

**REHABILITATION OF DAMAGED FLOOD CONTROL WORKS
LEHIGH RIVER WEISSPORT FLOOD PROTECTION PROJECT
CARBON COUNTY, PENNSYLVANIA**

DRAFT ENVIRONMENTAL ASSESSMENT

1.0. PURPOSE AND NEED FOR THE PROPOSED PROJECT

1.1. Property Location

The project area is in the borough of Weissport, Carbon County, Pennsylvania, which is in the Delaware River Basin and includes structures on the Lehigh River. The Borough has a total area of 0.4 km² (0.15 mi²). Approximately 0.3 km² (0.12 mi²) of the area is land and 0.1 km² (0.04 mi²) is water. Weissport is two miles northwest of Parryville and one mile southeast of Lehighton and has an elevation of 580 feet. Weissport has 434 residents and 176 households (U.S. Census Bureau, 2000). The Lehigh River is 103 miles long and drains a watershed of approximately 1,345 square miles.

1.2. Need for Action

Flooding occurred along the Lehigh River in heavy rain events that occurred between 23 June and 4 July 2006. Three areas along the Lehigh River incurred damage to riprap and concrete of the flood control structure within the suburban environment. The three areas in question are in the vicinity of Borough Hall on Allen Street; upstream of the railroad bridge; and downstream of the railroad bridge.

The portion of the flood control structure upstream of Bridge Street was constructed in 1934 by the Federal Civil Works Administration (CWA). In 1958-1960 the CWA portion was raised and the portion of the levee downstream of Bridge Street was constructed by the Commonwealth of Pennsylvania in 1962 and later turned over to the Borough of Weissport for operation and maintenance. The total project consists of earthen levees along the Lehigh River; a ponding area; drainage structures; and part of a levee that is steeper with concrete facing.

The Borough of Weissport submitted a letter to the U.S. Army Corps of Engineers (USACE) in July 2006, requesting rehabilitation assistance pursuant to PL 84-99 for damages incurred as a result of the heavy storm events. Members of the Philadelphia District USACE visited the site in September 2006. An investigative report was prepared that identified damaged areas consisting of missing or misplaced riprap and cracked and spalled concrete in the levee that had the concrete facing. The areas of the levee damaged included a 180-foot long stretch near Borough Hall along Allen Street, a 15-foot long section upstream of the railroad bridge, and a 200-foot long section south of the railroad bridge where the levee slope is steep and has concrete facing. Rehabilitation would prevent the continued erosion of damaged areas and the potential for ultimate levee failure.

2.0. DESCRIPTION OF THE PROPOSED ACTION

2.1. Project Authority

The flood control project consists of an earthen levee constructed in two increments to protect against flooding from the Lehigh River. Portions of the flood control structures were constructed by the CWA and the Commonwealth of Pennsylvania. The flood control structure was turned over to the Borough of Weissport for operation and maintenance in 1962. The USACE has authority under Public Law 84-99 to supplement local efforts in the repair of both Federal (Corps constructed, locally operated and maintained) and non-Federal (constructed by non-Federal interests or by the Work Projects Administration) flood control projects damaged by flood.

2.2. National Environmental Policy Act Documentation

This Environmental Assessment was prepared in accordance with National Environmental Policy Act (NEPA) regulations. This EA assesses conditions at the project site and evaluates the potential impacts of the proposed repair plan on existing resources in the immediate and surrounding areas to include: physical, chemical, and biological characteristics of the aquatic and terrestrial ecosystem; endangered and threatened species; hazardous and toxic materials; aesthetics and recreation; cultural resources; and the general needs and welfare of the public. Both individual and cumulative environmental effects were considered for this action. Preparation of this EA has included coordination with appropriate Federal and state resource agencies. A General Permit No. 11 (Maintenance, Testing, Repair, Rehabilitation, or Replacement of Water Obstructions and Encroachments) was issued by the Pennsylvania Department of Environmental Protection. 20 February 2008. A Section 404(b)(1) evaluation has been prepared and is included in Section 9.0. This evaluation concludes that the proposed action would not result in any significant environmental impacts relative to the areas of concern under Section 404 of the Clean Water Act.

2.3. Environmental Permits and Regulatory Compliance of Section 401 Water Quality Certification (Clean Water Act)

The Pennsylvania Department of Environmental Protection has issued General Permit No 11 (Maintenance, Testing, Repair, Rehabilitation, or Replacement of Water Obstructions and Encroachments) which provides state authorization to complete the work.

Minor and temporary impacts to water quality may result during the construction phase of the project due to the temporary water diversion and adjacent riprap and concrete repair work. An approved sediment and erosion control plan will be adhered to, therefore minimizing any impact.

Endangered Species Act: Based on the project location and the minor and temporary nature of the construction-related impacts, it has been determined that this action would not jeopardize the continued existence of any Federally-listed or proposed threatened and endangered species or their critical habitat.

National Historic Preservation Act: The USACE has coordinated and received a determination from the State Historic Preservation Office (SHPO) that the project will not affect properties listed or properties eligible for listing in the National Register of Historic Places.

2.4. Description of the Action Areas

As a result of a series of storms over a two-week period (23 June to 4 July 2006) three areas of the Lehigh River flood control structure are recommended for repair. Each of the areas are described below:

The first area is located in the vicinity of Borough Hall along Allen Street and is approximately 180 feet long by 10 feet wide by 10 feet in height (Photo 1 in the Appendix). It is recommended that two 10-foot transition zones be included (at each end). Similar to the original design, 12-inch riprap will be used with 6-inch blanket layers. A “V” shaped toe 5 feet wide and 3 feet deep will be repaired for the entire length. The existing riprap will be temporarily removed while the damaged area is excavated and graded for the placement of geotextile and riprap. Dewatering of the area will be required during construction.

