REFERENCE MATERIAL 1

DEPARTMENT OF THE ARMY
SEATTLE DISTRICT, CORPS OF ENGINEERS
P.O. BOX 3755
SEATTLE, WASHINGTON 98124-3755

REPLY TO
ATTENTION OF
Regulatory Branch

OCT 25 2012

Port of Tacoma
OCT 26 2012
Environmental Dept.

Mr. Mark Rettmann
Port of Tacoma
P.O. Box 1837
Tacoma, Washington 98401-1837

Reference: NWS-2011-0089-WRD
Tacoma, Port of
(Pile Replacement
Program)

Dear Mr. Rettmann:

Enclosed is a Department of the Army permit which authorizes the performance of the work described in your referenced application. You are cautioned that any change in the location or plans of the work will require submittal of revised plans to this office for approval prior to accomplishment. Deviation from the approved plans may result in imposition of criminal or civil penalties.

Your attention is drawn to General Condition 1 of the permit which specifies the expiration date for completion of the work. Upon completing the authorized work, please fill out and return the enclosed *Certificate of Compliance with Department of the Army Permit* form.

We are interested in your experience with our Regulatory Program and encourage you to complete a customer service survey form. This form and information about our program is available on our website at: www.nws.usace.army.mil select "Regulatory Branch Permit Information".

If you have any questions please contact Ms. Olivia Romano, at (206) 764-6960 or email at olivia.h.romano@usace.army.mil .

Sincerely,

for Michelle Walker
Chief, Regulatory Branch

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: Port of Tacoma

Mr. Mark Rettmann
Post Office Box 1837
Tacoma, Washington 98401-1837

Permit No: NWS-2011-0089-WRD

Issuing Office: Seattle District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To conduct maintenance activities at 12 wharf/pier structures over a five year period including the replacement of up to 1,000 piles (fender piles, dolphin piles, and/or support piles), and associated pile caps, chock, whalers, and rub strips at structures and place up to 600 cubic yards of sand in any holes left from the pile removal, at AMP Terminals, Terminal 7, Olympic Container Terminal, Husky Terminal (Terminal 3 and 4), Washington United Terminal, Blair Dock, Trident Pier 24 and 25, BRAC, Parcel 86, Parcel 99, Parcel 105, and Parcel 115 (in accordance with the plans and drawings dated July 02, 2012 attached hereto which are incorporated in and made a part of this permit). The purpose of the project is to maintain function and structural integrity of the existing wharf/pier structures.

Project Location:
In Hylebos, Blair, and Sitcum Waterways and Commencement Bay, in Tacoma, Pierce County, Washington.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on OCT 25 2017. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in accordance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification to this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your

permit.

7. After a detailed and careful review of all the conditions contained in this permit, the permittee acknowledges that, although said conditions were required by the Corps, nonetheless the permittee agreed to those conditions voluntarily to facilitate issuance of the permit; the permittee will comply fully with all the terms of all the permit conditions.

Special Conditions:

a. You must provide a copy of the permit transmittal letter, the permit form, and drawings to all contractors performing any of the authorized work.

b. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

c. The permittee must provide a completed "*Port of Tacoma Piling Replacement Program Compliance Form*" by March 15th of each year in which work under this permit is conducted. This completed form must be submitted to U.S. Army Corps of Engineers, Regulatory Branch, Post Office Box 3755, Seattle, Washington 98124-3755.

d. By accepting this permit, the permittee agrees to accept such potential liability for response costs, response activity and natural resource damages as the permittee would have under the Comprehensive Environmental Response, Compensation and Liability Act, 42 United States Code (U.S.C.) 9601 et seq. (CERCLA) or the Model Toxics Control Act, R.C.W. 70.105 (MTCA) absent the issuance of this permit. Further, the permittee agrees that this permit does not provide the permittee with any defense from liability under the CERCLA or the MTCA. Additionally, the permittee shall be financially responsible for any incremental response costs attributable under CERCLA or MTCA to the permittee's activities under this permit in the Sitcum, Blair, and Hylebos Waterways and Commencement Bay.

e. The permittee must provide site specific pre-construction information (number of piles to be removed and replaced, size of piles, type of piles, location of piles within the facility, etc) on the following facilities: Trident Piers 24 and 25; BRAC facility; Parcel 99/Arkema Chemical; Washington United Terminal, and Terminal 3. This information must be provide to the U.S. Army Corps of Engineers, Regulatory Branch, Post Office Box 3755, Seattle, Washington 98124-3755, a minimum of 60 days prior to construction in any year this permit is valid to allow for coordination with Environmental Protection Agency (EPA) CERCLA RPMs. Pile replacement at these facilities may not be conducted until CERCLA coordination has been completed and the Port receives written approval to proceed from the Corps.

f. You must implement and abide by the enclosed Best management Practices for Piling Removal and Disposal, dated March 1, 2007, with the exception of BMP 3B.

g. You must implement and abide by the Endangered Species Act (ACT) requirements and/or agreements set forth in the ESA Technical Memorandum, "*Programmatic Biological Evaluation, Port of Tacoma Pile Replacement Program, NWS-2011-89-WRD*", dated November 2011 – Revised April 2012, in its entirely. The U.S. Fish and Wildlife Service concurred with a finding of "may affect, not likely to adversely affect" based on this document on May 24, 2012 (USFWS Reference #01EWFW00-2012-I-0111). The National Marine Fisheries Service concurred with a finding of "may affect, not likely to adversely affect" based on this document on July 12, 2012

(NMFS Reference # 2012/00218). Both agencies will be informed of this permit issuance and will enforce any know violations of the commitments made in this document pursuant to the ESA.

h. In order to protect Puget Sound Chinook, Puget Sound steelhead, and Coastal-Puget Sound bull trout, the permittee may conduct the authorized activities from 16 July through 28 February in any year this permit is valid. The permittee shall not conduct work authorized by this permit from 1 March through 15 July in any year this permit is valid.

Further Information:

1. Congressional Authorities. You have been authorized to undertake the activity described above pursuant to:

☒ Section 10 of the Rivers and Harbor Act of 1899 (33 U.S.C. 403).

☒ Section 404 of the Clean Water Act (33 U.S.C. 1344).

☐ Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorization required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data. The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of the permit.

b. The information provided by you in support of your application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 Code of Federal Regulations (CFR), Part 325.7 or enforcement procedures such as those contained in 33 CFR, Parts 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR, Part 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

X _____ X Oct. 22, 2012

NAME OF PERMITTEE (DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

for _____ 25 OCTOBER 2012

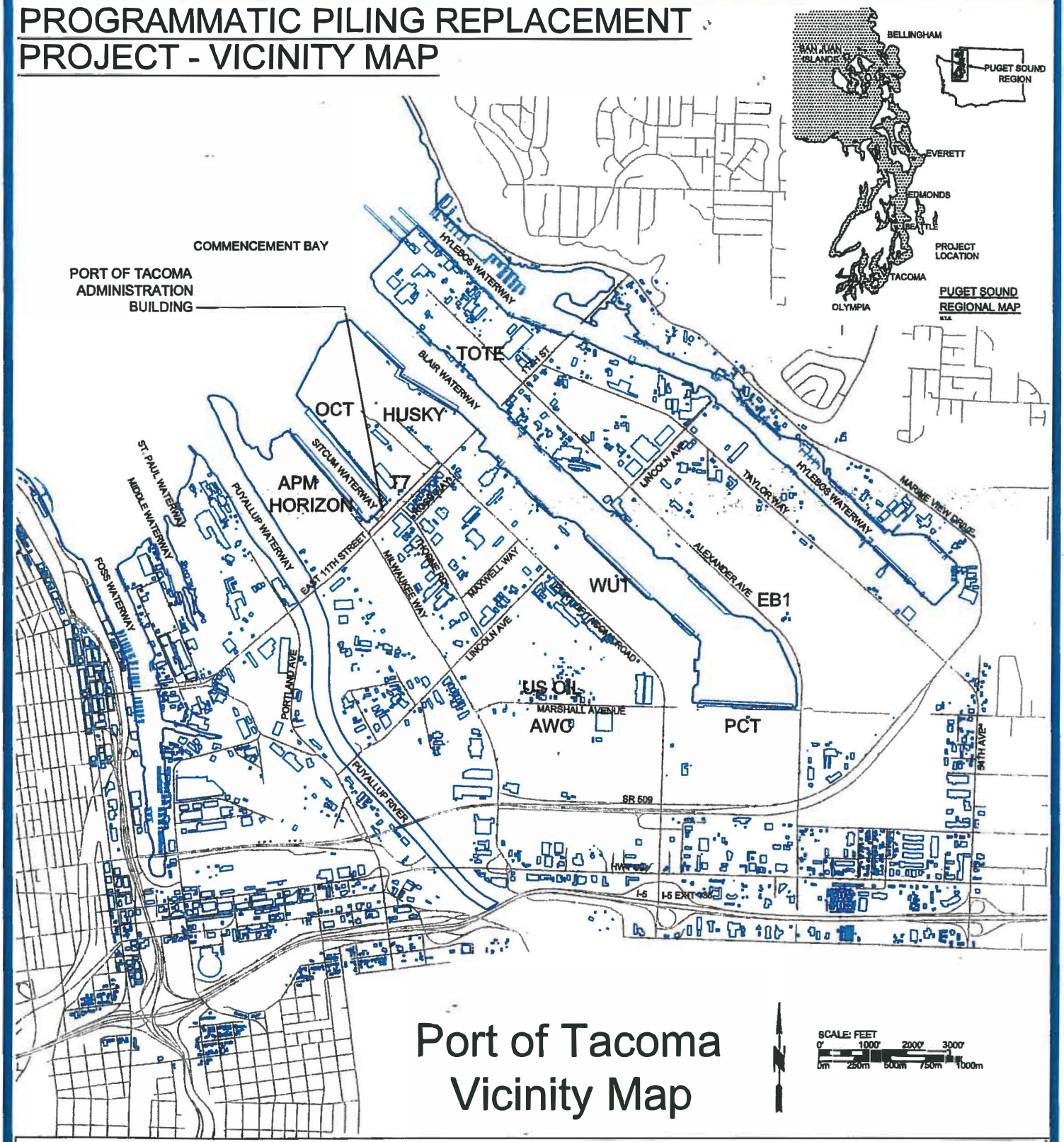
Bruce A. Estok (DATE)
Colonel, Corps of Engineers
District Engineer

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE) (DATE)

PROGRAMMATIC PILING REPLACEMENT PROJECT - VICINITY MAP



Port of Tacoma Vicinity Map

SCALE: FEET 0' 1000' 2000' 3000' 0m 250m 500m 750m 1000m

DATE OF PRINT: Oct 07, 2011 1:02:06pm - BY: barcher - FILE LOCATION: L:\PTac Projects\11 General Projects\110105_0005 - Programmatic Piling Replacement Project\CAD\PTac Programmatic Piling Rep Proj - VMap.dwg

Reference: NWS-2011-0089-WRD

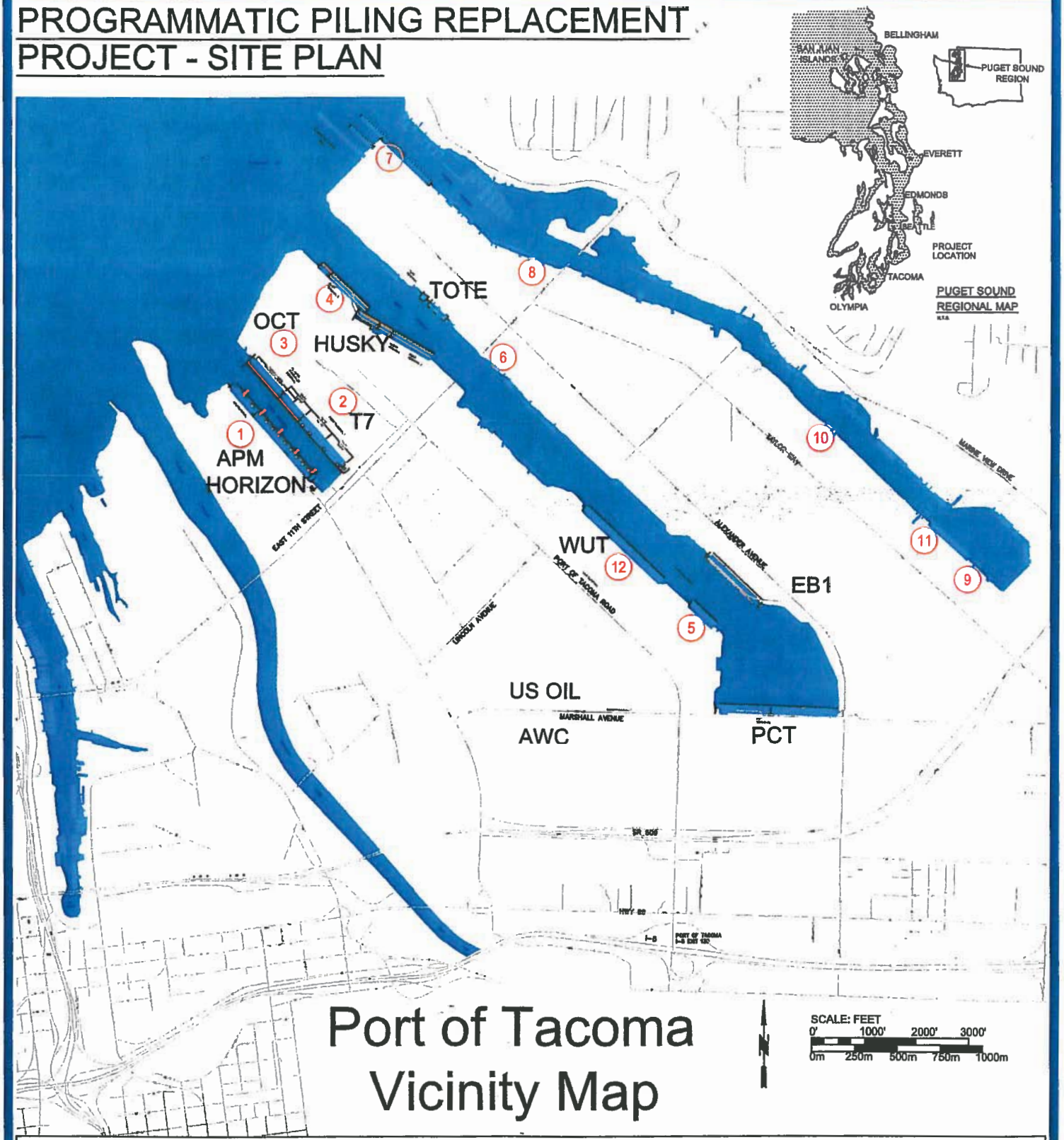
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 01

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT
PROJECT NO: N/A
SHEET: 1 OF: 10
DATE: 7/02/12

PROGRAMMATIC PILING REPLACEMENT PROJECT - SITE PLAN



Port of Tacoma Vicinity Map

SCALE: FEET
0' 1000' 2000' 3000'
0m 250m 500m 750m 1000m

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1 APM TERMINALS	5 BLAIR DOCK	9 PARCEL 86
2 TERMINAL 7	6 PARCEL 115	10 PARCEL 99
3 OCT	7 TRIDENT	11 PARCEL 105
4 HUSKY TERMINAL	8 BRAC PROPERTY	12 WUT

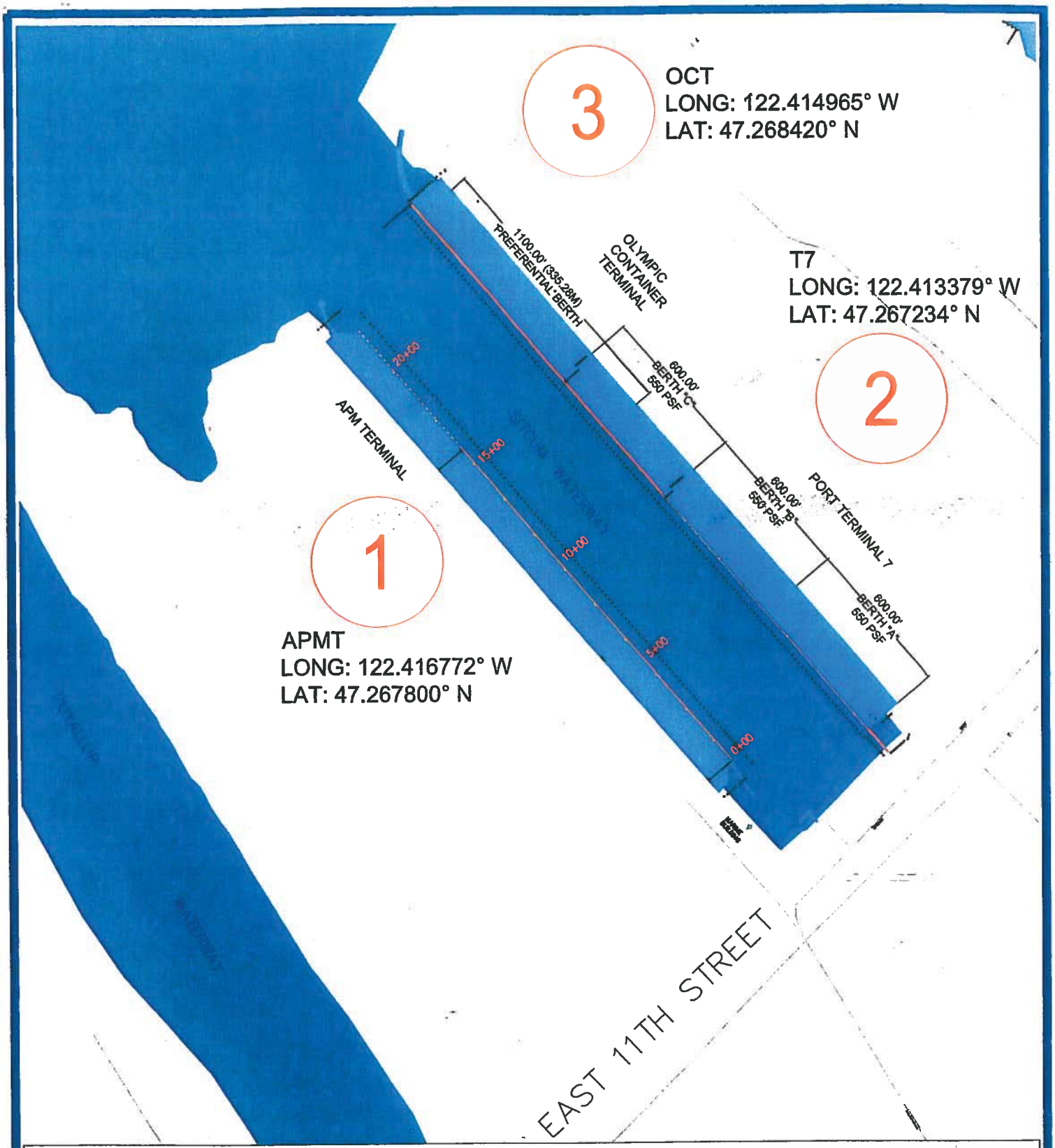
Reference: NWS-2011-0089-WRD

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 02

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 2 OF: 10
DATE: 7/02/12



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1. APM TERMINAL
2. T7 TERMINAL
3. OCT TERMINAL

Reference: NWS-2011-0089-WRD

0' 500' 1000'

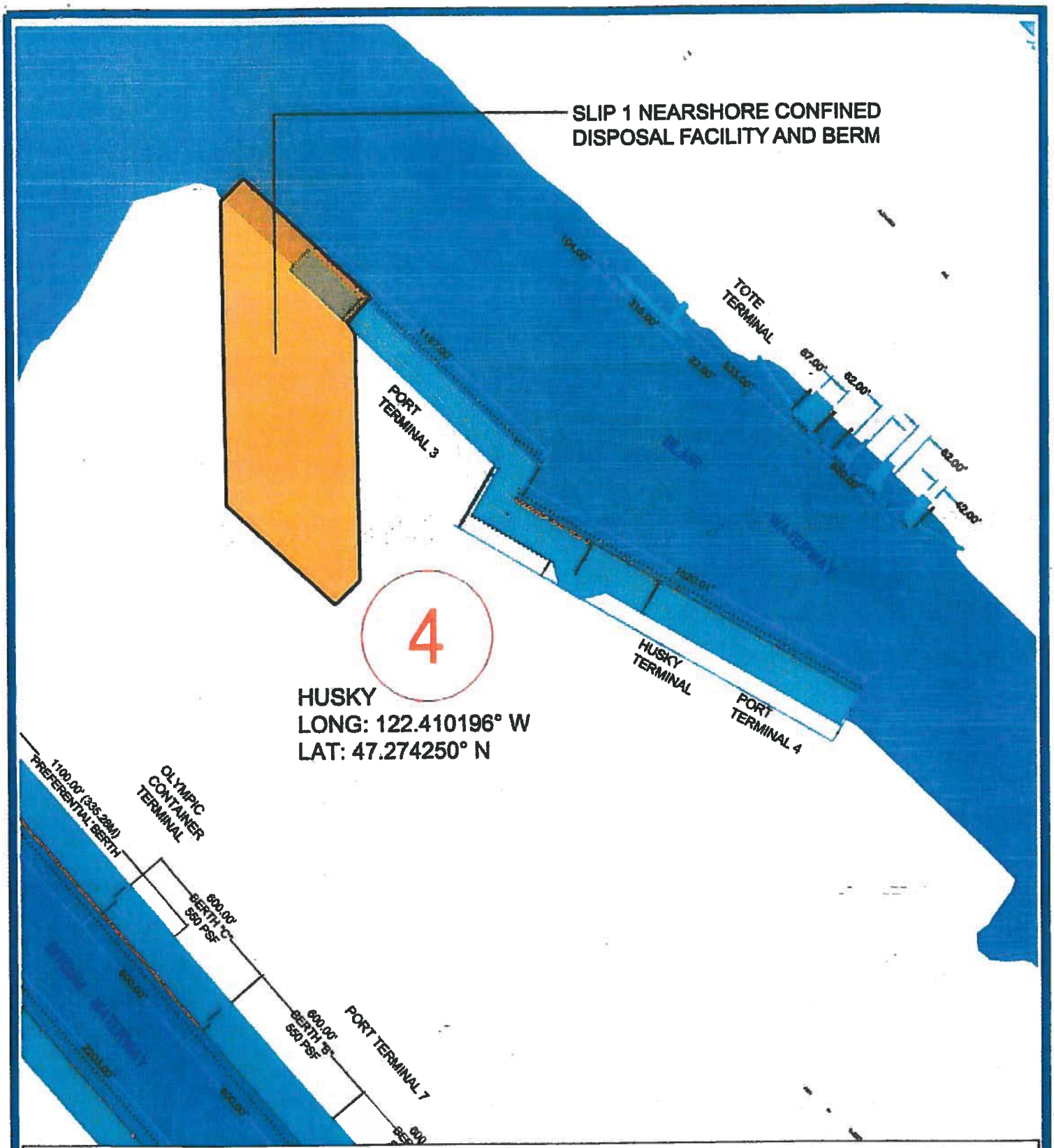
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 03

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 3 OF: 10
DATE: 2/02/12



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④ HUSKY TERMINAL

Reference: NWS-2011-0089-WRD

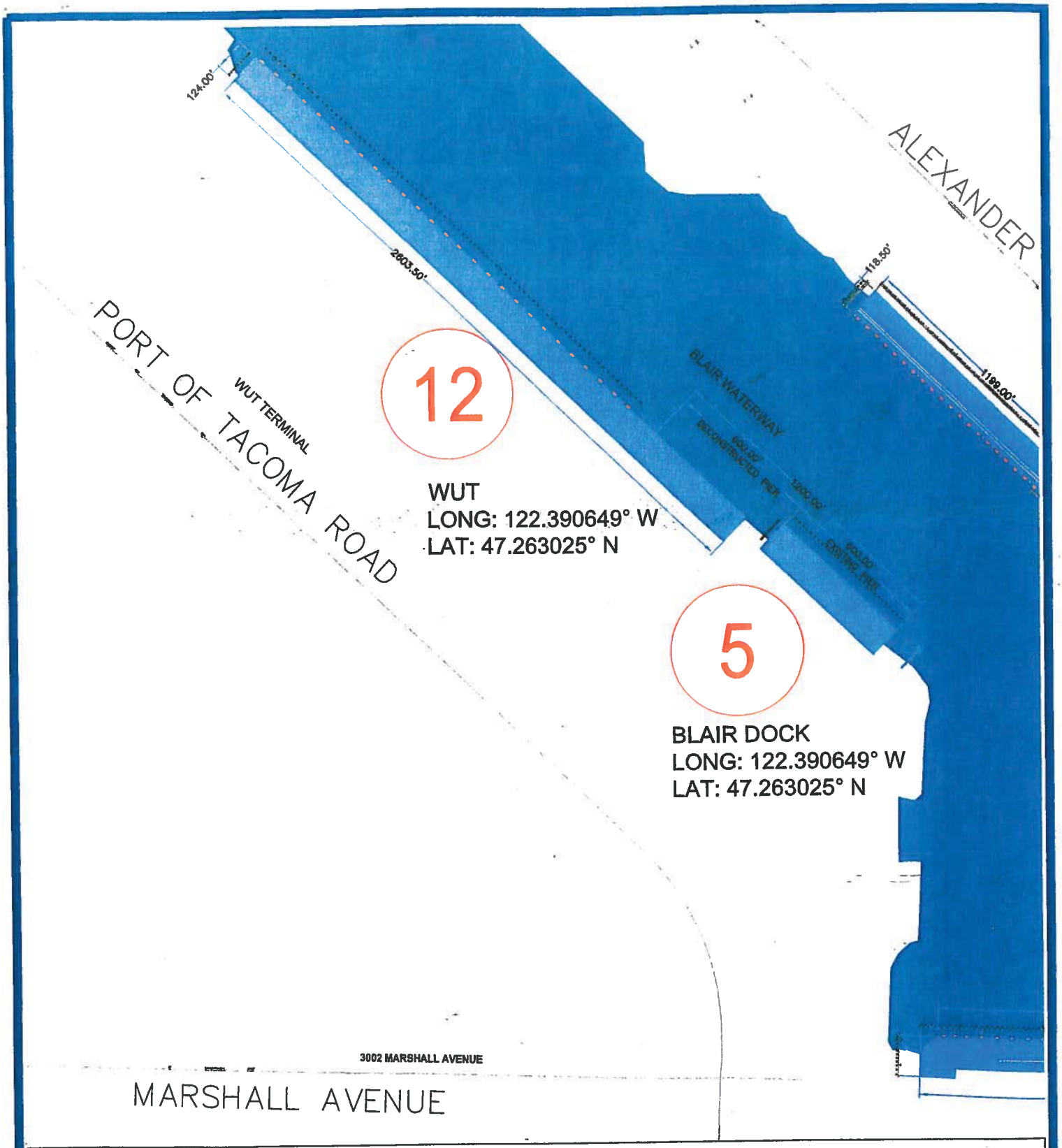
0' 500' 1000'

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 04

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 4 OF: 10 REVISED 07/02/2012



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(12) WUT
(5) BLAIR DOCK

Reference: NWS-2011-0089-WRD

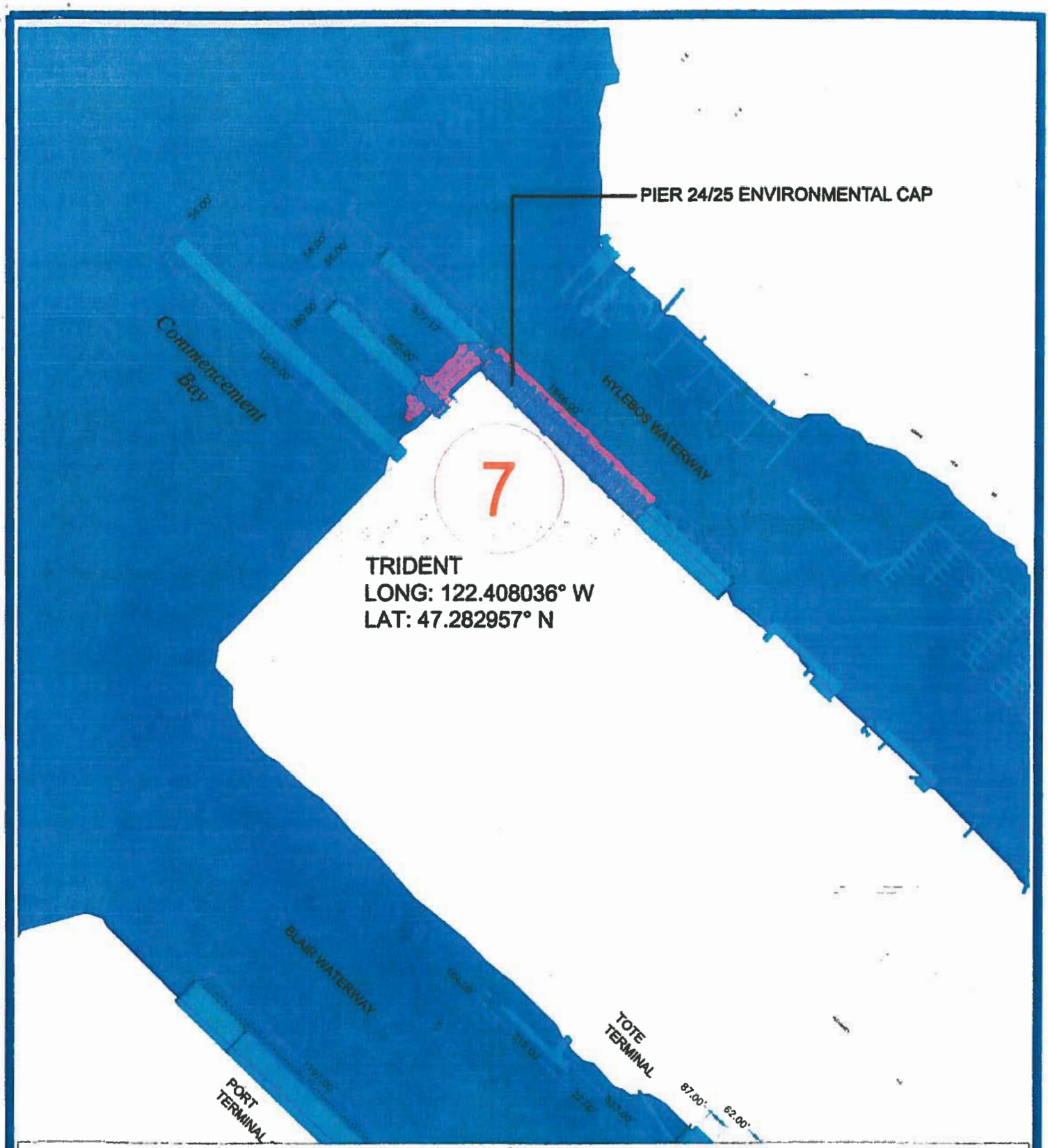
0' 500' 1000'

PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 05

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT
PROJECT NO: N/A
SHEET: 5 OF: 10
DATE: 7/02/12



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7 TRIDENT

Reference: NWS-2011-0089-WRD

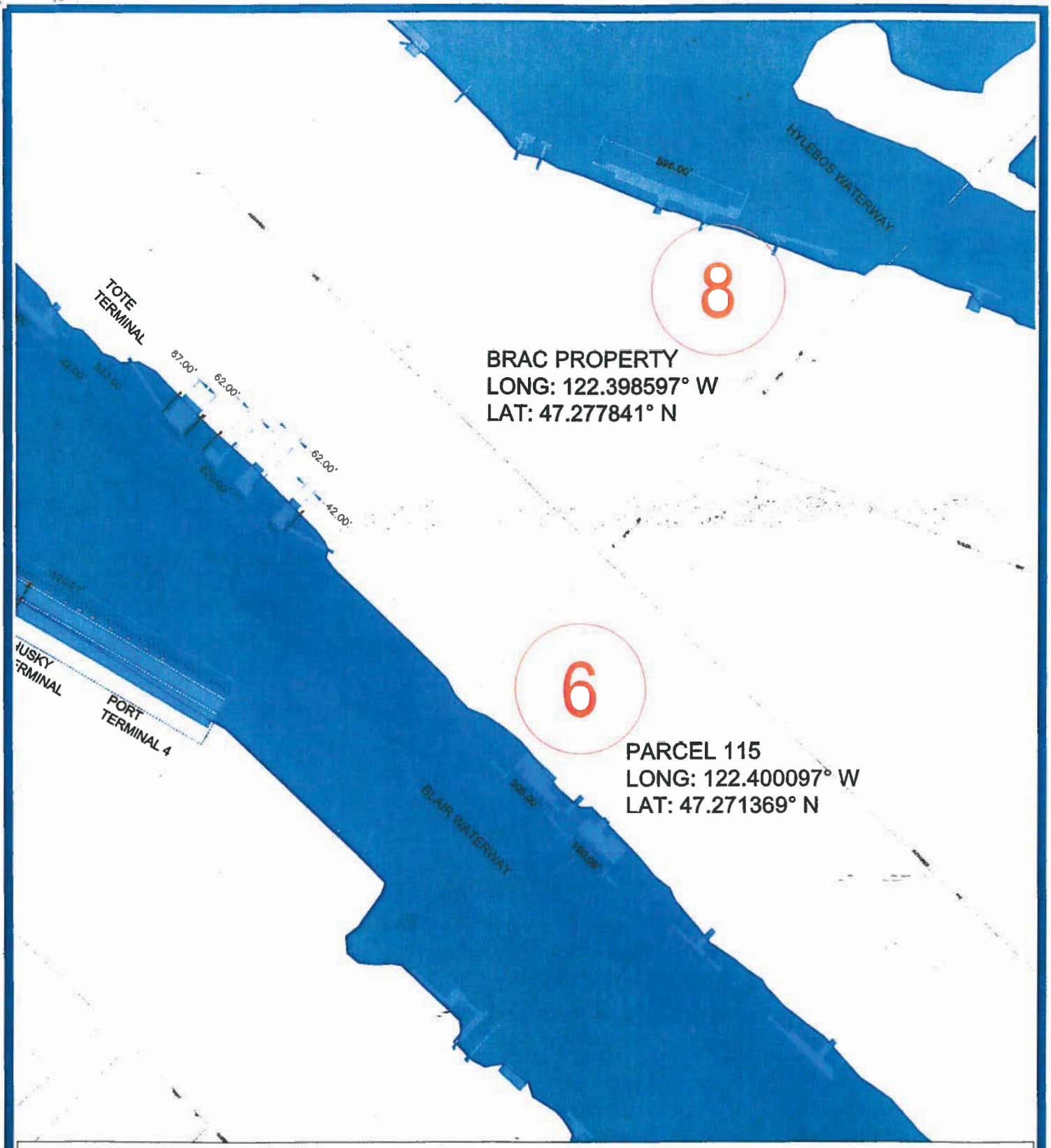
0' 500' 1000'

PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 06

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT
PROJECT NO: N/A
SHEET: 6 OF: 10
REVISED 7/02/12



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(8) BRAC PROPERTY
(6) PARCEL 115

Reference: NWS-2011-0089-WRD

0' 500' 1000'

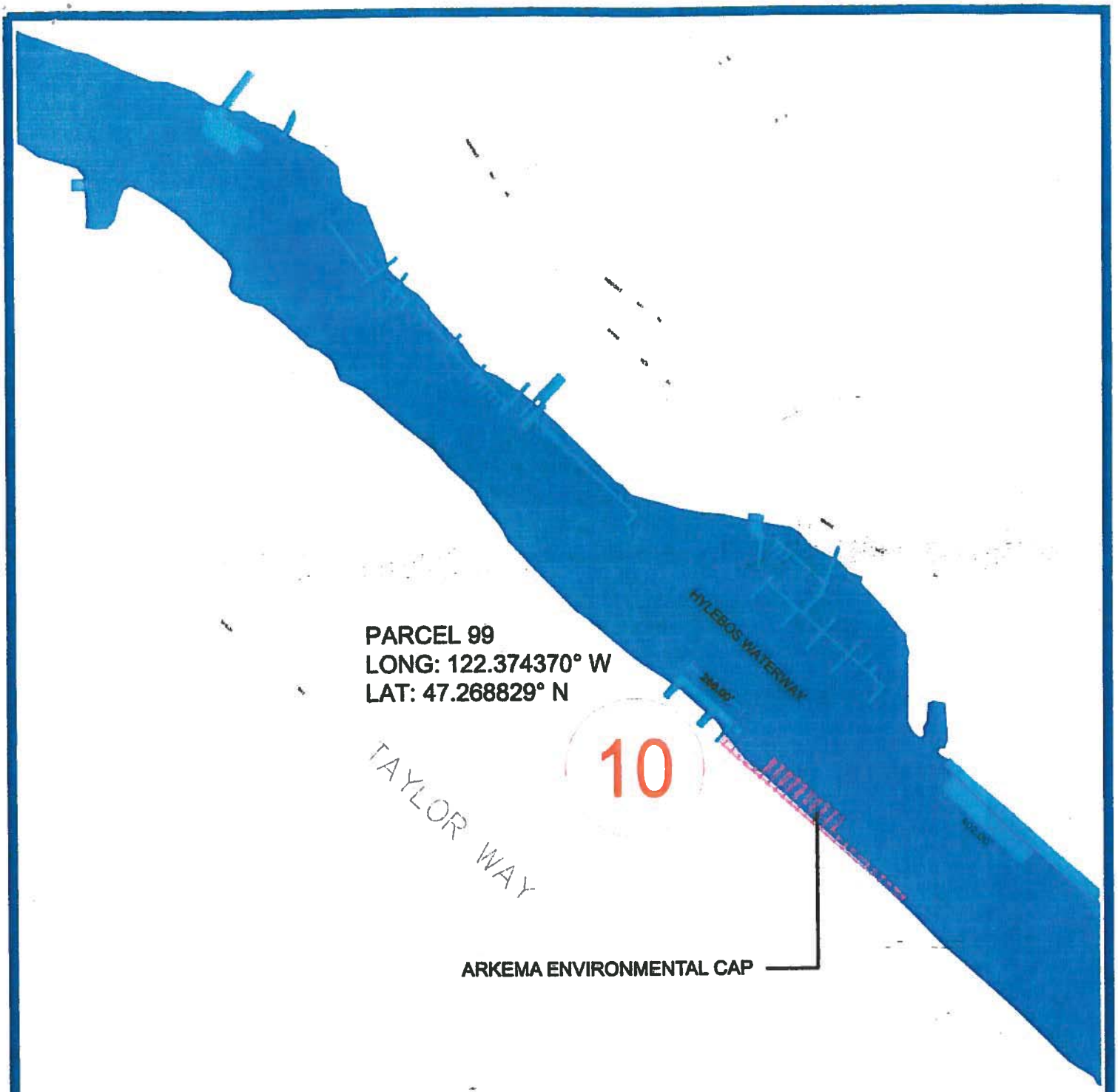
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 07

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 7 OF: 10
DATE: 7/02/12



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(10) PARCEL 99

Reference: NWS-2011-0089-WRD

0' 500' 1000'

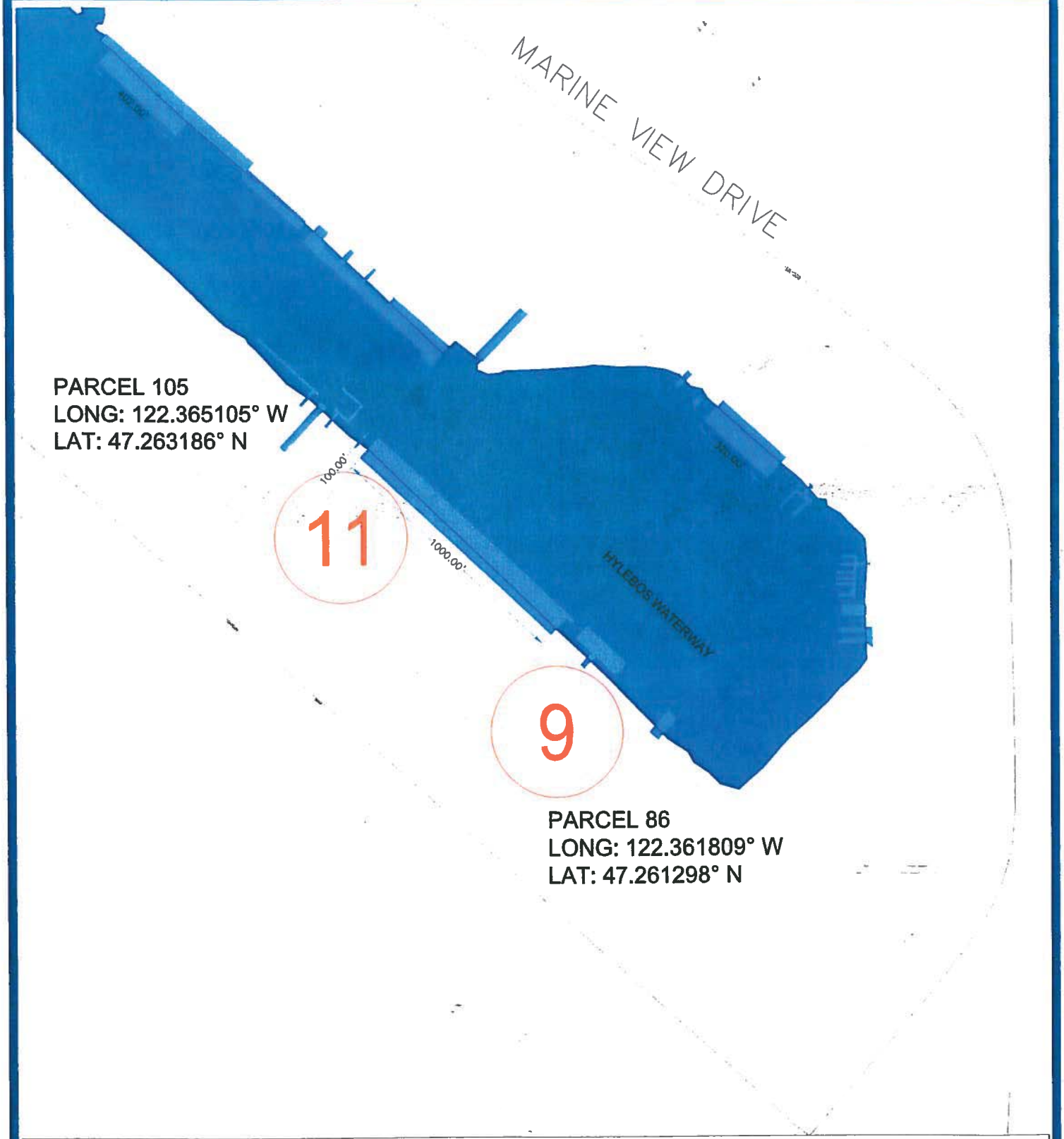
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 08

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROGRAM

PROJECT NO: N/A
SHEET: 8 OF: 10
REVISED 7/02/12



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(11) PARCEL 105
(9) PARCEL 86

Reference: NWS-2011-0089-WRD

0' 500' 1000'

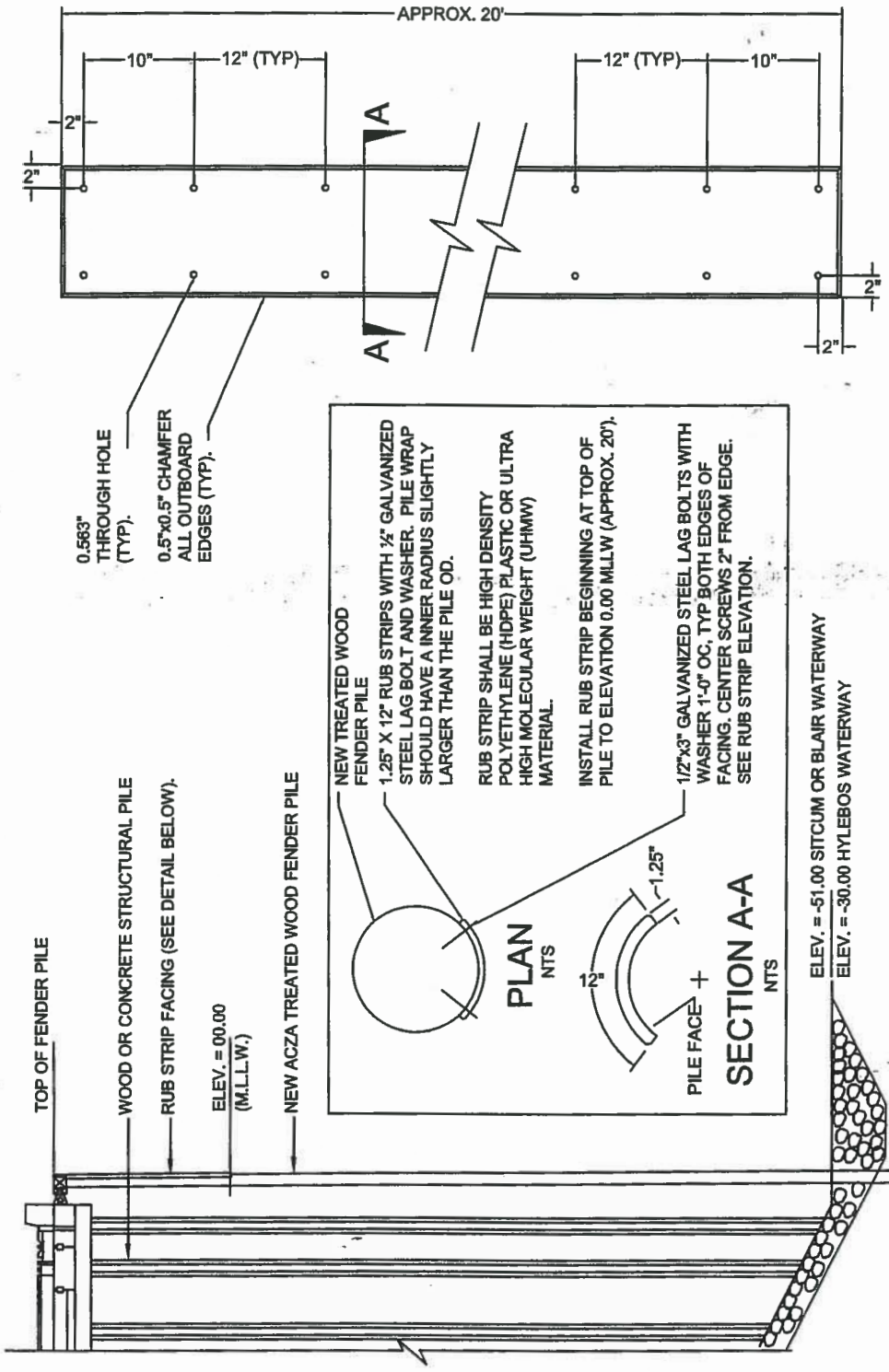
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 09

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROGRAM

PROJECT NO: N/A
SHEET: 9 OF: 10
DATE: 7/02/12



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Reference: NWS-2011-0089-WRD

PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 10

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT
PROJECT NO: N/A
SHEET: 10 OF: 10
DATE: 7/02/12

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

August 29, 2012

Port of Tacoma
Attn: Mr. Mark Rettmann
PO Box 1837
Tacoma WA 98401-1837

RE: Water Quality Certification - Order #9244/Corps Public Notice # **NWS-2011-0089-WRD** – Programmatic Piling Repair Project

Dear Mr. Rettmann:

The above-referenced public notice for proposed work in waters of the state has been reviewed in accordance with all pertinent rules and regulations. On behalf of the State of Washington, we certify that the work proposed in the public notice complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, as amended, and other appropriate requirements of State law. This certification is subject to the conditions contained in the enclosed Order and may be appealed by following the procedures described in the Order.

Please note that this Order does not cover CERLCA coordination, which will be conducted as part of the Corps of Engineers 404 process, and may have additional monitoring or sampling requirements dependent on location and numbers of pilings being removed.

If you have any questions concerning the content of this letter, please contact Helen Pressley at (360) 407-6076.

Sincerely,

Brenden McFarland, Section Manager
Shorelands & Environmental Assistance Program
Headquarters Office - Ecology
State of Washington

by Certified Mail 7010 2780 0000 2503 4195

Enclosure
Attachment

cc: Olivia Romano, Corps
Chris Waldbillig, WDFW

ecc: Loree' Randall, Ecology
Helen Pressley, Ecology
Laura Inouye, Ecology
Alex Callender, Ecology
DMMP@dnr.wa.gov
ecyrefedpermits@ecy.wa.gov

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO PORT OF TACOMA in accordance with 33 U.S.C. 1341 (FWPCA § 401), RCW 90.48.120, RCW 90.48.260 and Chapter 173-201A WAC	)))))))	**ORDER #9244** **Corps Reference No. NWS-2011-0089-WRD** Programmatic maintenance, repair, and replacement of up to 200 pilings per year throughout the Port of Tacoma property in Tacoma, Pierce County, Washington

TO: Port of Tacoma
Attn: Mr. Mark Rettmann
PO Box 1837
Tacoma WA 98401-1837

On March 23, 2011 the Port of Tacoma submitted a Joint Aquatic Resources Permit Application (JARPA) to the Department of Ecology (Ecology) requesting a Section 401 Water Quality Certification. A joint public notice regarding the request was distributed by the Army Corps of Engineers (Corps) for the above-referenced project pursuant to the provisions of Chapter 173-225 WAC on February 3, 2012.

The proposed work will include maintenance activities at 11 wharf/pier structures over a five year period. Work includes the replacement of up to 200 piles per year (fender piles, dolphin piles, and/or support), and associated pile caps, chocks, whalers, and rub strips at structures located at AMP Terminals, Terminal 7, Olympic Container Terminal, Husky Terminal (Terminal 3 and 4), Blair Dock, Trident Piers 24 and 25, BRAC, Parcel 86, Parcel 99, Parcel 105, and Parcel 115.

Replacement piles would range from 18-inch diameter to 24-inch diameter and include ACZA-treated wood and concrete piles. Piles would be extracted with a vibratory hammer or by pulling with a choke chain. Piles that break during extraction would be cut off 3-feet below the mudline and the location would be capped with clean sand. Up to 120 cubic yards of clean sand may be placed per year. New piles would be installed with a vibratory hammer. However, some piles may be proofed with an impact hammer and in some instances may be entirely installed with an impact hammer. Up to 1,000 piles could be replaced and up to 600 cubic yards of sand could be placed over the five year period. Work will be done in Hylebos, Blair, and Sitcum Waterways, and Commencement Bay, in Tacoma, Pierce County, Washington.

AUTHORITIES:

In exercising authority under 33 U.S.C. § 1341, RCW 90.48.120, and RCW 90.48.260, Ecology has examined this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. §1311, 1312, 1313, 1316, and 1317 (FWPCA § 301, 302, 303, 306 and 307);

2. Conformance with the state water quality standards contained in Chapter 173-201A WAC and authorized by 33 U.S.C. §1313 and by Chapter 90.48 RCW, and with other applicable state laws; and

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

WATER QUALITY CERTIFICATION CONDITIONS:

Through issuance of this Order, Ecology certifies that it has reasonable assurance that the activity as proposed and conditioned will be conducted in a manner that will meet the applicable water quality standards and other appropriate requirements of state law. In view of the foregoing and in accordance with 33 U.S.C. § 1341, RCW 90.48.120, RCW 90.48.260, Chapter 173-200 WAC and Chapter 173-201A WAC, water quality certification is granted to the Applicant subject to the conditions within this Order.

Certification of this proposal does not authorize the Applicant to exceed applicable state water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC) or sediment quality standards (Chapter 173-204 WAC). Furthermore, nothing in this certification shall absolve the Applicant from liability for contamination and any subsequent cleanup of surface waters, ground waters or sediments occurring as a result of project construction or operations.

A. General Conditions:

1. For purposes of this Order, the term "Applicant" shall mean the Port of Tacoma and its agents, assignees and contractors.

2. For purposes of this Order, all submittals required by its conditions shall be sent to Ecology's Headquarters Office, Attn: 401/CZM Federal permit coordinator, P.O. Box 47600 Olympia, WA 98504-7600 and/or hpre461@ecy.wa.gov. Any submittals shall reference Order #9244 and Corps Reference # NWS-2011-0089-WRD.

3. Work authorized by this Order is limited to the work described in the Joint Aquatic Resources Permit Application (JARPA) received by Ecology on March 23, 2011. The Applicant will be out of compliance with this Order and must submit an updated JARPA if the information contained in the JARPA is voided by subsequent changes to the project not authorized by this Order.

4. Within 30 days of receipt of an updated JARPA, Ecology will determine if the revised project requires a new water quality certification and public notice or if a modification to this Order is required.

5. This Order shall be rescinded if the U.S. Army Corps of Engineers does not issue an individual 404 and/or Section 10 permit for the project.

6. Copies of this Order shall be kept on the job site and readily available for reference by Ecology personnel, the construction superintendent, construction managers and lead workers, and state and local government inspectors.

7. The Applicant shall provide access to the project site upon request by Ecology personnel for site inspections, monitoring, necessary data collection, and/or to ensure that conditions of this Order are being met.

8. Nothing in this Order waives Ecology's authority to issue additional orders if Ecology determines that further actions are necessary to implement the water quality laws of the state. Furthermore, Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if additional impacts due to project construction or operation are identified or if additional conditions are necessary to further protect water quality.

9. The Applicant shall ensure that all appropriate project engineers and contractors at the project site have read and understand relevant conditions of this Order and all permits, approvals, and documents referenced in this Order. The Applicant shall provide Ecology a signed statement (see Attachment A for an example) from each project engineer and contractor that they have read and understand the conditions of this Order and the above-referenced permits, plans, documents and approvals. These statements shall be provided to Ecology before construction begins at the project.

10. This Order does not authorize direct, indirect, permanent, or temporary impacts to waters of the state or related aquatic resources, except as specifically provided for in conditions of this Order.

11. Failure of any person or entity to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.

B. Water Quality Conditions:

1. This order does not authorize temporary exceedances of water quality standards beyond the limits established in WAC 173-201A-210(1)(e)(i).

    - The area of mixing established for marine waters is a 150 foot radius surrounding the in-water activity. Turbidity occurring outside that zone that is more than 5 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less, or a 10% increase in turbidity when the background turbidity is more than 50 NTU is a violation of the turbidity water quality standard.

C. Water Quality Monitoring:

1. Turbidity shall be monitored visually in all areas, except those in or adjacent to CERCLA clean-up areas (condition C.2. of this certificate). Visible turbidity anywhere at or beyond the 150 ft point of compliance from the activity shall be considered to be an exceedance of the standard. Visual monitoring shall be conducted during all in-water activities.

2. Turbidity monitoring within CERCLA clean-up areas shall be conducted in accordance to an approved water quality monitoring plan. The Applicant shall submit a water quality monitoring plan (see condition A2) at least 30 days prior to in-water activities. The water quality monitoring plans shall be approved by Ecology prior to start of any in-water work. These areas include:
    a) Area 4, which is adjacent to the Slip 4 CERCLA cleanup.
    b) Area 7 which includes piling removals in Parcel 99-Arkema Chemicals, a completed CERCLA cleanup.
    c) Area 8 which is adjacent to the Trident Piers 24/25 CERCLA cleanup.
    d) Area 10 which is adjacent to the BRAC Navy CERCLA cleanup.

3. Turbidity monitoring reports shall be sent weekly to the 401/CZM Federal permit coordinator at the address or e-mail in A2. The permit coordinator shall be contacted within 24 hours if an exceedance occurs.

D. Piling Replacement and Repair:

1. All work shall be done so as to minimize turbidity, erosion, and other water quality impacts.

2. During pile removal and pile driving, a containment boom shall be placed around the perimeter of the work area to capture wood debris and other materials released into the water as a result of project activities. All accumulated debris shall be collected and disposed of upland at an approved disposal site. Absorbent pads shall be deployed should any sheen be observed.

3. The Applicant shall use tarps or other containment methods when cutting, drilling, or construction over-water to prevent debris, sawdust, concrete rubble, and other materials from entering the water.

4. Machinery and equipment used during piling removal and replacement shall be serviced, fueled, and maintained on uplands wherever possible in order to prevent contamination of surface water. Where practicable, machinery and equipment used during project activities shall use biodegradable hydraulic fluid.

5. Where possible, work shall be prioritized by the severity of the problem so that water quality can be protected.

6. The work surface on the uplands or barge shall include a containment basin for piles and any liquid or sediment removed during pulling of the piling. Basins may be constructed of durable plastic sheeting with sidewalls supported by hay bales or support structure to contain all sediment and liquid. Water left in the basins shall not be discharged into waters of the state.

7. Piles removed from substrate shall be moved immediately from the water onto the upland or barge. The pile shall not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile. All excavated piles shall be disposed of at an approved upland disposal site.

8. The Applicant shall deploy a bubble curtain or other BMP(s) to protect marine life while placing or proofing new piling.

9. During dredging, the Applicant shall have a boat available on site at all times to retrieve debris from the water.

E. Timing Requirements:

1. All in-water work shall be completed by the work window identified in the most current HPA issued for this project. Any project change that requires a new or revised HPA should also be sent to Ecology for review.

2. This Order shall remain in effect for a period of 5 years from date of issuance.

F. Notification Requirements:

1. The Applicant shall provide notice to Ecology's 401/CZM Federal permit coordinator at least 7 days prior to the start of maintenance, repairs, or installation of new tide gates and within 14 days after completion of work at the last project site every year this permit is in force. Notification should be made using all the information required in Condition A2.
2. The Applicant shall provide to Ecology a yearly report by January 31 of the following year. This report shall include details of the outfalls worked on in the previous year including photos, details of any problems and how they were solved, and a list of the outfalls planned to be cleaned in the next calendar year.

G. Emergency/Contingency Measures:

1. The Applicant shall develop a spill prevention and containment plan for this project, and shall have spill cleanup materials and an emergency call list available on site.

