King County
Department of Natural Resources and Parks
Wastewater Treatment Division

TETRA TECH
and Associated Firms

North Mercer Island Interceptor and Enatai Interceptor Upgrade Project

Project Narrative

Final

CONFLUENCE
ENVIRONMENTAL COMPANY

September 2019

Project Narrative

September 2019

PREPARED FOR

King County
Department of Natural Resources and Parks
Wastewater Treatment Division

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1. INTRODUCTION

King County Wastewater Treatment Division (WTD) is applying for environmental and construction permits from the City of Mercer Island (Mercer Island) for a project to improve reliability and increase the capacity of a portion of the existing regional wastewater system. King County's Conveyance System Improvements Program identified a need for capacity upgrades for the North Mercer Island and Enatai interceptors. The North Mercer Island Interceptor and Enatai Interceptor Upgrade Project (NME Project) is intended to improve the existing facility and pipeline components of the regional wastewater system to convey the 20-year peak wastewater flows projected through the year 2060 from service areas in North Mercer Island, the southwest portion of Bellevue, and the Town of Beaux Arts Village (Figure 1).

This document is compliance with Mercer Island City Code (MICC) 19.15.060(A)(10) that requires a *Project Narrative* that describes the proposed development, including any anticipated future phases, and briefly describe how the project complies with applicable criteria. This information is also provided in the *Critical Area Study* (CAS) that is part of the Land Use Permitting Package, but is provided herein for reviewers that may not need the full description of critical areas and shorelines within the NME Project site. Please note that the *Code Consistency Narrative* for the land use review is provided within the CAS.

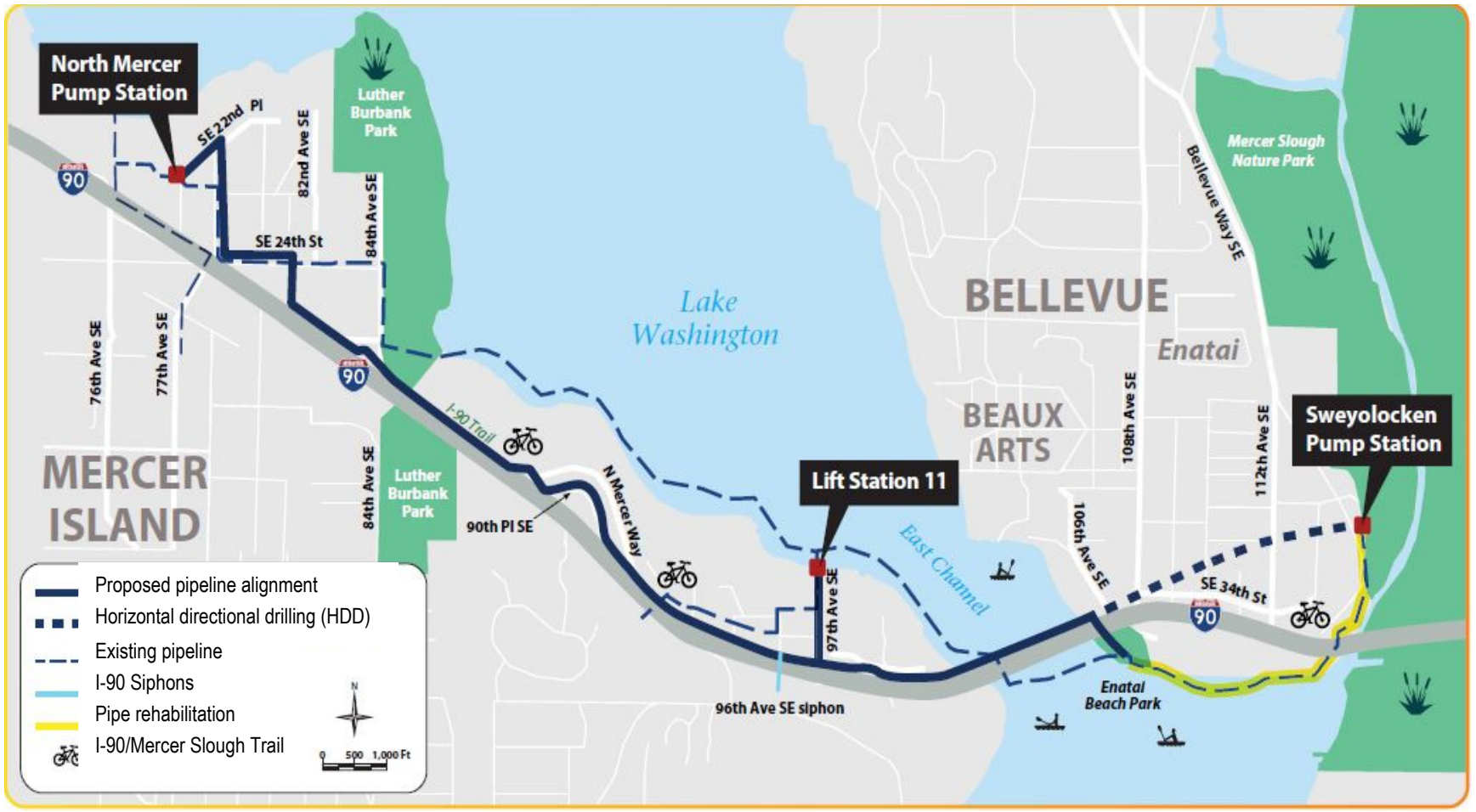


Figure 1 – NME Project Alignment Overview

2. PROPOSED PROJECT

The NME Project on Mercer Island is defined as the limits of construction associated with facility improvements to the North Mercer Pump Station (NMPS), construction of approximately 16,700 linear feet (LF) of new sewer pipe in upland areas on North Mercer Island, improvements along the Interstate 90 (I-90) Trail, improvements to Lift Station 11 (LS-11) at Fruitland Landing Park, and improvements along the shoreline of the Mercer Island Boat Launch. The NME Project also includes construction of approximately 1,400 LF new sewer pipe in the East Channel of Lake Washington. The work areas defined in CAS Section 1.1 for the NME Project include: (1) NMPS and NMPS stream; (2) Street right-of-way (ROWs) and I-90 Trail, (3) LS-11 (Fruitland Landing Park), (4) 96th Avenue Siphon, (5) Mercer Island Boat Launch, and (6) East Channel.

2.1 PROJECT TIMELINE AND SEQUENCING

NME Project construction on Mercer Island is expected to extend from April 2021 to December 2023 (Table 1). Activities within sensitive habitats were prioritized to occur for as short a period as possible; however, there are site-specific restrictions that will affect the timing and duration of construction activities. The expected sequence of work is as follows: updates to the NMPS will start as early as possible because this segment has the longest total duration (33 months); then work will progress in a linear fashion along the proposed pipeline alignment. At the same time, work will also start at the Mercer Island Boat Launch and proceed uphill toward the force main discharge to meet the work starting from NMPS. The exception to the linear workflow is the in-water work, which will occur during in-water work windows approved by the U.S. Army Corps of Engineers (Corps) and Washington Department of Fish and Wildlife (WDFW). It is anticipated that, for most of the work along the North Mercer Island Interceptor, construction activities will be in one area at a time (i.e., one street or continuous I-90 Trail segment) that is approximately 1,500 LF to 2,500 LF in length. The duration of the work within these segments will be for approximately 2 months to 6 months between mobilization and site restoration. Table 1 provides the overall durations, but the work itself will occur rapidly within individual neighborhoods and sections of the proposed NME Project pipeline alignment.

Table 1. Construction Sequencing for the NME Project on Mercer Island

Work Area (NME Project Segment)	Proposed Actions	Construction Sequencing	Duration (months)
NMPS and NMPS Stream (NMPS and North Mercer Island Interceptor)	• Begins with initial mobilization • Ends with the NMPS facility upgrades completed • NMPS stream work is a portion of this	• Apr 2021 • Dec 2023 • Jul 2022-Aug 2022	33
Street ROWs and I-90 Trail (North Mercer Island Interceptor)	• Begins after initial mobilization • Ends when the open cut-and-cover work is complete down to the Mercer Island Boat Launch	• Jul 2021 • Nov 2022	17
Fruitland Landing Park (LS-11 and North Mercer Island Interceptor)	• Begins with mobilization of LS-11 work • Ends after upgrades are complete	• Mar 2021 • May 2022	14

Table 1. Construction Sequencing for the NME Project on Mercer Island

Work Area (NME Project Segment)	Proposed Actions	Construction Sequencing	Duration (months)
96th Avenue Siphon (96th Avenue Siphon and North Mercer Island Interceptor)	• Begins with mobilization of 96th Avenue Siphon work • Ends after upgrades are complete	• May 2022 • Oct 2022	6
Mercer Island Boat Launch (North Mercer Island Interceptor)	• Begins after the installation of the shoring system (upland) • In-water work begins as soon as the in-water fish work window opens • Ends after site restoration of the bulkhead and planting the riparian area behind the bulkhead	• Jun 2021 • Jul 2022 • Nov 2022	18
East Channel of Lake Washington (East Channel Siphon)	• Begins as soon as the in-water fish work window opens • Ends when the open cut-and-cover work is complete in the East Channel to install the new siphon	• Jul 2022 • Nov 2022	5

NMPS = North Mercer Pump Station; LS-11 = Lift Station 11; ROW = right of way

The durations discussed in Table 1 are based on a conservative set of assumptions. They are shown as the earliest likely dates to begin work. The contractor may elect to conduct portions of the work in subsequent years, but will have to get any changes from the proposed schedule approved by King County. In-water work must be conducted during the seasonal windows proposed due to restrictions with other permitting agencies. It is also possible that unplanned events delay activities, and the resulting durations will exceed those presented in Table 1. Should such conditions affect permit conditions, King County will notify the relevant agencies.

2.2 PROPOSED PROJECT COMPONENTS

The purpose of the NME Project is to improve reliability and increase the capacity of the wastewater conveyance system that carries flows from northern Mercer Island to the Eastside Interceptor in Bellevue. To address the identified needs for capacity upgrades, King County WTD is proposing to upgrade existing facilities, construct a new pipeline from Mercer Island to the East Channel of Lake Washington via Fruitland Landing Park and the Mercer Island Boat Launch. The following proposed project components provide a detailed description of the construction methods.

2.2.1 NMPS and NMPS Stream

The NME Project proposes to upgrade and expand the NMPS facility. The pump station will be upgraded to accommodate the increased flow and pumping head that it will experience with the proposed pipeline improvements. Preventing nuisance odor impacts is also a major goal for the operation of the NME Project. The existing odor control system at the NMPS will be replaced with a more reliable carbon scrubber system. The carbon scrubber system, combined with the existing injection of inorganic salt solution into the wastewater at the NMPS, will control and treat odors at the pump station site.

