HABITAT CONDITIONS SURVEY REPORT
REVISION 2
REMEDIAL DESIGN SERVICES
SWAN ISLAND BASIN PROJECT AREA
CERCLA DOCKET NO. 10-2021-001
PORTLAND HARBOR SUPERFUND SITE
PORTLAND, MULTNOMAH COUNTY, OREGON

Prepared for:
Swan Island Basin Remedial Design Group

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December 2024

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LIST OF ACRONYMS AND ABBREVIATIONS

ft	foot/feet
ACM	active channel margin
CRD	Columbia River Datum
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
GIS	geographic information system
HEA	Habitat Equivalency Analysis
HGL	HydroGeoLogic, Inc.
LiDAR	light detection and ranging
MBES	Multibeam EchoSounder
NAVD88	North American Vertical Datum of 1988
NMFS	National Marine Fisheries Service
OHW	ordinary high water
OLW	ordinary low water
SIB	Swan Island Basin
USACE	U.S. Army Corps of Engineers

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HABITAT CONDITIONS SURVEY REPORT
SWAN ISLAND BASIN PROJECT AREA
PORTLAND HARBOR SUPERFUND SITE
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1.0 INTRODUCTION

This report summarizes the targeted habitat conditions survey conducted in the Swan Island Basin (SIB) Project Area of the Portland Harbor Superfund Site in Portland, Multnomah County, Oregon. HydroGeoLogic, Inc. (HGL) performed the work on behalf of the SIB Remedial Design Group. The work was performed in accordance with the Pre-Design Investigation Work Plan that the U.S. Environmental Protection Agency (EPA) approved in May 2022 (HGL, 2022a).

1.1 OBJECTIVES AND SCOPE

EPA initiated programmatic consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service for the sitewide cleanup and will direct the project area-specific evaluations under the Endangered Species Act Section 7 and Clean Water Act (CWA) Section 404. EPA prepared a Programmatic Biological Assessment to document the consultation (EPA, 2021a). Habitat Equivalency Analysis (HEA) is the tool EPA uses to evaluate habitat pre-and post-remediation for the purposes of complying with CWA Section 404 and, in coordination with NMFS, in compliance with the Endangered Species Act. The purpose of the habitat conditions survey was to collect the data needed to inform an HEA-based approach to comparing pre- and post-remediation habitat conditions.

The habitat conditions survey included data collection to support the following data gaps:

- Characterization of the riparian area, including vegetation, substrate, location with respect to historical floodplain, slope, presence of buildings, structures, and riprap;
- Characterization of the active channel margin (ACM), including depth, substrate, presence of riprap, sheetpile/seawall, pilings, and suspended and floating structures;
- Characterization of the shallow water area, including depth, substrate, presence of riprap, sheetpile/seawall, pilings, and suspended and floating structures; and
- Characterization of the deep-water area, including depth, substrate, presence of riprap, sheetpile/seawall, pilings, and suspended floating structures.

The habitat conditions survey utilized information obtained from the surface sediment sampling, riverbank conditions survey, bathymetric survey, and the shoreline and overwater structure inspections conducted in the SIB Project Area, in accordance with the Pre-Design Investigation Work Plan (HGL, 2022a).

1.2 PROJECT AREA

The SIB Project Area is between approximately River Mile 8.1 and River Mile 9.2 on the northeast side of the Willamette River. The study area for the habitat conditions characterization included

the riparian area on the riverbank extending into the shallow water area along the shoreline and beyond into the interior, or deep-water area, of the basin within the SIB Project Area (Figure 1-1). The vertical extent of the habitat conditions survey is defined as follows:

- Riparian area – Areas above ordinary high water (OHW) to the top of the riverbank.
- ACM – The area between OHW and ordinary low water (OLW).
- Off-channel area:
    - Shallow water – The area between approximately +5 to -13 ft North American Vertical Datum of 1988 (NAVD88).[1]
    - Deep water – The area deeper than -13 ft NAVD88.

1.3 DOCUMENT ORGANIZATION

This report is organized into the following sections:

- Section 1 presents an introduction, including the objectives and scope of the habitat conditions survey;
- Section 2 describes survey activities completed;
- Section 3 summarizes the survey results;
- Section 4 presents conclusions of the survey; and
- Section 5 presents the references cited in this report.

[1] 5.28 ft NAVD88 = 0 ft Columbia River Datum (CRD). CRD is used as the nautical chart datum for the Lower Willamette River. CRD is a reference plane that the U.S. Army Corps of Engineers (USACE) established in 1912 by observing low water elevations at various points along the Columbia and Willamette rivers (USACE, 1966). Consequently, CRD is not a fixed/level datum but slopes upward as one moves upstream. River users can obtain the depth on a chart and apply tide or river-level gauge readings, relative to CRD, to compute actual water depth. Low water values are used for navigation charting to provide conservative depth values in the event accurate tide data is not available to the river user.

2.0 SURVEY ACTIVITIES

A reconnaissance-level habitat conditions survey was performed to inform characterization of aquatic resources within the shallow nearshore and ecological conditions along the ACM and riparian areas.

In addition to the survey described below, characterization of habitat conditions in the SIB Project Area was obtained through the riverbank characterization activities conducted in February, May, and October 2022. These activities included identification and characterization of the types and conditions of materials present along the riverbanks, evaluation of slopes within the riparian area and ACM, location of areas of potentially erodible sediments, and grain-size analysis of riverbank soils (HGL, 2024a).

Mobile terrestrial light detection and ranging (LiDAR) elevation data were collected from a vessel-mounted laser scanner to measure riverbank elevations in April 2022 (HGL, 2024b). Additionally, the riverbed was imaged using a Multibeam EchoSounder (MBES) during a multibeam bathymetric survey that was conducted in May 2022 (HGL, 2022b). The mobile LiDAR and MBES datasets were used in conjunction with other published sources (City of Portland 2019 LiDAR; SIB 2022 mobile LiDAR; 2018 Bathymetric Survey for the Vigor Shipyard Facility [eTrac, Inc.]; and Willamette River, Oregon – River Mile 1.9 to 11.8 Hydrographic Survey [2018 Portland Harbor Bathymetry Data – David Evans and Associates, Inc.]) to develop a unified elevation model for SIB. The locations and elevations for OHW, OLW, and shallow and deep-water areas in the main channel illustrated in the figures referenced herein were generated from the unified elevation model.

The above-water portions of shoreline and overwater structures in SIB were inspected between May 25 and May 27, 2022, and a dive inspection followed between July 17 and July 28, 2022. Information from these inspections was used to identify the locations of in-water features such as pilings as well as suspended structures (e.g., docks and piers) in the ACM, shallow water, and deep-water areas within SIB. Additional detail on shoreline and overwater structures is presented in the Structure Condition Assessment Report (HGL, 2023). Structures, with respect to the survey locations, are illustrated on each of the figures referenced herein.

2.1 RECONNAISSANCE LEVEL SURVEY

A field reconnaissance survey was conducted via vessel between October 3 and 7, 2022, and by foot between April 4 and 5, 2023 to observe select upland areas during the start of the growing season. The survey encompassed riparian, riverbank, and shallow water areas within the SIB Project Area to qualitatively document both bank conditions in riparian and riverbank areas and substrate conditions within the shallow nearshore area. The river stage (via U.S. Geological Survey 14211720, Morrison Street Bridge gage) during the field reconnaissance periods ranged from a high of 0.7 ft NAVD88 to a low of -3.6 ft NAVD88 during the October 2022 reconnaissance and a high of -0.5 ft NAVD88 to a low of -3.37 ft NAVD88 during the April 2023 reconnaissance, allowing for full visibility of the ACM.

Habitat data collection transects were spaced at 100-ft intervals along the shoreline (Figure 2-1), rather than the 150-ft intervals proposed in the PDI Work Plan, to coincide with riverbank

characterization transects. The OHW mark at each transect was surveyed and marked at 20.075 ft NAVD88 by an Oregon-Licensed Professional Land Surveyor, prior to initiation of survey activities. Slope estimates were documented during the Physical Shoreline Inspection, conducted during the first phase of riverbank characterization field activities, and are documented in Attachment A.1 of the Riverbank Characterization Data Report (HGL, 2024a).

The habitat survey was performed in general accordance with the relevant portions of the EPA's National Rivers and Streams Assessment project non-wadeable field protocols for physical habitat characterizations (EPA, 2017). Relevant portions include characterization of riparian areas and ACM features that correspond to the HEA-type checklist that was prepared for the project that uses pre-defined habitat types and quantifiable features, as provided in Table B9-1 of EPA's Remedial Design Guidelines and Considerations (EPA, 2021b). Data were collected to be sufficient to establish the acreages and conditions of each habitat area where remedial activities will occur.

During the reconnaissance survey, the following qualitative data was recorded for each transect:

Area	Habitat Characteristic	Data Type
Riparian	Naturally vegetated forest, <400 ft from ACM	Presence/Absence
	Naturally vegetated, grass/shrub	Presence/Absence
	Invasive species	Presence/Absence
	Vegetated riprap	Presence/Absence
	Unvegetated/paved/buildings/riprap	Presence/Absence
	Substrate	Field classification
	Slope	Estimate
ACM	Sloped (<5:1 or 11 degrees), unarmored and vegetated (native or invasive)	Presence/Absence
	Sloped (>5:1 or 11 degrees), unarmored and vegetated (native or invasive)	Presence/Absence
	Sloped (<5:1 or >5:1), unarmored and unvegetated	Presence/Absence
	Sloped (<5:1 or >5:1), bioengineered	Presence/Absence
	Riprapped	Presence/Absence
	Sheet pile/seawall	Presence/Absence
	Pilings	Presence/Absence
	Suspended structures over channel margins (e.g., docks)	Presence/Absence
	Floating structures (e.g., docks)	Presence/Absence
	Substrate	Field classification
Off-channel [Main Channel] - Shallow Water	Gravel and finer	Presence/Absence
	Substrate	Field classification
	Natural rock outcrop	Presence/Absence
	Riprap/concrete/seawall in adjacent shoreline	Presence/Absence
	Suspended structures	Presence/Absence
	Floating structures	Presence/Absence

Field checklists and photographs are included in Attachment A.

2.2 DESKTOP REVIEW

The reconnaissance-level survey targeted the riparian, ACM, and shallow nearshore areas. Field qualitative data collection was supplemented with desktop review of information collected during the shoreline and overwater structure inspections and grain-size analysis completed on historical surface sediment samples throughout SIB (HGL, 2022a). The desktop review of these sources of information also provided data to support characterization of the deep-water areas with the addition of data from the MBES and LiDAR surveys (HGL, 2022b; 2023a).

The following data were compiled for each transect based on the desktop review:

Area		Habitat Characteristic	Data Type
Riparian		Location within historical floodplain	Mapping
ACM		Pilings	Location/Extent
		Suspended structures over channel margins (e.g., docks)	Location/Extent
		Floating structures (e.g., docks)	Location/Extent
		Substrate	Laboratory reports
Off-channel	Shallow Water	Substrate	Field classification
		Depth	Bathymetry
		Suspended structures	Location/Extent
		Floating structures	Location/Extent
	Deep Water	Substrate	Field classification
		Depth	Bathymetry
		Suspended structures	Location/Extent
		Floating structures	Location/Extent

The desktop review also informed the mapping exercise to delineate and refine field estimates of acreages for each of the habitat areas within SIB. The acreages for each habitat area are summarized in Table 2-1 and illustrated on Figure 2-2.

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3.0 SURVEY RESULTS SUMMARY

This section provides a summary of results from the reconnaissance-level habitat conditions survey of the four different types of habitat areas present within the SIB Project Area (i.e., riparian, ACM, off-channel – shallow water, off-channel – deep water). Attachment A includes the field checklists and the photographic log completed during the survey, in numerical order, by transect.

3.1 RIPARIAN AREAS

The riparian area comprises the area from OHW up to 400 linear ft upland of the ACM. The functions of this habitat include providing a filter for sediment and contaminant runoff, floodwater storage, slope stability, and erosion control. Additionally, the riparian area can provide canopy cover that serves as shelter for wildlife (and aquatic species during extended high-water events), shade that regulates temperature in the shallow water areas, and contribute beneficial large woody debris to the shoreline.

The vegetation type, slope, extent of impervious surfaces, and soil type are key features to the water quality and flood management functions of the riparian area. Vegetation orientation, vegetation type, and positioning of woody vegetation over the water are the key features of the thermal regulation function of the riparian area. Wildlife habitat also relies on the layers of vegetation, width of vegetated riparian area, presence of large woody debris, and presence of human-caused disturbances (Oregon Department of State Lands, 1998).

A mapping exercise was conducted to attempt to identify how much of the riparian area within the SIB Project Area for this survey falls within the historical floodplain. The current versus historical floodplain in the SIB Project Area differs due to the reshaping of the area that began in the late 1800s. Much of the existing landmass, including the entirety of the former Mocks Bottom area, was within the historical floodplain but due to fill material placement and subsequent development since the 1920s, the extent of the historical floodplain has been altered. The extent of the historical floodplain was derived from the Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FEMA, 2010), using the 1 percent annual chance flood (100 years) as well as the 0.2 percent annual chance flood (500 years) areas as well as areas that were inferred based on the historical configuration of Mocks Bottom, and is illustrated on Figure 3-1. Under current day conditions, the SIB does not convey flood flows moving in the main river because it is a backwater channel. Even during large flood events, the interior of the SIB remains quiescent, with river flow-induced current velocities less than 0.1 ft per second (Coast and Harbor Engineering, 2013). River discharges up to 100-year return periods were shown to generate very low currents in the interior of SIB.

The subsections that follow provide descriptions of site-specific types; extent; and general conditions (vegetation, slope, armoring, and presence of buildings, structures, and impervious surfaces) of riparian areas in the SIB Project Area. Table 3-1 presents a riparian area summary of vegetation type, presence of armoring, substrate, and slope in the SIB Project Area, organized by transect.

3.1.1 Types

The riparian areas within the SIB Project Area are bound by development consisting of commercial and industrial uses ranging between 0 and 100 ft above the OHW mark. The areas between impervious surfaces and structures and OHW mark can be divided into the following types:

- Shallow slopes (less than 11 degrees) with forested vegetated buffer, with an understory composed of predominantly invasive species.
- Shallow, sparsely vegetated slopes composed of predominantly invasive species.
- Steep, densely vegetated slopes (greater than 11 degrees) composed of predominantly invasive species.
- Steep, sparsely vegetated slopes with riprap interspersed with predominantly invasive species.

Much of the tip of the Swan Island Peninsula, at the mouth of SIB, is formed with a sheetpile bulkhead and an overlying pile-supported wharf. The area beneath the wharf is not being considered a riparian area for the purpose of this survey. The areas above OHW beneath the wharf consist of steep slopes shored by sheetpile wall.

3.1.2 Extent

Spatially, the riparian area in the SIB Project Area extends from OHW to the top of riverbank and encompasses approximately 11 acres. As described above, most of the footprint of the riparian area comprises commercially/industrially developed areas, including the wharf on Swan Island. The following general extents were determined based on field estimates and GIS mapping (Figure 3-2).

Riparian Area Type	Acreage
Shallow slopes (less than 11 degrees) with forested vegetated buffer, with an understory composed of predominantly invasive species.	2.6
Shallow, sparsely vegetated slopes composed of predominantly invasive species.	1.7
Steep, densely vegetated slopes (greater than 11 degrees) composed of predominantly invasive species.	2.8
Steep, sparsely vegetated slopes with riprap interspersed with predominantly invasive species.	0.8
Commercial/industrial development	3.1

Based on the FEMA maps, the entire riparian area within the SIB Project Area falls within the historical floodplain.

