

401 Exhibit 1: Additional Project Narrative

Block 8a: Activity – Describe the Overall Activity

The proposed project includes construction of a 307 foot long, approximately 12 foot high, reinforced cast-in-place (CIP) concrete gravity retaining wall. The proposed CIP wall will be anchored into the bedrock which has been exposed as a result of the erosion at the site and thus dowel bars will be drilled and grouted into the bedrock to tie the wall to the rock foundation. Temporary concrete forms will be placed along the proposed face of the wall until the forms are stripped. Copies of the applicable engineering plans sheets have been included in Appendix C of this application package.

The proposed work will be required to be done "in the dry" and will not be performed if water levels reach the foundation elevation. Construction of the proposed CIP wall will be completed from the top of the existing stream bank. Therefore, no equipment will be operating in or at the stream level for the duration of construction. Construction of the proposed stream bank stabilization project will involve placement of approximately 315 cubic yards of clean fill material below the ordinary highwater mark (OHWM). The project will not require any temporary de-watering, cofferdams, building platforms, or machinery in the water.

Lake Metroparks received U.S. Army Corps of Engineers (USACE) approval for the project under Nationwide Permit #13 on February 9, 2012. A copy of the USACE NWP permit approval letter has been included in Appendix D of this application package. Due to the *Seasonal Salmonid* designation for the Chagrin River, the Ohio Department of Natural Resources (ODNR) Division of Wildlife has reviewed the proposed project and subsequently granted Lake Metroparks a waiver for in-water work during the restricted period of September 15th through June 30th. A copy of the September 14, 2011 email from ODNR is included in Appendix E of this application package.

As required, coordination with the U.S. Fish and Wildlife Service and ODNR Division of Wildlife's Biodiversity Database and has been completed to determine the potential for the proposed project to impact known State-listed and Federally-listed threatened and endangered species and critical habitats. In a concurrence letter dated February 14, 2012, USFWS stated that "due to the project type, size, and location, we do not anticipate any impact on federally listed endangered, threatened, or candidate species, or their habitats." According to ODNR's March 1, 2012 coordination letter, there are two records for rare or endangered species within a one-mile radius of the project site. This includes one record of a State-listed species of concern (Longnose Dace, *Rhinichthys cataractae*) and one record of a potentially threatened vascular plant (Small-flowered Evening Primrose, *Oenothera parviflora*). ODNR is not aware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, national wildlife refuges, or other protected natural areas within a one-mile radius of the project area. Copies of the ODNR and USFWS coordination letters are included in Appendix E of this application package.

Block 10: Antidegradation Evaluation

10a)

Preferred Design

The applicant is proposing to complete a stream bank stabilization project along the Chagrin River at Chagrin River Park in Concord Township, Lake County, Ohio. A project location topographic map has been included in Attachment A of this application package. This stream bank stabilization project is being implemented in response to the severe stream bank erosion which is continuing to occur at Chagrin River Park. Erosion at the site is not only increasing sediment loading into the Chagrin River, but also posing a threat to existing park infrastructure; namely a pedestrian foot-bridge and multi-use trail. Photos of the existing conditions at the project location have been included in Appendix B of this application package.

The Preferred Design includes construction of a 307 foot long, approximately 12 foot high, reinforced cast-in-place (CIP) concrete gravity retaining wall. The proposed CIP wall will be anchored into the bedrock which has been exposed as a result of the erosion and thus dowel bars will be drilled and grouted into the bedrock to tie the wall to the rock foundation. Temporary concrete forms will be placed along the proposed face of the wall until the forms are stripped. Portions of the engineering plan set that includes a schematic plan and CIP cross sections have been included in Appendix C of this application package.

The proposed work will be required to be completed "in the dry" and will not be performed if water levels reach the foundation elevation. Construction of the proposed CIP wall will be completed from the top of the existing stream bank. Therefore, no equipment will be operating in or at the stream level for the duration of construction. Construction of the proposed stream bank stabilization project will involve placement of approximately 315 cubic yards of clean fill material below the ordinary highwater mark (OHWM). The project will not require any temporary de-watering, cofferdams, building platforms, or machinery in the water

Construction of the Preferred Design will require the discharge of approximately 314.7 cubic yards of clean fill material permanently filling approximately 318 linear feet (0.06-acre) of stream bank below the ordinary highwater mark (OHWM) of the Chagrin River. Fill material will consist of concrete (approximately 146.7 cubic yards) and aggregate fill material (approximately 168.27 cubic yards). The purpose for placing fill material below the OHWM is directly related to construction of the CIP wall. Construction of the proposed CIP will not require temporary dewatering, cofferdams, building platforms, or machinery in the water. Construction of the Preferred Design will not impact wetlands, lakes, or ponds.