Other improvements to the NMPS will be implemented at the same time, addressing the electrical service, heating, ventilation, air conditioning, water system, odor control, stormwater management, and site access. A new building and concrete pad will be constructed to the west of the existing structure house a standby generator, electrical service equipment, and a restroom. A temporary pump station will be built to manage flows during construction. Exterior modification will relocate the electrical transformer and an odor control chemical storage tank and add a fuel tank and more odor control equipment. The access roadway will be modified to improve vehicle access and turning.

The NME Project also proposes to replace the existing pipe by installing new sewer pipe using typical open cut-and-cover construction methods across the stream adjacent to NMPS. The NMPS stream is an unnamed stream that is a tributary to the Lake Washington watershed. The NMPS stream is expected to have an extremely low likelihood of salmonid presence due to poor water quality (headwaters are primarily stormwater runoff), channelized and armored banks and bed, and challenges to anadromy (including a 700-foot culvert from Lake Washington to the NMPS parcel).

There will also be a redesign of the existing stormwater outfall that discharges into the NMPS stream. Existing outfalls that service the pump station yard drains and roof drains will be combined with the existing outfall near the SE 22nd Street box culvert. This outfall will be moved back approximately 5 feet from the edge of the stream and a new apron in upland habitat will be constructed to dissipate energy before entering the stream.

Construction Staging and Access

There is existing infrastructure (i.e., a paved pump station access road and parking area) that will be used for temporary access and staging for NMPS facility upgrades and the open cut-and-cover work across the NMPS stream (Figure 2). This existing infrastructure will limit the need for site preparation that will disturb the surrounding area, but additional locations will be disturbed. Temporary staging and access will be used at the NMPS work area for the entire duration of the NME Project (April 2021 to December 2023). Clearing and grubbing activities will be minimal, as staging will be primarily limited to already improved areas.

Long-term access improvements will also be included in the construction activities associated with NMPS, including changes to the access road within the NMPS parcel and the frontage road before the NMPS parcel. The overall changes to the roads will result in new impervious surface area, as discussed in CAS Section 5.2, and removal of trees (Tree Solutions 2019).

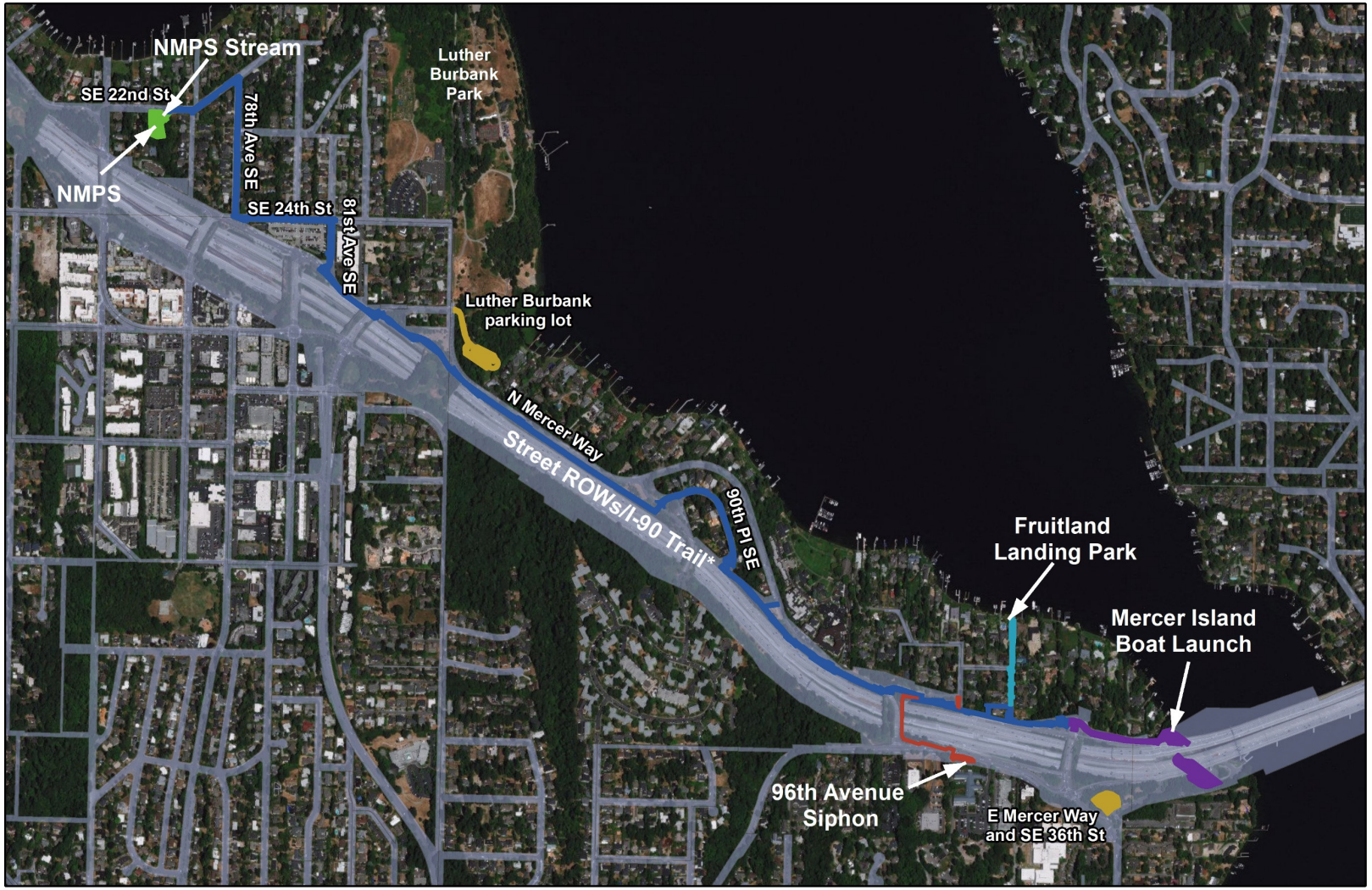
There will also be temporary construction access areas adjacent to the NMPS stream, on both banks, during construction (July 2022 to August 2022). This onsite access will include two areas that are largely dominated by Himalayan blackberry (*Rubus armeniacus*).

Site Preparation

Settlement monitoring points will be installed by hand prior to upland construction activities. Monitoring points will be used to identify changes in surface, slope, and structure settlement due to NME Project construction. Groundwater monitoring wells or vibrating wire piezometers will be installed in geotechnical exploratory boring locations. Groundwater readings will be taken and recorded every 3 months for a total of 33 months, which is the full range of activities for the NME Project at NMPS (refer to Table 1). Groundwater slug tests will be performed in wells to estimate the hydraulic conductivity of the soil.

Existing utilities (e.g., utility pipe or other buried structure) will be located and marked with paint or flags. This activity is relevant for upland work only. The utility will then be exposed using air excavation with a vactor truck to create a pothole.

Some existing utilities will require relocation during, and in advance of, construction. These utilities will be exposed by hand, vactor truck, or using an excavator, and relocated out of the new infrastructure footprint. New utility service will be installed and connected prior to decommissioning or removing the old utility. Following utility relocation, the trenches will be filled and compacted with a trench compactor. Excavated material may be removed from the site with a dump truck and trailer, as necessary.



*Note: Street ROWs/I-90 Trail work area includes the extent of proposed pipeline along the I-90 trail and city street ROWs

Figure 2 – Staging and Access along the Proposed NME Project Pipeline Alignment

Construct New and Temporary Facilities

The location of the new generator building, yard area, and temporary pump station will be cleared and grubbed using standard best management practices (BMPs) for erosion control (see CAS Section 4.3). Facility improvements for the existing pump station include (Figure 3):

- New dual force main pipe to convey wastewater;
- New generator building to house standby generator and restroom facility;
- New retaining walls and courtyard area to house mechanical equipment;
- Expanded driveway and parking area to allow for safe turnaround on-site; and
- Modified storm drainage outfall location and pipe size.

The equipment used for constructing new and temporary NMPS facilities may include excavators, dump trucks and trailers, compactors, concrete saws, compressors, concrete mixer and pumper trucks, lifts (for workers and materials), grinders, rollers, and pavers. The activities associated with NMPS facility improvements will result in an increase of approximately 5,300 square feet (SF) of impervious surface area, for a total impervious surface area of 11,096 SF (30% out of a 37,253 SF total area) post-NME Project.

The facility upgrades to NMPS will also include improvements to the existing stormwater pipe. The replacement pipe will be a 12-inch high-density polyethylene (HDPE) pipe. Construction methods will include removing the existing outfall pipe and rip-rap surrounding the pipe. Although some existing rip-rap surrounding the pipe may need to get replaced, the work below ordinary high water mark (OHWM) will be minimized to the extent possible. A new outfall apron will be constructed above the OHWM, and new pipe installed using open cut-and-cover methods. The revised stormwater outfall will follow the 2019 Stormwater Management Manual for Western Washington (Ecology 2019) and other standard practices. Note that additional stormwater control measures were not possible. According to Mercer Island (2019), the NMPS site is in a location where infiltrating low impact development facilities are not permitted. King County WTD will continue consultation with Mercer Island to formalize the plan for a fee-in-lieu for the increased stormwater quantity based on a ¼ mile downstream analysis.

Excavation and Fill Material Handling

Clean excavated materials during facility upgrades may be used as backfill in excavated areas. However, there is a preference to use clean backfill material from off-site sources. The clean excavated materials from upland habitat that are not reused as backfill will be transferred to a King County-approved upland disposal location.

Install Pipe Across the NMPS Stream

The pipe will be installed using typical open cut-and-cover construction methods perpendicular to the stream banks. Because the NMPS stream extends well beyond the limits of the property (both upstream and downstream), there was no way to connect to the rest of the proposed pipeline without crossing the stream. Surface water withdrawals of the NMPS stream work area are necessary to establish a dry work zone and avoid releasing excessive turbidity during construction through the stream channel. The trench will be excavated in a linear fashion. The excavated trenches for the pipe will be shored using a trench box style method, where applicable. The pipe will then be installed in the trench, and the trench backfilled and compacted. The equipment used for the stream crossing will primarily include a dump truck and trailer, excavator (midi or large), and a hand-held soil compactor.

