MPC's inactive Breezehill Pipeline does not allow for avoidance of wetland and stream impacts. Therefore, the only thing that can be done with regard to avoidance and minimization of impacts to waters of the U.S. is to look for ways to minimize impacts (see discussion in Section 5.3.2 below).

5.2.2 Non-Degradation Alternative

Construction of the Cornerstone Pipeline: Under the Non-Degradation Alternative all waters of the U.S. are avoided through use of various construction techniques.

Removal of the Breezehill Pipeline: Under the Non-Degradation Alternative it would not be possible to remove the inactive Breezehill Pipeline where it is located within wetlands or streams. The Applicant would be forced to leave sections of the inactive line in place by cutting the pipe outside of the jurisdictional areas and capping both ends.

5.3 Minimization

The decision to co-locate as much of the proposed pipeline with currently existing foreign (i.e., owned by other companies) pipelines was based principally on MPL's corporate position of minimizing impacts to the environment. Co-locating allows MPL to utilize a portion of the existing maintained ROW of the paralleling foreign pipeline, thereby minimizing the amount of disturbance to areas outside of the already disturbed ROW. The proposed alignment of the Cornerstone Pipeline parallels existing utility lines for over 75% of the route.

During construction, MPL will implement Best Management Practices for soil erosion and sediment control throughout the project area, further minimizing potential impacts from runoff from the disturbed ROW adjacent to waters of the U.S. Detailed typical drawings are shown in Item 6 for construction activities in both uplands and wetlands, where applicable BMPs are shown.

Wetland and waterbody mitigation and restoration procedures include a number of construction measures that minimize the overall impact area, contain sediment within the construction site, limit potential

erosion problems, and facilitate the effective restoration of temporarily impacted wetland and streambank areas.

5.3.1 Preferred Design

Where waters of the U.S. could not be avoided, every reasonable attempt was made to minimize impacts to them. For the Preferred Design, the construction ROW width for the Cornerstone Pipeline installation was reduced from 90 ft to 75 ft for work within wetlands and streams located along the ROW, resulting in a minimization of the temporary water quality impacts during construction of the crossing and from equipment travel. For the removal of the inactive, purged Breezehill pipe, the construction ROW will range in width from 20 to 40 ft depending on site specific conditions, e.g., proximity to proposed Cornerstone alignment, proximity to other in-place pipelines, other environmental constraints, etc.

All equipment crossings of wetlands will take place on timber mats thereby minimizing soil compaction that would result without the use of timber mats. Stream crossings will be constructed using heavy equipment working from the top of the stream banks, constructed low-water crossings, or from bridges spanning the channel, eliminating the need to use equipment within the stream channel.

5.3.2 Minimal Degradation Alternative

Construction of the Cornerstone Pipeline: Minimization efforts included narrowing of the construction ROW width from 90 ft to 75 ft at all stream crossings noted under the Preferred Design. In addition, the applicant identified four streams and one wetland where the construction ROW can be further narrowed to 50 ft, thereby further minimizing potential water quality impacts resulting from stream bank and riparian disturbance. Stream crossings by equipment will take place on either bridged or low-water stream crossings (see Typical Drawings 1647-100-DG-7547, 1647-100-DG-7548, and 1647-100-DG-7549 in Item 6).

Removal of the Breezehill Pipeline: The act of removing an existing pipeline, in this case MPL's inactive Breezehill Pipeline does not allow for avoidance of wetland impacts. Therefore, the only thing that can be done with regard to avoidance and minimization of impacts to waters of the U.S. is to look for ways to minimize impacts. Dredge and fill impacts to trenched wetlands will be temporary in nature. MPL will strive to minimize impacts to the wetlands during excavation and removal of the pipe. Best Management Practices (BMPs) will be employed to protect the wetland at all times. Under both the Preferred Design and the Minimal Degradation Alternative, MPL will to the maximum extent practicable, minimize the excavated trench width within wetlands and it is anticipated that the maximum trench width will not exceed 10 feet. Topsoil will be segregated during excavation. After replacement of backfill is complete, the segregated topsoil will be reapplied over the trench and the area will be recontoured to pre-construction contours and elevations, and restored in accordance with the project's Storm Water Pollution Prevention Plan (SWPPP). All equipment crossings of wetlands will take place on timber mats thereby minimizing soil compaction that would result without the use of timber mats.

5.3.3 Non-Degradation Alternative

Under the Non-Degradation Alternative all waters of the U.S. are avoided and therefore no further minimization of impacts is possible.

5.4 Magnitude of the Proposed Lowering of Water Quality

5.4.1 Preferred Design

Construction of the Cornerstone Pipeline: Impacts to water resources will be temporary in nature and will result in small, temporary lowering of water quality in streams during the actual trenching and installation of the pipeline in the stream bottom. Best Management Practices have been developed (see Item 6) for minimization of impacts to streams and wetlands through erosion and sediment control measures to be implemented at each wetland and stream crossing. Flow within streams will be maintained throughout construction of the crossings through the use of both dam and pump or dam and flume techniques that will move the stream flow around or over the trench construction area.

