Ecological No Net Loss Assessment Report

Prepared for

Owen Sun
7240 North Mercer Way
Mercer Island, WA 98040

Prepared by

Northwest
Environmental Consulting, LLC

Northwest Environmental Consulting, LLC
3639 Palatine Avenue North
Seattle, WA 98103
206-234-2520

October 2020

Purpose

The purpose of this report is to fulfill the requirements of City of Mercer Island Municipal Code (MICC) 19.07.110 Shoreline Master Program by assessing overall project impacts and proposed mitigation to determine if the project meets the “No Net Loss” General Regulation of the Shoreline Master Program.

No Net Loss is defined as “An ecological concept whereby conservation losses in one geographic or otherwise defined area are equaled by conservation gains in function in another area.”

Location

The subject property is located at 7240 North Mercer Way (King County parcel number 5315100045) in the City of Mercer Island, Washington (see Appendix A – Sheet A1.0). The parcel is on the waterfront of Lake Washington, which contains several endangered fish species listed under the Endangered Species Act and Washington State designated priority fish species. Permits are being applied for a pier repair and the creation of a beach cove (see Appendix A – Sheets A3.0 and A4.0).

Project Description

The work on the pier will include re-decking the existing 559-square-foot wooden pier with ThruFlow grated decking, removing one 10-inch wood pile, and repairing four 10-inch wood piles, five 12-inch wood piles, and one 16-inch wood pile. In addition, 27 linear feet of the existing rock bulkhead to the west of the pier will be removed and a 326-square-foot beach cove with rock stairs and beach nourishment gravel surrounded by a rockery wall will be installed. A boat lift will also be installed under the existing moorage cover.

During construction, a floating boom and sediment curtain will surround the work barge, pier, bulkhead and piles.

A shoreline vegetation plan is proposed, adding native trees including one shore pine and one Douglas fir and native shrubs including one Pacific ninebark and two red flowering currants. In addition, ornamental vegetation including 12 Kelsey’s dwarf red twig dogwoods and six Delavayi Osmanthus will be planted along the shoreline. These shoreline plantings will provide shade and allow leafy material to enter the lake along the shoreline (see Appendix A – Sheet L1.1). Invasive vegetation, including knotweed, will also be removed along the shoreline (see Appendix A – Sheet L1.0).

Project drawings are included in Attachment A.

Approach

Northwest Environmental Consulting LLC (NWEC) biologist Courtney Straight conducted a site visit on October 19, 2020 to evaluate conditions on site and adjacent to the site. NWEC also consulted the following sources for information on potential critical fish and wildlife habitat along this shoreline:

- Washington Department of Fish and Wildlife (WDFW): Priority Habitats and Species online database (http://apps.wdfw.wa.gov/phsontheweb/)

- WDFW SalmonScape online database of fish distribution and ESA listing units (https://apps.wdfw.wa.gov/salmonscape/)

- Mercer Island GIS online database (https://chgis1.mercergov.org/Html5Viewer/Index.html?viewer=PubMaps&viewer=PubMaps)

Site Description

The subject property is shoreline tract in a residential neighborhood. It has shoreline on its northeastern boundary with single-family homes on all other sides.

The only existing structures on the property are the house, the moorage cover, the existing wood pier, two mooring piles, and a rock bulkhead with rock stairs (Photos 1 through 4).

The substrate of the lake is sand and cobble. Milfoil was observed starting approximately 10 feet from the bulkhead and continuing waterward.

The property to the northwest has a wood pier and the shoreline was not visible from the subject property due to dense overhanging knotweed along the northwest property line (Photo 5). The property to the southeast has a rock bulkhead with a wood pier (Photo 6). The subject property yard has a lawn along the shoreline. The northwestern end of the subject property shoreline contains overhanging knotweed waterward of a Western red cedar. The middle shoreline contains a lawn with Himalayan blackberry, cotonester, and laurel. The northern end of the shoreline contains the rock stairs, the pier entrance, two Western red cedars, Oregon grape, cotoneaster, sword fern, and Himalayan blackberry.

Species Use

WDFW's PHS mapping and SalmonScape mapping tools show the following salmonid species using Lake Washington for migration and/or rearing: residential coastal cutthroat (*Oncorhynchus clarkii*), winter steelhead (*O. mykiss*), Dolly Varden/bull trout (*Salvelinus malma*), sockeye salmon (*O. nerka*), fall Chinook (*O. tshawytscha*), coho salmon (*O. kisutch*), and kokanee (*O. nerka*). The SalmonScape database maps the site as accessible to the Endangered Species Units (ESU) of Threatened Chinook and steelhead. The nearest salmon-bearing stream, Mercer Slough, approximately 3 miles to the southeast, is modeled by Washington Department of Fish and Wildlife (WDFW) for rearing of non-listed coho and listed Fall Chinook. Juveniles may rear in the waters near the project when traveling from spawning sites on other lake tributaries to the lake's outlet at the Locks. The project site is accessible to any fish migrating or rearing in the lake, and sockeye spawning has been mapped at the subject parcel.

The closest wetlands are mapped approximately one-half mile east in Luther Burbank Park, but no other priority habitats are directly associated with the project site for aquatic or terrestrial species.

The Mercer Island GIS map shows a Type Ns watercourse approximately 700 feet to the west and a Type F watercourse approximately 900 feet to the southeast.

Project Impacts and Conservation Measurements

Direct Impacts:

Sediments: Sediment disturbance will occur below the OHWM and along the shoreline of Lake Washington. Additionally, the tug and barge propwash may disturb sediments temporarily when making trips to/from the site. Some sedimentation may also be caused during removal of the bulkhead and by construction of the beach cove. The coarse sediments (sand and cobbles) found at the site are not likely to remain suspended long or travel far.

A silt curtain and floating boom will be placed around the pier and bulkhead to contain sediments that may become suspended during construction of the cove or contain floating debris in the project area. Work will be completed during the in-water work window when juvenile fish are not expected to be present. The project will meet state water quality standards.

Shoreline: The construction of the beach cove will remove 27 linear feet of the bulkhead from the OHWM. The cove will be properly constructed to prevent erosion of sediments. Some sedimentation may be caused during topsoil and woody debris installation above the OHWM along the shoreline. Any disturbed soils will be stabilized during construction using applicable BMPs. Beach nourishment gravels will be added to the cove as specified by WDFW to improve fish habitat along the shoreline.

Planting native vegetation will increase the habitat functions of the shoreline by creating shade along the shoreline that will be an improvement from the existing baseline habitat conditions at the project site. These plants will provide overhanging cover for fish, structural diversity for birds and wildlife, detritus for aquatic invertebrates and long-term recruitment of woody material and other allochthonous food sources. The existing shoreline vegetation is currently ornamental or invasive vegetation and lawn for most of the shoreline. The proposed planting plan is included (see Appendix A - Sheet L1.1). In addition, invasive Japanese knotweed will be removed from the shoreline (see Appendix A – Sheet L1.0).