The second area is located upstream of the railroad bridge and is approximately 15 feet long by 15 feet wide by 10 feet in height (Photo 2 in the Appendix). Two 10-foot transitional zones will be constructed on each end of the damaged area. It is recommended that the existing dislodged riprap be removed to excavate prior to placing a new layer of 35-inch riprap with geotextile layer underneath. Existing riprap may be reused, where appropriate. The repair work will require dewatering. Upstream (150 to 285 feet) of the bridge (Photo 3 in the Appendix), material that had existed prior to the storm along the exterior toe of the levee had eroded. The toe of the concrete facing, however, was not exposed along this reach.

The third area is located south of the railroad bridge and is approximately 200 feet long by 15 feet wide (Photos 4 and 5 in the Appendix). The damaged area exhibits cracking and spalling in grouted riprap. The recommended repair will require the removal of old concrete and 12-inch riprap placed and grouted. Approximately 50 feet of the existing toe at various locations will require riprap replacement. The design toe is “V” shaped 12 feet wide by 3 feet deep. Work on the toe will require dewatering.

The 50-year project was initially fully operational in 1960, and the proposed emergency work can be expected to extend the useful life of the project. As a result, a 20-year remaining life has been applied.

3.0. ALTERNATIVES CONSIDERED

3.1. The “No-Action” Alternative

The no-action alternative will presumably perpetuate a state of damaged levee structural integrity. The levee is now susceptible to further loss of riprap at the damaged areas as well as downstream, and the potential exists for further water erosion damage to the concrete facing in

the reach from the railroad bridge downstream to the first change in the levee alignment. Taking no action to repair the damaged portion of the levee will result in continued degradation of water quality within the stream due to further erosion of the levee and wash-out.

3.2. Removal and Replacement of Riprap and Concrete Facing

The alternative to remove the existing damaged concrete facing and dislocated riprap was discussed. However, the funding program proposed for this work (PL84-99) authorizes “repairs” only, not improved designs or complete replacement of an existing flood control structure. Improvements to the existing structure (originally constructed in 1934 and later added to during the 1950s and 1960s), may be beneficial based on current engineering guidelines and standards, but improvements are not authorized under this funding program. Therefore, alternatives are limited both by authorization and funding to repairs to the existing structures. The selected plan is a “repair” based on current engineering guidelines and criteria.

3.3 Repair of Damaged Riprap and Concrete Facing

Repairs to the damaged portions of the river bank riprap and concrete facing in damaged areas were discussed in Section 2.4. Figure 3-1 depicts the repair locations proposed along the banks of the Lehigh River. An aerial photograph of the proposed sections of the flood control structure is provided in the Appendix.

Concrete Repair: Concrete facing on the levees was performed as part of a 1950’s repair. The PL84-99 program authorizes the U.S. Army Corps of Engineers to repair damaged sections of the flood control project. Concrete will be scrapped away, probably by hand, and a new concrete facing will be applied. The new concrete facing will include a polymer component for improved adhesion and workability.

Coffer Dams / Turbidity Controls: Coffer Dams will be necessary to use in areas where riprap needs to be repaired at the toe of the levee. Jersey Barriers and silk curtains will most likely be used in the construction of the coffer dams and filter bags will be used around the pumps. The contractor will be responsible for coordination with the local Conservation District and shall comply with all Federal, State and local regulations. The size of the riprap will be determined by the stream flow / velocity and we may be required to use larger riprap in several areas.

