

# **ENVIRONMENTAL ASSESSMENT**

## **Pike River Ecosystem Restoration Phases 8 and 9 Village of Mount Pleasant Racine County, Wisconsin**



**August 2014**



**US Army Corps  
of Engineers ®**

Detroit District

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## **Pike River Ecosystem Restoration Phases 8 and 9 Village of Mount Pleasant Racine County, Wisconsin**

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### **ABSTRACT**

This document addresses the environmental impacts associated with aquatic ecosystem restoration of the Pike River in the Village of Mount Pleasant, Racine County, Wisconsin. The proposed project is being completed under Section 206 of the Water Resource Development Act (WRDA) of 1996, as amended [PL 104-303-Oct. 12, 1996]. The proposed project encompasses approximately 1.1 miles of the Pike River and includes restoration of the two stage river channel with emergent wetland, sedge meadow, wet-mesic and mesic prairie restoration through the excavation of approximately 600,000 cubic yards of soil. Most of the excavation is in the floodplain above the ordinary high water mark (OHWM) of the Pike River. The project would also involve the construction of meanders and riffles/pools within the restored Pike River. Construction of meanders, placement of riffles and stabilization of the river banks with log jams will require excavation below the OHWM and require state water quality certification. The project would contribute to the completion of a 9-phase restoration project initiated by the Village of Mount Pleasant and would realize the project goal of restoring scarce prairie and natural stream habitat, increasing the species richness of native prairie communities and the native plant herbaceous layer, and providing resting areas for fish, invertebrates, and wildlife.

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Phases 8 and 9  
Village of Mount Pleasant  
Racine County, Wisconsin

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## **1.0 PROJECT NEED AND PURPOSE**

1.1 The U.S. Army Corps of Engineers, Detroit District (USACE) proposes an aquatic ecosystem restoration project along approximately 1.1 miles of the North Branch of the Pike River, with the headwaters located in the Village of Mount Pleasant, Racine County, Wisconsin. The project involves restoring Phases 8 and 9, which are the last two phases of a 9-phase ecosystem restoration project initiated by the Village of Mount Pleasant on the Pike River which will replace the incised river channel with a restored two stage meandering river channel with wetland floodplain capable of handling a 1% storm event. The project involves restoration of a floodplain with emergent wetland, sedge meadow, wet-mesic and mesic prairie habitat. The proposed action entails excavating approximately 600,000 cubic yards of soil to restore the channelized river to a more natural riverine ecosystem. The proposed work is upstream of the confluence with the South Branch Pike River (**Figure 1**). The proposed action restores the riverine ecosystem with wetland and open water pockets within the floodplain, which will contain the 1% storm event as depicted in the cross section (**Figure 2**) in the proposed work area between Braun Road and County Line Road.

1.2 The objective of the project is to provide ecosystem restoration within the floodplain and restore the incised river channel to a more natural river system. Emergent wetlands and prairie will dominate the vegetated floodplain which will capture sediments and nutrients from overland runoff, reduce erosion, stabilize slopes with vegetation and restore a functioning riverine ecosystem. The proposed project would support a diverse animal community consisting of fish, reptiles, amphibians and invertebrates. The wetlands and prairie habitat within the floodplain will support a variety of semi-aquatic mammals, butterflies, birds and act to maintain water quality necessary for aquatic life by filtering the overland runoff.

## **2.0 PROJECT AUTHORITY**

2.1 The proposed project is being accomplished under Section 206 of the Water Resource Development Act (WRDA) of 1996, as amended [PL 104-303-Oct. 12, 1996]. The Federal cost share under the Section 206 authority is 65% with a \$5 million Federal expenditure limit per project.

## **3.0 NON-FEDERAL SPONSOR AND PROJECT HISTORY**

3.1 The non Federal sponsor is the Village of Mount Pleasant which is located on the western shore of Lake Michigan (**Figure 1**) at the headwaters of the North Branch of the Pike River upstream of the Phase 1 work area. The Northern Branch of the Pike River and its tributaries drain to meet the Southern Branch of the Pike River. The Pike River flows directly into Lake Michigan approximately three miles southeast of the confluence of Southern Branch of the Pike River and the Northern Branch of the Pike River.

3.2 Pike River was one of the earliest rivers in Wisconsin to be dammed and ditched in the late 18th and early 19th century to facilitate drainage for prime farmland and supply water for irrigation given its close proximity to growing settlements around the present day cities of Racine and Kenosha. Historic, pre-settlement maps of the area depict wetlands, wet prairie and prairie within the project area. Based on initial state survey data, it is estimated that the Pike River watershed once supported over 4,800 wetland acres prior to Euro-American settlement (WDNR Pike River Watershed Plan 2010). Today, the watershed contains approximately 350 acres of wetlands, a loss of over 93% of the historic wetlands as depicted from the original General Land Office (GLO) survey notes. These wetland losses are typical across the mid-west where wetlands were drained and converted to prime agricultural uses as were the prairies.

3.3 The historic vegetation in the northern part of the Southern Lake Michigan Coastal Ecological Landscape was dominated by sugar maple-basswood-beech forests with some oak while the southern part was dominated by oak forest, oak savanna and prairies. Wet-mesic and lake plain prairies were common in this area. Black ash, relict cedar and tamarack swamps were also present. Of the millions of acres of prairie types and savannahs that historically blanketed the landscape from the Appalachian Mountains to the Rocky Mountains, less than 1% of the ecosystem types remain, mostly as small relicts. Wisconsin has a similar habitat loss of historic prairie and savannah.

3.4 Decades of floodplain development and increases in impervious surfaces (roads, rooftops, parking lots) in urbanized watershed move stormwater off the land and downstream more quickly, resulting in flooding. In response to frequent flooding in the Pike River, the counties of Racine and Kenosha contracted with the Southeastern Wisconsin Regional Planning Commission (SEWRPC) in 1975 to develop a comprehensive watershed management plan for the Pike River. In 1993 the floodplain management element of the plan was refined to include measures for habitat restoration as part of the proposed project. Work was proposed along 13.2 miles of the Pike River. As the Town of Mount Pleasant was prepared to implement several of the recommendations in the plan a Draft EIS titled "Environmental Impact Statement for the Stream Channel Modifications to the Pike River System" dated August 1995 was prepared to evaluate cumulative effects and identify alternatives to reduce flooding and provide other benefits including habitat restoration within the Pike River watershed. The FEIS was approved and the project implemented. In pre-settlement condition, the watershed contained prairies, wetlands and oak savannah which were determined to exist as tiny remnants under present conditions and thus habitat improvements were added to the project. Severe storms with flooding have occurred several times in the recent past with 6 Major Flooding/Storm declared disasters (Presidential) since 1993 along the Pike River. The Village of Mount Pleasant determined that wetland and prairie restoration within a restored floodplain could potentially assist in reducing flooding within the Village and developed a 9-phase, long range plan for 5.5 miles of river (**Figure 1**).

3.5 Project phases 1-6 have been constructed and are performing as designed. Habitat evaluations taken from sampling stations within the river segments 1-6 fell into the

“Good” classification based on the USEPA rapid habitat analysis (Interim Monitoring of Stream Habitat & Aquatic Biotic Integrity, Pike River, North Branch, prepared by Fish Ecology Laboratory Group, UW-Milwaukee, December 2013). The fish index of biological indicators showed a steady improvement in restored sections of the stream relative to non-restored and reference streams. In the non-stream areas as reported in the Pike River Restoration Habitat Analysis May 2013, the Phase 1 segment constructed in 2002 and 2003 had the longest time for maturation (**Figure 3**). The wetland and stream shelf areas are comprised of 5.1 acres of emergent wetlands in the marsh, 2.5 acres in the central marsh and 7 acres of stream shelf as sedge meadow/wet prairie. The 15 acres of upland are mesic prairie species. Phase 4 was constructed between 2006-2010 with the wetlands classified as emergent, sedge meadow, wet prairie and wet-mesic prairie. Phase 4 segment contained “false aster,” *Boltonia asteroides*, which was not in the seed mix but in the seed bank that has a fairly conservative rating of 7 (co-efficient of conservatism, where 0 indicates weed species. not found in native landscapes and 10 most restricted to undisturbed landscapes).

3.6 In Phase 4, the upland 30.1 acres, contain mesic prairie and wet-mesic prairie species and the site is trending towards mesic prairie. Similar results were noted in other phases, depending on the construction time line. The native vegetation on the restored Pike River contains a far richer assemblage of plant species than prior to restoration. The native mesic prairie is critically impaired in Wisconsin and listed as one of the rarest community types in the state. The wet-mesic prairie is listed as imperiled. Phases 1, 4 and 5 include 59 acres of mesic prairie, 26.9 acres of wet-mesic and wet prairie, southern sedge meadow and emergent wetlands. Project Phase 7 is expected to be constructed in 2015, while project Phases 8 and 9, the two last remaining restoration segments, are the subject of this EA.

3.7 The proposed Phase 8 and 9 ecosystem restoration will require approximately 95 acres total from the private sector land owners of which approximately 60 acres are in farmland production. The actual wetland restoration work area in and adjacent to the floodplain totals approximately 75 acres. The remainder of the lands are 2.8 acres for the maintenance access path, 1.2 acres of existing wetlands that are not being touched and 10.5 acres of open water within the stream and ponds that will be excavated. The Village of Mount Pleasant has acquired all the land except for a 20 acre parcel located at the downstream end of Phase 9 on the east side of the river. Once the project is approved, the Village will obtain title to the remaining parcel (See Real Estate Appendix E). Excavation would occur from the existing river bank above the ordinary high water mark of the Pike River, except for the oxbows and meandered segments of the river. The ecosystem restoration within the restored floodplain is designed to contain wetlands, sedge meadow, wet-mesic prairie, mesic prairie, emergent and open water wetlands, all necessary for a vibrant functioning ecosystem. These proposed restoration habitats would be similar to prairie and wetland habitat restored upstream in Phases 1-6 and will provide a connectivity corridor for wildlife. Restoration of the stream with meanders and riffles/pools will provide in-stream habitat suitable for aquatic life. The vegetation within the floodplain will filter nutrients and sediments from overland

runoff, thus preserving the in-stream habitat values. The existing and proposed cross section of the river restoration is depicted (**Figure 4**).

3.8 Permits for the Village of Mount Pleasant's construction of Phases 1-6 were obtained from the Wisconsin Department of Natural Resources (WDNR) and the USACE. Effective 2012, both the WDNR and USACE revoked their original permits because of new waterway and wetland mitigation laws. The WDNR, USACE and U.S. Fish and Wildlife Service (USFWS) recommended that the Village apply for one permit to cover the remaining construction work (Phases 7, 8, and 9). The Village submitted the necessary permit application for the remainder of their work (Phase 7) in 2014 once plans were finalized. For the proposed Section 206 ecosystem restoration project (Phases 8 and 9), the necessary state and Federal permit applications have been submitted. The WDNR Chapter 30 permit for water quality certification, will be obtained prior to initiation of construction by the Village of Mount Pleasant (the non-Federal sponsor).

## **4.0 ALTERNATIVES**

4.1 This section describes the project alternatives to provide ecosystem restoration and restores the incised river channel to a more natural two stage river system. Project alternatives considered include: Alternative 1 – No Action; Alternative 2 – Riparian Prairie and Wetland Restoration; Alternative 3 – Riparian Prairie and Wetland Restoration with Channel Meanders, riffles and pools; and Alternative 4 – Riparian Prairie and Wetland Restoration with Channel Meanders, riffles and pools and additional vegetated buffer strip at top of bank. The alternatives are described below.

### **Alternative 1: No Action**

4.2 The USACE is required to consider the option of "No Action" as one of the alternatives in order to comply with the requirements of the National Environmental Policy Act (NEPA). No action assumes that no project would be implemented by the Federal Government or by local interests to achieve the planned objectives.