Lakebed: The project will remove one 10-inch wood mooring pile. This will uncover 0.5 square feet of lakebed that is currently covered.

Noise: Construction equipment will create noise audible to neighbors and in-water. Noise disturbance will be short-term and should have negligible effects on fish and wildlife in the area.

Potential spills: Short-term risks include the potential for petroleum spills that can occur with any equipment operation. The level of impact to the aquatic environment is expected to be minor because of the small amount of petroleum products available for spillage during typical construction activities, and because of spill containment measures that will be employed should a spill occur.

Indirect Impacts:

Shading: The existing solid wood pier covers approximately 559 square feet of the lake surface. The repaired pier will be fully grated.

Grated decking allows more light to penetrate the waters below a dock, which can increase productivity in the waters, and reduce the full shade favored by salmonid predators. Salmonid

predators are known to use hard shadowing under solid-decked docks to ambush juvenile salmonids. Reducing these hard shadows limits their ability to effectively hunt salmonids.

ThruFlow grated decking has measured performance at 43 percent light penetration (ThruFlow, 2020). Thus, the increase in lighting under the pier is effectively 57% of the area of a solid decked structure. A summary of how this will affect this project's shading is shown below:

Existing overwater dock area	559 sq. ft.
Effective overwater coverage with solid decking (100% of 559 sq. ft. pier area)	559 sq. ft.
Effective overwater coverage with ThruFlow decking (57% of 559 sq. ft. pier area)	319 sq. ft.

Thus, grating the deck surfaces will result in effective shading that is a reduction of 240 square feet from that of the existing conditions.

Recreational Boating: The project supports continued recreational boating, which has been identified as a limiting factor for salmonid populations in Lake Washington. The pier repair and beach cove will not introduce additional boating to Lake Washington, as the owners could still access the lake from a public boat launch or private moorage facility.

Other Conservation measures:

Work window: The work will be completed during the prescribed in-water work window for this area of Lake Washington (July 16 to April 30). Operating within this time frame helps protect Chinook salmon, steelhead, bull trout and other salmonid fish species by doing work when juvenile fish are not expected to be present.

Best Management Practices: Applicable BMPs will be used, such as a floating boom and weighted sediment curtain around the in-water work area, to contain any floating debris and sediments that may escape during construction (see BMP Notes on Sheet A6.0 in Appendix A). The barge will have a perimeter containment sock to absorb oil and grease that might inadvertently wash from the barge during construction.

Hazardous material containment materials such as spill absorbent pads and trained personnel will be required onsite during any phase of construction where machinery is in operation near surface waters.

Conclusion

Juvenile Chinook salmon, and other salmonids, rear and migrate along the Lake Washington shoreline.

The project will overall have a net benefit to the nearshore environment. There will be temporary impacts from noise and disturbed sediments during demolition and construction. However, these impacts are offset in the long-term by a 240-square-foot functional reduction of the pier's shading by installing ThruFlow grated decking and a 0.5-square-foot reduction in lakebed coverage. The grating reduces the hard shadows favored by salmonid predators and increases productivity under the pier.

The shoreline will be improved by constructing a beach cove that will remove 27 linear feet of wood bulkhead and create 326 square feet of beach. Beach nourishment gravels (of a size

approved by WDFW) will be added at and below the ordinary high water mark in the cove. Creation of the cove will attenuate wave action and reduce shoreline erosion. In addition, properly sized beach nourishment gravels have been shown to be utilized more often by juvenile salmonids. (Larry Fisher, Personal communication 2019).

A shoreline planting plan will be implemented, adding native trees and shrubs (Appendix A – Sheet L1.1).

The project will minimize construction effects on the environment by following the prescribed fish window and using applicable BMPs to prevent construction spills and debris from escaping the area.

This project has been designed to meet current residential dock standards and will use Best Management Practices to reduce project impacts. The conservation measures are designed to improve ecological functions or prevent further degradation of habitat **and will result in No Net Loss of ecological functions** at the site. Creation of the cove will improve ecological conditions at the site.

Document Preparers

Brad Thiele	Biologist	26 years of experience	Northwest Environmental Consulting, LLC. (NWEC)
Courtney Straight	Biologist	2 years of experience	NWEC

NWEC followed standard acceptable field methods and protocols at the time work was performed. These standards include delineation of wetland and stream boundaries, characterization, rating, functional analyses, impact assessments and mitigation of impacts. The conclusions and findings in this report are based on field observations and measurements and represent our best professional judgment and to some extent rely on other professional service firms and available site information. Within the limitations of project scope, budget, and seasonal variations, we believe the information provided herein is accurate and true to the best of our knowledge. Northwest Environmental Consulting does not warrant any assumptions or conclusions not expressly made in this report or based on information or analyses other than what is included herein.

REFERENCES

ThruFlow. 2020. Legacy Series. Online. Accessed October 2020 at https://thruflow.com/products/legacy/.

US Army Corps of Engineers (USACE). 2004. Final Biological Evaluation, Regional General Permit: Construction of New or Expansion of Existing Residential Overwater Structures and Driving of Moorage Piling. Lake Washington, Lake Sammamish, the Sammamish River and Lake Union, Including the Lake Washington Ship Canal, in the State of Washington.