Removal of the Breezehill Pipeline: Impacts to water resources will be temporary in nature and will result in small, temporary lowering of water quality in streams during the actual excavation and removal of the inactive Breezehill Pipeline from the stream bottom. Best Management Practices have been developed (see Item 6) for minimization of impacts to streams and wetlands through erosion and sediment control measures to be implemented at each wetland and stream crossing. Flow within streams will be maintained throughout excavation and removal of the Breezehill Pipeline from stream crossings through the use of both dam and pump or dam and flume techniques that will move the stream flow around or over the excavated trench area.

5.4.2 Minimal Degradation Alternative

Construction of the Cornerstone Pipeline: Impacts to water resources and water quality under the Minimal Degradation Alternative will be similar to, though slightly less than in the Preferred Design. Under this alternative, pipeline crossings of four streams and one wetland will have the construction ROW width narrowed down from the 75-ft width in the Preferred Design to 50 ft under this alternative resulting in 33 percent less groundcover disturbance at these five locations. Best Management Practices under this alternative will be the same as under the Preferred Design.

Removal of the Breezehill Pipeline: Impacts to water resources and water quality under the Minimal Degradation Alternative will be identical to those in the Preferred Design during removal of the Breezehill Pipeline.

5.4.3 Non-Degradation Alternative

Construction of the Cornerstone Pipeline: The Non-Degradation Alternative will not result in any impacts to wetlands and streams. All onsite water resources will be crossed using HDD technology.

Removal of the Breezehill Pipeline: Under the Non-Degradation Alternative it would not be possible to remove the inactive Breezehill Pipeline where it is located within streams. The Applicant would be forced to leave sections of the inactive line in place by cutting the pipe outside of the jurisdictional areas and capping both ends.

5.5 Technical Feasibility and Cost Effectiveness

5.5.1 Preferred Design

The Preferred Design is technically feasible for both the construction of the Cornerstone Pipeline and the removal of the inactive Breezehill Pipeline. Standard engineering design and installation practices will be required to install the pipeline under this alternative. Total cost for implementation of the Preferred Design is currently estimated to be approximately $221,700,000.

5.5.2 Minimal Degradation Alternative

The Minimal Degradation Alternative is also technically feasible for both the construction of the Cornerstone Pipeline and the removal of the inactive Breezehill Pipeline and would utilize the same standard engineering design and installation/removal practices to install the Cornerstone Pipeline or remove the Breezehill Pipeline. Total cost for implementation of the Minimal Degradation Alternative has been estimated to be in the range of $222,500,000 to $224,200,000. Under the Minimal Degradation Alternative MPL is proposing to narrow the construction ROW width at four stream crossings and one wetland crossing from the 75-ft proposed in the Preferred Design to 50-ft in this Minimal Degradation Alternative. The additional cost to complete the crossings in the more confining 50-ft ROW width was estimated to be $50,000 at three of the streams and the one wetland and $100,000 at the fourth stream. The narrowing at these five locations could result in a need to remobilize all construction crews around the crossing locations due to a lack of sufficient space to facilitate all of the equipment movement. Such a remobilization effort is estimated to add a cost of $500,000 per site. Using these estimates the cost range given above was developed where the low estimate included the costs to remobilize for only one of the five sites and the high estimate assumes the need to remobilize at all five locations.

5.5.3 Non-Degradation Alternative

Construction of the Cornerstone Pipeline: The Non-Degradation Alternative is technically feasible but highly challenging because to meet the non-degradation criteria MPL would be forced to use either HDD technology or horizontal bore technology to complete all of the crossings of streams and wetlands. Total cost for implementation of the Non-Degradation Alternative would be approximately $315,200,000, or approximately 1.4 times the cost of the Preferred Design. The cost increase results from increased installation expenses caused by the use of HDD or horizontal bore equipment at every crossing, additional ROW acquisition costs, and costs associated with clearing additional workspace at each crossing and pullback areas for HDD crossings of certain waters/wetlands. Beyond additional workspace requirements, additional access roads may be needed to relocate drilling equipment which will have to be moved to each stream and wetland. Also factored into the cost increase is the additional time required to install the pipeline utilizing these technologies at every waterbody/wetland crossing. The project would require much longer than the estimated 6 to 7 month installation timeframe if completed under the Non-Degradation Alternative. Use of these technologies will also result in greater impacts to the upland plant and animal communities along the course of the ROW. Finally, the Non-Degradation Alternative would have significant impacts on the property owners resulting from increased land clearing and ground disturbing activities in upland areas to accommodate the requirements for setting up each HDD or horizontal bore at each stream or wetland crossing and the associated ATWS requirements; as well as the general inconvenience of the increased amount of time the construction activities will be ongoing on their property.

