

Appendix F

Natural Resource Functional Assessment

Final Report rev1

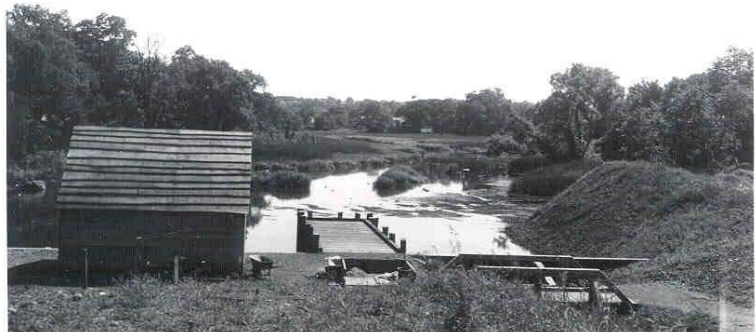
Natural Resource Functional Assessment

Project:

Restore Saugus River Turning Basin and Dock

Prepared for:

**U.S. Department of the Interior, National Park Service
Saugus Iron Works National Historic Site
Saugus, Massachusetts**



NPS Contract No. 1443C2000001500

Task Order No. T2000001508

PMIS SAIR 60214

August 2006

CH2MHILL

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Executive Summary

CH2M HILL conducted a functional assessment of existing wetlands, waterbodies and adjacent upland resources at the Saugus Iron Works National Historic Site (NHS) to evaluate the potential ecological benefits associated with a proposed restoration and enhancement project. The functional assessment was requested by the Massachusetts Department of Environmental Protection (MA DEP) and the Massachusetts Coastal Zone Management (CZM) office as part of an environmental review of the proposed project. This functional assessment qualitatively evaluates the significance of the existing and restored wetland and other natural resources on the site, to the protection of public and private water supplies; protection of groundwater supply; flood control; storm damage prevention; prevention of pollution; protection of land containing shellfish; protection of fisheries; and protection of wildlife habitat. These functions are to be protected in accordance with the Massachusetts Wetlands Protection Act for all Areas Subject to Protection.

The project site is within the 100-year floodplain of the Saugus River. A large portion of the site is comprised of floodplain, in the form of side channel bars on either side of the Saugus River, which are currently one to three feet above the mean high water line and support the wetland areas within the site. As such, the project site contains resource areas classified under the Massachusetts Wetlands Protection Act as “Bordering Land Subject to Flooding”. Currently maintained by the NPS, the 100-year floodplain abuts the proposed restoration area and dock.

The site is located along the Saugus River at the northern extent of tidal influence. The tidal range extends to just north of an existing bridge that connects the two upland areas of the site. An ecologically valuable area, the stream is utilized by rainbow smelt (*Osmerus mordax*) as spawning area. Studies on fisheries use of the Saugus River within the site boundary indicate that the site is currently or has been historically used by species such as river herring (*Alosa pseudoharengus* and *Alosa aestivalis*), yellow perch (*Perca flavescens*), American eel (*Anquilla rostrata*), mummichog (*Fundulus heteroclitus*), white sucker (*Catostomus commersonii*) and white perch (*Morone Americana*). As such, the project site contains resource areas classified under the Massachusetts Wetlands Protection Act as “Banks of or Land Under Rivers that Underlie and Anadromous Fish Run”.

The site contains two distinct wetland communities divided by the Saugus River; the “Northern Area” located within the historic turning basin area adjacent to the dock and bulkhead structures, and the “Southern Area” located to the southeast of the historic turning basin area. The Northern Area covers approximately 1.00 acres and the Southern Area 2.75 acres. As such, the project site contains resource areas classified under the Massachusetts Wetlands Protection Act as “Bordering Vegetated Wetlands”. Preliminary vegetation reconnaissance observed at least 27 species of plants within the Bordering Vegetated Wetland area, of which 16 are non-native and/or invasive species. The wetland is dominated by common reed, purple loosestrife and narrow-leaf cattail. Other abundant species include Japanese knotweed (*Polygonum cuspidatum*), multiflora rose (*Rosa multiflora*), and curly pondweed (*Potamogeton crispus*). These introduced species are considered to be

aggressive invaders of disturbed or damaged wetland habitats and tend to replace more valuable native species.

The NPS is proposing to restore the historic condition of the Saugus Iron Works NHS in three areas: (1) the turning basin in the northern area; (2) the southern area and (3) the existing bulkhead and dock area. A dam located upstream of the site was breached in 1957 causing extensive sedimentation of the site's turning basin feature. Sediment loading of nearby wetlands also prompted the introduction of invasive species reducing the quality and functional value of these aquatic resources.

The goals of the project are to restore and enhance the functional value of low quality emergent wetlands, while also restoring the site to its nationally significant historic condition. These wetlands are dominated by invasive species and have been significantly degraded by sediment accumulation that has occurred since 1957 when a dam was breached upstream of the site. Restoration and enhancement activities would provide 2.18 acres of high quality, high functional value, open water/mud flat habitat (Bordering Land Subject to Flooding), 1.51 acres of high quality, high functional value, native species dominated emergent wetlands (Bordering Vegetated Wetlands), and 0.03 acres of high quality, high functional value, native species dominated riparian forest habitat (Riverfront Area) (see Restoration Plan, Drawing C7).

The proposed project includes removal of approximately 9,000 cubic yards of sediment within the historic location of the turning basin at the Saugus Iron Works NHS. This action would restore the turning basin to its original open-water condition that was present prior to the 1957 dam breach. The turning basin area is commonly referred to as the "Northern Area". The proposed sediment removal would disturb approximately 1.00 acres of low quality, invasive species dominated Bordering Vegetated Wetlands within the Northern Area. The area would be excavated to pre-1957 grades to produce an open water condition at high tide. During low tides, portions of this area would be exposed to provide a mud flat habitat as existed pre-1957. Invasive species present in this area, such as common reed and purple loosestrife, would be removed as part of this activity. The final restored condition would provide approximately 0.90 acres of high quality, high functional value, open water/mud flat habitat (Bordering Land Subject to Flooding) and 0.04 acres of high quality, high functional value, fringe Bordering Vegetated Wetland habitat. The remaining 0.06 acres would be replaced with a gravel/cobble berm along the edge of the river channel to maintain integrity of the river channel and to protect rainbow smelt spawning habitat in this reach of the river. The riparian buffer along the berm, which is the area between 4 to 6 feet elevation and comprises 0.03 acres, would be planted with native riparian vegetation for stabilization and to provide shading of the river channel.

NPS is also proposing to restore and enhance a low quality common reed dominated emergent Bordering Vegetated Wetland located to the southeast of the historic turning basin area. This wetland area is commonly referred to as the "Southern Area". Sediments deposited during the 1957 dam break upstream would be excavated within approximately 2.75 acres of the Southern Area. Invasive species present in this area would be removed as part of this activity. The final restored condition would provide approximately 1.28 acres of high quality, high functional value, open water/mud flat habitat (Bordering Land Subject to Flooding) and 1.47 acres of high quality, high functional value, emergent Bordering Vegetated Wetland.

The above proposed activities would result in impacts to Bordering Vegetated Wetlands as defined under the Massachusetts Wetlands Protection Act. Table ES-1 summarizes impacts to Bordering Vegetated Wetlands and the proposed wetland mitigation measures that would replace the functions lost by these impacts.

Table ES-1. Summary of Impacts to Areas Subject to Protection and Proposed Mitigation

Area	Current Acreage	Proposed Acreage
Turning Basin (Northern Area):		
-vegetated (predominantly purple loosestrife, cat-tail)	1.0	0
-vegetated (diverse native assemblage)	0	0.04
-open water/mudflat	0	0.90
-riparian berm	0	0.06 (0.03 vegetated)
-river channel	No change	No change
Southern Area:		
-vegetated (<i>Phragmites</i>)	2.75	0
-vegetated (diverse native assemblage)	0	1.47
-open water/mudflat	0	1.28
-river channel	No change	No change
Summary:		
-vegetated wetland (BVW)	3.75 (degraded)	1.51 (native)
-open water/mudflat (BLSF)	0	2.18
-riparian berm (RA)	0	0.06 (0.03 vegetated)

BVW = Bordering Vegetated Wetland

BLSF = Bordering Land Subject to Flooding

RA = Riverfront Area

A functional assessment of the existing wetlands, banks, riverfront areas and other resources present at the Saugus Iron Works NHS was conducted by a CH2M HILL professional wetland scientist on March 15, 2006. This functional assessment, and previous marsh characterization studies, were used to evaluate a proposed restoration and enhancement project at the site. Table ES-2 provides a summary of the changes to eight functional values of the existing resource areas as a result of the proposed project. Areas left blank in the table occur when the function is not considered to be an attribute of the resource area per the definitions provided in the Massachusetts Wetlands Protection Act.

Table ES-1. Changes in Function of Areas Subject to Protection as a Result of the Proposed Restoration and Enhancement Project.

	Protection of Wildlife Habitat	Protection of Fisheries	Protection of Land Containing Shellfish	Prevention of Pollution	Storm Damage Prevention	Flood Control	Protection of Groundwater Supply	Protection of Public and Private Water Supply
Banks of or Land Under Rivers that Underlie and Anadromous Fish Run		NC						
Bank Resource Area	NC	NC		NC	NC	NC	NA	NA
Bordering Vegetated Wetland	I	I		I	I	I	NA	NA
Land Under Waterbodies and Waterways	I	I		I	I	I	NA	NA
Bordering Land Subject to Flooding	I				I	I		
Riverfront Area	NC	NC	NC	NC	NC	NC	NA	NA

I = Improved Function, NC = No Change in Function, R = Reduced Function, NA = Not Applicable

Based on the results of the functional assessment comparison of the existing and proposed conditions, a significant improvement in the functional value of the resource areas would be realized as a result of the project. Low quality, low functional value Bordering Vegetated Wetlands would be replaced by high quality, high functional value, native species dominated wetlands and open water/mud flat habitats (Bordering Land Subject to Flooding). Wetland restoration and enhancement activities would increase the flood control, storm damage prevention, pollution prevention, protection of fisheries and protection of wildlife habitat functions of wetlands on site. Land Under Waterbodies and Waterways and Bordering Land Subject to Flooding would be expanded as a result of proposed activities providing additional benefits to flood control, storm damage prevention, pollution prevention, protection of fisheries and protection of wildlife habitat functions of natural resource areas on site.

Note: the full Natural Resources Functional Assessment Report is available on the enclosed CD.

Appendix G

Weir Assessment

Final Report

Restore Saugus River Turning Basin and Dock – Engineering Assessment of the Rock Weir at Hamilton Street Bridge

Saugus Iron Works National Historic Site
Saugus, Massachusetts

NPS Contract No. 1443CX2000 00 1500

Task Order No. T2000 00 1511

PMIS 60214



December 2005

Prepared by



Executive Summary

The National Park Service (NPS) is completing a restoration plan for the Saugus Iron Works National Historic Site. The plan includes restoring a Turning Basin and wetlands along the Saugus River in Saugus, Massachusetts. An engineering analysis was completed to determine the effects that a rock weir structure has on the project site.

The First Iron Works Association placed the large rocks in the Saugus River in the 1950's to form the rock weir, which was intended to enunciate the open water condition of the river and slow tidal surge. The rock weir currently impedes navigation from downstream reaches during low river flow, and the rock weir and the Hamilton Street Bridge impede navigation from downstream locations during tidal events. Currently, the rock weir is not under NPS jurisdiction, however the NPS is very interested in the rock weir because of its close proximity to the project site, and because any changes to the rock weir may affect the hydraulics, salt water intrusion, and geomorphology within the project site.

The analysis presented in this report includes an evaluation of the potential effects of removal of the rock weir on water surface elevations and salinity concentrations in the river within the boundaries of the Saugus Iron Works National Historic Site and downstream to the Hamilton Street Bridge. Also included in the assessment is a brief scope of work that identifies costs, tasks, equipment, and special construction needs that would be needed to remove the weir. This assessment was completed for planning purposes only. It does not include a design or detailed evaluation necessary for actual removal of the structure, nor does it include a stability assessment of the streambed, stream banks, or bridge abutments.

The rock weir creates a backwater condition upstream of the weir for approximately 655 feet. If the rock weir was removed, the backwater condition would be eliminated and the river would flow as it does in the upstream reaches of the project site. If the rock weir was removed, a detailed geomorphic study would be required to determine the effect the removal would have on the river stability and hydraulics.

The rock weir will not likely have a significant effect on the upstream salinity values and it will not affect peak water surface elevations. At the upstream location, the salinity levels peak between approximately background levels and 15 ppt during low freshwater flow and astronomical high tides (i.e. full and/or new moons). The downstream location follows a similar trend and peaks between approximately 5-21 ppt during low freshwater flow and astronomical high tides. At both locations during high river flow, salinity levels decrease and the upstream location has very little salt water intrusion.

The rock weir is breached during all recorded tidal events, it encompasses a small portion of the water column during high tide events, and considering the rate at which the tide rises, the rock weir is crested very early in each tide event. The Hamilton Street bridge may reduce the amount of salt water entering the project site because it is a significant constriction in the river. The constriction caused by the bridge may also be the most significant factor related to the delay between peak salinity values and peak water surface

elevations, although the delay does not appear to have a significant effect on salt water intrusion. The delay is also not expected to have a significant ecological effect.

Note: the full Weir Engineering Assessment Report is available on the enclosed CD.

Appendix H

Drainage and Stormwater Management Assessment

Draft Final Report

Drainage and Stormwater Management

Project:

Restore Saugus River Turning Basin and Dock

Prepared for:

**U.S. Department of the Interior, National Park Service
Saugus Iron Works National Historic Site
Saugus, Massachusetts**



NPS Contract No. 1443C2000001500

Task Order No. T2000001508

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Note: the full Drainage and Stormwater Management report is available on the enclosed CD.

Appendix I

Wetland Delineation

Summary of Wetland Delineation Activities *Saugus Iron Works National Historic Site*

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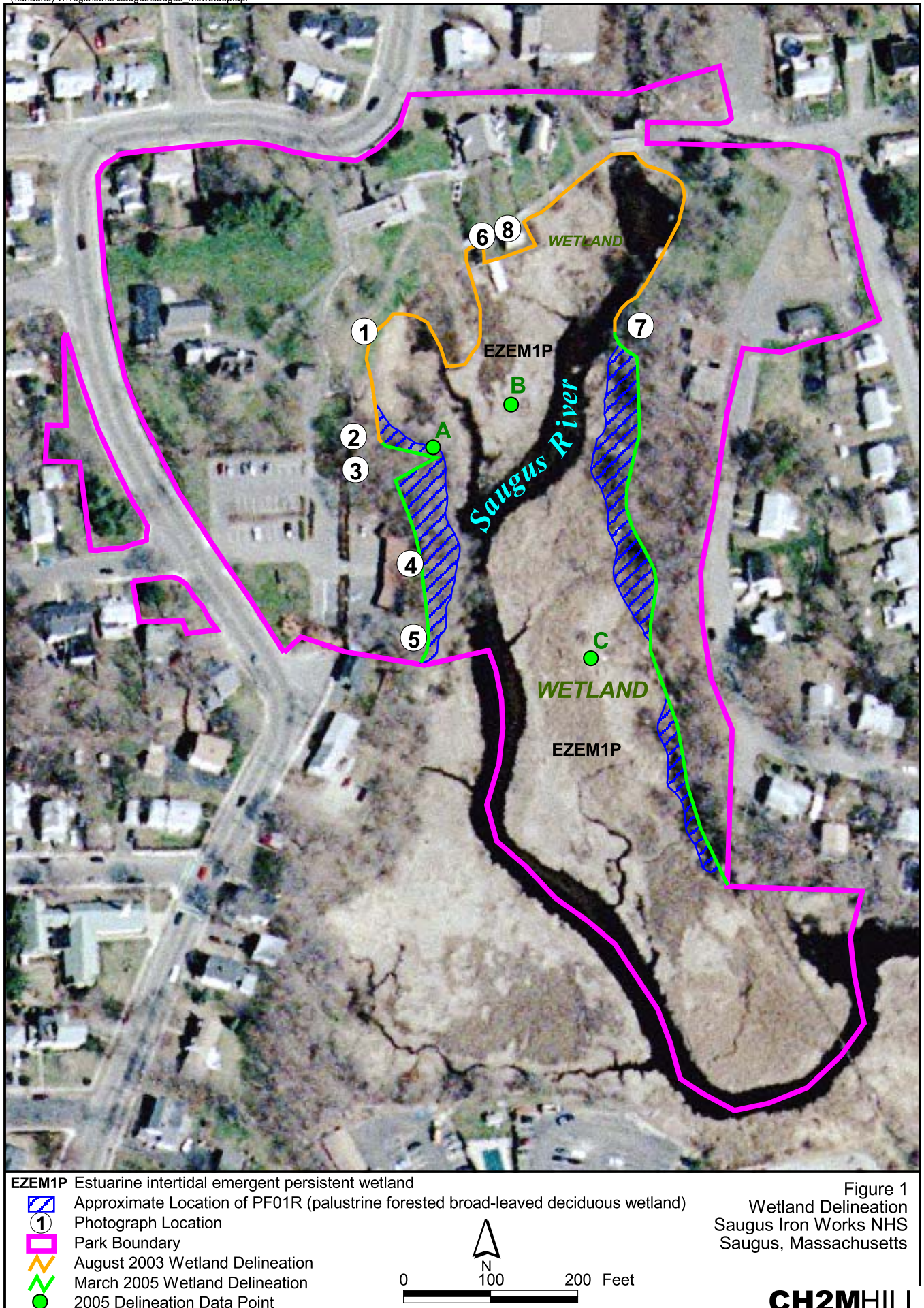
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DATE: June 7, 2005

Introduction

This technical memorandum summarizes the results of field surveys performed to locate the boundaries of state-regulated waterbodies and Bordering Vegetated Wetlands, in addition to federally-jurisdictional wetland resources at the Saugus Iron Works National Historic Site (NHS) in Saugus, Massachusetts. These activities were performed on March 29, 2005 by CH2M HILL wetland scientists in support of design development for the *Restore Saugus River Turning Basin and Dock* project. Figure 1 presents the boundaries of wetland resources delineated during the investigation.