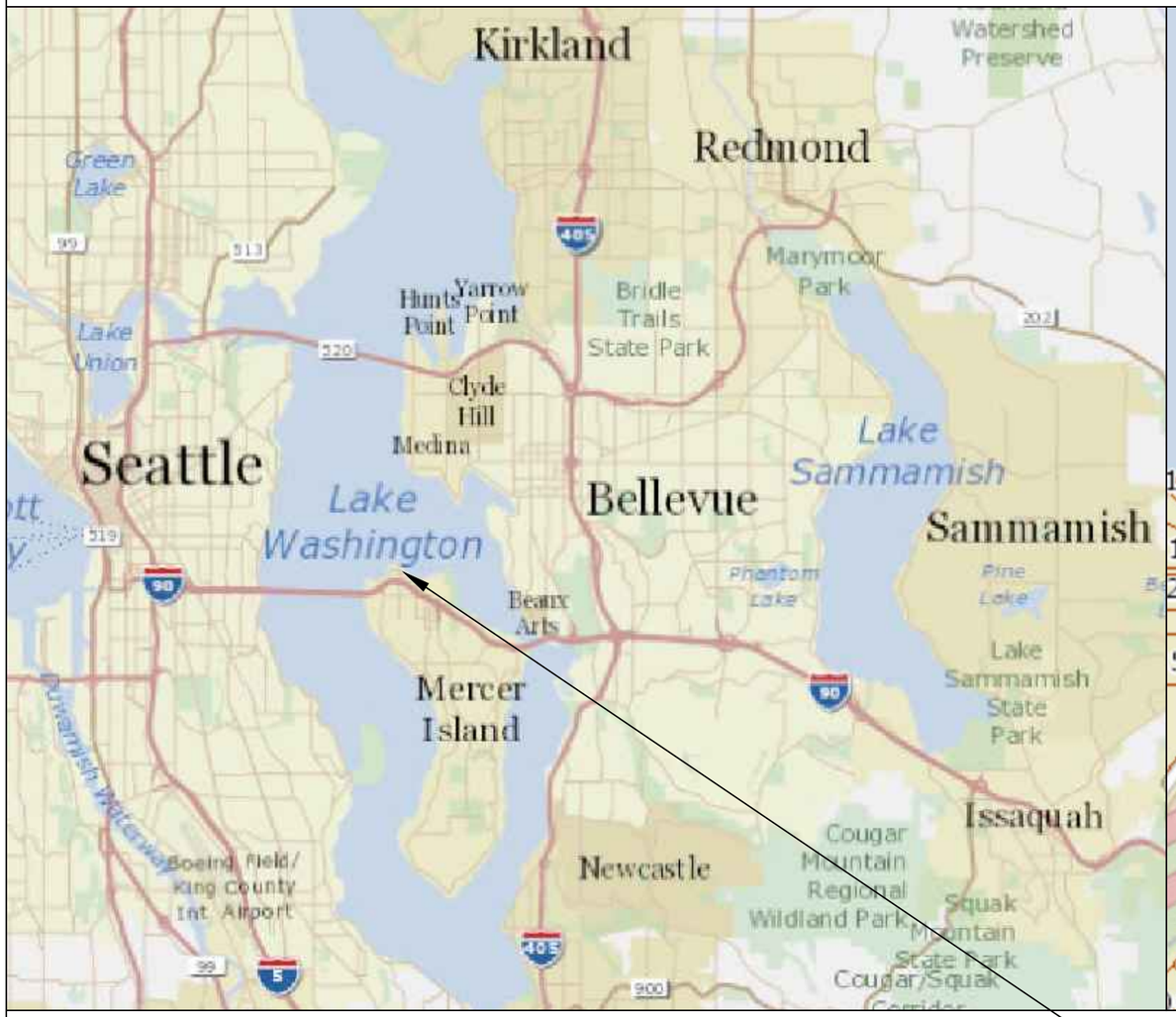
Washington Department of Fish and Wildlife (WDFW). 2019. Larry Fisher personal communication.

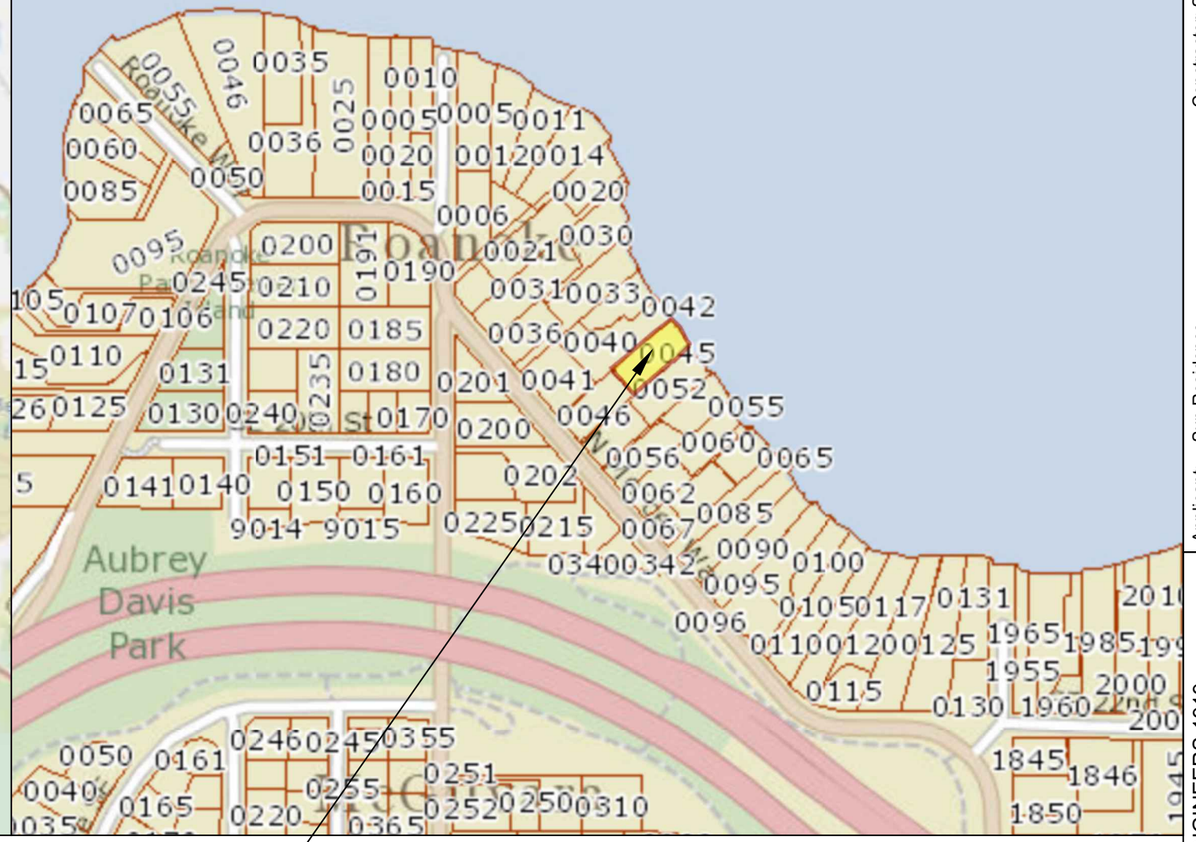
Washington Department of Fish and Wildlife (WDFW). 2020. Priority Habitats and Species. Online database. Accessed October 2020 at http://apps.wdfw.wa.gov/phsontheweb/

WDFW. 2020. SalmonScape. Online database. Accessed October 2020 at http://apps.wdfw.wa.gov/salmonscape/

Appendix A:
Project Drawings

SITE PLAN





SUBJECT PROPERTY

Pin: 5315100045

Legal Description: MC GILVRAS ISLAND ADD LOT B MERCER ISLAND SHORT PLAT NO 79-07-22 REC NO 7910030597 & SH LDS ADJ

Plat Block: 1
Plat Lot: 9

LAT: 47.59377 LONG: -122.24105

Prepared By:

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SEABORN PILE DRIVING COMPANY

Purpose: The proposed dock is to provide for safe boat moorage and safe water recreational activities for a single family residence.

Scope of Work: We propose to repair (10) existing pile. We will also construct a beach cove, installing new thruflow decking on entire dock & installing a boat lift under the existing moorage cover.