4.3. By taking no action, there would be minimal changes to current conditions in this 1.1 mile excavated incised river trapezoidal channel with a narrow riparian buffer, which has virtually no access to a floodplain nor does the incised channel contain the 1% discharge event. The confined, narrow and disturbed nature of the riparian corridor and stream channel is fairly limited in biodiversity. Overland runoff from the agricultural lands limits fishery use within the river through sediment input and warmed waters in the summer. The 1996 WDNR fish surveys have shown relatively little fish abundance and diversity, with pollution-tolerant warm water fish species, such as green sunfish and creek chub, the predominant resident fish. University of Wisconsin-Milwaukee (2012) Interim Report *Monitoring of Stream Habitat & Aquatic Biotic Integrity Pike River-North Branch* prepared for the Mount Pleasant Stormwater Utility District shows a steady fishery improvement in restored sections of the stream, relative to non-restored and reference streams based on increased metric values for fish abundance and fewer

tolerant species (as percent of all individuals). The non-farmed lands are indicative of a disturbed ecosystem with invasive plant species (reed canary grass), numerous weed species and few native species in the ecosystem. By taking no action, lands in and adjacent to the Pike River in the Village of Mount Pleasant would continue to experience localized flooding and the scarce prairie habitat and ecosystem would not be restored nor would the in-stream habitat improvements occur in this reach. The Racine County Conservationist has and continues to work with the neighboring farmers to enroll in the conservation reserve program and implement other soil conservation measures to minimize sediment discharge to the receiving waters.

4.4 If the No Action Alternative is implemented, towns and villages would continue to implement projects and conduct activities within the watershed to meet state water quality standards including installation of buffers along the drainage ways, construction of Best Management Practices (BMPs). The BMPs are designed to improve or enhance the receiving waters through the implementation of specific activities for stormwater management, implementation of wetland restoration projects, where practicable, and reduction of sediment input from non point sources including overland runoff from the agricultural lands with vegetated buffers, drop inlet structures, no-till farming and maintaining enrollment in the conservation reserve program (CRP), where appropriate on suitable lands. The action alternatives are described in the Engineering Appendix, Appendix A, of the Detailed Project Report.

#### **Alternative 2: Expanded ecosystem within the restored floodplain with existing channel**

4.5 Alternative 2 includes wetland and prairie habitat restoration within the restored floodplain. Excavation will occur above the ordinary high water mark of the river. The incised river channel will remain in its present alignment and only floodplain excavation will occur. However, the incised river channel will seek stability as it forms a natural channel with meanders and riffles. Over time, this action will cause erosion and loss of the adjacent restored prairie habitat as the stream erodes the banks to form a stable channel. The loss of prairie habitat is depicted in the habitat units located at the end of the monitoring plan.

#### **Alternative 3: Expanded ecosystem within the restored floodplain with meandered channel and in-stream structure**

4.6 Alternative 3, includes the floodplain excavation for ecosystem restoration of Alternative 2 along with bank stabilization, the construction of new in-stream meanders, the construction of three (3) river oxbows in the old river channel and habitat restoration including log jams (herein referred to as log deflector structures constructed with logs anchored into the bank designed to armor the bank from erosion), riffles and pools and boulder clusters. The plan view of the work areas, as proposed with meanders, floodplain and excavated material placement location at the fill location west of Phase 9 is depicted (**Figure 5**).

## **Alternative 4: Expanded Vegetated Filter Strips with Floodplain with Meandered Channel and In-stream Structure**

4.7 Alternative 4 includes all the actions listed in Alternative 3 but also includes the expansion of the property footprint by an additional 100 feet on the east and west property boundaries to create an additional vegetated buffer strip to enhance sediment capture from overland runoff and provide additional habitat and filtering. Figure 5 does not depict the additional 100 foot buffer along the outside of the orange line as Alternative 4 was ruled out early in the alternative selection process.

## **5.0 ALTERNATIVE SELECTION**

5.1 The tentatively selected alternative for the proposed ecosystem restoration project is Alternative 3. Feasibility level plans, design and engineering criteria are provided in the Detailed Project Report (DPR) Engineering Appendix.

5.2 Alternative 3 includes the restoration of the two stage river channel floodplain and plantings to restore wet-mesic, mesic and upland prairie habitat, emergent and open water wetland restoration and in-stream habitat improvements consisting of riffles/pools, log jams and boulder clusters. In three (3) locations, the incised river channel would be replaced with meanders and the old channel segments incorporated into the river as off stream oxbows. The vegetated stream banks provide feeding area for mink and other semi-aquatic mammals, the permanent pool open water wetlands habitat for amphibians and snapping turtles along with adjacent sand areas for turtle nesting. The rock riffles provide spawning habitat for fish and a hard substrate for invertebrates. The targeted fish species within the river is the creek chub though green sunfish could also be used for development of habitat units.

5.3 Approximately 600,000 cubic yards (CYD) of soil adjacent to the 1.1 miles of the Pike River project area would need to be excavated. The soil excavation is needed to restore the two stage river channel and provide the floodplain top widths to between approximately 220 feet to 938 feet at an elevation above the existing stream ordinary high water mark which will create a secondary flood shelf. The floodplain bench and side slope ecosystem work includes construction of approximately 40 acres of wetland consisting of emergent, sedge meadow, wet prairie and wet-mesic prairie along with 30 acres of mesic prairie and vegetated filter strips. The floodplain will also contain shallow water wetlands staged at specific drainage swales to capture overland runoff from agricultural fields and sediments prior to entry into the river to assist in maintaining water quality necessary for the aquatic life. A vegetative buffer is also located on the slope and at the top of the floodplain to assist in filtering overland runoff and provide habitat for a variety of birds, mammals and invertebrates as part of the ecosystem restoration. The excavated material will be placed on an existing 40 acre parcel of property in sponsor ownership west of the Pike River adjacent to Phase 9. The placement area is open field that was formerly farmland in crop production. The excavated material would be placed into a 1,000 foot by 1,700 foot area with depths up to 15 feet. The excavated soil will be mounded at the placement site and will be seeded

for stabilization. Fill quantities within the existing river are approximately 20,000 CYD with approximately 5,000 CYD of fill to be placed below the ordinary high water mark.

5.4 Alternative 3 includes the restoration of habitat within the existing incised river channel which is approximately 15-20 feet wide at the streambed which encompasses approximately 2+ acres (5,800 LF of stream x 15 feet wide). Three types of in-stream habitat structures will be installed along with the meanders being riffles/pools, boulder clusters and log jams. The in-stream log jams and riffles support bank and streambed stability by promoting a naturalized energy flow (and sediment bed load movement) and those features promote reduced erosion and are necessary to protect the investment in the floodplain wetlands restoration. Without stream stability as designed in Alternative 3, the habitat value of the floodplain ecosystem restoration will be lost through riverbank erosion over time. Therefore, the entire project including in-stream structure is necessary for successful ecosystem restoration within the floodplain.

5.5 The in-stream restoration activities include: construction of the low flow channel that will vary from 20-30 feet wide, realigning the course of the river to a more natural contour with bank stabilization, restoration of meanders, riffles/pools, boulder clusters and log jams. The in-stream work will require the placement of approximately 1,200 CYD of rock for riffle construction and boulder clusters; 550 CYD rock in conjunction with the construction of 25 log jams for riverbank protection, the placement of 40 CYD rock for each of three (3) temporary stream crossing that will be incorporated into the riffles or removed after use. At each of the 25 log structures, approximately 4 CYD of material will be excavated and the structures will create pools up to 30 feet in length and one to two feet below normal stream bed elevation. The newly created river meanders provide an additional 2,600 LF of stream that is habitat for a variety of semi-aquatic mammals, including mink and is included in the 2 acres of stream as listed in the habitats unit table in Appendix F. The length of existing channel segments that are filled and armored on the upstream end to direct flows into the new meandered segment is 650 LF and the length of the three (3) oxbows that remain are approximately 1,260 LF. Excavation of the new channel meanders averages 2.5 CYD/LF and the fill required for blocking the upstream segment of the cut off oxbows averages 6 CYD/LF with an additional 1 CYD/LF armor stone.

5.6 Implementation of Alternative 3 would cause negligible effects to the physical setting of the area but will remove farmlands from production and restore wetlands and scarce prairie within the floodplain. The existing streambed will remain and only be altered in the meander areas and by the placement of structures for habitat improvements. The restoration would improve in-stream fish habitat and leave existing oxbows for fish and wildlife habitat within the river. Construction of a natural channel lowers the stream gradient and the riffles act similar to check dams, slowing velocity. The log jam structures armor the banks and divert the flows back to the center of the river. These engineering features associated with the natural channel reduce velocity and lower erosion of the streambed and banks. The 2 acres of in-stream riffles, pools and hard structure have habitat value but the project value that is critical is the restoration of 73 acres of wetland and prairie habitat in and adjacent the floodplain (**Figures 6** – Phase 8;

**Figure 7-** Phase 9). The Monitoring Plan is found in Appendix F along with transect monitoring locations. The Village is in the process of acquiring the last parcel approximately 20 acres in size at the downstream end of the project area.

5.7 The proposed action may require the construction of one or more temporary structures upland or in-water besides the three proposed temporary rock crossings. The type and location of temporary structures and/or construction materials cannot be determined at this time, since they would be incidental to the work being performed. Examples are work and storage areas, access roads, and office facilities. Temporary structures or fill material would be at USACE approved locations within project boundaries or rights-of-way, outside of any wetlands, areas containing Federal or state protected species or their critical habitat, or properties listed on or eligible for listing on the National Register of Historic Places or state-listed properties. Temporary activities will include appropriate precautionary measures to prevent erosion and sedimentation or other undesirable environmental impacts. These construction aids would be removed when no longer needed and their sites would be restored upon project completion. Some variation in design details may occur as a result of unanticipated design improvements, site conditions, or cost-saving measures. Any variations that result in a significant change to the project design that may result in environmental impacts would be further evaluated under the National Environmental Policy Act.

## **6.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

6.1 This section describes the physical conditions and ecological resources within the proposed project area. All potentially relevant resource areas were initially considered in this EA. This section also contains an evaluation of environmental impacts which focused on those resources and conditions potentially subject to effects and on potentially significant environmental issues deserving of study. The environmental evaluation identified and analyzed the type and magnitude of anticipated impacts associated with implementing the proposed project's alternatives.

### **Existing Environment- Physical Setting and Land Use**

6.2 Weather - The Milwaukee area has the second-coldest average annual temperature of the 50 largest US cities, next to Minneapolis. Average winter lows are in the teens Fahrenheit (F) with average summer highs in the high 70s (F). Average rainfall is approximately 4 inches per month during the summer months. Snowfall mainly occurs between the middle of November and the end of April.

6.3 Land Use - The dominant land use in the watershed (45%) is in agricultural production. Next to agriculture, grasslands and forests respectively are the two next most common rural land uses. Farmland is located adjacent the incised Pike River. Typical crops raised are corn, soybeans, grain and hay in support of dairy farming. Most of the agricultural land is tilled and valued at \$6,000 or more per acre for large parcels.

6.4 Topography and Soils - Topography of the general area outside of the drainage ditches and streams is relatively flat and in agricultural production with some gentle rolling lands. This watershed is located in the middle of the Southern Lake Michigan Coastal Ecological Landscape which is characterized by ridge and swale topography, clay bluffs, and lake plain along Lake Michigan. Silt-loam soils overlying loamy and clayey tills are typical.

6.5 The physical setting and land use do not appreciably change with project implementation under the action alternatives. The lands remain rural, farm land and degraded habitat is converted to wetlands and prairie and remains non-developed for human use.

6.6 Hydrology - The River has a drainage area of 52 square miles and a gradient of 3.8 feet/mile within the project area, which is relatively flat. The river consists of the north branch, south branch and the main stem of the Pike River. The river water surface width is approximately 15-20 feet with depths from 1.5-3 feet under normal summer conditions. The model developed by URS/Baird shows a water surface increase for both Alternatives 2 (+0.02) and 3 (+0.52) at the downstream extent of Phase 9 greater than 0.00 ft. The community is part of the National Flood Insurance Program (NFIP). Under the NFIP the community is responsible for approving all proposed floodplain development. The Village has indicated they will prepare a CLOMR (Conditional Letter of Map Revision) based on the project's proposed hydrology changes (different flow values than those that are published by FEMA) and water surface elevation increases for the 100-yr event when comparing existing conditions to proposed conditions. When a CLOMR is submitted, a LOMR (Letter of Map Revision) has to be submitted within 6 months after construction with as-built drawings. Even though there is a stage increase in the downstream river segment, the restored riverine wetland within the floodplain will contain the 1% discharge event.