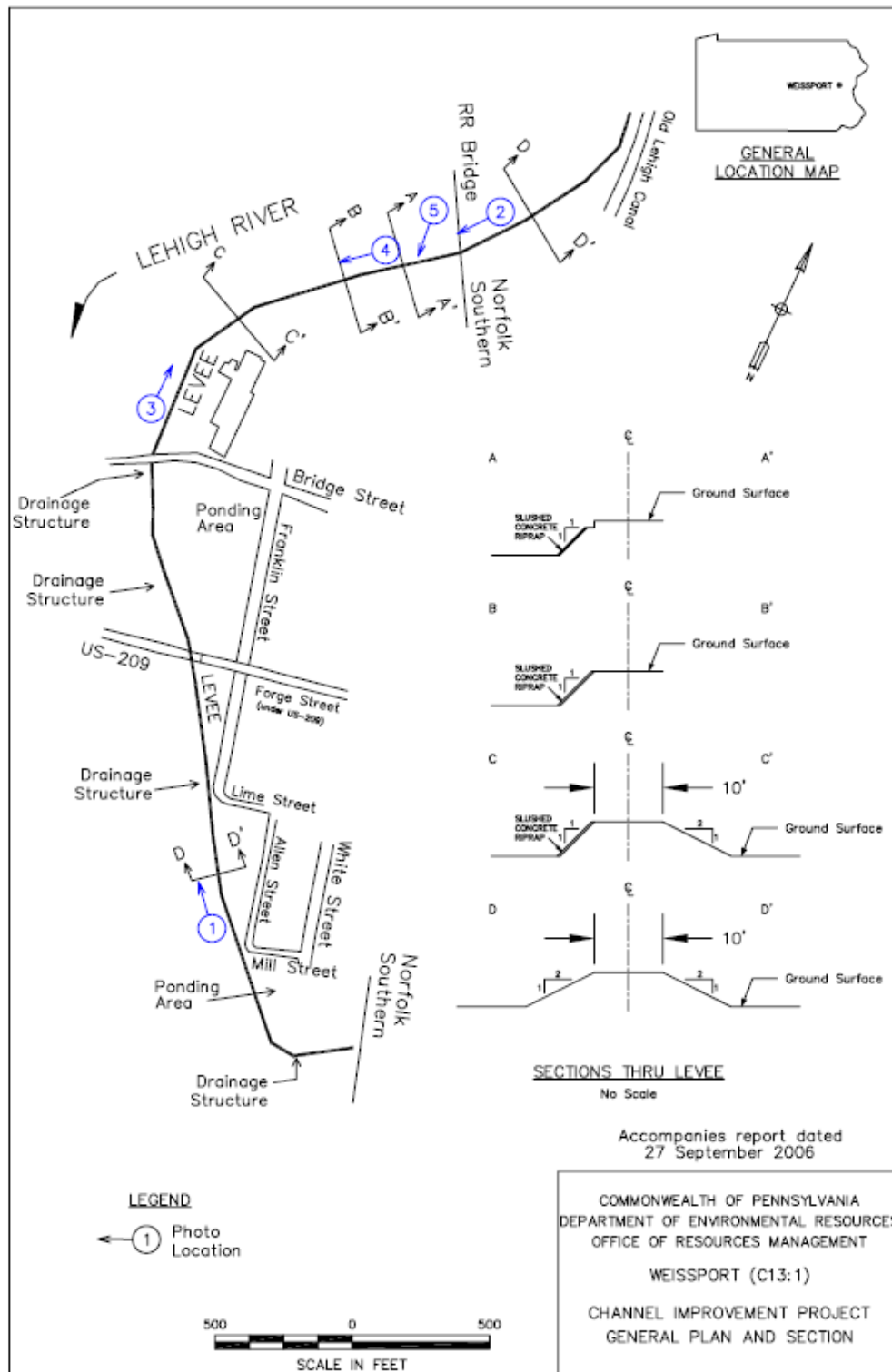


Figure 3-1: Weissport Repair along the Lehigh River: numbers refer to photographs in the Appendix.

4.0. EXISTING ENVIRONMENT

4.1. Project Area Description

The project area is an urban environment, within the borough of Weissport, Carbon County, Pennsylvania. Weissport is located in the middle portion of the Lehigh River watershed. The Lehigh River originates in glacial bogs and marshes in the area of Pocono Peak Lake near Gouldsboro (about 15 miles southeast of Scranton). The elevation at the headwaters is approximately 2,200 feet above sea level and drops nearly 1,000 feet towards the Delaware River. The damaged areas are in three specific locations within the vicinity of Borough Hall along Allen Street; upstream of the railroad bridge; and downstream of the railroad bridge.

4.2. Geology and Topography

The project area lies within two of the major physiographic provinces of Pennsylvania. These physiographic provinces are characterized by their own unique landscape and a distinctive geologic character. The northern area falls within the Appalachian Plateau Province, a broad area of hilly to low mountainous terrain that extends north and east into New York State and west across the northern tier counties of Pennsylvania. Topography is characterized by high, flat plateaus with elevations between 900-1,800 feet. The southern portion, where the proposed project site is located, lies within the Valley and Ridge Province, characterized by long, parallel, sharp-crested mountain ridges separated by long, narrow valleys. Elevations range from 1,600 feet along ridgetops to 500 feet in the valley bottoms.

The Lehigh River formed as a water gap in Blue Mountain. Erosion by the Lehigh River over millions of years brought the gap to its present elevation. A nearly continuous rock sequence from the top of the Martinsburg Formation (Ordovician age) to the Middle Silurian occurs along the east bank of the river (Lower Silurian).

4.3. Climate

The Delaware River basin climate is continental. The two major air masses that influence the climate move predominately from the interior of the continent, being modified by influences of the Great Lakes and the Appalachian Mountains to the west. Low pressure cells originating in the south move along the coast bringing rainfall which can be heavy at times, especially when associated with hurricanes. Canadian high pressure systems bring heavy snowfall and cold temperatures to the upper northwest portions of the watershed. Generally, west to southwest airflow with extended overland travel brings the hot dry weather which is responsible for occasional summer droughts. The average annual temperature is 51 degrees F and temperatures below zero or above 100 degrees F are rare. Precipitation is moderate, about 44 inches a year, and is well distributed through the year.

4.4. Air Quality

Air quality is monitored in Pennsylvania by the Department of Environmental Protection, Bureau of Air Quality. Air quality monitoring is conducted by placing air monitors within high population density areas within the state. The state has been partitioned into 13 “air basins” with Carbon County being closest to the Scranton-Wilkesbarre Air Basin. An Air Quality Index (AQI) developed by the U.S. Environmental Protection Agency is published daily for all sites in Pennsylvania as a means of reporting air quality to the general public. The AQI records levels of five common air contaminants: carbon monoxide, sulfur dioxide, particulate matter, ozone, and nitrogen dioxide. Air Quality is generally good within the county. The site is not listed by EPA as a non-attainment area for criteria pollutants. Air pollution levels do not exceed the national ambient air quality standards in the project area.

4.5. Population and Employment

The population of Carbon County in 2005 was 61,959 (50% urban, 50% rural). Industries in the county providing employment include manufacturing (22.1%), education, health and social services (19.5%) and retail trade (12.1%). According to the U.S. Census Bureau, the borough of Weissport has a total area of 0.4 km² (0.15 mi²). Approximately 0.3 km² (0.12 mi²) of the area is land and 0.1 km² (0.04 mi²) is water. There are 176 households.