Note: the full Wetland Delineation Report is available on the enclosed CD.



Appendix J

Aquatic Habitat Assessment

Final Report

Saugus River Aquatic Habitat and Benthic Invertebrate Survey

Addendum to the Marsh Characterization Report for
Restore Saugus River Turning Basin and Dock
Saugus Iron Works National Historic Site
Saugus, Massachusetts

NPS Contract No. 1443CX2000 00 1500

Task Order No. T2000 00 1505

PMIS 60214



December 2004

Prepared by



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Executive Summary

The objective of the aquatic habitat and benthic invertebrate survey (CH2M HILL, 2004c) was to document current conditions and species composition and to project which species would most likely benefit from the proposed restoration. The NPS also conducted a nekton (fish and decapod crustaceans) and vegetation survey at the Saugus Iron Works NHS in June-August 2004 (CH2M HILL, 2004c, Appendix B). The gravel and cobble portions of the Saugus River at the NHS have been identified as one of only seven rainbow smelt (*Osmerus mordax*) spawning habitats within the North Coastal Basin of Massachusetts (Chase, 1992).

Aquatic Habitat

The aquatic habitats were mapped and the dominant plant species within each habitat were documented. Three major habitat/substrate types were found in the river channel within the proposed restoration area: sand, gravel/sand, and gravel/cobble habitats. A few scattered mudflat areas were also present at low tide. The reach of the river that runs through the former turning basin area is dominated by shallow riffle/run habitat at low tide, with a predominantly gravel substrate. Embeddedness is low providing good substrate surface area for macroinvertebrates and small fish.

The survey confirmed that the majority of the floodplain within the study area is dominated by invasive, non-native vegetation, predominantly (*Phragmites australis*). Although, a small area dominated by the native species narrow-leaved cattail (*Typha angustifolia*) was found amidst the *Phragmites australis* along the eastern bank of the river. American waterwort (*Elatine americana*), a state-listed endangered plant, was discovered within the stream channel during the NPS vegetation survey.

Benthic Invertebrate Survey

Benthic invertebrate samples were collected from the Saugus River within the Saugus Iron Works NHS to characterize the existing benthic invertebrate community. Amphipods (*Gammarus sp.*) or scuds, were the most abundant organism in the benthic invertebrate community. These organisms comprised 64 percent of the total number of organisms collected. The second most abundant organisms were tubificid worms, which comprised 17 percent of the organisms collected. The results of the benthic invertebrate survey revealed that the benthic community is lacking in pollution-intolerant species, such as *Ephemeroptera* (mayflies) or *Plecoptera* (stoneflies), suggesting poor water quality. However, in comparison to the historical data for this reach of the river, the benthic community is more productive and diverse than it was in 1989, thus suggesting that water quality has improved.

Note: the full Aquatic Habitat and Benthic Invertebrate Survey Report is available on the enclosed CD.

Appendix K

NPS Statement of Findings for Floodplains and Wetlands

Statement of Findings:

Executive Order 11988 *Floodplain Management*

Executive Order 11990 *Protection of Wetlands*

U.S. Department of the Interior, National Park Service Saugus Iron Works National Historic Site Saugus, Massachusetts

NPS Contract No. 1443CX2000 00 1500

Task Order No. T2000 00 1507

PMIS 60214

October 2006



Recommended by Superintendent, Saugus Iron Works National Historic Site

Date

Certification of Technical Adequacy and Servicewide
Consistency by NPS Hydrogeologist

Date

Approved by Director, Northeast Region

Date

A. Introduction

Executive Order 11988 (“Floodplain Management”) and Executive Order 11990 (“Protection of Wetlands”) requires the National Park Service (NPS) and other agencies to evaluate the likely impacts of actions in floodplains and wetlands, respectively. This Statement Of Findings (SOF) has been prepared to comply with Executive Orders 11988 and 11990.

Proposed Action

The National Park Service (NPS) has prepared and made available an Environmental Assessment for Saugus Iron Works National Historic Site (NHS) (Figure 1). The preferred alternative proposes a restoration of the turning basin and waterfront structures (Figure 2) to their condition prior to the 1957 dam breach. It also includes restoration of the portion of the Saugus River south of the historic turning basin area, within site boundaries (henceforth referred to as the “southern area”) to conditions prior to the dam breach.

Because the dock and bulkhead are a full reconstruction; this project does not fall under an exclusion for wetland impacts described in the NPS Procedural Manual #77-1: Wetland Protection for structures in existence prior to May 28, 1980 (original publication date of the NPS Floodplain Management and Wetland Protection Guidelines). Therefore, according to the Procedural Manual #77-1: Wetland Protection, expansion or full reconstruction of waterfront structures and facilities requires full compliance with Director's Order #77-1. The total area impacted directly by the restoration and replacement of the existing dock and bulkhead would be less than one tenth of an acre (3,000 square feet). With impacts less than one tenth of an acre, the project will not require compensation.

The wetland restoration of the turning basin and portions of the river which comprise the remainder of the project would constitute “restoration of degraded (or completely lost) natural wetland, stream, riparian, or other aquatic habitats or ecological processes” and is an excepted action under Director's Order #77-1 and therefore does not require a Statement of Findings for Wetlands. The restoration of the southern wetland by removing the upper sediment (deposited from the upstream dam breach) and restoring an emergent wetland with native plant species is a reconstruction of the wetland to its previous condition.

Bulkhead and Dock. The entire wooden bulkhead and dock structure, including timber crib supports, would be removed for landfill disposal and replaced with new wooden members. Analyses would be conducted on the existing retaining wall, timber, historic joints, and other components to determine their ability to meet design requirements. Alternatives or reinforcement methods would be evaluated in the case that the existing materials are not sufficient. The

reconstructed dock would be designed to withstand personnel and maintenance vehicles loads and meet applicable code requirements for public walkways. The materials used to replace the bulkhead and dock would meet or exceed the required standards for water quality in aquatic environments.

The existing wharf consists of a native oak timber bulkhead approximately 6.5 feet high and approximately 110 feet long. It extends from the eastern edge of the existing slag pile to the western end of the rectangular fill area containing the reconstructed 17th Century warehouse. With the exception of a 12 -foot-long section across the tailrace for the water wheel at the western end of the forge building, the timber bulkhead is a facing constructed over an underlying concrete retaining wall. In the tailrace area, the timber bulkhead is a free-standing structure sitting upon the top of a lowered section of the concrete retaining wall.

The existing pier is a 36-foot-long, 12-foot-wide timber pier, extending into the turning basin from the existing wharf. The pier is connected to the wharf and is supported on two rock-filled timber crib piers located within the turning basin.

The wooden bulkhead components of the wharf structure have deteriorated to the point where they will require complete replacement. Although portions of the wooden structures beneath the water line were unobservable, it can probably be assumed that those materials, as well may require complete replacement.

The general deterioration of the oak members suggests that the design life is substantially less than 50 years. The oak members are not treated with creosote, therefore special disposal methods are not anticipated for the material.

The sediments in front of the bulkhead would be removed and disposed of as part of the Turning Basin restoration. There is a concrete retaining wall behind the bulkhead; therefore no soils would be removed from behind the bulkhead.

The new oak members would be treated with a wood preservative approved for use on this type of structure in wetlands. Because of the historical significance and physical location of the site, any preservative or treatment must meet several criteria:

- cause no discoloration of the wood
- must be environmentally safe
- must be able to endure a marine environment

Currently, NPS staff treat natural oak timbers with the product HydroClear distributed by PRG, Inc. This product is applied to the timbers once they are in place. This product meets all of the criteria.

Site Description

Saugus Iron Works National Historic Site (NHS) in Saugus, Massachusetts, is the site of the first integrated iron works in North America, which operated from 1646 to 1668. Saugus Iron Works NHS is an 8.51-acre site located about 10 miles north of Boston in Essex County, Massachusetts (Figure 1). It preserves and interprets the archaeological and historic sites, structures, objects, and the reconstructed historical scene associated with the first successful iron works in America.

Major landscape features were severely altered in 1957, when the dam breach north of the property caused extensive sedimentation in the site's restored harbor. Consequently, today, the river is choked with invasive plant species and is impacted by industrial contaminants derived from the urbanized Saugus River Watershed, as well as from waste material produced by the historic iron works (i.e., the slag pile). A brackish marsh dominated by narrow-leaved cattail (*Typhus angustifolia*) and *Phragmites* has replaced the open-water turning basin and native low-lying marsh grasses that previously existed. The marsh obscures the reconstructed turning basin and hinders interpretation of its role in the original iron-making operations. The NPS manages the river and marsh as a damaged cultural landscape and natural resource area.

Floodplains: The project site is within the 100-year floodplain of the Saugus River. A large portion of the site is comprised of floodplain, in the form of side channel bars on either side of the Saugus River, which are 1 to 3 feet above mean high tide and support the wetland areas within the site. Currently maintained by the NPS, the 100-year floodplain abuts the proposed restoration area and dock. A construction access road would temporarily place fill within areas of the 100-year floodplain. The fill would be removed at the end of the project, ensuring no net loss of storage capacity.

Increasing development upstream of Saugus Iron Works NHS increases the potential for seasonal flooding. A flood damage control project for the Saugus River and tributaries has been underway since 1989. The U.S. Army Corps of Engineers (USACE) installed a gauge to measure river flow from the adjacent Henkel property, immediately upstream from the site. The USGS now monitors this gauge. Per Federal Emergency Management Agency (FEMA) maps, and as a result of the particular restoration activities at Saugus Iron Works NHS, it is anticipated that only beneficial impacts would affect the floodplains.

Brackish wetlands: These herbaceous and shrubby wetland communities occur statewide in brackish waters along protected low energy estuarine shorelines of the Atlantic and Gulf coasts. Fresh/salt water marshes in the Saugus Iron Works area occur as a transitional bordering vegetated wetland zone between uplands and the river channel.

Freshwater wetlands: These wetland communities are dominated by a wide assortment of herbaceous and woody plant species growing on sand, clay, marl, and organic soils in areas of variable water depths and inundation regimes. Freshwater wetlands at Saugus Iron Works occur as vegetated fringing wetlands on either side of the river channel and within the turning basin in the

project area. Preliminary vegetation reconnaissance observed at least 27 species of plants within the bordering vegetated wetland area, of which 16 are non-native and invasive. The wetland is dominated by common reed (*Phragmites australis*) and narrowleaf cattail (*Typhus angustifolia*). Other abundant species include purple loosestrife (*Lythrum salicaria*), Japanese knotweed (*Polygonum cuspidatum*), multiflora rose (*Rosa multiflora*), and curly pondweed (*Potamogeton crispus*). These introduced species are considered to be aggressive invaders of disturbed or damaged habitats and tend to replace more valuable native species. An ecologically valuable area, the stream is utilized by rainbow smelt (*Osmerus mordax*) during spawning and during marsh characterization, a state endangered plant, American waterwort (*Elatine americana*) was found in the Saugus River stream channel.

The wetlands adjacent to the bulkhead that would be impacted by the bulkhead and dock replacement are dominated by common reed, purple loosestrife and narrow-leaf cattail. Other abundant species include Japanese knotweed (*Polygonum cuspidatum*), multiflora rose (*Rosa multiflora*), and curly pondweed (*Potamogeton crispus*). These introduced species are considered to be aggressive invaders of disturbed or damaged wetland habitats and tend to replace more valuable native species.

Functions and values: Both estuarine and freshwater wetlands serve a wide range of ecological functions. They are valuable as holding areas for rising flood waters; vegetation reduces floodwater velocity and depletes its destructive energy. Wetland vegetation also form buffers against shoreline erosion by absorbing current and storm energy, stabilizing substrates, and trapping suspended sediments. Filtration of sediments, nutrient pollutants, and toxic substances has the added advantage of improving water quality.

Exotic vegetation directly affects natural resources and can result in severe and persistent changes to habitat conditions and ecosystem functions, disrupting natural processes. Woody plants are also becoming established in the marsh area and have begun to visually block the east bank of the Saugus River. As a result, control of invasive species and woody plants are critical components of the restoration project.

The current condition of the wetlands, particularly in the southern area, which is dominated almost exclusively by *Phragmites*, has led to a decrease in the habitat value and diversity relative to the previous condition. The combined effect of the sedimentation and dense growth of invasive plants has reduced the amount of viable nursery habitat for fish, reduced the amount of foraging habitat available for shorebirds (former mudflat areas in the turning basin), and has reduced the carrying capacity of the wetland to support aquatic mammals (e.g., muskrat) and waterfowl because the invasive plant species *Lythrum salicaria* and *Phragmites australis* do not provide good habitat for foraging or nesting. The turning basin once provided foraging habitat for shorebirds at low tide and fish habitat at high tide, but this area is now mostly filled in with sediment and vegetated by invasive plant species. There is little mudflat of functional value remaining under low tide conditions.

General Characterization of Flooding Nature

The proposed action at Saugus Iron Works is found to be in an applicable regulatory floodplain and relocated the action to a non-floodplain is not considered a viable option. The restoration is classified as a "Class I" Action, as Saugus Iron Works is within the 100-year floodplain boundary. The area of the Class I action is within the 100-year floodplain which, according to the NPS Director's Order 77-2, Floodplain Management, has a one percent chance of flooding during one year and a 39% change of flooding during 50 years.

B. Justification for Use of the Floodplain

Removal and in-kind replacement of the existing bulkhead and dock. Restoration of these elements of the historic waterfront area would restore the cultural landscape of the site, improve visitor understanding of the historical context in which these structures were used, and allow visitors better access to the waterfront area. The existing bulkhead is approximately 6.5 ft high and 110 ft long. The existing dock consists of a 36 ft by 12 ft timber plank supported by three 9 inch (in.) by 7 in. stringers (girts). Upon evaluation of the existing conditions the entire wooden bulkhead and dock structure would need to be removed and replaced with new wooden members taking into account stability analyses and designed to withstand expected design loads (personnel and maintenance vehicle loads) as well as applicable code requirements for public walkways. Currently, site visitors are restricted from using the dock because of safety concerns related to its degraded condition.

Investigation of Alternative Sites

The project itself is location dependent. It is the turning basin and dock that are in need of restoration, and alternative sites do not exist at Saugus Iron Works NHS.

C. Hydrologic Risk

Conditions associated with flooding in the proposed project location are not considered particularly hazardous. Depths of flow during the 100-year flood are relatively low, 1 to 3 feet, and velocities are predicted to be very small due to low gradient. Furthermore, flooding generally occurs in this area slowly as a result of prolonged rainfall making warning and evacuation a practical option for protection of human life. Flooding related to hurricanes and other intense tropical storms also can

occur but warning is possible with these storms as well. The restoration project would increase the net flood storage capacity within the project area.

D. Mitigative Actions

The following activities would be conducted during the design and implementation phases of the selected alternative to lessen the adverse effects of the action.

- Special care would be provided in developing excavation limits and specifications for work near the base of the slag pile. Stability evaluations would be conducted to ensure that work does not destabilize the pile as every effort would be made to avoid any impact to the slag pile during the project.
- The final design would include regrading and stabilization of the drainage swale to the west of the slag pile to minimize the potential for erosion and transport of slag materials downgradient.
- The NPS would continue to maintain and enforce current access restrictions to the slag pile as outlined in the existing "Notice of Activity and Use Limitation".
- A sediment barrier would be created along the perimeter of the excavation where it abuts the Saugus River channel. The conceptual sediment barrier between the excavation and the river channel includes a physical barrier to filter out and collect sediment along the edge of the excavation. Its intent is to contain and filter sediment from water within the excavation.
- Silt fencing along the perimeter of dewatering/loading areas would collect and contain sediment generated during dewatering, processing and loading. Its intent is to remove sediment at the source, thereby minimizing the volume of sediment, which must be contained and collected within the excavation and perimeter barrier.
- The project would be timed around the rainbow smelt annual spawning to ensure they do not experience impacts.