6.7 Based on topography and surface water drainage, the local groundwater flow direction is toward the Pike River. Daily discharge flows for the period 2000 to 2008 averaged 44 cubic feet per second (cfs) as recorded at USGS gauging station #04087257 located 9 miles upstream from the Pike River's confluence with Lake Michigan. Annual peak flows for the same period have exceeded 1,500 cubic feet per second (cfs) on several occasions and minimum annual flows have dropped under 300 cfs. The river flows are considered very flashy. The minimum daily discharge for the period between 2000-2008 has dropped below 5 cfs. Restoration of the wetlands within the floodplain under the action alternatives will not adversely affect the hydrology of the river or surrounding property or have a measurable effect on the groundwater or water levels in the adjacent Pike River.

## Environmental Resources Excluded From Evaluation

6.8 Some environmental resources and conditions that are often analyzed in an EA have been excluded from the detailed environmental analysis as follows:

**Sustainability and Greening.** The proposed ecosystem restoration within the floodplain does not require significant resources for construction or operation nor produce significant emissions once constructed. Methods to implement green building technologies (i.e., utilizing recycled material or recycling product such as concrete or steel) are not applicable to the project and are not discussed within this EA.

**Aesthetics.** The restoration would directly impact the Pike River's physical appearance during restoration. The river traverses farmland in this location. The primary existing view of the incised river is looking north or south from the main east-west roads located north and south of the project site. When viewed from an east or west orientation, the incised river channel is not visible. Restoration of the river with a floodplain comprised of wetlands and prairie would result in a more natural river appearance, with more varied vegetation. Restoration would cause temporary aesthetic impairment. Restoration activities involve clearing of trees and vegetation, earth-moving, stock-piling, and other construction activities. Additionally, the construction equipment and vehicles would be visible outside the project area during ingress and egress. The site would appear as a large scale, earth-moving, construction project for the duration of construction. Within one growing season, the floodplain that was excavated would be stabilized with vegetation and provide a natural view. Therefore, aesthetics is dismissed as an impact topic in this EA.

**Socioeconomics.** Council on Environmental Quality regulations for implementing NEPA (40 CFR 1500), requires economic analyses of Federal actions that would affect local or regional economy. The topic of socioeconomics evaluates the effect of the proposed action on local and regional businesses and residents, and local and regional economies. The Phase 8 and 9 segments of the Pike River proposal would occur primarily on farm land near the Village of Mount Pleasant. The project encompasses 95 acres of which approximately 60 acres are under cultivation. The proposed project will not displace a population nor adversely impact a class of citizens. While there may be short-term benefits to local economies, local and regional businesses would not be appreciably affected in the long-term. Therefore, socioeconomics is dismissed as a topic in this EA.

**Energy Requirements and Conservation Potential.** CEQ guidelines for implementing the NEPA requires examination of energy requirements and conservation potential as a possible impact topic in environmental impact

statements and environmental assessments. Sustainability can be described as the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short and long-term environmental impacts of developments and other activities through resource conservation, recycling, waste minimization, and the use of energy efficient and ecologically responsible materials and techniques. Consequently, any adverse impacts relating to energy use, availability or conservation would be negligible. Therefore, energy requirements and conservation potential is an impact topic dismissed from further consideration in this EA.

6.9 The effects of taking no action are similar for most resources. By taking no action, there would be minimal changes to current conditions. The No Action, Alternative 1, would contribute to cumulative impacts to the resources at the site by the repeated flooding and high flows impacting the ecosystem and surrounding lands. By taking no action, lands in and adjacent the Pike River in the Village of Mount Pleasant would continue to experience localized flooding and the scarce prairie habitat would not be restored nor would the in-stream habitat improvements occur on the river. The village has completed construction of Phases 1-6 and will complete Phase 7 in the next two years. Without USACE involvement, there is no assurance that Phases 8 and 9 will be completed in a timely manner or at all.

### **Environmental Consequence from Implementing Project - Effects Summary**

6.10 **Vegetation, Wildlife, Aquatic Resources** No scarce or unique vegetation, fish or wildlife species have been identified along this segment of the Pike River corridor that would be significantly affected by the proposed action Alternatives 2-4. Tolerant aquatic species consisting of dipteran flies and oligochaetes (segmented worms) were dominant at most stations within the north and south branches of the Pike River. Green sunfish, bluegill and creek chubs are the dominant species in the system. All existing vegetation and the habitat provided by the vegetation would be destroyed from the floodplain excavation. Invasive species common to the area include tall manna grass, reed canary grass and reed grass (*Phragmites australis*). After excavation, the exposed soils will be seeded with native seed mixes and plants to establish the wetlands and prairie habitats. In some sections of the existing riverbank, the river bank soils are eroding and those eroding areas would be stabilized. Alternatives 3 and 4 would impact the benthic community within the streambed where filling of the existing river channel occurs. The existing biota within the Pike River would be destroyed in the fill areas to form the oxbows but the restoration of the river with riffles, pools, log jams, boulder clusters and adjacent wetlands will create a better and more varied habitat than presently exists within the incised channel. Best Management Practice (BMPs) would also protect downstream aquatic resources during and after construction. Any fish within the river system would move upstream or downstream during construction. Action alternatives 2-4 will create better wildlife habitat but existing wildlife would be displaced during construction. To minimize and help to prevent erosion and help prevent establishment of non-native and invasive plant species, all disturbed areas would be re-vegetated with

native or regionally appropriate plant species upon completion of the project. Construction will start at the upstream end (Phase 8) and work downstream in sections no longer than 400 feet that can be seeded and stabilized each day.

**6.11 Threatened and Endangered Species** The USFWS county list for Federally threatened and endangered (T&E) species was reviewed and there are no Federal listings under the Federal Endangered Species Act for Racine County, Wisconsin, (July 2, 2013). Therefore, the USACE has determined the proposed project will have no effect on Federally listed T&E species or critical habitats for Federally listed species. The USFWS agreed with the USACE determination in a letter dated August 24, 2011.

**6.12 Exotic and Invasive Species** Invasive vegetation in the proposed work area includes fruiting common and glossy buckthorn (*Rhamnus cathartica* and *Rhamnus frangula* –less common), honeysuckle (*Lonicera sp.*), purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*) reed manna grass (*Glyceria maxima*) and Phragmites (*Phragmites australis*). In the uplands additional invasives common to the area are crown vetch (*Coronilla varia*), birdsfoot trefoil (*Lotus corniculatus*) and cut-leaved teasel (*Dipsacus laciniatus*). Manna grass and reed canary grass are the primary species being controlled within the restored Phases 1-6. Reed canary grass is an opportunistic aquatic invasive wetland plant. Based on satellite imagery, reed canary grass coverage in the watershed is 70% for emergent wetlands and marshes and 15% coverage in the remaining forested wetlands. Invasive species inhibit successful establishment of native wetland species and will require identification during annual inspections and when identified, control by the local sponsor.

**6.13** Prior to construction, invasive species management would be performed within the limits of disturbance to ensure that clearing and grading of existing vegetation within project limits includes proper removal and disposal of invasive species to minimize their spread. BMPs and special equipment handling would be implemented to reduce the transport of invasive plants by seed. BMPs may include off-site power-washing of equipment prior to being transported to the site. Post construction monitoring and management of invasive plants in the floodplain is the responsibility of the non-Federal project sponsor. The warm waters of the Pike River do not support sea lamprey production.

**6.14 Wetlands** – Currently, it is estimated that the watershed contains approximately 350 acres of wetlands. Small, existing wetland pockets (2.6 acres total in 5 areas) would be affected by project implementation under alternatives 2-4 through excavation to restore the floodplain. These wetland pockets are isolated and would be lost through excavation but will be replaced with over 40 acres of wetlands restored at a lower elevation in the floodplain corridor consisting of emergent and open water, sedge meadow and wet-mesic prairie wetlands. No wetlands will be impacted from fill materials.

**6.15 Farmland** – The proposed Phase 8 and Phase 9 project requires 95 acres of land. The Village of Mount Pleasant has acquired 75 acres of land and is in the process of

acquiring the final 20 acres. Of the 95 acres required for the project, approximately 60 acres are under agricultural cultivation. Prior to the 2007, the Village of Mount Pleasant zoning maps identified the lands within the proposed project area as agricultural and prime farmlands. Between November 2007 and December 2008, Racine County Department of Planning & Development staff met with each local government to review and update, as necessary, their land use plan maps to the year 2035. The local land use maps were combined to create the Racine County land use plan map. The Mount Pleasant Land Use Plan: 2035 lists the 95 acre project lands adjacent the river as follows:

- The Phase 8 and 9 properties are zoned Floodplain;
- Phase 8 is also zoned secondary Environmental Corridor;
- Phase 9 is also zoned as Primary Environmental Corridor; and
- The proposed disposal site which is not part of the 95 acres was previously farmland that is now zoned Park, Recreation, Natural Area.

6.16 With the updated land use map, the Village of Mount Pleasant determined the land usage would change from farmlands to floodplain and environmental corridor in the proposed work areas Phases 8 and 9. Since the proposed project would convert prime farmlands to other uses, an Agricultural Impact Statement (AIS) was prepared by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) # 3704, in accordance with Wisconsin statute Section 32.035 (Village of Mt. Pleasant Flood Control & River Improvement Project, was published on August 19, 2010). The AIS is an informational and advisory document that describes and analyzes the potential effects of the project on farm operations and agricultural resources. The DATCP recommended that the farmland owners and operators be given advance notice of acquisition and construction schedules so that farm activities can be adjusted accordingly. To the extent feasible, the timing of the acquisition and construction would be coordinated to minimize crop damage and disruption to farm operations. .

6.17 The Farmland Compliance Requirement (Subtitle I of Title XV of the Agriculture and Food Act of 1981) is implemented under Department of Agriculture final rule effective 6 August 1984 (7 C.F.R. 658). The final rule requires that prior to taking any action that would result in conversion of designated prime or unique farmland to non-agricultural uses, federal agencies (such as the USACE) must examine the potential impacts of the proposed action and if there are adverse effects on farmland preservation, consider alternatives to lessen the adverse effects. The USACE contacted the Natural Resource Conservation Service (NRCS), Racine County Conservationist in August 2013 for identification of prime or unique farmland which might be impacted by proposed USACE actions.

6.18 In August 2013, the NRCS indicated that prime farmland is present on the uplands adjacent Phase 8 at the top of the riverbanks. The proposed project will cause impacts to prime farmland in the Phase 8 project area. Prime farmland adjacent Phase 8 will be removed from production with project implementation. NRCS indicated that the project is compliant with the Farmland Protection Policy Act as the project is designed to restore the riverine wetlands within a floodplain in the Village of Mount Pleasant and on

the farmlands adjacent the Pike River. Restoration of scarce prairie habitat that was previously converted to farmlands will restore a unique resource in an area. No other feasible alternatives are available that will reduce the impacts to the farmlands and still provide wetland and prairie restoration within a riverine floodplain to the 1% storm event.

**6.19 Water Quality** - The water quality of the 42 miles of rivers and streams in the Pike River watershed ranges from severely degraded to good. Twenty-one miles of perennial streams (50%) are currently considered to support a Warm Water Sport Fish community. Eight miles (19%) support a Warm Water Forage Fish community. Just over eight miles of streams in the Pike River Watershed are considered impaired and do not meet water quality standards. The stream segments that do not meet water quality standards are not within the project area. The Pike River within the proposed work area is listed as impaired for Fish and Aquatic Life. The impairment is due to degraded habitat caused by channelization, debrising of streambanks, draining of wetlands, sedimentation from runoff and increased stormwater drainage. Water quality sampling from a station located in the Phase 4 work area during the summer of 2012 revealed dissolved oxygen ranged from 12 mg/l to a low of near 3 mg/l. Levels fell below 5 mg/l (general use state water quality standard) approximately 7% of the time. Levels below 5 mg/l will affect intolerant aquatic species. Implementation of the proposed action alternatives will assist in reducing or eliminating some if not all contributing impairment factors in the river though the most beneficial effects occur from wetland and prairie restoration.