2. Any work that is out of compliance with the provisions of this Order, or conditions causing distressed or dying fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the Applicant or operator shall immediately take the following actions:
    a. Cease operations that are causing the compliance problem.
    b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
    c. In the event of finding distressed or dying fish, the applicant shall collect fish specimens and water samples in the affected area within the first hour of the event. These samples shall be held in refrigeration or on ice until the applicant is instructed by Ecology on what to do with them. Ecology may require analyses of these samples before allowing the work to resume.
    d. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.
    e. Immediately notify Ecology's 24-Hour Spill Response Team at 1-800-258-5990, **and** within 24 hours of spills or other events Ecology's 401/CZM Federal permit coordinator at (360) 407-6076.
    f. Submit a detailed written report to Ecology within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.
3. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters, including wetlands.
4. If at any time during work the proponent finds buried chemical containers, such as drums, or any unusual conditions indicating disposal of chemicals, the proponent shall immediately notify Ecology using the above phone numbers.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

DATED August 29, 2012 at Olympia, Washington.

Brenden McFarland, Section Manager
Shorelands & Environmental Assistance Program
Headquarters Office – Ecology
State of Washington

ATTACHMENT A

Port of Tacoma
Programmatic Piling Repair Project
Water Quality Certification Order #9244

Statement of Understanding of
Water Quality Certification Conditions

I have read and understand the conditions of Order #9244 Section 401 Water Quality certification for programmatic piling repair project. I have also read and understand all permits, plans, documents, and approvals associated with the project referenced in this order.

_____ _____
Signature Date

_____
Print Name

_____
Company

_____
Title

US Army Corps of Engineers
Seattle District

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT

Permit Number: NWS-2011-0089-WRD

Name of Permittee: Port of Tacoma

Date of Issuance: OCT 25 2012

Upon completion of the activity authorized by this permit, please check the applicable boxes below, date and sign this certification, and return it to the following address:

Department of the Army
U.S. Army Corps of Engineers
Seattle District, Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-3755

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with the terms and conditions of your authorization, your permit may be subject to suspension, modification, or revocation.

☐	The work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of this permit. Date work complete: _____
	☐ Photographs and as-built drawings of the authorized work (OPTIONAL, unless required as a Special Condition of the permit).

☐	If applicable, the mitigation required (e.g., construction and plantings) in the above-referenced permit has been completed in accordance with the terms and conditions of this permit (not including future monitoring). Date work complete: _____
	☐ Photographs and as-built drawings of the mitigation (OPTIONAL, unless required as a Special Condition of the permit).

Printed Name: _____

Signature: _____

Date: _____

REFERENCE MATERIAL 2

HYDRAULIC PROJECT APPROVAL

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

Issued Date: March 10, 2016
Project End Date: February 15, 2018

Permit Number: 2016-6-119+01
FPA/Public Notice Number: N/A
Application ID: 7030

PERMITTEE	AUTHORIZED AGENT OR CONTRACTOR
Port of Tacoma ATTENTION: Jennifer Stebbings PO Box 1837 Tacoma, WA 98401-1837	

Project Name: Programmatic Piling Replacement and Repair Program

Project Description: Load-bearing and fender piling may be damaged by the impact of ships against the piling or the pier faces, or through the actions of marine borers, necessitating their replacement to prevent further damage to the pier. Without replacement of damaged pile, the docks and piers could quickly degrade to the point that they are no longer useful, or become dangerous to human health and safety. Annual maintenance is required and piling will be replaced on an as-needed basis to maintain the function and structural integrity of the various docks and marginal wharves within the Port of Tacoma (Port). The number and location of piling replaced annually is dependent upon the number damaged in the preceding year, and the locations of the damaged piling. Annualized replacement rates give an estimate of the annual replacement average, though the actual number may be higher or lower in a given year. The annualized replacement rates are included in the attached copy of the 2011 JARPA for the Port's programmatic pile program, previously approved by WDFW. As the numbers may vary from the annualized replacement rates, no more than 200 piles will be replaced in a single year under this application.

PROVISIONS

AUTHORIZED WORK TIMES

1. TIMING LIMITATION: To protect fish and shellfish habitats at the job site, work below the ordinary high water line must occur from July 16 and February 14 of any year.

2. APPROVED PLANS: Work must be accomplished per plans and specifications submitted with the application and approved by the Washington Department of Fish and Wildlife, entitled Programmatic Piling Replacement and Repair Program, dated 3/3/2016, except as modified by this Hydraulic Project Approval.

Approved actions covered by this permit are:
1. Replacement of up to 200 damaged or deteriorating piling annually in locations listed in the approved JARPA/Plans with new concrete, steel, untreated or ACZA-treated wood piling.

You must have a copy of these plans available on site during all phases of the project proposal.

NOTIFICATION

3. PRE- AND POST-CONSTRUCTION NOTIFICATION: You, your agent, or contractor must contact the Washington Department of Fish and Wildlife by e-mail at HPAapplications@dfw.wa.gov; mail to Post Office Box 43234, Olympia, Washington 98504-3234; or fax to (360) 902-2946 at least three business days before starting work, and again within seven days after completing the work. The notification must include the permittee's name, project location, starting date

for work or date the work was completed, and the permit number. The Washington Department of Fish and Wildlife may conduct inspections during and after construction; however, the Washington Department of Fish and Wildlife will notify you or your agent before conducting the inspection.

4. FISH KILL/ WATER QUALITY PROBLEM NOTIFICATION: If a fish kill occurs or fish are observed in distress at the job site, immediately stop all activities causing harm. Immediately notify the Washington Department of Fish and Wildlife of the problem. If the likely cause of the fish kill or fish distress is related to water quality, also notify the Washington Military Department Emergency Management Division at 1-800-258-5990. Activities related to the fish kill or fish distress must not resume until the Washington Department of Fish and Wildlife gives approval. The Washington Department of Fish and Wildlife may require additional measures to mitigate impacts.

STAGING, JOB SITE ACCESS AND EQUIPMENT

5. Establish the staging area (used for activities such as equipment storage, vehicle storage, fueling, servicing, and hazardous material storage) in a location and manner that will prevent contaminants like petroleum products, hydraulic fluid, fresh concrete, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials from entering waters of the state.

6. Clearly mark boundaries to establish the limit of work associated with site access and construction.

7. Confine the use of equipment to specific access and work corridor shown in the approved plans.

8. Check equipment daily for leaks and complete any required repairs before using the equipment in or near the water.

9. Lubricants composed of biodegradable base oils such as vegetable oils, synthetic esters, and polyalkylene glycols are recommended for use in equipment operated in or near water.

10. Operate vessels during tidal elevations that are adequate to prevent grounding of the barge.

11. Do not deploy anchors or spuds in seagrass or kelp.

12. Maintain anchor cable tension, set and retrieve anchors vertically, and prevent mooring cables from dragging to avoid impacts to seagrass and kelp.

CONSTRUCTION-RELATED SEDIMENT, EROSION AND POLLUTION CONTAINMENT

13. Prevent contaminants from the project, such as petroleum products, hydraulic fluid, fresh concrete, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials, from entering or leaching into waters of the state.

14. Use tarps or other methods to prevent treated wood, sawdust, trimmings, drill shavings and other debris from contacting the bed or waters of the state.

CONSTRUCTION MATERIALS

15. To prevent leaching, construct forms to contain any wet concrete. Place impervious material over any exposed wet concrete that will come in contact with waters of the state. Forms and impervious materials must remain in place until the concrete is cured.

16. Do not use wood treated with oil-type preservative (creosote, pentachlorophenol) in any hydraulic project. Wood treated with waterborne preservative chemicals (ACZA, ACQ) may be used if the Western Wood Preservers Institute has approved the waterborne chemical for use in the aquatic environment. The manufacturer must follow the Western Wood Preservers Institute guidelines and the best management practices to minimize the preservative migrating from treated wood into aquatic environments. To minimize leaching, wood treated with a preservative by someone other than a manufacturer must follow the field treating guidelines. These guidelines and best management practices are available at www.wwpinstitute.org.

PILE REMOVAL, DRIVING

17. Remove the existing piling and dispose of them in an upland area above extreme high tide waters.

18. As specified in the approved plans, the replacement pilings must be similarly sized (as removed) diameter steel, concrete, untreated or Chemonite (ACZA) treated wood pilings.

19. Attach rubbing strips made of ultra high molecular weight (UHMW) type plastic, or high density polyethylene (HDPE) type plastic to the replacement fender system. Do not use rubber tires for the fender system.

20. Fit all pilings with devices to prevent perching by fish-eating birds.

21. The use of both a vibratory and/or an impact hammer is authorized for piling installation under this Hydraulic Project Approval, however a vibratory driver is preferred.

22. Sound attenuation methods are required for the driving or proofing of steel piles with an impact hammer below the ordinary high water line. For impact driving of steel piles that exceed the following criteria, a bubble curtain or other Washington Department of Fish and Wildlife approved sound attenuation device must be used. The specific criteria include sound pressure levels of:

a) Greater than or equal to 206 dB (one micropascal squared per second) peak,
b) Greater than or equal to 187 dB (one micropascal squared per second) accumulated sound exposure level (SEL) for fish greater than or equal to 2 grams, and
c) Greater than or equal to 183 dB (one micropascal squared per second) (SEL) for fish less than 2 grams.
d) Install a bubble curtain around the pile during all driving operations to ensure proper sound attenuation. The bubble curtain must distribute air bubbles around 100 percent of the perimeter of the piling over the full length of the pile in the water column.

23. Use appropriate sound attenuation when driving or proofing steel piling with an impact hammer.

a. For driving or proofing steel piling, 10 inches in diameter or less, install a 6 inch thick wood block, plastic or rubber between the piling and the impact hammer during impact pile driving operations or install a pile sleeve or bubble curtain around the piling during impact pile driving operations that distributes air bubbles around 100% of the perimeter of the piling over the full depth of the water column.

b. For driving or proofing steel piling greater than 10 inches in diameter, install a bubble curtain around the pile during piling impact driving operations that distributes air bubbles around 100% of the perimeter of the piling over the full depth of the water column.

24. To avoid attracting fish to light at night, limit impact pile driving to daylight hours whenever feasible.

25. Piling removal:

a. Vibratory or water jet extraction is the preferred method of pile removal.

b. Place the piling on a construction barge or other dry storage site after the piling is removed. The piling must not be shaken, hosed off, left hanging to dry or any other action intended to clean or remove adhering material from the piling near waters of the state.

c. If a treated wood piling breaks during extraction, remove the stump from the water column by fully extracting. If the stump cannot be fully extracted, remove the remainder of the stump with a clamshell bucket, chain, or similar means, or cut it off three feet below the mudline. Cap all buried cut stumps and fill holes left by piling extraction with clean sand.

d. When removing creosote piling, containment booms and absorbent booms (or other oil absorbent fabric) must be placed around the perimeter of the work area to capture wood debris, oil, and other materials released into marine waters as a result of construction activities to remove creosote pilings. All debris on the bed and accumulated in containments structures must be collected and disposed upland at an approved disposal site.

DEMOBILIZATION/CLEANUP

26. Remove all trash and unauthorized fill in the project area, including concrete blocks or pieces, bricks, asphalt, metal, treated wood, glass, floating debris, and paper, that is waterward of the ordinary high water line and deposit upland.

27. Reshape beach area depressions created during project activities to preproject beach level upon project completion.

HYDRAULIC PROJECT APPROVAL

Issued Date: March 10, 2016
Project End Date: February 15, 2018
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Application ID: 7030

28. Remove all debris or deleterious material resulting from construction from the beach area or bed and prevent from entering waters of the state.

29. Do not burn wood, trash, waste, or other deleterious materials waterward of the ordinary high water line.

NOTES

NOTE: Ordinary High Water Line is defined as 'the mark on the shores of all waters that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in ordinary years as to mark upon the soil or vegetation a character distinct from the abutting upland. Provided, that in any area where the ordinary high water line cannot be found, the ordinary high water line adjoining saltwater is the line of mean higher high water and the ordinary high water line adjoining fresh water is the elevation of the mean annual flood (Revised Code of Washington, RCW 77.55.011(16); Washington Administrative Code, WAC 220-660-030(108)).

LOCATION #1:	, , WA					
WORK START:	March 10, 2016			WORK END:	February 15, 2018	
WRIA		Waterbody:			Tributary to:	
1/4 SEC:	Section:	Township:	Range:	Latitude:	Longitude:	County:
						Pierce
Location #1 Driving Directions						

APPLY TO ALL HYDRAULIC PROJECT APPROVALS

This Hydraulic Project Approval pertains only to those requirements of the Washington State Hydraulic Code, specifically Chapter 77.55 RCW. Additional authorization from other public agencies may be necessary for this project. The person(s) to whom this Hydraulic Project Approval is issued is responsible for applying for and obtaining any additional authorization from other public agencies (local, state and/or federal) that may be necessary for this project.

This Hydraulic Project Approval shall be available on the job site at all times and all its provisions followed by the person (s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work.

This Hydraulic Project Approval does not authorize trespass.

The person(s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work may be held liable for any loss or damage to fish life or fish habitat that results from failure to comply with the provisions of this Hydraulic Project Approval.

HYDRAULIC PROJECT APPROVAL

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FPA/Public Notice Number: N/A
Application ID: 7030

Failure to comply with the provisions of this Hydraulic Project Approval could result in a civil penalty of up to one hundred dollars per day and/or a gross misdemeanor charge, possibly punishable by fine and/or imprisonment.

All Hydraulic Project Approvals issued under RCW 77.55.021 are subject to additional restrictions, conditions, or revocation if the Department of Fish and Wildlife determines that changed conditions require such action. The person(s) to whom this Hydraulic Project Approval is issued has the right to appeal those decisions. Procedures for filing appeals are listed below.

MINOR MODIFICATIONS TO THIS HPA: You may request approval of minor modifications to the required work timing or to the plans and specifications approved in this HPA. Any approved minor modification will require issuance of a letter documenting the approval. A minor modification to the required work timing means any change to the work start or end dates of the current work season to enable project or work phase completion. Minor modifications will be approved only if spawning or incubating fish are not present within the vicinity of the project. You may request subsequent minor modifications to the required work timing. A minor modification of the plans and specifications means any changes in the materials, characteristics or construction of your project that does not alter the project's impact to fish life or habitat and does not require a change in the provisions of the HPA to mitigate the impacts of the modification. Minor modifications do not require you to pay additional application fees or be issued a new HPA. If you originally applied for your HPA through the online Aquatic Protection Permitting System (APPS), you may request a minor modification through APPS. A link to APPS is at http://wdfw.wa.gov/licensing/hpa/. If you did not use APPS you must submit a written request that clearly indicates you are seeking a minor modification to an existing HPA. Written requests must include the name of the applicant, the name of the authorized agent if one is acting for the applicant, the APP ID number of the HPA, the date issued, the permitting biologist, the requested changes to the HPA, the reason for the requested change, the date of the request, and the requestor's signature. Send by mail to: Washington Department of Fish and Wildlife, PO Box 43234, Olympia, Washington 98504-3234, or by email to HPAapplications@dfw.wa.gov. Do not include payment with your request. You should allow up to 45 days for the department to process your request.

MAJOR MODIFICATIONS TO THIS HPA: You may request approval of major modifications to any aspect of your HPA. Any approved change other than a minor modification to your HPA will require issuance of a new HPA. If you paid an application fee for your original HPA you must pay an additional $150 for the major modification. If you did not pay an application fee for the original HPA, no fee is required for a change to it. If you originally applied for your HPA through the online Aquatic Protection Permitting System (APPS), you may request a major modification through APPS. A link to APPS is at http://wdfw.wa.gov/licensing/hpa/. If you did not use APPS you must submit a written request that clearly indicates you are requesting a major modification to an existing HPA. Written requests must include the name of the applicant, the name of the authorized agent if one is acting for the applicant, the APP ID number of the HPA, the date issued, the permitting biologist, the requested changes to the HPA, the reason for the requested change, the date of the request, payment if the original application was subject to an application fee, and the requestor's signature. Send your written request and payment, if applicable, by mail to: Washington Department of Fish and Wildlife, PO Box 43234, Olympia, Washington 98504-3234. You may email your request for a major modification to HPAapplications@dfw.wa.gov, but must send a check or money order for payment by surface mail. You should allow up to 45 days for the department to process your request.

APPEALS INFORMATION

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

HYDRAULIC PROJECT APPROVAL

Issued Date: March 10, 2016
Project End Date: February 15, 2018

Permit Number: 2016-6-119+01
FPA/Public Notice Number: N/A
Application ID: 7030

If you wish to appeal the issuance, denial, conditioning, or modification of a Hydraulic Project Approval (HPA), Washington Department of Fish and Wildlife (WDFW) recommends that you first contact the department employee who issued or denied the HPA to discuss your concerns. Such a discussion may resolve your concerns without the need for further appeal action. If you proceed with an appeal, you may request an informal or formal appeal. WDFW encourages you to take advantage of the informal appeal process before initiating a formal appeal. The informal appeal process includes a review by department management of the HPA or denial and often resolves issues faster and with less legal complexity than the formal appeal process. If the informal appeal process does not resolve your concerns, you may advance your appeal to the formal process. You may contact the HPA Appeals Coordinator at (360) 902-2534 for more information.

A. INFORMAL APPEALS: WAC 220-660-460 is the rule describing how to request an informal appeal of WDFW actions taken under Chapter 77.55 RCW. Please refer to that rule for complete informal appeal procedures. The following information summarizes that rule.

A person who is aggrieved by the issuance, denial, conditioning, or modification of an HPA may request an informal appeal of that action. You must send your request to WDFW by mail to the HPA Appeals Coordinator, Department of Fish and Wildlife, Habitat Program, 600 Capitol Way North, Olympia, Washington 98501-1091; e-mail to HPAapplications@dfw.wa.gov; fax to (360) 902-2946; or hand-delivery to the Natural Resources Building, 1111 Washington St SE, Habitat Program, Fifth floor. WDFW must receive your request within 30 days from the date you receive notice of the decision. If you agree, and you applied for the HPA, resolution of the appeal may be facilitated through an informal conference with the WDFW employee responsible for the decision and a supervisor. If a resolution is not reached through the informal conference, or you are not the person who applied for the HPA, the HPA Appeals Coordinator or designee will conduct an informal hearing and recommend a decision to the Director or designee. If you are not satisfied with the results of the informal appeal, you may file a request for a formal appeal.

B. FORMAL APPEALS: WAC 220-660-470 is the rule describing how to request a formal appeal of WDFW actions taken under Chapter 77.55 RCW. Please refer to that rule for complete formal appeal procedures. The following information summarizes that rule.

A person who is aggrieved by the issuance, denial, conditioning, or modification of an HPA may request a formal appeal of that action. You must send your request for a formal appeal to the clerk of the Pollution Control Hearings Boards and serve a copy on WDFW within 30 days from the date you receive notice of the decision. You may serve WDFW by mail to the HPA Appeals Coordinator, Department of Fish and Wildlife, Habitat Program, 600 Capitol Way North, Olympia, Washington 98501-1091; e-mail to HPAapplications@dfw.wa.gov; fax to (360) 902-2946; or hand-delivery to the Natural Resources Building, 1111 Washington St SE, Habitat Program, Fifth floor. The time period for requesting a formal appeal is suspended during consideration of a timely informal appeal. If there has been an informal appeal, you may request a formal appeal within 30 days from the date you receive the Director's or designee's written decision in response to the informal appeal.

C. FAILURE TO APPEAL WITHIN THE REQUIRED TIME PERIODS: If there is no timely request for an appeal, the WDFW action shall be final and unappealable.

HYDRAULIC PROJECT APPROVAL

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

Issued Date: March 10, 2016
Project End Date: February 15, 2018

Permit Number: 2016-6-119+01
FPA/Public Notice Number: N/A
Application ID: 7030

Habitat Biologist
Matthew Curtis

matthew.curtis@dfw.wa.gov
360-902-2578

for Director
WDFW

City of Tacoma
Planning and Development Services

January 3, 2014

Mark Rettmann
Port of Tacoma
P.O. Box 1837
Tacoma, WA 98401-1837 *also via electronic mail*

RE: Port of Tacoma Programmatic Piling Repair and Maintenance
Shoreline Substantial Development Permit Exemption
File No. SHR2013-40000215154

Dear Mr. Rettmann:

We have received and reviewed the JARPA and application letter for the above-noted proposal for the routine repair, maintenance, and replacement of piling at 12 sites throughout the Port of Tacoma over the next five years (see Attachment "A"). This request requires a Shoreline Substantial Development Permit Exemption and Critical Area Review pursuant to *Tacoma Shoreline Master Program* (*TSMP*) Chapter 2.3.3 as allowed per WAC 173-27-040 2(b). The *TSMP* allows that exemptions are typically valid for one year from issuance; however, longer periods may be allowed based upon the specifics of the proposal (Chapter 2.3.4).

Proposal

The specific request is for the repair and/or replacement of up to 200 damaged or broken fender and structural pile at the twelve identified sites. This would include pile caps, chokes, and whalers along with the piling itself. The purpose of the project is to maintain the integrity of existing pier, wharf, and fendering systems at Port properties, in support of water-dependent port and industrial activities as allowed in the "S-10" Shoreline District – Port Industrial.

As you have stated in the JARPA, the work will be conducted as follows:

- All work will occur within the authorized in-water work window;
- Pile removal BMPs may include the following:
  - Use of debris boom around the work area
  - Use of an absorbent boom
  - Cutting or driving broken pile below the mudline;
- Wood piling may be replaced with approved treated wood piling. All treated wood replacement piling will undergo required BMPs for treatment prior to placement in water;
- Concrete piling will be replaced with concrete piling which may be driven using a wood pillow atop;
- All fender piling will have an approved plastic rub strip fastened to the exposed face to prevent frictional losses of treated wood due to vessel movement;
- The contractor will have a spill containment kit on site; and
- No alteration of the existing bank/shoreline is proposed, nor will there be any dredging or filling associated with this project

Site Description (General)

The sites are located within the "S-10" Shoreline District - Port Industrial and the "S-13" Shoreline District - Marine Waters of the State. The intent of the "S-10" is to allow the continued development of the Port industrial Area, with an increase in the intensity of development and a greater emphasis on terminal facilities within the City. The intent of the "S-13" is to maintain these water bodies for the use by the public for navigation, commerce and recreation purposes and to manage in-water structures in a consistent manner throughout the City's shorelines. All sites are currently developed with water-dependent port and industrial uses, including shipping terminals.

The sites all include work within the required 50-foot marine buffer per *TSMP* 6.4.3, and therefore require Critical Areas review. The proposal and historic permitting records were reviewed by Karla Kluge, Senior Environmental Specialist, for compliance with the provisions of the *TSMP* for critical areas within the shoreline. Ms. Kluge has concluded that the request meets the requirements for a repair and maintenance exemption. Ms. Kluge's technical memorandum is included as Attachment "B" to this letter; conditions and advisory comments have been included herein.

Shoreline Substantial Development Permit Exemption

Repair and maintenance actions associated with existing structures and developments including acts to prevent a decline, lapse, or cessation from a lawfully established condition are listed as exempt from a Substantial Development Permit according to the *Tacoma Shoreline Master Program* (*TSMP*) Chapter 2.3.3. Section 2.3.3(1) notes "an exemption from the Substantial Development Permit requirements does not constitute an exemption from the policies and use regulations of the Shoreline Management Act (*SMA*), the provisions of this Master Program (*TSMP*), and other applicable City, state, or federal permit requirements".

Shoreline Management Act – RCW 90.58.020 sets forth the policy and priorities of the *SMA*. Within this section, development priority is allowed for Port uses, with an emphasis on best management practices to protect environmental functions of the shorelines. Given that the purpose of the proposal is to preserve established Port activities, and that all BMPs for repair and replacement will be followed, the request is in compliance with the stated goals and policies of the *SMA*.

TSMP – The Master Program sets forth allowed uses for the "S-10" District in Chapters 6.1, 7.6, and 9.12. Port activities – including shipping terminals – and the maintenance and repair thereof are allowed development activities within that district. Work within the "S-13" District is allowed in conjunction with permitted uses and activities at the upland locations. The applicant will meet all requirements of the *TSMP* and will pursue all required permits prior to starting work.

Other Permits – WAC 197-11-800(3) allows for SEPA exemptions for repair and replacement of existing development. This includes repair or replacement of piling, provided all other codes are complied with. The City of Tacoma will require building permits for some of the proposed work; you will need to obtain permits as necessary. Further, work will require permits from state and federal agencies; permitting is the responsibility of the applicant. You have indicated that you will comply with all other permitting requirements.

Conditions and Advisory Notes

The proposed activities are consistent with the applicable regulations, plans, and policies of the City of Tacoma. Furthermore, the Shoreline Management Act (*SMA*) allows certain activities to be exempt from the Shoreline Substantial Development Permit requirements. Based on the above findings, the proposed exemption to the City's Shoreline Substantial Development Permit requirement is consistent with the policies of the *SMA*, the policies and implementing

regulations of the *TSMP* and with the criteria set forth in the *WAC* and *RCW* for the authorization of such permits.

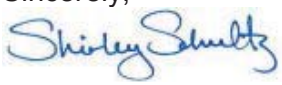
1. Replacement pilings shall be replaced on a one-to-one ratio with replacement pilings of the same or smaller diameter.
2. The applicant shall follow all proposed installation and construction methods and best management practices for minimizing unintended impacts during the repair and maintenance of the dock while installing and removing the piles. No construction materials or debris shall be allowed to enter the Waters of the State.
3. Construction material or debris shall be promptly removed and disposed of in an appropriate upland location.
4. All work must be completed within the approved in-water work window designated by the Washington State Department of Fish and Wildlife (WDFW).
5. The applicant shall notify the City of Tacoma and pertinent state or federal agencies should an unexpected spill of fuel or other chemical into the waterway.
6. Prior to issuance of construction permits, a copy of all permits required by or approvals provided by Washington State Department of Fish and Wildlife (WDFW), Department of Ecology (DOE), and U.S. Army Corps of Engineers (USACE) shall be provided to the City.
7. This exemption shall be valid for a period not to exceed five years from the date of issuance. Should the Shoreline Master Program be revised prior to the completion of this project, additional review may be required.

Advisory Notes

1. This permit is only applicable to the proposed project as described above and based upon the information submitted by the applicant. Modifications to this proposal and future activities or development within the regulated buffers may be subject to further review and additional permits as required in accordance with the *TMSP*.
2. The applicant must obtain other approvals prior to construction as required by other local, state and federal agencies. The City of Tacoma is not the only reviewing agency with jurisdiction over the project area. The Army Corps of Engineers and State Department of Fish and Wildlife have requirements regarding work within regulated waters that may be applicable to the project.

This letter of exemption is being issued per the provisions of the *Tacoma Shoreline Master Program* to comply with the requirements of *WAC* 173-27-040 and *WAC* 173-27-050. Should you have any further questions or requests please do not hesitate to contact me at 253-591-5121.

Sincerely,



Shirley Schultz
Principal Planner

cc via electronic mail:
Planning and Development Services, Peter Huffman, Reuben McKnight, Karla Kluge
Washington Department of Ecology, Shorelands & Environmental Assistance Program, Alex Callender, SWRO, P.O. Box 47775, Olympia, WA 98504-7775 (acal461@ecy.wa.gov)
Washington Department of Fish and Wildlife, Leonard Machut, 450 Port Orchard Boulevard, Suite 290, Port Orchard, WA 98366 (Leonard.Machut@dfw.wa.gov)
U.S. Army Corps of Engineers, Attn: Regulatory Branch, CENWS-OD-RG ATTN: Lori Lull, P.O. Box C-3755, Seattle, WA 98124 (Lori.C.Lull@usace.army.mil)
U.S. Fish & Wildlife Service, Attn: Judy Lantor, 510 Desmond Drive SE #102, Lacey, WA 98503 (judy_lantor@fws.gov)

Attachment "A" – Pile Repair/Replacement Sites

Parcel Number	Address	Waterway	Project Site	Critical Areas reviewed under permit number
2275200610	1001 Port of Tacoma Rd	Blair	Husky Terminal	SHR2010-40000151874
0321353016 **0321353014**	1815 Port of Tacoma Rd	Blair	Blair Dock	SHR2008-40000122326 SHR2009-40000127732
0321354035	2940 E Alexander Ave	Blair	Blair Dock (Additional Site 5) WUT	SHR2010-40000156509
2275200633	710 Port of Tacoma Rd 2209 East 11th Street	Sitcum	Terminal 7 & OCT	WET2010-40000141569 WET2010-40000138380
0321351053	2901 Taylor Way	Hylebos	Parcel 99	SHR2008-40000114953
0321364024	3701 Taylor Way	Hylebos	Parcel 86	WET2008-40000125347
5000350013	300 E Alexander Ave	Hylebos	Trident	SHR2009-40000130175
2275200292	1110 E Alexander Ave	Blair	Parcel 115	SHR2009-40000130175
2275200502	1001 E Alexander Ave	Hylebos	BRAC	SHR2010-40000156509
2275200620 **8950000061**	1901 E 11th Street 1002 Milwaukee Way	Sitcum	APM Terminals	SHR2010-40000156509
0321362046	3401 Taylor Way	Hylebos	Parcel 105	WET2010-4000146808

City of Tacoma
Planning and Development Services

Technical Memorandum

TO: Shirley Schultz, Principal Planner

FROM: Karla Kluge, Senior Environmental Specialist

SUBJECT: **Port of Tacoma Programmatic Piling Repair and Maintenance Shoreline Substantial Development Permit Exemption File No. SHR2013-40000215154**

DATE: January 2, 2013

Project Description

The applicant has applied for a Shoreline Substantial Development Permit Exemption for support piling maintenance and repair. The applicant is requesting an annual maintenance exemption to replace up to 200 damaged or broken fender and structural piling. This exemption will cover the pile, pile caps, chokes, and whalers at 12 wharf/dock facilities. An exemption previously issued included 11 sites. An additional site at the Blair Dock (site 5) is also included under this request.