Compliance

Federal regulations would take precedence over State and locally administered regulations.

National Environmental Policy Act

The Environmental Notification Form, the Environmental Assessment, this Statement Of Findings for EO 11990 and 11988, and the Finding Of No Significant Impact, when signed, would complete the requirements for the National Environmental Policy Act (NEPA) for this project. It is the

intention of the NPS to file jointly under NEPA and the Massachusetts Environmental Policy Act (MEPA).

United States Army Corps of Engineers (USACE) Permits

Actions proposed would impact waters which are considered waters of the United States. Therefore the proposed actions pertaining to wetlands restoration and the dock are subject to USACE review. A permit application would be made to the USACE for proposed activities, which are regulated by that agency in conformance with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act.

National Pollution Discharge Elimination System (NPDES)

Large construction projects, like that of Saugus Iron Works NHS Turning Basin and Dock Restoration Project, may need to obtain coverage under the NPDES Stormwater Construction General Permit because it approaches a disturbance nearing 4 acres of land. If determined a requirement, the NPS would submit a Notice of Intent to United States Environmental Protection Agency (USEPA) and must develop and implement a Stormwater Pollution Prevention Plan, detailing construction activities, erosion control measures, and inspection schedules to be implemented during construction, as detailed under the Federal Water Pollution Control Act.

Federal Consistency Review

The Federal Consistency Review is regulated by the Massachusetts Office of Coastal Zone Management (CZM). Any coastal project that requires a Federal license or permit, is implemented by a Federal agency, or is carried out with Federal funds must be approved by CZM before the Federal activity can take place. After receiving the final MEPA Certificate for the proposed project, the NPS would submit a copy of the Certificate, a copy of the Federal license or permit application, and a Federal consistency certification that describes the project's compliance with CZM's policies.

401 Water Quality Certification

The 401 Water Quality Certification for Dredging and Discharge is administered by the Division of Wetlands and Waterways within the Massachusetts Department of Environmental Protection (DEP). The 401 review ensures that a proposed dredge and/or fill project that can result in the discharge of pollutants complies with Massachusetts Surface Water Quality Standards, the Massachusetts Wetlands Protection Act, and otherwise avoids or minimizes individual and cumulative impacts to Massachusetts waters and wetlands.

The NPS has submitted an application for 401 Water Quality Certification.

Federal Endangered Species Act and Natural Heritage Endangered Species Program (NHESP)/Massachusetts Endangered Species Act

Federal Endangered Species Act and NHESP/Massachusetts Endangered Species Act protects and lists endangered or threatened species or species of concern and their habitat. The act also prohibits any alteration of significant habitat of any protected species. The Massachusetts

program coordinates with the Federal Endangered Species Act, administered by the U.S. Fish and Wildlife Service (USFWS). The NHESP and USFWS have issued a letters concurring that no known threatened or endangered species currently exist at Saugus Iron Works NHS dated October 7 and October 8, 2004, respectively. The NHESP and USFWS would be immediately notified if any other endangered, threatened or species of concern is discovered within the project area.

Federal Fisheries Regulations

Federal Fisheries Regulations aim to protect Essential Fish Habitat (EFH), including the waters and substrates necessary for fish to spawn, breed, feed or grow to maturity. After notification of a project proposal, NMFS must develop EFH Conservation Recommendations for the project. These recommendations are reflected in the Federal permit. A letter dated September 15, 2004, from NMFS states that "No threatened or endangered species under the jurisdiction of the National Marine Fisheries Service are known to exist in the Saugus area. Therefore, no consultation pursuant to Section 7 of the Endangered Species Act of 1973, as amended, is required."

National Historic Preservation Act and Massachusetts Historic Properties, protects properties that are on or eligible for listing on the National Register of Historic Places. The primary regulation is Section 106 of the National Historic Preservation Act, requiring Federal agencies to account for the effects of Federal projects on properties listed or eligible for listing on the National Register. The NPS has received confirmation from the State Historic Preservation Officer in a "no adverse impacts" concurrence letter dated March 2, 2004. Because soils below the 1957 level would remain undisturbed, the project is expected to have no impact on potential archeological deposits.

E. Conclusion

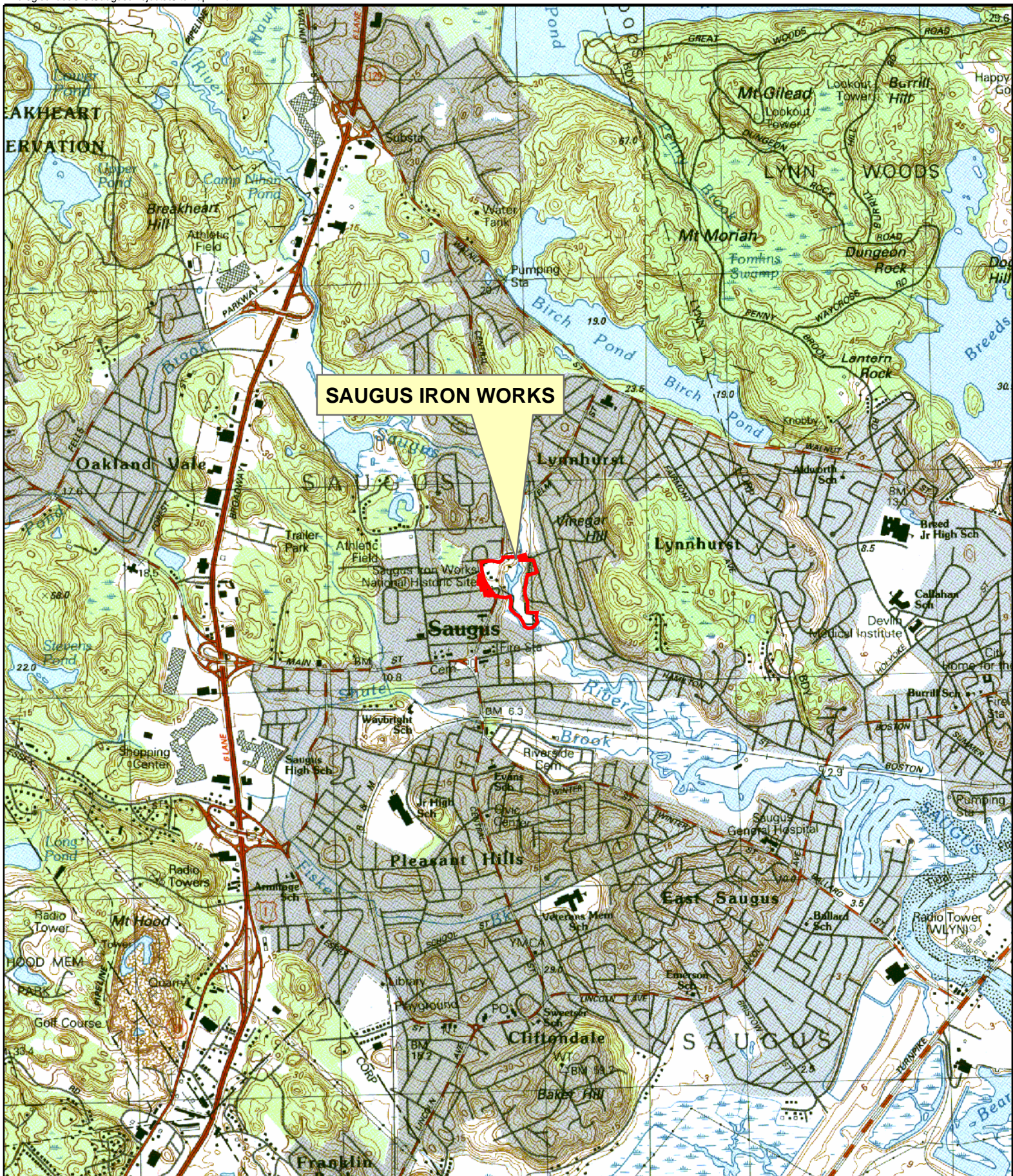
The improvement of water quality and biodiversity would enhance the habitat for aquatic and terrestrial organisms at Saugus Iron Works NHS. In doing so, the preservation and interpretation of the rich historic scene, central to Saugus Iron Works NHS mission, would also be served. It is the responsibility of the NPS to restore the open water condition of the historic tidal basin to reconstruct the cultural landscape of the site. The proposed restoration is essential to visitors' understanding that the iron works was located on the river to facilitate the transport of raw materials and the shipping of finished iron goods to local and international markets.

The NPS concludes that there is no other practicable alternative for the developments proposed. The proposed project would increase flood storage capacity, increase biodiversity in the *Phragmites*-dominated wetland and enhance the cultural and ecological landscape of the site. With design of the project to prevent flood damage, remove contaminated sediments and implement an emergency

evacuation plan, the risk to life and property would be minimized. There would be no significant adverse effects on wetland or floodplain values. The proposed restoration would result in a net gain of floodplain for the area equaling the total amount of sediment removed minus the minimal volume that may be utilized by the new dock, bulkhead and rock wall. The volume is considered minimal change as the existing conditions already include a dock, bulkhead and rockwall. The project would restore 3.58 acres of *Phragmites*-dominated, contaminated wetland to a high-value, diverse habitat. Mitigation would include good design through sustainable design principles, appropriate siting, and best management practices during and after construction. The NPS finds the proposal to be consistent with Executive Orders 11988 and 11990 (Wetland Protection) and the NPS no-net-loss of wetlands policy.

Maps showing the project area (Figure 1), project site (Figure 2), restoration plan (Figure 3) and wetlands and 100 year floodplain (Figure 4) are attached.

Figures



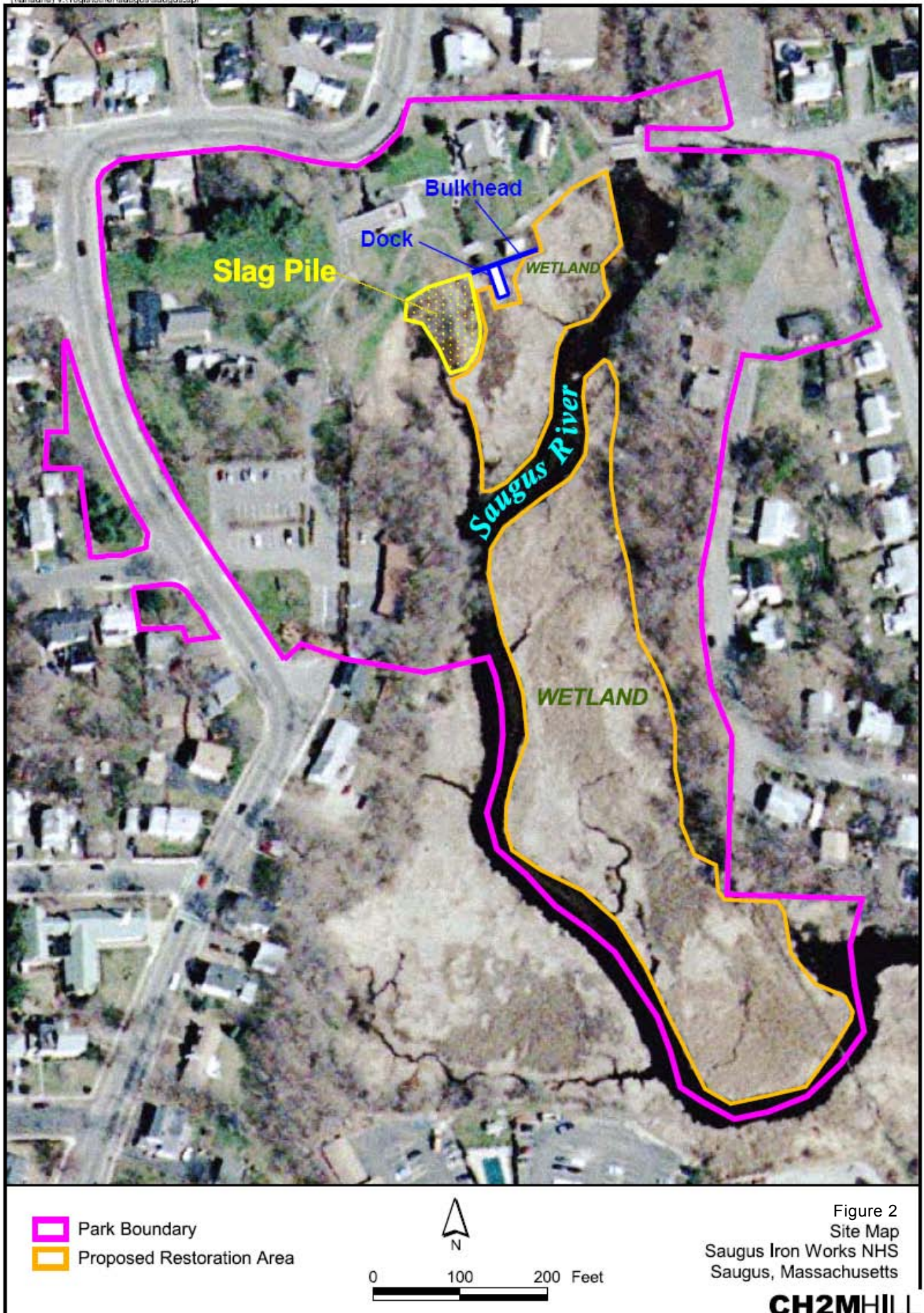
SAUGUS IRON WORKS

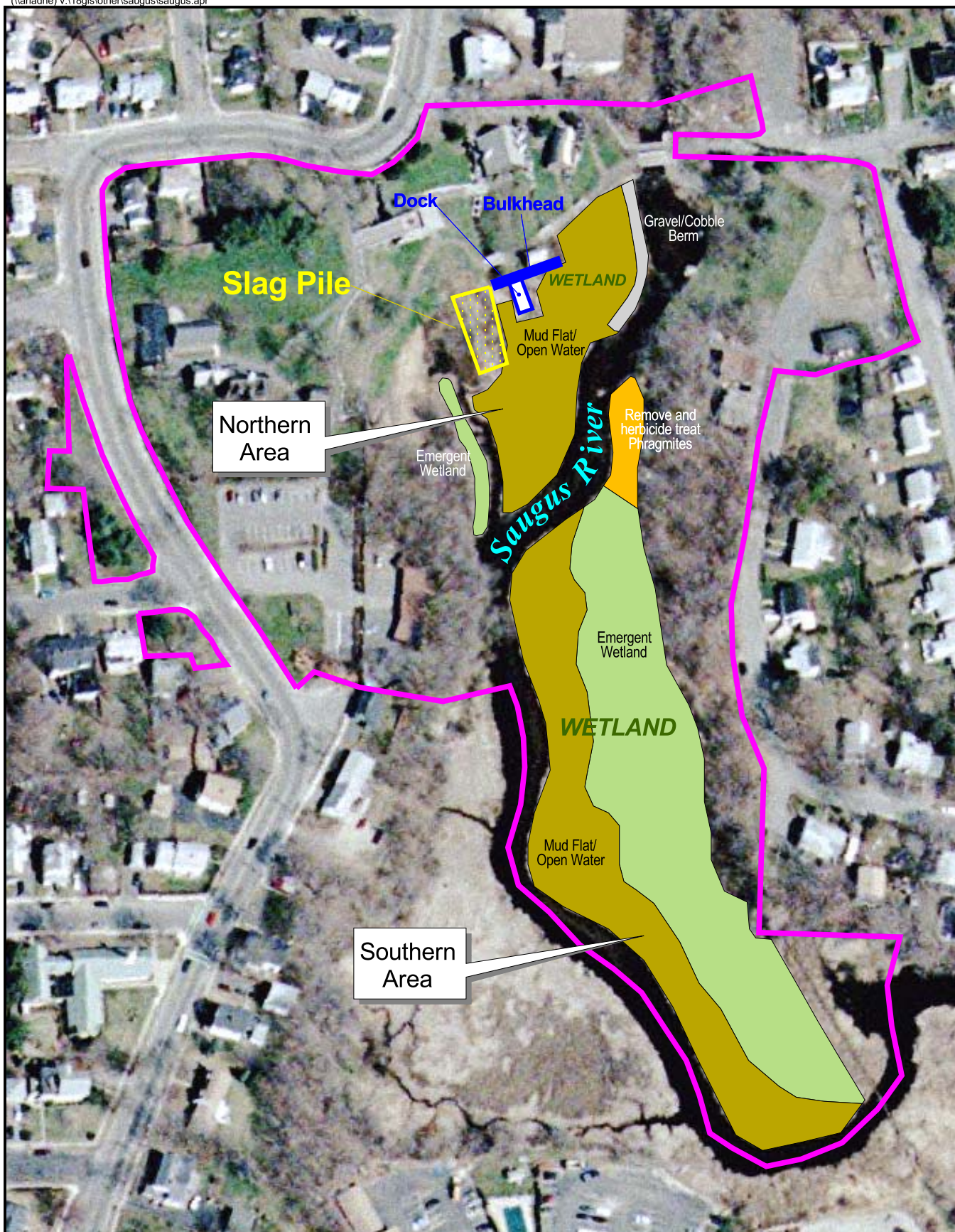
Legend
 Site Boundary



0 1,000 2,000 3,000
Feet

Figure 1
Site Map
Saugus Iron Works NHS
Saugus, Massachusetts





 Park Boundary

Areas shown are approximate; please see construction drawings for actual boundaries.