6.20 There would be negligible to no long term effect on water quality from the proposed construction. Temporary impacts would include sediment from runoff during construction and until permanent vegetation is established and minor sediment migration with the excavation for the installation of the log structures. Specific erosion control measures are detailed within the plans and specifications. An overview of the soil erosion control measures include installation of temporary soil erosion control measures, use of erosion control mats on the slopes, dividing the work into segments no longer than 400 feet that can be completed within one day, working on the east bank first, then west bank as sediment is transported to the placement site using the temporary crossing sites and in-stream work is limited to June 1-August 31 to protect spawning fish and provide for vegetation growth on the banks.

6.21 A water quality certification (WQC) will be required from the Wisconsin Department of Natural Resources (WDNR) for placement of fill materials into waters of the U.S., the Pike River. The Village of Mount Pleasant will obtain all the necessary approvals and state water quality certification.

**6.22 Hazardous, Toxic and Radioactive Waste (HTRW)** The terms “hazardous materials” refers to any item or agent (biological, chemical, radiological or physical) which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors. Issues associated with hazardous materials typically center around waste streams, underground storage tanks (USTs),

above ground storage tanks (ASTs), and the storage, transport, use, and disposal of pesticides, fuels, lubricants, hazardous toxic and radioactive waste (HTRW) and other industrial substances. When such materials are improperly used, they can threaten the health and well-being of wildlife species, habitats, soil and water systems, and humans.

6.23 USACE policy prohibits the use of Civil Works funds to respond to concerns associated with HTRW and requires appropriate investigation to identify potential HTRW concerns early in planning and development of a civil works project. Several actions were conducted to address the existence of, or potential for, HTRW contamination on lands in and adjacent to the proposed project site, including structures and submerged lands, which could impact, or be impacted by project implementation.

6.24 Environmental databases and related records were searched and reviewed for information regarding current and former land use indicating storage, disposal or use of CERCLA regulated substances. A review of the EPA's Envirofacts, EnviroMapper and MyEnvironment (which includes Superfund / National Priorities List sites, toxic releases, water dischargers, air emissions, and hazardous wastes) was conducted for the proposed project location and no listings were identified.

6.25 A Phase I Environmental Site Assessment (ESA) was conducted by the non-Federal sponsor for the entire project area (Northern Environmental, Phase I Environmental Site Assessment, Pike River Corridor Study, Highway C to Highway KR, Mount Pleasant, Wisconsin, May 25, 2000). The conclusion of the Phase I ESA indicated no environmental concerns were identified within the area of the proposed Phase 8 and 9 project. Therefore, no further evaluation was needed. Based on the results of the Phase I ESA, there is no reason to conduct a Phase II Environmental Site Assessment of river sediments to determine if there are CERCLA regulated substances above established State of Wisconsin cleanup levels.

6.26 During the non-Federal sponsor's construction of project Phases 1-6, no HTRW has been encountered. If HTRW sediments or materials are encountered above State of Wisconsin criteria in soils to be excavated and removed from the project, those soils will be transported and disposed of in accordance with applicable Federal, State, and local laws consistent with USACE policies. The non-Federal project sponsor will pay 100% of the costs associated with the removal and disposal of any HTRW regulated waste materials encountered during construction activities. The HTRW regulated materials will be taken to a properly permitted Type II landfill.

6.27 Excavated non-HTRW regulated material will be used for onsite construction activities or disposed of in accordance with applicable Federal, State, and local laws and USACE policies. The placement of non-HTRW regulated material into an appropriate disposal area(s) is considered a project feature and the non-federal project sponsor can obtain Lands, Easements Rights-of-Ways, Relocations, and Disposal (LERRDS) credit. For additional information, see the Real Estate plan located in the DPR, Appendix E - Real Estate.

**6.28 Floodplains** - Executive Order 11988, Floodplain Management, requires all Federal agencies to avoid construction within the 100-year floodplain unless no other practicable alternative exists. No alternatives exist to restore the riverine wetlands and prairie within the floodplain without excavation within the 100-year floodplain. No habitable structures or buildings are proposed within the 100 year floodplain. Implementation of the action alternatives would not adversely affect the natural values and functions of the floodplain or increase flood risks. The wetlands restoration area is within the floodplain of the Pike River but no stage increase or harmful interference occurs from project implementation with the restoration of the wetlands and prairies.

6.29 The Federal Emergency Management Agency (FEMA) published a Flood Insurance Study (FIS) and corresponding Flood Insurance Rate Maps (FIRMs) for the Village of Mount Pleasant along the Pike River on May 2, 2012. The flows identified in the FIS represent flows based on project Phases 1-3 as constructed and project Phases 4-9 as existing. Since the time that the FIS and FIRMs were published, the Village of Mt. Pleasant has constructed Phases 4-6, while project Phase 7 is in development.

6.30 The flows used for this proposed ecosystem restoration study were based on Phases 1-9 of the Pike River Project being constructed and are slightly less than the FIS flows. The published 1% annual exceedance probability from FEMA is 1,950 cfs. This discharge value does not take into consideration the storage and land-use changes that have occurred with the construction of Phases 4-6 and proposed 7-9. Comparing water surface elevations between the effective FIRM for base flood elevations (1% annual chance probability) and the proposed project conditions of Phases 8 and 9, show slight increases at the downstream extent of the project. The maximum increases are 0.52 ft localized at the culvert which runs under County Line Road, which is the downstream extent of the restoration project reach. It is noted that all water surface elevation increases for the 1% annual chance probability are contained within the proposed design floodplain for this restoration project.

6.31 Flooding has been an issue along the Pike River and the proposed ecosystem restoration work along the Pike River will assist in restoring a functional wetland floodplain. Based on USACE HEC-RAS analysis for the construction plans provided by the local sponsor's consultant, the results show an increase in the base flood elevations at the downstream end of the proposed reach, however the flow is contained in the proposed floodplain. Therefore, USACE review for the floodplain wetland restoration indicates the proposed design will contain the 1% flood event (**Figure 2**). The proposed action would not adversely impact the floodplain and complies with the Federal Executive Order on Flood Plain Management (E.O. 11988) because the project would not encourage floodplain development. The Village will prepare and submit the necessary CLOMR and LOMR to FEMA for the proposed project.

**6.32 Coastal Zone Management** - Racine County is located within the Wisconsin Coastal Zone boundary and is thus subject to the Wisconsin Coastal Management Program. The proposed action alternatives would be "consistent to the maximum extent practicable" (as defined in 16 USC 1456, Coastal Zone Management Act, approved

1978) with the Wisconsin Coastal Management Program and not significantly impact the coastal zone. As part of the Wisconsin Chapter 30 permit that will be applied for by the Village, CZM consistency will be requested and it is anticipated that the State of Wisconsin will make their required CZM determinations.

**6.33 Cultural Resources** - In compliance with Section 106 of the National Historic Preservation Act of 1996 and Executive Order 11593 (Protection and Enhancement of the Cultural Environment, May 1971), the NRHP and the SHPO have been consulted. The project site has been reviewed for historic and cultural resources. Cultural sites have been avoided throughout the project design (Phases 1-9). One site identified in the Phase I report is located close to the Area of Potential Effect (APE) for Phase 9, but believed to be located outside of the project boundary; and one site appears to be located within the APE for Phase 8. Both of the sites were isolated finds with a single artifact. Per the Phase I report, transects or secondary investigations were performed at both of these sites and the investigations did not yield additional cultural material. No known historic properties listed on or eligible for listing on the National Register, or archeological sites / items are known to be located at the proposed project site. It is the USACE determination that there are no historic properties located within the proposed project area and the project will not affect historic properties. SHPO concurred with this determination on July 21, 2011 file number 99-0393/RA. The THPO for the Stockbridge-Munsee Tribal Historic Office responded in a form letter dated July 12, 2011 that the project is not within a county where the Mohican Tribe has an interest. Construction contracts would include clauses protective of any discovered cultural resources. If any unusual sites/items that may have historical value are encountered during the course of proposed construction, work would stop and the sites/items would be protected while the appropriate authorities, including the District archeologist, are contacted.

**6.34 Noise/Traffic** - A range of noise-generating construction equipment would be used in this project for all action alternatives. Noise would be managed by compliance with terms outlined on construction permits. The noise would only occur during construction. However, the site is located adjacent to highways and farm fields and away from residential structures. Noise from construction would be limited to daylight hours generally during the summer construction season. Noise in the vicinity of the project site is typical of that found in a mixed use residential and rural farmlands property. Farm machinery operates as required and truck traffic is common on both the highways located north and south of the project area. Based on this analysis, excessive noise above what might be considered typical in the project vicinity is not anticipated.

**6.35** Construction activities such as initial mobilization for the project and transport of materials to the construction site would cause general traffic in the area to be heavier than normal, but impacts would be short-term, minimal and not have significant effects. Access to the project site will be from Braun Road on the north and the County Road on the south. Traffic associated with the project will occur on the access roadways for the delivery of rock, fuel and soil erosion control materials. All equipment and / or materials hauled to and from the project site would use approved hauling routes and abide by local, state, and Federal hauling requirements. While some additional traffic will be

generated with the excavation of up to 600,000 CYD, the haul distance and route is immediately adjacent the west side of the Pike River cross country. The excavated areas and haul routes to the disposal site are internal along the riverbank and across the temporary crossings. It is anticipated that over 90 percent of the traffic associated with the project will use internal haul routes to place the excavated sediments in the adjacent placement location. Based on this analysis, excessive traffic above what might be considered typical in the project vicinity is not anticipated.

**6.36 Air Quality** - The Clean Air Act, as amended (42 USC 7401 et. seq.) and Section 118 of the Clean Air Act requires all Federal facilities to comply with existing Federal, state, and local air pollution control laws and regulations. As of 2012, the Milwaukee Metropolitan counties that were in noncompliance before 2012, now meet the standard – Kenosha, Milwaukee, Ozaukee, Racine, Washington and Waukesha. The WDNR monitors air quality across the State of Wisconsin. USEPA data indicates that Racine County Average Air Quality Index (AQI) is moderate but Racine County AQI is above the mean values for Wisconsin.

6.37 Construction activities, including equipment operation and the hauling of material, could result in temporarily increased vehicle exhaust and emissions, as well as inhalable particulate matter. Construction equipment exhaust will comply with state pollution requirements and emission standards. Construction dust associated with exposed soils would be controlled, if necessary, with the application of water or other approved dust palliatives. In addition, any hydrocarbons, nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>) emissions, as well as airborne particulates created by fugitive dust plumes, would be rapidly dissipated because the location of the project and prevailing winds allows for good air circulation. Overall, there could be a local, short-term, negligible degradation of local air quality during construction activities; however, no measurable effects outside of the immediate construction site would be anticipated.

6.38 Emissions from the proposed construction activity are exempted as de minimis (Latin for 'of minimal importance'), and therefore meet the General Conformity Criteria pursuant to Section 107 of the Clean Air Act of 1970, as amended and 40 CFR 93.153. Any construction-related, adverse effects to air quality would be temporary, lasting only as long as construction. Any impacts would be short-term and minor. Once construction activities are complete and the vegetation grows, the project would produce negligible air emissions. After construction, a small number of employees would periodically visit the site to perform activities such as inspection, monitoring, invasive species control and general maintenance.

6.39 Once the prairies are established, maintenance will require periodic controlled burns generally on a 3-5 year cycle consistent with WDNR burn regulations. Controlled burns typically occur in March-May or later November and remove woody and invasive plants. Controlled burn activities take into account wind direction and the location of residential structures, vegetation dryness and safety requirements. Controlled burns will maintain prairie habitat which is estimated at less than ½ of 1% of the original pre-settlement prairie habitat in Wisconsin. The controlled burns will not have a significant

adverse effect on local air quality.

**6.40 Climate Change** - Global climate change is expected to lead to six major types of (physical) changes in the Great Lakes basin: (1) increased annual averages in air and surface water temperatures (with greater extremes in hottest temperatures), (2) increased duration of the stratified (thermocline) period, (3) changes in the direction and strength of wind and water currents, (4) flashier precipitation (increases in the intensity of storms and drier periods in between) and river flows, (5) greater variation in annual ice cover/greater water surface evaporation/larger lake effect snow events, and (6) greater variations in lake levels.