Note: An identical exemption request was previously analyzed by the City's Environmental Specialist, Misty Blair. A new Shoreline Master Program and Code (TSMP) was recently adopted and approved by the Department of Ecology necessitating an updated review and analysis under the recently approved TSMP. This Technical Memorandum contains similar information contained within the previous analysis and was prepared in collaboration with Ms. Blair.

The applicant asserts that this maintenance project is necessary to maintain the structural integrity of the pier, wharf or fendering system the piling supports. The subject sites are located along the Blair, Hylebos and Sitcum Waterways within the S-10 Shoreline District. The subject sites are currently used by Port of Tacoma or their various tenants in a commercial capacity. As described by the applicant, the pier/wharf/dock structures are located on the following parcels:

Parcel Number	Address	Waterway	Project Site	Critical Areas reviewed under permit number
2275200610	1001 Port of Tacoma Rd	Blair	Husky Terminal	SHR2010-40000151874
0321353016 **0321353014**	1815 Port of Tacoma Rd	Blair	Blair Dock	SHR2008-40000122326 SHR2009-40000127732
0321354035	2940 E Alexander Ave	Blair	Blair Dock (Additional Site 5) WUT	SHR2010-40000156509
2275200633	710 Port of Tacoma Rd 2209 East 11th Street	Sitcum	Terminal 7 & OCT	WET2010-40000141569 WET2010-40000138380
0321351053	2901 Taylor Way	Hylebos	Parcel 99	SHR2008-40000114953
0321364024	3701 Taylor Way	Hylebos	Parcel 86	WET2008-40000125347

5000350013	300 E Alexander Ave	Hylebos	Trident	SHR2009-40000130175
2275200292	1110 E Alexander Ave	Blair	Parcel 115	SHR2009-40000130175
2275200502	1001 E Alexander Ave	Hylebos	BRAC	SHR2010-40000156509
2275200620 **8950000061**	1901 E 11th Street 1002 Milwaukee Way	Sitcum	APM Terminals	SHR2010-40000156509
0321362046	3401 Taylor Way	Hylebos	Parcel 105	WET2010-4000146808

As described by the applicant, this project will utilize the following precautions and should have no negative impact on the FWHCA or the associated marine buffer:

- All work will occur within the authorized in-water work window
- Pile removal BMPs may include the following:
    - Use of debris boom around the work area
    - Use of an absorbent boom
    - Cutting or driving broken pile below the mudline
- Wood piling maybe replaced with approved treated wood piling. All treated wood replacement piling will undergo required BMPs for treatment prior to placement in water
- Concrete piling will be replaced with concrete piling which may be driven using a wood pillow atop
- All fender piling will have an approved plastic rub strip fastened to the exposed face to prevent frictional losses of treated wood due to vessel movement
- The contractor will have a spill containment kit on site
- No alteration of the existing bank/shoreline is proposed, nor will there be any dredging or filling associated with this project

Documents provided to the City

The applicant submitted the following reports and supporting documents:

- Shoreline Substantial Development Permit Exemption (SHR2011-400000158452) and Critical Areas Preservation Ordinance Exemption (WET2011-40000160132)
- Original JARPA with Plan/Figures
- Exemption Request Letter dated December 23, 2013

Findings

1. The following Shoreline and Critical Areas permit files and previous Wetland/Stream/FWHCA site reviews and information are applicable to this exemption request:

   SHR2000-00033, SHR2005-40000061724, SHR2008-40000114953, SHR2008-40000122326, WET2008-40000125347, SHR2009-40000127732, SHR2009-40000130175, WET2010-40000138380, SHR2010-40000146808, SHR2010-40000151874, WET2010-40000141569 and SHR2010-40000156509.

2. These sites are developed and the proposal will not increase this intensity or create additional permanent impacts. This maintenance and repair work is taking place water-ward of the Ordinary High Water Mark (OHWM). The shoreline itself is armored with existing concrete bulkheads, rip rap or other protective measures along

the shore. As described by the applicant these facilities contain a total of approximately 20,000 piling, therefore the proposal is for an annual replacement of 1% of the total pile. This seems to be a reasonable estimation of the needed annual replacement rate for facilities of this size. In addition, these wharfs, docks, and piers are utilized for industrial shipping needs and subject to damage from impacts of marine vessels and/or floating debris as well as typical deterioration.

3. The applicant identified the following listed threatened and endangered species as occurring within the vicinity of the project area: Chinook salmon, steelhead, bull trout, marbled murrelet, bald eagles, stellar sea lion, and orca. Additionally the applicant identified that rockfish may be present further out in Commencement Bay. The applicant goes on to state that no priority habitats are present within the project area and the proposed work is extremely unlikely to impact any priority species.

Applicable Tacoma Shoreline Master Program and Code (TSMP)

4. The parcels referenced above are located within the S-10 Port Industrial Area Shoreline District and the S-13 Marine Waters of the State.

5. The intent of the S-10 Port Industrial Area Shoreline District is to allow the continued development of the Port industrial Area, with an increase in the intensity of development and a greater emphasis on terminal facilities within the City.

6. The intent of the S-13 Marine Waters of the State Shoreline District is to maintain these water bodies for the use by the public for navigation, commerce and recreation purposes and to manage in-water structures in a consistent manner throughout the City's shorelines.

7. *TSMP 6.4.3* requires a 50-foot marine buffer for S-10 Port Industrial Area Shoreline District.

8. *Under TSMP 2.1, proposed actions that would alter designated critical areas or their buffers, as established by the Program (TSMP Section 6.4) shall be reviewed for compliance with the provisions of this program. An applicable critical area report and/or mitigation plan and/or habitat management plan shall be prepared consistent with the requirements of TSMP Section 2.4.2 and submitted as part of the development application or request for statement of exemption. The critical area review shall be conducted and processed in conjunction with the highest threshold of review that is applicable to the primary development proposed*

9. *Under TSMP 2.3.2 Exemptions from a Substantial Development Permit. All uses within shoreline jurisdiction must be consistent with the regulations of this Master Program whether or not they require a shoreline Substantial Development Permit. An exemption from the Substantial Development Permit requirements does not constitute an exemption from the policies and use regulations of the Shoreline Management Act, the provisions of this Master Program, and other applicable City, state, or federal permit requirements.*

10. *Under TSMP 2.3.4 Letter of Exemption, Exempt activities related to any of the following shall not be conducted until a letter of exemption has been obtained from the Director or designated signatory; dredging, flood control works, in-water*

structures, archaeological or historic site alteration, clearing and ground disturbing activities such as filling or excavation, docks, shore stabilization, or activities deemed to be located within a critical area or buffer.

11. *Under TSMP 2.3.3 (WAC173-27-040 (2)(b)(b)) Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements. "Normal maintenance" includes those usual acts to prevent a decline, lapse, or cessation from a lawfully established condition. "Normal repair" means to restore a development to a state comparable to its original condition, including but not limited to its size, shape, configuration, location and external appearance, within a reasonable period after decay or partial destruction, except where repair causes substantial adverse effects to shoreline resource or environment. Replacement of a structure or development may be authorized as repair where such replacement is the common method of repair for the type of structure or development and the replacement structure or development is comparable to the original structure or development including but not limited to its size, shape, configuration, location and external appearance and the replacement does not cause substantial adverse effects to shoreline resources or environment*.

12. *Under TMSP 6.4.4 Fish and Wildlife Habitat Conservation Areas (FWHCA's), lands containing priority habitats and species and critical saltwater habitats are classified as Fish and Wildlife Habitat Conservation Areas.*

13. *Under TMSP 6.4.4 FWHCA standards, Whenever activities are proposed within or adjacent to a habitat conservation area with which state or federally endangered, threatened, or sensitive species have a primary association, such area shall be protected through the application of protection measures in accordance with a critical area report and habitat management plan prepared by a qualified professional and approved by the City. And, under TMSP 2.4.2, the Director shall determine whether these reports are necessary based upon the activities associated with the project.*

Conclusions

14. The Blair, Hylebos and Sitcum Waterways are considered FWHCAs and as such are provided a 50 foot buffer per *TSMP 6.4.3*. In this case, the FWHCA and its buffer that are located within the shoreline district are eligible for the maintenance and repair exemption from the Shoreline Substantial Development Permit.

15. The new pile placement will occur as a pile for pile replacement and impacts will be temporary and limited during the active construction. Impacts that may occur will be unavailability of habitat due to noise and turbidity in the work zone. No permanent adverse impacts are anticipated. No new additional structures are proposed, and there is no expansion or increase to the water dependent use.

16. Species listed under the Endangered Species Act that may occur within the vicinity of the project include Puget Sound Chinook salmon (*Onchorhynchus tshawaytscha*), Coastal-Puget Sound bull trout (*Salvelinus confluentus*), Puget Sound Steelhead trout (*O. mykiss*), Stellar Sea Lion (*Eumetopias jubatus*), Southern Resident Killer Whale (*Orcinus orca*), Humpback whale (*Megaptera novaeangliae*) , Leatherback Sea turtle (*Dermochelys coriacea*), Bocaccio (*Sebastes paucispinis*), Canary rockfish *S. pinniger*), and Yelloweye rockfish (*S. ruberrimus*).

17. Species that may be temporarily affected due to noise and turbidity include the Harbor Seal, Bald Eagle, Coho Salmon, Chum Salmon, and Pink Salmon.

18. The project site lies within an identified FEMA floodplain area (Commencement Bay); however, no vegetation removal or increase in impervious surface is proposed. Project impacts are being avoided and minimized; therefore no additional floodplain mitigation is required.

19. The applicant argues that the characteristic uses of the water body will not be adversely affected by the proposed project. All work within Commencement Bay will occur during in-water work windows approved by the Army Corps of Engineers, U.S. Fish and Wildlife Service, NOAA Fisheries, and Washington Department of Fish and Wildlife to avoid and minimize impacts on essential and designated habitats as well as fish, marine mammals, and avian species utilizing the coastal environment. Increases in water column turbidity caused by suspended sediments during pile removal and driving will be localized and temporary.

20. The project will not result in any permanent loss of habitat and will not compromise the fish and wildlife habitat conservation area or buffer functions; therefore no compensatory mitigation is required.

21. (*WAC*) 173-27-040(2)(b) exempts "Normal maintenance or repair of existing structures or developments, including damage by accident, fire or elements." Furthermore, (*WAC*) 173-27-040(2)(b) exempts "Replacement of a structure or development … where such replacement is the common method of repair for the type of structure or development … and the replacement does not cause substantial adverse effects to shoreline resources or environment." These repairs are considered typical and will conform to the size, shape, configuration, location and general appearance of the existing structures. The project (as described above) is generally consistent with the Shoreline Substantial Development Permit Exemption requirements.

22. Based on the above findings, the proposed programmatic proposal to remove and replace pilings over five years is consistent with the policies of the *Tacoma Master Shoreline Program.* The proposal, as described by the applicant, is not likely to cause substantial adverse impacts to the shoreline. Therefore, if properly conditioned, this project can be approved without the need for a Shoreline Substantial Development Permit.

Conditions

1. Replacement pilings shall be replaced on a one-to-one ratio with replacement pilings of the same or smaller diameter.

2. The applicant shall follow all proposed installation and construction methods and best management practices for minimizing unintended impacts during the repair and maintenance of the dock while installing and removing the piles. No construction materials or debris shall be allowed to enter the Waters of the State.

3. Construction material or debris shall be promptly removed and disposed of in an appropriate upland location.

4. All work must be completed within the approved in-water work window designated by the Washington State Department of Fish and Wildlife (WDFW).

5. The applicant shall notify the City of Tacoma and pertinent state or federal agencies should an unexpected spill of fuel or other chemical into the waterway.

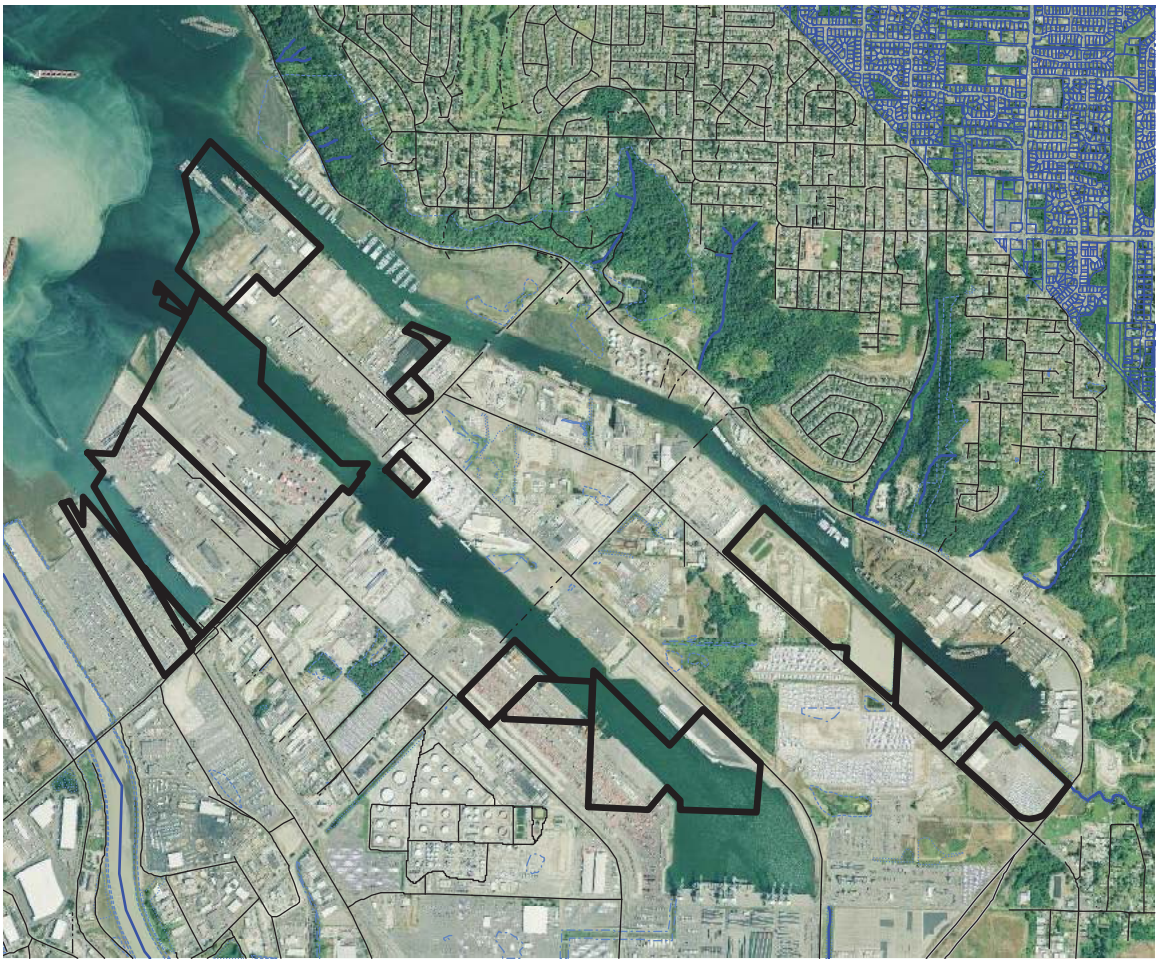
6. Prior to issuance of construction permits, a copy of all permits required by or approvals provided by Washington State Department of Fish and Wildlife (WDFW), Department of Ecology (DOE), and U.S. Army Corps of Engineers (USACE) shall be provided to the City.

7. This exemption shall be valid for a period not to exceed five years from the date of issuance. Should the Shoreline Master Program be revised prior to the completion of this project, additional review may be required.

Advisory Notes

1. This permit is only applicable to the proposed project as described above and based upon the information submitted by the applicant. Modifications to this proposal and future activities or development within the regulated buffers may be subject to further review and additional permits as required in accordance with the *TMSP*.

2. The applicant must obtain other approvals prior to construction as required by other local, state and federal agencies. The City of Tacoma is not the only reviewing agency with jurisdiction over the project area. The Army Corps of Engineers and State Department of Fish and Wildlife have requirements regarding work within regulated waters that may be applicable to the project.



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

August 29, 2012

Port of Tacoma
Attn: Mr. Mark Rettmann
PO Box 1837
Tacoma WA 98401-1837

RE: Water Quality Certification - Order #9244/Corps Public Notice # **NWS-2011-0089-WRD** – Programmatic Piling Repair Project

Dear Mr. Rettmann:

The above-referenced public notice for proposed work in waters of the state has been reviewed in accordance with all pertinent rules and regulations. On behalf of the State of Washington, we certify that the work proposed in the public notice complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, as amended, and other appropriate requirements of State law. This certification is subject to the conditions contained in the enclosed Order and may be appealed by following the procedures described in the Order.

Please note that this Order does not cover CERLCA coordination, which will be conducted as part of the Corps of Engineers 404 process, and may have additional monitoring or sampling requirements dependent on location and numbers of pilings being removed.

If you have any questions concerning the content of this letter, please contact Helen Pressley at (360) 407-6076.

Sincerely,

Brenden McFarland, Section Manager
Shorelands & Environmental Assistance Program
Headquarters Office - Ecology
State of Washington

by Certified Mail 7010 2780 0000 2503 4195

Enclosure
Attachment

cc: Olivia Romano, Corps
Chris Waldbillig, WDFW

ecc: Loree' Randall, Ecology
Helen Pressley, Ecology
Laura Inouye, Ecology
Alex Callender, Ecology
DMMP@dnr.wa.gov
ecyrefedpermits@ecy.wa.gov

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO PORT OF TACOMA in accordance with 33 U.S.C. 1341 (FWPCA § 401), RCW 90.48.120, RCW 90.48.260 and Chapter 173-201A WAC	)))))))	**ORDER #9244** **Corps Reference No. NWS-2011-0089-WRD** Programmatic maintenance, repair, and replacement of up to 200 pilings per year throughout the Port of Tacoma property in Tacoma, Pierce County, Washington

TO: Port of Tacoma
Attn: Mr. Mark Rettmann
PO Box 1837
Tacoma WA 98401-1837

On March 23, 2011 the Port of Tacoma submitted a Joint Aquatic Resources Permit Application (JARPA) to the Department of Ecology (Ecology) requesting a Section 401 Water Quality Certification. A joint public notice regarding the request was distributed by the Army Corps of Engineers (Corps) for the above-referenced project pursuant to the provisions of Chapter 173-225 WAC on February 3, 2012.

The proposed work will include maintenance activities at 11 wharf/pier structures over a five year period. Work includes the replacement of up to 200 piles per year (fender piles, dolphin piles, and/or support), and associated pile caps, chocks, whalers, and rub strips at structures located at AMP Terminals, Terminal 7, Olympic Container Terminal, Husky Terminal (Terminal 3 and 4), Blair Dock, Trident Piers 24 and 25, BRAC, Parcel 86, Parcel 99, Parcel 105, and Parcel 115.

Replacement piles would range from 18-inch diameter to 24-inch diameter and include ACZA-treated wood and concrete piles. Piles would be extracted with a vibratory hammer or by pulling with a choke chain. Piles that break during extraction would be cut off 3-feet below the mudline and the location would be capped with clean sand. Up to 120 cubic yards of clean sand may be placed per year. New piles would be installed with a vibratory hammer. However, some piles may be proofed with an impact hammer and in some instances may be entirely installed with an impact hammer. Up to 1,000 piles could be replaced and up to 600 cubic yards of sand could be placed over the five year period. Work will be done in Hylebos, Blair, and Sitcum Waterways, and Commencement Bay, in Tacoma, Pierce County, Washington.

AUTHORITIES:

In exercising authority under 33 U.S.C. § 1341, RCW 90.48.120, and RCW 90.48.260, Ecology has examined this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. §1311, 1312, 1313, 1316, and 1317 (FWPCA § 301, 302, 303, 306 and 307);

2. Conformance with the state water quality standards contained in Chapter 173-201A WAC and authorized by 33 U.S.C. §1313 and by Chapter 90.48 RCW, and with other applicable state laws; and

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

WATER QUALITY CERTIFICATION CONDITIONS:

Through issuance of this Order, Ecology certifies that it has reasonable assurance that the activity as proposed and conditioned will be conducted in a manner that will meet the applicable water quality standards and other appropriate requirements of state law. In view of the foregoing and in accordance with 33 U.S.C. § 1341, RCW 90.48.120, RCW 90.48.260, Chapter 173-200 WAC and Chapter 173-201A WAC, water quality certification is granted to the Applicant subject to the conditions within this Order.

Certification of this proposal does not authorize the Applicant to exceed applicable state water quality standards (Chapter 173-201A WAC), ground water standards (Chapter 173-200 WAC) or sediment quality standards (Chapter 173-204 WAC). Furthermore, nothing in this certification shall absolve the Applicant from liability for contamination and any subsequent cleanup of surface waters, ground waters or sediments occurring as a result of project construction or operations.

A. General Conditions:

1. For purposes of this Order, the term "Applicant" shall mean the Port of Tacoma and its agents, assignees and contractors.

2. For purposes of this Order, all submittals required by its conditions shall be sent to Ecology's Headquarters Office, Attn: 401/CZM Federal permit coordinator, P.O. Box 47600 Olympia, WA 98504-7600 and/or hpre461@ecy.wa.gov. Any submittals shall reference Order #9244 and Corps Reference # NWS-2011-0089-WRD.

3. Work authorized by this Order is limited to the work described in the Joint Aquatic Resources Permit Application (JARPA) received by Ecology on March 23, 2011. The Applicant will be out of compliance with this Order and must submit an updated JARPA if the information contained in the JARPA is voided by subsequent changes to the project not authorized by this Order.

4. Within 30 days of receipt of an updated JARPA, Ecology will determine if the revised project requires a new water quality certification and public notice or if a modification to this Order is required.

5. This Order shall be rescinded if the U.S. Army Corps of Engineers does not issue an individual 404 and/or Section 10 permit for the project.

6. Copies of this Order shall be kept on the job site and readily available for reference by Ecology personnel, the construction superintendent, construction managers and lead workers, and state and local government inspectors.

7. The Applicant shall provide access to the project site upon request by Ecology personnel for site inspections, monitoring, necessary data collection, and/or to ensure that conditions of this Order are being met.

8. Nothing in this Order waives Ecology's authority to issue additional orders if Ecology determines that further actions are necessary to implement the water quality laws of the state. Furthermore, Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if additional impacts due to project construction or operation are identified or if additional conditions are necessary to further protect water quality.

9. The Applicant shall ensure that all appropriate project engineers and contractors at the project site have read and understand relevant conditions of this Order and all permits, approvals, and documents referenced in this Order. The Applicant shall provide Ecology a signed statement (see Attachment A for an example) from each project engineer and contractor that they have read and understand the conditions of this Order and the above-referenced permits, plans, documents and approvals. These statements shall be provided to Ecology before construction begins at the project.

10. This Order does not authorize direct, indirect, permanent, or temporary impacts to waters of the state or related aquatic resources, except as specifically provided for in conditions of this Order.

11. Failure of any person or entity to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce its terms.

B. Water Quality Conditions:

1. This order does not authorize temporary exceedances of water quality standards beyond the limits established in WAC 173-201A-210(1)(e)(i).

    - The area of mixing established for marine waters is a 150 foot radius surrounding the in-water activity. Turbidity occurring outside that zone that is more than 5 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less, or a 10% increase in turbidity when the background turbidity is more than 50 NTU is a violation of the turbidity water quality standard.

C. Water Quality Monitoring:

1. Turbidity shall be monitored visually in all areas, except those in or adjacent to CERCLA clean-up areas (condition C.2. of this certificate). Visible turbidity anywhere at or beyond the 150 ft point of compliance from the activity shall be considered to be an exceedance of the standard. Visual monitoring shall be conducted during all in-water activities.

2. Turbidity monitoring within CERCLA clean-up areas shall be conducted in accordance to an approved water quality monitoring plan. The Applicant shall submit a water quality monitoring plan (see condition A2) at least 30 days prior to in-water activities. The water quality monitoring plans shall be approved by Ecology prior to start of any in-water work. These areas include:
    a) Area 4, which is adjacent to the Slip 4 CERCLA cleanup.
    b) Area 7 which includes piling removals in Parcel 99-Arkema Chemicals, a completed CERCLA cleanup.
    c) Area 8 which is adjacent to the Trident Piers 24/25 CERCLA cleanup.
    d) Area 10 which is adjacent to the BRAC Navy CERCLA cleanup.

3. Turbidity monitoring reports shall be sent weekly to the 401/CZM Federal permit coordinator at the address or e-mail in A2. The permit coordinator shall be contacted within 24 hours if an exceedance occurs.

D. Piling Replacement and Repair:

1. All work shall be done so as to minimize turbidity, erosion, and other water quality impacts.

2. During pile removal and pile driving, a containment boom shall be placed around the perimeter of the work area to capture wood debris and other materials released into the water as a result of project activities. All accumulated debris shall be collected and disposed of upland at an approved disposal site. Absorbent pads shall be deployed should any sheen be observed.

3. The Applicant shall use tarps or other containment methods when cutting, drilling, or construction over-water to prevent debris, sawdust, concrete rubble, and other materials from entering the water.

4. Machinery and equipment used during piling removal and replacement shall be serviced, fueled, and maintained on uplands wherever possible in order to prevent contamination of surface water. Where practicable, machinery and equipment used during project activities shall use biodegradable hydraulic fluid.

5. Where possible, work shall be prioritized by the severity of the problem so that water quality can be protected.

6. The work surface on the uplands or barge shall include a containment basin for piles and any liquid or sediment removed during pulling of the piling. Basins may be constructed of durable plastic sheeting with sidewalls supported by hay bales or support structure to contain all sediment and liquid. Water left in the basins shall not be discharged into waters of the state.

7. Piles removed from substrate shall be moved immediately from the water onto the upland or barge. The pile shall not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile. All excavated piles shall be disposed of at an approved upland disposal site.

8. The Applicant shall deploy a bubble curtain or other BMP(s) to protect marine life while placing or proofing new piling.

9. During dredging, the Applicant shall have a boat available on site at all times to retrieve debris from the water.

E. Timing Requirements:

1. All in-water work shall be completed by the work window identified in the most current HPA issued for this project. Any project change that requires a new or revised HPA should also be sent to Ecology for review.

2. This Order shall remain in effect for a period of 5 years from date of issuance.

F. Notification Requirements:

1. The Applicant shall provide notice to Ecology's 401/CZM Federal permit coordinator at least 7 days prior to the start of maintenance, repairs, or installation of new tide gates and within 14 days after completion of work at the last project site every year this permit is in force. Notification should be made using all the information required in Condition A2.
2. The Applicant shall provide to Ecology a yearly report by January 31 of the following year. This report shall include details of the outfalls worked on in the previous year including photos, details of any problems and how they were solved, and a list of the outfalls planned to be cleaned in the next calendar year.

G. Emergency/Contingency Measures:

1. The Applicant shall develop a spill prevention and containment plan for this project, and shall have spill cleanup materials and an emergency call list available on site.

2. Any work that is out of compliance with the provisions of this Order, or conditions causing distressed or dying fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the Applicant or operator shall immediately take the following actions:
    a. Cease operations that are causing the compliance problem.
    b. Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.
    c. In the event of finding distressed or dying fish, the applicant shall collect fish specimens and water samples in the affected area within the first hour of the event. These samples shall be held in refrigeration or on ice until the applicant is instructed by Ecology on what to do with them. Ecology may require analyses of these samples before allowing the work to resume.
    d. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.
    e. Immediately notify Ecology's 24-Hour Spill Response Team at 1-800-258-5990, **and** within 24 hours of spills or other events Ecology's 401/CZM Federal permit coordinator at (360) 407-6076.
    f. Submit a detailed written report to Ecology within five (5) days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.
3. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters, including wetlands.
4. If at any time during work the proponent finds buried chemical containers, such as drums, or any unusual conditions indicating disposal of chemicals, the proponent shall immediately notify Ecology using the above phone numbers.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do all of the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 1111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

DATED August 29, 2012 at Olympia, Washington.

Brenden McFarland, Section Manager
Shorelands & Environmental Assistance Program
Headquarters Office – Ecology
State of Washington

ATTACHMENT A

Port of Tacoma
Programmatic Stormwater Outfall Repairs
Water Quality Certification Order #9244

Statement of Understanding of
Water Quality Certification Conditions

I have read and understand the conditions of Order #9244 Section 401 Water Quality certification for programmatic stormwater outfall repairs. I have also read and understand all permits, plans, documents, and approvals associated with the project referenced in this order.

_____ _____
Signature Date

_____
Print Name

_____
Company

_____
Title

FILE COPY

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

November 29 2012

Port of Tacoma
Mr. Mark Rettmann
PO Box 1837
Tacoma WA 98401-1837

RE: Water Quality Certification - Order #9244 First Amendment

Dear Mr. Rettmann:

On August 29, 2012 the Washington State Department of Ecology (Ecology) issued a water quality certification to the Port of Tacoma for the above-referenced project pursuant to the provisions of 33 U.S.C. 1341 (FWPCA § 401). Ecology received an e-mail dated November 1, 2012 requesting Ecology amend the water quality certification to clarify the language in two conditions in the water quality certification.