Figure 3 – NMPS Site Plan

Prior to excavation, the stream will be isolated using block nets, and fish will be removed from the construction area using a seine. Barriers will be installed upstream and downstream of the excavation area to isolate the construction area from the surrounding environment. A gravity bypass system will be installed in the construction area (refer to Figure 3), and flow will be returned downstream of the construction area. A standby pump will be installed temporarily to handle high flow events during construction activities.

The NMPS stream crossing will include installation of stabilization in the area where the pipe will cross the stream, which is similar to the existing condition of riprapped streambed conditions. Although the majority of the existing streambed material is composed of gravels and cobbles, the substrate ranges in size from silt (<0.002 inches) to large cobbles (7 inches). The proposed replacement of streambed material will be a 1.5-feet thick layer of Washington State Department of Transportation (WSDOT) 10-inch cobbles (note that 10 inches is the maximum size of the existing material, and this material includes smaller sediment – about 50% is smaller than 4 inches) on top of standard WSDOT streambed sediment (grain size up to 2.5 inches). The substrate material mix matches the smaller 80% of the existing grain size present in the streambed. The larger materials will be used to stabilize the channel and protect against scour. The site-specific hydraulic assessment identified a need for larger cobble at the top layer for scour protection from larger infrequent flood events, up to the 100-year event. Materials up to 2.5 inches are stable up to a velocity of 3 feet per second (ft/s) to 4 ft/s and materials up to 8 inches are stable up to a velocity of 5 ft/s to 8 ft/s.

The bypass outfall will include temporary erosion-protection measures to prevent scour at the point of discharge, if necessary. The contractor-proposed dewatering system will be reviewed and approved by Mercer Island and WDFW and will comply with NMFS fish screen criteria (NMFS 1997). Even though ESA-listed species are not documented in the NMPS stream, the NME Project will still adhere to the recommended in-water work window for tributaries to Lake Washington.

Site Restoration and Cleanup

All construction equipment will be removed as soon as practicable once construction activities are completed within the limits of construction. Temporarily affected areas will be restored in-kind to baseline conditions. Pavement and hardscapes (e.g., roadways, curbs, gutters) removed during construction will be replaced or moved. There will also be site restoration activities surrounding the NMPS facility that will replace trees removed during construction (Development Plan Set [PLAN] Volume 1: L101). Riprap that currently serves as substrate for the streambed within the area that is crossed by the pipe will be replaced by a more appropriate streambed material. General site restoration includes a total of 19,672 SF within King County property.

In addition to general site restoration, the NMPS stream buffer will be enhanced. The buffer will be cleared of invasive vegetation and replanted with native vegetation throughout much of the stream length on the property (PLAN Volume 1: L101). Overall, there is a total of 26,592 SF of on-site enhancement available that will provide benefits to the NMPS stream. These enhancement measures will provide improved riparian functions, including shading, pollutant filtration, and organic material recruitment to the stream. The native species proposed for planting will also benefit wildlife that may use the riparian areas surrounding the NMPS facility. Given the predominance of invasive species in the existing understory, as described above, the proposed enhancement actions will improve the habitat functions along the NMPS stream area over existing conditions. The ecological enhancement within the NMPS stream buffer will specifically address the criteria under MICC 19.07.180(E)(1), to improve habitat complexity, connectivity, and other biological functions.

Additional details on the site restoration and enhancement plan are provided in CAS Section 6.

2.2.2 Street ROWs and I-90 Trail

The existing North Mercer Island Interceptor will be replaced using typical open cut-and-cover construction methods in the upland areas from the NMPS to the Mercer Island shoreline near the I-90 East Channel Bridge. Pipeline will be installed within shallow trenches 15 feet deep or less and backfilled to match the existing grade and surface conditions The alignment where pipe will be installed mainly follows N Mercer Way, the multi-use path adjoining I-90 (i.e., the I-90 Trail), or some combination of the two (refer to Figure 2). The proposed pipeline alignment in the street ROWs and I-90 Trail work area will cross seven piped stream sections . There are perennial and seasonal portions of the piped streams that occur outside of the construction limits. There is one perennial stream buffer that occurs adjacent to the Luther Burbank Park parking lot (discussed in the following section), and a seasonal stream that occurs adjacent to the I-90 Trail, that overlaps with the construction limits. Work within the street ROWs and I-90 Trail work area will prioritize locations that have existing impervious surface area, but will have both temporary and permanent impacts to vegetated areas (see CAS Section 5 below). Finally, there are geologically hazardous areas along the proposed North Mercer Island Interceptor alignment. Work in these areas will not affect the stability of geologically hazardous areas, as described in CAS Section 5.1.2.

Construction activities within this work area will avoid critical areas to the extent practicable. For example, piped streams will be avoided by at least 2 vertical feet and more often over 5 vertical feet. Piped streams will not be removed, relocated, or altered, to preserve the existing conditions of the stream. Buffer habitat for the seasonal stream adjacent to the I-90 Trail will be temporarily affected, but impacts will only include the grasses along the edge of the trail and will not affect trees within the buffer habitat. Other critical areas and shorelands are also affected at Fruitland Landing Park, the 96th Avenue Siphon, and Mercer Island Boat Launch, but those areas are separate from the street ROWs and I-90 Trail work area even though they are part of the North Mercer Island Interceptor construction segment.

Construction Staging and Access

The majority of construction on Mercer Island is associated with transitioning the active North Mercer Island Interceptor from Lake Washington to a new pipe in upland habitat, primarily along the I-90 Trail. This part of the NME Project is a linear segment (10,240 LF) that will occur sequentially along the proposed pipeline alignment. Staging and access will be provided through a series of locations (Table 2, refer to Figure 2). Ultimately, access points along the work area will be determined by the contractor. Clearing and grubbing will occur as necessary for access followed by substantial clearing of vegetation, including trees, during the expansion of the I-90 Trail.

The area that will be used for the longest duration is the offsite staging located south of I-90 and at the intersection of E Mercer Way and SE 36th Street, also located adjacent to the frontage road leading to the Mercer Island Boat Launch (refer to Figure 2). This area will be used for staging for the entire 17 months, and no other construction activities will occur. This location currently is a grassy field that is not currently used by the public. The Luther Burbank Park parking lot (refer to Figure 2), which is an improved surface, will be needed for a total of 17 months. However, staging will not be provided consecutively because this area will only be used during winter months. There will likely be pruning and removing limbs of trees along the boundary of the parking lot, but no tree removal. In addition, the perennial stream adjacent to the parking lot will be avoided, and only the portion of the buffer that occurs in areas with improved surfaces will be used. Street ROWs and I-90 Trail will be used as the NME Project progressively moves along the alignment. Even though this entire work area will be accessed over the 17-month construction period, individual areas will not be used for that entire length of time. The contractor will require staging areas for laydown, with selection based on open and accessible space for construction equipment to safely load and unload. These short-term staging and access areas will be used for several months at a time.

Table 2. Staging and Access along the North Mercer Island Conveyance Pipeline Alignment

Staging and Access	Location	Duration (months)
Luther Burbank Park	Staging will be provided at the Luther Burbank Park parking lot during winter months. No construction activities, other than staging, will occur at this location.	17 months (only during winter months)
Street ROWs	Site to be accessed off existing Mercer Island ROWs: • SE 22nd Street • 78th Avenue SE • SE 24th Street • 81st Avenue SE • N Mercer Way • 90th Place SE • SE 35th Street	17 months
I-90 Trail	Work within the I-90 Trail will be accessed from N Mercer Way via construction access points, as determined by the contractor.	13 months
E Mercer Way and SE 36th Street	Staging will be provided adjacent to the Mercer Island Boat Launch during the duration of construction along the street ROWs and I-90 Trail. No construction activities, other than staging, will occur at this location.	17 months

Site Preparation

Settlement monitoring points, as described above for the NMPS and NMPS Stream work area, will be installed by hand prior to upland construction activities. Groundwater readings will be taken and recorded every 3 months for a total of 17 months, which is the full range of activities for the street ROWs and I-90 Trail work area (refer to Table 1). Groundwater slug tests will be performed in wells to estimate the hydraulic conductivity of the soil.

Groundwater withdrawals will also be necessary at several points along the proposed upland portions of the North Mercer Island Interceptor alignment during the open cut-and-cover construction. Sump pumps and wells may be used at the discretion of the contractor to temporarily dewater these work areas where the excavation depths are within approximately 3 feet below the groundwater table. In limited areas where the depth below the water table exceeds 3 feet, dewatering will most likely be done with well points.

Turbid water will be held in Baker tanks before discharge in accordance with applicable permit requirements. Dewatering discharges will be made to storm drains or the sanitary sewer according to local area permit conditions. No discharges will be made into the groundwater.

Existing utilities (e.g., utility pipe or other buried structure) will be located and marked with paint or flags. This activity is relevant for upland work only. The utility will then be exposed using air excavation with a vactor truck to create a pothole.

Some existing utilities will require relocation during, and in advance of, construction. These utilities will be exposed by hand, vactor truck, or using an excavator, and relocated out of the new infrastructure footprint. New utility service will be installed and connected prior to decommissioning or removing the old utility. Following utility relocation, the trenches will be filled and compacted with a trench compactor. Excavated material may be removed from the site with a dump truck and trailer, as necessary.

Install Maintenance Holes and Gravity Sewer

A total of 32 new maintenance holes will be installed during construction along the proposed North Mercer Island Interceptor alignment (Figure 4). All maintenance holes will be installed in upland areas, most within existing impervious surfaces. Each maintenance hole is less than 4 SF of impervious area, and installation of the maintenance holes will not affect critical areas or shorelands.

Four steep slopes occur along the proposed North Mercer Island Interceptor alignment. The first is within a small (170 SF) vegetated area with conifers, adjacent to the I-90 Trail and south of North Mercer Way (see PLAN Volume 2: C213). This area is within the WSDOT ROW. The second steep slope is at the end of the 90th Place SE cul-de-sac (see PLAN Volume 2: C229). The slope at this location is approximately 43%. The gravity sewer pipe will drop down the side of the bank for approximately 35 LF to merge into the I-90 Trail. The third steep slope is between 97th Avenue SE and SE 35th Street where the pipeline will be aligned along a steep embankment in a well-established vegetated area (see PLAN Volume 2: C221). The slope is approximately 50% and a total length of 120 LF. The fourth steep slope is located at the Mercer Island Boat Launch, within both WSDOT and Mercer Island ROWs. The slope extends upland of the OHWM from a failing retaining wall through a section of mixed lawn and roadway (54% slope; see PLAN Volume 2: C232). As noted above, work in these areas will not affect the stability of geologically hazardous areas.