4.6. Water Quality

The Lehigh River is a major tributary of the Delaware River. It is 103 miles long and drains an area of 1,383 square miles. The Lehigh River’s main stem from Francis E. Walter Dam to Jim Thorpe has been designated a Pennsylvania Scenic River. The upper reaches from the headwaters to the Pennsylvania Route 903 bridge, is classified by Pennsylvania Department of Environmental Protection (PADEP) as a high quality cold water fishery. South of PA Route 903 (Weissport) to the Allentown Dam, the main stem of the river is classified as a trout-stocked fishery; and from the Allentown Dam to the Lehigh’s confluence with the Delaware River, the main stem is classified as a warm water fishery.

Water resources have been a major factor in the development of the Lehigh River basin. The United States Geologic Survey (USGS) determined that public and industrial water supplies are the two major surface and groundwater uses in the watershed. Numerous studies have been completed in the watershed to determine if water quality conditions are improving or deteriorating from a historical perspective (Versar, 2002). The conclusion: the Lehigh River is cleaner now than it has been in the last 150 years. In general, the watershed is in good condition with the exception of a few areas. Continued problems result from abandoned mine drainage to the Lehigh. In 1998, the Wildlands Conservancy conducted a detailed study of the chemistry of four abandoned mine drainage tributaries. Sandy Run is the largest contributor of aluminum to the river, as well as iron, sulfate, and manganese. These result in a total AMD load of 13,984 lbs/day to the Lehigh River.

4.7. Hazardous, Toxic, or Radioactive Substances

Pennsylvania has the second highest number of sites on the National Priority List for Superfund sites (CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act). Several are located within the Lehigh River watershed and two are located in Carbon County. The Palmerton Zinc Piles site is located 6 miles from the borough of Weissport, and the Tonolli Corporation, located in the borough of Nesquehoning, is located 9 miles from Weissport.

The Lehigh River served as a transportation conduit during the industrialization of eastern Pennsylvania. Coal was transported from northern counties to the seaport of Philadelphia. As economic conditions changed over the decades, many industrial sites were abandoned and are known as brownfields. The largest Brownfield in the Lehigh watershed is Bethlehem Steel, located approximately 33 miles from the borough of Weissport. The site includes 1,600 acres and more than a mile of Lehigh River frontage.

Other CERCLA sites outside of Carbon County in neighboring Monroe County include the Tobyhanna Army Depot site, approximately 31 miles from Weissport; the Route 940 Drum Dump site also in Tobyhanna; four sites in Lehigh County: Dorney Road Landfill in Mertztown (31 miles), Heleva Landfill in Ormrod (17 miles), Novak Sanitary Landfill in South Whitehall (24 miles), and Rodale Manufacturing Company in Emmaus (30 miles). One site in Northampton County 38 miles from Weissport is the Hellertown Manufacturing site.

4.8. Land Cover

Within the Lehigh River watershed, land cover consists of approximately 67% in natural condition and 33% human-influenced condition. Natural conditions are defined as forests, shrub lands, meadows, grasslands, and vegetated riparian zones. Human-influenced land cover includes agricultural land, urban, suburban and mining uses.

4.9. Plants and Animals

The Lehigh River crosses to major forested areas: the Hemlock-White Pine-Northern Hardwoods region and the Oak-Chestnut region. The former forest region corresponds to the Pocono Plateau section of the Appalachian Plateaus Physiographic Province and the mixed oak forest encompasses the area from Wilkes-Barre to White Haven, the western portion from White Haven to Palmerton, and from Palmerton to Easton. Plants in the northern portions include gold thread, mountain ash, showy lady slipper, striped maple, toothwort, buckhorn, and sheep laurel. The southern portion species include Jersey pine, lady fern, persimmon, Virginia snakeroot, shiny coneflower and winter grape.

Fish species within the Lehigh River include smallmouth and largemouth bass, brown and brook trout, chain pickerel, rock bass, bluegill, crappie, darters, suckers, eels, and bullheads. Ten species of frogs and toads as well as 12 salamanders, 7 turtles, 1 lizard, and 10 snake species inhabit the region. One turtle species, the bog turtle (*Glyptemys muhlengergi*) is listed as threatened under the Federal Endangered Species Act. The timber rattlesnake (*Crotalus horridus*) is a candidate species on the state of Pennsylvania's "species of concern" list.

Approximately 291 species of birds inhabit the Lehigh River watershed. Eleven species of birds have been recommended as state endangered species: American bittern, least bittern, yellow crowned night heron, peregrine falcon, and the bald eagle. Over 60 species of mammals reside in the Lehigh River watershed. More common species include the opossum, little and big brown bats, raccoon, long-tailed weasel, mink, skunk, red fox, woodchuck, eastern chipmunk, eastern gray squirrel, red squirrel, muskrat, house mouse, Norway rat, eastern cottontail, coyote, black bear, and white-tailed deer.

4.10. Threatened and Endangered Species

Although some state and Federally-listed species are known to inhabit the Lehigh River watershed, none are anticipated to occur in the immediate vicinity of the proposed project. The riprap and concrete banks proposed for repair are not anticipated to adversely impact any listed species. The river is within the historic range of the bald eagle and peregrine falcon, except for an occasional transient species, no federally listed species are known to occur within the project area.

4.11 Cultural Resources

There are no recorded prehistoric or historic archaeological sites within the project area. Within 16-33 miles from the project area, there are four National Register historic sites: Eckley Miners' Village, Stroud Mansion, the John O-Hara House, and the George Taylor House. All four properties fall outside the current project's area of potential effect.

During the nineteenth century hundreds of company mining towns were built in Pennsylvania's anthracite region. In 1854, the mining firm of Sharpe, Leisenring and Company leased land from the Trench Coxe estate of Philadelphia, and began coal mining and the village of Eckley was built. The village provided the housing, schools, stores and churches for the miners and their families, and by owning the village, the company had greater control over the lives of its workers. Presently, coal is strip-mined in the outskirts of the village. Eckley was a company town until 1971 when it was deeded to the Commonwealth of Pennsylvania.