Minimal Degradation Alternative

The engineering design associated with the Minimal Degradation Alternative would be the same as the Preferred Design. This is necessary to meet the purpose and need for the project while providing a cost-effective engineering solution given the existing environmental and geotechnical site constraints. The alternative analysis phase of this project included an evaluation of "natural" stabilization alternatives. However, investigations showed that due to the location of project site, "natural" stabilization

alternatives would be highly susceptible to scour and damage associated with both high velocity flows and ice jams. It is likely that if implemented, "natural" stabilization techniques would require the use of construction equipment in the stream and/or the need to dewater or use coffer dams to permit access.

Construction impacts associated with the Minimal Degradation Alternative are anticipated to be essentially the same as those of the Preferred Design. The Minimal Degradation Alternative will also result in the discharge of approximately 314.7 cubic yards of clean fill material permanently filling approximately 318 linear feet (0.06-acre) of stream bank below the ordinary highwater mark (OHWM) of the Chagrin River. Fill material will consist of concrete (approximately 146.7 cubic yards) and aggregate fill material (approximately 168.27 cubic yards). The Minimal Degradation Alternative would involve the introduction of slightly less rip-rap material below the OHWM. However, the need to armor the tie-in trenches at each end of the proposed CIP wall is necessary to minimize the potential for the Chagrin River to erode behind the wall. Therefore, it is for this reason that the discharge quantities and impacts associated with the Minimal Degradation Alternative are similar to that of the Preferred Design.

Similar to the Preferred Design, the Minimal Degradation Alternative will require all work to be completed "in the dry" and will not permit work to be performed if water levels reach the proposed CIP wall foundation elevation. Additionally, all construction activity will occur from the top of the stream bank as a means of eliminating the use of machinery below the Chagrin River OHWM.

Non-Degradation Alternative

The applicant considers the Non-Degradation Alternative as the "No-Build Alternative". Selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative would not eliminate continued threats to existing park infrastructure, impacts related to increased sedimentation into the Chagrin River, and impacts associated with the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River. If the Non-Degradation Alternative was selected as the preferred alternative, there would be no affect on existing aquatic resources. No fill material would be placed below the OHWM of the Chagrin River.

10b)

Preferred Design

Biological and Physical Impacts

As proposed, impacts associated with the Preferred Design will have a minimal adverse affect on animal life and plant life. As proposed, the reinforced CIP concrete gravity retaining wall will be anchored into the bedrock which has been exposed as a result of the excessive erosion occurring at the site (see site photos included in Appendix B). The bedrock in this location is situated above the "normal" water elevation for this reach the Chagrin River and therefore offers little to no habitat for sport and recreational fishes or aquatic invertebrates. Continued erosion of the stream bank in this location limits the ability for vegetation to re-established itself following an erosion event. Therefore, this

portion of the stream bank offers limited habitat for animal populations and very limited opportunity for plant establishment and succession.

As required, coordination with the U.S. Fish and Wildlife Service and ODNR Biodiversity Database and has been completed to determine the potential for the proposed project to impact known State-listed and Federally-listed threatened and endangered species and critical habitats. In a concurrence letter dated February 14, 2012, USFWS stated that "due to the project type, size, and location, we do not anticipate any impact on federally listed endangered, threatened, or candidate species, or their habitats." According to ODNR's March 1, 2012 coordination letter, there are two records for rare or endangered species within a one-mile radius of the project site. This includes one record of a State-listed species of concern (Longnose Dace, *Rhinichthys cataractae*) and one potentially threatened vascular plant (Small-flowered Evening Primrose, *Oenothera parviflora*). ODNR is not aware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, national wildlife refuges, or other protected natural areas within a one-mile radius of the project area. However, given the location and nature of activity and the absence of suitable habitat, it is anticipated that the Preferred Design will have no effect on threatened or endangered species. Copies of the ODNR and USFWS coordination letters are included in Appendix E of this application package.