Applicant: Sun Residence
7240 N MERCER WAY
Mercer Island, WA 98119

County: King County
Location: Lake Washington

Conctractor: Seaborn Pile Driving Company
1080 W Ewing St
Seattle, WA 98119

Created: 10/11/2020

Last Updated: 10/9/2020 12:21 PM Kelse

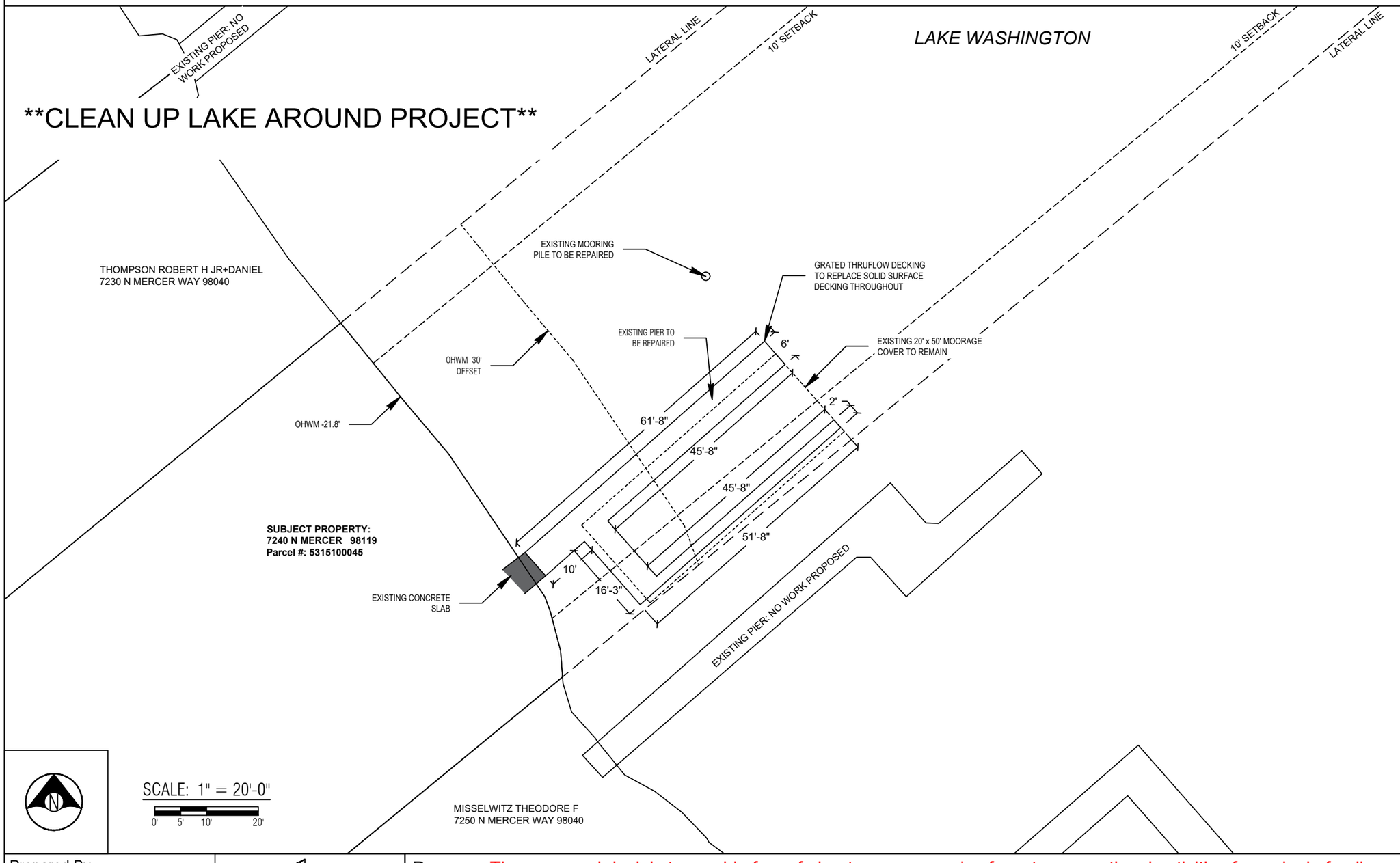
Datum: CORPS OF ENGINEERS 1919
SW Quarter Of Section 01, Township 24, Range 04

Adjacent Owners:
MISSELWITZ THEODORE F
7250 N MERCER WAY 98040
THOMPSON ROBERT H JR+DANIEL
7230 N MERCER WAY 98040

SHEET A1.0

NWS-2020-XXX
PAGE 1 OF 9

EXISTING CONDITIONS



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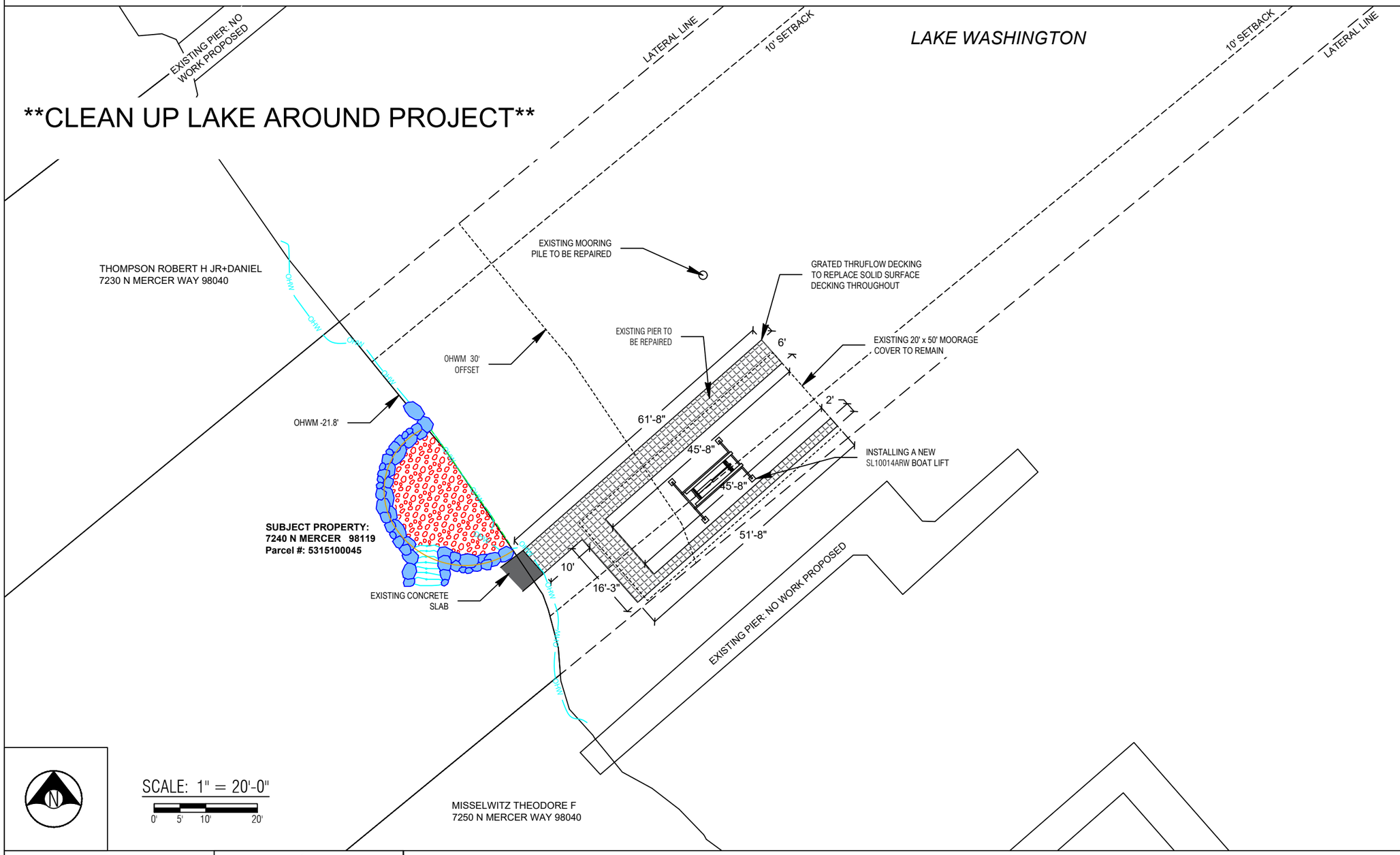
SHEET A2.0