Install Odor Control Vault

A new odor control vault with an above-grade exhaust fan, access hatch, and lift slab will be installed at the force main discharge structure at the 90th Place SE cul-de-sac (Figure 4). A second odor control structure will be installed near the intersection of E Mercer Way and SE 35th Place (Figure 4). Vaults will be constructed below grade. The area used for the vaults will be cleared, excavated, and shored; the unit installed; the air duct connected to the sewer; and the area backfilled and compacted. The odor control vaults will include a carbon scrubber odor control system that will be designed to ensure high level odor prevention and reduce emission levels to maintain existing conditions. The odor control system will withdraw and treat potential odors from the hydraulic structures, including the flow diversion vault and siphon inlet and outlet vaults.

Equipment for the odor control vault that is located above grade includes a fresh air intake, vent stack (more than 6 feet in height), access hatch, lift slab, and electrical service cabinet. The larger odor control components, including foul air ducts, fan, and carbon scrubber are located below grade. The primary equipment used for this work will include a dump truck and trailer, excavator, and trench compactor. Other necessary equipment will be determined by the contractor. The activities associated with the odor control vault will result in new impervious surface area.

Site Restoration and Cleanup

All construction equipment will be removed as soon as practicable once construction activities are completed within the limits of construction. Temporarily affected areas will be restored in-kind to baseline conditions. Pavement and hardscapes (e.g., roadways, curbs, gutters) removed during construction will be replaced or moved. There will also be site restoration activities along the street ROWs and I-90 Trail to replace vegetation removed during construction, although not all trees removed will be able to be replaced in-kind and onsite (refer to the Tree Management Plan – Appendix A). All work for the North Mercer Island Interceptor, after the NMPS stream crossing, will be located outside of sensitive aquatic habitats. There will be some impacts to watercourse buffers (e.g., adjacent to the I-90 Trail), but this impact will be restored with native species (Planting Mix D) that will provide improvements to the existing conditions. Overall, there is a total of 7,050 SF of improvements within the existing watercourse buffer.

Additional details on the site restoration and enhancement plan are provided in CAS Section 6.

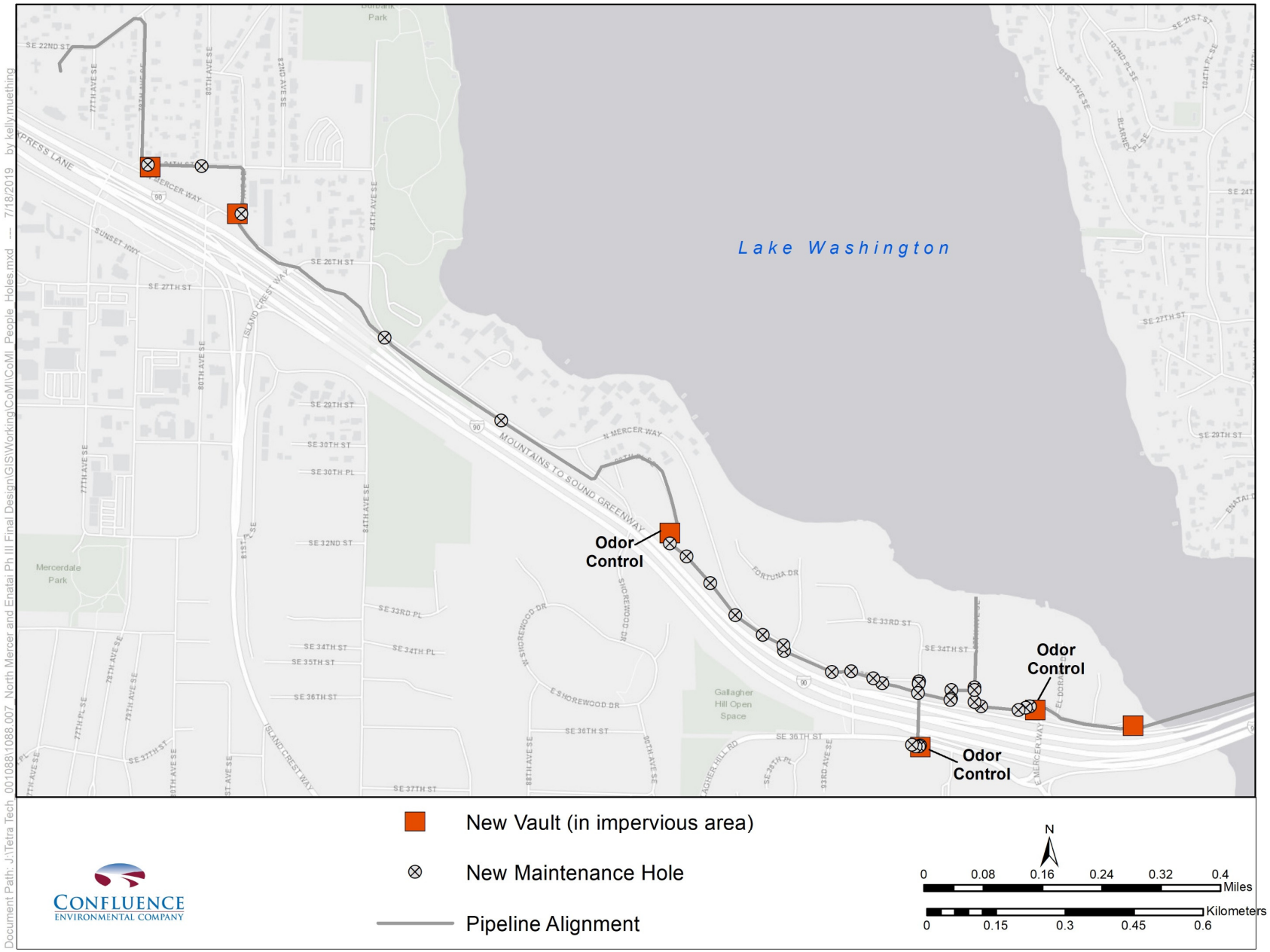


Figure 4 – Location of New Maintenance Holes and Vaults along the North Mercer Island Interceptor Alignment

2.2.3 LS-11 (Fruitland Landing Park)

Mercer Island operations has requested upgrades to the existing LS-11. The existing LS-11 is a duplex pump station located in Fruitland Landing Park at the end of 97th Avenue SE. LS-11 will be modified to allow it to meet a greater discharge head (Figure 5).

Construction Staging and Access

The staging area for LS-11 will be at the existing Fruitland Landing Park (refer to Figure 2). Staging will be needed for a total of 14 months (March 2021 to May 2022). Clearing or grubbing for these staging areas will be minimal, although some vegetation will be removed, including one tree (common hawthorn; *Crataegus monogyna*). Access to the Fruitland Landing Park work area will be from an existing street ROW at the end of 97th Avenue SE.

Site Preparation

Settlement monitoring points, as described above, will be installed by hand prior to construction activities. Groundwater readings will be taken and recorded every 3 months for a total of 14 months, which is the full range of activities for LS-11 (refer to Table 1). Groundwater slug tests will be performed in wells to estimate the hydraulic conductivity of the soil. If groundwater withdrawals are necessary, they will be done in the same manner as described for the street ROWs and I-90 Trail work area. Similarly, existing utilities will be located, marked, exposed, and relocated (as necessary).

Upgrade LS-11

Upgrades at LS-11 are requested by Mercer Island operations to allow for greater discharge head that will accompany growth on Mercer Island. LS-11 upgrades will consist of motor upsizing, piping replacement within the dry well, electrical improvements, and the force main extension. The NME Project is working with Mercer Island because many of the requests made by Mercer Island operations will increase the impervious surface area of LS-11. The existing LS-11 is a nonconforming structure because the conditions exceed the maximum impervious area identified in the SMP for lot coverage, even though the park is not a full lot (Table 3). Fruitland Landing Park is a street-end park that is narrow and has limited space to reduce the amount of impervious area due to the overall size. The proposed improvements requested by Mercer Island to LS-11 will result in an increase of 10% between 0 and 25 feet of OHWM and 32% between 25 and 50 feet of OHWM.

Table 3. Impervious Surface Area within Fruitland Landing Park

	Within 25' of OHWM	Within 25-50' of OHWM	Total
Existing Impervious Area (SF)	261	450	711
Proposed Impervious Area (SF)	337	771	1108
Added Impervious Area (SF)	76	321	397
Total Area (included vegetated area) (SF)	730	1000	1730
% Total Impervious Area	**46%**	**77%**	**64%**
% Change Total Impervious Area	**+10%**	**+32%**	**+23%**

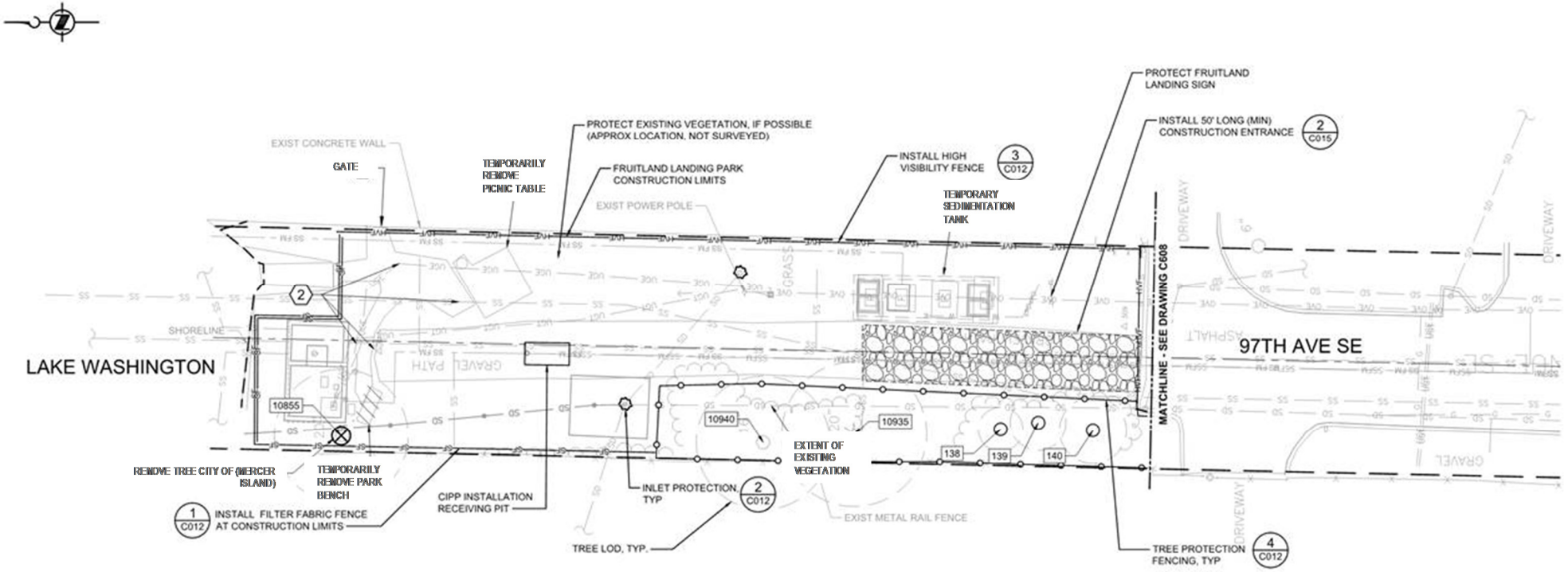


Figure 5 – Proposed Modifications to Lift Station-11

The power conduit and cable from the local service pole to the dry well will need to be replaced, which will require minor trenching above the OHWM of Lake Washington (a distance of <25 LF). The contractor will temporarily place gravel to stabilize the staging areas during construction, which will be removed after construction.