Physical impacts to aquatic habitat within the Chagrin River are expected to be minimal. As noted above, construction of the Preferred Design will involve anchoring the proposed CIP wall into bedrock that has been exposed as a result of continued erosion at the site. Due to the location of the exposed bedrock, and continued erosion at the project site, the area to be directly impacted by the proposed CIP currently exhibits very little to no aquatic habitat. Once the CIP wall is cast, no activity will be required on the waterward side of the wall. The proposed work will be required to be done "in the dry" and will not be performed if water levels reach the foundation elevation. Construction of the proposed CIP wall will be completed from the top of the existing stream bank. Therefore, no equipment will be operating in or at the stream level for the duration of construction, thus minimizing impacts to in-stream habitat. In an effort to minimize any short-term water quality impacts, Proper erosion and sediment control measures will be implemented in accordance to the Ohio Department of Transportation's *Supplemental Specification 832 - Temporary Sediment and Erosion Control*.

The Preferred Design will alter the physical characteristics of the existing stream bank adjacent to Chagrin River Park. A photo of the existing site conditions can be seen in the project site photos included in Appendix B. When compared to other "natural" stabilization alternatives (i.e. live plant cuttings, dumped tree stumps with live plant cuttings, GeoWeb Green Wall, etc.), the Preferred Design introduces the largest change in the physical characteristics of the existing stream bank. However, while it may be considered less aesthetically appealing than "natural" stabilization alternatives, evaluations have shown the preferred alternative to be the most appropriate engineering solution due to the project study area being highly susceptible to scour and damage associated with both high velocity flows and ice jams. A summary of alternatives considered is included in Gannett Fleming's October 28, 2011 report provided to the USACE Buffalo District office located in Appendix F.

The Preferred Design is not expected to adversely impact flow patterns and/or velocities of the Chagrin River. Modeling completed during the design phase of the project

showed a slight reduction in post-construction velocity as compared to the pre-construction condition. A summary of the H&H modeling completed for the project can be found in Gannett Fleming's October 28, 2011 report provided to the USACE Buffalo District office located in Appendix F.

Wetlands

No wetlands are present within the project area and therefore no wetlands impacts are expected.

Streams

The proposed project is located along the Chagrin River, directly adjacent to Chagrin River Park at approximately River Mile 2.72 (see project location map in Appendix A). According to Ohio EPA's *Biological and Water Quality Study of the Chagrin River and Selected Tributaries 2003-04*, dated December 31, 2006, the segment of the Chagrin River within the project limits is designated as a warmwater habitat (WWH) and supports full attainment of aquatic life for fish and macroinvertebrate communities. Ohio EPA's study included a chemical and biological sampling point located directly adjacent to Chagrin River Park. The study's sampling effort reported and IBI score of 44, and MIwb score of 7.9, an ICI score of Very Good (VG), and an QHEI score of 78.5. This reach of the Chagrin River is designated a *Seasonal Salmonid* stream. Riparian vegetation adjacent to the project area is narrow, sparse, and denuded due to excessive erosion at the site and existing land use characteristics (i.e. Chagrin River Park).

Construction of the preferred alternative will impact approximately 318 feet of stream bank, directly adjacent to Chagrin River Park. Direct impacts associated to construction will be minimized by requiring the awarded contractor to completed construction from the top of the existing stream bank. At no time will equipment be permitted to operate in or at the stream level during construction. Proper erosion and sediment control measures will be implemented to minimize any short-term water quality impacts.

Lakes/Ponds

No lakes or ponds are located within the project study area. Therefore, no impacts are anticipated.

Minimal Degradation Alternative

The biological, aquatic habitat, and riparian impacts associated with the Minimal Degradation Alternative would be relatively the same as the Preferred Design. In attempt to minimize the amount of fill material below the OHWM, the Minimal Degradation Alternative would reduce, if not eliminate, the rip-rap that is being proposed in front of the tie-in trenches located at each end of the CIP wall. However, placement of rip-rap in these locations is necessary to armor the tie-in trenches whereby eliminating the potential for the Chagrin River to erode behind the CIP wall. The location of the proposed rip-rap and tie-in trenches can be seen in the engineering plan sheets included in Appendix C.

Non-Degradation Alternative

The applicant considers the Non-Degradation Alternative as the "No-Build Alternative". Selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative would not eliminate

continued threats to existing park infrastructure, impacts related to increased sedimentation into the Chagrin River, and impacts associated with the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River. The no build alternative will not adversely impact animal life within the project area. Additionally, there will be no adverse impact on plant life, threatened and endangered species, aquatic habitat, and the physical characteristics of aquatic resources including the flow patterns of surface water bodies.