PROPOSED CONDITIONS



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SHEET A3.0

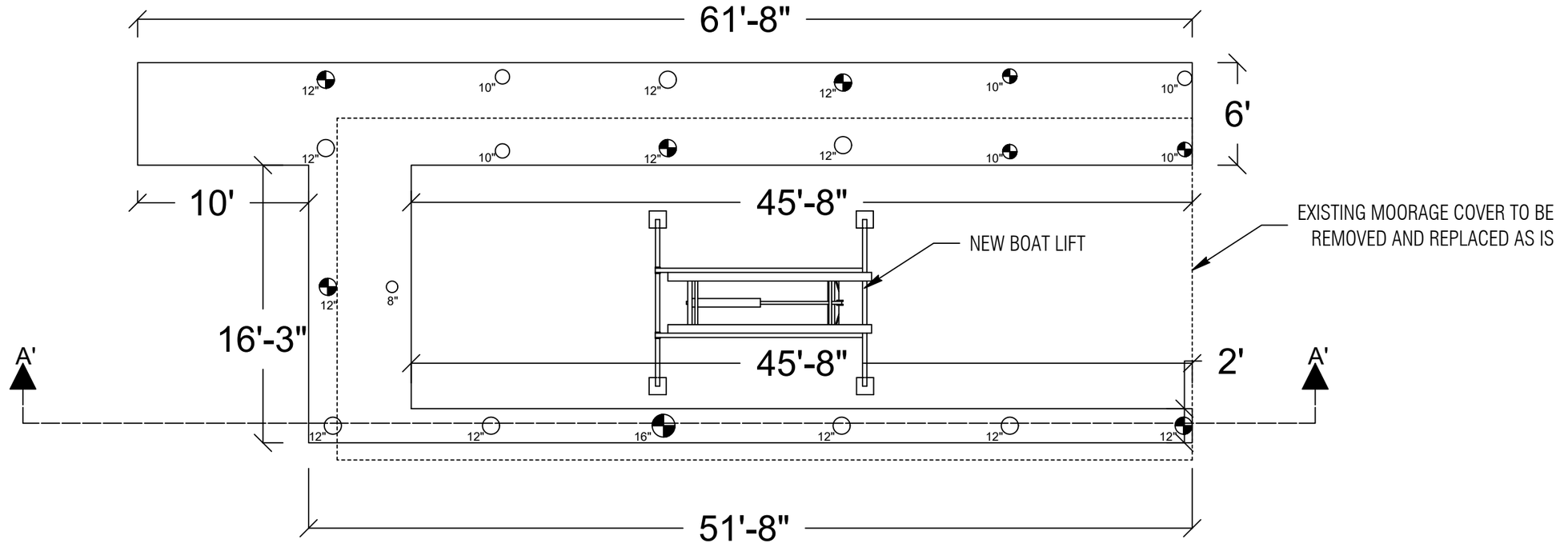
PIER DETAILS

LEGEND

(10) EXISTING PILES - TO BE REPAIRED

(11) EXISTING PILES - NO WORK TO BE DONE

Area: 559 sqft (total & over water)
Area: 559 sqft (new thruflow grated decking)



PLAN VIEW

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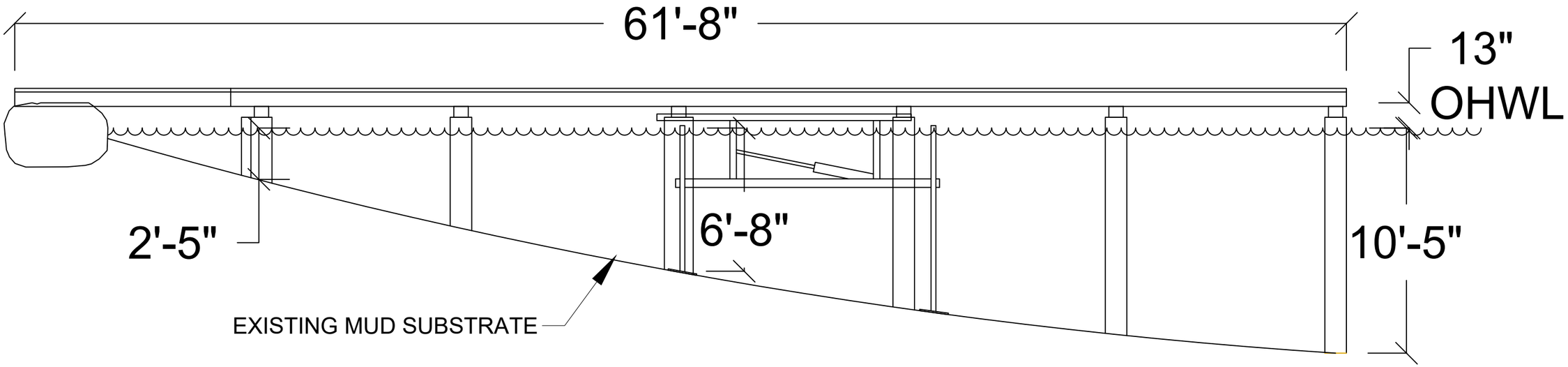
SHEET A4.0