6.41 Also of importance to be considered are changes in plant, fish and wildlife community composition and distribution within the basin, including the distribution and advancement of invasive species into the basin. These factors interact with one another, further complicating the ability to anticipate climate change trends and impacts, making this a serious, albeit uncertain, threat. The risk and uncertainty to project performance and sustainability attributable to potential climate change impacts is now required to be addressed in the feasibility phase report for each particular study location. The proposed wetland restoration work will not result in a significant increase in greenhouse gases that may affect planet temperatures or climate change.

**6.42 Social Setting/Environmental Justice** - The lands where the proposed project is located are farmlands without structures within the specific work boundaries. In a letter dated August 5, 2011, the USEPA responded to early coordination that the area may be living with environmental justice concerns and recommended outreach. As such, several principles were considered while evaluating the proposed action for environmental justice to evaluate if the recommended alternative would cause disproportionately high and adverse effects on low-income, minority and tribal populations. These included consideration such as the human composition of the affected area (e.g., low-income and minority groups), recognizing the interrelated cultural, social, occupational, historical, or economic factors that may amplify the natural and physical environmental effects of the proposed action, and coordination with local tribes.

6.43 The occupation of lands for the project and the presence and operation of construction equipment and materials delivery would not significantly affect the social setting of the area at the site. Any effects would be minor and short-term. Annoyance resulting from construction activities involves the subjective responses of individuals. Construction activities would only occur during times of the day designated by the Village. In addition, Mount Pleasant staff have been involved in the planning for this multi-phase project, discussion with residents and coordination with state and Federal regulatory staff.

6.44 It is anticipated that the proposed project may benefit community growth by the restoration of a wetland floodplain that could assist in reducing the potential for flooding in the village. The proposed project would not have a significant impact on community

cohesion, desirable community growth, tax revenues, property values, public facilities, public services, regional growth, employment or the labor force, business and industrial activity, or human-made resources; nor would the project cause displacement of people. The action would not cause disproportionately high and adverse effects on low-income, minority, tribal or child populations.

**6.45 Recreation** - Substantial recreational activity is not known to occur at the proposed work site. Upon completion of the project, the excavated material placement site could be suitable for development as recreational fields or a sledding hill. The prairie and wetlands within the restored floodplain habitat could be used for viewing by the citizens in the community and as a teaching environment with interpretive signs, though none are proposed at this time.

**6.46 Cumulative Effects** - This section presents the recent, present and foreseeable future projects that were considered during the assessment of cumulative effects of each alternative. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. Principles of cumulative effects analysis are outlined in the CEQ guide "Considering Cumulative Effects under the National Environmental Policy Act" (CEQ, 1997) which states: "for cumulative effects analysis to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully."

6.47 The potential for cumulative effects on the environment from the project alternatives were evaluated by reviewing available data such as historical aerial photographs and reports to identify recent projects, and by reviewing ongoing and planned projects within the vicinity of the proposed project areas that could affect the same environmental resources as each alternative. Actions that were considered include existing farming, the previous environmental restorations/improvements that were recently completed for Phases 1-6, are currently underway, or are programmed to occur within the near future, Phases 7 and the proposed Phases 8 and 9. Cumulative effects from the project are described for each resource area in Table 1.

6.48 No other ecosystem restoration projects are known in the project area as Phases 1-6 were completed and Phases 7-9 are the last components of the 9- phase project. The Village of Mount Pleasant and their designated engineering team and consultants have been involved in the planning and design of the entire 9-phased project. No other projects are planned within the immediate area.

**6.49 Evaluation of Cumulative Effects on Resources** - The No Action alternative would not have a significant impact on cumulative effects from recent, present, or reasonably foreseeable future projects. The cumulative effects of Phases 1-6 are considered negligible to the overall ecosystem impacts.

6.50 The recommended alternative, Alternative 3, is anticipated to have negligible to no impacts to the majority of resources. The adverse impacts from implementation of Alternative 3 are to the existing benthic community within the Pike River that will be

filled (0.25 acres) but will be replaced with 1.2 acres of enhanced riverine meander habitat. Excavation for restoration of the wetlands and prairie habitat will result in the loss of 2.6 acres of wetland located in 5 isolated areas through excavation. Implementation of the project will result in the restoration/creation of approximately 40 acres of new wetland habitat and 30 acres of scarce prairie habitat. Based on evaluation of these potential impacts, and consideration of recent, present, and reasonably foreseeable future projects, the proposed action would not cause significant short-term or long-term cumulative effects on resources or significantly affect the quality of the human environment. Table 1 summarizes potential impacts of the No Action and Recommended Alternative, Alternative 3 as well as Cumulative Effects.

Table 1. Summary of Potential Effects and Cumulative Effects.

RESOURCE	Potential Effects		
	No Action	Recommended Alternative 3	Cumulative Effects of Recommended Alternative
Physical Setting and Land Use	No effects	Negligible effects based on farm land within watershed, Positive long term based on wetlands restoration	Negligible cumulative effects
Vegetation, Wildlife Habitat, Wildlife and Aquatic Resources	Continued short term and long term minor negative effects	Short-term, minor negative effects; Long term positive effects.	No cumulative effects
Threatened and Endangered Species	No effects	No effects	No cumulative effects
Exotic and Invasive Species	No effects	Negligible effects in short term; positive long term as invasives are reduced in watershed.	No cumulative effects
Wetlands	No effects	Negligible effectson existing; Positive long term effects	No cumulative effects

RESOURCE	Potential Effects		
	No Action	Recommended Alternative 3	Cumulative Effects of Recommended Alternative
Farmland	No effects	Negligible effects given overall farmland acreage within watershed	No cumulative effects
Water Quality	No effects	Negligible to no effects (related to soil erosion)	No cumulative effects
Hazardous, Toxic and Radioactive Waste (HTRW)	No effects	No effects	No cumulative effects
Floodplains	No effects	Local positive effects	No cumulative effects
Coastal Zone Management	No effects	No impacts	No cumulative effects
Hydrology	No effects	Positive effects flood reduction	No cumulative effects
Cultural Resources	No effects	No effects	No cumulative effects
Noise and Traffic	No effects	Minor during construction; negligible during operation	No cumulative effects
Air Quality	No effects	Minor during construction; negligible during operation	No cumulative effects
Climate Change	No effects	Negligible during operation	No cumulative effects
Social Setting and Environmental Justice	No effects	Negligible to minor beneficial effects from flood reduction	No cumulative effects
Recreation	No effects	Minor positive effects	No cumulative effects
Biological Impacts Selected Alternative 3	Negligible effects	Minor positive effects	No cumulative effects

6.51 In summary, adverse effects associated with the proposed Section 206 project are mainly temporary and include items such as: short-term noise and air emissions from equipment operation, temporary turbidity during excavation and construction operations, and temporary displacement of fish and wildlife and the replacement of in-stream

habitat. Positive effects, which are longer term, restore habitat and include vegetated buffer strips consisting of prairie to remove sediments from overland runoff, restore integrated emergent, open water, wet prairie and in-stream habitat consisting of rock riffles, pools, log jams, boulder clusters, meanders and oxbows. Implementation of these project features will improve the natural setting, restore scarce prairie ecosystem, provide wildlife habitat for a variety of species, and increase wetlands within the restored floodplain that will assist in filtering overland runoff, thus assisting in water quality improvements through nutrient and sediment removal. The project complies with the Environmental Operating Principles by restoring the riparian floodplain corridor, maximizes environmental restoration and minimizes impacts. The NFS has held public meetings throughout the development of Phases 1-9 and worked with locals to achieve a balance of project goals and address public concerns.

## **7.0 STATE AND FEDERAL AGENCY COORDINATION**

7.1 The USACE, Detroit District, coordinated this Section 206 ecosystem restoration project proposal for the Pike River in July 2011 with U.S. Fish and Wildlife Service (USFWS), the Wisconsin Department of Natural Resource (WDNR), the State Historic Preservation Office (SHPO), the U.S. Environmental Protection Agency (USEPA) and several Native American Indian Tribes and Interests. Summary comments from this coordination effort are listed below.

7.2 The USFWS Green Bay Ecological Services Field Office (Correspondence of August 24, 2011) provided comments pursuant to the Endangered Species Act of 1973, the Fish and Wildlife Coordination Act, and the Migratory Bird Treaty Act, noting that because of the project location “no federally-listed, proposed, or candidate species, or designated critical habitat are expected within the project area” and the agency agreed with the USACE determination of no effects on T&E species.

7.3 The USEPA responded that this area may be living with environmental justice concerns and recommended an enhanced outreach to ensure that all populations are able to meaningfully participate.

7.4 The WDNR has been in contact with the Village of Mount Pleasant and that new permits will be required for completion of Phases 7-9. The necessary water quality certification and other applicable permits will be obtained before in water construction proceeds. No work will commence in the waters or wetlands until the Section 401 water quality certification has been issued by the WDNR or waiver provided and all other necessary approvals have been received to include the construction timing, sediment controls and sequencing which will be included within the WDNR Chapter 30 permit.

7.5 The SHPO (correspondence of July 21, 2011) concurred with the USACE determination that no historic properties would be affected.

7.6 The Stockbridge-Munsee Tribal Historic Preservation Office (correspondence of July

12, 2011) responded that the project is not within a county the Mohican Tribe has interest in. No comments were received from the other tribes or tribal interests contacted.

7.7 The project is consistent with the local zoning for the Village of Mount Pleasant. The project was coordinated with the Racine County conservationist in August 2013. The project was deemed acceptable from the Racine County Land Conservation perspective.

7.8 A copy of this EA will be provided to the resource agencies, Native American Tribes and concerned citizens for their review.

## **8.0 MAJOR FINDINGS AND CONCLUSIONS**

8.1 The proposed ecosystem restoration project has been reviewed pursuant to the following Acts and Executive Orders: Fish and Wildlife Act of 1956; Fish and Wildlife Coordination Act of 1958; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; the Council on Environmental Quality, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR Parts 1500-1508); and the Corps of Engineers, Policy and Procedure for Implementing NEPA (33 CFR Part 230), Clean Air Act of 1970; Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971; Coastal Zone Management Act of 1972; Endangered Species Act of 1973; Clean Water Act of 1977; Executive Order 11988, Flood Plain Management, May 1977; and Executive Order 11990, Wetland Protection, May 1977.

This Environmental Assessment concludes:

- the proposed project has been found to be in compliance with the acts and executive orders listed above;
- The proposed action would be exempt as de minimis and meet the Conformity Requirements under Section 93.153 of the Clean Air Act, 40 CFR, as amended;
- The proposed action would be “consistent to the maximum extent practicable” (as defined in 16 USC 1456, Coastal Zone Management Act, approved 1978) with the Wisconsin Coastal Zone Management Program and not significantly impact the coastal zone;
- Although the project site is located within the floodplain, the proposed action complies with E.O. 11988 because there is no practicable alternative to construction in the floodplain, nor would the project encourage floodplain development;
- there are no significant short-term, long-term or cumulative adverse environmental impacts associated with the proposed ecosystem restoration

project;

- The No Action Alternative was considered but it does not meet the project's purpose and need;
- the benefits of the project outweigh the minor, temporary impacts that may result; and
- the project does not constitute a major Federal action significantly affecting the quality of the human environment.