3.1.3 General Condition

Riparian areas on the tip of the Swan Island Peninsula, at the mouth of SIB, are generally covered by the wharf structure described in Section 3.1.1. There is a small area near the center of the tip of the peninsula (Transects 000-011) that includes a riparian area that is not overlaid by the wharf. This area consists of generally shallow slopes that are sparsely vegetated with predominantly invasive species (Scotch broom, butterfly bush, tree-of-heaven, Himalayan blackberry) with a few native saplings in an area where restoration was initiated but has not yet been successful. The width

of the riparian buffer between OHW and impervious surfaces/structures in this area is approximately 50 ft.

The riparian area on the northeastern side of the Swan Island Peninsula (Transects 044 to 063) includes a vegetated buffer on steep slopes. The overstory consists of mature native trees (black cottonwood, red alder, and Oregon white oak) and the understory is densely dominated by invasive species (Himalayan blackberry, English ivy, and Scotch broom) underlain by weathering riprap embedded in the slope. The width of the riparian buffer between OHW and impervious surfaces/structures in this area ranges from 20 to 50 ft.

The riparian area at the head of the basin (Transects 064-070) encompasses the area known as the "Swan Island Lagoon Beach" and Swan Island Boat Ramp is composed of sparse native grasses with few mature trees (black cottonwood, willow [*Salix spp.*], Douglas fir), with less prevalent invasives (Himalayan blackberry and Scotch broom). Manmade disturbances are present in the undeveloped interior related to unauthorized trails. The Swan Island Boat Ramp area is unvegetated and impervious surfaces (boat ramp parking lot, North Basin Avenue) are located immediately adjacent to the boat ramp.

The riparian area on the northern side of SIB (Transects 071-095) includes a vegetated buffer on shallow slopes. The overstory consists of mature native trees (black cottonwood, red alder, and Oregon white oak) and the understory is densely dominated by invasive species (Himalayan blackberry and English ivy). The width of the riparian buffer between OHW and impervious surfaces/structures in this area ranges from 80 to 100 ft.

The riparian area on the north-central side of SIB (Transects 096-102) includes steep, sparsely vegetated, and generally unarmored slopes. Minimal native grasses and forbs occur along with invasive species (Scotch broom, knapweed [*Centaurea spp.*], and Himalayan blackberry) interspersed with saplings and few mature trees (Black cottonwood, Oregon Ash, Pacific madrone, Sitka spruce). The width of the riparian buffer between OHW and impervious surfaces/structures in this area ranges from 40 to 60 ft.

The riparian area on the north side of SIB (Transects 103-111) includes steep slopes, densely vegetated with invasive species (tree-of-heaven, English ivy, and Himalayan blackberry), and interspersed with native grass/forb species underlain by riprap. The width of the riparian buffer between OHW and impervious surfaces/structures in this area is approximately 45 ft.

The riparian area on the northwestern side of SIB through the edge of the SIB Project Area boundary, towards the mouth of SIB (Transects 112-125), includes steep, densely vegetated, and generally unarmored slopes. The overstory consists of mature native trees (black cottonwood, quaking aspen, and Oregon ash) and the understory is densely dominated with invasive species (Himalayan blackberry, tree-of-heaven, and English ivy). The width of the riparian buffer between OHW and impervious surfaces/structures in this area is approximately 50 ft.

3.2 ACTIVE CHANNEL MARGIN

The ACM is defined as the portion of the river's edge from the OHW mark to OLW (National Oceanic and Atmospheric Administration [NOAA], 2017). In earlier evaluations at the Portland

Harbor Superfund Site, OLW has been defined as 5.1 ft NAVD88 and OHW as 20.075 ft NAVD88 (Anchor QEA, 2012). Using this elevation datum, the uniform depth of the ACM is +15 ft NAVD88.

The habitat in this area can be valuable to juvenile salmon by providing refuge from prey and a location to escape strong currents. Young-of-the-year (all fish less than one year in age) Chinook move in association with the shoreline edge, and persistent vegetation can be important. For the ACM to be considered vegetated, it should contain an appropriate assemblage of water-tolerant trees and shrubs. Undulating or irregularly shaped shoreline ACM is preferred, both from a geomorphic perspective (sustained undulations create flow complexities) and from an aspect of providing locations for fish to escape from strong currents. The ACM is a preferred habitat for mink as they follow the undulating margin under the cover of vegetation in search of prey (NOAA, 2017).

The subsections that follow provide descriptions of site-specific types; extent; and general conditions (slope, vegetation, armoring, sheetpile/seawall, substrate, and presence of structures) of the SIB ACM. Table 3-2 presents a summary of vegetation type, presence of armoring, suspended structures, pilings, substrate, and slope in the SIB ACM, organized by transect.

3.2.1 Types

The ACM along SIB can be divided into the following types:

- Shallow slopes (less than 11 degrees) with submerged vegetation and minimal armoring.
- Shallow slopes with no armoring and sparse vegetation.
- Shallow slopes with cobbles and/or gravel, sparsely vegetated with predominantly invasive species.
- Steep slopes (greater than 11 degrees) with mix of cobbles and/or riprap, densely vegetated just above OLW, composed of predominantly invasive species.
- Steep slopes with riprap near OLW, densely vegetated with forested canopy and invasive species understory.
- Steep slopes with riprap interspersed with predominantly invasive species.
- Steep slopes with cobbles and/or gravel and no vegetation (below the wharf).

Numerous suspended structures are in the SIB ACM (Figure 2-2). These are summarized as follows:

Transect	Suspended Structure
000	Berth 312-Pier D, Demo Pier
001-002	East/West Pier
012-042	Wharf
011-012	Walkway to Shipyard Commerce Center Floating Dock
013-014	Dry Dock 3

Transect	Suspended Structure
015	Pier C
016-017	Dry Dock 5
018-020	Berth 301-Pier A
044-048	Berth 306
050-052	Berth 307
055-056	Berth 308
061	Wind Tunnel
069	Swan Island Boat Ramp
080-085	Berth 311
099	Dredge Base
107-108	Marine Consortium, Inc. Pier
118	U.S. Navy Pier
123-124	U.S. Coast Guard Dock and Pier

In addition to the suspended structures, much of the tip of the Swan Island Peninsula, at the mouth of SIB, is formed with a sheetpile bulkhead and an overlying pile-supported wharf, and the sheetpile and wooden retaining walls beneath the wharf structure extend into the ACM. The Quay Wall, at the northeastern tip of the peninsula, generally extends to OLW, and is generally lacking an ACM (Transects 013-020).

3.2.2 Extent

The SIB ACM encompasses approximately 14 acres. The acreages for the ACM types in the SIB Project Area are summarized in the table below. The acreages were estimated using field observations and GIS mapping (Figure 3-3).

Active Channel Margin Type	Acreage
Shallow slopes with submerged vegetation and minimal armoring.	6.5
Shallow slopes with no armoring and sparse vegetation.	1.1
Shallow slopes with cobbles and/or gravel, sparsely vegetated with predominantly invasive species.	0.2
Steep slopes with mix of cobbles and/or riprap, densely vegetated just above OLW, composed of predominantly invasive species.	1.5
Steep slopes with riprap near OLW, densely vegetated with forested canopy and invasive species understory.	1.2
Steep slopes with riprap interspersed with predominantly invasive species.	1.4
Steep slopes with cobbles and/or gravel and no vegetation (below the wharf).	1.5

3.2.3 General Condition

The ACM along the southwestern corner of Swan Island Peninsula (Transects 000-002) consists of steep slopes with riprap and/or quarry spalls and minimal sparse invasive vegetation (Scotch broom, butterfly bush, Himalayan blackberry). The underlying substrate is composed of sandy loam. Suspended structures are present on the southwestern edge of the peninsula associated with the Berth 312-Pier D, Vigorous dry dock, and East/West/Demo piers.

The ACM near the center of the tip of Swan Island Peninsula (Transects 003-010) consists of generally shallow slopes with quarry spalls and/or gravel and minimal sparse invasive species (Scotch broom, butterfly bush, Himalayan blackberry). The underlying substrate is composed of sandy loam. Derelict pilings extend into the ACM in Transect 004.

The ACM on the northwestern side of Swan Island Peninsula, beneath the wharf (Transects 021-042) consists of steep slopes with gravel and/or quarry spalls and no vegetation. The underlying substrate is composed of sandy loam and silt loam. Piles supporting the wharf are present throughout the ACM and the sheetpile bulkhead is situated below the OHW mark. The city of Portland municipal outfall OFS-1 is positioned within the ACM and a portion of the corrugated metal pipe is disconnected and laying on the riverbank (Transect 037). Various wooden debris from derelict structures is also present throughout.

The ACM on the northeastern side of the Swan Island Peninsula (Transects 043 to 063) consists of steep slopes with mix of cobbles and/or riprap and is densely vegetated just above OLW, composed of predominantly invasive species (Himalayan blackberry, English ivy, and Scotch broom). The underlying substrate is composed of sandy loam and silt loam. Suspended structures include Berth 306 (Transects 044-048), Berth 307 (Transects 050-052), Berth 308 (Transects 055-056), and the Wind Tunnel (Transect 61). Wood tie beams are present within the ACM from Transects 048-061. The city of Portland municipal outfall OFS-2 is positioned within the ACM and surrounded by various solid-waste-type debris (Transect 063).

The ACM at the head of the basin (Transects 064-069) encompasses the area known as the "Swan Island Lagoon Beach" and consists of a gently sloping sandy beach, constructed using dredged material from the Willamette River in the 1970s and 1980s, with no armoring and minimal to no vegetation. The underlying substrate is composed of sand. Large woody debris was observed on the beach during the time of the survey. The Swan Island Boat Ramp is located at the northern corner of the head of the basin (Transect 070). The stretch of ACM between the boat ramp and the beach area consists of riprap with sparse vegetation. A floating dock is located immediately adjacent to the north of the boat ramp.

The ACM on the northeastern to north central side of SIB (Transects 071-102) consists of a gently sloping sandy beach up to the vegetated buffer described in Section 3.1.3, the edge of which occurs within the ACM, with the tree canopy overhanging the water during high river stages. The beach is unarmored and submerged vegetation becomes more persistent near Transect 078. The underlying substrate is composed of silt loam. A mix of cobbles and gravel is present within the ACM from Transects 095-102. The top of the pipe associated with City of Portland municipal outfall OFM-3 is visible above ground (Transect 071) and outfalls OFM-2 and OFM-1 are positioned within the ACM (Transects 086 and 102, respectively). A portion of the ACM at Transect 095 encompasses a gravel launchpad. Large woody debris is located on the beach in this area. Suspended structures include Berth 311 (Transects 080 and 085) and the Port of Portland Dredge Base (Transect 099).

The ACM area on the north side of SIB (Transects 103-111) includes heavily armored steep slopes, sparsely vegetated with invasive species (English ivy and Himalayan blackberry). The underlying

substrate is composed of silt loam. The Marine Consortium, Inc. pier is suspended above the ACM at Transect 107-108.

The ACM on the northwestern side of SIB through the edge of the SIB Project Area boundary, towards the mouth of SIB (Transects 112-125), includes densely vegetated steep slopes. Riprap is present near OLW up to the vegetated buffer described in Section 3.1.3, the edge of which occurs within the ACM, with the tree canopy overhanging the water during high river stages. The underlying substrate is composed of silt loam. Just before the northern bend of SIB, Himalayan blackberry was observed in dense thickets over 10 ft in height. The ACM flattens out briefly in the bend with a shallow sloped beach near OLW and dense vegetation up to the OHW mark. Large woody debris is present near OLW to the edge of the SIB Project Area boundary. Suspended structures include the U.S. Navy pier (Transect 118) and the U.S. Coast Guard pier and dock (Transects 123-124).

3.3 OFF-CHANNEL

SIB was historically part of the main channel of the Willamette River and Swan Island was formed from a natural bar in the river. The main river channel flowed east of the island adjacent to the marshy lowlands of Mocks Bottom. The main navigation channel was relocated to the west side of the island in the early to mid-1920s. In the late 1920s, Swan Island was connected to the mainland, closing off the channel and creating a still-water basin or alcove. Historical modifications include a complex dredging and filling history that altered the shorelines on Mocks Bottom, which was formerly a marshland, and Swan Island where sheet pile seawalls and fill material turned the island into a peninsula. On-going maintenance dredging is conducted to support the commercial and industrial uses of SIB.

The interior waterway is approximately 1 mile long and 650 ft wide. Water depths within SIB range from 10 to 57 ft with shallowest depths at the head of the basin and deepest areas located at the transition to the main river channel downstream of the end of the Swan Island Peninsula. SIB is a freshwater waterbody, but it is influenced by daily tides that cause water surface elevation to vary typically over a 3- to 4-ft range with a maximum range of approximately 6 ft (HGL, 2022a). The waterway within the SIB Project Area supports commercial/industrial, recreational, and governmental vessel traffic related to the ongoing uses of the shoreline and is not part of the federal navigation channel.

The subsections that follow provide descriptions of the extent and general condition (substrate, presence of riprap, pilings, and suspended and floating structures) of the shallow water and deep water in SIB. Table 3-3 presents a summary of water depth, presence of riprap, structures, piles, and substrate in the shallow and deep-water areas of SIB, organized by transect.

3.3.1 Shallow Water

The shallow water area includes the area from the ACM out to a maximum depth of 20 ft below OLW. The location of this area is not static but changes with the rise and fall of river height (flow) and tidal period. In SIB, shallow water occurs along the riverbanks, where maintenance dredging does not occur, and at the head of the basin.

As with the ACM, the habitat in the shallow water areas can be valuable to juvenile fish by providing refuge from prey and a location to escape strong currents. The shallow water extent along the riverbanks of SIB has slower current conditions that offer lower energy expenditure feeding opportunities for juvenile fish. The presence of structures and vegetation, as described in Section 3.3.1.2, provides potential cover from predation whereas areas without cover provide increased opportunities for avian predation. Additionally, navigating deep water areas of the basin increases predation risk from larger fish. Water temperatures in shallow water are expected to be influenced by inputs of cooler or warmer water from outfall discharges and are also influenced by ambient air temperatures during the hotter summer months in areas without cover.

3.3.1.1 Extent

Shallow water areas generally encompass approximately 14 acres of SIB. Figure 2-2 illustrates the shallow water areas acquired from the unified elevation model. This extent represents SIB conditions during a range of average river heights that occurred at the time of the individual surveys. Actual shallow water acreage will fluctuate based on river stage fluctuations.

3.3.1.2 General Condition

Shallow water habitat on the tip of the Swan Island Peninsula, at the mouth of SIB, (Transects 000-018) is limited to a small area near the center of the tip of the peninsula due to the industrial functions of this area. The underlying substrate is composed of sandy loam. Quarry spalls and/or gravel extend below OLW. A grouping of derelict pilings is present in Transect 004. Floating booms are prevalent throughout this area.

Shallow water habitat is also limited on the northeastern side of the Swan Island Peninsula (Transects 043 to 054) due to the industrial functions of this area. The underlying substrate is composed of silt loam and sandy loam. Cobbles and/or riprap extend below OLW. Suspended structures, associated pilings, and dolphins are associated with Berth 306 (Transects 044-048) and Berth 307 (Transects 050-052). Derelict piles are present from Transects 048-054.