PIER DETAILS



SECTION VIEW

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Created: ----

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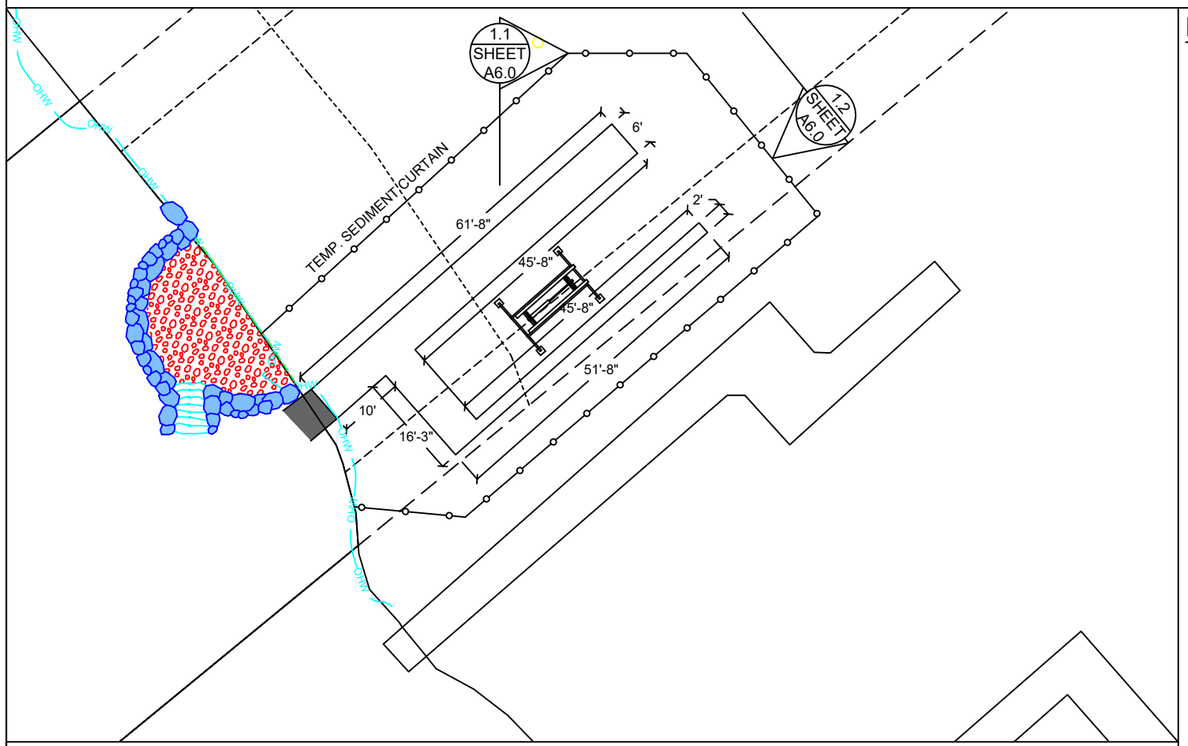
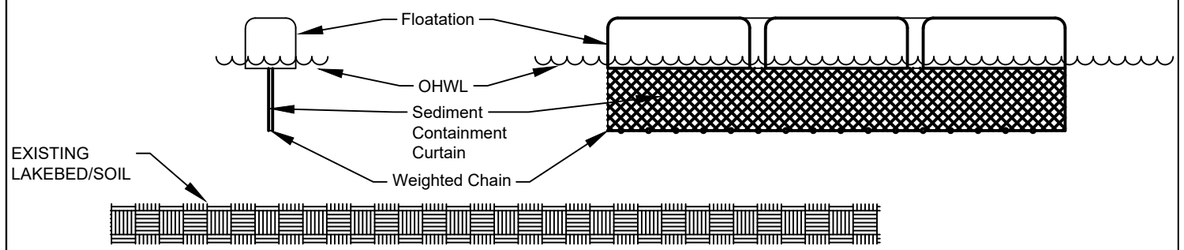
SHEET A5.0

BMP INFORMATION



DETAIL 1.1 & 1.2

DETAIL 1.1



DETAIL 1.2

BMP NOTES:

A. Constant vigilance shall be kept for the presence of protected fish species during all aspects of the proposed action, particularly during in-water activities such as vessel movement, deployment of anchors & spuds, pile driving, dredging, and placement of gravels and other fill.

1. The project manager shall designate an appropriate number of competent observers to survey the project site and adjacent areas for protected species, including the presence of fish as conditions allow.
2. Visual surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than an hour. Periodic additional visual surveys throughout the work day are strongly recommended.
3. All in-water work shall be done during the in-water work window for the waterbody. Where there is a difference between the USCOE and WDFW work windows, the overlap of the two shall apply.
4. All pile driving and extraction shall be postponed or halted when obvious aggregations or schooling of fish are observed within 50 yards of that work, and shall only begin/resume after the animals have voluntarily departed the area.
5. When piloting vessels, vessel operators shall operate at speeds and power settings to avoid grounding vessels, and minimize substrate scour and mobilization of bottom sediments.

B. No contamination of the marine environment shall result from project-related activities.

1. Appropriate materials to contain and clean potential spills shall be stored and readily available at the work site and/or aboard project-related vessels.
2. The project manager and heavy equipment operators shall perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations shall be postponed or halted should a leak be detected, and shall not proceed until the leak is repaired and the equipment is cleaned.
3. To the greatest extent practicable, utilize biodegradable oils for equipment that would be operated in or near water.
4. Fueling of land-based vehicles and equipment shall take place at least 50 feet away from the water, preferably over an impervious surface. Fueling of vessels shall be done at approved fueling facilities.
5. Turbidity and siltation from project-related work shall be minimized and contained through the appropriate use of erosion control practices, effective silt containment devices, and the curtailment of work during adverse weather and tidal/flow conditions.
6. All wastes shall be collected and contained for proper disposal at approved upland disposal sites appropriate for the material(s).
7. When removing piles and other similarly treated wood, containment booms must fully enclose the work area. Wood debris, oils, and any other materials released into lake waters must be collected, removed, and properly disposed of at approved disposal sites.
8. All in- and over-water wood cutting would be limited to the minimum required to remove the subject wood component, and all cutting work should be enclosed within floating containment booms.
9. When removing piles, no actions shall be taken that would cause adhering sediments to return to lake waters.
10. Above-water containment shall be installed around removed piles to prevent sediment laden waters from returning to lake waters.
11. Construction staging (including stocking of materials, etc.) will occur on the supply barge.