The existing force main will be extended by approximately 280 LF as a 10-inch-diameter pipe southward from the intersection of 97th Avenue SE and SE 34th Street to the new interceptor down 97th Avenue SE toward the I-90 Trail. All work for the force main extension will occur within the street ROW. There is an existing piped stream in the Fruitland Landing Park work area, which will be moved by Mercer Island prior to the NME Project construction activities. This piped stream will be moved out of the construction limits. The final location of this piped stream will affect the location of the associated 25-foot buffer, per the pre-2019 CAO

Site Restoration and Cleanup

All construction equipment will be removed as soon as practicable within the limits of construction. Temporarily affected areas will be restored in-kind to baseline conditions. Restoration also includes replacing the curb, gutter, and sidewalk removed during connection of the new siphon to the interceptor. There is a small section (620 SF) that will include adding native vegetation to screen the additions within the park from neighboring residents. Other changes in this area will include moving overhead power lines below ground, which will enhance park scenery and habitat function.

Additional details on the site restoration and enhancement plan are provided in CAS Section 6.

2.2.4 96th Avenue Siphon

The NME Project proposes to construct a new sewer siphon to accept flows from eastern Mercer Island, identified as the 96th Avenue Siphon. The location of the 96th Avenue Siphon is in a residential area that will receive limited upgrades as part of the proposed NME Project. The proposed siphon will be located 320 feet south of the proposed North Mercer Island Interceptor alignment, which is just south of I-90 (refer to Figure 2).

Construction Staging and Access

The staging area for the 96th Avenue Siphon will be in the areas surrounding the existing maintenance hole to the south of I-90 (refer to Figure 2). Staging will be needed for a total of 6 months (May 2022 to October 2022). Clearing or grubbing for the staging area will be minimal, as the locations are within improved areas. Minor amounts of clearing alongside the access road, and at existing maintenance holes and vaults, may be necessary. No trees will be removed for staging or access (Tree Solutions 2019). Access for the 96th Avenue Siphon will likely occur via SE 36th Street.

Site Preparation

Settlement monitoring points, as described above, will be installed by hand prior to construction activities. Groundwater readings will be taken and recorded every 3 months for a total of 6 months, which is the full range of activities for the 96th Avenue Siphon (refer to Table 1). Groundwater slug tests will be performed in wells to estimate the hydraulic conductivity of the soil. If groundwater withdrawals are necessary, they will be done in the same manner as described for the street ROWs and I-90 Trail work area. Similarly, existing utilities will be located, marked, exposed, and relocated (as necessary).

Install Bypass Pipe and Remove Existing Siphon

Upgrades at the 96th Avenue Siphon are required for the new pipeline to run through the North Mercer Island upland. These upgrades will reroute flows from eastern Mercer Island to flow directly into the proposed North

Mercer Island Interceptor rather than flowing through King County's existing East Trunk in Lake Washington, which will be decommissioned. This accomplishes 2 tasks: (1) flows are rerouted through the upland, rather than through Lake Washington; and (2) substantial upgrades to LS-11 which will otherwise be needed are avoided on the shoreline of Lake Washington. Both tasks avoid potential impacts within sensitive habitat.

A temporary bypass will be installed during construction activities for the 96th Avenue Siphon. This bypass will run west along SE 36th Street and cross under SE 36th Street, adjacent to the I-90 retaining wall along N Mercer Way over I-90, and connect to a discharge maintenance hole on SE 35th Street.

The existing 16-inch pipe, bends, supports, and sand will be removed from the existing steel casing by pushing from one end of the pipe to the other in sections small enough to fit through the maintenance hole. This work will be accomplished with a boring sled, a dump truck, and trailer. The steel casing will then be inspected and cleaned.

Install New Siphon

The 96th Avenue Siphon will be installed in the existing casing that was cleaned during removal of the existing pipe. All installation work will occur in the maintenance holes in small sections. Carrier pipes and isolation spacers will be installed using a boring sled (skids). The annular space will be filled with backfill material. Concrete plugs will be installed at the casing entrance into the maintenance hole wall at the upstream and downstream ends. Drop pipes will be connected at the inlet and outlet structure, and clamps and supports applied, as necessary.

To connect the new siphon to the proposed North Mercer Island Inceptor, a trench will be excavated and shored for installation and sewer connection. A containment structure will be installed, and then the area will be backfilled and compacted. The primary equipment for the siphon installation will include a dump truck and trailer, excavator, and trench compactor.

Install Odor Control Vault

A new passive odor control system will be installed adjacent to the siphon inlet. This system will include a vault housing a carbon canister and smaller vault housing a below-grade vent pipe. The activities associated with the odor control vault will not result in new impervious surface area.

Site Restoration and Cleanup

All construction equipment will be removed as soon as practicable once construction activities are completed within the limits of construction. Temporarily affected areas will be restored in-kind to baseline conditions. Restoration also includes replacing the curb, gutter, and sidewalk removed during connection of the new siphon to the interceptor. No additional ecological enhancements are proposed in this work area beyond general site restoration.

2.2.5 Mercer Island Boat Launch

The NME Project proposes to install pipe to connect the upland portions of the North Mercer Island Interceptor to the in-water portions of the East Channel Siphon. Installation of this pipe will occur at the northern end of the Mercer Island Boat Launch, which is a waterfront park featuring lawn, parking area, and a boat launch ramp to Lake Washington. The lawn area is separated from the beach by a low (approximately 4-foot) riprap-armored bulkhead that is failing in several locations. The lake substrate along this shoreline area is dominated by cobble and gravel, with areas of fine sediment being deposited into the nearshore from the failing bulkhead. The boat launch is located beneath the I-90 East Channel Bridge. There is a small dock associated with the boat launch, which includes moorage space for the Mercer Island Police Department and the Muckleshoot Indian Tribe.

Construction Staging and Access

Construction staging will encompass the entire upper parking lot and an uphill portion of the lower parking lot located under the I-90 East Channel Bridge (refer to Figure 2). Staging will be needed for a total of 24 months (June 2021 to May 2023). Access will utilize the existing frontage road, which will temporarily block a portion of road coming into the Mercer Island Boat Launch area during construction activities. Some clearing or grubbing activities will be necessary for construction staging and access at the boat launch, but the area is mostly improved and will not require substantial amount of clearing.

Site Preparation

Settlement monitoring points, as described above, will be installed by hand prior to upland construction activities. Groundwater readings will be taken and recorded every 3 months for a total of 18 months, which is the full range of activities at the Mercer Island Boat Launch (refer to Table 1). Groundwater slug tests will be performed in wells to estimate the hydraulic conductivity of the soil. If groundwater withdrawals are necessary, they will be done in the same manner as described for the street ROWs and I-90 Trail work area. Similarly, existing utilities will be located, marked, exposed, and relocated (as necessary).

Install Operations and Maintenance Access Vault

An access vault for operations and maintenance will be installed on the grassy hillside approximately 150 feet upland of the East Channel of Lake Washington and adjacent to the existing frontage road (labeled "New O&M Structure" on Figure 6). The access vault will be cast-in-place and approximately 10 feet by 16 feet (160 SF). The vault area will be excavated and shored, a clay dam (a bentonite water barrier that swells upon contact with water from a pumper truck) will be installed on the lake side of the excavation, and the excavation will be dewatered using WSDOT-approved methods (WSDOT 2014). The vault structure will then be installed and utility connections made, prior to backfilling and compaction. Equipment will include a dump truck and trailer, excavator, and soil compactor.

Install Rock Catcher

A rock catcher will be installed in the pipeline to prohibit large solids from entering the East Channel Siphon. The area used for the rock catcher will be cleared, excavated, and shored; the unit will be installed; the air duct will be connected to the sewer; and the area will be backfilled and compacted. The equipment used for this work will primarily include a dump truck and trailer, excavator, and trench compactor.

Install Pipe Above the OHWM

The upland work will require installation of a shoring system to isolate the work area from the surrounding environment that will transition into the work below the OHWM. This system will be assembled in the upland (above OHWM) and will serve as a transition. Excavations to OHWM will occur in the upland layback area. A turbidity curtain (below OHWM) and silt fences (above OHWM) will be used for secondary containment of turbidity or erosion from upland, thereby minimizing turbidity effects in Lake Washington. The isolated area will be dewatered using a contractor-proposed system that will be reviewed and approved by Mercer Island. A trench will be created, the pipe will be installed in the trench, and the trench will be backfilled and compacted. Installation of the pipe will require taking out a portion of the existing bulkhead (65 LF out of 128 LF). Replacement of this portion of the bulkhead will include soft shore stabilization design elements (described below under site restoration and cleanup). The turbidity curtain will remain in place while work is occurring in the isolated nearshore area to prevent a turbidity plume in Lake Washington. After pipe installation, and after turbidity has subsided below regulatory levels, the turbidity curtain will be removed.