The most prevalent shallow water habitat in SIB occurs at the head of the basin (Transects 055-078), outside of the basin areas that are used for commercial vessel-related activities. The underlying substrate is composed predominantly of sand with a patch of silty clay loam evident on the northeastern side of SIB (Transects 072-077). Cobbles and/or riprap extend below OLW from Transects 055-063 and 069. City of Portland municipal outfall OFM-3, along with protective piles positioned at the end of the outfall, are in Transect 071. Suspended structures, pilings, and dolphins are associated with Berth 308 (Transects 055-056) and the Wind Tunnel (Transect 61), and a floating dock is located immediately adjacent to the north of the Swan Island Boat Ramp (Transect 070). Derelict piles are present from Transects 055-061.

Shallow water habitat occurs along the entire northern shoreline of SIB (Transects 079-125). The substrate varies between sandy loam, silty clay loam, loamy sand, and sand. A mix of cobbles and gravel extend below OLW from Transects 095-102 and riprap extends below OLW from Transects 103-125. Suspended structures, pilings, and dolphins are associated with Berth 311 (Transects 080 and 087), Port of Portland Dredge Base (Transect 099), the Marine Consortium, Inc. pier and

floating docks (Transect 107-108), the U.S. Navy pier (Transects 104-111), and the U.S. Coast Guard pier and dock (Transects 121-125).

3.3.2 Deep Water

The deep-water area includes the area of SIB at depths greater than 20 ft below OLW. The location of this area is not static but changes with the rise and fall of river height (flow) and tidal period. In SIB, deep water occurs in the interior of the basin as well as around dry docks and other dock areas where maintenance dredging occurs.

3.3.2.1 Extent

Deep water areas generally encompass approximately 70 acres of SIB. Figure 2-2 illustrates the deep-water areas acquired from the MBES dataset (HGL, 2022b). This extent represents SIB conditions during a range of average river heights that occurred at the time of the MBES survey. Actual deep-water acreage will fluctuate based on river stage fluctuations.

3.3.2.2 General Condition

Much of the tip of the Swan Island Peninsula, at the mouth of SIB, (Transects 000-018) is maintained as deep water to support the industrial uses of this area. The underlying substrate is predominantly sandy loam with some areas of silt and silt loam. Suspended structures, pilings, and dolphins are associated with Berth 312 – Pier D, Vigorous dry dock, East/West/Demo piers (Transects 000-002), Shipyard Commerce Center floating dock (Transects 006-012), Berth 309 and 310-Pier C (Transects 013-015), Quay Wall (Transects, 016-017), and Berth 301-Pier A (Transect 018). Floating boons are prevalent throughout this area.

The northeastern side of the Swan Island Peninsula also consists of deep water adjacent to the wharf (Transects 019-042) due to the industrial functions of this area. Gravel and/or quarry spalls extend below OLW. The underlying substrate is composed of silt loam. Suspended structures and piles are associated with the wharf wall and derelict piles are present throughout. Floating boons are prevalent throughout this area.

Deep water surrounds the suspended structures, associated pilings, and dolphins associated with Berth 306 (Transects 044-048) and Berth 307 (Transects 050-052). The underlying substrate is composed predominantly of silt loam.

Deep water extends from Swan Island Peninsula across SIB to Transects 079-125. The substrate varies between sandy loam, loamy sand, and sand. Suspended structures, pilings, and dolphins that extend into the deep water are associated with Berth 311 (Transects 080 and 087), Port of Portland Dredge Base (Transect 099), and the U.S. Navy pier (Transects 104-111).

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4.0 CONCLUSIONS

The habitat conditions survey was conducted to provide qualitative information on the condition and extent of riparian, ACM, and off-channel areas in the SIB Project Area. During the data gap analysis conducted during development of the PDI Work Plan it was determined that aquatic and terrestrial habitat conditions were not adequately documented to support analysis of RD impacts to aquatic resources. The data compiled as part of the survey provides documentation of the aquatic and terrestrial habitat conditions and will be utilized to provide baseline (existing/pre-construction condition) inputs to a HEA that will evaluate pre-and post-remediation habitat conditions for the purposes of complying with CWA Section 404 and compliance with the Endangered Species Act.

The SIB was designed to functionally support the industrial, commercial, and military-type activities that occur along the shoreline of the SIB Project Area. The shoreline, in its entirety, was constructed by fill placement and other modifications that occurred over decades. The desktop review combined with field observations were used to inform a mapping exercise to delineate and refine acreages of current habitat conditions in the SIB Project Area. The riparian areas have limited vegetative buffers with substantial development, including structures and large swaths of impervious surfaces, encompassing over 73 percent of the riparian area. Invasive species are prevalent and abundant, composing nearly 100 percent of the understory in the forested riparian areas and more than 50 percent of the vegetated ACM. Up to 50 percent of the ACM is armored with riprap or protected from erosion by other shoreline structures. However, there are a limited number of areas where the riparian and ACM may encompass some functional habitat in the presence of vegetated buffers of mature trees and unarmored ACM with submerged vegetation, such as in the vicinity of Berth 311 (Figures 3-2 and 3-3). There are a large number of suspended structures that could provide thermoregulation in the shallow water but also a large number of piles, dolphins, and other manmade in-water disturbances that diminish the benefit of those structures.

Habitat layers will be incorporated into the constructed remedy, in accordance with Section 14.2 of the Record of Decision and technology assignments presented therein. The Remedial Design will incorporate elements of suitable habitat materials and minimize adverse effects on habitats. This habitat conditions survey provides the baseline for determining the current and future habitat requirements for the purpose of designing and constructing the selected remedy. Projected post-remediation habitat quantity and condition data will be collected, as needed.

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5.0 REFERENCES

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TABLES

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Table 2-1
Habitat Areas Acreage Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Habitat Zone Type	Acreage
Riparian	***11***
Shallow slopes (less than 11 degrees) with forested vegetated buffer, with an understory comprised of predominantly invasive species.	2.6
Shallow, sparsely vegetated slopes comprised of predominantly invasive species.	1.7
Steep, densely vegetated slopes (greater than 11 degrees) comprised of predominantly invasive species.	2.8
Steep, sparsely vegetated slopes with riprap interspersed with predominantly invasive species.	0.8
Commercial/industrial development (e.g., structures, impervious surfaces).	3.1
Active Channel Margin	***13.4***
Shallow slopes with submerged vegetation and minimal armoring.	6.5
Shallow slopes with no armoring and sparse vegetation.	1.1
Shallow slopes with cobbles and/or gravel, sparsely vegetated with predominantly invasive species.	0.2
Steep slopes with mix of cobbles and/or riprap, densely vegetated just above OLW, comprised of predominantly invasive species.	1.5
Steep slopes with riprap near OLW, densely vegetated with forested canopy and invasive species understory.	1.2
Steep slopes with riprap interspersed with predominantly invasive species.	1.4
Steep slopes with cobbles and/or gravel and no vegetation (below the wharf).	1.5
Off-channel	***84***
Shallow Water	14
Deep Water	70

Notes:
% = percent
OLW = ordinary low water

Table 3-1
Riparian Area Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect[1,2]	Natural Forested	Natural Grass/Shrub	Invasive Species	Vegetated Riprap	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Substrate	Slope
000	N	N	Y	N	Y	Y	Sandy loam	>15%
001	N	Y	Y	N	Y	Y	Silty clay	>15%
002	N	Y	Y	N	Y	Y	Silty clay	<15%
003	N	Y	Y	N	Y	Y	Silt loam	<15%
004	N	Y	Y	N	Y	Y	Silt loam	<15%
005	N	Y	Y	N	Y	Y	Silt loam	<15%
006	N	Y	Y	N	Y	Y	Silt loam	<15%
007	N	Y	Y	N	Y	Y	Silt loam	<15%
008	N	Y	Y	N	Y	Y	Silt loam	<15%
009	N	Y	Y	N	Y	Y	Silt loam	<15%
010	N	Y	Y	N	Y	Y	Silt loam	>15%
011	N	Y	Y	N	Y	Y	Sandy loam	>15%
012	N	N	N	N	N	N	Sheetpile	N/A
013	N	N	Y	N	N	N	Sheetpile	N/A
014	N	N	Y	N	N	N	Sheetpile	N/A
015	N	N	N	N	N	N	Sheetpile	N/A
016	N	N	N	N	N	N	Sheetpile	N/A
017	N	N	N	N	N	N	Sheetpile	N/A
018	N	N	N	N	N	N	Sheetpile	N/A
019	N	N	N	N	N	N	Sheetpile	N/A
020	N	N	N	N	N	N	Sheetpile	N/A
021	N	N	N	N	N	N	Sheetpile	N/A
022	N	N	N	N	N	N	Sheetpile	N/A
023	N	N	N	N	N	N	Sheetpile	N/A
024	N	N	N	N	N	N	Sheetpile	N/A
025	N	N	N	N	N	N	Sheetpile	N/A
026	N	N	N	N	N	N	Sheetpile	N/A
027	N	N	N	N	N	N	Sheetpile	N/A
028	N	N	N	N	N	N	Sheetpile	N/A
029	N	N	N	N	N	N	Sheetpile	N/A
030	N	N	N	N	N	N	Sheetpile	N/A
031	N	N	N	N	N	N	Sheetpile	N/A
032	N	N	N	N	N	N	Sheetpile	N/A

Table 3-1 (continued)
Riparian Area Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect[1,2]	Natural Forested	Natural Grass/Shrub	Invasive Species	Vegetated Riprap	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Substrate	Slope
033	N	N	N	N	N	N	Sheetpile	N/A
034	N	N	N	N	N	N	Sheetpile	N/A
035	N	N	N	N	N	N	Sheetpile	N/A
036	N	N	N	N	N	N	Sheetpile	N/A
037	N	N	N	N	N	N	Sheetpile	N/A
038	N	N	N	N	N	N	Sheetpile	N/A
039	N	N	N	N	N	N	Sheetpile	N/A
040	N	N	N	N	N	N	Sheetpile	N/A
041	N	N	N	N	N	N	Sheetpile	N/A
042	N	N	Y	N	N	N	Silt loam	N/A
043	N	N	Y	Y	N	Y	Silt loam	>15%
044	Y	Y	Y	Y	N	Y	Silt loam	>15%
045	Y	Y	Y	Y	N	Y	Silt loam	>15%
046	Y	Y	Y	Y	N	Y	Silt loam	>15%
047	Y	Y	Y	Y	N	Y	Silt loam	>15%
048	Y	Y	Y	Y	N	Y	Silt loam	>15%
049	Y	Y	Y	Y	N	Y	Silt loam	>15%
050	Y	Y	Y	Y	N	Y	Silt loam	>15%
051	Y	Y	Y	Y	N	Y	Silt loam	>15%
052	Y	Y	Y	Y	N	Y	Silt loam	>15%
053	Y	Y	Y	Y	N	Y	Silt loam	>15%
054	Y	Y	Y	Y	N	Y	Silt loam	>15%
055	Y	Y	Y	Y	N	Y	Silt loam	>15%
056	Y	Y	Y	Y	N	Y	Silt loam	>15%
057	Y	Y	Y	Y	N	Y	Silt loam	>15%
058	Y	Y	Y	Y	N	Y	Silt loam	>15%
059	Y	Y	Y	Y	N	Y	Silt loam	>15%
060	Y	Y	Y	Y	N	Y	Silt loam	>15%
061	Y	Y	Y	Y	N	Y	Silt loam	>15%
062	Y	Y	Y	Y	N	Y	Silt loam	>15%
063	Y	Y	Y	Y	N	Y	Silt loam	>15%
064	Y	Y	Y	N	N	N	Sandy loam	>15%
065	Y	Y	Y	N	N	N	Sand	<15%
066	Y	Y	Y	N	N	N	Sand	<15%

Table 3-1 (continued)
Riparian Area Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect[1,2]	Natural Forested	Natural Grass/Shrub	Invasive Species	Vegetated Riprap	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Substrate	Slope
067	Y	Y	Y	N	N	N	Sand	<15%
068	Y	Y	Y	N	N	N	Sand	<15%
069	Y	Y	Y	Y	N	Y	Silt loam	<15%
070	N	N	Y	N	N	Y	Silt loam	<15%
071	Y	Y	Y	N	N	N	Silt loam	<15%
072	Y	Y	Y	N	N	N	Silt loam	<15%
073	Y	Y	Y	N	N	N	Silt loam	<15%
074	Y	Y	Y	N	N	N	Silt loam	<15%
075	Y	Y	Y	N	N	N	Silt loam	<15%
076	Y	Y	Y	N	N	N	Silt loam	<15%
077	Y	Y	Y	N	N	N	Silt loam	<15%
078	Y	Y	Y	N	N	N	Silt loam	<15%
079	Y	Y	Y	N	N	N	Silt loam	<15%
080	Y	Y	Y	N	N	N	Silt loam	<15%
081	Y	Y	Y	N	N	N	Silt loam	<15%
082	Y	Y	Y	N	N	N	Silt loam	<15%
083	Y	Y	Y	N	N	N	Sand	<15%
084	Y	Y	Y	N	N	N	Sand	<15%
085	Y	Y	Y	N	N	N	Silt loam	<15%
086	Y	Y	Y	N	N	N	Silt loam	<15%
087	Y	Y	Y	N	N	N	Silt loam	<15%
088	Y	Y	Y	N	N	N	Silt loam	<15%
089	Y	Y	Y	N	N	N	Silt loam	<15%
090	Y	Y	Y	N	N	N	Silt loam	<15%
091	Y	Y	Y	N	N	N	Silt loam	<15%
092	Y	Y	Y	N	N	N	Silt loam	<15%
093	Y	Y	Y	N	N	N	Silt loam	<15%
094	Y	Y	Y	N	N	N	Silt loam	<15%
095	N	N	Y	N	Y	Y	Silt loam	<15%
096	Y	Y	Y	N	N	N	Sandy loam	<15%
097	Y	Y	Y	N	N	N	Silt loam	<15%
098	Y	Y	Y	N	N	N	Silt loam	<15%
099	Y	Y	Y	N	N	N	Sandy loam	<15%
100	Y	N	Y	N	N	N	Sandy loam	<15%

Table 3-1 (continued)
Riparian Area Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect[1,2]	Natural Forested	Natural Grass/Shrub	Invasive Species	Vegetated Riprap	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Substrate	Slope
101	Y	Y	Y	N	N	N	Silt loam	<15%
102	Y	N	Y	N	N	N	Sandy loam	<15%
103	Y	Y	Y	Y	N	Y	Silt loam	<15%
104	N	Y	Y	Y	N	Y	Silt loam	>15%
105	N	N	Y	Y	N	Y	Silt loam	>15%
106	N	N	Y	Y	N	Y	Silt loam	>15%
107	N	N	Y	Y	N	Y	Silt loam	>15%
108	N	N	Y	Y	N	Y	Silt loam	>15%
109	N	N	Y	Y	N	Y	Silt loam	>15%
110	N	N	Y	Y	N	Y	Silt loam	>15%
111	N	N	Y	Y	N	Y	Silt loam	>15%
112	N	N	Y	N	N	N	Silt loam	>15%
113	Y	Y	Y	N	N	N	Silt loam	>15%
114	Y	Y	Y	N	N	N	Silt loam	>15%
115	Y	Y	Y	N	N	N	Silt loam	>15%
116	Y	Y	Y	N	N	N	Silt loam	>15%
117	Y	Y	Y	N	N	N	Silt loam	>15%
118	Y	Y	Y	N	N	N	Silt loam	>15%
119	Y	Y	Y	N	N	N	Silt loam	>15%
120	Y	Y	Y	N	N	N	Silt loam	>15%
121	Y	Y	Y	N	N	N	Silt loam	>15%
122	Y	Y	Y	N	N	N	Silt loam	>15%
123	Y	Y	Y	N	N	N	Silt loam	>15%
124	Y	Y	Y	N	N	N	Silt loam	>15%
125	Y	Y	Y	N	N	N	Silt loam	>15%

Notes:
[1] The entirety of riparian areas within the Swan Island Basin Project Area are within the historical floodplain.
[2] The entirety of riparian areas within the Swan Island Basin Project Area include unvegetated impervious surfaces and buildings/structures.