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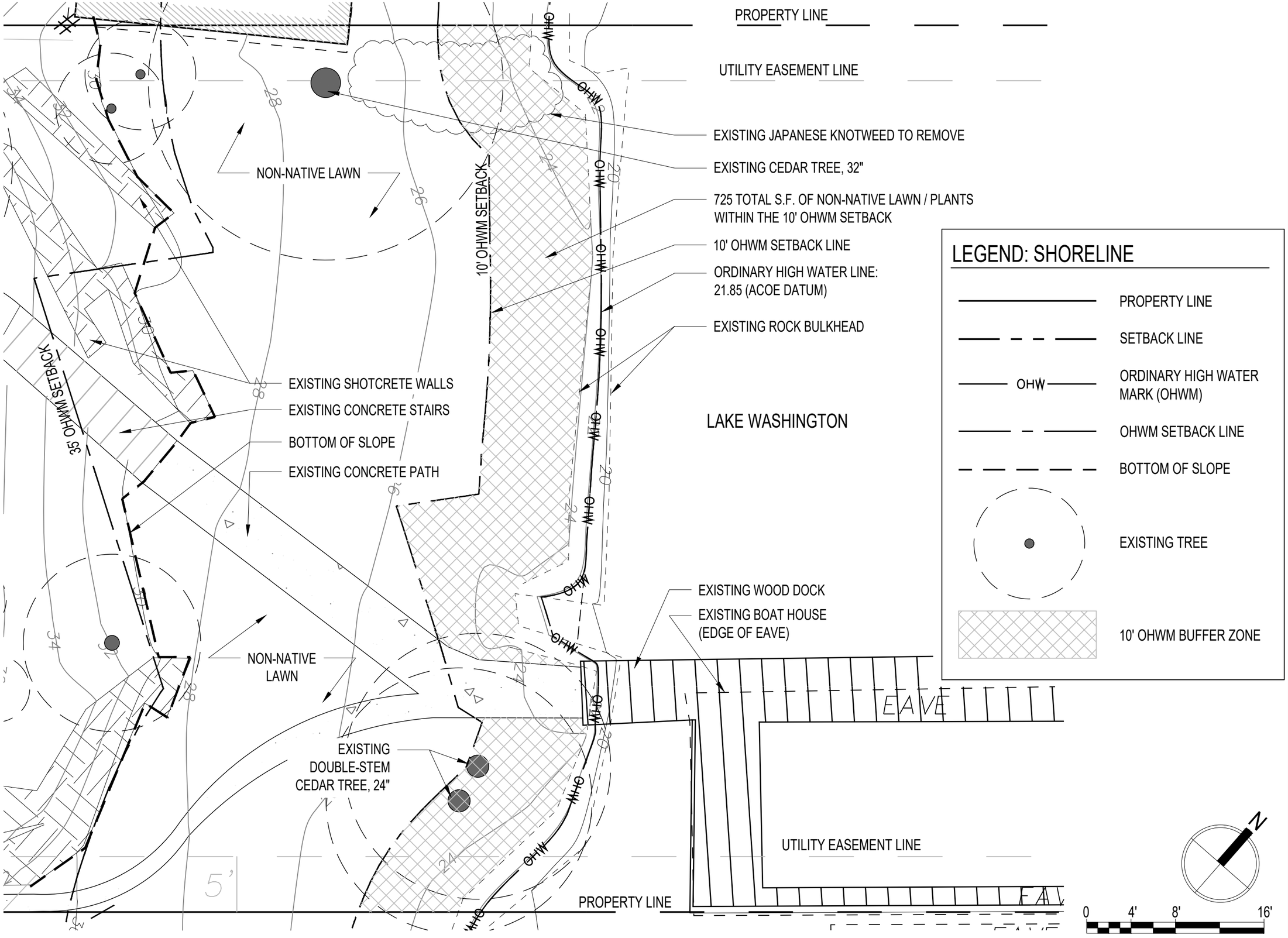
SHEET A6.0



LEGEND: SHORELINE

- PROPERTY LINE
- SETBACK LINE
- OHW — ORDINARY HIGH WATER MARK (OHWM)
- OHWM SETBACK LINE
- BOTTOM OF SLOPE
- EXISTING TREE
- 10' OHWM BUFFER ZONE

Land Morphology
1512 Alaskan Way
Seattle, WA 98101
206 443 2120
www.landmorphology.com