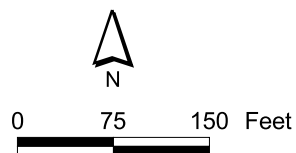
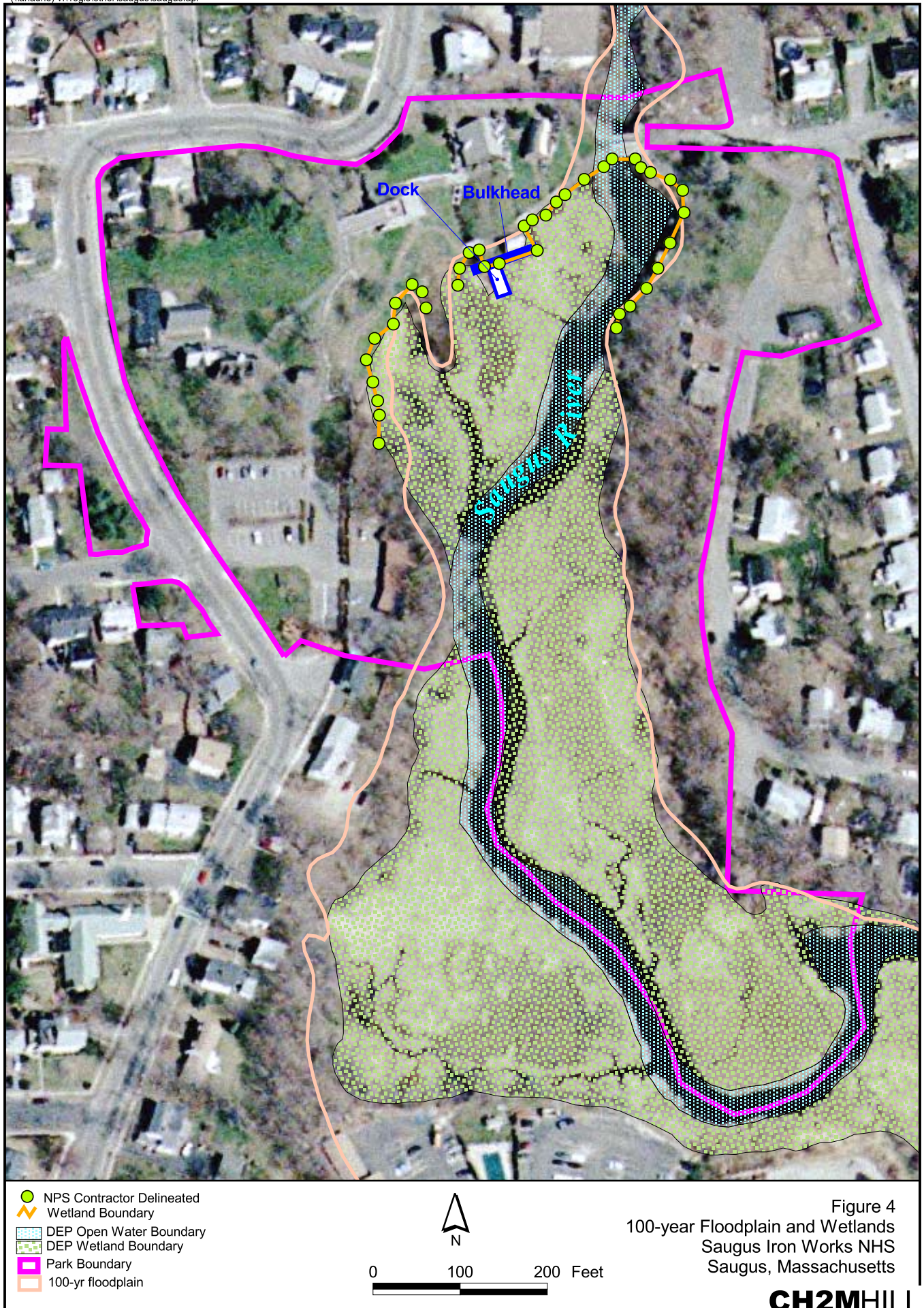


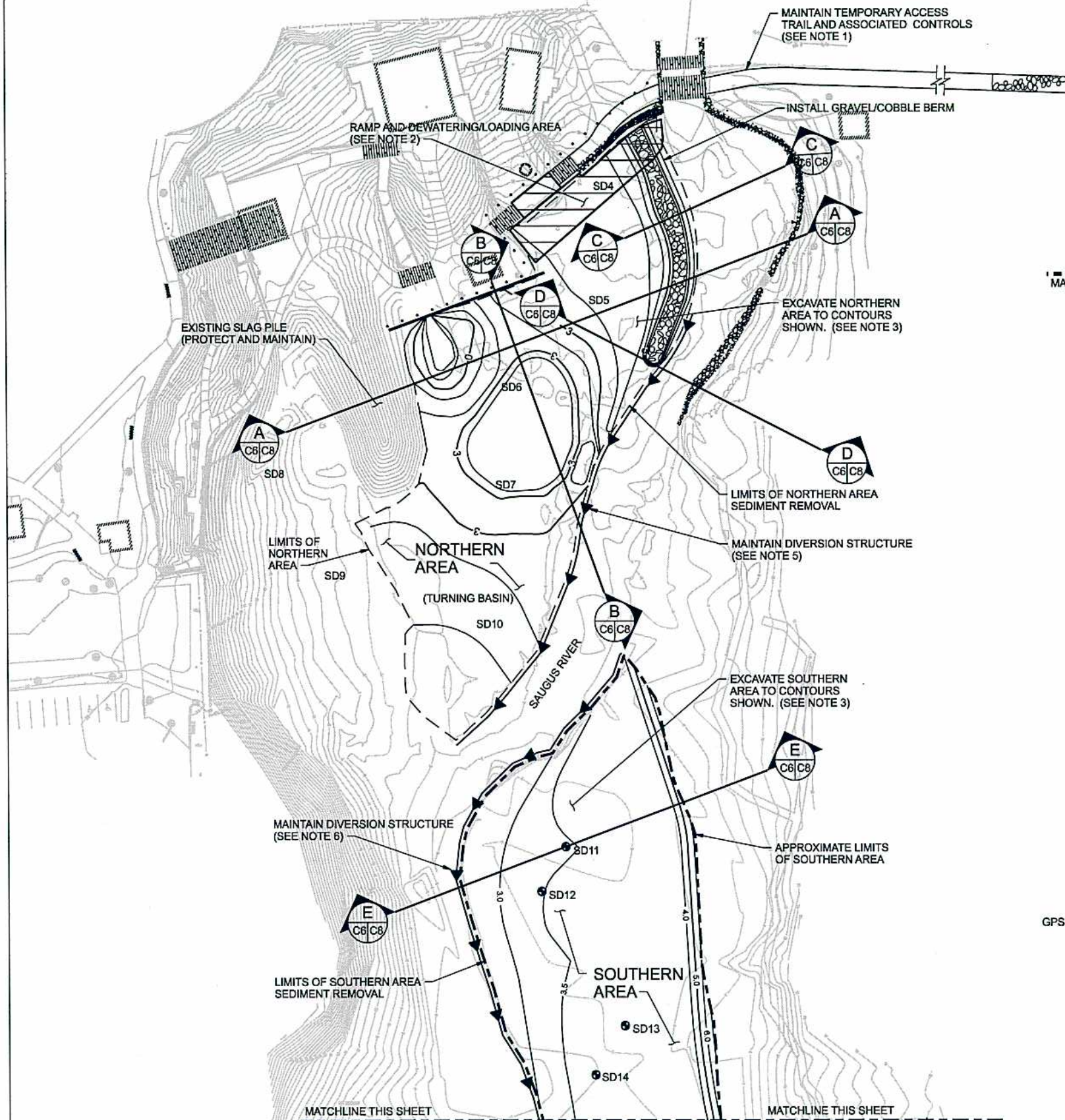
Figure 3
Restoration Plan
Saugus Iron Works NHS
Saugus, Massachusetts



Appendix L

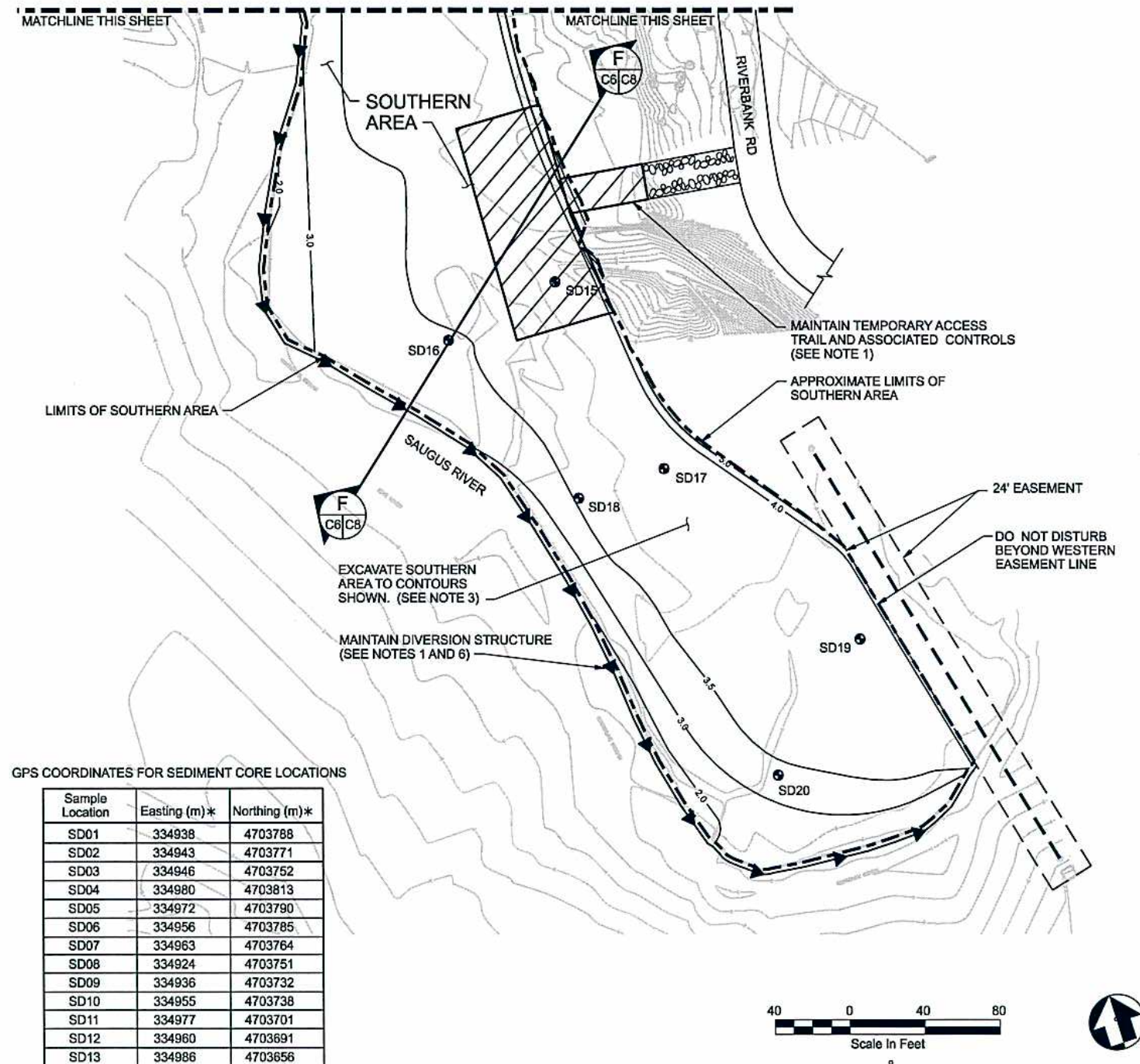
Draft Construction Documents

Note: the following drawings are referenced frequently in the text, but the full set of Draft Construction Documents are available on the enclosed CD.



NOTES:

1. MAINTAIN ACCESS TRAIL, EROSION AND SEDIMENT CONTROLS, AND ACCESS CONTROLS THROUGHOUT CONSTRUCTION WITHIN PROTECTED WORK AREAS.
2. EXCAVATE TOWARD APPLICABLE DEWATERING/LOADING AREAS. REMOVE DEWATERING/LOADING AREAS LAST.
3. REMOVE SEDIMENT TO CONTOURS SHOWN.
4. SEDIMENT IN SAMPLING LOCATIONS SD06, SD07, SD10, SD12, SD16, AND SD20 EXCEEDED MCP RCS-1 VALUES FOR PPM's AND/OR PAH's. SEGREGATE EXCAVATED MATERIALS FROM THESE AREAS TO CONFIRM DISPOSAL REQUIREMENTS.
5. TEMPORARY DIVERSION STRUCTURE AROUND NORTHERN AREA SHALL REMAIN IN PLACE UNTIL ALL WORK IN TURNING BASIN IS COMPLETE.
6. TEMPORARY DIVERSION STRUCTURE AROUND SOUTHERN AREA SHALL REMAIN IN PLACE UNTIL EXCAVATION AND WETLAND PLANTING OPERATIONS ARE COMPLETED IN THAT AREA.



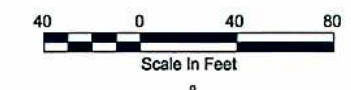
GPS COORDINATES FOR SEDIMENT CORE LOCATIONS

Sample Location	Easting (m)*	Northing (m)*
SD01	334938	4703788
SD02	334943	4703771
SD03	334946	4703752
SD04	334980	4703813
SD05	334972	4703790
SD06	334956	4703785
SD07	334963	4703764
SD08	334924	4703751
SD09	334936	4703732
SD10	334955	4703738
SD11	334977	4703701
SD12	334960	4703691
SD13	334986	4703656
SD14	334970	4703646
SD15	335003	4703613
SD16	334970	4703602
SD17	335020	4703578
SD18	335007	4703562
SD19	335047	4703548
SD20	335035	4703521

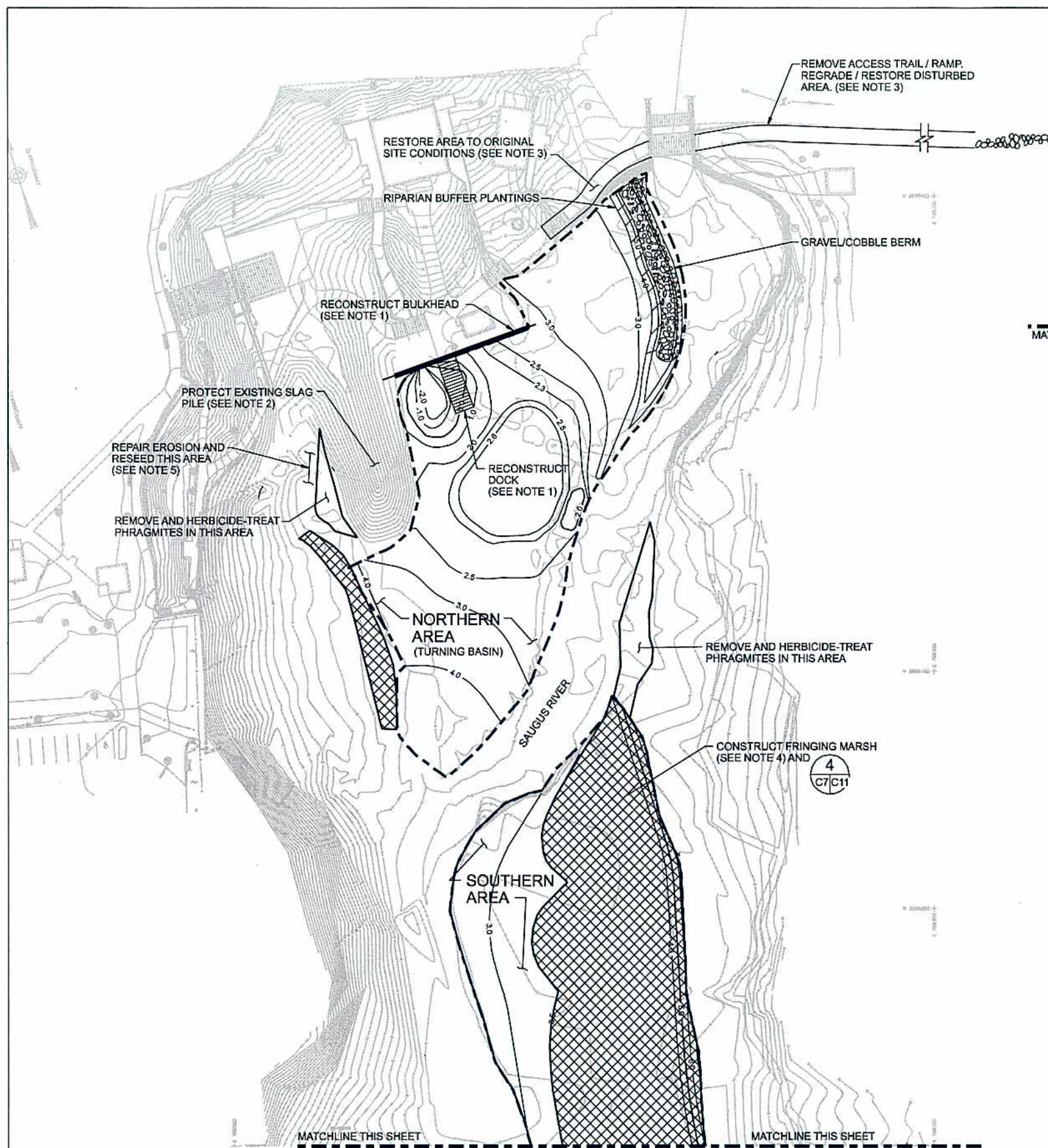
* NAD83, UTM zone 19

LEGEND

SD1 SEDIMENT SAMPLING LOCATION (APRIL 2004)