The Stroud Mansion was built in 1795 by the town's founder, Jacob Stroud., who, along with his three brothers, enlisted in the English army and served in the French and Indian War. Stroud returned to Pennsylvania and prospered. He also served during the American Revolution as Captain of Militia in Lower Smithfield and later as Colonel of the 4th and 6th Battalions of the Northhampton County Militia. Stroud was elected as a member of the convention to form the first constitution of Pennsylvania and attended the first meeting held in Carpenter's Hall in Philadelphia on July 15, 1776. He served as a member of the House of Representatives from 1781 to 1783. The Stroud family ran a grist mill and a saw mill but after the war Stroud focused on his extensive landholdings. Today, the basement and first floor of the Stroud Mansion house the Monroe County Historical Society Museum. The second floor is used for community meeting rooms and the third floor is a rental apartment.

The John O'Hara home in Pottsville, approximately 33 miles from the borough of Weissport, is the childhood home of an American writer (1905-1970). He became known initially as a short

story writer but later became a best-selling novelist. O'Hara was a controversial figure and keen observer of social status and class differences.

The George Taylor House is located 29 miles from the borough of Weissport, in Catasauqua. A National Landmark, this 1768 home was the home of a Declaration of Independence signer. Taylor was a slave-owning magnate of a great estate. He acquired his wealth from a successful iron business and an astute marriage. He lived a lavish lifestyle but was in debt at the time of his death in 1781.

5.0. ENVIRONMENTAL EFFECTS

5.1. No Action

In addition to the value of adjacent property continually exposed to risk in a major storm, there is also the risk of continued erosion. Subsequent storms occurring without the necessary repair work will result in further damage to the weakened sections and future repair costs will increase.

5.2. Repair of Damaged Riprap and Concrete Facing

The recommended repairs will restore the levee riprap to its pre-storm condition. No adverse environmental impacts are anticipated to occur in restoring the existing condition. Refer to specific sections below.

5.3. Geology and Topography

No adverse impact to the geology or existing topography is expected to result from the project.

5.4. Climate

No adverse impact to climate in the region will result from the proposed repair project.

5.5. Air Quality

Temporary impacts to the aesthetics of the project area may occur during the construction phase. Air quality impacts resulting from the release of carbon monoxide and particulate emissions will occur at the site during project-related activities and may be considered offensive, but are generally not considered far-reaching or exceeding permissible levels.

The 1990 Clean Air Act Amendments include the provision of General Conformity, which is a regulation that ensures that Federal actions conform to a nonattainment area's State Implementation Plan (SIP) thus not adversely impacting the area's progress toward attaining the National Ambient Air Quality Standards. Air quality within the county is generally good. The project area is not listed by the U.S. Environmental Protection Agency as a non-attainment area for criteria pollutants. Air pollution levels in the project area do not exceed the national ambient air quality standards and no evaluation of the project's conformity to a SIP is required.

5.6. Population and Employment

No adverse impact to the socioeconomic conditions of the area are expected to result from the project. Likewise, the project is not expected to adversely impact any minority or low-income communities. Future economic benefits include the enhanced protection of area businesses and residences to flooding.

5.7. Water Quality

Some construction activities will have the potential to generate soil runoff that could increase turbidity in the creek during periods of heavy rain. The turbidity will be minimized through sediment and erosion control measures such as the use of ecology blocks in conjunction with an impermeable membrane and sandbags to provide a nearly dry construction area and minimize soil runoff into the river. Minor and temporary impacts to water quality would be expected during construction. An approved sediment and erosion control plan will be adhered to, therefore minimizing any impacts. Following project construction completion, no negative impact to water quality would be expected. On the contrary, construction of the proposed project should have a positive effect on water quality in the area. Repairs to the damaged portions of the levee where soil can be eroded during storm events will reduce turbidity levels generated in the Lehigh River due to washout.

5.8. Hazardous, Toxic, and Radioactive Substances

Based on the historical review of sites containing hazardous substances in the region and their distance from the immediate project area, the likelihood of hazardous substances existing within the project area or adversely affecting the project area due to the proposed construction activities is very low.

5.9 Land Cover

No adverse impacts to land cover are anticipated to occur. The proposed project will restore the levee to its pre-storm condition. The completed project should result in a positive impact to land cover by reducing the potential for additional erosion and levee washout. No wetlands occur within the project limits of construction.

5.10. Plants and Animals

No adverse impact to wildlife or plant species is expected from the proposed project. The repairs will restore pre-storm conditions and reduce erosion and added turbidity to the Lehigh River due to wash out. Impacts during the temporary construction period may result from noise and diversion of water flow. Birds, mammals, reptiles and amphibians are capable of moving, and would be expected to leave the immediate area of the construction site, relocating in adjacent habitat.

5.11. Threatened and Endangered Species

Coordination with Federal and state natural resource agencies has concluded that there are no known threatened or endangered species within the project area that would be impacted by the proposed repair project. No significant negative impacts are anticipated for wildlife and plant species within the project area or adjacent habitats (TNC, 2005).

5.12. Cultural Resources

Coordination with the Pennsylvania Historical and Museum Commission, Bureau of Historic Preservation has concluded that the proposed repair project is minor in scope and will not pose any effect on cultural resources in the historic district of Weissport (pers. comm.. S. McDougal, February 2008).

5.13. Cumulative Impacts

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes those actions. The proposed plan is conservative in that its objective is to repair a previously established flood protection project. The need for the repair has resulted from flooding due to heavy rain events. Portions of the structure were originally built in 1934 and later raised and additional portions constructed in the late 1950s. No cumulative impacts are anticipated from the repair of the existing structure.