10c)

Preferred Design

The cost to construct the Preferred Design is estimated to be approximately \$313,500. This estimate includes costs associated with mobilization, labor, and materials. Construction of the Preferred Design will utilize construction techniques that are commonly used for cast-in-place (CIP) reinforced concrete retaining wall projects. These techniques have proven to be reliable and cost-effective. As typical with concrete structures, the design life for the proposed CIP wall is approximately 50 years with very minor, if any, reoccurring maintenance costs anticipated.

In addition to commonly used construction techniques, construction of the Preferred Design will incorporate proven Best Management Practices (BMP's) as a means of decreasing short-term surface water degradation related to construction activity. This includes requiring the contractor to complete the proposed work "in the dry" and at a time when water levels do not reach the foundation elevation. Construction of the proposed CIP wall will also be completed from the top of the existing stream bank. Therefore, no equipment will be operating in or at stream level for the duration of construction.

Minimal Degradation Alternative

The cost to construct the Minimal Degradation Alternative is very similar to that of the preferred alternative. The cost is estimated to be approximately \$307,200. The estimated cost difference is related to the absence of Type A rock channel protection (rip-rap) that has been incorporated into the Preferred Design as a mechanism for armoring the CIP's tie-in trenches from erosion. Similar to the Preferred Design, construction of the Minimal Degradation Alternative will utilize construction techniques that are commonly used to construct cast-in-place (CIP) reinforced concrete retaining walls. These techniques have proven to be reliable and cost-effective. As typical with concrete structures, the design life for the Minimal Degradation Alternative is approximately 50 years with very minor, if any, reoccurring maintenance costs anticipated.

In addition to commonly used construction techniques, construction of the Minimal Degradation Alternative will incorporate proven Best Management Practices (BMP's) as a means of decreasing short-term surface water degradation related to construction activity. This includes requiring the contractor to complete the proposed work "in the dry" and at a time when water levels do not reach the foundation elevation. Construction of the proposed CIP wall will also be completed from the top of the existing stream bank. Therefore, no equipment will be operating in or at stream level for the duration of construction.

Non-Degradation Alternative

No costs will be incurred by the applicant for the Non-Degradation Alternative. However, selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative would not eliminate continued threats to existing park infrastructure; namely the existing multi-use trail and pedestrian footbridge.

The Chagrin River Park pedestrian footbridge was constructed by Lake Metroparks in 2002 at cost of \$250,000. If not addressed, continued erosion at the site will continue to threaten the integrity of the structure and thus poses a potential economic loss to the applicant related to the future maintenance, repair, and/or total replacement of the structure.

10d)

This proposed project does not involve sewage collection or treatment facilities.

10e)

The following conservation projects and/or water quality improvement studies have been identified within the Chagrin River Watershed.

Chagrin River Watershed Action Plan, Chagrin River Watershed Partners, Inc., December 18, 2006 (Revised December 2009) - This document was produced by Chagrin River Watershed Partners, Inc. in collaboration with multiple partners and Stakeholders, including Lake Metroparks. The watershed action plan is a comprehensive plan for protecting and improving the Chagrin River Watershed. The plan includes an inventory of watershed resources and problems within the watershed, while identifying detailed goals to protect high quality areas and address identified problem areas. The plan received full endorsement from the Ohio EPA Division of Surface Water and ODNR Division of Soil and Water Conservation on December 18, 2006. A copy of the watershed action plan can be found at: http://www.crowp.org/pdf_files/ChagrinRiverWAP_20120217.pdf.

Chagrin River Watershed Balanced Growth Plan, Chagrin River Watershed Partners, Inc. - This plan was developed to help achieve the objectives of the Lake Erie Balanced Growth Program, the Lake Erie Protection and Restoration Plan, and the Chagrin River Watershed Action Plan, while also promoting the conservation and development goals of various Chagrin River Watershed communities. This plan was endorsed by the Ohio Lake Erie Commission on September 28, 2009. A copy of the plan can be found at: http://www.crowp.org/pdf_files/ChagrinRiverBGPlan_20091210.pdf.

Biological and Water Quality Study of the Chagrin River and Selected Tributaries 2004-04, Ohio Environmental Protection Agency, Division of Surface Water, December 31, 2006.

Total Maximum Daily Loads for the Chagrin River Watershed, Ohio Environmental Protection Agency, Division of Surface Water, May 115, 2007.