% = percent
N = No
N/A = not applicable
Y = Yes
> = greater than
< = less than

Table 3-2
Active Channel Margin Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Natural Forest/Grass/ Shrub	Invasive Species	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Suspended Structures	Pilings	Substrate	Slope
000	N	Y	N	Y	Y	Y	Sandy loam	>11%
001	N	Y	N	Y	Y	Y	Sandy loam	>11%
002	N	Y	N	Y	Y	Y	Sandy loam	>11%
003	Y	Y	N	Y	N	N	Sandy loam	<11%
004	Y	Y	N	Y	N	Y	Sandy loam	<11%
005	Y	Y	N	Y	N	N	Sandy loam	<11%
006	Y	Y	N	Y	N	N	Sandy loam	<11%
007	Y	Y	N	Y	N	N	Sandy loam	<11%
008	Y	Y	N	Y	N	N	Sandy loam	<11%
009	Y	Y	N	Y	N	N	Sandy loam	<11%
010	N	Y	N	Y	N	N	Sandy loam	>11%
011	N	Y	N	Y	N	N	Silt loam	>11%
012	N	Y	N	Y	N	N	Sheetpile/Seawall	N/A
013	N	Y	N	Y	Y	N	Sheetpile/Seawall	N/A
014	N	Y	N	Y	Y	N	Sheetpile/Seawall	N/A
015	N	N	N	N	N	N	Sheetpile/Seawall	N/A
016	N	N	N	N	N	N	Sheetpile/Seawall	N/A
017	N	N	N	N	N	N	Sheetpile/Seawall	N/A
018	N	N	N	N	N	N	Sheetpile/Seawall	N/A
019	N	N	N	N	N	N	Sheetpile/Seawall	N/A
020	N	N	N	N	N	N	Sheetpile/Seawall	N/A
021	N	N	N	N	N	N	Silt loam	>11%
022	N	N	Y	Y	Y	Y	Silt loam	>11%
023	N	N	Y	Y	Y	Y	Silt loam	>11%
024	N	N	Y	Y	Y	Y	Silt loam	>11%
025	N	N	Y	Y	Y	Y	Silt loam	>11%
026	N	N	Y	Y	Y	Y	Silt loam	>11%
027	N	N	Y	Y	Y	Y	Silt loam	>11%
028	N	N	Y	Y	Y	Y	Silt loam	>11%
029	N	N	Y	Y	Y	Y	Silt loam	>11%
030	N	N	Y	Y	Y	Y	Silt loam	>11%
031	N	N	Y	Y	Y	Y	Silt loam	>11%
032	N	N	Y	Y	Y	Y	Silt loam	>11%

Table 3-2 (continued)
Active Channel Margin Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Natural Forest/Grass/ Shrub	Invasive Species	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Suspended Structures	Pilings	Substrate	Slope
033	N	N	Y	Y	Y	Y	Silt loam	>11%
034	N	N	Y	Y	Y	Y	Silt loam	>11%
035	N	N	Y	Y	Y	Y	Silt loam	>11%
036	N	N	Y	Y	Y	Y	Silt loam	>11%
037	N	N	Y	Y	Y	Y	Silt loam	>11%
038	N	N	Y	Y	Y	Y	Silt loam	>11%
039	N	N	Y	Y	Y	Y	Silt loam	>11%
040	N	N	Y	Y	Y	Y	Silt loam	>11%
041	N	N	Y	Y	Y	Y	Silt loam	>11%
042	N	N	Y	Y	Y	Y	Silt loam	>11%
043	Y	Y	N	Y	N	Y	Silt loam	>11%
044	Y	Y	N	Y	Y	N	Silt loam	>11%
045	Y	Y	N	Y	Y	N	Silt loam	>11%
046	Y	Y	N	Y	Y	N	Silt loam	>11%
047	Y	Y	N	Y	Y	N	Silt loam	>11%
048	Y	Y	N	Y	Y	N	Silt loam	>11%
049	Y	Y	N	Y	N	N	Sandy loam	>11%
050	Y	Y	N	Y	Y	N	Sandy loam	>11%
051	Y	Y	N	Y	Y	N	Silt loam	>11%
052	Y	Y	N	Y	Y	N	Silt loam	>11%
053	Y	Y	N	Y	N	N	Silt loam	>11%
054	Y	Y	N	Y	N	N	Silt loam	>11%
055	Y	Y	N	Y	Y	N	Silt loam	>11%
056	Y	Y	N	Y	Y	N	Silt loam	>11%
057	Y	Y	N	Y	N	N	Silt loam	>11%
058	Y	Y	N	Y	N	N	Silt loam	>11%
059	Y	Y	N	Y	N	N	Silt loam	>11%
060	Y	Y	N	Y	N	N	Sandy loam	>11%
061	Y	Y	N	Y	Y	Y	Sandy loam	>11%
062	Y	Y	N	Y	N	N	Sandy loam	>11%
063	Y	Y	N	Y	N	Y	Silt loam	>11%
064	Y	Y	N	N	N	N	Sand	<11%
065	Y	Y	N	N	N	N	Sand	<11%
066	Y	Y	N	N	N	N	Sand	<11%

Table 3-2 (continued)
Active Channel Margin Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Natural Forest/Grass/ Shrub	Invasive Species	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Suspended Structures	Pilings	Substrate	Slope
067	Y	Y	N	N	N	N	Sand	<11%
068	Y	Y	N	N	N	N	Sand	<11%
069	Y	Y	Y	Y	N	Y	Sand	>11%
070	N	N	Y	N	N	Y	Silt loam	<11%
071	Y	Y	N	N	N	N	Silt loam	<11%
072	Y	Y	N	N	N	N	Silt loam	<11%
073	Y	Y	N	N	N	N	Silt loam	<11%
074	Y	Y	N	N	N	N	Silt loam	<11%
075	Y	Y	N	N	N	N	Silt loam	<11%
076	Y	Y	N	N	N	N	Silt loam	<11%
077	Y	Y	N	N	N	N	Silt loam	<11%
078	Y	Y	N	N	N	N	Silt loam	<11%
079	Y	Y	N	N	N	N	Silt loam	<11%
080	Y	Y	N	N	Y	Y	Silt loam	<11%
081	Y	Y	N	N	N	N	Silt loam	<11%
082	Y	Y	N	N	N	N	Silt loam	<11%
083	Y	Y	N	N	N	N	Silt loam	<11%
084	Y	Y	N	N	N	N	Silt loam	<11%
085	Y	Y	N	N	Y	Y	Silt loam	<11%
086	Y	Y	N	N	N	N	Silt loam	<11%
087	Y	Y	N	N	N	N	Silt loam	<11%
088	Y	Y	N	N	N	N	Silt loam	<11%
089	Y	Y	N	N	N	N	Silt loam	<11%
090	Y	Y	N	N	N	N	Silt loam	<11%
091	Y	Y	N	N	N	N	Silt loam	<11%
092	Y	Y	N	N	N	N	Silt loam	<11%
093	Y	Y	N	N	N	N	Sandy loam	<11%
094	Y	Y	N	N	N	N	Silt loam	<11%
095	N	Y	N	Y	N	N	Sandy loam	<11%
096	Y	Y	Y	N	N	N	Sandy loam	<11%
097	Y	Y	N	N	N	N	Silt loam	<11%
098	Y	Y	N	Y	N	N	Silt loam	<11%
099	Y	Y	N	Y	Y	Y	Silt loam	<11%
100	Y	Y	N	Y	N	N	Sandy loam	<11%

Table 3-2 (continued)
Active Channel Margin Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Natural Forest/Grass/ Shrub	Invasive Species	Unvegetated	Riprap/Cobbles/ Quarry Spalls	Suspended Structures	Pilings	Substrate	Slope
101	Y	Y	N	Y	N	N	Sandy loam	<11%
102	Y	Y	N	Y	N	N	Sandy loam	<11%
103	Y	Y	N	Y	N	N	Silt loam	<11%
104	Y	Y	N	Y	N	N	Silt loam	>11%
105	Y	Y	N	Y	N	N	Silt loam	>11%
106	Y	Y	N	Y	N	N	Silt loam	>11%
107	Y	Y	N	Y	Y	Y	Silt loam	>11%
108	Y	Y	N	Y	Y	Y	Silt loam	>11%
109	Y	Y	N	Y	N	N	Silt loam	>11%
110	Y	Y	N	Y	N	N	Silt loam	>11%
111	Y	Y	N	Y	N	N	Silt loam	>11%
112	Y	Y	N	Y	N	N	Silt loam	>11%
113	Y	Y	N	Y	N	N	Silt loam	>11%
114	Y	Y	N	Y	N	N	Silt loam	>11%
115	Y	Y	N	Y	N	N	Silt loam	>11%
116	Y	Y	N	Y	N	N	Silt loam	>11%
117	Y	Y	N	Y	N	N	Silt loam	>11%
118	Y	Y	N	Y	Y	Y	Silt loam	>11%
119	Y	Y	N	Y	N	N	Silt loam	>11%
120	Y	Y	N	Y	N	N	Silt loam	>11%
121	Y	Y	N	Y	N	N	Silt loam	>11%
122	Y	Y	N	Y	N	N	Silt loam	>11%
123	Y	Y	N	Y	Y	Y	Silt loam	>11%
124	Y	Y	N	Y	Y	Y	Silt loam	>11%
125	Y	Y	N	Y	N	N	Silt loam	>11%

Notes:
% = percent
N = No
N/A = not applicable
Y = Yes
> = greater than
< = less than

Table 3-3
Off-channel Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Shallow Water/ Gravel or Finer	Shallow Water with Riprap/Seawall (Adjacent)	Deep Water/Natural Substrates	Suspended/ Floating Structures	Pilings	Substrate	Percent Fines (%)
000	Y	Y	Y	Y	Y	Silt loam	20-40
001	Y	Y	Y	Y	Y	Silt loam	20-40
002	Y	N	Y	Y	Y	Silt	40-60
003	Y	N	Y	Y	N	Silt	40-60
004	Y	N	Y	Y	N	Sandy loam	40-60
005	Y	N	Y	Y	N	Sandy loam	40-60
006	Y	N	Y	Y	Y	Sandy loam	40-60
007	Y	N	Y	Y	Y	Sandy loam	40-60
008	Y	N	Y	Y	Y	Sandy loam	40-60
009	Y	N	Y	Y	Y	Sandy loam	40-60
010	Y	N	Y	Y	Y	Sandy loam	40-60
011	Y	N	Y	Y	Y	Sandy loam	40-60
012	N	N	Y	Y	Y	Sandy loam	20-40
013	N	N	Y	Y	N	Sandy loam	20-40
014	N	N	Y	Y	N	Sandy loam	20-40
015	N	N	Y	Y	Y	Sandy loam	20-40
016	N	N	Y	Y	Y	Sandy loam	20-40
017	N	N	Y	Y	Y	Sandy loam	20-40
018	N	N	Y	Y	Y	Sandy loam	20-40
019	N	N	Y	Y	Y	Sandy loam	20-40
020	N	N	Y	Y	Y	Sandy loam	20-40
021	N	N	Y	Y	Y	Sandy loam	20-40
022	N	Y	Y	Y	Y	Silt loam	20-40
023	N	Y	Y	Y	Y	Silt loam	20-40
024	N	Y	Y	Y	Y	Silt loam	20-40
025	N	Y	Y	Y	Y	Silt loam	20-40
026	N	Y	Y	Y	Y	Silt loam	20-40
027	N	Y	Y	Y	Y	Silt loam	20-40
028	N	Y	Y	Y	Y	Silt loam	20-40
029	N	Y	Y	Y	Y	Silt loam	20-40
030	N	Y	Y	Y	Y	Silt loam	40-60
031	N	Y	Y	Y	Y	Silt loam	40-60

Table 3-3 (continued)
Main Channel Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Shallow Water/ Gravel or Finer	Shallow Water with Riprap/Seawall (Adjacent)	Deep Water/Natural Substrates	Suspended/ Floating Structures	Pilings	Substrate	Percent Fines (%)
032	N	Y	Y	Y	Y	Silt loam	40-60
033	N	Y	Y	Y	Y	Silt loam	40-60
034	N	Y	Y	Y	Y	Silt loam	40-60
035	N	Y	Y	Y	Y	Silt loam	40-60
036	N	Y	Y	Y	Y	Silt loam	40-60
037	N	Y	Y	Y	Y	Silt loam	40-60
038	N	Y	Y	Y	Y	Silt loam	40-60
039	N	Y	Y	Y	Y	Silt loam	40-60
040	N	Y	Y	Y	Y	Silt loam	40-60
041	N	Y	Y	Y	Y	Silt loam	40-60
042	N	Y	Y	Y	Y	Silt loam	40-60
043	Y	Y	Y	N	Y	Silt loam	40-60
044	Y	Y	Y	Y	Y	Loam	40-60
045	Y	Y	Y	Y	Y	Loam	40-60
046	Y	Y	Y	Y	Y	Loam	40-60
047	Y	Y	Y	Y	Y	Loam	40-60
048	Y	Y	Y	Y	Y	Loam	40-60
049	Y	Y	Y	N	Y	Silt loam	40-60
050	Y	Y	Y	Y	Y	Silt loam	40-60
051	Y	Y	Y	Y	Y	Silt loam	40-60
052	Y	Y	Y	Y	Y	Silt loam	40-60
053	Y	Y	Y	N	Y	Silt loam	40-60
054	Y	Y	Y	N	Y	Silt loam	40-60
055	Y	Y	Y	Y	Y	Silt loam	40-60
056	Y	Y	N	Y	Y	Silt loam	40-60
057	Y	Y	N	N	Y	Silt loam	40-60
058	Y	Y	N	N	Y	Sandy loam	0-20
059	Y	Y	N	N	Y	Sandy loam	0-20
060	Y	Y	N	N	Y	Sandy loam	0-20
061	Y	Y	N	Y	Y	Sandy loam	0-20
062	Y	Y	N	N	N	Sand	0-20
063	Y	Y	N	N	N	Sand	0-20
064	Y	N	N	N	N	Sand	0-20