The attached amendment may be appealed by following the procedures described in this amendment. If you have any questions regarding the content of the amendment, please contact Helen Pressley at (360) 407-6076.

Sincerely,

Brenden McFarland, Section Manager
Environmental Review and Transportation Section
Shorelands and Environmental Assistance Program

by Certified Mail 7010 2780 0000 2503 4102

Enclosure

cc: David Kendall, Corps Seattle
Olivia Romano, Corps Seattle

ecc: Loree' Randall, Ecology
Helen Pressley, Ecology
Laura Inouye, Ecology
Alex Callender, Ecology
Marv Coleman, Ecology
ecyrefedpermits@ecy.wa.gov

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO: the Port of Tacoma in accordance with 33 U.S.C. 1341 (FWPCA § 401), RCW 90.48.120, RCW 90.48.260 and Chapter 173-201A WAC	))))))	**ORDER #9244, FIRST AMENDMENT Corps Reference No. NWS-2011-0089-WRD** Programmatic maintenance, repair and replacement of up to 200 pilings per year throughout the Port of Tacoma property in Tacoma, Pierce County, Washington

On August 29, 2012 the Washington State Department of Ecology (Ecology) issued a water quality certification to the Port of Tacoma for the above-referenced project pursuant to the provisions of 33 U.S.C. 1341 (FWPCA § 401).

Ecology received an e-mail November 1, 2012 requesting Ecology amend water quality certification Order No. 9244 to clarify the language in Conditions F1 and F2 of the water quality certification.

No other changes in the water quality certification are necessary.

Order No.9244 dated August 29, 2010 is hereby amended as follows:

Condition F.1. currently reads:

F.1. The Applicant shall provide notice to Ecology's 401/CZM Federal permit coordinator at least 7 days prior to the start of maintenance, repairs, or installation of new tide gates and within 14 days after completion of work at the last project site every year this permit is in force. Notification should be made using all the information required in Condition A2.

Condition F.1 is amended to read:

F.1. The Applicant shall provide notice to Ecology's 401/CZM Federal permit coordinator at least 7 days prior to the start of maintenance, repairs, or installation of piling and within 14 days after completion of work at the last project site every year this permit is in force. Notification should be made using all the information required in Condition A2.

Condition F.2. currently reads:

F.2. The Applicant shall provide to Ecology a yearly report by January 31 of the following year. This report shall include details of the outfalls worked on in the previous year including photos, details of any problems and how they were solved, and a list of the outfalls planned to be cleaned in the next calendar year.

Condition F.2. is amended to read:

F.2. The Applicant shall provide to Ecology a yearly report by January 31 of the following year. This report shall include details of the piling worked on in the previous year including photos, details of any problems and how they were solved, and a list of the piling planned to be maintained, repaired, or installed in the next calendar year.

YOUR RIGHT TO APPEAL

You have a right to appeal this Order to the Pollution Control Hearing Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of this Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

ADDRESS AND LOCATION INFORMATION

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel Rd SW STE 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

CONTACT INFORMATION

Please direct all questions about this Order to:

Helen Pressley
Department of Ecology
SEA Program
300 Desmond Dr.
Olympia WA 98504

360-407-6076
hpre461@ecy.wa.gov

MORE INFORMATION

- **Pollution Control Hearings Board Website**
  www.eho.wa.gov/Boards_PCHB.aspx
- **Chapter 43.21B RCW - Environmental Hearings Office – Pollution Control Hearings Board**
  http://apps.leg.wa.gov/RCW/default.aspx?cite=43.21B
- **Chapter 371-08 WAC – Practice And Procedure**
  http://apps.leg.wa.gov/WAC/default.aspx?cite=371-08
- **Chapter 34.05 RCW – Administrative Procedure Act**
  http://apps.leg.wa.gov/RCW/default.aspx?cite=34.05
- **Chapter 90.48 RCW – Water Pollution Control**
  http://apps.leg.wa.gov/RCW/default.aspx?cite=90.48
- **Chapter 173-201A WAC – Water Quality Standards for Surface Waters of the State of Washington**
  www.ecy.wa.gov/biblio/wac173201A.html

SIGNATURE

Dated November 29, 2012 at Olympia, Washington

Brenden McFarland, Section Manager
Shorelands and Environmental Assistance Program
Headquarters Office – Ecology
State of Washington

REFERENCE MATERIAL 3

Programmatic Biological Evaluation

Port of Tacoma – Pile Replacement Program
NWS-2011-89-WRD

Submitted to:

US Army Corps of Engineers
Seattle District
CENWS-OD-RG
PO BOX 3755
Seattle WA 98124-3755

On behalf of:

Applicant:
Port of Tacoma
PO Box 1837
Tacoma, Washington 98401-1837

November 2011 – Revised April 2012

Submitted by:

BergerABAM
1111 Main Street • Suite 300
Vancouver, Washington 98660
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Job No. VAVAN-12-024

PROGRAMMATIC BIOLOGICAL EVALUATION
PORT OF TACOMA – PILE REPLACEMENT PROGRAM

US ARMY CORPS OF ENGINEERS

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PROGRAMMATIC BIOLOGICAL EVALUATION
PORT OF TACOMA – PILE REPLACEMENT PROGRAM

US ARMY CORPS OF ENGINEERS
NWS-2011-89-WRD

NOVEMBER 2011 – REVISED APRIL 2012

1 PURPOSE OF BIOLOGICAL EVALUATION

The Port of Tacoma (Port) is proposing to conduct pile replacement activities (the proposed action) at 12 wharf/dock structures located on the Sitcum, Blair, and Hylebos waterways, and in the nearshore of Commencement Bay in Tacoma, Washington (Figures 1 and 2) (see Appendix A for all figures). The Port is proposing to replace up to 200 damaged or broken fender and/or structural piling annually as needed, along with associated pile caps, chocks, and whalers. The proposed action will require work below the ordinary high water mark (OHWM) of the Sitcum, Blair, and Hylebos waterways, which will require a Section 10 permit from the US Army Corps of Engineers (USACE). This represents a federal nexus requiring that the USACE evaluate the potential for effects to species or critical habitats listed or proposed for listing under the Endangered Species Act (ESA), and to Essential Fish Habitat (EFH).

The Port's wharf/dock facilities cumulatively have over 20,000 structural and fender pilings, up to 1% of which typically require replacement in any given year. In the past, the Port has permitted and prepared ESA consultation for each individual pile replacement activity. This process requires significant resources on the parts of the Port, the USACE, and the services who administer the ESA, National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS) (collectively, the Services). The Port, therefore, is requesting a multi-year permit from the USACE, and has prepared this Programmatic Biological Evaluation (PBE) to facilitate the ESA and EFH consultations.

The USACE will serve as the lead agency in this consultation. The purpose of this PBE is to examine the effects of the proposed program on ESA-listed species, designated and proposed critical habitats, and EFH for purposes of consultation with the Services under Section 7 of the ESA and the Magnuson-Stevens Act.

2 BACKGROUND/HISTORY

The Port prepared a Joint Aquatic Resources Permit Application (JARPA) in January 2011 requesting a multi-year permit for a proposed pile replacement program. The Port also submitted a *Programmatic ESA Consultation Specific Project Information Form* (SPIF) and a supplemental Effects Analysis memorandum for purposes of ESA and EFH consultation under the USACE's existing Phase I programmatic ESA consultation for piling replacement. The SPIF and Effects Analysis documented that the proposed program did not meet all of the requirements of the programmatic consultation, and as such were submitted as a reference BE (NMFS reference #2005/07506; USFWS reference #13410-2009-I-0421).

The USACE responded in a Memorandum for the Record (MFR), dated May 10, 2011, stating that, in order to implement a programmatic consultation, the USACE typically requires the preparation of a PBE. The MFR recommended a teleconference between the Port, USACE, and the Services, to discuss the details of the Port's proposed pile replacement program and to define the requirements of a programmatic ESA/EFH consultation.

The Port held a teleconference on August 19, 2011. In attendance were Robert Brenner (Port), Dan Gunderson (BergerABAM), Brian Carrico (BergerABAM), Maryann Baird (USACE), Olivia Romano (USACE), and Shandra O'Haleck (NMFS/USFWS). During the discussion, it was agreed that the Port would pursue a multi-year USACE permit and a programmatic ESA/EFH consultation. It was further agreed by all parties that the USACE and the Services would not require pre-project approval for each activity, but would instead require post-project reporting in the form of an annual submittal of a Compliance Form (included as Appendix B of this document).

The Corps provided comments on the Draft PBE in a second MFR (dated October 18, 2010 but provided via email on November 3, 2011). BergerABAM, on behalf of the Port, prepared a revised PBE to address the comments provided in the MFR in January 2012.

Teresa Mongillo (NMFS) provided comments via email (dated February 9, 2012) requesting additional clarification regarding certain components of the proposed marine mammal monitoring plan. The Port held a meeting to discuss the comments on February 27, 2012. In attendance were Tony Warfield (Port), Mark Rettmann (Port), Dan Gunderson, Shandra O'Haleck, and Teresa Mongillo. The Port has prepared this revised PBE and marine mammal monitoring plan consistent with the outcome of the meeting and subsequent telephone and email correspondence.

3 PROPOSED ACTION AND ACTION AREA

The proposed action will consist of the replacement of no more than 200 piling per year at 12 Port wharf/dock facilities (Figures 3 to 9). Load bearing and fender piling are under considerable structural stress, and are frequently damaged by natural and human-caused interactions such as marine borers and the impact of ships against pile faces. If damaged piling are not replaced, docks and pier structures can degrade quickly to the point where they are no longer functional, or they become dangers to human health and safety.

The proposed action will be conducted as needed to maintain the function and structural integrity of the docks and marginal wharves within the Port's Industrial Development district. The numbers and specific locations of piles to be replaced will depend on the number assessed as damaged each year. The Port estimates that no more than 200 pilings would need to be replaced in any given year. This represents approximately 1% of the total number of piling in place at the 12 facilities. The actual number of piles requiring replacement in any given year is typically much less than 200.

A detailed description of the proposed action follows in section 3.1.

3.1 Description of Project Activities

3.1.1 Overview

Eleven of the 12 facilities where pile replacement will be conducted are located within the Sitcum, Blair, and Hylebos waterways, which are busy industrial shipping channels adjacent to Commencement Bay in the City of Tacoma, Washington (Figures 1 and 2). One additional site, the Trident facility, is located within the waters of Commencement Bay at the mouth of the Hylebos Waterway. These waterbodies are located within the Puyallup River Basin (Water Resource Inventory Area [WRIA] 10; Hydrologic Unit Code [HUC] 17110014).

The piles being replaced include a combination of load-bearing structural piles and fender piles. Most of the piles are wood treated with creosote or ammoniacal copper zinc arsenate (ACZA), but some are concrete. Both types of wood piling will be replaced with ACZA-treated wooden piling of a similar size and diameter. No creosote-treated timber piling will be installed. Concrete piling will be replaced with concrete piling of a similar size and diameter. The largest timber piling will be 18 inches in diameter. The largest concrete piling to be replaced will be 24 inches in diameter. Most of the piling to be replaced are less than 18 inches in diameter, and it is estimated that no more than 4 concrete piling with diameters 18 inches or greater will be replaced in a single year.

Pilings will be removed with a vibratory hammer or by pulling with a choke chain. Piling that break during extraction will be cut off 3 feet below the mudline and capped with clean sand. Most new pilings will be installed with a vibratory hammer. However, some new pilings may need to be proofed with an impact hammer and, in some instances, it may be necessary to use an impact hammer for the entire installation.

Once the pile has been removed and the new pile installed, the overwater portions of the work will be completed. Chocks and whalers will be repaired as necessary to restore the fendering systems to their design capabilities. Pile caps, where present, will be repaired or replaced as necessary. Fender pilings will have a rub strip of either ultra-high molecular weight (UHMW) or high-density polyethylene (HDPE) plastic lag-screwed to their outer faces to prevent frictional loss of treated wood during berthing operations. All of these activities will typically occur above the OHWM of the waterways. Figure 10 shows a typical cross-section, and includes a detail of the rub strip installation.

3.1.2 Duration of Pile Driving Activities

The proposed action will be conducted during the Washington Department of Fish and Wildlife (WDFW)-approved in-water work window (July 16–February 14) for waters of Commencement Bay in each year between July 16, 2012 and February 14, 2017. Work will typically be conducted during standard daylight working hours, roughly 8 to 10 hours a day. It is estimated that up to approximately 8 to 9 piles could be installed per day, which equates to approximately 25–30 total days of pile driving per year.

3.1.3 Annual Reporting

The proposed action will be conducted as needed. Rather than providing pre-project notification to the USACE and the Services, the Port will instead provide annual post-project reporting via completion of the Compliance Form included as Appendix B. The form will be submitted by March 15 of each year, and will include, at minimum, the following information: 1) the number of piles replaced in each waterway, and 2) the linear feet in which piles were replaced in each waterway. To arrive at the linear feet of pile replacement, the furthest linear distance between two piles replaced at each facility where piles were replaced will be calculated.

3.2 Conservation Measures

The project will implement the following list of conservation measures to reduce, eliminate, or minimize the effects of the proposed action to listed species or habitat.

- Pile removal and installation will be conducted during the WDFW-approved in-water work window for Commencement Bay (July 16–February 14 of each year).
- Upon advance notice, the Port will provide access to the work site to representatives from the USACE, the Services, Washington Department of Ecology (Ecology), and WDFW during all hours when the proposed action is being conducted.
- No new access roads, routes, or trails will be constructed as part of the proposed action.
- No stockpiling or staging of materials will occur below the mean higher high water mark (MHHW) of any waterbody.
- All areas for fuel storage and refueling and servicing of construction equipment and vehicles will be located 150 feet from open water or wetlands, with the exception of refueling of barge derricks, which may need to be refueled and serviced while in the water.
- Work performed in or within 25 feet of an existing or previously designated Superfund site, or Washington State Model Toxics Control Act (MTCA) site, will follow BMPs established by the US Environmental Protection Agency (EPA) during CERCLA coordination or Ecology during MTCA.
- No piles will be associated with log raft booms.
- Sheet piling will not be used in lieu of pole piling.
- The Port will report annually to the USACE and the Services with a Compliance Form (Appendix B) that includes the following information: 1) the number of piles replaced in each waterway, and 2) the linear feet in which piles were replaced in each waterway.
- Holes left when removing piling will be capped with clean sand. Any sand used as fill material will be washed and cleaned prior to being brought to the site, and will be obtained from a commercial source that is operating within compliance with the ESA.
- No solvents or other chemicals will be used in or over the water during the construction or operation of the proposed action.
- Only ACZA-treated wood will be used and treatment will comply with the Western Wood Preservers Institute BMPs.

- During removal of creosote-treated piles, containment booms and absorbent sausage booms (or other oil-absorbent fabric) will be placed around the perimeter of the work area to capture wood debris, oil, and other materials released into marine waters. All accumulated debris will be collected daily and disposed of at an approved upland site.
- Removed creosote-treated piles will be disposed of in a manner that precludes their further use. Piles will be cut into manageable lengths (4 feet or less) for transport and disposal in an approved upland location that meets the liner and leachate standards contained in the Washington Administrative Code (WAC), Chapter 173-304, Minimum Functional Standards, and that complies with the ESA. No reuse of treated wood will occur.
- All treated wood will be contained during and after removal to preclude sediments and any contaminated materials from entering the aquatic environment.
- All ACZA-treated timber fender piling will be fitted with an approved rub strip(s) in a manner that prevents direct contact with vessels, vessel bumpers, and piling. The rub strips will be composed of UHMW or HDPE plastic.
- All equipment that will operate over water or below MHHW will be cleaned of accumulated grease, oil, or mud. All leaks will be repaired prior to arriving on site. Equipment will be inspected daily for leaks, accumulations of grease, etc., and any identified problems will be fixed before operating over water or below the MHHW.
- Piles will not be placed in or adjacent to vegetated shallows, wetlands, special aquatic sites, or within sites designated by WDFW as documented or suitable forage fish spawning (WDFW 2010).
- At least two oil-absorbing floating booms, appropriate for the size of the work area, will be available on site whenever heavy equipment operates within 150 feet of open water and there is a potential for hazardous materials to enter surface waters. The booms will be stored in a location that facilitates their immediate deployment in the event of a spill.
- If a barge is used, it will not ground out or rest on the substrate, or be over or within 25 feet of vegetated shallows (except where such vegetation is limited to State-designated noxious weeds).
- The bottom of any structure, vessel, watercraft grid, or watercraft lift will be at least 1 foot above the level of the substrate during all water levels.
- Hydraulic water jets will not be used to remove or place piles.
- Piles will be replaced in the same general location and will not extend beyond the footprint of the existing structure.
- Fueling and servicing of all equipment, with the exception of barge derricks, will be confined to an established staging area that is at least 150 feet from open water or wetlands. Barge derricks will be fueled and serviced while they float. Spill containment systems will be adequate to contain all fuel leaks.
- Equipment and vehicles will be stored in established staging areas when not in use (excluding cranes, which cannot be easily moved).
- A written spill prevention, control and countermeasures (SPCC) plan will be prepared for activities that include the use of heavy equipment. The plan will describe measures to

prevent or reduce impacts from accidental leaks or spills, and will describe all hazardous materials that will be used, their proper storage and handling, and the methods that will be used to monitor their use. A spill kit will be available on site during construction and stored in a location that facilitates immediate deployment if needed.

- Uncured concrete will not be allowed to come into contact with surface water.
- During pile removal or installation conducted between October 1 and February 14, a marine mammal monitoring plan will be implemented to avoid impacts to ESA-listed marine mammals. The areas in which monitoring is proposed is site-dependent, and is also dependent on the type of activity being conducted (vibratory removal or installation or impact installation). Some sites will not require monitoring. A detailed marine mammal monitoring plan is included as Appendix C.
- No piling will be installed in or within 25 feet of any eelgrass beds and barges will not anchor over any eelgrass beds.
- Existing piles will either be 1) fully extracted or 2) cut 3 feet below the mudline. If piles cannot be fully extracted or cut below the mudline, they may be cut at or near the mudline and then driven to a depth of 3 feet below the mudline.
- Replacement piles will be wood piles no greater than 18 inches in diameter and concrete piles no greater than 24 inches in diameter.
- No installation or removal of sheet piling will occur.
- Pile removal and installation will be conducted during daylight hours.

3.3 Action Area

This section describes the action area for the proposed action. The action area is the defined geographic area that could be affected by the direct and indirect effects of the proposed action. The action area (Figure 11) has been established based on:

- The project footprint, which is limited to the immediate footprint where the proposed action will be conducted.
- The extent of temporarily elevated underwater noise levels associated with pile removal and installation.
- The extent of temporarily elevated terrestrial noise levels associated with pile removal and installation.
- The extent of temporarily increased levels of sedimentation and turbidity associated with pile removal and installation.

3.3.1 Project Footprint

The project footprint portion of the action area consists of the physical locations of the piles that may need to be replaced under the proposed action at 12 Port wharf/dock locations, as shown in Figure 2 and as described in section 3.1 above.

The proposed action will replace piles within the footprint of the piles that are removed and, as such, will not result in any additional impacts to benthic habitat. For this reason, direct impacts to benthic habitat associated with the proposed action are considered insignificant.

Nevertheless, the action area includes the physical footprints of the 12 wharf/dock facilities, as shown on Figure 11.

3.3.2 Underwater Noise

The proposed action will result in temporarily elevated underwater noise levels. The zone of influence for underwater noise has been determined using the practical spreading loss model described in the Washington State Department of Transportation (WSDOT) Training Manual (WSDOT 2011), which assumes a 4.5-dB reduction per doubling of distance. WSDOT reports records of ambient levels within 1 km of ferry terminals or other anthropomorphic activity to be approximately 135 dB_{RMS}, while average ambient noises collected at distances greater than 1km are approximately 120 dB_{RMS}. Shipping traffic within the Sitcum, Blair, and Hylebos waterways and nearshore areas of Commencement Bay likely produce levels of ambient noise of 135 dB_{RMS} or greater. However, portions of Commencement Bay and adjacent Puget Sound are further than 1km from shore and may have background ambient noise levels closer to 120 dB_{RMS}. In the absence of site specific data, for purposes of this analysis within this document, the background noise level has been assumed to be 120 dB_{RMS} on average.

While most pile removal and installation will be conducted with a vibratory hammer, some piles may need to be proofed with an impact hammer, and, in some cases, it may be necessary to drive a pile for some or all of its entire length with an impact hammer.

There is little data available regarding underwater noise levels associated with vibratory removal or installation of 12- to 18-inch timber piles, or of 12-24-inch concrete piles. A review of existing literature including CALTRANS' Compendium of Pile Driving Data (Reyff 2007), and project specific data published by WSDOT (Laughlin 2007, 2010, 2011) indicate that 160 dB_{RMS} is an appropriate worst case estimate of the maximum sound levels likely to be produced during vibratory removal or installation of timber or concrete piles, for the following reasons:

- In 2010 WSDOT collected hydroacoustic data during vibratory pile removal at its Port Townsend Ferry Terminal (Laughlin 2011). The results of this monitoring indicated that average dBRMS values during vibratory pile removal ranged between 149 and 152, with an overall average of 152 dBRMS.

- WSDOT reports that, on average, vibratory noise levels are between 10 and 20 dB lower than those produced by impact pile driving (WSDOT 2011). Underwater noise from impact installation of 12-18" timber piles typically produces maximum underwater noise levels of 170 dBRMS. Impact installation of concrete piles have been shown to produce a range of underwater sound levels (see below), but for purposes of this consultation have been assumed to not exceed 176 dBRMS. If a 10-16 dB reduction is assumed, on average, the underwater noise would be expected to not exceed 160 dBRMS during vibratory removal or installation of timber or concrete piles.

- Concrete and timber piles produce much lower underwater sound pressures than similarly sized steel piles (Reyff 2007). CALTRANS' Compendium of Pile Driving Data (Reyff 2007), provides information regarding vibratory installation of: 12-inch steel pipe piles (150 dB_{RMS}), 12-inch steel pipe piles (155 dB_{RMS}), 24-inch AZ steel sheet pile (160 dB_{RMS}), and 36-inch steel pipe piles (170 dB_{RMS}). Given these sound pressure levels, it is safe to assume that the sound pressure levels associated with vibratory removal and/or installation of 12-18" timber piles or 12-24-inch concrete piles would not exceed 160 dB_{RMS} on average.

Impact proofing and/or installation of 12- to 18-inch timber and 12- to 24-inch concrete piles would have the potential to create the highest levels of temporarily elevated underwater noise. Data published by WSDOT (WSDOT 2011) indicate that impact installation of timber piles, irrespective of diameter, has been measured as producing underwater noise levels as high as 180 dB_{Peak}, 170 dB_{RMS}, and 160 dB_{SEL} (WSDOT 2011). This same data indicates that impact installation of concrete piles, irrespective of diameter, typically produces single strike sound pressure levels of 192 dB_{Peak}, 176 dB_{RMS}, and 174 dB_{SEL} (WSDOT 2011). WSDOT has published project specific data documenting significantly lower decibel levels (184 dB_{Peak}, 170 dB_{RMS}, and 159dB_{SEL}) during impact driving of 24-inch concrete piles. However, for purposes of making a conservative estimate of the extent of underwater noise produced, the higher decibel levels have been used to determine the extent of underwater noise.

The following equation shows how the practical spreading loss model was used to calculate the distance that will be required to attenuate project-related underwater noise to the baseline decibel level of 120 dB_{RMS} for purposes of establishing the action area.

$TL = 15*\text{Log}\ (R_1/R_2)$

TL = amount of spreading loss (known noise level – ambient noise level)

R_1 = distance where noise attenuates

R_2 = range of known noise level (10 meters in this case)

The practical spreading loss model equation, solved for R_1, calculates the distance at which project noise would attenuate to background conditions:

$R_1 = (10^{(TL/15)})(R_2) = (10^{(192\text{-}120/15)})(10) = 631{,}000$ m.

The results of the practical spreading underwater noise attenuation model indicate that underwater noise would theoretically attenuate to background levels at approximately 631,000 meters, or roughly 392 miles. This is a theoretical scenario and the model is not likely accurate at this level. In-water noise from pile driving activities at Trident Piers 24 and 25 could travel a maximum of approximately 11 miles before intersecting a landmass. The existing network of bulkheads and nearshore structures within the waterway portions of the action area also serve to attenuate noise within that portion of the action area.

For the purpose of this consultation, and consistent with the principles of noise attenuation, the extent of potentially detectable temporarily elevated underwater noise has been estimated to extend throughout the water columns of the Sitcum, Blair, and Hylebos waterways, and the waters of Commencement Bay and adjacent waters of Puget Sound in straight line distances from the proposed pile driving activities to the point of intersection with the nearest land mass. The zones of influence are shown graphically on Figure 11.

3.3.3 Terrestrial Noise

Baseline and construction-related noise levels were inferred using a technique recommended in the WSDOT training manual (WSDOT 2010). That guidance includes information regarding noise levels associated with construction procedures from the City of Boston's noise assessment methodology (Thalheimer 2000) and noise attenuation data from the Federal Transit Administration's (FTA) construction noise methodology (FTA 2006).

The loudest piece of equipment anticipated to be needed for the proposed action would be an impact pile driver, which can produce peak terrestrial noise levels of approximately 110 dBpeak (WSDOT 2010). Vibratory pile drivers produce terrestrial noise levels of approximately 101 dBpeak (WSDOT 2010).

While no specific terrestrial noise data exists within the action area, for purposes of this terrestrial noise attenuation analysis, baseline noise levels have been assumed to be at least 78 dBA measured at 50 feet. This estimate is based on data from Cavanaugh and Tocci (Cavanaugh and Tocci 1998) as cited by WSDOT (WSDOT 2011), that indicates that background sound levels in high density urban areas is approximately 78 dBA, while background sounds in urban areas adjacent to freeway traffic can be as high as 88 dBA. Because of the high level of shipping and industrial traffic in and surrounding inner Commencement Bay and the Sitcum, Blair, and Hylebos waterways, and because of the proximity of the action area to I-5 and I-705, baseline noise levels have been assumed to be at least 78 dBA measured at 50 feet, and may in fact be much higher. Hard site conditions were assumed for noise attenuation purposes because the surrounding landscape is largely open water or hardscape.

Table 1 shows the attenuation of terrestrial noise from impact pile installation to the baseline decibel level of 78 dBA.

Table 1. Project-Related Terrestrial Noise Attenuation

Distance from Source (ft)	Construction Noise (Point Source, Hard Site) (-6.0 Db reduction per doubling of distance)
50	110
100	104
200	98
400	92
800	86
1600	80
3200	74

Based on the calculated noise attenuation distances shown in Table 1, the terrestrial noise from vibratory and impact pile installation will attenuate to the background noise level of 78 dBA at a distance between 1,600 and 3,200 feet from the location of the pile-driving activity. For purposes of establishing the action area for the proposed action, the more conservative 3,200-foot radius has been established as the limit of detectable terrestrial noise from construction activity. The zones of influence for terrestrial noise are shown graphically on Figure 11.

3.3.4 Sedimentation/Turbidity

The proposed pile installation activities have the potential to elevate levels of sedimentation and turbidity temporarily. The zone of influence associated with temporarily elevated levels of sedimentation and turbidity has been determined based on the turbidity mixing zone standard for marine waters authorized by Ecology and defined in WAC 173-201A-210. For projects working within or along lakes, ponds, wetlands, estuaries, marine waters or other nonflowing waters, the point of compliance is at a radius of 150 feet from the activity causing the turbidity exceedance.

4 STATUS OF SPECIES AND CRITICAL HABITAT

This section discusses the ESA-listed species and critical habitat known to occur, or with the potential to occur, within the action area, which includes Commencement Bay and adjacent waters of Puget Sound, as well as portions of the Sitcum, Blair, and Hylebos waterways (see Appendix D for species lists).

Information for this PBE regarding listed species was obtained from the USFWS web site (USFWS 2011) and the NMFS web site (NMFS 2011) on September 9, 2011. Additional information came from the Natural Heritage Program (NHP) of the Washington Department of Natural Resources (DNR) (WNHP 2011) and WDFW Priority Habitat and Species (PHS) maps (WDFW 2010). Table 2 identifies the species listed under the ESA that are addressed within this PBE.