## **9.0 PUBLIC REVIEW**

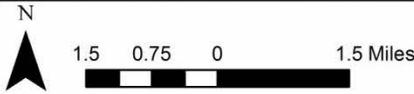
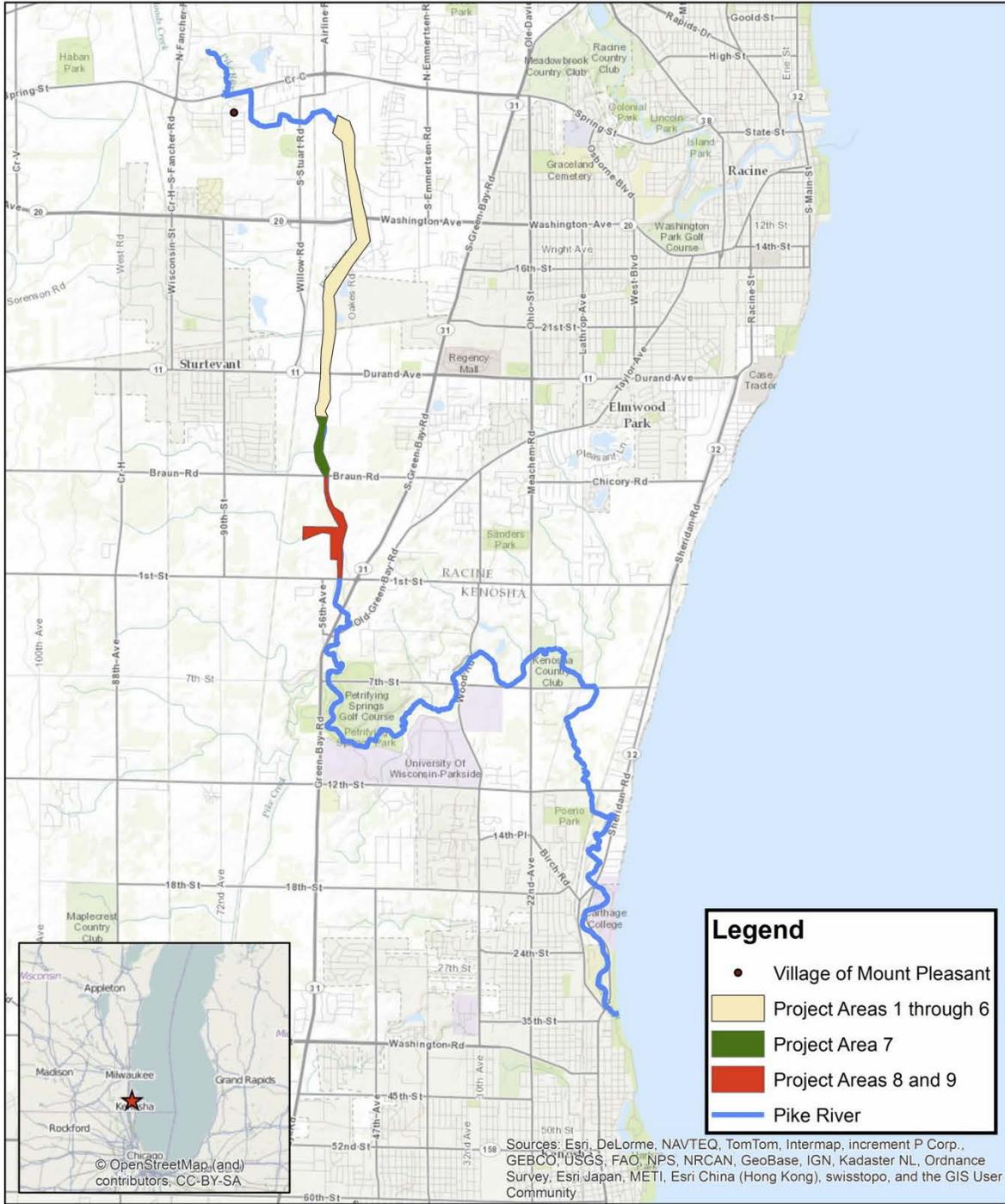
9.1 This EA, a Preliminary Finding of No Significant Impact (FONSI), and a Section 404 (b)(1) evaluation will be available to Federal, state, and local agencies, interested groups, and the general public for comment for a period of 30 days. At the end of the 30-day period, the USACE will consider all comments submitted by individuals, agencies, and organizations. As appropriate, the USACE may then finalize and execute the preliminary FONSI and proceed with implementing the project's recommended alternative.

9.2 If it is determined that implementing the recommended alternative would result in potentially significant impacts, the project may be modified to reduce the impacts to an acceptable level, mitigation measures will be proposed to reduce the impact below a level of significance, or the USACE will either publish in the Federal Register a Notice of Intent to prepare an Environmental Impact Statement (EIS) or choose not proceed with the proposed action. If the District Engineer determines that an EIS is not necessary, the Preliminary FONSI would be finalized and the proposed ecosystem restoration project implemented.

**ATTACHMENT A**

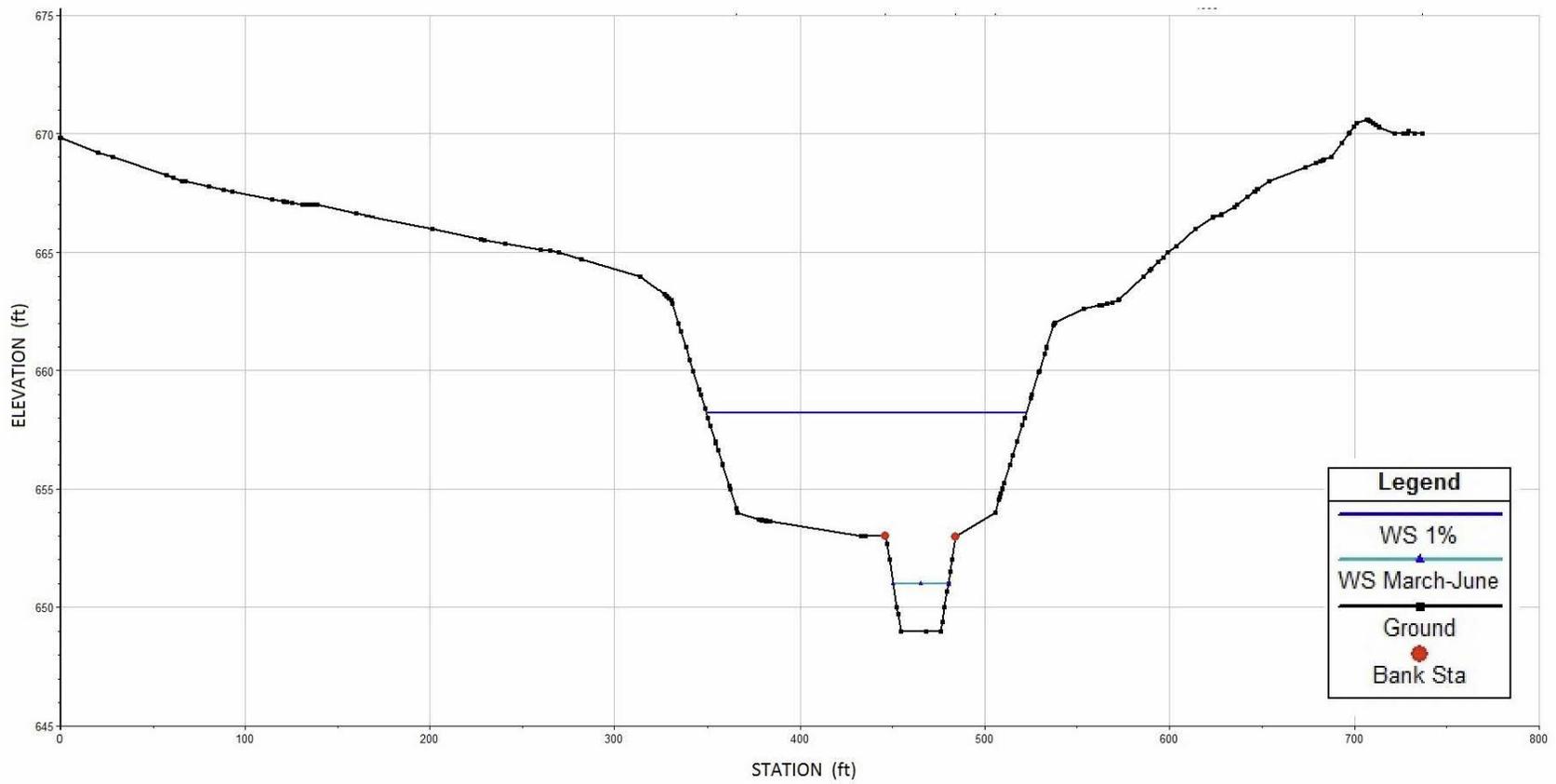
**FIGURES**

# Project Location



Date: 3/7/2014  
Image produced under license from ESRI

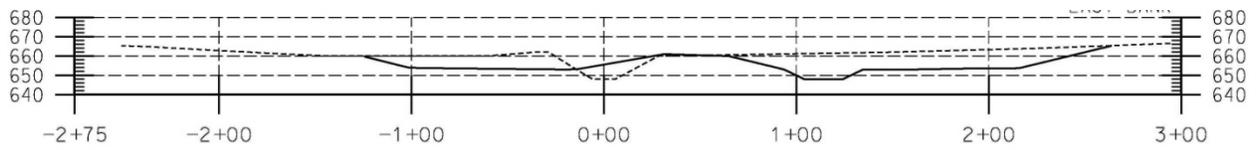
Figure 1. Project Location--North Branch Pike River