Removal of the Breezehill Pipeline: Under the Non-Degradation Alternative it would not be possible to remove the inactive Breezehill Pipeline where it is located within wetlands or streams. The Applicant would be forced to leave sections of the inactive line in place by cutting the pipe outside of the jurisdictional areas and capping both ends. Doing so is technically feasible.

5.6 Economic Considerations

MPL is required to maintain the integrity of its pipeline network in order to ensure safety of the general public. The construction activities are not anticipated to have any significant impacts to the communities, as it will be short in duration and the project area will be restored to pre-construction conditions. MPL intends to conduct the work in accordance with company policy and federal, state, and local requirements. The project will employ contractors, laborers, and others from the region.

The economic benefits associated with the project will be substantial, and will include local and non-local installation payroll expenditures, purchases of installation materials, and expenditures for temporary housing, food, and fuel. Long-term economic benefits will be realized primarily through new tax revenues on the pipeline and associated facilities, ongoing maintenance activities utilizing local service providers, and sustained economic growth in eastern Ohio.

The project will employ contractors, laborers and others from the region and construction of the proposed pipeline will ensure the safe and efficient delivery of condensate to the end users. Economic considerations discussed below address the anticipated economic impact to the project vicinity as well as the long-term economic impacts resulting from the creation of new, full-time and permanent jobs with MPL as a result of the Company adding the Cornerstone Pipeline to their corporate assets and addressing the management and operation needs associated with this new asset. Construction of the Cornerstone Pipeline has already created seven (7) new full-time, permanent jobs with MPL consisting of one supervisory position and six technician positions. These seven new permanent jobs generate approximately $685,000 worth of payroll annually.

The Cornerstone Pipeline project will produce significant economic benefits for landowners and communities along the project route. In terms of the property tax revenue generated by the project, MPL is currently working with the Ohio Department of Taxation to determine the project's property tax burden. One estimate is that the project may generate approximately $11,000,000 in first year annual property tax revenue, though this estimate is subject to further revision and MPL can provide an update to this estimate once the project's tax obligations have been determined.

It is estimated that MPL will expend $15,200,000 to acquire all easements necessary for construction of the pipeline. It is further estimated that MPL will pay $3,630,000 to landowners in crop, timber, and other land damages resulting from construction of the pipeline. Additional benefits include regular purchases of local surveillance and maintenance services for the pipeline after it is installed.

5.6.1 Preferred Design and Minimal Degradation Alternative

The Preferred Design and Minimal Degradation Alternative will have nearly identical impacts on the local economy. It has been estimated that approximately 700 full time contractors will be employed throughout the construction of the Cornerstone Pipeline and removal of the Breezehill Pipeline, with an average of approximately 500 contractors on site at any one time. In addition, approximately 65 inspectors, engineers, project controls, document coordinators, land agents, managers, and administrative personnel will be present during the entire construction process. Using the average of 500 and an assumed low end estimate of six months to complete the construction, the onsite personnel will add

approximately $15,300,000 to the local economy through expenditures for lodging, food, clothing, purchase of hardware and small equipment, etc. Increased tax revenues will be generated by construction workers patronizing local businesses.

5.6.2 Non-Degradation Alternative

Construction of the Cornerstone Pipeline: The Non-Degradation Alternative would have a similar but significantly higher impact on the local economy due to the additional time (estimated to add 3 to 4 months to the construction schedule) that would be required to complete construction of the Cornerstone Pipeline using HDD and horizontal bore technologies. As noted previously, to meet the constraints of a Non-Degradation Alternative, the Applicant would be forced to leave sections of the inactive Breezehill Pipeline in place by cutting the pipe outside of the jurisdictional areas and capping both ends. The Breezehill Pipeline removal would be done simultaneously with construction of the Cornerstone Pipeline, i.e., within the estimated 3 to 4 additional months that would be added to the construction schedule. Using an additional 3 months to construct brings the estimated expenditures by contractors for lodging, food, clothing, etc., to $22,950,000.