Table 2. Species Listed under the ESA Addressed in this PBE

Species Name			ESA Listing Status	Critical Habitat
Common Name	**Scientific Name**	**ESU or DPS***		
Chinook Salmon	*(Oncorhynchus tshawytscha)*	Puget Sound ESU	Threatened	Designated
Steelhead	*(Oncorhynchus mykiss)*	Puget Sound DPS	Threatened	Not Designated or Proposed[1]
Bull Trout	*(Salvelinus confluentus)*	Puget Sound DPS	Threatened	Designated
Steller Sea Lion	*(Eumatopius jubatus)*	Eastern DPS	Threatened	Designated
Southern Resident Orca	*(Orcinus Orca)*	Southern Resident DPS	Endangered	Designated
Humpback Whale	*(Megaptera novaeangliae)*	N/A	Endangered	Not Designated Or Proposed
Marbled murrelet	*(Brachyramphus marmoratus)*	N/A	Threatened	Designated
Boccaccio	*(Sebastes paucispinis)*	Puget Sound/ Georgia Basin DPS	Endangered	Not designated or proposed
Yelloweye Rockfish	*(Sebastes ruberrimus)*	Puget Sound/ Georgia Basin DPS	Threatened	Not designated or proposed
Canary Rockfish	*(Sebastes pinniger)*	Puget Sound/ Georgia Basin DPS	Threatened	Not designated or proposed
Pacific Eulachon	*(Thaleichthys pacificus)*	Southern DPS	Threatened	Proposed

*ESU =Evolutionarily Significant Unit; DPS=Distinct Population Segment

According to the USFWS species list, although the species listed in Table 3, and/or their designated critical habitat, do occur, or may occur, within Pierce County, they are not addressed in this PBE for the reasons that are discussed following the table.

Table 3. Species Listed but Not Addressed in this PBE

Species Name		ESA Listing Status
Common Name	**Scientific Name**	
Canada Lynx	*(Lynx canadensis)*	Threatened
Gray Wolf	*(Canis lupus)*	Endangered
Grizzly Bear	*(Ursus arctos)*	Threatened
Northern Spotted Owl	*(Strix occidentalis caurina)*	Threatened
Marsh Sandwort	*(Arenaria paludicola)*	Endangered
Golden Paintbrush	*(Castilleja levisecta)*	Endangered
Water Howellia	*(Howellia aquatilis)*	Endangered

While information from USFWS (USFWS 2011) identified the potential for Canada lynx, gray wolf, grizzly bear, northern spotted owl, marsh sandwort, golden paintbrush, and water howellia to occur within the county, WDFW PHS maps indicate that there is no known occurrence of these species within the action area (WDFW 2010). Suitable habitat for these

[1] Critical habitat has been neither designated nor proposed for Puget Sound DPS steelhead. However, on January 10, 2011, NMFS published a proposal to propose critical habitat for Puget Sound DPS steelhead. If critical habitat is designated prior to project completion, the effects of this proposed action on the designated critical habitat would be evaluated at that time.

species does not exist within the action area or its vicinity—the project will occur within a heavily industrialized marine aquatic environment. The terrestrial portions of the action area are heavily developed with industrial and residential development, with little natural habitat left.

Based on the lack of suitable habitat for the species listed in Table 3, it is determined that the proposed project will have **no effect** on them and they are not addressed further.

5 BIOLOGICAL REQUIREMENTS

This section describes the biological requirements of the listed species that have the potential to occur within the action area. These descriptions include run timing, biological requirements, and factors affecting recovery.

5.1 Run Timing

Table 4 below shows the times of year that juvenile salmonids may be outmigrating within the action area. Table 5 shows the times of year of adult runs within the action area. Table 6 shows the times of year that listed non-salmonid species may be present within the action area.

Table 4. Timing of Juvenile Salmonid Downstream Migration within Action Area

Species and ESU/DPS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook - Puget Sound ESU												
Steelhead - Puget Sound DPS												
Bull Trout - Puget Sound DPS												

= WDFW Puget Sound in-water work window

= Potential presence of outmigrating juvenile salmonids

Table 5. Timing of Adult Salmonid Migration within Action Area

Species and ESU/DPS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chinook - Puget Sound ESU												
Steelhead - Puget Sound DPS												
Bull Trout - Puget Sound DPS												

= WDFW Puget Sound in-water work window

= Potential presence of migrating adult salmonids

Table 6. Timing of Potential Non-Salmonid Species Occurrence within Action Area

Species and ESU/DPS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Steller Sea Lion – Eastern DPS												
Orca – Southern Resident DPS												
Humpback Whale												
Marbled Murrelet												
Georgia Basin DPS Boccaccio												
Georgia Basin DPS Yelloweye Rockfish												
Georgia Basin DPS Canary Rockfish												
Southern DPS Pacific Eulachon												

= WDFW Puget Sound in-water work window

= Potential presence of non-salmonid species

5.2 Chinook Salmon (*Oncorhynchus tshawytscha*)

The Puget Sound ESU of Chinook salmon includes all naturally spawned populations of Chinook salmon from rivers and streams flowing into Puget Sound (70 FR52630). Puget Sound ESU Chinook salmon are listed as threatened by NMFS under the ESA. The proposed action is located in designated marine nearshore areas of the Sitcum, Blair, and Hylebos waterways as well as within the waters of Commencement Bay and adjacent waters of Puget Sound which represent suitable habitat for adult and outmigrating and rearing juveniles in this ESU.

5.2.1 Distribution & Habitat Requirements

Compared to the other Pacific salmon, Chinook salmon have the most complex life history with a large variety of patterns (SSPS 2007). The length of freshwater and saltwater residency varies greatly (Myers et al. 1998). Juvenile Chinook salmon may move out of the freshwater area from their river of birth within 1 to 10 days after emerging from the streambed gravel, and spend many months rearing in the estuary, or they may reside in freshwater for a full year, spending relatively little time in the estuary area before migrating to sea. The majority of Puget Sound ESU Chinook salmon leave the freshwater environment during their first year, making extensive use of protected estuary and nearshore habitats (SSPS 2007). Although some Puget Sound Chinook apparently spend their entire life within Puget Sound, most migrate to the ocean and north along the Canadian coast (SSPS 2007). After 3–5 years in the ocean, Puget Sound stocks return to the Puyallup River to spawn in the spring and fall. Spawning occurs in the mainstems of larger tributaries in coarse gravel and cobble (Myers *et al.* 1998).

5.2.2 Status

Spawning ground surveys and juvenile sampling efforts have found Chinook present in the Hylebos Waterway in low numbers (Kerwin 1999). The naturally spawning Chinook population in the Puyallup River is composed of unknown proportions of natural and hatchery origin fish. The proportion of adult hatchery fish that contribute to the natural spawning population has not been determined (Kerwin 1999). However, based on their proximity to the Puyallup River and Hylebos Creek, the Blair and Sitcum waterways may also contain ESA-listed Chinook salmon migrating through the area. Habitat degradation from stream blockages, channelization, contamination, forest practices, and urbanization is listed as the primary cause of decline.

5.2.3 Presence in Action Area

Chinook salmon have been documented in Hylebos Waterway and in Commencement Bay (WDFW 2011), but not in the Blair or Sitcum waterways. Puget Sound ESU Chinook salmon adults migrate through the action area between approximately June and November. None of the waterways (Sitcum, Blair, or Hylebos) that are within the action area provide suitable spawning habitat for Chinook salmon, as the project occurs within a marine environment.

Adult Chinook salmon, if present within the action area, would most likely be temporarily holding within the waters of Commencement Bay, or migrating to upstream spawning waters in the Puyallup River Basin. Adult Chinook salmon are not likely present within the Sitcum, Blair, or Hylebos waterways for any significant periods of time. Juvenile Chinook salmon would similarly not be expected to hold for long periods within the Sitcum, Blair, or Hylebos Waterways, but could potentially be rearing within the waters of Commencement Bay at any time of the year.

5.3 Steelhead (*Oncorhynchus mykiss*)

Puget Sound DPS steelhead are listed as threatened by NMFS under the ESA (May 11, 2007; 72 FR 26722). While critical habitat for steelhead in Puget Sound marine waters is currently under review, it has not been proposed nor designated at this time. The action area represents suitable habitat for migrating adults and outmigrating and rearing juveniles in this DPS.

5.3.1 Distribution & Habitat Requirements

Steelhead is a more widely distributed anadromous fish than salmonids. The life history pattern of steelhead can be very complex, involving repeated spawnings and reversals of freshwater to ocean phases (71 FR 15667). Steelhead use a variety of habitats throughout the freshwater portion of their life history (Busby et al 1996). As with all salmonid species, water temperatures and intra-gravel flow are also important for spawning and incubation. After fry emerge from the gravels, they seek complex habitat of boulders, rootwads, and woody material along the stream margins. As juveniles get older and larger, they move downstream to rear in larger tributaries and mainstem rivers. Undercut banks, large woody debris (LWD), and boulders are all utilized by larger juveniles (Busby et al. 1996).

Juvenile steelhead may stay in freshwater for up to 3 years before moving into the estuary and migrating out to sea. Once outmigration has begun, steelhead spend little time in estuaries prior to heading out to sea (Oregon Department of Fish and Wildlife [ODFW] 1998, King County

Department of Natural Resources [KCDNR] 2001, City of Seattle 2007). In estuaries, juvenile steelhead feed on small crustaceans, insects, aquatic worms, fish eggs, and small fish. In marine waters, juvenile and adult steelhead eat fish, crustaceans, squid, and insects (KCDNR 2001).

5.3.2 Status

Steelhead counts in the Puyallup River have declined steadily since the 1980s (Ford et al. 2010). Factors contributing to the decline of Puget Sound DPS steelhead in the action area include blocked access to historical habitat, habitat degradation, channelization, contamination, forest practices, and urbanization. Spawning ground surveys and juvenile sampling efforts have found steelhead present in the system in low numbers (Kerwin 1999).

5.3.3 Presence in Action Area

Puget Sound DPS steelhead have been documented within the Blair and Hylebos waterways, and could potentially occur in the Sitcum Waterway (WDFW 2011). Adult and juvenile steelhead most likely use the waterways in the action area as a migration corridor. The waters of Commencement Bay and adjacent waters of Puget Sound provide potentially suitable habitat for adult migration and also for juvenile rearing and outmigration.

Puget Sound DPS steelhead adults could be present at all times of the year and would be migrating through Commencement Bay to the Puyallup River, or within the Blair and Hylebos waterways to Hylebos and Wapato creeks. Outmigration of juveniles could be occurring between approximately the middle of March through the middle of July, and rearing juveniles could be present in Commencement Bay at any time of year.

5.4 Bull Trout (*Salvelinus confluentus*)

The Puget Sound DPS of bull trout includes all natural spawning populations of bull trout in the Puget Sound Basin, including in the streams that flow into Puget Sound. Puget Sound DPS bull trout are listed as threatened by the USFWS under the ESA. USFWS has also designated nearshore marine habitat within Puget Sound as critical habitat for Puget Sound bull trout (70 FR 56212-56311). Critical habitat extends along the entire Puget Sound nearshore from extreme high water to 33 feet depth relative to mean lower low water (MLLW). Critical habitat also includes tidally influenced freshwater areas at the heads of estuaries.

5.4.1 Distribution & Habitat Requirements

Once widely distributed throughout the Pacific Northwest, bull trout have been reduced to approximately 44 percent of their historical range (LCFRB 2004c). Compared to other salmonids, bull trout are thought to have more specific habitat requirements, and are most often associated with undisturbed habitat with diverse cover and structure. Spawning and rearing are thought to be primarily restricted to relatively pristine cold streams, often within headwater reaches (Rieman and McIntyre 1993). Adults can reside in lakes, reservoirs, and coastal areas or they can migrate to salt water (63 FR 31647). Juveniles are typically associated with shallow backwater or side-channel areas, while older individuals are often found in deeper pools sheltered by large organic debris, vegetation, or undercut banks (63 FR 31467). Water temperature is also a critical factor for bull trout, and areas where water temperature exceeds 59° F are thought to limit distribution (Rieman and McIntyre 1993).

5.4.2 Status

Key factors in the decline of bull trout populations include harvest by anglers, impacts to watershed biological integrity, and the isolation and fragmentation of populations. Changes in sediment delivery (particularly to spawning areas), degradation and scouring, shading (high water temperature), water quality, and low hydrologic cycles adversely affect bull trout. Therefore, impacted watersheds are negatively associated with current populations. Additionally, bull trout appear to be affected negatively by non-native trout species through competition and hybridization.

5.4.3 Presence in Action Area

Puget Sound DPS bull trout have more specific habitat requirements compared to other salmonids (Rieman and McIntyre 1993). Habitat components that appear to influence bull trout distribution and abundance include water temperature, cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors. Sparse suitable habitat and water quality issues related to development within the Sitcum, Blair, and Hylebos Waterways may deter the presence of bull trout in the immediate vicinity of the proposed pile replacement sites. The waters of Commencement Bay and adjacent waters of Puget Sound provide potentially suitable habitat for adult migration and also for juvenile rearing and outmigration.

Puget Sound DPS bull trout have been documented in both the Blair and Hylebos waterways, and they may be presumed to be present at least occasionally in the Sitcum waterway (WDFW 2010). These waterways provide only for migratory habitat for bull trout migrating to locations higher in the Puyallup River watershed. Most migratory bull trout leave freshwater and enter Puget Sound during late winter and spring, then return to freshwater during late spring and early summer (Goetz *et al.* 2004).

It is possible that migrating adult or subadult bull trout could potentially be migrating within the portions of the action area that are within the Sitcum, Blair, and Hylebos waterways between approximately mid-February and mid-July. Adult and/or rearing juvenile bull trout could be present within the waters of Commencement Bay or adjacent waters of Puget Sound at any time of the year.

5.5 Steller Sea Lion (*Eumatopius jubatus*)

The Steller sea lion is a pinniped and the largest of the eared seals. Steller sea lions are listed as threatened east of 144° W (Cape Suckling, Alaska), while the population west of this latitude is listed as endangered based largely on over-fishing of the seal's food supply. The increasing eastern population segment, in southeast Alaska, British Columbia, and down the West Coast into California, is listed as threatened under the ESA.

5.5.1 Distribution & Habitat Requirements

The range of the Steller sea lion includes the North Pacific Ocean rim from California to northern Japan. This sea lion is primarily a coastal and open-ocean species although it does occur in Commencement Bay. Compared with the California sea lion, Steller sea lions are thought to be less tolerant of human activity and prefer to feed offshore in deeper waters.

Habitat requirements include islands or isolated shoreline areas for breeding and undisturbed water for feeding.

5.5.2 Status

The western stock of Steller sea lions in Alaska was listed as endangered and the eastern stock in the continental US and Canada was listed as threatened in 1997. Declines in Steller sea lion populations are probably attributable to declines in fish populations due to increasing commercial fisheries in the Gulf of Alaska. Drowning, entanglement in nets, and shooting by fishermen are possible reasons for the decline. Steller sea lions are protected under the ESA and the Marine Mammal Protection Act (MMPA), which forbids the killing, harming, or harassing of any marine mammal.

5.5.3 Presence in the Action Area

Steller sea lions do not occur frequently in the inland waters of Washington, and occur only occasionally in the waters of Commencement Bay. No Steller sea lion rookeries or haulouts have been documented within the action area (Jeffries *et al.* 2000), and Commencement Bay is not a primary migratory corridor for Steller sea lions. If present, the species would be expected to be foraging opportunistically in the waters of Commencement Bay and adjacent waters of Puget Sound. Steller sea lions are not expected to be present in the busy industrial areas due to the high level of continuous disturbance. For the same reason, Steller sea lions are not expected to be present within the waters of the Sitcum, Blair, or Hylebos waterways.

5.6 Southern Resident Orca (*Orcinus Orca*)

Southern Resident orcas, first protected under the MMPA in 1972, were considered to be depleted under the MMPA in May 2003. Drastically reduced from 1965 through 1975 for reasons that may include the capture of the animals for marine parks, the Southern Resident orca was considered a DPS of the orca whale species in August 2004 and was proposed as threatened under the ESA in December 2004. In November 2005, the Southern Resident orca was listed as an endangered species under the ESA (National Oceanic and Atmospheric Administration [NOAA] 2005). The population of Southern Resident orca currently stands at 89 whales.

5.6.1 Distribution & Habitat Requirements

Southern Resident orcas occur in large, stable pods with memberships ranging from 10 to approximately 60 whales. Their primary prey is fish and their distribution is closely tied to the peak abundance of various species of salmon prey. The assemblage contains three distinct pods (J pod, K pod and L pod), and is considered a stock under the MMPA. Their range during the spring, summer, and fall includes the inland waterways of Puget Sound, the Strait of Juan de Fuca, and the Southern Georgia Strait. Little is known about the winter movements and range of the Southern Resident stock. Southern Resident orcas have not been seen to associate with other resident whales. Mitochondrial and nuclear genetic data suggest that Southern Residents interbreed with other orcas rarely, if at all (NOAA 2005).

5.6.2 Status

The Southern Resident population is more subject to anthropogenic influences than any other population. For example, levels of toxic chemicals in Southern Residents are three times higher than levels known to cause immunotoxicity in harbor seals (*Phoca vitulina*). Organochlorine concentrations are four times higher than reported for the Northern Resident population. It is also possible that the large and growing commercial and recreational whale watching industry on the West Coast may be having an impact, although specific impacts are unclear. The Southern Residents are also subject to significantly higher levels of vessel interactions because their summer range lies close to large urban areas (Seattle, Victoria, and Vancouver). Human interactions include live-capture fisheries, entanglement in fishing gear, collisions with vessels, and exposure to oil spills.

5.6.3 Presence in the Action Area

The *Southern Resident Killer Whale Sighting Compilation, 1990-2008* (Osborne 2008) has compiled data regarding the average number of orca sightings in Puget Sound per month over an 18 year period. The compilation divides Puget Sound into discrete "quadrats", and provides sighting data for each quadrat. The action area includes all or portions of quadrats 418, 420, 421, and 422. Table 7 below provides the sighting data for each quadrat for the years 1990-2008

Table 7. Timing of Potential Non-Salmonid Species Occurrence within Action Area

Quadrat (from Osborne 2008)	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb
418	1	2	0	6	12	18	9	3
420	1	1	1	10	10	31	13	2
421	0	1	0	2	1	4	9	0
422	0	1	0	4	4	14	4	4

Southern Resident orcas, if present within the action area, would be limited to the waters of Commencement Bay and adjacent waters of Puget Sound. Orcas are most commonly observed in Commencement Bay between approximately October and January, with the greatest potential for occurrence being the months of December and January (Osborne 2008).

The Sitcum, Blair, and Hylebos waterways do not represent suitable habitat for orcas, and orcas would not be expected to occur within the portion of the action area that includes these waterways.

5.7 Humpback Whale (*Megaptera novaeangliae*)

The humpback whale is listed as an endangered species under the ESA. Critical habitat has been neither designated nor proposed for humpback whale. For the purposes of the MMPA stock, humpback whales that feed off the West Coast are defined as comprising the Eastern North Pacific Stock. The winter migratory destination of this stock is primarily in coastal waters of Mexico and Central America (NMFS 2009).

5.7.1 Distribution & Habitat Requirements

Humpback whales range from California to the Chukchi Sea, Hawaii, and the Mariana Islands (NMFS 1991). During summer, humpback whales in the North Pacific migrate and feed over the continental shelf and along the coasts of the Pacific Rim. Humpback whales winter in three separate wintering grounds: 1) the coastal waters along Baja California and the mainland of Mexico; 2) the main islands of Hawaii; and 3) the islands south of Japan (NMFS 1991).

Humpback whales inhabit waters over continental shelves, along their edges, and around some oceanic islands. During winter, they are usually found in tropical or temperate waters. During the summer, most migrate considerable distances to waters with higher biological productivity, typically at higher latitudes (City of Seattle 2007).

5.7.2 Status

Worldwide, the population of humpbacks is about 10,000 (City of Seattle 2007). This is 8% of the historical population size, although this species is now protected and is considered to be recovering. The greatest threats to humpbacks today are entanglements in fishing gear, ship strikes, and coastal habitat pollution (City of Seattle 2007).

5.7.3 Presence in the Action Area

The occurrence of humpback whale within Commencement Bay or the adjacent waters of Puget Sound within the action area is considered very unlikely or infrequent. Humpback whales are sighted only occasionally in south Puget Sound.

The number of humpback sightings in Puget sound reported to the Orca Network has increased from three in 2001 to 30 in 2004 (Falcone et al. 2005). Today, one or two humpback whales come into Puget Sound each year (J. Calambokidis, Cascadia Research, pers. comm. in City of Seattle 2007). Humpback whales, if present in the action area, would only be expected to occur in the waters of adjacent Puget Sound, and not within inner Commencement Bay.

5.8 Marbled Murrelet (*Brachyramphus marmoratus*)

The marbled murrelet was listed as threatened in the states of California, Oregon, and Washington under the ESA on September 28, 1992 (57 FR 45328). Critical habitat was designated on June 24, 1996 (61 FR 26256).

5.8.1 Distribution & Habitat Requirements

The marbled murrelet is a small sea bird that feeds primarily on fish and invertebrates in nearshore marine waters (City of Seattle 2007). Marbled murrelets nest in mature stands of coastal forest, typically closely associated with the marine environment, though murrelets have been documented in forested stands at distances of up to 50 miles inland in Washington (Hamer and Cummins 1991). Marbled murrelets require forests with large trees (greater than 30 inches diameter at breast height), multi-storied stands, and moderate canopy closure. (City of Seattle 2007).

5.8.2 Status

The primary threat to marbled murrelet is the loss of suitable old-growth habitat adjacent to coastal foraging habitats. Key threats to marbled murrelet in the marine environment also include entanglement in nearshore fishing nets and pollution (City of Seattle 2007).

5.8.3 Presence in the Action Area

The Sitcum, Blair, and Hylebos waterways do not provide suitable habitat for marbled murrelet. Marbled murrelets are occasionally seen in the waters of Commencement Bay, and could potentially be present year-round. However, WDFW PHS information does not identify any documented murrelet habitat or nesting sites within the vicinity. There is no mature forested habitat suitable for murrelet nesting within the action area or immediate vicinity, and, as a result, marbled murrelets do not frequently forage in Commencement Bay.

5.9 Georgia Basin DPS Boccaccio (*Sebastes paucispinis)*

Boccaccio made up 8-9 percent of the commercial catch in Puget Sound in the 1970s, constituting most fish caught in the vicinity of Point Defiance and the Tacoma Narrows. Adult boccaccio are difficult to age, but it is suspected that they live as long as 54 years (Drake *et al.* 2008). Critical habitat for Georgia Basin (GB) DPS boccaccio is neither designated nor proposed at this time.

5.9.1 Distribution and Habitat Requirements

The range of boccaccio extends from Baja California to the Gulf of Alaska, and within this range, they are most common between Oregon and northern Baja California (Love *et al.* 2002).They are most frequently found in water depths between 160 and 820 feet, but may be found as deep as 1,560 feet (Orr *et al.* 2000). Copulation and fertilization occur in the fall, generally between August and November. Larvae and juvenile boccaccio may remain pelagic for 3.5–5.5 months, often associated with floating kelp mats, before settling to deeper water habitats. While generally associated with hard substrates, adults occasionally are found in mudflat habitat. While primarily bottom dwellers, boccaccio can be found as much as 30 feet off the sea floor (Love *et al.* 2002). Large adult boccaccio have greater movement potential than smaller species of rockfish, but their presence within the Georgia Basin seems to be patchy and limited to specific areas.

5.9.2 Status

GB DPS boccaccio has been deemed to be at high risk of extinction throughout all of its range by the NMFS Biological Review Team (BRT) reviewing the petition for listing. As compared with other species, boccaccio have declined significantly within Puget Sound. Once comprising nearly 5 percent of the total rockfish catch, there have been no confirmed observations of boccaccio in the Georgia Basin in approximately 7 years. Primary threats to GB DPS boccaccio identified by the BRT include areas of low dissolved oxygen within their range, potential for continued bycatch from recreational and commercial harvest, and a reduction in kelp habitat necessary for juvenile recruitment.

5.9.3 Presence in the Action Area

Adult GB DPS boccaccio are not expected to occur within the portions of the Sitcum, Blair, or Hylebos waterways within the action area, as water depths are too shallow (maximum depth of approximately -51 feet), and substrates consist of silty sand and sandy silt. Juvenile or larval boccaccio could be present within this portion of the action area, but water quality conditions and the generally high shipping activity likely limit the habitat suitability within the action area. The nearshore habitat within the waterways is largely lacking any eelgrass, kelp, or other aquatic vegetation that would be preferred by juvenile and larval boccaccio rockfish.

Deep water portions of the action area that extend into Commencement Bay do provide suitable habitat for adult and juvenile boccaccio, and these species could be present within this portion of the action area at any time of the year.

5.10 Georgia Basin DPS Yelloweye Rockfish (*Sebastes ruberrimus)*

GB DPS yelloweye rockfish have been deemed to be at moderate risk of extinction throughout all of its range by the NMFS BRT. In North Puget Sound, the frequency of yelloweye rockfish decreased from greater than 3 percent of total rockfish catch in the 1970s to 0.65 percent in the most recent samples. Critical habitat for this species is neither designated nor proposed at this time.

5.10.1 Distribution and Habitat Requirements

Yelloweye rockfish range from Baja California to the Aleutian Islands, but are most common from central California north to the Gulf of Alaska (Clemens and Wilby, 1961; Eschmeyer *et al.* 1983; Hart 1973; Love 1996). They are among the largest of the rockfish, weighing up to 25 pounds (Love *et al.* 2002). Living as long as 118 years, they are also among the most long-lived rockfish (Love 1996). Yelloweye rockfish occur in waters between 80-1,560 feet deep, but are most commonly found between 300 and 590 feet of depth.

In Puget Sound, yelloweye rockfish are thought to spawn during the winter to summer months, giving birth from early spring to late summer. Yelloweye juveniles settle quickly to shallow, high relief areas. As they grow, they continue to move toward deeper water habitats and continue to associate with high relief areas (Carlson and Straty 1981; Love *et al.* 1991). Yelloweye rockfish are less frequently observed in South Puget Sound than in North Puget Sound, primarily because of the relative lack of rocky, high relief habitat (Miller and Borton 1980).

5.10.2 Status

In South Puget Sound, the trend of decline is less clear, although the BRT concluded that the general trend of decline contributed significantly to the extinction risk of the DPS. Primary threats to GB DPS yelloweye rockfish cited by the BRT in the proposed listing include low intrinsic productivity combined with continued threats of bycatch from commercial and recreational harvest, loss of nearshore habitat, chemical contamination, and areas of low dissolved oxygen.

5.10.3 Presence in the Action Area

Adult GB DPS yelloweye rockfish are not expected to occur within the portions of the Sitcum, Blair, or Hylebos waterways within the action area, as water depths are shallow (maximum depth of approximately -51 feet), and substrates consist of silty sand and sandy silt. No high relief, deep-water habitat occurs within this portion of the action area. Juvenile or larval yelloweye rockfish are also not likely to be present within these waterways during the in-water work window, as most yelloweye give birth in spring, and juvenile yelloweye tend to move quickly to deep-water habitat outside the action area. Additionally, water quality conditions and the generally high level of shipping activity likely limit the habitat suitability within the action area. Juvenile yelloweye rockfish do not use nearshore habitat frequently, and are most frequently found in association with floating kelp beds, and no kelp beds are found within the waterways.

Deep water portions of the action area that extend into Commencement Bay do provide suitable habitat for adult and juvenile yelloweye rockfish. These species could be present within this portion of the action area at any time of the year.

5.11 Georgia Basin DPS Canary Rockfish (*Sebastes pinniger)*

GB DPS canary rockfish have been deemed to be at moderate risk of extinction throughout all of its range by the NMFS BRT. In Puget Sound proper, canary rockfish occurred at frequencies above 2 percent of total rockfish catch in the 1960s and 1970s, but by the late 1990s, had declined to about 0.76 percent.

5.11.1 Distribution and Habitat Requirements

Canary rockfish range between Baja California and the western Gulf of Alaska, and within this range are most common off the central coast of Oregon (Richardson and Laroche 1979). Canary rockfish primarily inhabit waters 160 to 820 feet deep but may be found at up to 1,400 feet of depth. They can live to be up to 84 years old, and were once considered fairly common in the greater Puget Sound area. Canary rockfish spawn once per year between September (at the southern end of the range) and December (Guillemot 1985), with birth occurring between September and March off the Oregon and Washington coasts, with peaks in December and January (Barss 1989; Wyllie-Echeverria 1987). Juvenile and adult canary rockfish tend to be associated with deep water and rocky and coarse habitats throughout the basins of Puget Sound (Miller and Borton 1980), and are broadly distributed throughout the Georgia Basin.

5.11.2 Status

Primary threats to GB DPS canary rockfish cited by the BRT in the proposed listing include low intrinsic productivity combined with continued threats of bycatch from commercial and recreational harvest, loss of nearshore habitat, chemical contamination, and areas of low dissolved oxygen.

5.11.3 Presence in the Action Area

Adult GB DPS canary rockfish are not expected to occur within the portions of the Sitcum, Blair, or Hylebos waterways within the action area, as water depths are shallow (maximum depth of approximately -51 feet), and substrates consist of silty sand and sandy silt. No high relief, deep-

water habitat occurs within the waterways. Juvenile or larval canary rockfish may be present within the waterways during the in-water work period, but they are not likely to be present for significant amounts of time, as they tend to move quickly to deep-water habitats. The nearshore habitat within the waterways lacks any eelgrass, kelp, or other aquatic vegetation that would be preferred by juvenile and larval canary rockfish. Additionally, water quality conditions and the generally high level of shipping activity likely limit the suitability of habitat within the action area.

Deep water portions of the action area that extend into Commencement Bay do provide suitable habitat for adult and juvenile canary rockfish. These species could be present within this portion of the action area at any time of the year.