**Figure 2. Typical Cross Section- 1% Event Contained in Proposed Floodplain at St 11.93**



**Figure 3. Restored Prairie and Pike River Channel in Phase 1 Project Work Area after 5 Years**



**Figure 4. Existing (dashed) and Proposed (solid) Cross Section of River Restoration**

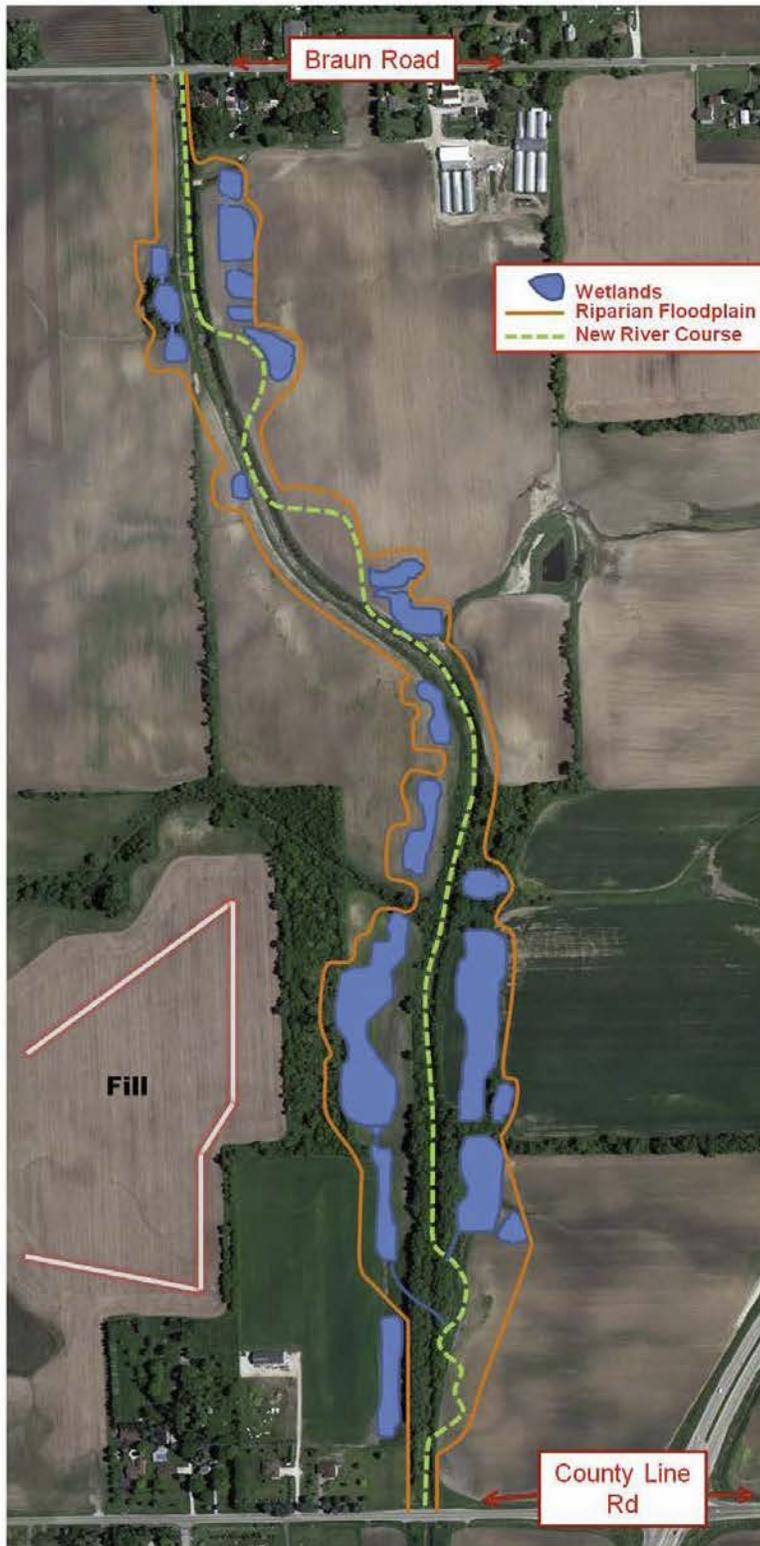


Figure 5. Project Restoration Plan View with Fill Site

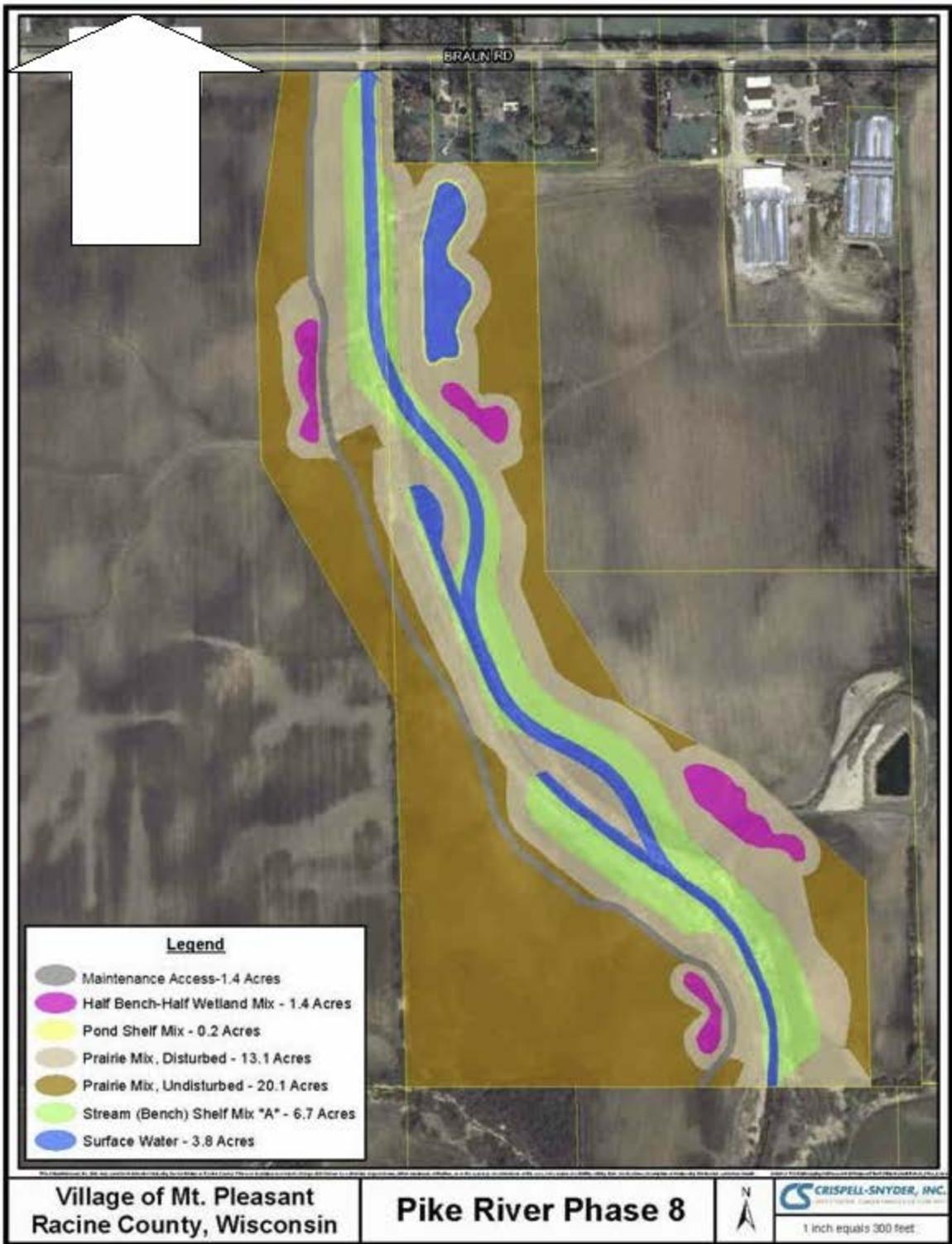


Figure 6. Pike River Phase 8

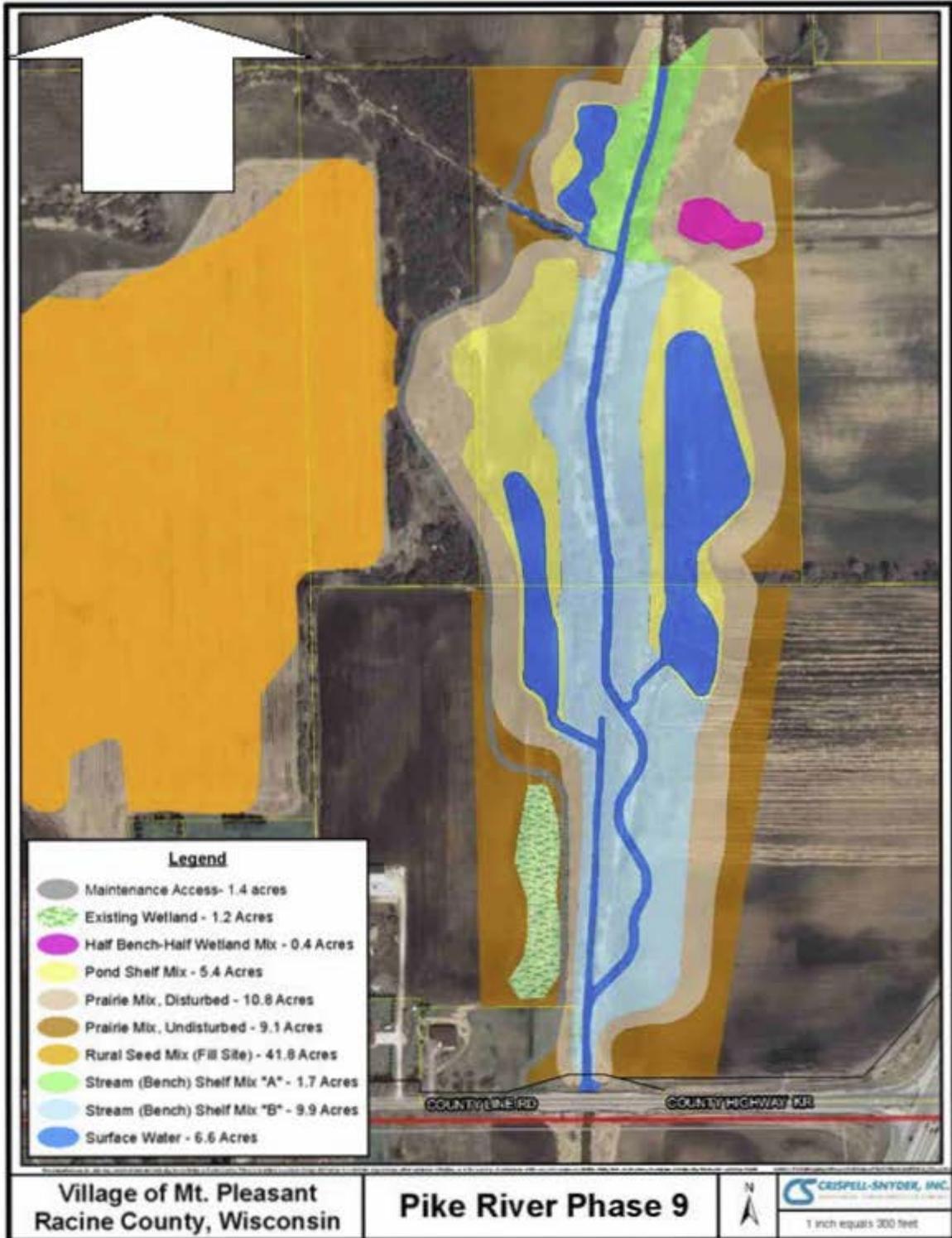


Figure 7. Pike River Phase 9

**ATTACHMENT B**

**PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT**



**DEPARTMENT OF THE ARMY**  
DETROIT DISTRICT, CORPS OF ENGINEERS  
477 MICHIGAN AVE.  
DETROIT, MICHIGAN 48226-2250

IN REPLY REFER TO:

Planning Office  
Environmental Analysis Branch

## **PRELIMINARY FINDING OF NO SIGNIFICANT IMPACT**

### **Pike River Ecosystem Restoration, Phases 8 and 9 Village of Mount Pleasant, Racine County, Wisconsin**

**Proposed Action:** In accordance with the National Environmental Policy Act of 1969, the U.S. Army Corps of Engineers, Detroit District, (USACE) has assessed the potential environmental impacts associated with providing environmental restoration of approximately 1.1 miles of the Pike River within the Village of Mount Pleasant, Racine County, Wisconsin.

**Project Authority:** The study is being conducted under Section 206 of the Water Resource Development Act (WRDA) of 1996, as amended, for Aquatic Ecosystem Restoration [PL 104-303-Oct. 12, 1996].

**Project Purpose and Need:** The purpose of the proposed ecosystem restoration action is to restore a two stage river channel resulting in the restoration of 70 acres of scarce prairie habitat including sedge meadow, wet-mesic, mesic and upland prairie. This action (Phases 8 and 9) would contribute to the completion of a 9-phase restoration project initiated by the Village of Mount Pleasant.

**Project Alternatives:** Project alternatives considered include: Alternative 1 – No Action; Alternative 2 – Riparian Prairie and Wetland Restoration; Alternative 3 – Riparian Prairie and Wetland Restoration with Channel Meanders, riffles and pools; and Alternative 4, Riparian Prairie and Wetland Restoration with Channel Meanders, riffles and pools and additional vegetated buffer strip at top of bank. The tentatively recommended alternative is Alternative 3 which would meet the project's purpose and need.

**Environmental Effects:** An *Environmental Assessment (EA)—Pike River Ecosystem Restoration, Phases 8 and 9, Village of Mount Pleasant, Racine County, Wisconsin* dated August 2014 and an evaluation pursuant to Section 404 (b) (1) of the Clean Water Act (CWA) was completed for the proposed action. The proposed project includes 600,000 CYD of excavation to restore the two stage river channel within

approximately 1.1 miles of the Pike River. The restored floodplain shelf will provide wetland and prairie habitat. Excavated material will be placed on an adjacent existing farm field in village ownership.

The EA concludes that: 1) there are no significant short-term, long-term, or cumulative adverse environmental effects associated with implementing the proposed action; 2) the project benefits outweigh minor, temporary impacts, primarily short-term noise and air emissions from construction activities; and 3) the proposed action does not constitute a major Federal action significantly affecting the quality of the human environment. The Section 404(b)(1) evaluation of the environmental effects of the discharge of fill material into waters of the U.S. concludes with the determination that the "proposed action is in compliance with Section 404 of the Clean Water Act.

**Coordination:** Early project coordination was conducted with Federal and state natural resource agencies, the State Historic Preservation Office (SHPO), tribes and tribal interests. Their applicable comments were incorporated into this EA. The EA will be sent out for a 30 day public review to the agencies, tribes and interested parties.

**Determination of Compliance:** The proposed action has been reviewed pursuant to the following acts and Executive Orders: Fish and Wildlife Act of 1956; Fish and Wildlife Coordination Act of 1958; National Historic Preservation Act of 1966; National Environmental Policy Act of 1969; Clean Air Act of 1970; Executive Order 11593, Protection and Enhancement of the Cultural Environment, May 1971; Coastal Zone Management Act of 1972; Endangered Species Act of 1973; Clean Water Act of 1977; Executive Order 11988, Flood Plain Management, May 1977; and Executive Order 11990, Wetland Protection, May 1977. The proposed project complies with the statutes and Executive Orders.