Table 3-3 (continued)
Main Channel Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Shallow Water/ Gravel or Finer	Shallow Water with Riprap/Seawall (Adjacent)	Deep Water/Natural Substrates	Suspended/ Floating Structures	Pilings	Substrate	Percent Fines (%)
065	Y	N	N	N	N	Sand	0-20
066	Y	N	N	N	N	Sand	0-20
067	Y	N	N	N	N	Sand	0-20
068	Y	N	N	N	N	Sand	0-20
069	Y	Y	N	N	N	Sand	20-40
070	Y	N	N	Y	Y	Sand	20-40
071	Y	N	N	N	Y	Sand	20-40
072	Y	N	N	N	N	Sand	20-40
073	Y	N	N	N	N	Silty clay loam	40-60
074	Y	N	N	N	N	Silty clay loam	40-60
075	Y	N	N	N	N	Silty clay loam	40-60
076	Y	N	N	N	N	Sand	40-60
077	Y	N	N	N	N	Silty clay loam	40-60
078	Y	N	N	N	N	Silt loam	20-40
079	Y	N	Y	N	N	Loamy sand	40-60
080	Y	N	Y	Y	Y	Sandy loam	40-60
081	Y	N	Y	Y	Y	Sandy loam	20-40
082	Y	N	Y	Y	Y	Silty clay loam	40-60
083	Y	N	Y	Y	Y	Silty clay loam	40-60
084	Y	N	Y	Y	Y	Silty clay loam	40-60
085	Y	N	Y	Y	Y	Silty clay loam	40-60
086	Y	N	Y	Y	Y	Loamy sand	0-20
087	Y	N	Y	Y	Y	Sandy clay loam	20-40
088	Y	N	Y	N	N	Loamy sand	0-20
089	Y	N	Y	N	N	Loamy sand	0-20
090	Y	N	Y	N	N	Loamy sand	20-40
091	Y	N	Y	N	N	Loamy sand	20-40
092	Y	N	Y	N	N	Loamy sand	20-40
093	Y	N	Y	N	N	Sandy loam	20-40
094	Y	N	Y	N	N	Sandy clay loam	40-60
095	Y	N	Y	N	N	Silt loam	40-60
096	Y	N	Y	Y	N	Sandy loam	20-40
097	Y	Y	Y	Y	N	Silt loam	40-60

Table 3-3 (continued)
Main Channel Summary
Habitat Conditions Survey Report; Swan Island Basin Project Area, Portland, Oregon

Transect	Shallow Water/ Gravel or Finer	Shallow Water with Riprap/Seawall (Adjacent)	Deep Water/Natural Substrates	Suspended/ Floating Structures	Pilings	Substrate	Percent Fines (%)
098	Y	Y	Y	Y	Y	Sandy loam	0-20
099	Y	Y	Y	Y	Y	Sandy loam	0-20
100	Y	Y	Y	Y	Y	Sandy loam	0-20
101	Y	Y	Y	N	Y	Sandy loam	0-20
102	Y	Y	Y	N	Y	Silty clay loam	40-60
103	Y	Y	Y	N	N	Sandy loam	0-20
104	Y	Y	Y	N	N	Sandy loam	0-20
105	Y	Y	Y	Y	Y	Loamy sand	20-40
106	Y	Y	Y	Y	Y	Loamy sand	20-40
107	Y	Y	Y	Y	Y	Loamy sand	20-40
108	Y	Y	Y	Y	Y	Sand	20-40
109	Y	Y	Y	Y	Y	Sand	20-40
110	Y	Y	Y	Y	Y	Silty clay loam	40-60
111	Y	Y	Y	N	N	Sand	20-40
112	Y	Y	Y	N	N	Sandy loam	20-40
113	Y	Y	Y	N	N	Sand	40-60
114	Y	Y	Y	N	Y	Loamy sand	20-40
115	Y	Y	Y	Y	Y	Loamy sand	20-40
116	Y	Y	Y	Y	Y	Loamy sand	20-40
117	Y	Y	Y	Y	Y	Loamy sand	20-40
118	Y	Y	Y	Y	Y	Loamy sand	20-40
119	Y	Y	Y	N	N	Silt loam	40-60
120	Y	Y	Y	N	N	Silt loam	40-60
121	Y	Y	Y	N	N	Sandy loam	40-60
122	Y	Y	Y	Y	Y	Sandy loam	40-60
123	Y	Y	Y	Y	Y	Sandy loam	40-60
124	Y	Y	Y	Y	Y	Sandy loam	40-60
125	Y	Y	Y	Y	Y	Sandy loam	40-60

Notes:
% = percent
N = No
Y = Yes

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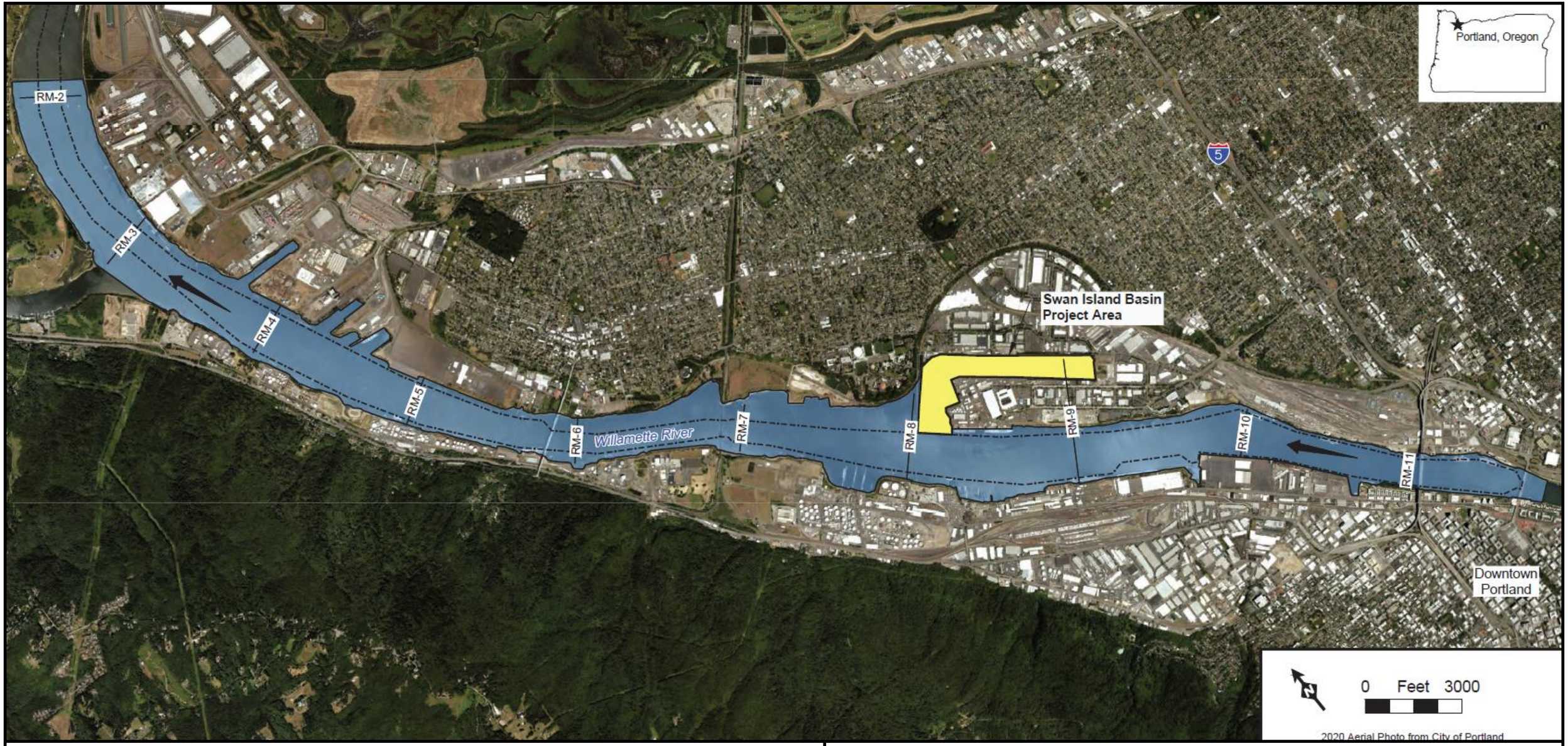
FIGURES



Federal Navigation Channel (USACE 2020)

River Flow Direction

Swan Island Basin Project Area

Portland Harbor Superfund Site Boundary (River Mile 1.9 to 11.8)

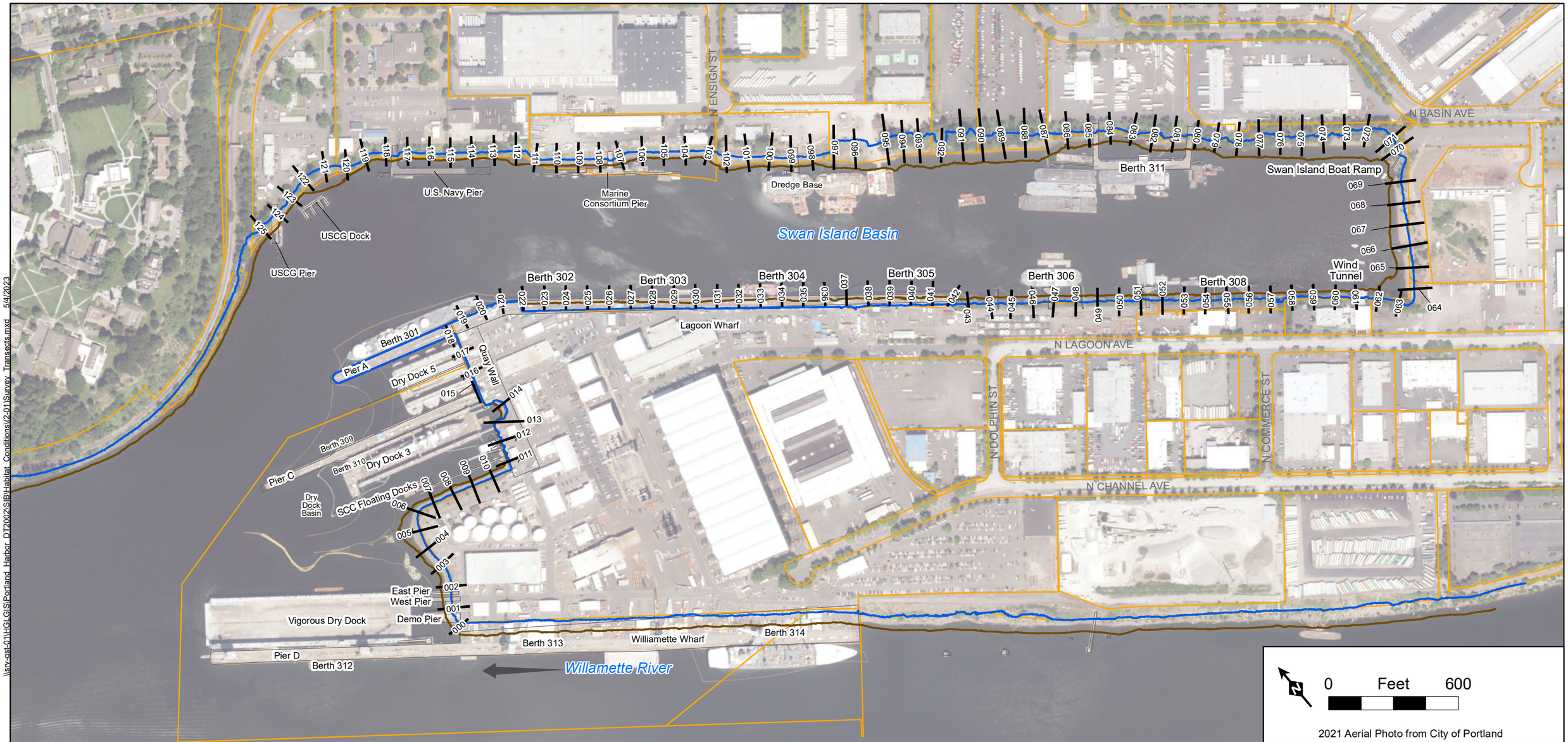
Notes:
RM – River Mile
SIB – Swan Island Basin
USACE – U.S. Army Corps of Engineers

Figure 1-1

SIB Project Area Location Map

Prepared on 6/30/2022
Habitat Conditions Survey Report
Swan Island Basin

PACIFIC groundwater GROUP
HGL
MOTT MACDONALD
BRIDGEWATER GROUP



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Survey Transect

Ordinary Low Water

Ordinary High Water

River Flow Direction

Docks and Structures

Tax Lot Boundary

Notes:
SCC - Shipyard Commerce Center
USCG - U.S. Coast Guard

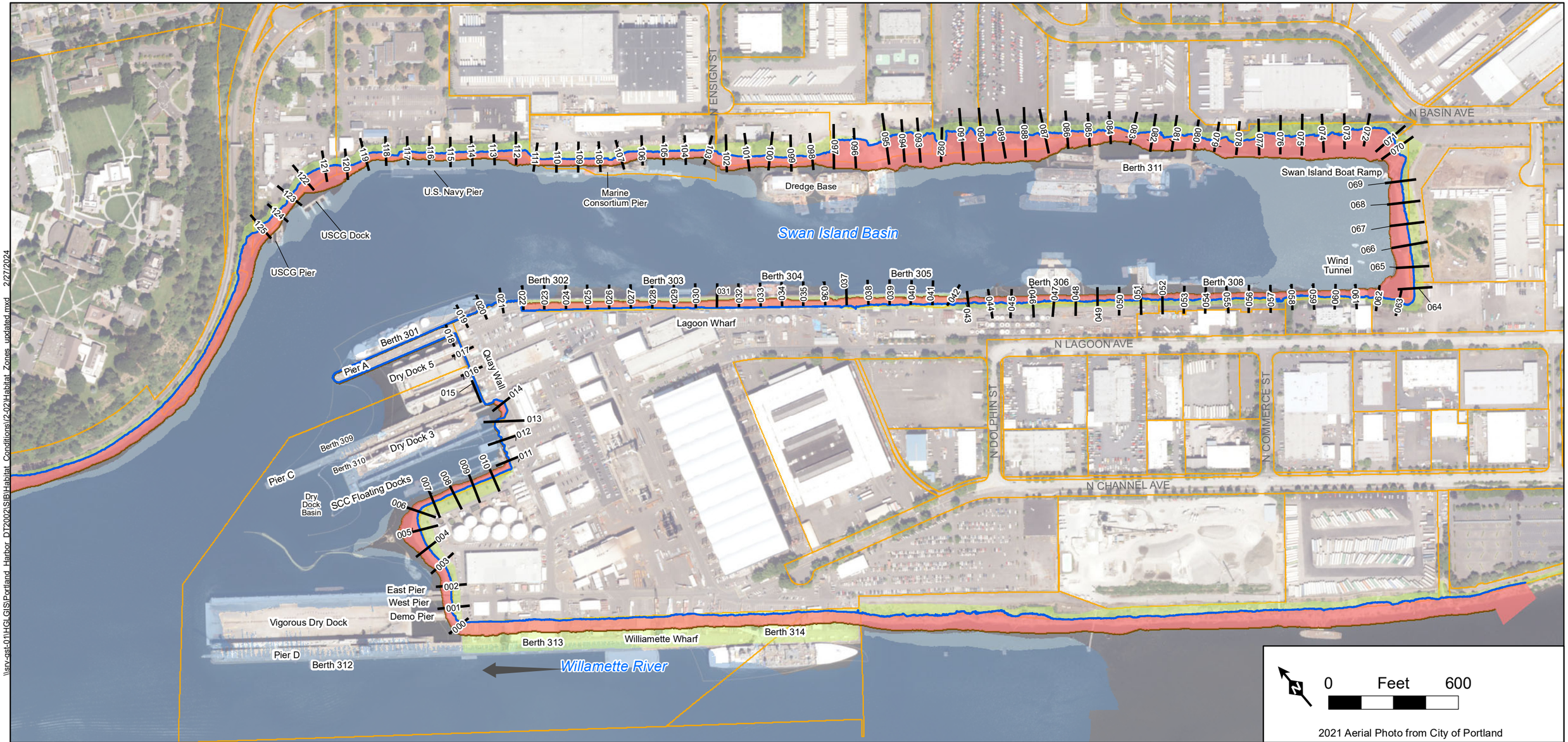
Figure 2-1

Habitat Conditions Survey Transects

Prepared on 5/4/2023

Habitat Conditions Survey Report
Swan Island Basin

PACIFIC groundwater GROUP
HGL
MOTT MACDONALD
BRIDGEWATER GROUP



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- Survey Transect
- Ordinary Low Water
- Ordinary High Water
- River Flow Direction
- Docks and Structures
- Tax Lot Boundary
- Active Channel Margin (~14 acres)
- Riparian (~11 acres)
- Shallow Water Zone (<-13 ft NAVD88, ~14 acres)
- Deep Water Zone (>-13 ft NAVD88, ~70 acres)