Watershed Groups - One (1) local watershed group was identified within the Chagrin River Watershed:

Chagrin River Watershed Partners, Inc.
4145 Erie Street, Suite 203
Willoughby, OH 44096
(440) 975-3870

10f)

Preferred Design

The standard specifications of the State of Ohio, Department of Transportation govern the proposed project. Therefore, temporary sediment and erosion control measures shall be incorporated into the project in accordance with Ohio Department of Transportation (ODOT) *Supplemental Specification 832 - Temporary Sediment and Erosion Control*. In addition, all water pollution control measures shall be designed and implemented in accordance with the applicable General Conditions and Special Conditions included as part of the approved Nationwide Permit #13.

Water column and sedimentation impacts shall be kept to a minimum through the use of best management practices for soil erosion and sedimentation control; including seeding and mulching. All soil erosion and sediment control measures shall be in place prior to any excavation, grading or filling operations and installation of the proposed CIP wall. They shall remain in place until construction is completed and the area is stabilized. An estimate of \$1,600.00 for sediment and erosion control was identified for the Preferred Design.

Minimal Degradation Alternative

The cost for water pollution controls would be similar to that of the Preferred Design. There are no foreseeable cost reductions or increases.

Non-Degradation Alternative

The applicant considers the Non-Degradation Alternative as the “No-Build Alternative”. Therefore, this alternative would not require any water pollution control practices and thus no cost for such controls is anticipated. Selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative would not eliminate continued threats to existing park infrastructure, impacts related to increased sedimentation into the Chagrin River, and impacts associated with the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

10g)

Preferred Design

There are no negative human health impacts anticipated as a result of the proposed stream bank stabilization project. Construction of the CIP wall will eliminate continued threats to existing park infrastructure including the Chagrin Park pedestrian footbridge and a multi-use trail that runs directly adjacent to the project site. This project will help

the applicant maintain the integrity of these important community recreational resources; which could ultimately have a positive impact on human health for those persons who utilize the park for recreational purposes.

The Chagrin River is a high-quality resource which is full attainment of its water quality use designation. As proposed, impacts to the overall quality of the Chagrin River associated with the Preferred Design can be considered marginal.

Minimal Degradation Alternative

Impacts to human health would be similar to that of the Preferred Design. In attempt to minimize the amount of fill material below the OHWM, the Minimal Degradation Alternative would reduce, if not eliminate, the rip-rap that is being proposed in front of the tie-in trenches located at each end of the CIP wall. Therefore, it is anticipated that human health impacts related to water quality impacts would be virtually the same as the Preferred Design.

Non-Degradation Alternative

There would be no adverse human health impacts related to a reduction in water quality associated with this alternative.

The applicant considers the Non-Degradation Alternative as the “No-Build Alternative”. Selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative would not eliminate potential human health impacts related to increased sedimentation and the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

10h)

Lake County, Ohio Profile

According to the U.S. Census Bureau (2010 data), Lake County, Ohio has an estimated population of approximately 236,000 people. Approximately 68% of the residents (above the age of 16) in Lake County are employed. U.S. Census data shows that 6.9% of the families in Lake County have lived below the poverty level in the past 12 months. This percentage is considerably lower than the State of Ohio's estimated poverty level of 11.8%. On average, the health care and social assistance (22.4%), manufacturing (19.6%) and retail trade (11.5%) fields employ the most workers within Lake County.

Preferred Design

There are no foreseen increases in jobs and/or economic benefits associated with this alternative. Additionally, no direct or indirect increases in property values are anticipated. Construction of the Preferred Design will potentially have a positive impact on recreational opportunities associated with the Chagrin River by decreasing sedimentation into the Chagrin River and eliminating the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

Although the Preferred Design is considered a hard-armoring alternative, the project will have a positive impact on aesthetics at the current project site. As seen in the project

site photos included in Appendix B, the stream bank is experiencing excessive erosion. Continued erosion at the site has resulted in the exposure of (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) which presents an aesthetically unpleasing environment for users of the park's multi-use trail and those persons utilizing the Chagrin River for recreational opportunities. In addition to seeding the areas adjacent to the CIP wall, the Preferred Design will utilize an Long Island Ashlar form liner to maximize the aesthetic value of the wall's face. Detailed information on the Long Island Ashlar form liner to be use is included with the Plan Sheets included in Appendix C.

Minimal Degradation Alternative

This alternative would be expected to have the same effect with respect to jobs, revenues gained, property values, and aesthetics.

Non-Degradation Alternative

This alternative would neither result job creation or increased revenues. However, selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative would not eliminate potential human health impacts related to increased sedimentation into the Chagrin River and the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

10i)

Preferred Design

No social or economic benefits are expected to be lost as a result of this alternative.