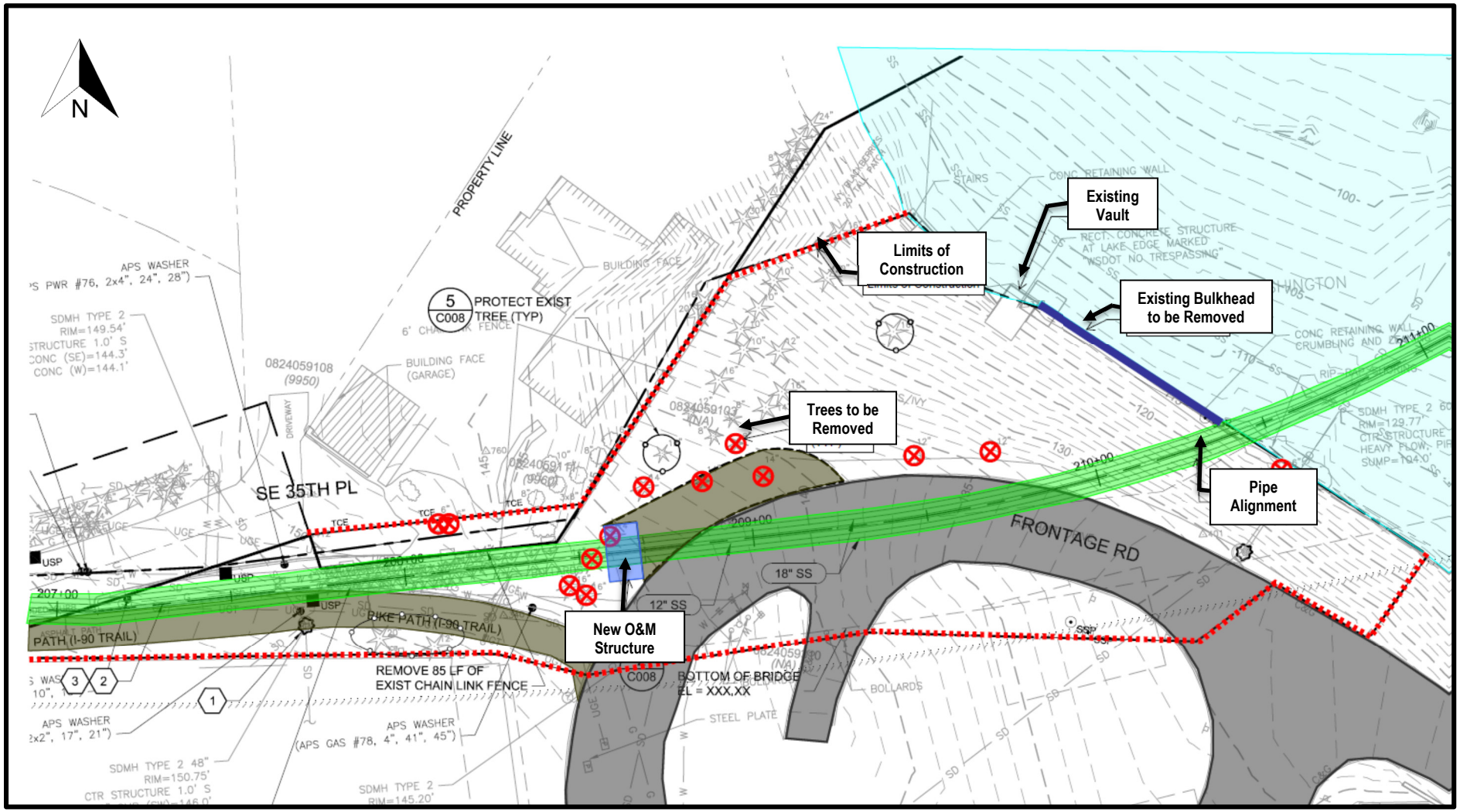


Figure 6 – Proposed Construction Activities at the Mercer Island Boat Launch

Install Pipe Below the OHWM

New pipe will be installed below the OHWM using typical open cut-and-cover construction methods with special considerations for in-water work. The isolation system used for the upland habitat (e.g., slide rail) will transition into the water in order to install the new pipe. In addition, there is an existing bulkhead that is protecting the steep slope (54% slope) associated with the Mercer Island Boat Launch shoreline, which will be removed during construction.

Work that must occur in-water will be completed during one approved in-water work window, in an area isolated from the rest of Lake Washington. This will be accomplished by installing the shoring system and turbidity curtain (described above). Fish removal from the isolated area may be required.

The existing concrete bulkhead will be removed in the vicinity of the pipeline construction area, and a temporary barrier will be constructed to provide isolation of the upland construction area from Lake Washington. Construction below the isolation system will occur via a floating derrick with a clamshell dredge (i.e., "in the wet"). Anchor blocks will be installed and used to secure the pipe in the trench for the East Channel Siphon and will be constructed of concrete that is precast off-site. The pipe will then be installed, and the trench will be backfilled. After pipe installation, and after turbidity has subsided below regulatory levels, the turbidity curtain will be removed.

In-Water Dredge and Fill

The clean dredged materials will be stored on barges and transported to Elliott Bay for open-water disposal, pursuant to the Washington State Department of Natural Resources Site Use Authorization. Figure 7 provides the location of the Elliott Bay open-water disposal site in relation to the NME Project area. New clean fill material may be used as backfill, as necessary.

Site Restoration and Cleanup

All construction equipment will be removed as soon as practicable once construction activities are completed within the limits of construction. Temporarily affected areas will be restored in-kind to baseline conditions. Pavement and hardscapes (e.g., roadways, curbs, gutters) removed during construction will be replaced or moved. General site restoration includes a total of 44,390 SF within WSDOT ROW and Mercer Island parks property.

In addition to general site restoration for the Mercer Island Boat Launch, the NME Project proposes to replace a large portion of the existing shoreline stabilization structure at Mercer Island Boat Launch, which is currently failing. The portion of the existing structure that will be replaced will use soft shore stabilization design elements, including anchor logs to prevent erosion, gravel supplementation in the nearshore below the OHWM, and upland landscape restoration and planting. The proposed design will increase habitat complexity along the shoreline. Anchor logs will be placed parallel to the shoreline, reinforced soil lifts with live stakes will be used to provide overhanging vegetation and additional stabilization, and placement of beach nourishment will provide areas for benthic invertebrates to colonize. The primary design criteria of the shoreline treatment was to balance shoreline stabilization with improving habitat complexity for fish and invertebrates. The additional ecological enhancements along the Mercer Island Boat Launch shoreline are consistent with opportunities for restoration identified as Project Number LW-S3-2, LW-S3-3, and LW-S3-4 in the water resource inventory area (WRIA) 8 Chinook Salmon Conservation Plan (WRIA 8 Salmon Recovery Council 2017). In addition, the design meets or exceeds the criteria for shoreline stabilization replacement, as discussed under MICC 19.13.050(B).

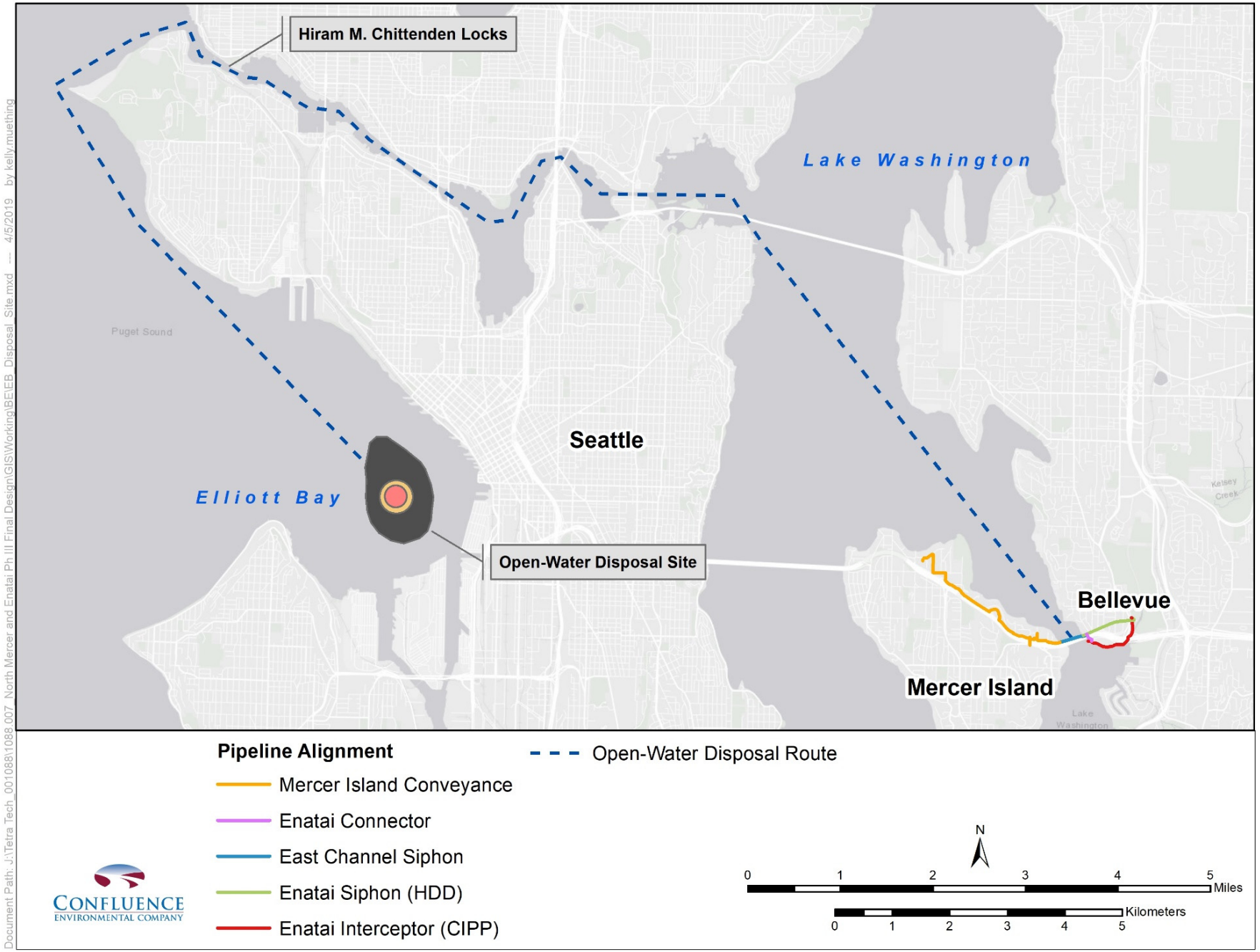


Figure 7 – Open Water Disposal Site in Elliott Bay

The proposed shoreline enhancement area is approximately 6,190 SF of new plantings and 1,920 SF of in-water improvements. The goal is to replace the existing shoreline armoring with soft shore design elements including large wood, gravels, and overhanging vegetation. Restoration also includes replacing the curb, gutter, and a portion of the road and sidewalk removed during construction.

Additional details on the site restoration and enhancement plan are provided in CAS Section 6.

2.2.6 East Channel

Within the East Channel Siphon construction segment, the NME Project proposes to construct a new in-water siphon via in-water, open cut-and-cover construction. The East Channel Siphon is the portion of the pipeline in Lake Washington below the OHWM between the Mercer Island and Bellevue shorelines, just north of the I-90 East Channel Bridge. The pipeline will parallel the bridge on the northern side. Figure 8 depicts the pipeline alignment and dredge limits.