6.0. COORDINATION

Coordination of the proposed project involves the U.S. Fish and Wildlife Service, the U.S. Environmental Protection Agency, the Pennsylvania Department of Environmental Protection, the Pennsylvania Historic and Museum Commission, the Pennsylvania Fish and Boat Commission, the Pennsylvania Game Commission, and the Pennsylvania Department of Conservation and Natural Resources.

7.0. CONCLUSIONS

This Environmental Assessment has evaluated potential environmental impacts associated with implementing the proposed repairs to the Lehigh River flood control structure in Weissport, Carbon County, Pennsylvania. The findings herein have been prepared in accordance with the National Environmental Policy Act of 1969, as amended. Potential impacts to environmental and cultural resources resulting from the proposed action have been described and evaluated in this document. Due to the existence of the previously established flood protection project, any negative effects to the environment are expected to be minor and temporary (i.e. during the construction period only). The positive effect anticipated from this project is increased flood protection by the repaired flood protection structure for the borough of Weissport. No permanent environmental change to the project area will occur as a result of repairs to the existing structure.

8.0. LITERATURE CITED

Wildlands Conservancy, 2000. *Lehigh River Mine Drainage Assessment and Abatement Plan to Mitigate the Mine Drainage Impacts to the Lehigh River Watershed.*

The Nature Conservancy, 2005. *A Natural Areas Inventory of Carbon County, Pennsylvania.*

Versar, Inc. 2002. *Water Quality Monitoring Report.*

9.0.EVALUATION OF 404 (b) (1) GUIDELINES

I. Project Description

A. Location

The project is located along the banks of the Lehigh River in the Borough of Weissport, Carbon County, Pennsylvania. The damaged areas occur adjacent to the Borough Hall, upstream of the railroad bridge, downstream of the railroad bridge, and upstream of Bridge Street.

B. General Description

The portion of the flood control structure upstream of Bridge Street was constructed in 1934 by the Federal Civil Works Administration (CWA). In 1958-1960 the CWA portion was raised and the portion of the levee downstream of Bridge Street was constructed by the Commonwealth of Pennsylvania in 1962 and later turned over to the Borough of Weissport for operation and maintenance. The total project consists of earthen levees along the Lehigh River; a ponding area; drainage structures; and part of a levee that is steeper with concrete facing.

C. Purpose

The flood control project consists of an earthen levee constructed in two increments to protect against flooding from the Lehigh River. Portions of the flood control structures were constructed by the CWA and the Commonwealth of Pennsylvania. The purpose of the project is to restore the flood control structure to its pre-storm condition.

D. General Description of the Dredged or Fill Material

Similar to the original design, Type A armor stone (12-15 inch riprap) will be used with 6-inch blanket layers (geotextile fabric).

E. Description of Placement Method

The existing riprap will be temporarily removed while the damaged area is excavated and graded for the placement of geotextile and riprap. The stone will be placed in the work area by crane, loaded from trucks. The construction contractor will determine the most efficient method, based on available equipment, and personnel. All of the existing displaced stone in the damaged area will be re-used for the new construction. Cement for the facing will be delivered on-site by truck.

II. Factual Determination

A. Physical Substrate Determination

1. Type A riprap (12"-15"), Geotextile, and Cement
2. No Other effects are anticipated to occur. Minimal impact to the stream bed. The substrate (riprap, geotextile, and cement) are nontoxic materials.
3. Actions taken to minimize impacts include selection of clean, inert stone fill material. In addition, standard construction practices to minimize turbidity and erosion will be employed.

B. Water Circulation, Fluctuation, and Salinity Determinations

1. Water. Consider effects on:
 - a. salinity – not applicable
 - b. water chemistry – no significant effect
 - c. clarity – minor short-term increase in turbidity during construction.
 - d. Color – no effect
 - e. Odor – no effect
 - f. Taste – no effect
 - g. Dissolved gas levels – no significant effect
 - h. Nutrients – minor short-term effect
 - i. Eutrophication – no effect
 - j. Others as appropriate – no effect
2. Current patterns and circulation
 - a. Current patterns and flow – circulation would not be significantly impacted by the proposed work as placement of riprap on the bank will not affect stream circulation.
 - b. Velocity – no effect.
 - c. Stratification – not applicable
 - d. Hydrologic regime – no effect
3. Normal water level fluctuations – no effect
4. Salinity gradients – not applicable
5. Actions that would be taken to minimize impacts – utilization of clean, inert stone fill and temporary turbidity barriers during construction.

C. Suspended Particulate/Turbidity Determinations

1. Expected changes in suspended particulates and turbidity levels in the vicinity of the placement site - there would be a short-term minimal elevation of suspended particulate concentrations during construction phases in the immediate vicinity of the work area. Minimal impact to the stream bed.
2. Effects (degree and duration) on chemical and physical properties of the water column.

- a. Light penetration - Short-term, limited reductions would be expected at the stone placement sites due to construction activities adjacent to the stream.
 - b. Dissolved oxygen - There is a potential for a slight decrease in dissolved oxygen levels but the anticipated low levels of organics in the turbidity generated during construction should not generate a high, if any, oxygen demand.
 - c. Toxic metals and organics - Because the fill material is essentially clean, inert stone, no toxic metals or organics are anticipated.
 - d. Pathogens - Pathogenic organisms are not known or expected to be a problem in the project area.
 - e. Aesthetics - Construction activities associated with the fill site would result in a minor, short-term degradation of aesthetics.
3. Effects on Biota
- a. Primary production, photosynthesis - Minor, short-term effects related to turbidity.
 - b. Suspension/filter feeders - Minor, short-term effects related to suspended particulates outside the immediate deposition zone.
 - c. Sight feeders - Minor, short-term effects related to turbidity.
4. Actions taken to minimize impacts include the selection of clean inert stone fill. Standard construction practices would also be employed to minimize turbidity and erosion.