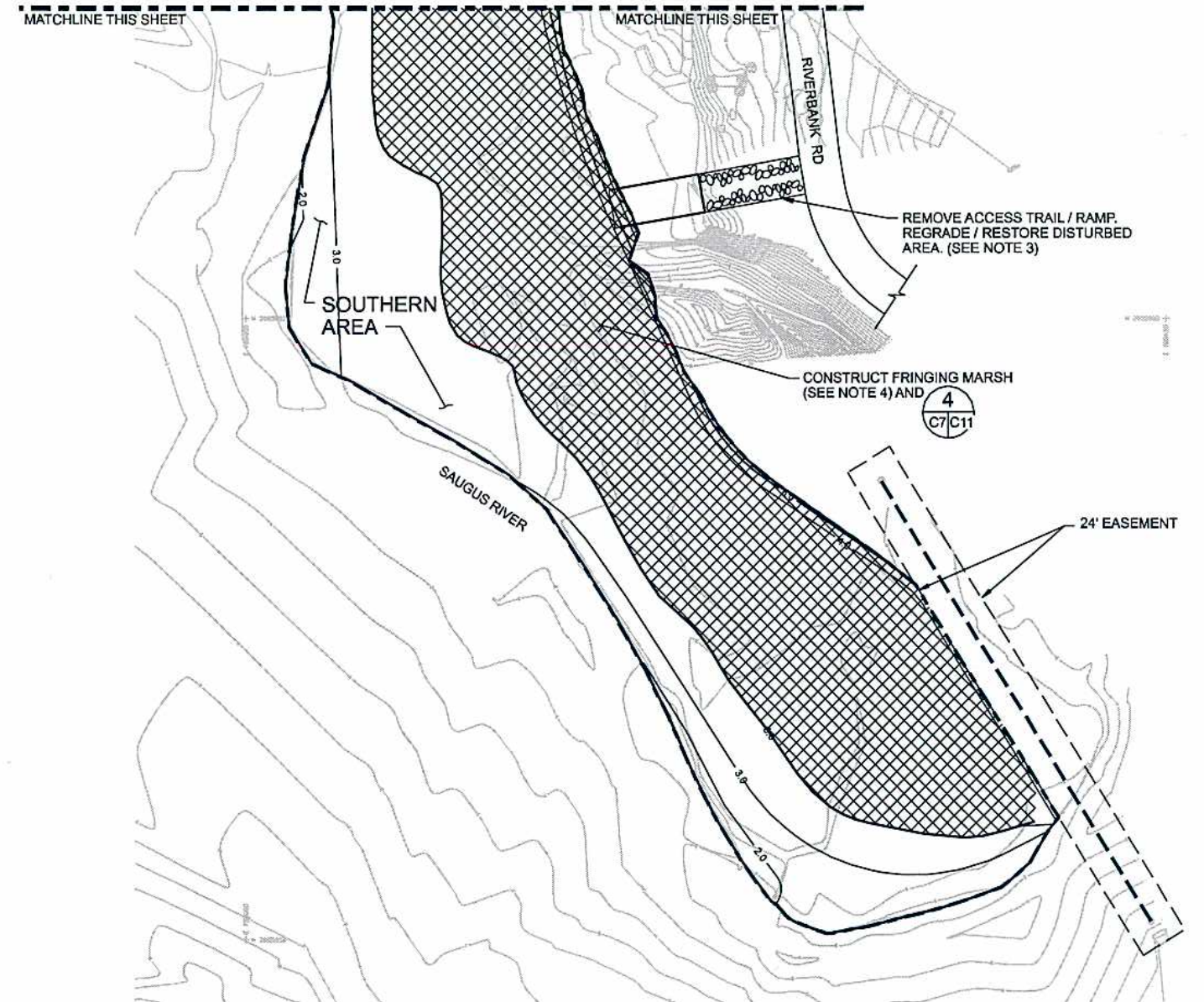


DESIGNED: E. UNDERWOOD	SUB SHEET NO. C6	TITLE OF DRAWING EXCAVATION AND GRADING PLAN	DRAWING NO. 444
TECH. REVIEW: L. SHAFFER			41,006
DATE: SEPT 2005		SAUGUS IRON WORKS NHS	PKG. NO. 60214
			SHEET 7
			OF 20

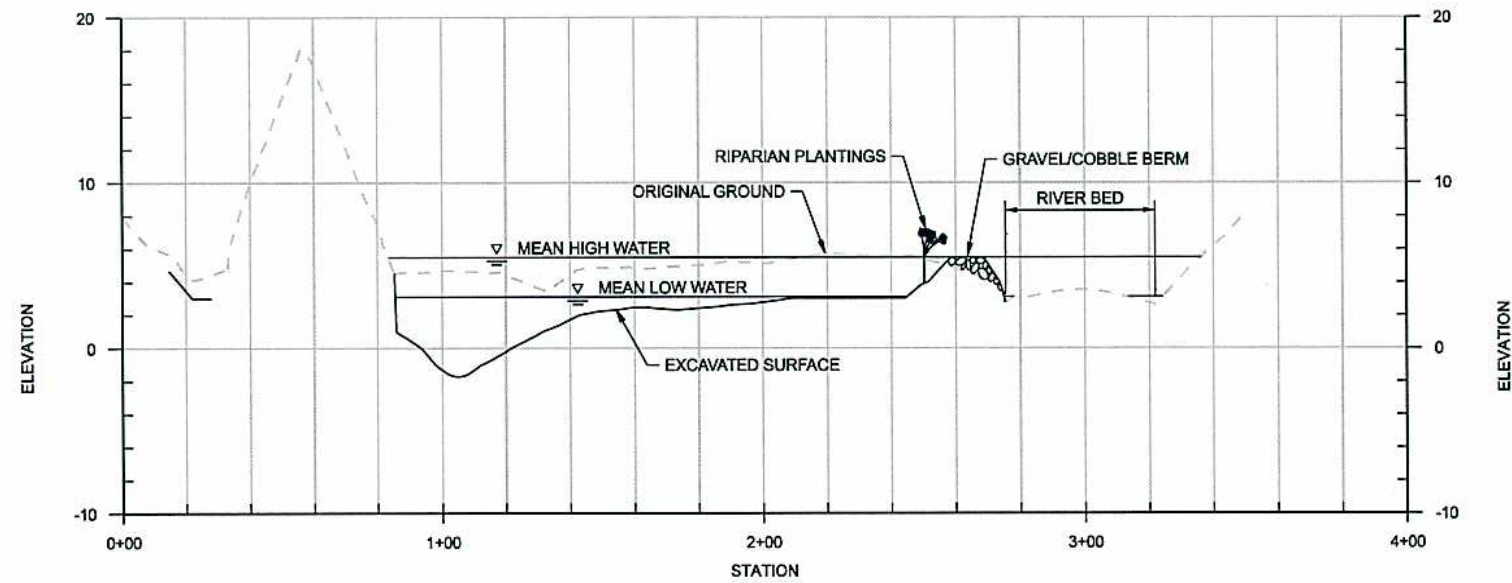


NOTES:

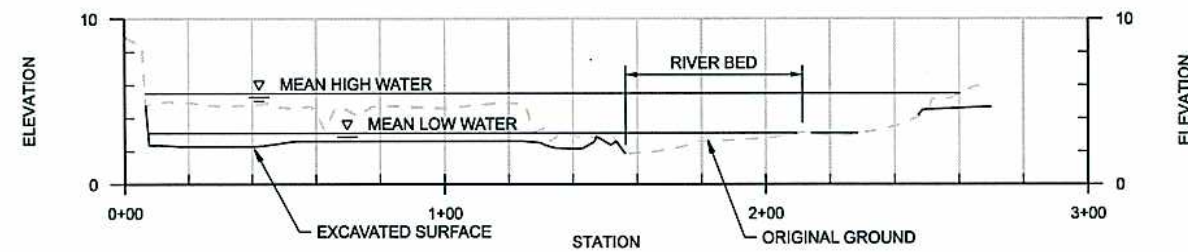
1. RECONSTRUCT TIMBER BULKHEAD AND DOCK WITH IN-KIND CONSTRUCTION. SEE SHEETS C9 AND C10.
2. INSPECT TOE OF SLAG PILE. PROVIDE STONE ARMORING ON PORTION OF TOE BELOW HIGH TIDE LINE IF SIGNS OF ACTIVE EROSION ARE PRESENT. OTHERWISE, LEAVE PILE AS IT EXISTS.
3. UPON COMPLETION OF WORK, REMOVE BRIDGE REINFORCEMENTS, RAMPS, AND ACCESS CONTROLS. RESTORE SURFACE, TRAILS AND BRIDGES TO PRE-CONSTRUCTION CONDITIONS.
4. THE WETLAND PLANTING TABLE ON SHEET C11 CONTAINS A PRELIMINARY LIST OF SPECIES BASED ON CURRENT KNOWLEDGE OF SALINITY IN THE PROJECT AREA.
5. NO EXCAVATION IS PERMITTED IN THIS AREA. FILL EROSION FEATURES WITH TOPSOIL AND SEED.
6. INSTALL GOOSE FENCING IN PLANTED AREAS. SEE 4 C7/C12



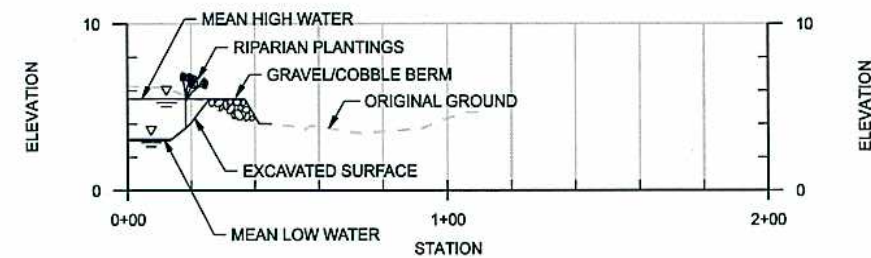
DESIGNED: E. UNDERWOOD	SUB SHEET NO. C7	TITLE OF DRAWING RESTORATION PLAN	DRAWING NO. 444
TECH. REVIEW: L. SHAFFER			PKG. NO. 60214
DATE: SEPT 2005		SAUGUS IRON WORKS NHS	SHEET 8
			OF 20



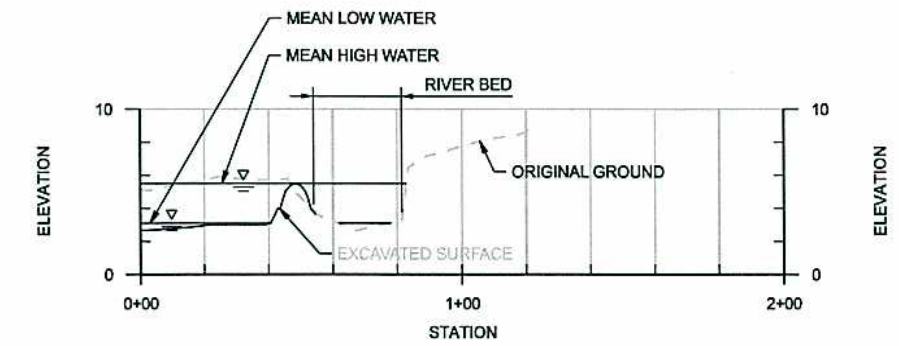
A SECTION
C6 C8



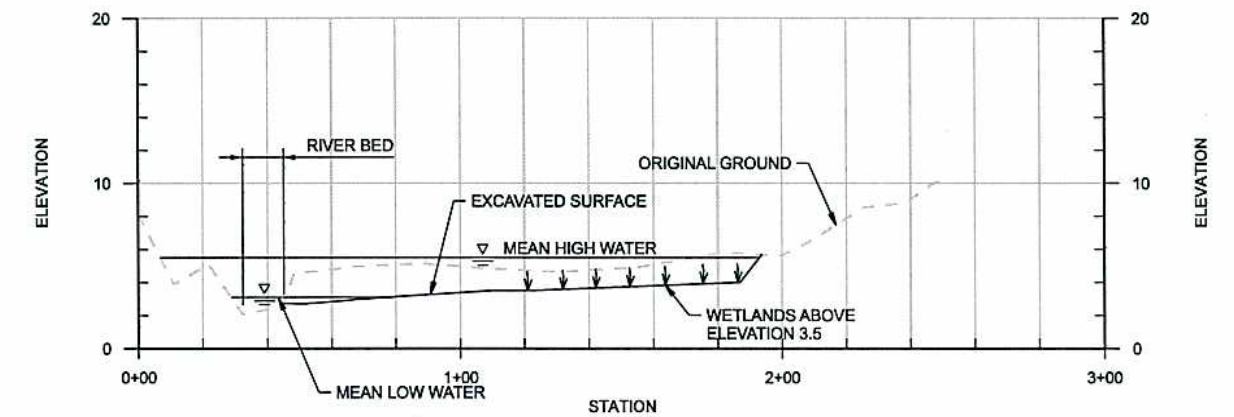
B SECTION
C6 C8



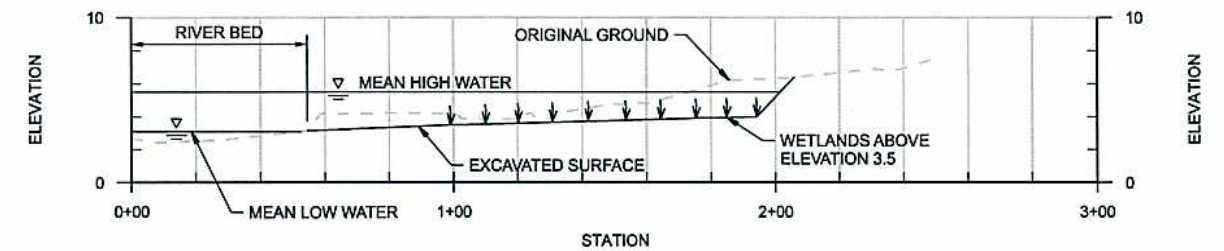
C SECTION
C6 C8



D SECTION
C6 C8



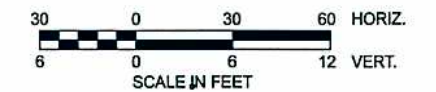
E SECTION
C6 C8



F SECTION
C6 C8

NOTES:

1. BOTTOM OF EXCAVATION APPROXIMATES 1954 CONTOURS. DO NOT EXCAVATE BELOW LIMITS SHOWN.
2. MEAN HIGH WATER AND MEAN LOW WATER ELEVATIONS ARE BASED ON DATA MONITORING BETWEEN MAY 26, 2004 AND JULY 23, 2004.
- MEAN HIGH WATER ELEVATION = 5.5 FEET
- MEAN LOW WATER ELEVATION = 3.1 FEET



DESIGNED: E. UNDERWOOD	SUB SHEET NO. C8	TITLE OF DRAWING TYPICAL SECTIONS	DRAWING NO. 444
TECH. REVIEW: J. BOOTH		SAUGUS IRON WORKS NHS	41,006
DATE: SEPT 2005			PKG. NO. 60214
			SHEET 9
			OF 20

Appendix M

Chapter 91 Permit Application

Note: a revised Chapter 91 license application will be submitted because the stone wall rehabilitation project is being permitted separately from the Restore Saugus River Turning Basin and Dock project. The license application included here lists both projects on the application.