Water depths in the East Channel segment of Lake Washington range from 0 feet to approximately 60 feet. Substrate in the shallower depths is a mix of gravel, sand, muck (mud), and cobble, with occasional boulders. At depths below 10 feet, sand and muck dominate the substrate.

Construction Staging and Access

Primary construction staging will be located on barges. Additional upland staging or access may be used for the East Channel Siphon at the Mercer Island Boat Launch, as described above. Because the East Channel of Lake Washington is an active navigation channel, a navigable passage through the channel will be maintained during construction activities. This will be done by maintaining at least one navigable passage channel at a time. The duration of construction within the East Channel will be 5 months (July 2022 to November 2022).

Locate Existing Utilities and Support in Place

Existing utilities will be located by divers and excavated by hand. A temporary support for fiber-optic lines and sewer lake lines will be installed. Utilities will likely be supported and protected with a webbed truss that will span the width of the trench. The area under the existing utilities will be excavated by jetting out the sediment within the area isolated by a turbidity curtain. Equipment for locating and protecting existing utilities will include a derrick and trash pump with jetter hose. Other necessary equipment will be determined by the contractor.

Install In-Water Pipe

New pipe will be installed in the East Channel of Lake Washington using open cut-and-cover construction methods (Figure 8). The trench will be excavated in a linear fashion with a clamshell bucket, but the trench will not be shored. The excavated trench is expected to be up to 50 feet wide by 10 feet deep, to accommodate required width for work area isolation and depth for pipe installation. The pipe will be installed in segments and attached to precast anchor blocks using a controlled sink from the lake surface into the trench.

The trench will be backfilled with washed gravel, and the pipe and anchor blocks will be covered with a depth between 1 foot and 3 feet (Figure 9). The equipment used for the pipe installation will include a derrick, crane with clamshell bucket, and trash pump with jetter hose. Other necessary equipment will be determined by the contractor. A portion of the substrate materials excavated from the East Channel will be disposed of off-site. These materials will be transported by barge to Elliott Bay for open-water disposal (refer to Figure 7).

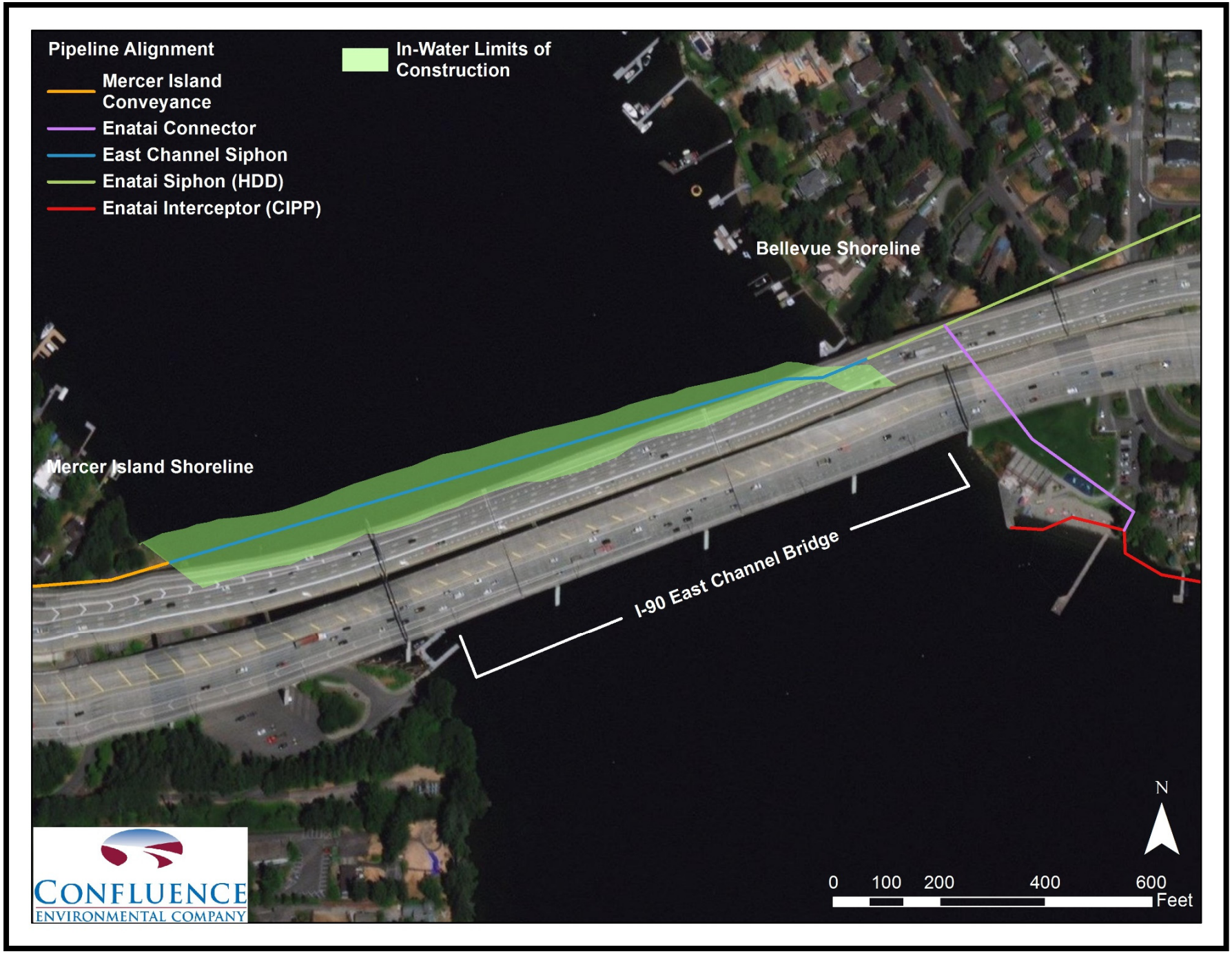
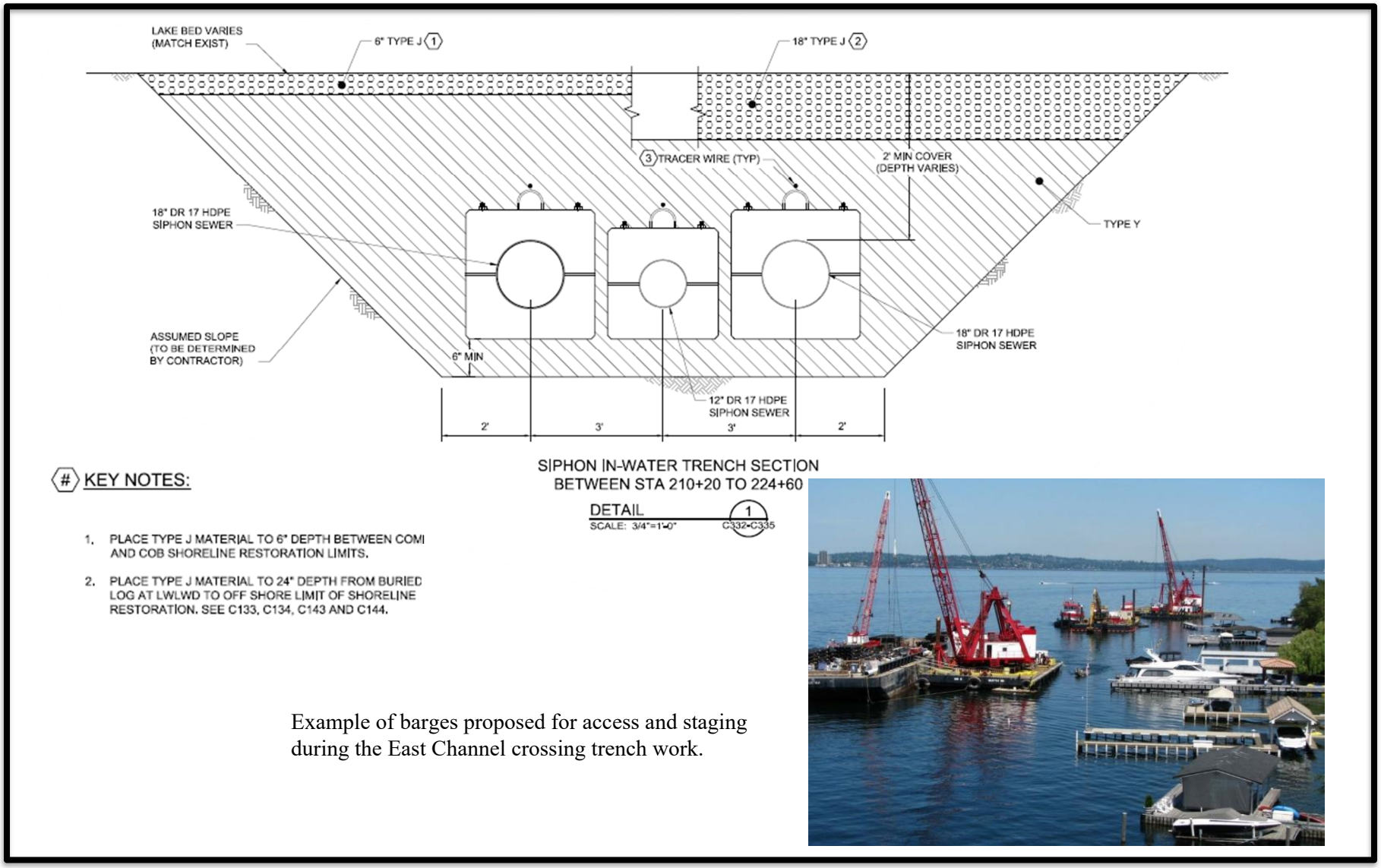


Figure 8 – East Channel Crossing and Proposed Dredging Limits



Example of barges proposed for access and staging during the East Channel crossing trench work.

Figure 9 – In-Water Trench Cross Section for the East Channel Crossing

A turbidity curtain will be used to minimize turbidity effects in Lake Washington. The turbidity curtain will remain in place while work is occurring in the East Channel to prevent excessive turbidity releases into Lake Washington. After pipe installation, and after turbidity has subsided below regulatory levels (refer to WAC 173-201A-200 (1)(e) Table 200), the turbidity curtain will be removed.

The timing for the work will be during agreed timeframes based on discussions with the Corps and WDFW.