No impacts to the recreational value of the Chagrin River are anticipated. Construction of the Preferred Design will potentially have a positive impact on recreational opportunities associated with the Chagrin River by decreasing sedimentation into the Chagrin River and eliminating the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

Minimal Degradation Alternative

This alternative would result in virtually the same impacts as the Preferred Design.

Non-Degradation Alternative

This alternative would neither result in job losses or decreased revenue. However, selection of this alternative would not meet the Purpose and Need of the project, whereby eliminating the needed stream bank stabilization measures at the Chagrin River Park location. Selection of the Non-Degradation Alternative could potentially impact the recreational value of the Chagrin River since it would not address issues related to continued sedimentation and the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

10j)

Preferred Design

A discussion of the aquatic resource impacts associated with the Preferred Design is included in Section 10b of this application. It is assumed that construction of the proposed CIP wall will not result in the loss of environmental benefits. At no time will the Chagrin River's natural sediment-moving capabilities be affected. Construction of the Preferred Design can be considered an environmental gain as it directly addresses impacts related to increased sedimentation and the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

Minimal Degradation Alternative

The effect on environmental benefits for this alternative would be the same as the Preferred Design.

Non-Degradation Alternative

This alternative would not result in environmental benefits lost or gained. However, selection of the Non-Degradation Alternative would not eliminate continued threats to existing park infrastructure, impacts related to increased sedimentation into the Chagrin River, and impacts associated with the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.

10k)

Preferred Design

Efforts have been made to avoid and minimize impacts to aquatic habitats throughout project development. This includes considerations for the proposed wall alignment, materials, and construction means and methods. As proposed, the reinforced CIP concrete gravity retaining wall will be anchored into the bedrock which has been exposed as a result of the excessive erosion occurring at the site. The bedrock in this location offers little to no habitat for sport and recreational fishes, aquatic invertebrates, and animal and plant populations.

Temporary sediment and erosion control measures shall be incorporated into the project in accordance with Ohio Department of Transportation (ODOT) *Supplemental Specification 832 - Temporary Sediment and Erosion Control*. In addition, all water pollution control measures shall be designed and implemented in accordance with the applicable General Conditions and Special Conditions included as part of the approved Nationwide Permit #13. The awarded contractor will be required to be complete the work "in the dry" and thus work will not be performed if water levels reach the foundation elevation. Construction of the proposed CIP wall will be completed from the top of the existing stream bank. Therefore, no equipment will be operating in or at the stream level for the duration of construction. The project will not require any temporary de-watering, cofferdams, building platforms, or machinery in the water.

Coordination with OEPA was completed to determine the mitigation requirements associated with the Preferred Design. The proposed mitigation site is located on the main stem of the Chagrin River at Pleasant Valley Park, 37611 Pleasant Valley Rd.,

Willoughby Hills, OH 44094. Pleasant Valley Park is owned by Lake Metroparks. In order to satisfy the project's stream mitigation requirements, the applicant is proposing to remove an existing 500' earthen levee located along the banks of the Chagrin River. The earthen levee is approximately 6-7' in height. These levees were apparently placed as a means of flood control. After the levee is graded and removed the next step in the mitigation plan is to re-vegetate the site. Lake Metroparks will plant a total of (230) trees utilizing (10) different species of native floodplain trees. Lake Metroparks will also plant a total of (230) shrubs and live stakes utilizing (10) different species of native floodplain shrubs. Lake Metroparks will finally stabilize the site with a native floodplain seed mix. Lake Metroparks will monitor the forested riparian buffer and report at the end of 10 years. Lake Metroparks will measure frequency, density and dominance as well as dominance per species against time to ensure the mitigation project is a success. A minimum of 400 native, live and healthy (disease and pest free) woody plants per acre (of which at least 200 are tree species) must be present at the end of the monitoring period. The complete Mitigation Plan is located in Appendix G.

Minimal Degradation Alternative

Mitigation techniques for the Minimal Degradation Alternative would be the same as the Preferred Design.

Non-Degradation Alternative

This alternative would not impact project area aquatic resources. Therefore, mitigation is not required. However, selection of the Non-Degradation Alternative would not eliminate continued threats to existing park infrastructure, impacts related to increased sedimentation into the Chagrin River, and impacts associated with the movement of Construction and Demolition (C&D) landfill material (i.e. eroded brick, concrete block, wood, and other C&D debris) into the Chagrin River.