5.12 Southern DPS Pacific Eulachon (*Thaleichthys pacificus*)

The Southern DPS Pacific eulachon were listed as threatened under the ESA on March 18, 2010 (75 FR 13012). Critical habitat was recently proposed (January 5, 2011) for Pacific eulachon, but the proposed listing does not include any marine waters of Puget Sound or tributaries to Puget Sound (76 FR 515).

5.12.1 Distribution & Habitat Requirements

Pacific eulachon are endemic to the eastern Pacific Ocean ranging from northern California to southwest Alaska and into the southeastern Bering Sea. Eulachon typically spend 3–5 years in saltwater before returning to fresh water to spawn from late winter through early summer. Spawning grounds are typically in the lower reaches of larger rivers fed by snowmelt.

5.12.2 Status

Key threats to eulachon are overfishing in subsistence and commercial fisheries, continued/increased bycatch in commercial groundfish and shrimp fisheries, industry pollution of freshwater and marine habitats, human impact on spawning habitat through logging, dredging, and diversions, and climate change (Hay and McCarter 2000).

5.12.3 Presence in the Action Area

According to NMFS (76 FR 515), most Pacific eulachon production for the southern DPS occurs in the Columbia River Basin. There are no documented eulachon spawning sites in Puget Sound. Other Olympic Peninsula rivers that drain into the Strait of Juan de Fuca have been extensively surveyed for many years for the presence of salmonid species, and eulachon have not been observed (BRT 2010). The closest documented eulachon spawning site or migration corridor is the Elwha River on the Olympic Peninsula (NMFS 2010).

Pacific eulachon have not been documented within the Puyallup River Basin, and are not documented or expected to occur within any of the action area waterways.

6 CRITICAL HABITAT DESIGNATION FOR EACH ESU/DPS

Critical habitat has been designated within the action area for Puget Sound ESU Chinook, Puget Sound DPS bull trout, and Southern Resident orcas. Critical habitat has been designated for

Eastern DPS Steller sea lion and marbled murrelet, but no critical habitat occurs within the action area. Critical habitat has been neither proposed nor designated for any of the ESA-listed ESUs of rockfish, Puget Sound DPS steelhead, or humpback whale.

6.1 Puget Sound ESU Chinook Salmon

The proposed critical habitat designation and description for Puget Sound ESU Chinook salmon are summarized in Table 8.

Table 8. Salmon Critical Habitat Designations and Descriptions

Species and ESU/DPS	Date of Critical Habitat Designation	Description of Critical Habitat
Chinook Salmon		
Puget Sound ESU	September 2, 2005	Puget Sound and several main tributaries on east side of Puget Sound

6.1.1 PCEs of Designated Critical Habitat for Puget Sound ESU Chinook Salmon

This section consists of a discussion of the primary constituent elements (PCEs) which have been identified for ESA-listed salmon, and the potential for their presence within the action area.

1. **Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation, and larval development.**

   Action area: This PCE is not present within the action area. The Sitcum, Blair, and Hylebos waterways, Commencement Bay, and adjacent waters of Puget Sound are saltwater tidal habitats.

2. **Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.**

   Action area: This PCE is not present within the action area. The Sitcum, Blair, and Hylebos waterways, Commencement Bay, and adjacent waters of Puget Sound are saltwater tidal habitats.

3. **Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.**

   Action area: This PCE is not present within the action area. The Sitcum, Blair, and Hylebos waterways, Commencement Bay, and adjacent waters of Puget Sound are saltwater tidal habitats.

4. **Estuarine areas free of obstruction with water quality, water quantity and salinity conditions supporting juvenile and adult physiological transitions between fresh-and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels, and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.**

   Action area: Given its proximity to the mouth of the Puyallup River, the action area does provide for saltwater transition/estuarine habitat for Chinook salmon. The Puyallup River estuary has been significantly modified from its natural condition, as a result of decades of dredge and fill projects, including the relocation of the Puyallup River mouth (WDFW 2000). Out of more than 5,900 acres of estuary habitats that historically existed at the head of Commencement Bay, only about 200 acres remain (SSPS 2007). The freshwater, tidal–brackish transition zone now occurs in a channelized river with heavily armored shorelines (Simenstad 2000). The degraded water quality conditions and the highly developed nature of the estuarine habitat within the action area severely limit the amount of critical habitat function provided.

5. **Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulder and side channels.**

   Action area: The portion of the action area that is within the Sitcum, Blair, and Hylebos waterways provide very little functional nearshore marine habitat for Chinook salmon. Natural cover in the form of submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels is largely lacking throughout the action area. Riprap, pilings, and vertical bulkheads dominate the available cover. Water quality conditions are also severely impaired throughout most of the action area.

   The portion of the action area that includes the waters of Commencement Bay and adjacent waters of Puget Sound have been extensively hardened and modified, but do provide some functional nearshore rearing and foraging habitat for Chinook salmon (Simenstad 2000). Much of the nearshore habitat in this portion of the action area has been artificially armored associated with road construction or residential development. Habitat complexity features such as overhanging vegetation and backwater areas are lacking. Large woody debris is frequently present at and above the Mean Higher High Water (MHHW) line and aquatic vegetation such as eelgrass and kelp beds are distributed patchily within the nearshore environment.

6. **Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.**

   Action area:

   The portions of the action area that are within the Sitcum, Blair, and Hylebos waterways are not considered offshore marine areas. The waters of Commencement Bay and adjacent

Puget Sound do provide offshore marine habitat for Chinook salmon, and do provide water quality and forage conditions suitable for growth and maturation of Chinook salmon.

6.2 Puget Sound DPS Bull Trout

The proposed critical habitat designation and description for Puget Sound DPS bull trout are summarized in Table 9.

Table 9. Bull Trout Proposed Critical Habitat Designation and Descriptions

Species and ESU/DPS	Date of Critical Habitat Designation	Description of Critical Habitat
Bull Trout		
Puget Sound DPS	October 18, 2010	Marine areas along east side of Puget Sound and Puget Sound tributaries to the east.

6.2.1 PCEs of Designated Critical Habitat for bull trout.

This section consists of a discussion of the PCEs designated for bull trout critical habitat and the potential for their presence within the action area.

1. **Springs, seeps, groundwater sources, and subsurface water connectivity (hyporheic flows) to contribute to water quality and quantity and provide thermal refugia.**

   Action area: This PCE is not present within the action area. There are no springs or seeps or significant groundwater sources in the action area, and the action area does not provide thermal refugia for bull trout.

2. **Migratory habitats with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats, including but not limited to permanent, partial, intermittent, or seasonal barriers.**

   Action area: In general, migratory habitat for Puget Sound DPS bull trout within the portion of the action area that is within the Sitcum, Blair, and Hylebos waterways has been severely degraded due to the extent of development. However, this portion of the action area does provide a migratory corridor for bull trout.

   Within the waters of Commencement Bay and adjacent waters of Puget Sound riparian habitat and water quality are also degraded, but to a lesser extent and the action area provides suitable migratory and foraging habitat for Puget Sound DPS bull trout.

3. **An abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.**

   Action area: Aquatic macro-invertebrates and forage fish occur within the waters of Commencement Bay and adjacent waters of Puget Sound, and occur to a lesser extent within the Sitcum, Blair, and Hylebos waterways. There is little habitat for terrestrial organisms of riparian origin located in the nearshore environment within the waterways,

and bull trout are not known to forage in these waterways; however, the waterways do provide a moderate food base for bull trout. Nearshore habitats within Commencement Bay and adjacent waters of Puget Sound do provide potentially suitable habitat for terrestrial organisms of riparian origin, and likely provide a more substantial food base for bull trout.

4. **Complex river, stream, lake, reservoir, and marine shoreline aquatic environments and processes with features such as large wood, side channels, pools, undercut banks and unembedded substrates, to provide a variety of depths, gradients, velocities, and structure.**

   Action area: Complex habitat features are largely non-existent within the portions of the Sitcum, Blair, and Hylebos waterways within the action area. The waterways are located in a heavily developed area with little remaining undisturbed habitat. Throughout most of this portion of the action area, riprap, pilings, and vertical bulkheads dominate the available cover. However, a few mitigation and restoration sites have been created within the Sitcum, Blair, and Hylebos waterways, and these sites do provide for some habitat complexity.

   The portion of the action area that includes the waters of Commencement Bay and adjacent waters of Puget Sound have been extensively hardened and modified, but do provide some functional marine shoreline habitat (Simenstad 2000). Much of the nearshore habitat in this portion of the action area has been artificially armored associated with road construction or residential development. Habitat complexity features such as overhanging vegetation and side channels are lacking. However, large woody debris is frequently present at and above the Mean Higher High Water (MHHW) line and aquatic vegetation such as eelgrass and kelp beds are distributed patchily within the nearshore environment.

5. **Water temperatures ranging from 36 to 59°F (2 to 15°C), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will depend on bull trout life-history stage and form; geography; elevation; diurnal and seasonal variation; shading, such as that provided by riparian habitat; streamflow, and local groundwater influence.**

   Action area: Elevated temperatures are not typically a problem in marine environments such as the Sitcum, Blair, and Hylebos waterways; Commencement Bay; or the waters of Puget Sound. At a minimum, the action area does provide seasonally appropriate water temperatures, suitable for bull trout migration.

6. **In spawning and rearing areas, substrate of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile survival. A minimal amount of fine sediment, generally ranging in size from silt to coarse sand, embedded in larger substrates, is characteristic of these conditions. The size and amounts of fine sediment suitable for bull trout will likely vary from system to system.**

   Action area: This PCE is not present within the action area. No population of bull trout is known to spawn in the action area.

7. **A natural hydrograph, including peak, high, low, and base flows within historic and seasonal ranges or, if flows are controlled, minimal flow departure from a natural hydrograph.**

   Action area: The hydrology/hydraulics within the action area are concurrent with the tides of Commencement Bay and Puget Sound.

8. **Sufficient water quality and quantity such that normal reproduction, growth, and survival are not inhibited.**

   Action area: In general, water quality throughout the action area has been degraded. However, the Sitcum, Blair, and Hylebos waterways, Commencement Bay, and adjacent waters of Puget Sound do provide sufficient water quality and quantity conditions for bull trout migration. Commencement Bay and the adjacent waters of Puget Sound also provide suitable water quantity and quality for bull trout rearing. The action area does not provide water temperatures or water quality conditions suitable for bull trout reproduction, and no populations of bull trout are known to spawn within the action area.

9. **Sufficiently low levels of occurrence of nonnative predatory (e.g. lake trout, walleye, northern pike, smallmouth bass), interbreeding (e.g. brook trout), or competing (e.g. brown trout) species that, if present, are adequately temporarily and spatially isolated from bull trout.**

   Action area: The action area is not known to have significant populations of nonnative predatory, interbreeding, or competing species.

6.3 Steller Sea Lion—Eastern DPS

The proposed action does not occur within designated critical habitat for the eastern DPS of Steller sea lion. Critical habitat for Steller sea lion was designated in 1993 and includes a 20-nautical mile buffer around selected haulouts and rookeries and three major foraging areas identified in the final rule. No designated Steller sea lion critical habitat is present within the action area.

6.4 Southern Resident DPS Orca

Critical habitat has been designated for the Southern Resident DPS of orcas that may occur within the action area of the Sitcum, Blair, and Hylebos waterways. Table 10 summarizes critical habitat designations and descriptions for orca.

Table 10. Orca Critical Habitat Designation and Description

Species and ESU/DPS	Date of Critical Habitat Proposal	Description of Critical Habitat
Orca		
Southern Resident DPS	November 29, 2006	Haro Strait and San Juan Islands, Puget Sound, and Strait of Juan de Fuca

6.4.1 Primary Constituent Elements of Designated Critical Habitat for Southern Resident DPS of Orcas

This section consists of a discussion of the PCEs identified for ESA-listed orcas and the potential for their presence within the action area.

1. **Water quality to support growth and development;**

   Action area: The waters of the Sitcum, Blair, and Hylebos waterways do not provide suitable water quality conditions for orca growth or development. The portion of the action area that extends into Commencement Bay and adjacent waters of Puget Sound does likely provide suitable water quality conditions for orca migration and may provide suitable conditions for growth and development.

2. **Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development as well as overall population growth;**

   Action area: The waters of the Sitcum, Blair, and Hylebos waterways do provide moderately suitable migratory habitat for Chinook salmon, which is the orca's primary prey species. However, these waterways are not suitable for orca presence and orca do not occur within the waterways. The portion of the action area that extends into Commencement Bay and adjacent waters of Puget Sound does provide suitable habitat for orca, and provides suitable habitat for orca prey species, however, not likely in numbers sufficient for individual growth, reproduction, development, or population growth.

3. **Passage conditions to allow for migration, resting, and foraging. NMFS is gathering data to assist it in evaluating sound as a potential PCE.**

   Action area: The waters of the Sitcum, Blair, and Hylebos waterways do not provide suitable conditions for orca migration, resting, or foraging due to their small size, constrained nature, and high level of human activity and shipping traffic. The portion of the action area that extends into Commencement Bay and adjacent waters of Puget Sound does provide suitable passage conditions for orca migration, resting and foraging.

6.5 Marbled Murrelet

The proposed action does not occur within designated critical habitat for marbled murrelet. Critical habitat for marbled murrelet was designated in 1996 and includes 3,887,000 acres of land in 32 Critical Habitat Units identified in the final rule. No designated marbled murrelet critical habitat is present within the action area or vicinity.

7 ENVIRONMENTAL BASELINE

This section outlines the presence and condition of aquatic and terrestrial habitat features within the action area as they pertain to the species addressed in this PBE. The following sections summarize the baseline habitat conditions at both the action area and watershed scales, and then analyze the likely effects that the proposed action would have on the baseline conditions at both scales.

7.1 General Setting

Beginning in the late 19th century, development of Commencement Bay has fragmented the estuarine habitats contained therein (USACE *et al.* 1993). By 1917, several waterways, including the Sitcum, Blair, and Hylebos, had been created by dredging and filling mudflats in Commencement Bay. Industrial development and altered shorelines, consisting of vertical or steeply sloping bulkheads and piers, fragmented the remaining estuarine habitat (Kerwin 1999). Historical migrations of anadromous fish into side channels and sloughs have largely been eliminated. Saltwater transition zones, an important ecological habitat for the development of young salmonids, have all but disappeared. Chemical contamination of sediments within the bay has compromised the effectiveness of the remaining habitat (USACE *et al.* 1993; USFWS and NOAA 1997; Collier *et al.* 1998). Despite these extensive alterations to the natural habitat of Commencement Bay, some biological resources still use the remaining habitat (USFWS and NOAA 1997).

Extensive intertidal mudflats once covered an estimated 2,100 acres of Commencement Bay. In 1992, approximately 180 acres remained (USACE *et al.* 1993). Dredging and other anthropogenic activity within the bay are responsible for this change in habitat. The majority of the remaining mudflat habitat is located near the mouth of the Puyallup River within the Hylebos, Middle, Wheeler-Osgood, and St. Paul waterways (USACE *et al.* 1993; USFWS and NOAA 1997).

7.2 Terrestrial Habitat

There is little to no natural terrestrial habitat within the action area. The terrestrial portions of the action area that are at the sites of the proposed action consist primarily of manmade hardened shoreline, including bulkheads and riprap. A few small upland areas are dominated by scattered grasses and weedy forbs growing near the tops of banks and along riprapped areas, but terrestrial habitat is otherwise lacking. Within the portion of the action area that includes the zone of influence for terrestrial noise, there are scattered terrestrial habitats, including some small isolated patches of forested habitat in the hills surrounding the immediate project vicinity. However, most of the natural terrestrial habitat in the vicinity has been developed for industrial and residential uses, and there is no suitable terrestrial habitat for any ESA-listed species within the action area.

7.3 Riparian Habitat

Riparian habitat is also severely limited throughout the action area. At the immediate location of the sites of the proposed action, riparian habitat is non-existent, consisting only of hardened bulkheads and/or riprap. There is little to no natural vegetation to provide shade or natural bank stability. This is true throughout most of the Sitcum, Blair, and Hylebos waterways;

however, there are a few restoration and mitigation sites on portions of the waterways within the action area where riparian conditions have been restored and some riparian vegetation exists.

Riparian conditions are similar within the portion of the action area that extends into inner Commencement Bay. The shoreline throughout inner Commencement Bay has been armored with riprap and there is little or no overhanging riparian vegetation. A narrow band of forested hillside is present along the north shore of Commencement Bay along Marine View Drive, but this provides little riparian function. In general, riparian habitat within the action area is of limited quantity and quality.

7.4 Aquatic Habitat

An evaluation of the baseline aquatic habitat conditions within the action area was conducted according to the guidance outlined in Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS 1996). The evaluation assessed several baseline indicators of habitat quality and determined whether the proposed action would restore, maintain, or degrade existing baseline conditions at the watershed and action area level. Table 11 and Table 12 show the results of this analysis.

In general, the environmental baseline conditions within the action area are severely degraded. As indicated in Table 11 and Table 12, most of the indicators of environmental condition are not properly functioning, or are functioning at risk, at both the watershed and action area scales. The Sitcum, Blair, and Hylebos waterways within the action area are maintained artificially as shipping channels. As a result, the natural functional processes of these waterways have been altered dramatically. There is no functioning floodplain within the action area, and sediments within the action area are predominantly silts and sands. Aquatic habitat conditions within the portion of the action area that extends into inner Commencement Bay are better, though still degraded.

Table 11. Overview of Environmental Baseline Conditions at Action Area and Watershed Scales

Diagnostic/Pathway Indicators	Baseline Environmental Conditions		Effects of Project Activities	
	Action Area	Watershed	Action Area	Watershed
Water Quality				
Temperature	PF*	FR	Maintain	Maintain
Sediment/Turbidity	NPF	NPF	Temporarily Degrade	Maintain
Chemical Contamination/Nutrients	NPF	NPF	Maintain	Maintain
Habitat Access				
Physical Barriers	PF	NPF	Maintain	Maintain
Habitat Elements				
Substrate	NPF	FR	Maintain	Maintain
Large Woody Debris	NPF	FR	Maintain	Maintain
Pool Frequency	N/A	N/A	Maintain	Maintain
Pool Quality	N/A	N/A	Maintain	Maintain
Off-Channel Habitat	NPF	FR	Maintain	Maintain
Refugia	NPF	FR	Improve	Maintain
Channel Conditions/Dynamics				
Width/Depth Ratio	NPF	NPF	Maintain	Maintain
Streambank Condition	PF	NPF	Maintain	Maintain
Floodplain Connectivity	NPF	NPF	Maintain	Maintain
Flow/Hydrology				
Change in Peak/Base Flows	PF	NPF	Maintain	Maintain
Increase in Drainage Network	NPF	NPF	Maintain	Maintain
Watershed Conditions				
Road Density and Location	NPF	NPF	Maintain	Maintain
Disturbance History	NPF	NPF	Maintain	Maintain
Riparian Reserves	NPF	FR	Maintain	Maintain

*NPF-Not properly functioning; FR=Functioning at Risk; PF=properly functioning

Table 12. Overview of Environmental Baseline Conditions Specific to Bull Trout at Action Area and Watershed Scales

Diagnostic/Pathway Indicators	Effects of Project Activities	
	Action Area	Watershed
Subpopulation Characteristics within Subpopulation Watersheds		
Subpopulation Size	Maintain	Maintain
Growth and Survival	Maintain	Maintain
Life History Diversity and Isolation	Maintain	Maintain
Persistence and Genetic Integrity	Maintain	Maintain
Integration of Species and Habitat Conditions	Maintain	Maintain

8 MATRIX OF PATHWAYS AND INDICATORS ANALYSIS

8.1 Water Quality

8.1.1 Water Temperature

None of the waterbodies within the action area are listed for high water temperatures on the Ecology 303(d) list. While the relative lack of riparian vegetation may affect water temperatures within the action area to some degree, water temperatures are not typically elevated in large tidal systems such as Commencement Bay and associated marine water. Baseline conditions at the action area scale therefore are determined to be **properly functioning**. Water temperature conditions throughout the Puyallup River watershed are likely elevated, due to the extent of historic development, encroachment into riparian areas, and channelization of streams. Baseline conditions for water temperature at the watershed scale are determined to be **functioning at risk.**

The proposed action will **maintain** this indicator at both the action area and watershed scales. The project will not result in any change in the composition of riparian vegetation or riparian habitat structure within the action area, nor will it result in any measurable effect on water temperatures within the Sitcum, Blair, or Hylebos waterways.

8.1.2 Sediment/Turbidity

Sediments within the Sitcum, Blair, and Hylebos waterways within the action area are predominantly fine-grained, and generally consist of sand and silty sand, as well as organic sediments that enter the action area from Hylebos and Wapato Creeks. While no specific data is available regarding substrate composition, fine-grained materials are certainly present in high quantities within the waterways, and to a lesser extent within inner Commencement Bay.

High sediment and turbidity are major factors within the Sitcum, Blair and Hylebos waterways, primarily due to turbidity from the Puyallup River, which enters the waterways on the flood tide. In inner Commencement Bay, turbidity is also a concern for similar reasons, though in deep water habitats, turbidity is likely less of an issue.

Within the action area, sediments are primarily fine-grained and turbidity is elevated throughout much of the action area. Erosion in the upper watershed naturally contributes relatively high sediment loads to the Puyallup River, and elevated turbidity in the river is largely a natural condition. Nevertheless, baseline conditions for sediment and turbidity are elevated above the levels published by NMFS as being necessary for proper functioning condition for salmonids, and are therefore determined to be **not properly functioning**.. The proposed action has the potential to increase sediment and turbidity temporarily within the action area during pile driving activities, but the conservation measures proposed will be sufficient to ensure no long-term impacts on sediment or turbidity either within the action area or at the watershed scale. The proposed action may **temporarily degrade** this indicator, but will **maintain** it at both the action area and watershed scales in the long term.

8.1.3 Chemical Contamination/Nutrients

The Sitcum, Blair and Hylebos waterways are within the Commencement Bay Nearshore-Tideflats (CB-NT) Superfund site. The EPA placed the site on the Superfund National Priorities List (NPL) in 1983 due to widespread contamination of the water, sediments, and upland areas (EPA 1996; FR 96-21629).

The EPA partially deleted the Blair Waterway from the NPL in 1996. This partial deletion pertains only to the sediments contained in the waterway and upland properties draining to the Blair Waterway (FR 96-21629).

Ecology maintains a database of sites in Washington that are suspected and/or confirmed to be contaminated relative to the MTCA. Sites identified in Ecology's database that may be within 25 feet of the action areas addressed in this study are listed in Table 13 below.

Table 13. Ecology MTCA Sites Within Approximately 25 Feet of Sites of Proposed Action

Facility Name	Ecology Site Name	Regulatory Status
APM Terminals	Tacoma Port Terminal 7	No Further Action (NFA) determination 1996
Terminal 7	—	—
OCT	—	—
Husky Terminal	—	—
Blair Dock	Tacoma Port BP	Closed May 2000
Parcel 115	Tacoma Port Terminal 7	NFA determination 1996
Trident	Tacoma Port Early Business Center	Awaiting cleanup
	Pier 24/25	Construction complete—performance monitoring
	U.S. Army Pier 23	Cleanup started
Brac Property	Tacoma Port Parcel 4	Cleanup started
Parcel 86	Petroleum Reclaiming Services	Cleanup started
Parcel 99	Arkema	Cleanup started
Parcel 105	Atofina	Cleanup started

Note: — = no site listing

8.1.3.1 Water

According to Ecology's 2008 303d list, three portions of the Hylebos Waterway and two areas near the central portion of the Blair Waterway are listed as Category 2 and/or Category 5 waters. The Sitcum Waterway is not listed on Ecology's 303d list of impaired waters. Table 14 provides definitions for each listing Category.

Table 14. Ecology 303(d) Listing Category Definitions

Category 1	Meets tested standards for clean waters
Category 2	Waters of concern
Category 3	Insufficient data
Category 4	Polluted waters that do not require a total maximum daily load (TMDL)
4a	Has a TMDL
4b	Has a pollution control program
4c	Is impaired by a non-pollutant
Category 5	Polluted waters that require a TMDL

8.1.3.2 Sediment

Hylebos Waterway - Ecology's 303d list indicates the sediments within the Hylebos Waterway are classified as Category 4B. Sediments in the Hylebos Waterway were contaminated with polychlorinated biphenyls (PCBs), polynuclear aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), wood waste, and metals (zinc, copper, lead and arsenic) (EPA 2010). Dredging to remove contaminated sediment has been completed in the "mouth" portions of the waterway north of the East 11th Street Bridge in the vicinity of the action areas addressed in this PBE.

Blair Waterway - One area near the central portion of the Blair Waterway is listed on Ecology's 303d list as Category 1 and 2 sediments. Contaminated sediments were removed from the navigation channel and most of the berths in the Blair Waterway in the mid-1990s. Additional dredging for deepening and widening of the Blair Waterway has been completed since that time. The Blair Waterway is generally been considered to be of low concern with respect to sediment contamination by the Dredge Material Management Program (DMMP) (DMMP 2009).

Sitcum Waterway - Ecology's 303d list indicates the sediments within the Sitcum Waterway are classified as Category 4B. Contaminated sediments were also removed from Sitcum Waterway in the mid-1990s, and the navigation channel has been deepened an additional 7 feet since that time. The Sitcum Waterway is currently considered to be of low concern with respect to sediment contamination (USACE 2000).

Within the action area and watershed, due to the fact that there are several reaches on the 303(d) list, and due to the relatively high levels of historic chemical contamination, baseline conditions for chemical and nutrient contamination are determined to be **not properly functioning.**

The proposed action will **maintain** this indicator at both the action area and watershed scales. The proposed conservation measures will be sufficient to ensure that the project does not result in any contaminant releases. The proposed action will result in a net improvement in chemical contamination conditions within the Sitcum, Blair, and Hylebos waterways in the long term, due to the removal of several hundred creosote-treated timber piles over the lifetime of the

permit. This will result in a significant net benefit to water quality within the action area, but is not expected to be sufficient to restore proper functioning condition.

8.2 Habitat Access

8.2.1 Physical Barriers

There are no major barriers to fish migration within the action area. The Sitcum, Blair, and Hylebos waterways are substantially altered and maintained as shipping channels, but do provide suitable migratory pathways to upstream waters. For this reason, within the action area, baseline conditions for physical barriers are determined to be **properly functioning.** At the watershed scale, barriers to anadromous fish migration are present in several areas within the Puyallup River Basin. A water diversion at river mile 11.7 moves Wapato Creek into a collection pipe that actively removes all flow from the upper Wapato Creek channel into a stormwater bypass system that flows into the Puyallup River (Kerwin 1999). While the project was conceived to prevent flooding along Wapato Creek by diverting peak flows into the stormwater bypass system, it operates in reverse of its intention. Under normal flows, the project diverts all the water of upper Wapato Creek into the bypass and only flood flows into lower Wapato Creek. This diversion has significantly contributed to the critical low flows within the subbasin in the last 20 years. Within the Puyallup River Basin, baseline conditions for physical barriers are determined to be **not properly functioning.**

The proposed action will **maintain** this indicator at both the action area and watershed scales. The proposed action will not pose a significant barrier to fish passage at any range of flow at either the action area scale or the watershed scale.

8.3 Habitat Elements

8.3.1 Substrate

Sedimentation throughout the watershed has altered the substrate within the action area. Sediments within the action area are predominantly fine-grained sands and silty sands, and no substrate is present that is adequate for salmonid spawning. Sedimentation is likely a larger problem within the Blair and Hylebos waterways due to the relatively high sediment load provided by Wapato and Hylebos creeks. At the watershed scale, due to significant alteration of natural channel morphology, conditions are also significantly altered from normal conditions. However, many streams in the upper reaches of the watershed do have substrates that provide proper functioning condition for salmonids. Within the action area, baseline conditions for substrate are determined to be **not properly functioning.** At the watershed scale, baseline conditions are determined to be **functioning at risk.**

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action has the potential to increase sediment and turbidity temporarily within the action area, but this short-term effect will not result in a measurable effect on substrate embeddedness within the action area. The proposed action will have no measurable long-term impacts on substrate at either the action area or the watershed scales.

8.3.2 Large Woody Debris

There is very little LWD within the portion of the action area within the Sitcum, Blair, and Hylebos waterways. These waterways are largely devoid of natural vegetation or habitat. A few restoration and mitigation sites on portions of the waterways that are within the action area have been restored, and some LWD has been recruited. Within the portion of the action area that includes inner Commencement Bay, there are areas along the shoreline where LWD has been recruited, mostly along the high water line in areas that have been armored with riprap. Within the action area, baseline conditions for LWD are determined to be **not properly functioning**. Within the Puyallup River Basin, LWD levels are lower than would be necessary for proper functioning condition, but opportunity does exist for recruitment. Baseline conditions for LWD at the watershed scale are determined to be **functioning at risk.**

The proposed action will **maintain** this indicator at the action area scale and **maintain** it at the watershed scale in the long term. The proposed action will not result in any impacts to riparian vegetation or habitat and will not affect the opportunity for future recruitment.

8.3.3 Pool Frequency

The action area provides marine and estuarine habitat and is not a riffle/pool system. This indicator does not apply. The proposed action will have no impact on pool frequency at either the action area or watershed scales.

8.3.4 Pool Quality

For the same reasons given for pool frequency, this indicator does not apply. The proposed action will have no impact on pool frequency at either the action area or watershed scales.