Application for Chapter 91 License-WW01b

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



For assistance in completing this application, please see the "Instructions".

A. Application Information (Check one)

Name (Complete Application Sections)	Check One	Fee	Application #
SIMPLIFIED -			
Water-dependent and Nonwater-dependent (A-E)	<input type="checkbox"/> Residential with ≤ 4 units	\$65.00	BRP WW06a
	<input type="checkbox"/> Other	\$65.00	BRP WW06b
WATER-DEPENDENT -			
General (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$175.00	BRP WW01a
	<input checked="" type="checkbox"/> Other	\$270.00	BRP WW01b
	<input type="checkbox"/> Extended Term	\$2730.00	BRP WW01c
Amendment (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$85.00	BRP WW03a
	<input type="checkbox"/> Other	\$105.00	BRP WW03b
NONWATER-DEPENDENT -			
Full (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$545.00	BRP WW15a
	<input type="checkbox"/> Other	\$1635.00	BRP WW15b
	<input type="checkbox"/> Extended Term	\$2730.00	BRP WW15c
Partial (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$545.00	BRP WW14a
	<input type="checkbox"/> Other	\$1635.00	BRP WW14b
	<input type="checkbox"/> Extended Term	\$2730.00	BRP WW14c
Municipal Harbor Plan (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$545.00	BRP WW16a
	<input type="checkbox"/> Other	\$1635.00	BRP WW16b
	<input type="checkbox"/> Extended Term	\$2730.00	BRP WW16c
Joint MEPA/EIR (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$545.00	BRP WW17a
	<input type="checkbox"/> Other	\$1635.00	BRP WW17b
	<input type="checkbox"/> Extended Term	\$2730.00	BRP WW17c
Amendment (A-H)	<input type="checkbox"/> Residential with ≤ 4 units	\$435.00	BRP WW03c
	<input type="checkbox"/> Other	\$815.00	BRP WW03d
	<input type="checkbox"/> Extended Term	\$1090.00	BRP WW03e

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

B. Applicant Information Proposed Project/Use Information

1. Applicant:

Note: Please refer
to the "Instructions"

National Park Service, Saugus Iron Works,
Patricia Trap

patricia_trap@nps.gov

E-mail Address

244 Central Street

Mailing Address

Saugus

MA

01906

City/Town

State

Zip Code

9787401680

Telephone Number

Fax Number

2. Authorized Agent (if any):

CH2M HILL - Cristina Aspuru or John Burgess

caspu@ch2m.com or jburgess@ch2m.com

Name

E-mail Address

25 New Chardon Street, Suite 300

Mailing Address

Boston

MA

02141

City/Town

State

Zip Code

6175232002

Telephone Number

6177239036

Fax Number

C. Proposed Project/Use Information

1. Property Information (all information must be provided):

(same as above)

Owner Name (if different from applicant)

E9-710, E9-711, E9-818, E9-1021

422808N

0710032W

Tax Assessor's Map and Parcel Numbers

Latitude

244 Central Street, Saugus

MA

01906

Street Address and City/Town

State

Zip Code

2. Registered Land ☒ Yes ☐ No

3. Name of the water body where the project site is located:

Saugus River

4. Description of the water body in which the project site is located (check all that apply):

Type

Nature

Designation

☐ Nontidal river/stream

☐ Natural

☐ Area of Critical Environmental Concern

☒ Flowed tidelands

☒ Enlarged/dammed

☐ Designated Port Area

☐ Filled tidelands

☐ Uncertain

☐ Ocean Sanctuary

☐ Great Pond

☐ Uncertain

☐ Uncertain

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

C. Proposed Project/Use Information (cont.)

Select use(s) from
Project Type Table
on pg. 2 of the
"Instructions"

5. Proposed Use/Activity description

Non-commercial docking and boating access to navigable waters (Pier), shore stabilization for the protection of existing structures (Bulkhead), and excavation of sediment-filled turning basin and invasive species-choked river.

6. Is the project a pre-1984 existing structure AND less than 600 square feet?

☐ Yes

☒ No

7. Is the project a post-1984 existing or new structure, less than 300 square feet AND water dependent?

☐ Yes

☒ No

8. What is the estimated total cost of proposed work (including materials & labor)?

\$2,412,237 _____

9. List the name & complete mailing address of each abutter (attach additional sheets, if necessary). An abutter is defined as the owner of land that shares a common boundary with the project site, as well as the owner of land that lies within 50' across a waterbody from the project.

(please see attached)

Name

Address

Name

Address

Name

Address

D. Project Plans

1. I have attached plans for my project in accordance with the instructions contained in (check one):

☒ Appendix A (License plan) ☐ Appendix B (Simplified License plan) ☐ Appendix C (Permit plan)

2. Other State and Local Approvals/Certifications

☒ 401 Water Quality Certificate

(in progress)

Date of Issuance

☒ Wetlands

(in progress)

File Number

☐ Jurisdictional Determination

JD-

File Number

☒ MEPA

(in progress)

File Number

☐ EOE Secretary Certificate

Date

☐ 21E Waste Site Cleanup

RTN Number

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

E. Certification

All applicants, property owners and authorized agents must sign this page. All future application correspondence may be signed by the authorized agent alone.

"I hereby make application for a permit or license to authorize the activities I have described herein. Upon my signature, I agree to allow the duly authorized representatives of the Massachusetts Department of Environmental Protection and the Massachusetts Coastal Zone Management Program to enter upon the premises of the project site at reasonable times for the purpose of inspection."

"I hereby certify that the information submitted in this application is true and accurate to the best of my knowledge."

Applicant's signature

Date

Property Owner's signature (if different than applicant)

Date

Agent's signature (if applicable)

Date

APPLICANTS FILING A SIMPLIFIED APPLICATION STOP HERE

F. Waterways Dredging Addendum

1. Provide a description of the dredging project

☐ Maintenance Dredging (include last dredge date & permit no.) ☒ Improvement Dredging

Dredging would restore open-water to the turning basin to preserve the distinctive character of the historic site & thus provide a higher quality visitor experience & benefit the site's ecology & habitat.

2. What is the volume (cubic yards) of material to be dredged?

9,620 cubic yards

3. What method will be used to dredge?

☐ Hydraulic

☒ Mechanical

☐ Other

4. Describe disposal method and provide disposal location (include separate disposal site location map)
(please see attached)
-

5. Provide copy of grain size analysis. If grain size is compatible for beach nourishment purposes, the Department recommends that the dredged material be used as beach nourishment for public beaches. **Note:** In the event beach nourishment is proposed for private property, pursuant to 310 CMR 9.40(4)(a)1, public access easements below the existing high water mark shall be secured by applicant and submitted to the Department.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

G. Municipal Zoning Certificate

National Park Service, Saugus Iron Works NHS, Patricia Trap, Superintendent

Name of Applicant

244 Central Street

Project street address

Saugus River

Waterway

Saugus

City/Town

Description of use or change in use:

Please see attached

To be completed by municipal clerk or appropriate municipal official:

"I hereby certify that the project described above and more fully detailed in the applicant's waterways license application and plans is not in violation of local zoning ordinances and bylaws."

Printed Name of Municipal Official

Date

Signature of Municipal Official

Title

City/Town

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

H. Municipal Planning Board Notification

Notice to Applicant:

Section H should be completed and submitted along with the original application material.

National Park Service, Saugus Iron Works, Patricia Trap, Superintendent

Name of Applicant

244 Central Street

Project street address

Saugus River

Waterway

Saugus

City/Town

Description of use or change in use:

Please see attached

To be completed by municipal clerk or appropriate municipal official:

"I hereby certify that the project described above and more fully detailed in the applicant's waterways license application and plans have been submitted by the applicant to the municipal planning board."

Printed Name of Municipal Official

Date

Signature of Municipal Official

Title

City/Town

Note: Any comments, including but not limited to written comments, by the general public, applicant, municipality, and/or an interested party submitted after the close of the public comment period pertaining to this Application shall not be considered, and shall not constitute a basis for standing in any further appeal pursuant to 310 CMR 9.13(4) and/or 310 CMR 9.17.

Appendix A: License Plan Checklist

General View

- ☐ PE or RLS, as deemed appropriate by the Department, stamped and signed, in ink, each sheet within 8 1/2 inch by 11 inch border
- ☒ Format and dimensions conform to "Sample Plan" (attached)
- ☒ Minimum letter size is 1/8 of an inch if freehand lettering, 1/10 of an inch if letter guides are used
- ☒ Sheet number with total number in set on each sheet
- ☐ Title sheet contains the following in lower left: Plans accompanying Petition of [Applicant's name, structures and/or fill or change in use, waterway and municipality]
- ☒ North arrow
- ☒ Scale is suitable to clearly show proposed structures and enough of shoreline, existing structures and roadways to define its exact location
- ☒ Scale is stated & shown by graphic bar scale on each sheet
- ☒ Initial plans may be printed on bond; final plans due before License issuance must be on 3mil Mylar.

Structures and Fill

- ☒ All Structures and Fill shown in full BLACK lines, clearly labeling which portions are existing, which are Proposed and indicating Existing Waterways Licenses
- ☐ *Cross Section Views* show MHW* and MLW* and structure finish elevations
- ☒ *Dredge or Fill*, actual cubic yardage must be stated and typical cross sections shown
- ☒ All Structures and Fill shown in full BLACK lines, clearly labeling which portions are existing, which are Proposed and indicating Existing Waterways Licenses
- ☐ *Cross Section Views* show MHW* and MLW* and structure finish elevations
- ☒ *Dredge or Fill*, actual cubic yardage must be stated and typical cross sections shown
- ☐ Actual dimensions of structures(s) and or fill and the distance which they extend beyond MHW* or OHW*
- ☒ Change in Use of any structures on site must be stated

* See 310 CMR 9.02, Waterways Regulations definitions of High Water Mark, Historic High Water Mark, Historic Low Water Mark, and Low Water Mark. *Note:* DEP may, at its discretion, accept appropriately scaled preliminary plans in lieu of the plans described above. In general, DEP will accept preliminary plans only for non-water dependent projects and projects covered by MEPA to address site design components such as visual access, landscaping & site coverage. *Anyone wishing to submit preliminary plans must obtain prior approval of the DEP Waterways Program before submitting them with their application.*

Appendix A: License Plan Checklist (cont.)

Boundaries

- ☒ Property lines, full black lines, _____, along with abutters' names and addresses
- ☐ Mean High Water (MHW)* or Ordinary High Water (OHW)*, full black line _____
- ☐ Mean Low Water (MLW)*, black dotted line, (.....)
- ☐ Historic MHW* or OHW* (— — — —)
- ☐ Historic MLW* (...__...__...__)
- ☐ State Harbor Lines, black dot-dash line (- . - . - .) with indication of Chapter & Act establishing them (Ch. , Acts of)
- ☐ Reference datum is National Geodetic Vertical Datum (NGVD) or (NAVD).
- ☒ Floodplain Boundaries according to most recent FEMA maps
- ☐ Proposed & Existing Easements described in metes & bounds

Water-Dependent Structures

- ☐ Distance from adjacent piers, ramps or floats (minimum distance of 25' from property line, where feasible)
- ☐ Distance from nearest opposite shoreline
- ☐ Distance from outside edge of any Navigable Channel
- ☐ Access stairs at MHW for lateral public passage, or 5 feet of clearance under structure at MHW.

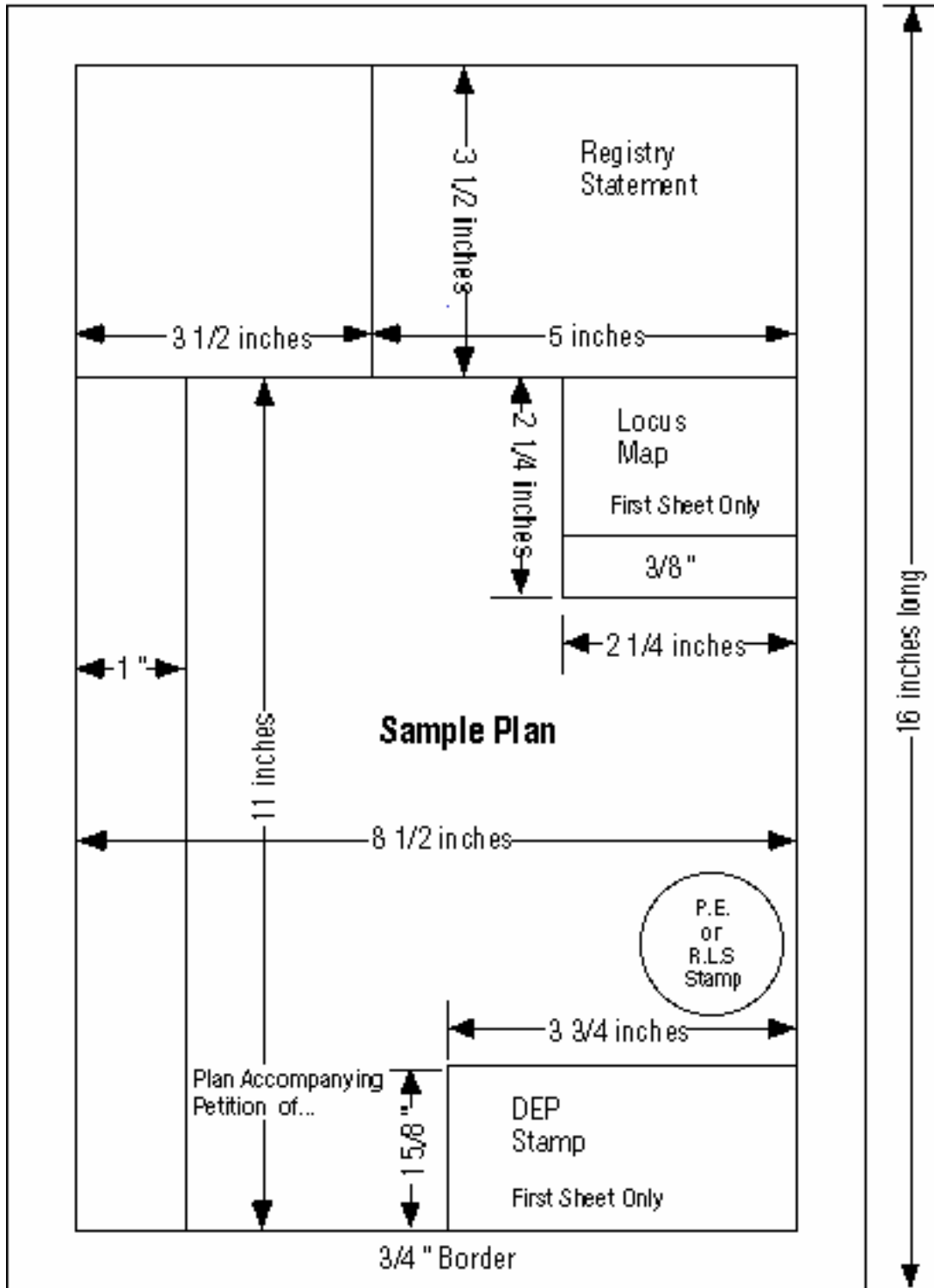
Non Water-Dependent Structures

- ☐ Depict extent of "Water-dependent Use Zone".

See Waterways Regulations at 310 CMR 9.51-9.53 for additional standards for non water-dependent use projects.

Note: Final Mylar project site plans will be required upon notice from the Department, prior to issuance of the Chapter 91 Waterways License.

Appendix A: License Plan Checklist Cont.



Appendix B: Simplified License Plan Checklist

For projects applying for a Simplified license or permit only, enclose drawings with the General Waterways Application that include the following information:

General View

- ☐ Applicants can use existing plot plans or plans submitted with a Notice of Intent under the Wetlands Protection Act. If no existing plans are available, applicants may prepare their own plans using the following guidance. Please refer to the sample plan drawings included in the application package.
- ☐ Drawings must be prepared on the 8 1/2 x 11 inch paper provided with the application package.
- ☐ A 1-inch margin should be left at the top edge of each drawing for purposes of reproduction and binding. A 1/2 inch margin is required in the three other edges.
- ☐ A complete title block on each drawing submitted should identify the project and contain: the name of the waterway; name of the applicant; number of the sheet and total number of sheets in the set; and the date the drawing was prepared.