D. Contaminant Determinations

The discharge material (stone) is not expected to introduce, relocate, or increase contaminant levels at the placement sites. This is assumed based on the characteristics of the materials, the proximity of the placement sites to sources of contamination, the area's hydrodynamic regime, and existing water and sediment quality.

E. Aquatic Ecosystems and Organism Determinations

- 1. Effects on plankton -The effects on plankton should be minor and mostly related to light level reduction due to turbidity. Significant dissolved oxygen level reductions are not anticipated.

2. Effects on benthos .There would be minimal disruption of the benthic community adjacent to the placement area due to the potential for elevated temporary turbidity levels. The loss is somewhat offset by the expected rapid opportunistic recolonization from adjacent areas that would occur following cessation of construction activities.
3. Effects on Nekton .Only a temporary displacement is expected as nekton would be temporarily blocked from the active work areas or intentionally avoid the active work areas.
4. Effects on Aquatic Food Web .Only a minor, short-term impact on the food web is anticipated. This impact would extend beyond the construction period until recolonization of the filled area has occurred.
5. Effects on Special Aquatic Sites .No wetlands would be impacted by the project.
6. Threatened and Endangered Species – No threatened or endangered species are anticipated to occur in the project area during the construction period.
7. Other wildlife .The proposed plan would not adversely affect other wildlife. The proposed project is anticipated to provide a positive impact to water quality by reducing washout of the levee and continued erosion into the stream.
8. Actions to minimize impacts – A sediment and erosion control plan will be implemented during construction.

F. Proposed Placement Site Determinations

1. Mixing zone determination

- a. Depth of water - < 5 feet.
- b. Current velocity – Variable depending on season and degree of precipitation.
- c. Degree of turbulence – Minimal during non-storm periods.
- d. Stratification .None
- e. Discharge vessel speed and direction .Not applicable
- f. Rate of discharge –Not applicable
- g. Dredged material characteristics –Not applicable
- h. Number of discharge actions per unit time –Not applicable

2. Determination of compliance with applicable water quality standards .A Section 401 Water Quality Certificate has been obtained from the state of Pennsylvania.

3. Potential effects on human use characteristics

- a. Municipal and private water supply –positive effect by reducing turbidity related to levee washout and erosion.

- b. Recreational and commercial fisheries – temporary negative effect during construction due to the potential for elevated turbidity levels. Positive effect post-construction due to reduced turbidity from further erosion of the levee.
- c. Water related recreation –N/A
- d. Aesthetics .Short-term effect during construction
- e. Parks, national and historic monuments, national seashores, wilderness areas, etc. –N/A.

G. Determination of Cumulative Effects on the Aquatic Ecosystem –Positive impacts are anticipated due to the reduced erosion of the earthen levee and therefore reduced potential for elevated turbidity levels during storm events.

H. Determination of Secondary Effects on the Aquatic Ecosystem –the proposed project offers positive impacts to the entire aquatic ecosystem present in the vicinity of the project and downstream due to the reduced potential for elevated turbidity levels within Brodhead Creek.

III. Finding of Compliance or Non-Compliance with the Restrictions on Discharge

A. No significant adaptation of the Section 404(b)(1) Guidelines was made relative to this evaluation.

B. The alternative measures considered for accomplishing the project are detailed in Section 3.0 of the document of which this 404(b)(1) analysis is part.

C. A General Permit No. 11 was obtained from the Pennsylvania Department of Environmental Protection.

D. The proposed project will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

E. The proposed project is in compliance with the Endangered Species Act of 1973. Informal coordination procedures have been completed.

F. The proposed project will not violate the protective measures for any Marine Sanctuaries designated by the Marine Protection, Research, and Sanctuaries Act of 1972.

G. The proposed project will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Significant adverse effects on life stages of aquatic life and other wildlife dependent on the aquatic ecosystem; aquatic ecosystem diversity, productivity, and stability; and recreational, aesthetic, and economic values will not occur.

H. Appropriate steps to minimize potential adverse impacts of the project on aquatic

systems include selection of clean, inert stone fill material, use of an erosion and sedimentation plan during construction, and minimal work within the streambed itself

- I. On the basis of the guidelines, the placement site for the fill material is specified as complying with the requirements of these guidelines, with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects on the aquatic ecosystem.

APPENDIX

**DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, U.S. ARMY CORPS OF ENGINEERS
WANAMAKER BUILDING, 100 PENN SQ. EAST
PHILADELPHIA, PENNSYLVANIA 19107-3390**

NOTICE TO PUBLIC SPONSORS

**REHABILITATION ASSISTANCE FOR FLOOD-DAMAGED
FLOOD CONTROL PROJECTS**

REPLY TO:
U.S. ARMY CORPS OF ENGINEERS
Philadelphia District
Emergency Management Branch
Wanamaker Building, 100 Penn Sq. East
Philadelphia, PA. 19107-3390

DATE: 5 July 2006

APPLICATION PERIOD EXPIRES 5 August 2006

Public Sponsors of flood control projects that sustained damages due to flooding during the period 23 June 2006 to 4 July 2006, have until 7 August 2006 to apply for Public Law 84-99 Rehabilitation Assistance from the U.S. Army Corps of Engineers, Philadelphia District.

The Corps of Engineers has authority under Public Law 84-99 to supplement local efforts in the repair of both Federal (Corps constructed, locally operated and maintained) and non-Federal (constructed by non-Federal interests or by the Work Projects Administration {WPA}) flood control projects damaged by flood.