Notes:
NAVD88 - North American Vertical Datum of 1988
SIB - Swan Island Basin
USCG - U.S. Coast Guard

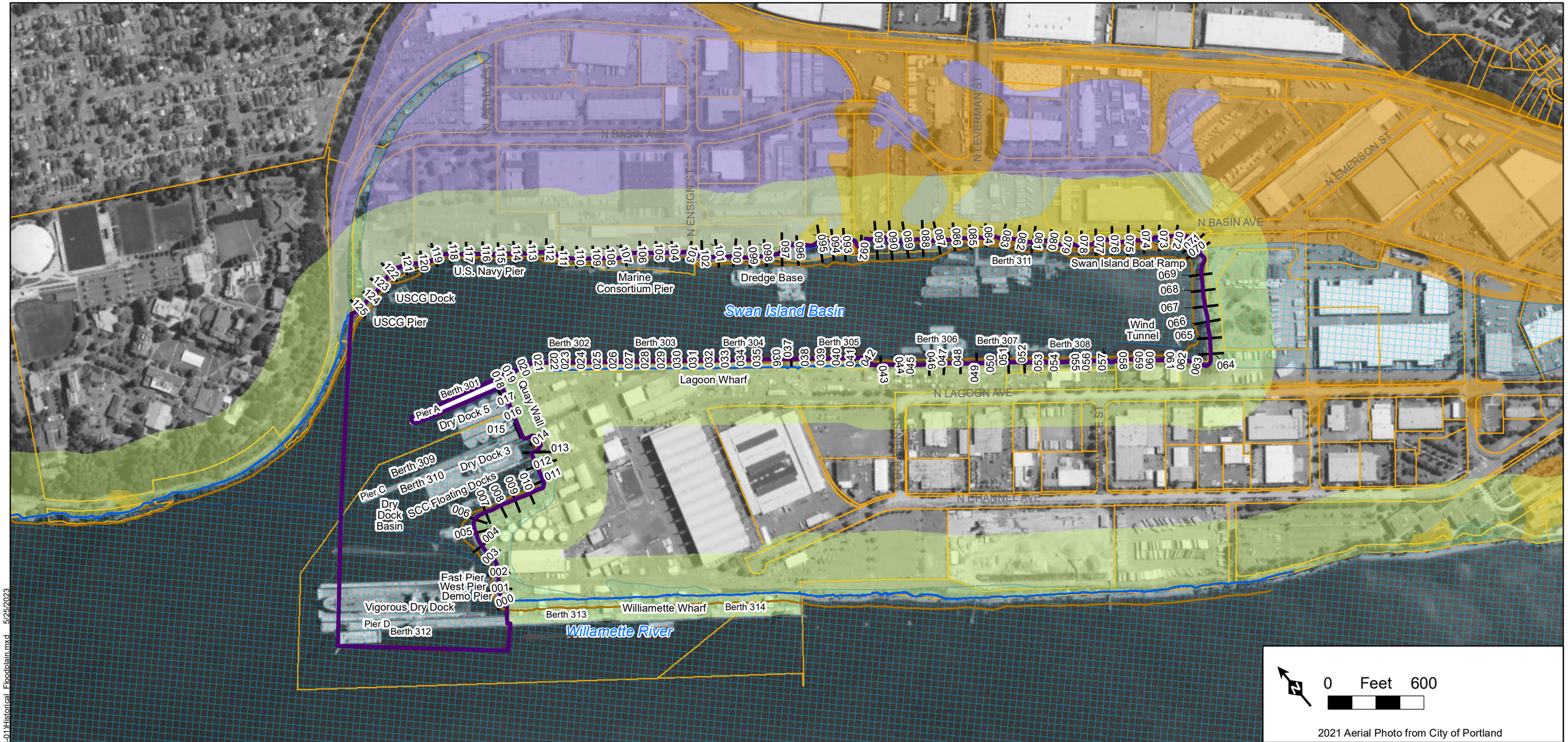
Figure 2-2

SIB Habitat Areas

Prepared on 2/27/2024

Habitat Conditions Survey Report
Swan Island Basin

PACIFIC groundwater GROUP
HGL
MOTT MACDONALD
BRIDGEWATER GROUP



- Survey Transect
- Ordinary Low Water
- Ordinary High Water
- River Flow Direction
- Docks and Structures
- Tax Lot Boundary
- Riparian
- 100-year Floodplain (FEMA)
- 500-year Floodplain (FEMA)
- Inferred Historical Floodplain
- Swan Island Sediment Decision Unit (SDU)

Notes:
FEMA - Federal Emergency Management Agency
SIB - Swan Island Basin
USCG = U.S. Coast Guard

Figure 3-1

Historical Floodplain in SIB Project Area

Prepared on 5/25/2023

Habitat Conditions Survey Report
Swan Island Basin

PACIFIC groundwater GROUP
HGL
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BRIDGEWATER GROUP

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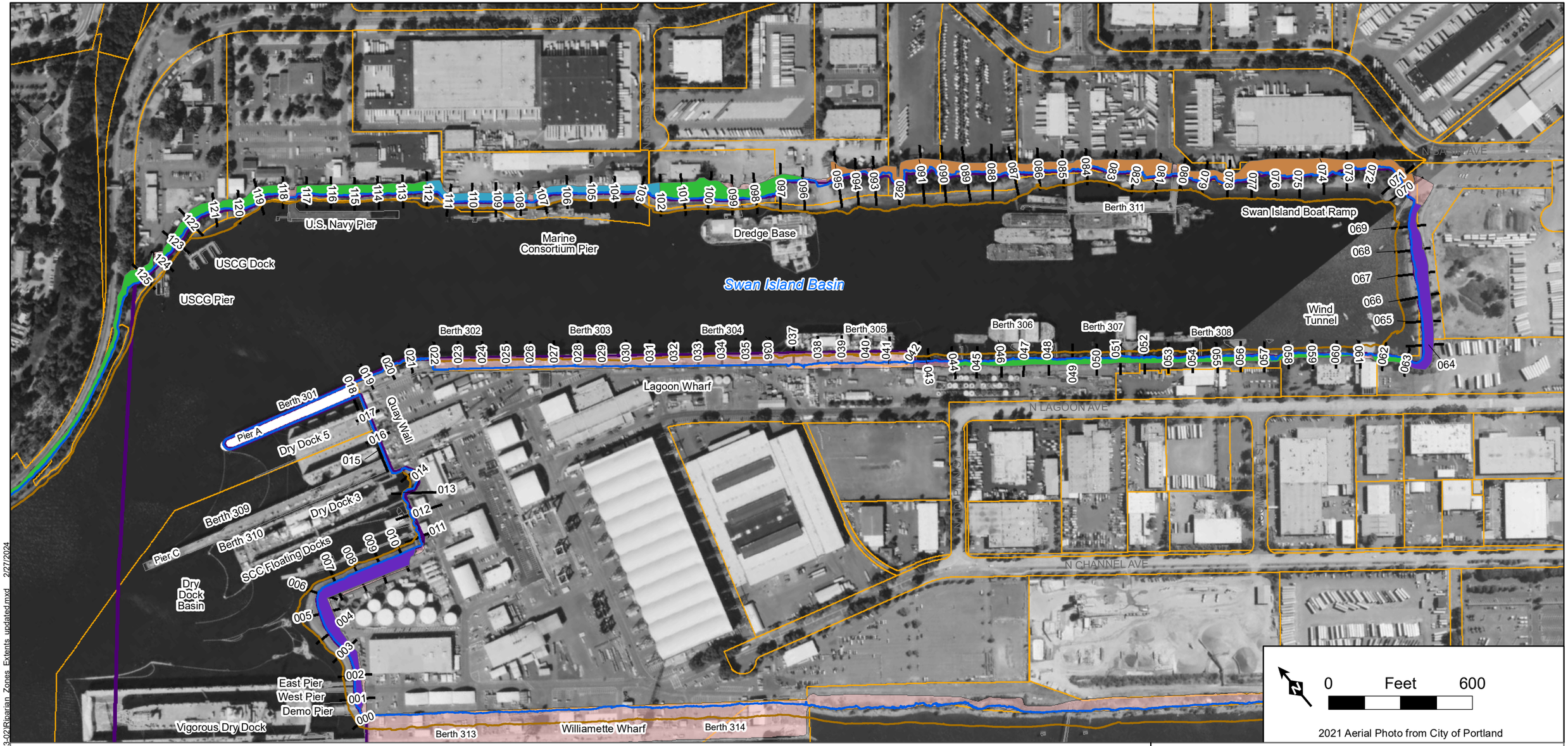

- Survey Transect
- Ordinary Low Water
- Ordinary High Water
- River Flow Direction

- Docks and Structures
- Tax Lot Boundary
- Swan Island Sediment Decision Unit (SDU)
- Shallow slopes (less than 11 degrees) with forested vegetated buffer, with an understory composed of predominantly invasive species.
- Shallow, sparsely vegetated slopes composed of predominantly invasive species.
- Steep, densely vegetated slopes (greater than 11 degrees) composed of predominantly invasive species.
- Steep, sparsely vegetated slopes with riprap interspersed with predominantly invasive species.
- Commercial/Industrial Development.

Notes:
SIB - Swan Island Basin
USCG - U.S. Coast Guard

Figure 3-2

SIB Riparian Area Types and Extents

Prepared on 2/27/2024

Habitat Conditions Survey Report
Swan Island Basin

PACIFIC groundwater GROUP
HGL
MOTT MACDONALD
BRIDGEWATER GROUP

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Shallow slopes (less than 11 degrees) with submerged vegetation and minimal armoring.

Shallow slopes with no armoring and sparse vegetation.

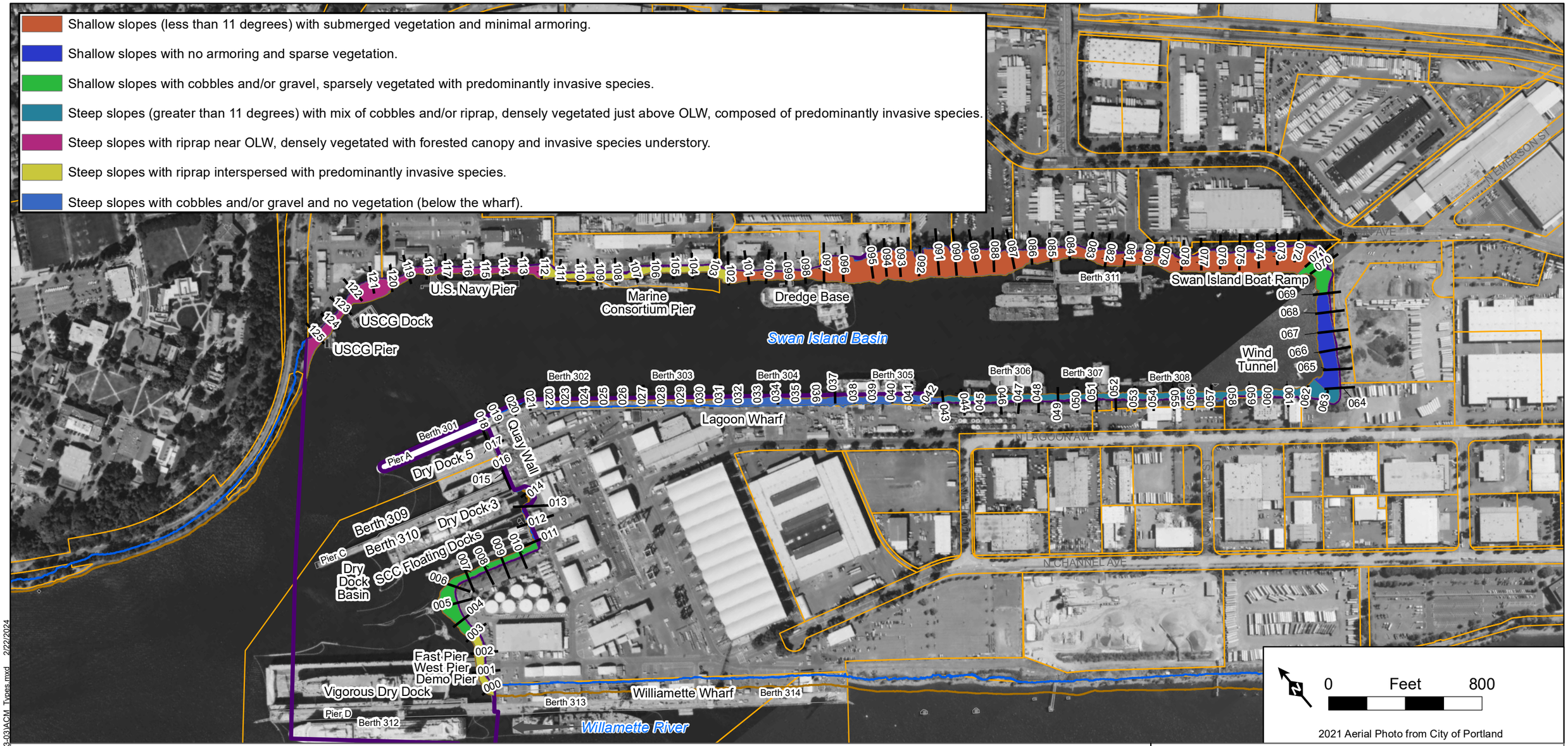
Shallow slopes with cobbles and/or gravel, sparsely vegetated with predominantly invasive species.

Steep slopes (greater than 11 degrees) with mix of cobbles and/or riprap, densely vegetated just above OLW, composed of predominantly invasive species.

Steep slopes with riprap near OLW, densely vegetated with forested canopy and invasive species understory.

Steep slopes with riprap interspersed with predominantly invasive species.

Steep slopes with cobbles and/or gravel and no vegetation (below the wharf).