Plan View

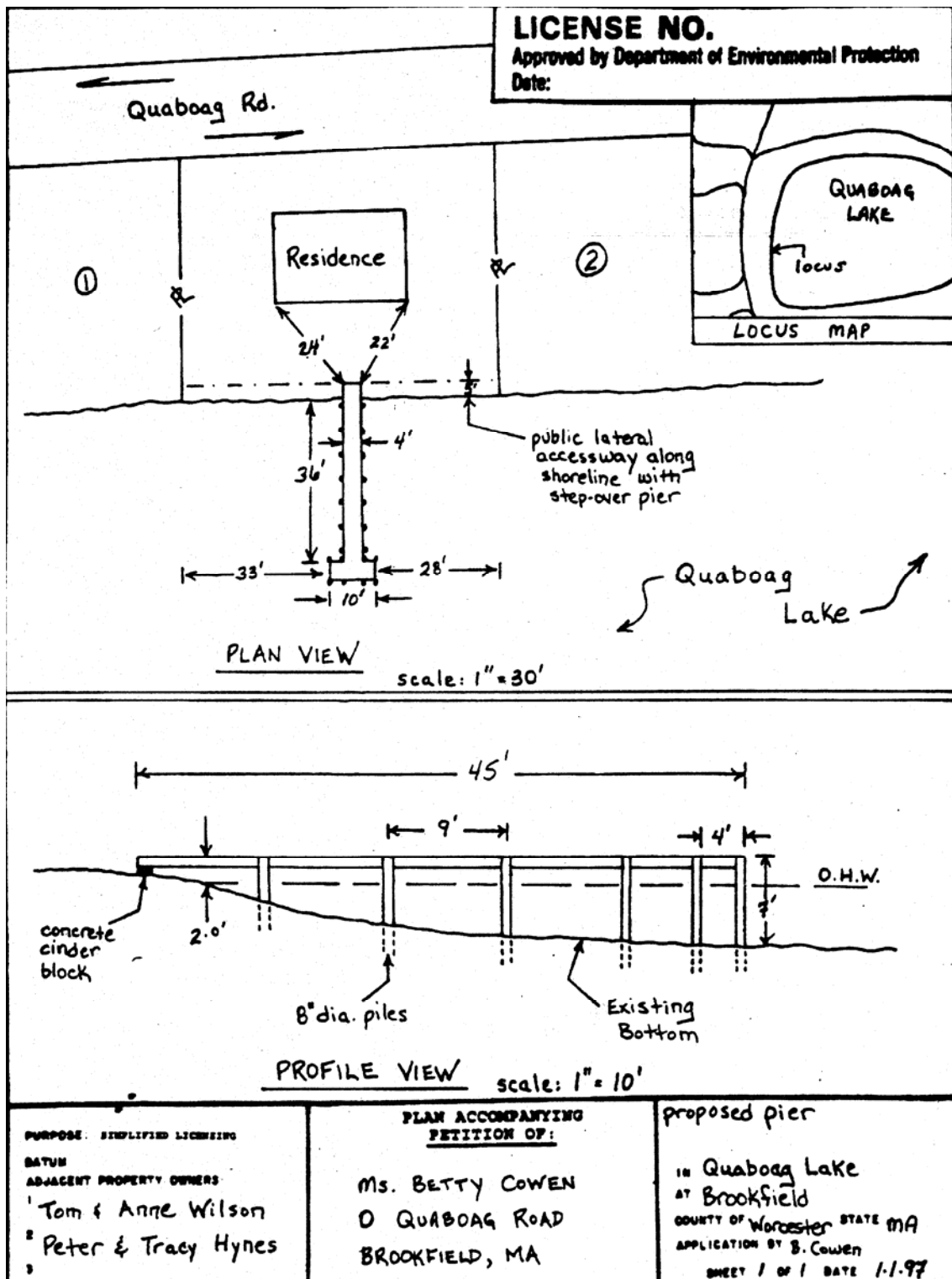
- ☐ North Arrow
- ☐ Locus Map - A locus map shall be included, depicting the subject property in relation to the surrounding area. This may be prepared as illustrated on the sample plan, in the upper right-hand corner, or the Applicant may simply photocopy a street map, circle the property, and label it "Locus." Any such photocopy must be contained within the borders of the plan sheets provided.
- ☐ Scale - All drawings shall be in a suitable scale (e.g., 1 inch = 40 feet) and the scale should be indicated on each sheet of the plan.
- ☐ Subject property - Illustrate as much of the subject property as possible, including any residence, adjacent streets, property lines, and the tax assessor's information (map number).
- ☐ Mean high and low water lines - The mean high water (MHW) and mean low water (MLW) lines must be clearly delineated. In inland waters, such as ponds and non-tidal rivers, the ordinary high and low water shorelines (OHW and OLW) should be used. Because plans must be reproduced by the Department, color shading cannot be used. Please use dashed or dotted lines, or crosshatching where necessary. (see definitions of "High Water Mark" and "Low Water Mark" at 310 CMR 9.02, C. 91 Regulations).
- ☐ Licensed activities - All structures and/or fill to be licensed must be clearly depicted, **accompanied by their dimensions**. Linear distances, in feet, must be provided from the structures to each property line along the waterway and residence.
- ☐ Abutters – Abutters' names must appear in the lower left-hand block, and the corresponding number (1, 2, or 3 etc.) should be placed in the appropriate lot location.
- ☐ Title Blocks – The lower-middle and right-hand blocks shall be prepared as indicated on the sample plan.

Appendix B: Simplified License Plan Checklist

Section View

- ☐ Profiles - Bottom and bank profiles should be delineated as accurately as possible.
- ☐ Mean high water (MHW) and mean low water (MLW) lines - MHW and MLW (or ordinary high and low water lines [OHW/OLW]) must be illustrated. The elevation of MLW may be given as 0.0 ft. Elevations for MHW and all other structures should then be given relative to MLW.
- ☐ Licensed activities - All structures and/or fill to be licensed must be clearly depicted. Dimensions of piles, and any other structures not indicated on Sheet 1, must be provided.
- ☐ Title Blocks - The lower-middle and right-hand blocks shall be prepared as indicated on the sample plan.

Appendix B: Simplified License Plan – Sample Plan



Massachusetts Department of Environmental Protection
 Bureau of Resource Protection - Waterways Regulation Program
Chapter 91 Waterways License Application - 310 CMR 9.00
 Simplified, Water-Dependent, Nonwater-Dependent, Amendment

Transmittal No. _____

Appendix B: Simplified License Plan – Plan Template

<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-top: 10px;"> LICENSE NO. Approved by Department of Environmental Protection Date: _____ </div>		
Purpose: Simplified Licensing Datum Adjacent Property Owners: 1. _____ 2. _____ 3. _____ 4. _____	Plan accompanying petition of: _____ _____ _____ _____ _____	Project Description: _____ _____ _____ In _____ At _____ County _____ State _____ Applicant _____ Date _____ Sheet _____ Of _____

Appendix C: Dredging Permit Plan Checklist

For projects applying for dredging permits only, enclose drawings with the General Waterways Application that include the following information:

General View

- ☒ Submit one original of all drawings. Submit the fewest number of sheets necessary to adequately illustrate the project on 8-1/2 inch X 11 inch paper.
- ☒ A 1-inch margin should be left at the top edge of each drawing for purposes of reproduction and binding. A 1/2 inch margin is required in the three other edges.
- ☒ A complete title block on each drawing submitted should identify the project and contain: the name of the waterway; name of the applicant; number of the sheet and total number of sheets in the set; and the date the drawing was prepared.
- ☒ Use only dot shading, hatching, and dashed or dotted line to show or indicate particular features of the site on the drawings.
- ☐ If deemed appropriate by the Department, certification by the Registered Professional Engineer or Land Surveyor is included.

Plan View

- ☒ North Arrow
- ☒ Locus Map
- ☒ Standard engineering scale.
- ☐ Distances from channel lines and structures if appropriate.
- ☐ Mean high water and mean low water shorelines (see definitions of "High Water Mark" and "Low Water Mark" at 310 CMR 9.02, C. 91 Regulations).
- ☒ Dimensions of area proposed to be dredged or excavated.
- ☐ Notation or indication of disposal site.
- ☒ Volume of proposed dredging or excavation.
- ☐ Ordinary high water, proposed drawdown level, and natural (historic) high water (for projects lowering waters of Great Ponds).

Section Views

- ☒ Existing bottom and bank profiles.
- ☒ Vertical and/or horizontal scales.
- ☒ Proposed and existing depths relative to an indicated datum.
- ☒ Elevation and details of control structure (for projects lowering waters of Great Ponds).

Appendix D: Application Completeness Checklist

Please answer all questions in the General Waterways Application form. If a question does not apply to your project write "not applicable" (n/a) in that block. Please print or type all information provided on the form. Use black ink (blue ink or pencil are not easily reproducible, therefore, neither will be accepted). If additional space is needed, attach extra 8-1/2" x 11" sheets of paper.

- ☐ **Proper Public Purpose:** For nonwater-dependent projects, a statement must be included that explains how the project serves a proper public purpose that provides greater benefit than detriment to public rights in tidelands or great ponds and the manner in which the project meets the applicable standards. If the project is a nonwater-dependent project located in the coastal zone, the statement should explain how the project complies with the standard governing consistency of the policies of the Massachusetts Coastal Zone Management Program, according to 310 CMR 9.54. If the project is located in an area covered by a Municipal Harbor Plan, the statement should describe how the project conforms to any applicable provisions of such plan pursuant to 310 CMR 9.34(2).
- ☐ **Plans:** Prepared in accordance with the applicable instructions contained in Appendix A-C of the General Waterways Application. For initial filing, meet the requirements of 310 CMR 9.11(2)(b)(3).
- ☐ **Applicant Certification:** All applications must be signed by "the landowner if other than the applicant. In lieu of the landowner's signature, the applicant may provide other evidence of legal authority to submit an application for the project site." If the project is entirely on land owned by the Commonwealth (e.g. most areas below the current low water mark in tidelands and below the historic high water mark of Great Ponds), you may simply state this in lieu of the "landowner's signature".
- ☐ **Municipal Zoning Certification:** If required, applicants must submit a completed and signed Section E of this application by the municipal clerk or appropriate municipal official or, for the initial filing, an explanation of why the form is not included with the initial application. If the project is a public service project subject to zoning but will not require any municipal approvals, submit a certification to that effect pursuant to 310 CMR 9.34(1).
- ☐ **Municipal Planning Board Notification:** Applicants must submit a copy of this application to the municipal planning board for the municipality where the project is located. Submittal of the complete application to DEP must include Section H signed by the municipal clerk, or appropriate municipal official for the town where the work is to be performed, except in the case of a proposed bridge, dam, or similar structure across a river, cove, or inlet, in which case it must be certified by every municipality into which the tidewater of said river, cove, or inlet extends.
- ☐ **Final Order of Conditions:** A copy of one of the following three documents is required with the filing of a General Waterways Application: (1) the Final Order of Conditions (with accompanying plan) under the Wetlands Protection Act; (2) a final Determination of Applicability under that Act stating that an Order of Conditions is not required for the project; or (3) the Notice of Intent for the initial filing (if the project does not trigger review under MEPA).
- ☐ **Massachusetts Environmental Protection Act (MEPA):** MGL 30, subsections 61-61A and 301 CMR 11.00, submit as appropriate: a copy of the Environmental Notification Form (ENF) and a Certificate of the Secretary of Environmental Affairs thereon, or a copy of the final Environmental Impact Report (EIR) and Certificate of the Secretary stating that it adequately and properly complies with MEPA; and any subsequent Notice of Project change and any determination issued thereon in accordance with MEPA. For the initial filing, only a copy of the ENF and the Certificate of the Secretary thereon must be submitted.

Note: If the project is subject to MEPA, the Chapter 91 Public Notice must also be submitted to MEPA for publication in the "Environmental Monitor". MEPA filing deadlines are the 15th and 30th of each month.

Appendix D: Application Completeness Checklist (cont.)

- ☐ **Water Quality Certificate:** if applicable, pursuant to 310 CMR 9.33, is included.
- ☐ **Other Approvals:** as applicable pursuant to 310 CMR 9.33 or, for the initial filing, a list of such approvals which must be obtained.

Projects involving dredging:

- ☒ The term “dredging” means the removal of materials including, but not limited to, rocks, bottom sediments, debris, sand, refuse, plant or animal matter, in any excavating, clearing, deepening, widening or lengthening, either permanently or temporarily, of any flowed tidelands, rivers, streams, ponds or other waters of the Commonwealth. Dredging includes improvement dredging, maintenance dredging, excavating and backfilling or other dredging and subsequent refilling. Included is a completed and signed copy of Part F of the application.

Filing your Completed General Waterways Application:

- ☒ **For all Water-Dependent AND Simplified applications** – submit a completed General Waterways Application and all required documentation with a *photocopy* of both payment check and DEP’s *Transmittal Form for Permit Application & Payment* to the appropriate DEP regional office (please refer to Pg. 10 of the “Instructions” for the addresses of DEP Regional Offices).
- ☐ **For all Non Water-Dependent applications** – submit a completed General Waterways Application and all required documentation with a *photocopy* of both payment check and DEP’s *Transmittal Form for Permit Application & Payment* to DEP’s Boston office.

Department of Environmental Protection
Waterways Regulation Program
One Winter Street
Boston, MA 02108

- ☐ **Application Fee Payment for ALL Waterways Applications:** Send the appropriate Application fee* (please refer to Page 1 of the “Application”), in the form of a check or money order, along with DEP’s *Transmittal Form for Permit Application & Payment*.

Department of Environmental Protection
P.O. Box 4062
Boston, MA 02211

* Under extreme circumstances, DEP grants extended time periods for payment of license and permit application fees. If you qualify, check the box entitled “Hardship Request” on the *Transmittal Form for Permit Application & Payment*. See 310 CMR 4.04(3)(c) to identify procedures for making a hardship request. Send hardship request and supporting documentation to the above address.

NOTE: You may be subject to a **double application fee** if your application for Chapter 91 authorization results from an enforcement action by the Department or another agency of the Commonwealth or its subdivisions, or if your application seeks authorization for an existing unauthorized structure or use.

License Application

**Massachusetts Department of
Environmental Protection
Chapter 91 License Application
Restoration of Saugus River
Turning Basin and Dock
Essex County, Massachusetts**

Applicant:

National Park Service
Saugus Iron Works National Historic Site
244 Central Street
Saugus, MA 01906-2107

October 2005

Prepared by:

CH2MHILL
25 New Chardon St., Suite 300
Boston, Ma 02114

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List of Abutters

The following is a summary table of property owners adjacent to the Saugus Iron Works National Park Service (NHS) property, including those adjacent to the portion of the Saugus River to be impacted as a result of the proposed work.

TABLE 1
Summary of Adjacent Property Owners
Saugus Iron Works NHS

Owner	Address ¹	Comments
Christine and James Donahue	231 Central Street	Residential
Joseph F. and Deborah A. Newman	17 Greystone Rd.	Residential
Roberta M. Preshong	15 Greystone Rd.	Residential
Harold and Gloria Hashen	11 Lothrop St.	Residential
Albert and Linda Coppola	17 Lothrop Street	Residential
Michael and Bridget V. Grant	24 Bridge St.	Residential
Central Storage	222 Central St.	Commercial
Richard W. and Marian E. Burnham	5 Pleasant View Pl.	Residential
Jose A. and Roseann T. Camilo	255 Central St.	Residential
George A. and Majorie E. Robie	250 Central St.	Residential
Karen Saulnier	2 Lothrop St.	Residential
Paul J. and Margaret M. Luciano	8 Lothrop St.	Residential
Richard C. Picardi	14 Greystone Rd.	Residential
Robert J. and Clara E. Enright	11 Pleasant St.	Residential

¹ The city, state, zip code for all addresses is: Saugus, MA 01906

Purpose and Need for the Proposed Action

Saugus Iron Works NHS in Saugus, Massachusetts, is the site of the first integrated iron works in North America, which operated from 1646 to 1668. Saugus Iron Works NHS is an 8.51-acre park located about 10 miles north of Boston in Essex County, Massachusetts (Figures 1 and 2). The site, which is administered by the National Park Service (NPS), preserves and interprets the archaeological and historic areas, structures, and objects, and reconstructs the historical setting of the iron works.

In 1957, a breach of the Prankers Pond dam on the Saugus River upstream of the site resulted in extensive sedimentation in the turning basin, which is an important historical element of Saugus Iron Works NHS. Consequently, 3.58 acres of the river within the NHS are choked with invasive plant species and the sediments are impacted by industrial contaminants from the urbanized Saugus River watershed, as well as from waste material produced by the historic iron works (i.e., the slag pile).

The purpose of the proposed action is to restore the natural and cultural resources of Saugus Iron Works NHS. Restoring the reconstructed historic scene of the site will provide a more accurate portrayal of the iron-making industry and will enhance the quality of the visitors' experience. Restoration of the historic tidal basin to an open-water condition and the *Phragmites australis*-dominated marsh to a native emergent wetland will underscore the historical importance of the river setting for the iron works. The Saugus River was essential for the transport of raw materials to the site and of finished iron goods to local and international markets. The restoration also will improve biodiversity by enhancing native fish and wildlife habitat.

The Saugus Iron Works NHS General Management Plan (GMP) (NPS, 2002) recommends restoring the Saugus River turning basin to its original open-water condition to preserve the distinctive character of site resources and thereby provide for a quality visitor experience (Figure 3). The goal of the project is to restore the turning basin to an environment with a higher ecological value commensurate with a historically accurate setting and enhance the interpretive quality of the site. An open-water habitat with an emergent wetland will enhance the habitat for fish, waterfowl, and other birds. This goal will be achieved through the project components detailed in the following section.