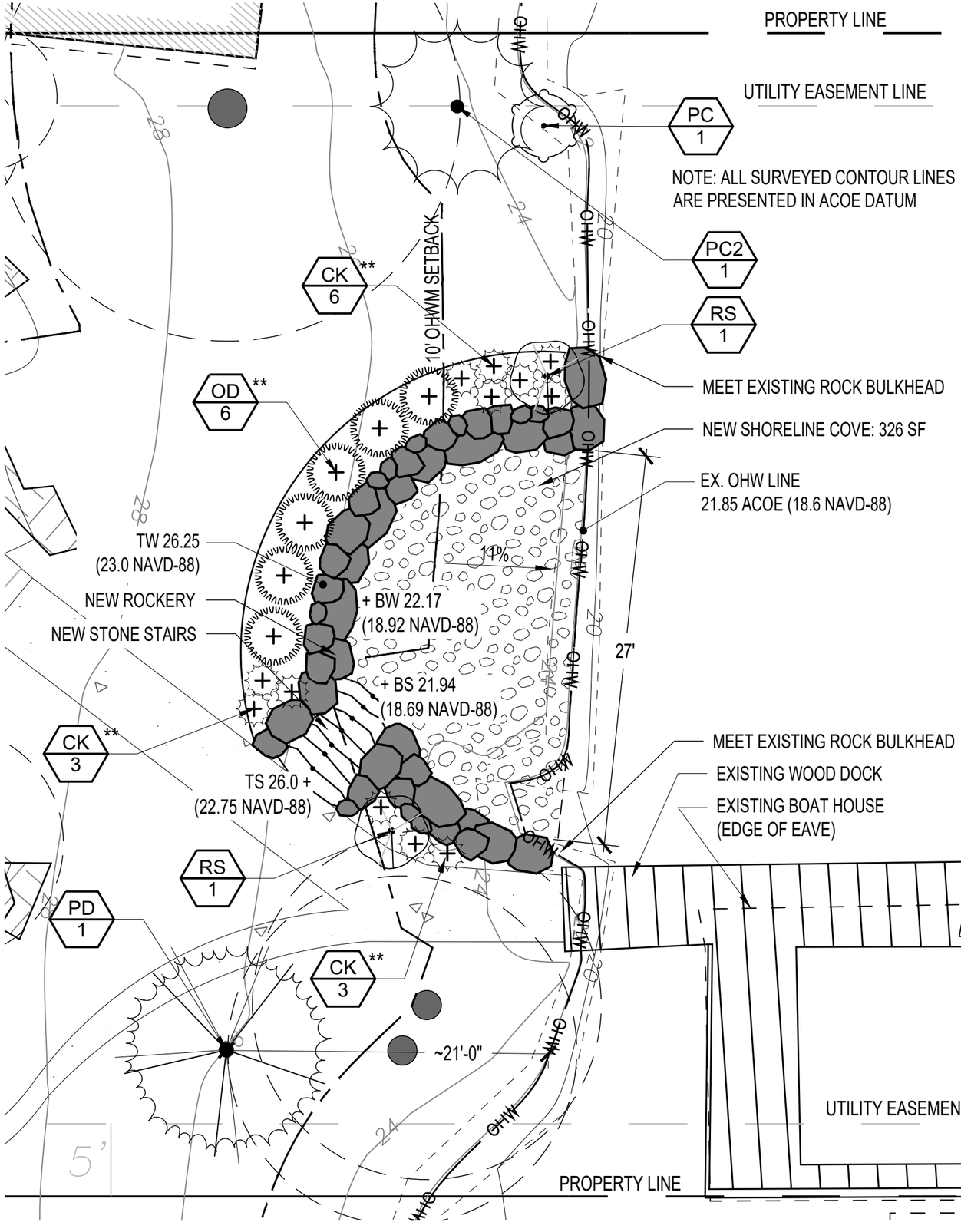
SUN RESIDENCE

7240 NORTH MERCER WAY
MERCER ISLAND, WA 98040

Scale:	1/8" = 1'-0"
Date:	10/01/2020
Drawn By:	MJ
Checked By:	RF
Revisions:	

Sheet: L-1.0

EX. VEG. PLAN



PLANT SCHEDULE SHORELINE

TREES	CODE	QTY	BOTANICAL / COMMON NAME	CONT
	PC2	1	PINUS CONTORTA `CONTORTA` SHORE PINE	5 GAL
	PD	1	PSEUDOTSUGA MENZIESII DOUGLAS FIR	5 GAL
SHRUBS	**CODE**	**QTY**	**BOTANICAL / COMMON NAME**	**SIZE**
	CK **	12	CORNUS SERICEA `KELSEYI` KELSEYI DOGWOOD	2 GAL
	OD **	6	OSMANTHUS DELAVAYI DELAVAYI OSMANTHUS	3 GAL
	PC	1	PHYSOCARPUS CAPITATUS PACIFIC NINEBARK	3 GAL
	RS	2	RIBES SANGUINEUM RED FLOWERING CURRANT	5 GAL

** NOTE: THESE SHRUBS ARE OUTSIDE OF THE 10' OHWM PLANTING ZONE OR EXTRA SHRUBS NOT REQUIRED BY RAP

Land Morphology
1512 Alaskan Way
Seattle, WA 98101
206 443 2120
www.landmorphology.com

SUN RESIDENCE

7240 NORTH MERCER WAY
MERCER ISLAND, WA 98040

Scale: 1/8" = 1'-0"

Date: 10/01/2020

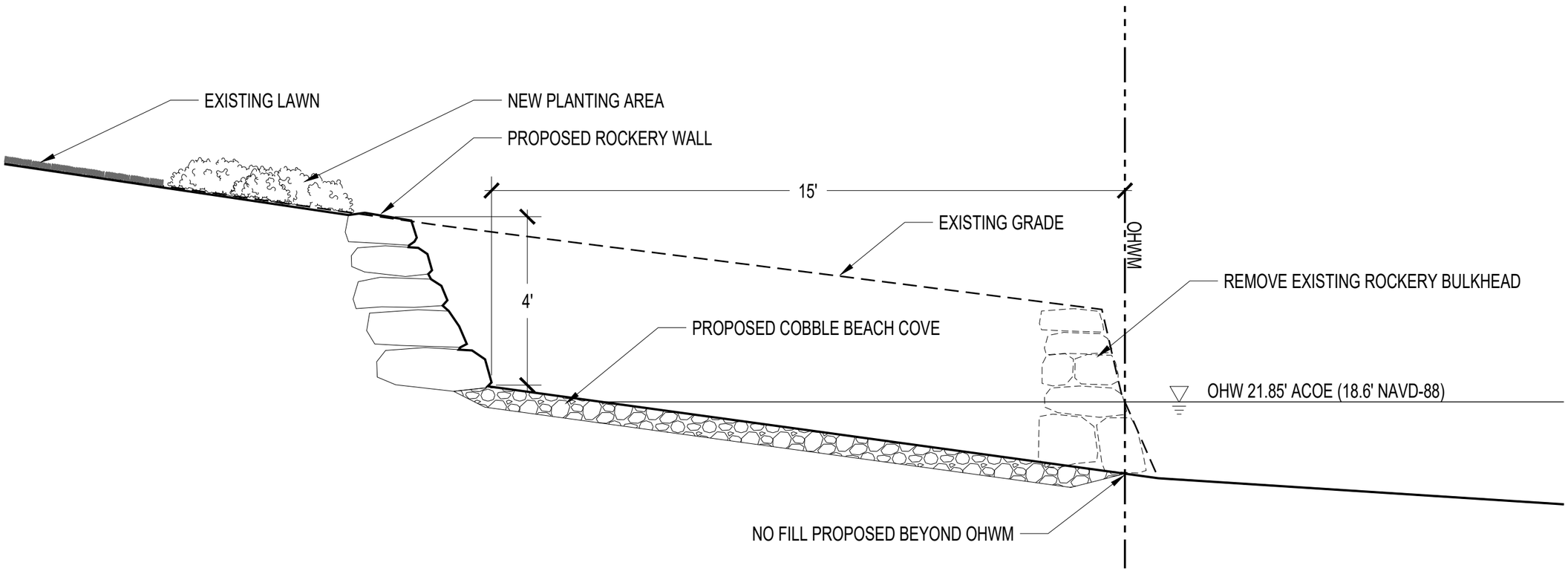
Drawn By: MJ

Checked By: RF

Revisions:

Sheet: L-1.1

PLANTING PLAN



1 COBBLE BEACH COVE – SECTION

SCALE: 3/8"=1'-0"

Land Morphology
1512 Alaskan Way
Seattle, WA 98101
206 443 2120
www.landmorphology.com

SUN RESIDENCE

7240 NORTH MERCER WAY
MERCER ISLAND, WA 98040

Scale: 3/8" = 1'-0"

Date: 10/01/2020

Drawn By: MJ

Checked By: RF

Revisions:

Sheet: L-1.2

SECTIONS

Appendix B:
Site Photographs

Photo 1. View of pier and moorage cover from shoreline looking east.

Photo 2. View of pier and moorage cover from pier entrance looking northeast.

Photo 3. View of shoreline and bulkhead from northwest property line looking southeast.

Photo 4. View of shoreline from southeast property line looking northwest.

Photo 5. View of northwest adjacent shoreline and subject property shoreline from pier entrance looking northwest.

Photo 6. View of southeast adjacent property.