Survey Transect

Ordinary Low Water

Ordinary High Water

River Flow Direction

Docks and Structures

Tax Lot Boundary

Swan Island Sediment Decision Unit (SDU)

Notes:
OLW - ordinary low water
SIB - Swan Island Basin
USCG - U.S. Coast Guard

Figure 3-3

SIB Active Channel Margin Types and Exent

Prepared on 2/22/2024

Habitat Conditions Survey Report
Swan Island Basin

PACIFIC groundwater GROUP
HGL
MOTT MACDONALD
BRIDGEWATER GROUP

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ATTACHMENT A

FIELD RECONNAISSANCE DOCUMENTATION

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Habitat Conditions Checklists

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Transect # 000

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	Minimal to no vegetation
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Sparse
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Gravel, silty sand
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	Sparse invasives
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Drydock
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 001

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	Native grasses/shrubs/saplings present with bare ground and invasive
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Present but sparse (blackberry)
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Gravel, silty clay
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	Sparse invasives
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 002

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse native grasses/shrubs
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Scotch broom, blackberry
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Gravel, silty clay
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 003

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Active revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Cobbly, silty sand
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boons
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 004

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse natives, revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Scotch broom
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Derelict
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boons
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 005

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse natives, revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boons
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 006

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse natives, revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Floating dock
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 007

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse natives, revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Floating dock
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 008

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse natives, revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Floating dock
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 009

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse natives, revegetation area
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Floating dock
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 010

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	Sparse
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Floating dock
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 011

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sandy loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	
	shallow water with floating structures	Y	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 012

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	Y	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	
	shallow water with floating structures	Y	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 013

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile into concrete wall
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	Y	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 014

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile into concrete wall
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	Y	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 015-021

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	N	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	N	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Quay and Sheetpile
	Substrate	NA	
	Slope	NA	
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	Y	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		NA
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 022

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 023

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 024

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 025

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 026

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 027

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 028

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 029

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 030

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 031

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 032

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 033

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 034

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 035

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 036

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 037

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	Y	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 038

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 039

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 040

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 041

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	N	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate	NA	
	Slope	NA	Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 042

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	Sheet pile
	Substrate		Silt loam
	Slope		Sheet pile
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	N	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	During low water
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boon
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 043

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 044

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Some mature cottonwood
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, Scotch broom
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	N	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 306
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 306
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 045

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Some mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, Scotch broom
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	N	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 306
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 306
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 046

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, Scotch broom
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Berth 306
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 306
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 047

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Berth 306
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 306
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 048

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Berth 306
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 306
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 049

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 050

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 307
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 307
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 051

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 307
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 307
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 052

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 307
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 307
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 053

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 054

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	Paved at TOB
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 055

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 308
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 308
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 056

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	Berth 308
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Berth 308
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 057

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 058

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 059

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 060

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	Wood tie beams, few piles
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 061

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Wind Tunnel
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Wind Tunnel
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 062

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Mature cottonwood trees from TOB to below OHW
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy, tree-of-heaven
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 063

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Mature cottonwood trees from TOB to below OHW
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	OFS-2 present in ACM
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 064

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Sparse mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sandy loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	Y	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 065

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Sparse mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Scotch broom
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sand
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	Y	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 066

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Sparse mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sand
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	Y	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 067

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Sparse mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sand
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	Y	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 068

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Sparse mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sand
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	Y	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 069

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Sparse mature trees
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	Area adjacent to boat ramp
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 070

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<15%
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	Y	Partial, boat ramp is asphalt
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	Y	Boat ramp floating dock
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	Boat ramp floating dock
	shallow water with pilings	Y	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 071

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	OFM-3 in water
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	Bollard-type at mouth of OFM-3
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 072

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam --> sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 073

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 074

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 075

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 076

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 077

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam --> sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 078

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	N	
	deep water with artificial substrates	N	

Transect # 079

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 080

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Berth 311
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 081

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 082

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 083

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sand
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 084

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Sand
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 085

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Berth 311
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 086

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 087

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam --> sand
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	Y	Berth 311
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 088

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 089

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 090

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 091

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 092

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 93

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 94

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Band of mature trees, ~ 90 feet wide at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 95

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Sparse blackberry
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Gravel boat launch NE border of transect
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	Y	mix native/invasive
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	Small riprap area near boat launch
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 96

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Less mature trees along top of bank than transect 100
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and top of bank
	Substrate		Sandy loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	More gravel/cobbles than riprap
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	N	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	"Permanent" barge in channel
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 97

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Less mature trees along top of bank than transect 100
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and TOB
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	More gravel/cobbles than riprap
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	Y	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	"Permanent" barge in channel
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 98

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Less mature trees along top of bank than transect 100
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Scotch broom, dormant invasive forbs, minimal blackberry and ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and top of
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	More gravel/cobbles than riprap
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	Riprap extends below OLW
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	"Permanent" barge in channel
	shallow water with pilings	Y	Pier pilings and remnant pilings and dolphin around vessel
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 99

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Less mature trees along top of bank than transect 100
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Scotch broom, dormant invasive forbs, minimal blackberry and ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and top of
	Substrate		Sandy loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	Y	Pier to spud - Dredge Base
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	"Permanent" barge in channel
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 100

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Mature ash, cottonwood, and madrone along top of bank
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Scotch broom, dormant invasive forbs, minimal blackberry and ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and top of
	Substrate		Sandy loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	Y	"Permanent" barge in channel
	shallow water with pilings	Y	Remnant pilings
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 101

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Mature cottonwood and madrone top of bank
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy, invasive forbs
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and top of bank
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam, gravel
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	derelect dolphin
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 102

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Mature cottonwood and madrone top of bank
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy, invasive forbs
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	Former paved road between OHW and top of bank
	Substrate		Sandy loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Sandy loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	One remnant piling, just at or below water
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 103 **Date:** 10/06/2022

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, madrone, and maple saplings interspersed beginning at OHW to TOB, mature spruce and cottonwood at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry: 100% dense cover (~10 ft height) from OHW to top of bank; ivy at top of bank
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		<5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	Y	Remnant of former bridge
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam, gravel
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 104

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Ivy, Blackberry, Lathyrus spp
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam, gravel
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		0-20
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 105

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Ivy, Blackberry, tree-of-heaven
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	MC pier and associated structures
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 106

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Ivy, Blackberry, tree-of-heaven
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	MC pier and associated structures
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 107

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Ivy, Blackberry, tree-of-heaven
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	Y	MC pier
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	MC pier and associated structures
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 108

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	Y	MC pier
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	MC pier and associated structures
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 109

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	MC pier and associated structures
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 110

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silty clay loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	MC pier and associated structures
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 111

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 112

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	N	Ash and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	Beached, derelect dock
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 113

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	Y	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 114

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy, tree-of-heaven
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	Y	Dolphin
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 115

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Navy pier
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 116

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Navy pier
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 117

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Navy pier
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 118

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	Navy pier
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Loamy sand
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		20-40
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	Navy pier
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 119

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 120

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Silt loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 121

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy, tree of heaven
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	N	
	shallow water with floating structures	N	
	shallow water with pilings	N	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 122

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	Y	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	Y	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	N	
	sheet pile/seawall	N	
	pilings	N	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	USCG dock
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 123

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	USCG dock
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	USCG dock
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 124

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	Y	USCG pier
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	USCG pier
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Transect # 125

Habitat	Habitat Characteristics	Y/N	Notes
RIPARIAN (above ordinary high water)	naturally vegetated forest, <400 feet from active channel margin	Y	Ash, aspen, and cottonwood trees at TOB
	and in the historical floodplain	Y	
	naturally vegetated, grass/shrub	N	
	and associated with historical floodplain	Y	
	invasive species (e.g., Himalayan blackberry)	Y	Blackberry, ivy
	vegetated riprap	N	
	unvegetated/paved/buildings/riprap	Y	
	Substrate		Silt loam
	Slope		>5:1
ACTIVE CHANNEL MARGIN (ACM) (between ordinary high water and ordinary low water)	sloped (<5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (<5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (native)	N	
	sloped (>5:1 or 11°), unarmored and vegetated (invasive)	N	
	sloped (<5:1), unarmored and unvegetated	N	
	sloped (>5:1), unarmored and unvegetated	N	
	sloped (<5:1), bioengineered	N	
	sloped (>5:1), bioengineered	N	
	riprapped	Y	
	sheet pile/seawall	N	
	pilings	Y	
	suspended structures over channel margins (e.g., docks)	N	
	floating structures (e.g., docks)	N	
	Substrate		Silt loam, gravel
MAIN CHANNEL (below ordinary low water)	shallow water, gravel and finer substrates	Y	
	Substrate		Sandy loam
	Percent Fines (e.g., 0-20%, 20-40%, 40-60%, 60-80%, 80-100%)		40-60
	shallow water, natural rock outcrop	N	
	shallow water with riprap/concrete/seawall in adjacent shoreline	Y	
	shallow water with suspended structures	Y	USCG pier
	shallow water with floating structures	N	
	shallow water with pilings	Y	
	deep water with natural substrates	Y	
	deep water with artificial substrates	N	

Photographic Documentation

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PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
1	04/05/2023

Direction Photo Taken: West

Description: Transect 000 – looking towards Pier D

Photo No.	Date:
2	10/17/2022

Direction Photo Taken: Southeast

Description: Transect 001 from ordinary low water (OLW) to ordinary high water (OHW)

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 3	Date: 10/17/2022

Direction Photo Taken: East

Description: Transect 002 from OLW to OHW

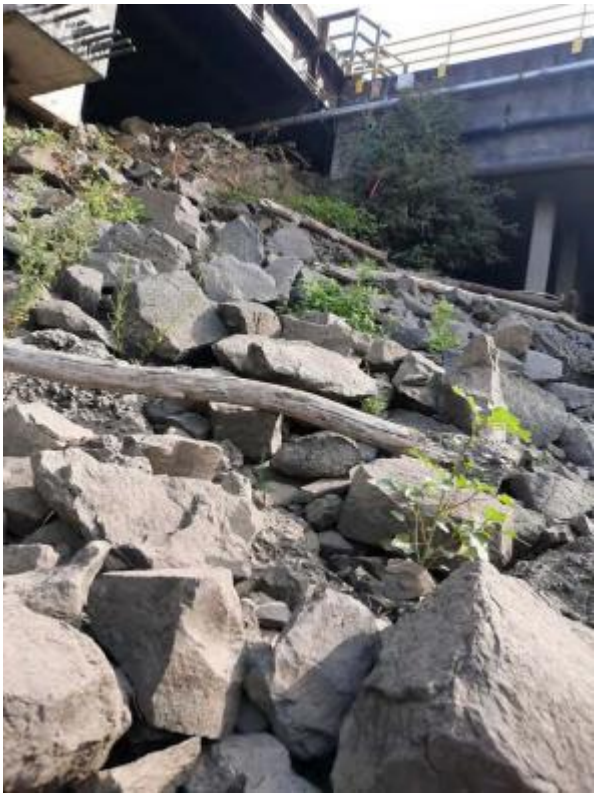


Photo No. 4	Date: 04/04/2023

Direction Photo Taken: West

Description: Looking toward the main channel from Transect 003

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 5	Date: 10/17/2022

Direction Photo Taken: Northeast

Description: Looking along OLW towards Transect 004 from 002

Photo No. 6	Date: 10/17/2022

Direction Photo Taken: Northeast

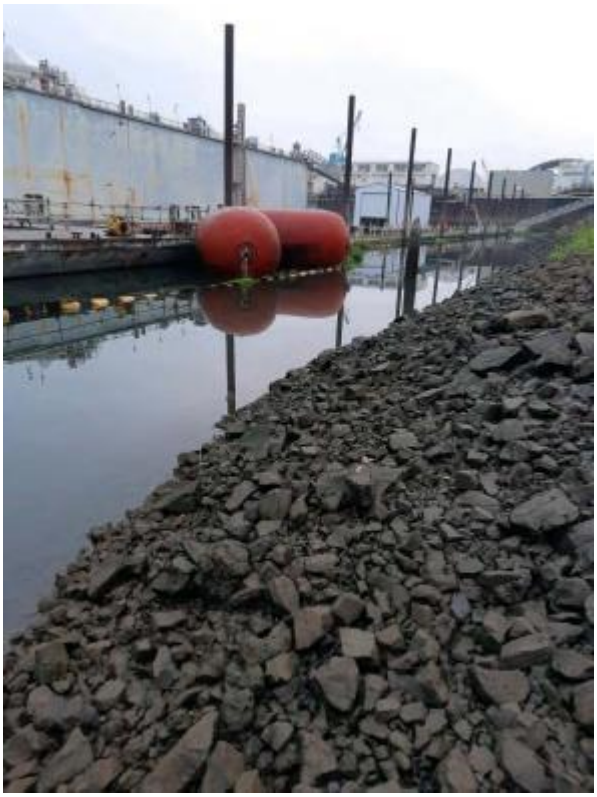
Description: Revegetation area in Transect 003

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 7	Date: 10/17/2022
Direction Photo Taken: West	
Description: Transect 004	

Photo No. 8	Date: 10/17/2022
Direction Photo Taken: East	
Description: Looking along OLW towards Transect 011 from 007	



PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 9	Date:
Direction Photo Taken: West	
Description: Looking along OLW towards Transect 007 from 011	

Photo No. 10	Date: 02/16/2022
Direction Photo Taken: Northeast	
Description: Transect 014	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
11	10/17/2022

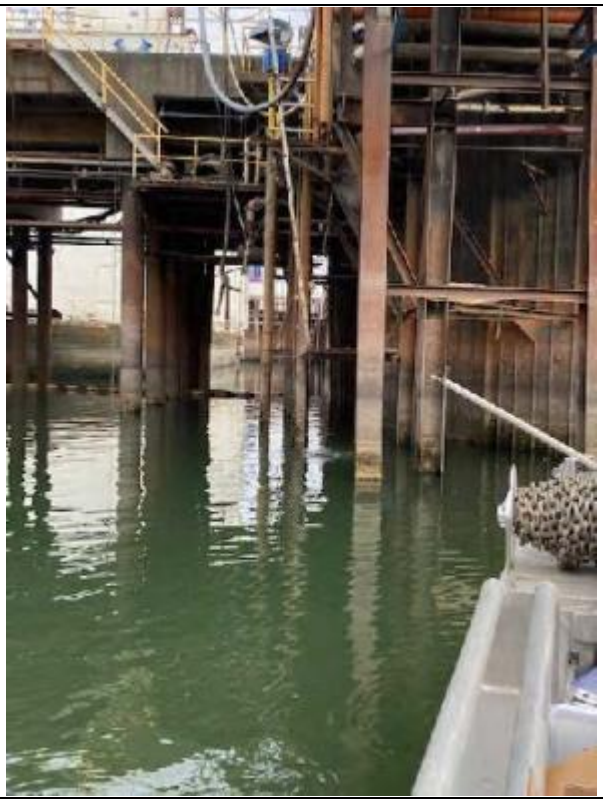
Direction Photo Taken: East

Description: Transect 014

Photo No.	Date:
12	10/17/2022

Direction Photo Taken: North

Description: Looking towards Transects 015-017 beneath the Dry Dock Basin structures



PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 13	Date: 02/16/2022

Direction Photo Taken: Southeast

Description: Aerial view of the north side of the Lagoon Wharf (Transects 020-032)

Photo No. 14	Date:

Direction Photo Taken: Northeast

Description: From just above OLW at Transect 024

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 15	Date: 02/17/2022

Direction Photo Taken: Southwest

Description: Transect 025

Photo No. 16	Date: 02/17/2022

Direction Photo Taken: Southwest

Description: Transect 026

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 17	Date: 02/16/2022
Direction Photo Taken: Northeast	
Description: Transect 027	

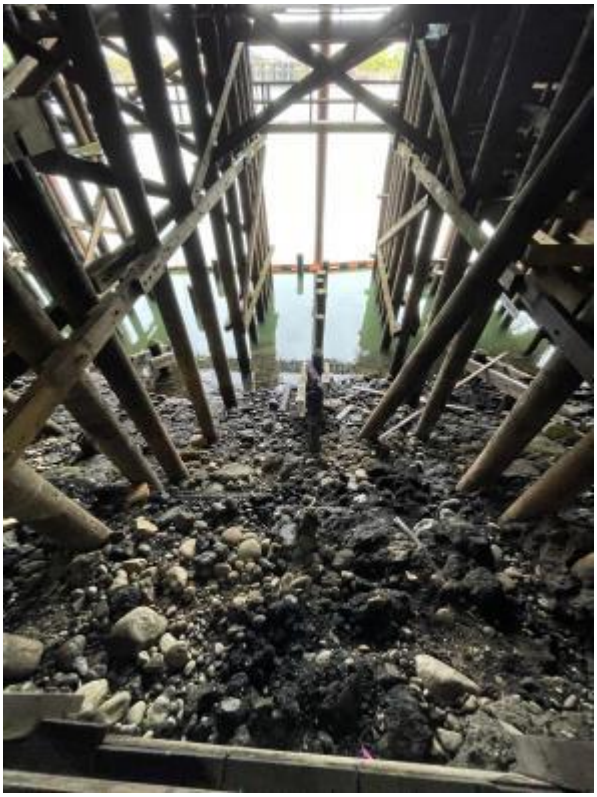


Photo No. 18	Date: 02/16/2022
Direction Photo Taken: Southwest	
Description: Transect 028	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 19	Date: 02/16/2022