- a. For a non-Federal flood control project to be eligible for Rehabilitation Assistance, it must have been inspected, evaluated, and accepted into the Corps Rehabilitation and Inspection Program (i.e., granted active status) prior to the onset of the flood, and still be Active (based on the latest Continuing Eligibility Inspection) at the time of the flood.
- b. For a Federal flood control project to be eligible for Rehabilitation Assistance, it must be in an Active status by having passed its last Inspection of Completed Works inspection.


- c. Rehabilitation Assistance will be provided by the Corps only when the work is economically justifiable, the damage was sustained during the recent flood event, and the cost of repairs is more than \$15,000.
- d. Rehabilitation Assistance for a non-Federal project is cost-shared between the Public Sponsor and the Corps of Engineers. The Public Sponsor must provide 20 percent of the cost of the Rehabilitation Assistance.

All request for assistance made to the Corps will be coordinated with the Federal Emergency Management Agency (FEMA) and the Natural Resources Conservation Service (NRCS) to prevent duplication of benefits.

If the Public Sponsor believes that its project may qualify for Rehabilitation Assistance, a written request must be submitted to the Corps of Engineers at the address above. The request must be signed by an officer or responsible official of the Public Sponsor, and must include:

- Name and telephone number of the Public Sponsor's point of contact;
- Legal name of the flood control project;
- Date and results of the last inspection by the Corps of Engineers;
- Location of the flood control project by township, section, range, city and county;
- Location(s) of the damaged section(s), and extent of the damage at each location; and
- Waterway causing the flood.

Upon receipt of the Public Sponsor's request, the Corps of Engineers will schedule an inspection with the Public Sponsor. If you have any questions, contact Ms. Kathleen A. Mulvenna, Philadelphia District, Corps of Engineers, at (215) 656-6756 for assistance.


Robert J. Kuch
Lieutenant Colonel, Corps of Engineers
District Commander

MEMORANDUM FOR FILES

SUBJECT: Post-Storm Assessments of Weissport, Pennsylvania

1. **Introduction.** The Delaware River Basin was inundated by a lengthy period of almost-constant, heavy precipitation during the latter portion of June 2006. Officials of the Borough of Weissport, Pennsylvania, requested technical assistance per Public Law 84-99 to assess the impact of high Lehigh River flows on the existing nonfederal flood protection project. Technical assistance was provided by the undersigned on 7 July 2006. Following receipt from the Borough of an application for project rehabilitation, the undersigned participated in the Project Delivery Team's site assessment on 21 September 2006. Photos taken during the assessments are attached. The locations of where the photos were taken are shown in Enclosure 1.

2. **Project Description.** The project consists of an earthen levee constructed in two episodes. The portion upstream of Bridge Street was constructed in 1934 by the federal Civil Works Administration (CWA). In 1958-60, the CWA portion was raised and the portion of the levee downstream of Bridge Street was constructed by the Commonwealth of Pennsylvania (see Enclosure 2). The project was then turned over to the Borough of Weissport for operation and maintenance. It is noted that the CWA portion of the levee has a steeper exterior slope than the state portion, and the slope has a concrete facing.

3. **Assessment Results.**

a. Loss or sloughing of riprap was evident at two locations. Adjacent to the Borough Hall, an area about 180 feet long by 10 feet wide by 10 feet high has lost riprap or the riprap has sloughed (see Photo 1). Immediately upstream of the railroad bridge, an area about 15 feet long by 15 feet wide by 10 feet high has lost riprap (see Photo 2).

b. Upstream from Bridge Street, material that had existed prior to the storm along the exterior toe of the levee has eroded (see Photo 3). This situation was most prominent from 150 feet upstream of the bridge to 285 feet upstream of the bridge. The toe of the concrete facing, however, was not exposed anywhere along this reach.

c. The concrete facing appeared to have been damaged in the reach from the railroad bridge downstream to the first change in levee alignment. (This coincides with the end of the levee section that has a parapet wall.) The damage consisted of cracking and spalling in several locations (see Photo 4), and loss of riprap near the toe of the levee in a few locations (see Photo 5).

d. There was no change evident to the deteriorated CMP that leads from the ponding area to the river.

4. Conclusions and Recommendations.

a. It is concluded that the existing flood protection project has suffered damage due to the June 2006 high water event. Since the project is Active in the Rehabilitation and Inspection Program, the areas of lost riprap should qualify for rehabilitation under PL 84-99. The Borough has applied for this using the guidelines in the Notice to Public Sponsors that was announced by the District following the event. Repair of the concrete facing where it has deteriorated (from the railroad bridge downstream to the first change in levee alignment) might also qualify for PL 84-99 rehabilitation, and the Borough has included this aspect in its application.

b. The unconsolidated material at the exterior toe of the levee where it is concrete-faced is not necessarily essential for levee stability or toe protection. The material might have simply collected over the years, and then some of it was eroded during this event. A check of the project drawings has indicated that this material is not part of the original project design.

BRUCE R. ROGERS, P.G.
Physical Scientist
Geotechnical Section

Encls

CF:
CENAP-DP/DePrefontaine



Photo 1. [7 July 2006] Area of loss or sloughing of riprap adjacent to the Borough Hall.



Photo 2. [21 September 2006] Area of loss of riprap immediately upstream of the Railroad Bridge.



Photo 3. [7 July 2006] Area of erosion of material at the exterior toe of the concrete-faced portion of the levee.



Photo 4. [7 July 2006] Area of deterioration of the concrete facing.



Photo 5. [21 September 2006] Loss of riprap at the toe of the levee below the concrete facing.