Site Restoration and Cleanup

All construction equipment will be removed as soon as practicable once construction activities are completed within the limits of construction. Temporarily affected areas will be restored in-kind to baseline conditions. The lakebed within the East Channel of Lake Washington will be restored to better than baseline conditions, and a WDFW-approved gravel substrate deemed to be beneficial for fish will be added to enhance the existing bottom substrate.

2.3 BEST MANAGEMENT PRACTICES

Avoidance of NME Project impacts are provided through design and construction methods proposed. Minimization measures include BMPs that will be used during all construction activities to avoid or minimize potential environmental impacts. Many of these BMPs are standards that will apply universally to many NME Project construction activities, including upland staging areas. Certain BMPs are also used during operations and maintenance, which are also discussed in this section.

2.3.1 Avoidance Measures

The following construction methods have been selected to avoid unnecessary environmental impacts:

- Constructing a new pipeline in upland habitat and decommissioning a large portion of the degraded existing pipeline currently located in Lake Washington.
- Crossing the East Channel of Lake Washington at its narrowest point to install the new East Channel Siphon, which will replace the existing pipe that is located farther to the south at a wider crossing of the channel.
- Using shoring systems that avoid driving and removing sheet piling (e.g., slide rail or trench box system) for the shoreline transition work to and from the East Channel crossing for the East Channel Siphon work.

2.3.2 Erosion Control Measures

The following BMPs will be used during construction to reduce or control erosion:

- A Temporary Erosion and Sediment Control (TESC) Plan and a Source Control Plan will be developed and implemented for all clearing, vegetation removal, grading, ditching, filling, soil compaction, or excavation. The BMPs in the plans will be used to control sediments from all vegetation removal or ground disturbing activities.
- The contractor will designate at least 1 employee as the erosion and spill control (ESC) lead. The ESC lead will be responsible for the installation and monitoring of erosion control measures and maintaining spill containment and control equipment. The ESC lead will also be responsible for ensuring compliance with all local, state, and federal erosion and sediment control requirements.
- All temporary and permanent erosion and sedimentation control measures will be inspected, maintained, and repaired on a regular basis to assure continued performance of their intended function. Silt fences will be inspected immediately after substantial rainfall, and at least daily during prolonged rainfall. Sediment will be removed as it collects behind the silt fences and prior to their final removal. Regular street

cleaning will occur where necessary to control mud and dust, and minimization measures will be taken to minimize tracking of sediment onto public roadways by construction vehicles.

- Erosion control blankets will be installed on steep slopes that are susceptible to erosion and where ground-disturbing activities have occurred. This will prevent erosion and assist with establishment of native vegetation.
- All exposed soils will be stabilized during the first available period, and no soils will remain without stabilization for more than 2 days from October 1 to April 30, and for more than 7 days from May 1 to September 30.
- Disturbed areas will be returned to existing or improved conditions (e.g., replanting or repaving) as soon as practical after construction is completed.
- Should any BMPs not function as intended, the contractor will take additional action to minimize erosion, maintain water quality, and achieve the intended environmental performance.

2.3.3 Air Quality Control Measures

The following BMPs will be used during construction to reduce or control air quality:

- BMPs will be implemented for the proper use, storage, and disposal of equipment and materials within the construction limits. These BMPs will minimize or eliminate the discharge of potential pollutants that may contribute to exceeding applicable air quality standards.
- Structures and pipelines will be hydraulically designed to reduce potential emissions during operation, particularly by reducing turbulence in wastewater conveyance segments, thus reducing the release of dissolved hydrogen sulfide (the primary source of odors) at the force main discharge and siphon structures.

Operational and maintenance practices that will be implemented to control odor and emissions include the following:

- Require regular maintenance of equipment to minimize emissions.
- Use electrically powered equipment where practical.
- Avoid prolonged idling of vehicles and equipment.
- Operate pumps daily at a high capacity to produce scouring velocities in the pump station force mains.
- Use fresh water to scour and flush the force mains.
- Ensure force main check valves are leak tight.
- Install pigging (i.e., pipeline cleaning) station in the force mains.

Odor control systems will be either upgraded or added to NMPS and along the proposed North Mercer Island Interceptor alignment to avoid and minimize visual, noise, and air impacts to the community that will have an above-grade odor control stack. The above-grade portion will be located above the nearest receptacle (more than 6 feet in height). Carbon scrubber odor control systems will be designed to ensure high level odor prevention and ensure emission levels are held below the existing conditions. The carbon media proposed to be used in these systems is a highly reliable odor control technology with minimal risk and is effective for removal of the hydrogen sulfide gases.

2.3.4 Water Quality Control Measures

The following BMPs will be implemented to reduce or control water quality impacts:

- Turbidity curtains will be used for all in-water work to confine the impact to the local area and exclude fish from the work area as outlined below. Turbidity curtain removal will only occur after water quality

sampling shows that water quality has returned to allowable limits according to the WAC 173-201A-200 (1)(e) Table 200.

- Turbidity monitoring will occur during dredging and filling of the pipeline alignment zone to ensure that water quality standards are met.
- A Sampling and Analysis Plan (SAP) to test sediment was prepared, executed, and submitted to King County in July 2017. The sediments met all standards to be approved for open water disposal at authorized open water disposal locations. The SAP identifies contingency measures for the inadvertent discovery of contaminated sediments.
- Seasonal restrictions (i.e., in-water work windows) will be applied to the project to avoid or minimize potential impacts on fish species, following approval from the regulatory agencies.

2.3.5 Surface, Ground, and Runoff Water, and Drainage Pattern Control Measures

The following BMPs, in addition to what is identified above, will be implemented to reduce or control surface, ground, and runoff water, and drainage impacts:

- Store fuels and other potential contaminants in secured containment areas.
- Contain equipment, materials, and wash water associated with construction.
- Conduct regular inspections, maintenance, and repairs of fuel hoses, hydraulically operated equipment, lubrication equipment, and chemical/petroleum storage containers.
- Regularly maintain spill containment and cleanup material at construction sites.
- Establish a communication protocol for handling spills (e.g., ESC lead).
- Refuel construction equipment and vehicles away from surface waters whenever practicable.
- If warranted, place an impervious material over concrete or asphalt after pouring to avoid direct contact with stormwater as the pavement cures.
- Do not dump washout from concrete trucks into storm drains or onto soil or pavement that carries stormwater runoff.

In addition to the above BMPs, the contractor will be responsible for preparing and implementing the Construction Stormwater Pollution Prevention Plan according to the criteria established by Ecology through the Clean Water Act Section 401 permitting process.

2.3.6 Landscaping, Use of Native Plants, or Other Measures to Preserve or Enhance Vegetation

King County WTD is working with Mercer Island and WSDOT on tree replacements and other ecological enhancements along the pipeline alignment. All temporarily disturbed vegetation areas will be graded to pre-NME Project contours and replanted with native vegetation suitable for site conditions. Permanent impacts will be mitigated per the applicable local codes and WSDOT requirements.

Several locations are proposed for ecological enhancements that go beyond standard site restoration following construction activities. The enhancements will use native plants to off-set potential NME Project impacts, and preserve, restore, or enhance existing vegetation on-site. Please refer to the additional ecological enhancement proposed for the temporary reduction in habitat functions and values along the NME Project pipeline alignment, and is described in CAS Section 6. Overall, there will be more than a 1:1 ratio of site restoration activities within the limits of construction that include planting native vegetation, including trees, and removing non-native or invasive plant species intended to improve ecological conditions.

Construction activities will follow vegetation and tree protection BMPs including:

- Minimize clearing to the extent necessary to complete the project.
- Minimize disturbance to riparian vegetation by straddling the vegetation with heavy equipment (or by pruning branches without damaging the roots) to allow for the operation of heavy equipment.
- Avoid disturbance to riparian vegetation outside of the work area.
- Mark the extent of clearing before construction begins.
- Install and maintain tree protection fencing to protect the critical root zone of all trees to be retained.
- Replant vegetated areas as soon as practicable after construction activities are complete.
- Establish a tree protection zone (TPZ) or recommended limit of disturbance (RLOD) identified in the *Arborist Report* (Tree Solutions 2019) for each tree, using a distance from each tree based on a direct correlation to tree diameter. This distance is calculated by multiplying the trunk diameter by a TPZ factor.
- Reduce the RLODs based on site conditions, proposed work, and tree protection measures that are implemented. As necessary, the RLOD for individual trees may be reduced if determined that the type of work will not be detrimental to the long-term survivability of the tree.
- Refer to additional tree protection specifications in the *Arborist Report* (Tree Solutions 2019).
- Remove noxious species in compliance with King County's Noxious Weed Program's BMPs and replant areas of removal with native species.

2.3.7 Measures to Reduce or Control Noise Impacts

BMPs that will be used to reduce noise generated from equipment used during construction activities include:

- The contractor will equip construction equipment engines with adequate mufflers, intake silencers, and engine enclosures to reduce their noise by 5 to 10 dBA.
- The contractor will turn off construction equipment during prolonged periods of non-use to eliminate extraneous noise.
- The contractor will maintain all equipment and train equipment operators in good practices to reduce noise levels.
- Temporary diesel generators and temporary pumping equipment to be operated at night will be required to be fitted with sound attenuation equipment.

The only noise generated during typical operations will include the fans for the odor control at NMPS and along the proposed North Mercer Island Interceptor alignment. Sound enclosures will be provided for the fan in the odor control vault and silencers on the exhaust stack if the acoustical analysis identifies a need.

2.3.8 Measures to Reduce or Control Environmental Health Hazards

During construction, BMPs will be implemented to minimize the potential for spills or mechanical failures to occur, and to minimize the potential for adverse effects from fuels, fluids, and lubricants to workers, nearby residents, or the environment. During construction, it will be the responsibility of the contractor to adhere to all applicable regulations.

Applicable project BMPs identified above will also reduce or control environmental health hazards. Additionally, the NME Project will comply with following regulations by Mercer Island: fire code, wastewater treatment codes, and construction spill protocols.

For dredged materials, prior to their disposal, sediments excavated from the lakebed will be tested for the presence of contaminants. If contaminated sediments are encountered, containment BMPs will be implemented to avoid or minimize the introduction of contaminated sediments to the water column.

2.4 OPERATIONS AND MAINTENANCE

Operations and maintenance will continue at NMPS similar to the existing operations and maintenance. Additional quarterly maintenance trips will occur to maintain the new odor control vaults at the 90th Place SE cul-de-sac, intersection of E Mercer Way and SE 35th Place, and the 96th Avenue Siphon. These maintenance events are expected to occur via surface streets and existing access roads with light- to medium-duty vehicles. Equipment used for odor control system maintenance includes vactor trucks, gantry crane mounted utilities and trucks, and utility vehicles.

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