Description of Proposed Action

This project includes removal and disposal of contaminated sediments to specified grades in the Northern (Turning Basin) and Southern Areas as shown on the 30 percent Design Development Drawings; demolition and reconstruction of the deteriorated dock and bulkhead structures at the northern edge of the turning basin; site restoration and restoration of the wetland; incidental construction, including but not limited to, protection of remaining park features (main park area, slag pile, existing stone wall, etc.), temporary staging area and access trails, controls and protection of Saugus River flow and erosion and sediment controls.

- **Removal of contaminated wetland sediments.** The removal of contaminated wetland sediments covering 3.58 acres will help to minimize threats to human and ecosystem health and will improve natural habitats.
- **Removal of invasive exotic plant species.** Invasive plant species displace valuable native species and contribute to the narrowing of the river channel, threatening the health of wetland habitats and limiting biodiversity. This displacement also has impacted the site's viewsheds, as character-defining landscape elements are now blocked by stands of *Phragmites australis* (common reed) and other exotic invasive species. Control of invasive plant species infesting the marsh area is needed to improve biodiversity, restore habitat, and achieve a more historically accurate, natural wetland vista for visitor enjoyment and understanding.
- **Restoration of an open-water condition by regrading.** The current turning basin area will be restored to the 1954-period open-water and emergent wetland condition by excavating and regrading the marsh sediments (Figure 3). This will be achieved by careful selection of target elevations within the intertidal zone. The appropriate microtopography elevations can also serve to reduce the spread of invasive species, such as *Phragmites*.
- **Construction of emergent brackish wetlands using native vegetation.** Native vegetation will contribute to a more historically appropriate, ecologically diverse, and aesthetically pleasing landscape for visitors, and will also enhance wildlife habitat. An emergent wetland will be created along the river, bordered by non-vegetated mudflats at low tide (Figure 3).
- **Removal of the rock weir under Hamilton Street Bridge.** To the south of the site, next to the Hamilton Street Bridge, the First Iron Works Association placed large rocks in the Saugus River to form a weir, which was intended to enunciate the open water condition of the river and slow tidal surge. The rock weir currently impedes inflow of saltwater and outflow of freshwater. Removal of the rock weir will increase upstream flow of salt water and downstream flow of freshwater, thereby increasing the salinity of the habitats in the project site and increasing the growth of desirable, native vegetation. Currently, the weir is not under NPS jurisdiction. However, the NPS is committed to looking for

creative ways to collaborate with other agencies and organizations in removing the Hamilton Street Bridge weir.

- **Removal and in-kind replacement of the existing wood bulkhead and dock and rehabilitation of a stone retaining wall along the Saugus River.** Replacement of these elements of the historic waterfront area will restore the cultural landscape of the site, improve visitor understanding of the historical context in which these structures were used, and allow visitors better access to the waterfront area. The dock and bulkhead are reconstructed elements of the seventeenth century iron works. The structures are listed on the National Register of Historic Places as “Wharf (Pier and Bulkhead) LCS # 40302”. The existing wood bulkhead is approximately 6.5 ft high and 110 ft long. The existing dock consists of a 36-foot (ft) by 12-ft timber plank supported by three 9-in by 7-in oak stringers (girts). Based on evaluation of the structures’ existing conditions, it was determined that the entire wooden bulkhead and dock will need to be removed and replaced with new wooden members. Stones beneath the dock will be removed during construction and replaced once the cribbing has been rebuilt. The replacement structures will take into account stability analyses and will be constructed to withstand expected design loads (e.g., personnel and maintenance vehicle loads) as well as applicable code requirements for public walkways. Currently, site visitors are restricted from using the dock because of safety concerns related to its degraded condition.

A fieldstone retaining wall spanning both banks of the Saugus River is also in need of repair. The wall is comprised of random coursed boulders and cobbles. The wall flanks the Bridge Street bridge abutments to a height of about 9 ft and follows a gradually sloping topography along 66 ft on the river’s west bank and about 250 ft along the river’s east bank. The wall terminates on each bank with a single large cobble at the river’s edge. The stone bulkhead was built by the First Iron Works Association in 1954 as part of the effort to reconstruct the colonial ironworks. The stone retaining wall is listed on the National Register of Historic Places as “Saugus River Stone Bulkhead” List of Classified Structures (LCS) #40312. Stones have eroded from the structure and sinkholes have developed along a walking path adjacent to the structure, creating a safety hazard. This project will remove, salvage, and rebuild the stone wall. A coffer dam will be temporarily installed to enable this work.

Site Access/Staging Area Plan

All access to the staging and work areas shall be from streets along the eastern side of the Saugus River. Primary access shall be via Riverbank Road. Secondary access shall be via Saville Street and Bridge Street (see Sheet C2). The area under Chapter 91 jurisdiction begins at the end of each the northern and southern area access roads, by the Saugus River.

Access to the northern work area shall be along the existing stabilized access trail and bridges from the maintenance yard to the main park area and access to the southern work area shall be a temporary access trail and ramp into the area from an existing gated access point along Riverbank Road.

The contractor shall confine on-site staging (trailer, material, stockpiles, equipment storage) area to designated locations within the NPS maintenance yard. If additional staging or material storage areas are needed, the contractor must arrange and pay for a suitable off-site area. In accessing work areas, contractor shall conform to all town laws, ordinances, directives, and limitations for heavy truck traffic.

Erosion and Sediment Control

In order to minimize erosion and best control sediment, temporary diversion structures shall be installed prior to the start of fill and/or sediment removal operations. Surface disturbance will be minimized as much as possible. Areas which must be disturbed will utilize temporary silt fencing and other measures to prevent sediment release until the disturbed areas have been restored and stabilized. The diversion structure will be installed between the excavation and the river channel to control water within the excavation and to provide physical barrier that will prevent water within the river channel from entering the excavation and also prevent water from within the excavation from being released into the river. The diversion structure will consist of a commercially-available metal frame/geomembrane barrier, or equivalent system, designed specifically for water containment and diversion applications. Water within the excavation will be monitored, filtered, or otherwise treated as necessary to remove sediment and other identified contaminants to applicable release limits prior to being pumped back to the river (Sheet C12).

The temporary diversion structures around the northern and southern areas shall remain in place until all work in each work area is complete including excavation and wetland planting operations. Silt fencing and construction entrances along temporary access trails will be installed prior to disturbance and use of those access ways and shall be maintained and left in place until the protected areas have been stabilized.

In the event water must be pumped from the work areas, all sumps and discharge points will be implemented with appropriate erosion and sediment controls.

Site Preparation

Site preparation activities include:

- Removing timber bulkhead components, (concrete retaining wall to remain);
- Removing timber dock and timber/stone piers to underlying concrete slabs and stockpiling stone for re-use during dock reconstruction;
- Disposing demolition debris at approved off-site disposal area(s);
- Installing safety fencing along perimeter of work area and limiting traffic into work areas to excavation equipment and haul trucks;
- Installing silt fences, construction entrances, and temporary diversion structures at locations shown on Sheet C4;
- Improving existing maintenance trail from staging area to northern work area, as necessary, to support construction traffic, trim adjacent trees, and relocate existing fence, as necessary, to provide safe access;
- Constructing temporary construction trail from Riverbank Road to southern work area; and
- Minimizing disturbance to the absolute minimum necessary to facilitate construction.

Excavation and Grading

During construction, contractors will maintain access trails and diversion, erosion, sediment, and access controls within protected work areas. Using conventional wet excavation techniques and equipment, sediment will be excavated toward applicable dewatering/loading areas. The sediment will be removed to contours detailed on Sheet C6. Given the small and delicate nature of the site, extreme care will be taken during sediment removal to ensure all cultural resources are preserved.

Since sediment (SD) in sampling locations SD06, SD07, SD10, SD12, SD16, and SD20 have shown concentrations of priority pollutant metals (PPM) and/or polycyclic aromatic hydrocarbons (PAH) in the past, excavated material from these areas will be segregated and sampled to confirm disposal requirements. See Sheet C6 in Design Drawings for sampling locations.

The temporary diversion structures around the northern and southern areas shall remain in place until all work in each area is complete, including excavation and wetland planting operations. Other measures, including staged excavation and use of absorbent materials, will be utilized if deemed necessary during excavation. Staged excavation will involve breaking the excavations into components, either by designated areas of excavation or by intermediate silt curtains. Its purpose will be to provide intermediate settling areas or traps to collect sediment before it reaches the perimeter controls. Absorbent materials will be used in conjunction with other controls to contain and collect any oily residues, if any, that might be present in the work areas. Best management practices will be followed and implemented during restoration activities.

Dewatering and Transport of Materials

Excavated sediment will be staged in dewatering/loading areas for dewatering and preparation for loading and off-site disposal. Sediment removed from the northern area will be placed in a temporary dewatering/loading location to the northeast of the dock and bulkhead. The southern area dewatering/loading location is centrally located on the east bank of the Saugus River. Sediment from the dewatering/loading areas will be contained by silt fencing for water to drain back into the excavation area.

Removed sediment will be sufficiently dewatered and transported in sealed or lined truck beds to minimize dripping on roads. The majority of spoil disposal will likely be in unlined landfills, though final determination of the disposal site will depend upon results of post-removal sediment testing to ensure proper disposal procedures (see section “Dredge Disposal Method”, below).

Restoration

During restoration, contractor will reconstruct the bulkhead and dock with in-kind construction (Sheets C9 and C10). The timber bulkhead will be reconstructed with elevations adjusted to current mapping data. The toe of the slag pile will be inspected for stability and erosional features. If signs of instability or past erosion are observed, protective measures, such as stone armoring, will be provided on the portion of toe below the high tide line if signs of active erosion are present. Otherwise, the pile will be left as-is.

Upon completion of work, bridge reinforcements, ramps, and access controls will be removed and dewatering/loading areas will be removed last. Ground surface, trails, and bridges will be restored to pre-construction conditions.

The wetland planting table on Sheet C11 contains a preliminary list of species based on current knowledge of salinity in the project area. Final planting schedule will be confirmed during final design.

Post-construction activities include long-term monitoring of the wetland areas and water monitoring of the site to ensure that they are performing as intended. Included in the long-term monitoring will be *Phragmites* control with herbicides and manual removal by a full-time, on-site NPS employee. A monitoring and sampling plan for wetlands is currently being developed.

Contractor Limitations

The contractor will be subject to the following limitations while on site:

- Contractor's access and use of portions of the park shall be limited to the designated staging area and specified accessways and work areas.
- Staging Area: A staging area will be permitted within designated portions of the Maintenance Area located at the northeastern corner of the park. The contractor shall be responsible for providing necessary structures and utilities to support the work, keeping the staging area neat and clean during the course of the work, and removing all structures, equipment, and materials at completion of work. Contractor shall at all times conduct his operations to ensure the least inconvenience to the public. Temporary closures will be permitted, when required, upon specific approval of Contracting Officer.
- Preservation of Natural Features: All operations will be confined to the limits shown for the project. The contractor shall be responsible for preventing damage to natural surroundings, restoring damaged areas, repairing or replacing damaged trees and plants.
- Existing Utilities: The contractor shall be responsible for verifying with the government and utility companies the locations of all utilities in the work area, protecting utilities which could be affected, and repair any damage which may occur.
- Hauling Restrictions: The contractor shall comply with all legal load restrictions in the hauling of materials. Load restrictions on park roads are identical to the state load restrictions with such additional regulations as may be imposed by the Park Superintendent. A special permit will not relieve Contractor of liability for damage which may result from moving of equipment.

Special Construction Requirements

The Contractor must provide sufficient measures and shall conduct his work in a manner as to:

- Prevent any work within, damage to, or discharge of sediment or other contaminants into the existing Saugus River channel.
- Prevent any disturbance, instability, or erosion to the existing slag pile located along the eastern edge of the work area.
- Prevent disturbance or damage to the stone wall located along the northeastern edge of the turning basin.
- Prevent disturbance, damage, or interruption of any other park resources outside the specified limits of the work.

Dredge Disposal Method

Sediments deposited during the 1957 dam breach will be excavated, tested, dewatered, and disposed off site pursuant to the appropriate and applicable state standards. The spoils likely will be disposed of in an unlined landfill, though the plan contains a contingency for disposing of 30 percent of spoil in a treated landfill. The turning basin and marsh will be excavated to proposed base grades, which will be determined based on historical excavation drawings of the original turning basin, water surface elevation data collected during the tidal change study, the depth of pre-1957 sediments as determined from the sediment cores collected during the marsh characterization study, and the baseline topographic survey. Grades will be designed to restore an open-water at high tide and a vegetated wetland with some non-vegetated areas at low tide.

The conceptual excavation sequence will include the following:

- Establishing an excavated materials dewatering/loading area and access trails into the work area using excavated sands and gravels as fill;
- Excavating the work areas from the perimeter back towards the loading area;
- Temporarily stockpiling excavated materials in the dewatering/loading area for dewatering and processing sufficient to meet transportation and disposal requirements;
- Removing access trails, and ultimately the dewatering/loading area, as the excavation progresses to completion.

The project will be timed to avoid the annual spawning of rainbow smelt and other anadromous fish spawning. To maintain river flow and ensure no impact on the state-listed endangered plant, American waterwort (*Elatine Americana*), no work will take place within the river channel itself.

Sediment disposal will be at an approved site. The disposal site has yet to be determined. Grain size has yet to be analyzed.

Checklist Details

The following text details the items listed in Application Appendix D: Application Completeness Checklist.

Proper Public Purpose

This project is a water-dependent project and a statement on proper public purpose is not applicable.

Municipal Zoning Certification

As this is a federal project, a Municipal Zoning Certification is not required.

Municipal Planning Board Notification

Notification of the Saugus Planning Board is in progress.

Final Notice of Intent

The NPS is preparing a final Notice of Intent and Determination of Applicability for submittal to the Saugus Conservation Commission.

Massachusetts Environmental Protection Act (MEPA)

An Environmental Notification Form has been prepared under MEPA. A request is being made to integrate the MEPA process with the NEPA process such that the EA prepared under NEPA will address MEPA requirements. It is projected that the ENF will serve as a mechanism for integrating the two processes.

Water Quality Certificate

The 401 Water Quality Certificate has been prepared and will be submitted to the DEP.

Other Permits, Certificates, or Approvals

The following is a summary table of other permits, certificates, or approvals that have been or are in the process of being obtained for the proposed work at Saugus Iron Works NHS.

TABLE 2

Summary of Other Permits, Certificates, or Approvals

Saugus Iron Works NHS

Agency	Type Approval	Identification Number	Approval Status and Date	Comments
National Park Service	NEPA EA/EIS	n/a	In preparation, to be completed October 2005	Representatives in attendance at Pre-Application Interagency meeting
Executive Office of Environmental Affairs	MEPA Environmental Notification Form	n/a	In preparation, to be completed October 2005	
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act Consultation	None	Concurrence letter dated October 7, 2004	
National Marine Fisheries Service (NMFS)	Endangered Species Act Consultation	None	Concurrence letter dated September 15, 2004	
Massachusetts Historical Commission	State Historic Preservation Officer Consultation	MHC #8246	Concurrence letter dated March 2, 2004	
Massachusetts Division of Fisheries and Wildlife	Natural Heritage and Endangered Species Program (NHESP) Consultation	NHESP# 04-16610	Concurrence letter dated October 8, 2004	In a June-August 2004 survey of the site, after receipt of the letters, state-listed American waterwort (<i>Elatine americana</i>) was found within the Saugus Iron Works NHS stream channel (James-Pirri and Roman, 2004). The NHESP has been notified of the discovery in a letter dated March 25, 2005.
Massachusetts Office of Coastal Zone Management	Federal Consistency Review	n/a	In preparation, to be submitted October 2005	Representative in attendance at Pre-Application Interagency meeting
U.S. Army Corps of Engineers (USACE)	Section 10 and Section 404 Permits	n/a	In preparation, to be submitted October 2005	Representatives in attendance at Pre-Application Interagency meeting
United States Environmental Protection Agency (USEPA)	National Pollution Discharge Elimination System (NPDES)	n/a	In preparation	Representative in attendance at Pre-Application Interagency meeting

TABLE 2

Summary of Other Permits, Certificates, or Approvals

Saugus Iron Works NHS

Agency	Type Approval	Identification Number	Approval Status and Date	Comments
USEPA	NPDES Construction Stormwater General Permit	n/a	An application for the permit is planned	Representative in attendance at Pre-Application Interagency meeting
Massachusetts Board of Underwater Archaeological Resources	Underwater archeological resources clearance	n/a	In preparation. To be completed October 2005	Representative in attendance at Pre-Application Interagency meeting

MADEP – Massachusetts Department of Environmental Protection

USEPA – U.S. Environmental Protection Agency

NHESP- Natural Heritage and Endangered Species Program

NPDES- National Pollution Discharge Elimination System



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.