Direction Photo Taken: Southwest

Description: Transect 029

Photo No. 20	Date: 02/16/2022

Direction Photo Taken: Southwest

Description: Transect 031

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 21	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 032

Photo No. 22	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: Transects 033-037

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 23	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 034

Photo No. 24	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 035

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 25	Date: 10/25/2022
Direction Photo Taken: Northeast	
Description: Transect 036	

Photo No. 26	Date: 02/15/2022
Direction Photo Taken: Northwest	
Description: Looking along the wharf wall from Transect 037	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 27	Date: 10/25/2022

Direction Photo Taken: Northwest

Description: Municipal Outfall OSF-1 in Transect 037

Photo No. 28	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: Looking along the edge of the wharf from Transect 037

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 29	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 039

Photo No. 30	Date: 10/25/2022

Direction Photo Taken: Southwest

Description: Transect 040

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 31	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 041

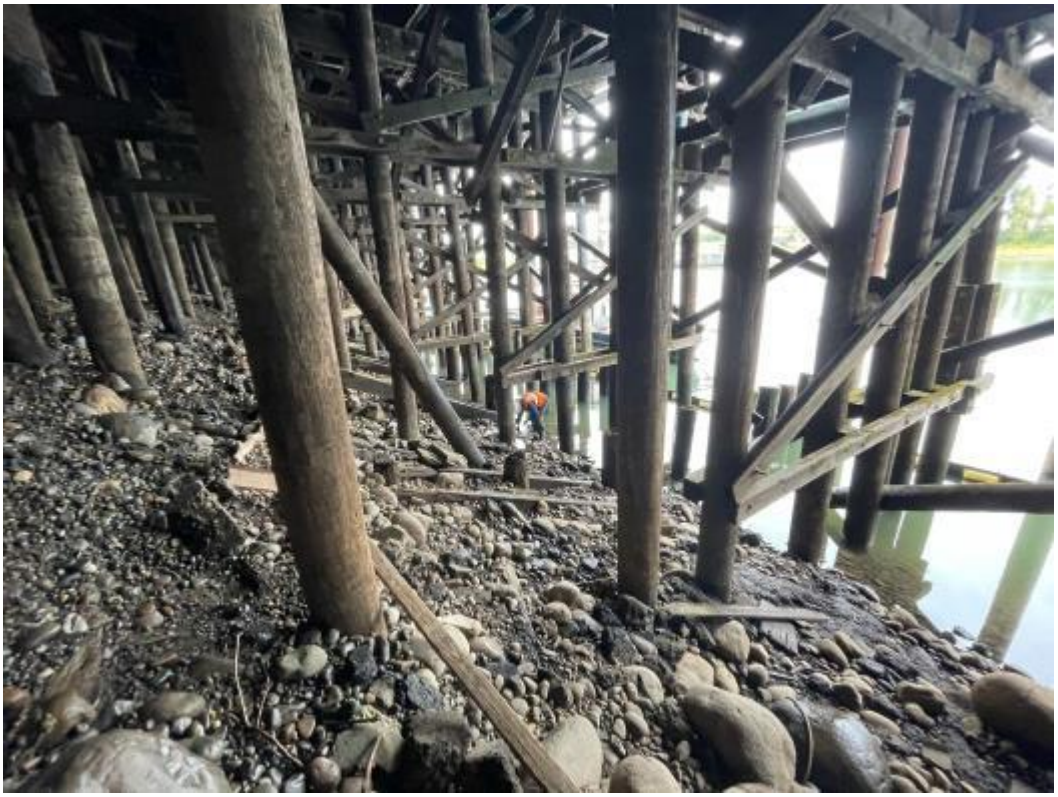


Photo No. 32	Date: 02/15/2022

Direction Photo Taken: Northwest

Description: Looking along the Lagoon Wharf from Transect 042

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 33	Date: 02/15/2022

Direction Photo Taken: Northwest

Description: Transect 043

Photo No. 34	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: Looking towards Transect 044 from 043

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 35	Date: 10/24/2022

Direction Photo Taken: Northwest

Description: Transect 048

Photo No. 36	Date: 10/24/2022

Direction Photo Taken: Southeast

Description: Transect 044-048

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 37	Date: 10/24/2022
Direction Photo Taken: Southwest	
Description: Transect 046	

Photo No. 38	Date: 02/15/2022
Direction Photo Taken: Northwest	
Description: Transect 047	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 39	Date: 10/24/2022

Direction Photo Taken: Northwest

Description: Looking towards Transect 048 from 049

Photo No. 40	Date: 02/15/2022

Direction Photo Taken: Northwest

Description: Transect 047-048

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 41	Date: 10/20/2022

Direction Photo Taken: North

Description: Transects 048-053

Photo No. 42	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 049

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 43	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 050

Photo No. 44	Date: 02/15/2022

Direction Photo Taken: Southwest

Description: Transect 050

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 45	Date: 02/15/2022

Direction Photo Taken: Northeast

Description: Transect 051

Photo No. 46	Date: 10/20/2022

Direction Photo Taken: Southeast

Description: Transect 051

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 47	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: Transect 052

Photo No. 48	Date: 10/19/2022

Direction Photo Taken: Northwest

Description: Transects 053-055

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 49	Date: 10/19/2022
Direction Photo Taken: Northwest	
Description: Transects 052-053	

Photo No. 50	Date: 05/31/2022
Direction Photo Taken: Southeast	
Description: Transect 053	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 51	Date: 10/19/2022
Direction Photo Taken: Southeast	
Description: Transect 53	

Photo No. 52	Date: 02/15/2022
Direction Photo Taken: Northwest	
Description: Transect 054	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 53	Date: 02/15/2022

Direction Photo Taken: Northwest

Description: Transect 053-054

Photo No. 54	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: Transect 055

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 55	Date: 02/15/2022

Direction Photo Taken: South

Description: Transect 055

Photo No. 56	Date: 10/19/2022

Direction Photo Taken: Northeast

Description: Transect 056

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 57	Date: 10/19/2022

Direction Photo Taken: Southwest

Description: Transect 057

Photo No. 58	Date: 10/19/2022

Direction Photo Taken: Northwest

Description: Transect 057-060

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
59	02/15/2022

Direction Photo Taken: Southeast

Description: Transect 058

Photo No.	Date:
60	10/19/2022

Direction Photo Taken: Northeast

Description: Transect 060

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 61	Date: 02/15/2022

Direction Photo Taken: Northeast

Description: Transect 060

Photo No. 62	Date: 02/15/2022

Direction Photo Taken: Northwest

Description: Transect 061

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 63	Date: 10/18/2022

Direction Photo Taken: Southwest

Description: Transect 062-063

Photo No. 64	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: From Transect 062, looking towards the head of the basin

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 65	Date: 10/18/2022

Direction Photo Taken: Southwest

Description: ACM from Transects 062-068

Photo No. 66	Date: 02/15/2022

Direction Photo Taken: Southeast

Description: Municipal Outfall OFS-2 in Transect 063

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 67	Date: 10/18/2022

Direction Photo Taken: Northeast

Description: Transects 063-068 from the top of bank at 063

Photo No. 68	Date: 10/18/2022

Direction Photo Taken: Southeast

Description: Municipal Outfall OFS-2 in Transect 063

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
69	02/15/2022

Direction Photo Taken: Southeast

Description: Transect 064

Photo No.	Date:
70	02/15/2022

Direction Photo Taken: Southeast

Description: Transect 066

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 71	Date: 02/14/2022

Direction Photo Taken: Southeast

Description: Transect 068

Photo No. 72	Date: 10/14/2022

Direction Photo Taken: Southeast

Description: Transect 069

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 73	Date: 10/14/2022

Direction Photo Taken: North

Description: Transect 069-071

Photo No. 74	Date: 02/14/2022

Direction Photo Taken: East

Description: Municipal Outfall OFM-3 in Transect 071

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 75	Date: 04/04/2023

Direction Photo Taken: Northwest

Description: Transects 071-079 from the Swan Island Boat Ramp

Photo No. 76	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 072

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 77	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 072

Photo No. 78	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 073

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
79	02/17/2022

Direction Photo Taken: North

Description: Transect 074-079

Photo No.	Date:
80	10/13/2022

Direction Photo Taken: Northeast

Description: Transect 074

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 81	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 075

Photo No. 82	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 076

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
83	10/13/2022

Direction Photo Taken: Northeast

Description: Transect 076

Photo No.	Date:
84	02/17/2022

Direction Photo Taken: Northeast

Description: Transect 077

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 85	Date: 10/13/2022

Direction Photo Taken: Northeast

Description: Transect 077

Photo No. 86	Date: 02/17/2022

Direction Photo Taken: North

Description: Transect 078

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 87	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 079

Photo No. 88	Date: 10/12/2022

Direction Photo Taken: Southwest

Description: Below OLW at Transect 079

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
89	10/12/2022

Direction Photo Taken: Northeast

Description: OHW at Transect 079

Photo No.	Date:
90	02/17/2022

Direction Photo Taken: East

Description: Transect 080

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 91	Date: 10/12/2022
Direction Photo Taken: Northeast	
Description: Transect 080, adjacent to the east trestle of Berth 311	

Photo No. 92	Date: 10/12/2022
Direction Photo Taken: Southeast	
Description: Transect 080 from OHW	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 93	Date: 10/12/2022

Direction Photo Taken: West

Description: Transect 081 from top of bank

Photo No. 94	Date: 05/31/2022

Direction Photo Taken: Northwest

Description: Transect 082

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 95	Date: 10/11/2022

Direction Photo Taken: East

Description: Transects 083-084

Photo No. 96	Date: 05/31/2022

Direction Photo Taken: Southeast

Description: Transect 083 above OHW

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 97	Date: 05/31/2022

Direction Photo Taken: Northeast

Description: Transect 084

Photo No. 98	Date: 10/11/2022

Direction Photo Taken: Southeast

Description: Transect 086 with Municipal Outfall OFM-2

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 99	Date: 02/14/2022

Direction Photo Taken: Southeast

Description: West trestle of Berth 311, from Transect 086

Photo No. 100	Date: 10/10/2022

Direction Photo Taken: Northeast

Description: Transects 086-087

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 101	Date: 10/10/2022

Direction Photo Taken: Southwest

Description: Transect 086 just above OWH

Photo No. 102	Date: 10/05/2022

Direction Photo Taken: Northeast

Description: Transects 087-095

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 103	Date: 05/31/2022

Direction Photo Taken: Northeast

Description: Transect 087

Photo No. 104	Date: 02/14/2022

Direction Photo Taken: West

Description: Transect 089 near OWH

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
105	10/10/2022

Direction Photo Taken: Northeast

Description: Transect 089

Photo No.	Date:
106	10/10/2022

Direction Photo Taken: Southeast

Description: Transect 090-092

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 107	Date: 02/14/2022

Direction Photo Taken: Southeast

Description: Transect 092

Photo No. 108	Date: 10/07/022

Direction Photo Taken: Southeast

Description: Transects 093-094

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
109	10/07/2022

Direction Photo Taken: Northeast

Description: Transects 095-096

Photo No.	Date:
110	10/07/2022

Direction Photo Taken: Northeast

Description: Transects 096-098

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
111	10/07/2022

Direction Photo Taken: Southeast

Description: Transect 098

Photo No.	Date:
112	10/07/2022

Direction Photo Taken: Northeast

Description: Transect 099

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 113	Date: 10/07/2022

Direction Photo Taken: Southeast

Description: Transect 099-101

Photo No. 114	Date: 10/07/2022

Direction Photo Taken: Southeast

Description: Transect 100-102

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
115	10/06/2022

Direction Photo Taken: Northeast

Description: Municipal Outfall OFM-1 in Transect 102

Photo No.	Date:
116	10/06/2022

Direction Photo Taken: Northeast

Description: Transects 104-106

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 117	Date: 10/05/2022

Direction Photo Taken: Northeast

Description: Transect 105

Photo No. 118	Date: 10/05/2022

Direction Photo Taken: Southeast

Description: Transect 105 from top of bank

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 119	Date: 02/14/2022

Direction Photo Taken: Southeast

Description: Transect 106

Photo No. 120	Date: 10/04/2022

Direction Photo Taken: Southeast

Description: Transects 109-108

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 121	Date: 10/05/2022

Direction Photo Taken: Southeast

Description: Transect 108 and the Marine Consortium, Inc. pier

Photo No. 122	Date: 10/05/2022

Direction Photo Taken: Northeast

Description: Transect 109

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 123	Date: 10/04/2022

Direction Photo Taken: Northeast

Description: Transect 109-110

Photo No. 124	Date: 02/14/2022

Direction Photo Taken: Northeast

Description: Transect 111

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 125	Date: 10/05/2022

Direction Photo Taken: Northeast

Description: Transects 111-117

Photo No. 126	Date: 10/05/2022

Direction Photo Taken: Northeast

Description: Transect 112

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 127	Date: 10/03/2022

Direction Photo Taken: Southwest

Description: Transect 114

Photo No. 128	Date: 02/17/2022

Direction Photo Taken: Southwest

Description: U.S. Navy pier from Transect 115

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 129	Date: 10/03/2022

Direction Photo Taken: Northeast

Description: Transects 116-117, inside the “L” of the U.S. Navy pier

Photo No. 130	Date: 10/03/2022

Direction Photo Taken: Northeast

Description: Dense Himalayan blackberry on Transect 118

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 131	Date: 10/03/2022

Direction Photo Taken: West

Description: Below OLW at Transect 119

Photo No. 132	Date: 10/03/2022

Direction Photo Taken: Northeast

Description: OHW at Transect 119

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 133	Date: 10/03/2022
Direction Photo Taken: North	
Description: Transect 120	

Photo No. 134	Date: 10/03/2022
Direction Photo Taken: West	
Description: Transect 121	

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
135	02/17/2022

Direction Photo Taken: East

Description: Transect 120-122

Photo No.	Date:
136	02/17/2022

Direction Photo Taken: Northwest

Description: Transect 123, walkway to U.S. Coast Guard dock

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No. 137	Date: 02/17/2022

Direction Photo Taken: Southwest

Description: Transect 124, beneath the U.S. Coast Guard pier suspended over the ACM

Photo No. 138	Date: 02/17/2022

Direction Photo Taken: Northeast

Description: Transect 125, U.S. Coast Guard pier

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
139	02/17/2022

Direction Photo Taken: North

Description: Fence line at U.S. Coast Guard boundary

Photo No.	Date:
140	10/26/2022

Direction Photo Taken: Northeast

Description: OLW at Transect 125

PHOTOGRAPH LOG

Project Name:	Site Location:	Project No.
Habitat Conditions Survey	Swan Island Basin Project Area	DT2002

Photo No.	Date:
141	10/26/2022

Direction Photo Taken:
Northwest

Description:
OHW at Transect 125

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