5.7 Cumulative Impact

5.7.1 Preferred Design and Minimal Degradation Alternative

The Preferred Design and Minimal Degradation Alternative will cause minor temporary impacts. Following re-grading of the pipeline trench to pre-construction contours, the impacted areas will be restored to preexisting conditions. There are no anticipated cumulative impacts considering the wetlands and streams will be restored to preexisting conditions along the pipeline route. All impacts to streams and wetlands are temporary in nature and there will be no loss of wetlands as a result of the construction of the Cornerstone Pipeline or removal of the Breezehill Pipeline. The overall project does result in the conversion of 1.8 acres of PFO dominated wetland systems (PFO = 0.61 ac; PFO/PEM = 0.25 ac; PFO/POW/PEM = 0.06 ac; and PFO/PSS/PEM = 0.88 ac) located within the 50-ft permanent ROW of the newly constructed Cornerstone Pipeline. PFO dominated wetlands located within the 50-ft permanent ROW will be maintained as wetlands post-construction; however, due to USDOT requirements for aerial surveillance, the permanent ROW is to be kept clear of trees throughout operation of the pipeline. This USDOT requirement will result in the conversion of all PFO dominated wetlands located within the 50-ft permanent ROW to non-forested wetlands. With regard to the existing ROW for the inactive Breezehill Pipeline, once the pipe has been removed the ROW will be allowed to re-vegetative to a natural state.

The project area (inclusive of the Cornerstone Pipeline and the Breezehill Pipeline) was reviewed with the United States Fish and Wildlife Service (USFWS) during a pre-application meeting for potential effects to federally listed species. Because there were known records for the federally endangered Indiana bat (*Myotis sodalis*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*), the USFWS recommended seasonal clearing restrictions (1 April to 30 September) to address bat concerns relating to the project. Coordination with the USFWS has been completed resulting in a determination that the proposed project may affect, but is not likely to adversely affect Indiana and Northern long-eared bats. In addition, the USFWS determined that the proposed project will not result in take of bald eagles under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (see Item 4d).

5.7.2 Non-Degradation Alternative

Under the Non-Degradation Alternative there would be no impacts, temporary or permanent due to installation of the pipeline because installation would be accomplished through the use of either HDD or horizontal bore technologies. However, there would be wetland disturbance within PFO dominated wetlands located within the 50-ft permanent ROW resulting from the requirement to remove trees from the ROW in order to meet USDOT standards for aerial surveillance of the maintained ROW to assess potential integrity issues. There would not be a loss of wetlands; only a loss of wetland functions provided by PFO dominated wetland systems due to converting them to non-forested wetlands.

The findings of the USFWS noted above under the Preferred Design apply equally to the Non-Degradation Alternative

5.8 Indirect Impacts

5.8.1 Preferred Design and Minimal Degradation Alternative

Construction of Cornerstone Pipeline and Removal of Breezehill Pipeline: Indirect impacts along the pipeline for both the Preferred Design and the Minimal Degradation Alternative may include the temporary loss of a portion of wetland function due to the clearing of wetland vegetation, changes in hydrology for that portion of the wetland, and removal of soils. The wetlands are anticipated to regain full and proper functionality following restoration of the temporary impacts. In addition, construction impacts to onsite streams may cause minor and temporary indirect impacts to downstream water flow.

5.8.2 Non-Degradation Alternative

Under the Non-Degradation Alternative there would be no wetland or stream-related indirect impacts.

5.9 Construction Storm Water Management Plans

5.9.1 Preferred Design and Minimal Degradation Alternative

Although the Cornerstone Pipeline project was determined by OEPA to be exempt from Stormwater Permitting under the oil and gas-related operations exemption, MPL developed a project-specific Storm Water Pollution Prevention Plan (SWPPP) to provide protection to surface waters and wetlands.

Construction of Cornerstone Pipeline and Removal of Breezehill Pipeline: For both the Preferred Design and the Minimal Degradation Alternative, BMPs and erosion and sediment control devices will be implemented throughout construction to minimize storm water runoff, soil erosion and the transport of sediments from the construction area, and to protect surface waters and wetlands located in and adjacent to the project area. The SWPPP has been prepared for the project following the ODNR Ohio Rain Water and Land Development Manual for all alternatives discussed here. The project's SWPPP was prepared in accordance with the OEPA's NPDES Permit No. OHC000004 for Storm Water Discharges Associated with Construction Activity (General Permit) and the Stark County Storm Water Quality Regulations. A set of construction typical drawings showing the soil erosion and control measures used is provided in Item 6.

5.9.2 Non-Degradation Alternative

Construction of Cornerstone Pipeline and Removal of Breezehill Pipeline: Under the Non-Degradation Alternative, a project specific SWPPP will be implemented throughout the ROW during construction providing protection from storm water runoff from construction activities in the uplands. There would be no construction-related activities at the stream and wetland crossings, but they will still receive appropriate BMP measures to protect them from the adjacent uplands that will be disturbed during construction.

5.10 Post-Construction Storm Water Management Plans

Following pipeline replacement, all temporarily disturbed areas will be returned to their original slope and contour and stabilized. Wetlands will be allowed to naturally revegetate with the original seed bank. All other vegetated areas along the pipeline trench that undergo project-related soil disturbance will be seeded and re-vegetated to provide a permanent herbaceous cover to stabilize the soils, and temporary erosion controls will be maintained until this permanent cover is established. No further post-construction stormwater management is needed based on the temporary nature of the project activities.