The proposed action complies with Federal Executive Order 11988 on Flood Plain Management because it would not encourage floodplain development. The Village of Mount Pleasant initiated the habitat restoration projects Phases 1-9 to assist in the control of flood waters. The proposed action is within the coastal zone (as defined by the Wisconsin Coastal Management Program), but would have no adverse effects on the waters of Lake Michigan; therefore, it would be "consistent to the maximum extent practicable" (as defined in 16 U.S.C. §1456, Coastal Zone Management Act) with the Wisconsin Coastal Management Program. The USFWS concurred with the USACE's determination of "no effect" on Federally-listed species (August 24, 2011). The State Historic Preservation Office (SHPO) concurred on July 21, 2011 that the project work area, as proposed, will not affect historic properties. The Section 404(b)(1) evaluation concludes that the proposed action is in compliance with Section 404 of the Clean Water Act. The WDNR has indicated they will process the required Chapter 30 permit consistent with Section 401 of the Clean Water Act and state water quality standards. Any WDNR Chapter 30 permit limitations and construction restrictions listed in the WDNR permit will be part of the project specifications.

**Finding and Conclusion:** Based on the findings of the EA and Section 404(b)(1) evaluation and the results of the 30-day public review and comment period, the proposed action has been found to be in compliance with the acts and executive orders identified above. The proposed action does not constitute a major Federal action significantly affecting the quality of the human environment; therefore, an Environmental Impact Statement will not be prepared.

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Date

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Michael L. Sellers  
Lieutenant Colonel, U.S. Army  
District Engineer

**ATTACHMENT C**  
**SECTION 404 (b)(1) EVALUATION**

**CLEAN WATER ACT  
SECTION 404(b)(1) EVALUATION**

**Of the Effects of Placing Fill Material into the Waters of the United States**

**Pike River Ecosystem Restoration  
Phases 8 and 9  
Village of Mount Pleasant  
Racine County, Wisconsin**

**I. PROJECT DESCRIPTION:**

**a. Project Location, Description, and Authority:** The U.S. Army Corps of Engineers (USACE), Detroit District, proposes aquatic habitat restoration under Section 206 of the Water Resources and Development Act (WRDA) of 1996, (P.L. 104-303) as amended; (U.S. Code 33 USC 2330). This proposed action is implementing Phases 8 and 9 of a 9-phase project initiated by the Village of Mount Pleasant, Wisconsin. The ecosystem restoration of floodplain wetlands, wet-mesic and mesic prairie habitat and in-stream construction of riffles, pools, log jams, boulder clusters and stream bank stabilization is proposed along 5,800 lineal feet (LF) (1.1 miles) of existing incised river channel of the Pike River. The project encompasses the excavation of 600,000 cubic yards (CYD) of material to restore the two stage river channel and floodplain ecosystem, replanting with prairie vegetation for restoration of scarce prairie habitat, restoration of the entire 5,800 LF of river (5,800 LF x 15-20 feet wide = 2 acres) with riffles, pools and habitat structures. The excavation for the restoration of the floodplain wetlands is above the ordinary high water mark of the Pike River except for the creation of meanders totaling an additional 2,600 LF of river and placement of fill into the existing river channels to direct the water flow to the meanders which results in the formation of three oxbows totaling approximately 1,300 LF. During construction, the river flows will be maintained within 400 foot segments that are stabilized at the end of each work day.

**b. Description of Disposal Methods:** The proposed project involves the excavation of approximately 600,000 CYD of material to increase the floodplain top widths to between 220 feet to 938 feet to accommodate ecosystem restoration within the floodplain consisting of emergent wetlands, wet-mesic and mesic prairie habitat. Approximately 2.6 acres of wetland exists within the proposed work area in five separate pockets. The 2.6 acres of wetlands will be eliminated through excavation for wetland restoration but will be replaced, as described below. A large wetland complex located at the downstream end of Phase 9 will remain. The excavated material will be placed on an existing 40 acre upland parcel owned by the Village of Mount Pleasant into a 1,000 foot by 1,700 foot area with depths up to 15 feet. Fill quantities are approximately 20,000 CYD with approximately 5,000 CYD of the fill is below the OHWM as discussed below.

Approximately 2,600 LF of new streambed (Phase 8 and 9) will be excavated and altered for the restoration of the river meanders. Riffles, pools, log jams, boulder clusters and stream bank stabilization will occur within the 5,800 LF of river channel. The proposed project includes restoration of the stream channel approximately 20-30 feet wide, placement of approximately 1,200 cubic yards (CYD) of rock for riffle construction and boulder habitat; 550 CYD rock in conjunction with the construction of 25 log jams and the placement of 40 CYD rock for each of three (3) temporary stream crossing that will be removed or incorporated into the riffles. At each of the 25 log jams, approximately 4 CYD of material will be excavated to create a pool up to 30 feet in length and one to two feet below normal stream bed elevation. Approximately 1,300 LF of existing river channel will remain in three (3) sections as oxbows off the main river channel. Three segments of old river channel will be filled (650 LF total) for blocking the upstream segment of the cut off oxbows to force the flows down the newly created meandered channel by placing 3,200 CYD of fill material in the old river channel (6 CYD/LF) with an additional 80 CYD armor stone (1 CYD/LF river bank). The anticipated habitat restoration includes planting seeds to restore scarce prairie including approximately 40 acres of wetland consisting of emergent, sedge meadow, wet-mesic-prairie along with 30 acres of mesic-prairie. The in-stream riffles act similar to grade control structures and the logjams in the streambank provide streambank stability and prevent the erosion of the restored floodplain wetlands.

An overview of the soil erosion control measures include installation of temporary soil erosion control actions, dividing the work into segments no greater than 400 LF that can be completed within one day, working on the east bank first, then west bank, conducting in-stream work between June 1-August 31 to protect spawning fishes. All exposed earthwork will include erosion and stormwater controls until the project is complete and bare earth areas are stabilized. The implementation of action alternatives and the tentatively selected plan, Alternative 3, will cause no increase in flood stage outside of the newly constructed floodplain. Upon project completion, the Village will apply to FEMA for the LOMR. The proposed work will not result in further human development or occupation of the floodplain.

**c. Description of Habitat:** The existing 5,800 LF of river is incised channel approximately 15-20 feet wide under low flow conditions. The existing incised river channel habitat is of low quality without wetland fringe and limited woody debris. The sandy/silty natural substrate provides minimal habitat for fish and invertebrates. The adjacent riparian areas proposed for excavation for the restoration of the floodplain ecosystem consist of farm lands, some woods and shrubs and five (5) pocket wetlands that will be removed by excavation totaling 2.6 acres.

## II. FACTUAL DETERMINATION

**a. Physical Substrate Determinations:** No significant adverse effects. Existing sand, silt and gravel streambed will be enhanced with rock riffles, pools and log habitat structures to create a river with extensive interstitial space providing prime hard structure habitat for both invertebrates and fish.

**b. Water Circulation, Fluctuation, and Salinity Determinations:** No adverse effects. The restored river channel and ecosystem floodplain will handle flood flows up to the 1% event. The proposed project will provide capacity to hold the base flood elevations within the

restored wetland floodplain. The implementation of Alternative 3 will result in a total floodplain ecosystem restoration with all necessary components for habitats and streambank stability. The increase in flood storage capacity within the floodplain ecosystem will not result in further development or occupation of the floodplain.

**c. Suspended Particulate/Turbidity Determinations:** No significant adverse effect. Project construction will occur in 400 LF segments or shorter lengths that will be stabilized at the end of each construction day. If rains are projected, smaller segments will be initiated to minimize erosion or no work will occur that day. Some temporary turbidity will occur with in-stream dredging and during the placement of the rock. Turbidity effects would dissipate over a short time period and distance from the work area and would not have significant, short-term or long term effects. The riffles within the engineered stream channel would reduce erosion from scour of the underlying sediments and construction of meanders will reduce stream gradient, thus erosion. The rock riffles will act similar to grade control structures and the log jam revetments/habitat structures will protect the bank from erosion and re-direct flow. The project plans for minimizing erosion are depicted in the Construction Staging & Erosion Control Plan and include placement of silt fence, erosion control mats on the slopes and seeding of exposed raw earth areas.

**d. Contaminant Determinations:** A Phase 1 assessment was completed for the proposed project Phases 1-9 and no contaminated sites were identified. No regulated contaminant sites or contaminants have been identified in the completed upstream work areas 1-6 and there is no reason to believe contaminants exist in the Phase 8 and 9 work areas. Only suitable bedding aggregate and stone would be placed in the river bed for riffle restoration. The excavated sediments will be disposed of according to state and Federal regulations. The excavated materials are suitable for unrestricted upland disposal and will be contained at the former farmland property owned by the Village of Mount Pleasant located west of the Pike River near Phase 9.

**e. Aquatic Ecosystem and Organism Determinations:** The bulk of the excavation is in the floodplain above the ordinary high water mark (OHWM) of the Pike River. No significant adverse effects are anticipated from the project. The fill into the river segments would result in the destruction of invertebrates living within the three (3) existing river segments (approximately 0.25 acres) that get filled to re-direct flows down the new meandered river segments. The new meandered river segments increase stream length by more than one half mile (1.2 surface water acres) and maintain approximately 1,300 LF of oxbow created from the existing river. Upon project completion, the restored meandered river segment will re-populate from invertebrate drift from upstream so impacts are considered temporary and minor. The restored rock riffle/pool with the resulting interstitial spaces will provide additional aquatic habitat for invertebrates and fish. During construction, fish would move upstream or downstream out of the work area. Wildlife would temporarily avoid the area because of the noise and activity. The restored wetland floodplain will provide for the filtering of overland runoff and improved habitats within the floodplain and the stream segments.

**f. Federally Listed Species:** No Federally listed “threatened” or “endangered” species are known to be present in the work area nor are any species proposed for listing that inhabit the project area on the USFWS list (revised July 2, 2013). In a letter dated August 24, 2011, the U.S. Fish and Wildlife Service (USFWS) concurred that the project will have no effect on

Federally listed or proposed threatened or endangered species. The USFWS concurred with the USACE, Detroit District determination that there will be “no effect” on Federally listed species or critical habitats.

**g. Proposed Disposal Site Determinations:** The placement of rock and other fill material would have no significant adverse impacts on municipal or private water supplies, recreational or commercial fisheries, water related recreation, aesthetics, parks, monuments, wilderness areas, research sites, or similar preserves. The State Historic Preservation Office (SHPO) concurred on July 21, 2011 that the project work area, as proposed, will not affect historic properties.

**h. Determination of Cumulative and Secondary Effects on the Aquatic Ecosystem:** No significant cumulative or secondary impacts are expected to occur from the proposed work which includes shaping the river banks for ecosystem restoration within the floodplain and restoration of in stream habitat with riffles, pools, boulder clusters and log jam habitat structures.

### III. FINDING OF COMPLIANCE:

No significant adaptations of the Section 404 (b)(1) Evaluation guidelines were made relative to this project as described in Sections I (a and b). The proposed project will meet applicable water quality standards; would not result in significant adverse effects on human health and welfare, aquatic life, or other wildlife dependent on the aquatic ecosystem. The proposed project will eliminate 2.6 acres of existing wetlands located in five (5) small pockets through excavation and replace the isolated wetland habitats with over 40 acres of emergent, sedge meadow and wet-mesic prairie and will create a more natural riverine habitat. Additional restoration will include the establishment of 30 acres of mesic prairie.

The project will not significantly impact the diversity, productivity, and stability of the aquatic ecosystem. However, the project will significantly enhance these features by creating a more natural riverine habitat. The proposed riffle/pool project would maintain bedload discharge and not cause excessive sedimentation during construction.

Coordination of the project with the USFWS indicates that no Federally listed “threatened” or “endangered” species have been identified that would be affected by the project. Appropriate steps have been taken to minimize adverse effects on the aquatic ecosystem including specific environmental protection clauses in the project contract specifications to ensure protection of natural resources. On the basis of *Section 404 (b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material* (40 CFR part 230), it has been determined that the proposed action is in compliance with Section 404 of the Clean Water Act.