8.3.5 Off-Channel Habitat

There is very little natural off-channel habitat within the action area. Historical migrations of anadromous fish into side-channels and sloughs within the action area have largely been eliminated (Kerwin 1999). Saltwater transition zones, an important ecological habitat for the development of young salmonids, are limited in quantity and quality. A few restoration and mitigation sites have been established within the Sitcum, Blair, and Hylebos waterways that do provide some off-channel and back water habitat. However, off-channel habitat is not present in the quantity or quality necessary to provide proper functioning condition. Baseline conditions for off-channel habitat are **not properly functioning** within the action area. At the watershed scale, historic development throughout the Puyallup River Basin has resulted in impacts to the quantity and quality of off-channel habitats. Baseline conditions for off-channel habitat at the watershed scale are determined to be **functioning at risk**.

The proposed action will **maintain** this indicator at the action area scale and at the watershed scale. The proposed action will not result in any impacts to off-channel habitat at either the watershed or the action area scale.

8.3.6 Refugia

As described previously, there is very little functional off-channel or side channel habitat within the action area that would provide refugia for sensitive aquatic species. While there are a few

mitigation and restoration sites within the action area that do provide significant function as refugia, they are not sufficient to provide for proper functioning condition. Baseline conditions for refugia within the action area are **not properly functioning**. For similar reasons, baseline conditions for refugia at the watershed scale are determined to be **functioning at risk**.

The proposed action will **maintain** this indicator at both the action area and watershed scales. The proposed action will not result in any impacts to the quality or quantity of refugia at either the watershed or the action area scale.

8.4 Channel Conditions & Dynamics

8.4.1 Width/Depth Ratio

The width/depth ratio within the action area is likely in excess of the ratio required for proper functioning condition. The Sitcum, Blair, and Hylebos waterways are artificially maintained as industrial shipping channels and do not provide for natural morphological channel dynamics. Conditions are likely similar throughout much of the lower the Puyallup River Basin, as development pressures have resulted in significant alterations to natural channel morphology. For this reason, this indicator is considered **not properly functioning** at the action area and watershed scales.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not result in any impacts to the channel width/depth ratio at either the action area or watershed scales.

8.4.2 Streambank Condition

Riparian vegetation is largely lacking throughout the action area, particularly within the Sitcum, Blair, and Hylebos waterways. However, very little active streambank erosion is occurring because almost all of the streambank has either been armored with riprap or consists of hardened bulkheads. Within the action area, therefore, streambank condition is determined to be **properly functioning**. Within the greater watershed, streambank conditions are likely less stable, due to the relative lack of riparian vegetation on streams within the lower Puyallup River Basin. While no specific information is available, it is estimated that less than 80% of streambanks in the watershed would be considered stable. Streambank condition at the watershed scale, therefore, is considered **not properly functioning**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not result in any impacts to streambank stability either within the action area or at the watershed scale.

8.4.3 Floodplain Connectivity

Peak and base flow conditions within the action area are tidal, and therefore are functioning naturally. At the action area scale, peak and base flow conditions are considered to be **properly functioning**. At the watershed scale, given the amount of development in the lower watershed as compared to an undisturbed watershed, there have been pronounced changes in peak/base flow conditions. At the watershed scale, therefore, floodplain connectivity is determined to be **not properly functioning**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not result in any impacts to floodplain connectivity within the action area or at the watershed scale.

8.5 Flow/Hydrology

8.5.1 Change in Peak/Base Flows

The Sitcum, Blair, and Hylebos waterways suffer from impaired runoff conditions as a result of the absence of riparian vegetation along the riparian zone. The Sitcum Waterway does not contain any streams entering within its extent, but contains hardened shoreline and lacks riparian vegetation to hold back peak surface flows. Wapato Creek, which is located in the east portion of the Blair Waterway, suffers from frequent flooding and erosion because of the commercial and residential development that has taken place along both sides (Kerwin 1999). Hylebos Creek, which flows into the east portion of the Hylebos Waterway, likely suffers from increased runoff and peak flows from the lack of a vegetated riparian corridor as well. Peak and base flows within the action area and at the watershed scale are determined to be **not properly functioning**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not result in any impacts to base or peak flows either within the action area or at the watershed scale.

8.5.2 Increase in Drainage Network

The increase in the drainage network at both the watershed and action area scales due to development and road construction have been substantial. The drainage network at both the action area and watershed scales is **not properly functioning**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not create any increases to the drainage network.

8.6 Watershed Conditions

8.6.1 Road Density & Location

While information describing the specific road density and locations within the action area and watershed is not available, it is clear that road density is very high at both scales. Within the action area, the banks of the Sitcum, Blair, and Hylebos waterways are almost completely developed. At the watershed scale, the road density is very high, particularly in the lower watershed, and there are valley bottom roads associated with almost all of the major drainages. Therefore, the indicator for road density and location at both the action area and watershed scales is **not properly functioning**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not result in any impacts to road density or location either within the action area or at the watershed scale.

8.6.2 Disturbance History

Disturbance levels within the action area and at the watershed scale are far above the threshold for proper functioning condition. Terrestrial habitats adjacent to the Sitcum, Blair, and Hylebos

waterways consist largely of hardened shorelines and bulkheads constructed on fill material. Development throughout the greater Puyallup River Basin has resulted in significant impacts to sensitive habitat areas such as riparian and wetland habitats. The indicator for disturbance history within the action area and at the watershed scale is **not properly functioning**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action will not result in any significant amount of new disturbance at either the action area or the watershed scale.

8.6.3 Riparian Reserves

The riparian reserve system within the action area scale is **not properly functioning**. There is little to no native riparian vegetation within the action area, and the riparian vegetation that does exist occurs in highly fragmented, unconnected patches. At the watershed scale, there have also been significant impacts to the riparian habitats, though there are still significant areas of interconnected riparian habitats. At the watershed scale, this indicator is considered to be **functioning at risk**.

The proposed action will **maintain** this indicator at both the action area and watershed scales in the long term. The proposed action does not propose any new riparian disturbance, and will not affect the quality or quantity of riparian reserves at either the action area or the watershed scale.

8.7 Pathways and Indicators Specific to Bull Trout Only

The USFWS provides a matrix of pathways and indicators specific to bull trout. The proposed action will not affect these indicators significantly, and therefore they are not addressed in detail here. The specific indicators are:

- Subpopulation size
- Growth and survival
- Life history diversity and isolation
- Persistence and genetic integrity
- Integration of species and habitat conditions

The proposed action will maintain all of these indicators at both the action area and watershed scales in the long term. It is possible that bull trout migrating in the action area may be present when in-water work is being conducted, but bull trout are likely not present within the action area for significant periods. There is little or no suitable bull trout rearing or foraging habitat within the action area. The proposed action will have no measurable effect on any of the indicators of proper functioning condition for bull trout habitat.

9 EFFECTS OF THE ACTION

9.1 Direct Effects

Direct effects are the direct or immediate impacts of the proposed action to federally listed species and their habitat. This section addresses potential direct effects that listed species and

critical habitats could experience as a result of the proposed action and the likely response to each potential direct effect.

9.1.1 Water Quality

Increased levels of sedimentation and turbidity could result from any sediment-disturbing activities. The pile removal and installation activities that comprise the proposed action could disturb sediments and temporarily increase turbidity within the action area. Increased levels of sedimentation and turbidity could have temporary negative impacts on habitat for listed fish species and, if any listed fish species are present within the action area during the time of construction, could affect them directly.

All of the sites of the proposed action are located within areas that either are currently or were formerly within the CB-NT Superfund site. The Blair Waterway has been cleaned up and removed from the Superfund. Seven of the 12sites are within 25 feet of areas designated as MTCA sites by Ecology (Table 13). Water quality is already a limiting factor within the action area, and temporary increases in sedimentation and turbidity during pile removal and installation activities could result in increased potential for negative effects.

Shipping traffic throughout the action area routinely disturbs sediments. Any temporary increase in turbidity as a result of the proposed action is not anticipated to measurably exceed levels caused by normal periodic increases due to this industrial traffic on the river. The low volume and slow velocity of water movement within the action area will also greatly minimize the potential negative effects of temporarily increased turbidity levels. In addition, pile removal and installation activities will adhere to conservation measures established during EPA CERCLA review and Ecology MTCA review.

With over-water work, there is the potential for construction debris to enter the waterway. There is also slight potential for leaks and spills of fuel, hydraulic fluids, lubricants, and other chemicals from equipment and storage containers associated with the project.

The contractor will be required to provide and implement conservation measures including an SPCC plan (see Section 3.2 above). As part of this plan, a floating containment boom will be deployed during project implementation, which will contain any debris that enters the waterway during the proposed action. Additional conservation measures have been included to avoid any potential impacts from hazardous materials. These measures include inspecting construction equipment daily to ensure that there are no leaks of hydraulic fluids, fuel, lubricants or other petroleum products and locating temporary material and equipment staging areas above the OHWM of the action area waterbody and outside environmentally sensitive areas.

The following ESA-listed species and designated critical habitat have the potential to be exposed to the direct effects of temporarily decreased water quality conditions that could occur within the action area during project construction.

- Puget Sound ESU Chinook salmon
- Puget Sound DPS steelhead
- Puget Sound DPS bull trout
- GB DPS boccaccio rockfish
- GB DPS yelloweye rockfish
- GB DPS canary rockfish
- Designated critical habitat for Puget Sound DPS orca
- Designated critical habitat for two ESUs/DPSs of salmon and bull trout

Orca, Steller sea lion, and marbled murrelet would not be exposed to any direct effects of temporarily decreased water quality, as they are not expected to be present within the portion of the action area where water quality conditions could be temporarily affected. Temporary water quality effects will be localized to the area within 150 feet of the location of the proposed action, and these areas do not provide suitable habitat for orca, Steller sea lion, or marbled murrelet.

During the in-water work period, outmigrating juveniles and migrating adult salmon and steelhead could be present within the action area. Juvenile rockfish species could also be present within the action area during this timeframe, though their presence is unlikely. These species, if present, would likely be migrating and would not be present within the action area for any significant period.

It is possible that adult and/or juvenile Chinook salmon, steelhead, and bull trout, as well as juvenile rockfish, could be present within the action area and could be exposed to temporarily decreased water quality conditions, including temporarily elevated turbidity levels and/or potential debris contamination. The geographic extent and duration of any potential short-term decreases in water quality conditions are expected to be limited, and the conservation measures implemented for the proposed action (including the implementation of an SPCC plan) will be sufficient to minimize any effects. It is anticipated that any steelhead present would respond by temporary avoidance of, or more rapid migration through, the action area. The portion of Blair Waterway within the action area that lies within Commencement Bay has been designated critical habitat for two ESUs/DPSs of salmon and bull trout. This area has also been designated as critical habitat for Southern Resident DPS orcas.

The portion of the action area that could be potentially affected by temporarily decreased water quality is designated critical habitat for Puget Sound ESU Chinook salmon, Puget Sound DPS bull trout, and Southern Resident orca. Designated critical habitats within the action area may experience temporarily increased levels of turbidity during the proposed action. The geographic extent and duration of any potential short-term increases in sedimentation or turbidity are expected to be limited, and are not expected to exceed baseline sedimentation conditions measurably. Any temporarily elevated sedimentation levels will not result in any significant effect to designated or proposed critical habitats. The SPCC plan and other conservation measures implemented as part of this proposed action will be sufficient to ensure that any

potential water quality impacts will not result in any adverse effects to any designated critical habitats.

The long-term effect on water quality within the action area will be a net improvement because of the removal of creosote-treated piles and their replacement with ACZA-treated timber and/or concrete piles.

9.1.2 Noise

The most significant potential noise-related effects will result from pile installation activities. The proposed action will consist of the removal and installation of up to 200 piles in each year of the program. The piles being replaced include a combination of load-bearing structural piles and fender piles. Most of the piles are treated wood piles (including creosote-treated and ACZA-treated piles), but some are concrete. Both types of wood piling will be replaced with ACZA-treated wooden piling of a similar size and diameter. No creosote-treated timber piling will be installed. Concrete piling will be replaced with concrete piling of a similar size and diameter. The largest timber piling will be 18 inches in diameter. The largest concrete piling to be replaced will be 24 inches in diameter. Most of the piling to be replaced are less than 18 inches in diameter, and it is estimated that no more than 4 concrete piling with diameters 18 inches or greater will be replaced in a single year.

While most pile removal and installation will be conducted with a vibratory hammer, some piles may need to be proofed with an impact hammer, and in some cases, it may be necessary to drive a pile for some or all of its entire length with an impact hammer. The proposed action has been designed to use timber and concrete replacement piles, which produce sound pressure levels significantly less than those produced by steel pipe piles.

The following ESA-listed species and designated critical habitats have the potential to be exposed to direct effects of temporarily increased noise levels because of their potential or documented presence within the action area.

- Puget Sound ESU Chinook salmon
- Puget Sound DPS steelhead
- Puget Sound DPS bull trout
- Eastern DPS Steller sea lion
- Southern Resident DPS orca
- Humpback whale
- Marbled murrelet
- GB DPS boccaccio rockfish
- GB DPS yelloweye rockfish
- GB DPS canary rockfish

9.1.2.1 Salmon, Steelhead, Bull Trout, and Rockfish

During the in-water work period, it is possible that adult and/or juvenile Chinook salmon, steelhead, bull trout, and rockfish could be present within the action area. Juvenile rockfish are not likely present in the Sitcum, Blair, or Hylebos waterways in significant numbers at any time, but could be present within the portion of the action area that extends into Commencement Bay and the adjacent waters of Puget Sound. Adult rockfish would only be likely to be present within the deep water habitats of Commencement Bay and adjacent Puget Sound, and not within the waters of the Sitcum, Blair, and Hylebos waterways. Although run timing within the action area is different for each ESU/DPS within the action area, it is possible that these species could be present within the action area, and could be exposed to temporarily elevated underwater noise levels resulting from impact pile driving.

The proposed action has been designed to minimize the likelihood of any impacts resulting from pile installation activities. It has been designed to use small diameter timber and concrete piles, which produce significantly lower peak pressures than steel piles. As described in section 3, impact pile driving activity with concrete piles has the potential to elevate peak underwater noise levels temporarily to approximately 192 dB_{PEAK}, which is well below the peak injury threshold of 206 dB_{PEAK} for ESA-listed fish of any size.

It is not expected that many of the piles will need proofing. However, a worst-case estimate is that up to approximately 10% of piles may need to be proofed in any given year. This would be approximately 20 piles. It is estimated that no more than 4 piles would be proofed in a given day, and that each pile might require up to 100 strikes, representing a worst-case daily maximum of 400 pile strikes for pile proofing. This would result in the cumulative injury threshold for fish greater than 2 grams (187 dB_{RMS}) being temporarily exceeded within a radius of almost 250 feet of pile driving activity. Similarly, the cumulative injury threshold for fish less than 2 grams (183 dB_{RMS}) could be exceeded within approximately 446 feet of pile driving activity. However, fish within this portion of the action area would be expected to be moving rapidly through it and would not be exposed to all 400 strikes, and therefore are not expected to be adversely affected by cumulative underwater noise impacts.

9.1.2.2 Orca, Humpback Whale, and Steller Sea Lion

NMFS has established impact pile driving underwater noise injury thresholds of 180 dBRMS for cetaceans and 190 dBRMS for pinnipeds; impact pile driving disturbance thresholds of 160 dBRMS for both cetaceans and pinnipeds; and vibratory pile driving disturbance thresholds of 120 dBRMS for both cetaceans and pinnipeds.

Noise levels during impact pile installation are not expected to exceed the injury thresholds for either pinnipeds or cetaceans, but they may temporarily exceed the disturbance thresholds of 120 dBRMS (during vibratory pile installation and removal), and of 160 dBRMS (during impact pile installation) within some portions of the action area, depending upon the site at which work is being conducted.

There is little data available regarding underwater noise levels associated with vibratory removal or installation of 12- to 18-inch timber piles, or of 12-24-inch concrete piles. However, the information presented in Section 3.3.2 indicate that 160 dBRMS is a conservative estimate of the sound levels likely to be produced. Similarly, the data presented in Section 3.3.2 indicate that impact installation of concrete piles are expected to produce maximum single strike sound pressure levels of 192 dBPeak, 176 dBRMS, and 174 dBSEL.

Using the practical spreading loss model, the distance at which 160 dBRMS is expected to attenuate to 120 dBRMS is approximately 2.8 miles. The distance at which 176 dBRMS is expected to attenuate down to 160 dBRMS is approximately 382 feet. Additionally, the terrestrial disturbance thresholds for Steller sea lions (100 dBRMS) could be exceeded at distances of approximately 233 feet for impact driving, and at approximately 56 feet during vibratory driving.

Orca, humpback whale, and Steller sea lions are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time, and are therefore unlikely to be exposed to elevated underwater noise associated with any pile removal or installation conducted at Parcels 86, 99, and 105 (sites 9, 10, and 11 on Figures 1-11). Additionally, pile removal or installation conducted at the Blair dock, Parcel 116, BRAC property, or the Washington United Terminal (WUT) (sites 5, 6, 8, and 12 on Figures 1-11) is only expected to elevate sound levels within Commencement Bay within a small area, where ESA-listed marine mammals are unlikely to be present, or within such a small area that the noise would be insignificant.

The sites at which vibratory pile installation and/or removal could potentially affect orca, humpback whale, or Steller sea lions would be at the APM Terminal, Terminal 7, Olympic Container Terminal (OCT), Husky Container Terminal and Trident piers 24 and 25 (sites 1-4 and 7 on Figures 1-11). The only site at which impact pile installation could potentially affect orca, humpback whale, or Steller sea lions would be at the Trident piers 24 and 25 (site 7 on Figures 1-11).

Orca, humpback whale, and Steller sea lion are unlikely to be present within Commencement Bay between July 16 and September 30, and pile removal and installation activities conducted during this time period would not be expected to affect any marine mammals (Osborne 2008; Mongillo 2012). During any vibratory pile removal or installation conducted at the APM Terminal, Terminal 7, Olympic Container Terminal (OCT), Husky Container Terminal and Trident piers 24 and 25 (sites 1-4 and 7 on Figures 1-11), the area within the 120 dBRMS area of effect will be monitored and maintained as marine mammal buffer areas in which pile driving will not commence or will be suspended temporarily if any orca, humpback whale, or Steller sea lions are observed. In addition, during any impact pile installation conducted at Trident Piers 24 and 25, the area within the 160 dBRMS area of effect during impact driving will be monitored and maintained as a marine mammal buffer area. A detailed marine mammal monitoring plan is included as Appendix C.

Since no orca, humpback whale or Steller sea lion will be exposed to temporarily elevated noise levels, noise from the proposed action will have no effect on these species.

9.1.2.3 Marbled Murrelet

The peak underwater injury threshold for marbled murrelet (180 dB_{PEAK}) could be exceeded within approximately 207 feet, and the underwater disturbance threshold (150dB_{RMS}) could be exceeded to a distance of 152 feet during impact pile driving. No injury or disturbance thresholds have been established for marbled murrelet associated with vibratory pile driving. The terrestrial injury threshold for marbled murrelet (92 dBA) could be exceeded at a distance of approximately 400 feet during impact pile driving.

Marbled murrelet are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time, and would not be affected by the proposed action within those waterways. The only site at which pile installation could potentially affect marbled murrelet would be at Trident piers 24 and 25 (site 7 on Figures 3, 6 and 11). Marbled murrelet are present only infrequently in Commencement Bay and would not be expected to be present within 207 feet of the proposed action, given that this area is a very busy shipping lane with continuous activity. There is documented forage fish spawning habitat located approximately 330 feet northeast of the Trident facility, and marbled murrelets may forage in that area. Murrelets foraging there would not be exposed to any underwater or terrestrial noise levels above the injury thresholds.

9.1.2.4 Critical Habitats

The action area has been designated critical habitat for two ESU/DPS of salmon and bull trout, and for Southern Resident DPS orcas. Any temporarily elevated underwater noise levels associated with the proposed action will be temporary and will have no effect on any PCEs of designated or proposed critical habitat.

9.2 Indirect Effects

Indirect effects are defined as those effects that are caused by or result from the proposed action which are later in time but still reasonably certain to occur. The proposed action will not result in any increase in capacity or any other indirect effects that could affect ESA-listed species.

9.3 Effects from Interdependent and Interrelated Actions

Interdependent actions are defined as those actions having no independent utility apart from the proposed action (50 CFR §402-02). Interdependent actions are typically "because of" the proposed action. Interrelated actions are defined as those actions that are part of a larger action and depend on the larger action for their justification (50 CFR §402-02). Interrelated actions are typically "associated with" the proposed action. The proposed action has no interdependent or interrelated actions that could affect ESA-listed species.

9.4 Effects Determinations for Listed Species and Designated Critical Habitat

Based on the description of the proposed action and the analysis provided in this document, Table 15 lists the effects determinations for ESA-listed species and species proposed for listing, while Table 16 shows the effects determinations for designated critical habitats. A summary

description of how these effects determinations were reached for each species and critical habitat follows the tables.

Table 15. Effects Determinations Summary Table – Species

Species ESU/DPS	Federal Status	Effect Determination*
Chinook Salmon		
Puget Sound ESU	Threatened	NLTAA
Steelhead		
Puget Sound DPS	Threatened	NLTAA
Bull Trout		
Puget Sound DPS	Threatened	NLTAA
Steller Sea Lion		
Eastern DPS	Threatened	NLTAA
Orca		
Southern Resident DPS	Threatened	NLTAA
Humpback Whale		
Eastern North Pacific Stock	Endangered	NLTAA
Marbled Murrelet		
N/A (no ESU/DPS designation)	Threatened	NLTAA
Rockfish		
Boccaccio	Endangered	NLTAA
Yelloweye Rockfish	Endangered	NLTAA
Canary Rockfish	Endangered	NLTAA
Pacific Eulachon		
Southern DPS	Threatened	NE

*LTAA = Likely to Adversely Affect; NLTAA = Not Likely to Adversely Affect; NE = No Effect

Table 16. Effects Determinations Summary Table – Critical Habitats

Species ESU/DPS	Critical Habitat Status	Effect Determination*
Chinook Salmon		
Puget Sound ESU	Designated	NLTAA
Steelhead		
Puget Sound DPS	Not designated or proposed	N/A
Bull Trout		
Puget Sound DPS	Designated	NLTAA
Steller Sea Lion		
Eastern DPS	Designated	NE
Orca		
Southern Resident DPS	Designated	NLTAA
Humpback Whale		
Eastern North Pacific Stock	Not designated or proposed	N/A
Marbled Murrelet		
N/A (no ESU/DPS designation)	Designated	NE
Rockfish		
Boccaccio	Not designated or proposed	N/A
Yelloweye Rockfish	Not designated or proposed	N/A
Canary Rockfish	Not designated or proposed	N/A

*LTAA = Likely to Adversely Affect; NLTAA = Not Likely to Adversely Affect; NE = No Effect; NA = Not Applicable

9.4.1 Species

9.4.1.1 Puget Sound ESU Chinook salmon, Puget Sound DPS steelhead, and Puget Sound DBS bull trout

The proposed action "**may affect, but is not likely to adversely affect**" the PS ESU of Chinook salmon. A "**may affect**" determination is warranted based on the following.

- The project will require work below the OHWM of portions of inner Commencement Bay and the Sitcum, Blair, and Hylebos waterways that represent migratory habitat for adult and juvenile Puget Sound ESU Chinook salmon, Puget Sound DPS steelhead, and Puget Sound DPS bull trout.
- The proposed action will conduct work during the in-water work period, when Chinook salmon, steelhead, and/or bull trout could be migrating in Commencement Bay and could enter the action area.
- The project has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during pile removal and installation.

A "**not likely to adversely affect**" determination is based on the following.

- Salmonid habitat within the portions of the action area that are within and immediately adjacent to the pile replacement locations is limited to low- to moderate-quality migration

habitat. No freshwater rearing or spawning habitat occurs within this portion of the action area. Even under normal, non-project conditions, migrating adult and juvenile salmonids likely move through this portion of the action area rapidly.

- Conservation measures described in section 3.2, including work within the in-water work window and the use of only treated timber and concrete piles, will be sufficient to ensure that any temporary noise-related impacts will not result in any adverse effects to any Chinook salmon, steelhead, or bull trout.
- Peak underwater noise levels will not rise to levels where injury would be expected and the extent of potential impacts will be limited to temporary avoidance of the action area.
- Cumulative underwater noise impacts are not expected to rise to the level of take, as there is little habitat within the portion of the action area where cumulative noise levels could exceed injury thresholds, and fish would be expected to move quickly through these areas and not be exposed to the entire extent of cumulative impacts.

9.4.1.2 Eastern DPS Steller sea lion

The proposed action "**may affect, but is not likely to adversely affect**" Eastern DPS Steller sea lion. A "**may effect**" determination is warranted based on the following.

- The project will require work below the OHWM of a portion of inner Commencement Bay which represents potentially suitable foraging habitat for Steller sea lion.
- The proposed action will conduct work during the in-water work period, when Steller sea lion could potentially be present within Commencement Bay, and could potentially enter the action area.
- The project has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during the proposed action.

A "**not likely to adversely affect**" determination is based on the following.

- Steller sea lion are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time of year, and would not be affected by activities conducted within those waterways
- Steller sea lions are present only infrequently in Commencement Bay and the adjacent waters of Puget Sound. There are no documented Steller sea lion haulouts within the action area, and the action area does not represent a significant migratory corridor.
- During pile removal or installation conducted between October 1 and February 14, a marine mammal monitoring plan will be implemented to avoid impacts to ESA-listed marine mammals. The areas in which monitoring is proposed is site-dependent, and is also dependent on the type of activity being conducted (vibratory removal or installation or impact installation). Some sites will not require monitoring. This will avoid the potential for

any Steller sea lions to be exposed to noise levels above injury or disturbance thresholds. A detailed marine mammal monitoring plan is included as Appendix C.

- Conservation measures described in Section 3.2, including work within the in-water work window, the use of only treated timber and concrete piles, and implementation of the marine mammal monitoring plan included as Appendix C of this document will be sufficient to ensure that any temporary noise-related impacts will not result in any adverse effects to any Steller sea lions

9.4.1.3 Southern Resident DPS orca

The proposed action "**may affect, but is not likely to adversely affect**" Southern Resident DPS orcas. A "**may effect**" determination is warranted based on the following.

- The project will require work below the OHWM of a portion of inner Commencement Bay which represents potentially suitable habitat for orca.
- The proposed action will conduct work during the in-water work period, when orca could potentially be present within Commencement Bay, and could potentially enter the action area.
- The project has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during pile removal and installation.

A "**not likely to adversely affect**" determination is based on the following.

- Orca are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time of year, and would not be affected by activities conducted within those waterways.
- Orca are present only infrequently in Commencement Bay, and are only very rarely present in the months of July–September.
- During pile removal or installation conducted between October 1 and February 14, a marine mammal monitoring plan will be implemented to avoid impacts to ESA-listed marine mammals. The areas in which monitoring is proposed is site-dependent, and is also dependent on the type of activity being conducted (vibratory removal or installation or impact installation). Some sites will not require monitoring. This will avoid the potential for any orca to be exposed to noise levels above injury or disturbance thresholds. A detailed marine mammal monitoring plan is included as Appendix C.
- Conservation measures described in Section 3.2, including work within the in-water work window, the use of only treated timber and concrete piles, and implementation of the marine mammal monitoring plan included as Appendix C of this document will be sufficient to ensure that any temporary noise-related impacts will not result in any adverse effects to any orca.

9.4.1.4 Humpback Whale (Eastern North Pacific Stock)

The proposed action will have "**may affect, but is not likely to adversely affect**" humpback whale. A "**may effect**" determination is warranted based on the following:

- The project will require work below the OHWM of a portion of Commencement Bay which represents potential foraging habitat for humpback whale.
- The proposed action will conduct work below the OHWM of Commencement Bay during the in-water work period, when humpback whale could potentially be present in Commencement Bay or adjacent waters of Puget Sound, and could potentially enter the action area.
- The project has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during pile removal and installation.

A "**not likely to adversely affect**" determination is based on the following:

- Humpback whale are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time of year, and would not be affected by activities conducted within those waterways.
- Humpback whales are present only infrequently in waters of Puget Sound, and are not expected to occur in Commencement Bay
- During pile removal or installation conducted between October 1 and February 14, a marine mammal monitoring plan will be implemented to avoid impacts to ESA-listed marine mammals. The areas in which monitoring is proposed is site-dependent, and is also dependent on the type of activity being conducted (vibratory removal or installation or impact installation). Some sites will not require monitoring. This will avoid the potential for any humpback whale to be exposed to noise levels above injury or disturbance thresholds. A detailed marine mammal monitoring plan is included as Appendix C.
- Conservation measures described in Section 3.2, including work within the in-water work window, the use of only treated timber and concrete piles, and implementation of the marine mammal monitoring plan included as Appendix C of this document will be sufficient to ensure that any temporary noise-related impacts will not result in any adverse effects to any humpback whales.

9.4.1.5 Marbled murrelet

The proposed action "**may affect, but is not likely to adversely affect**" marbled murrelet. A "**may effect**" determination is warranted based on the following.

- The project will require work below the OHWM of portions of inner Commencement Bay that represent potentially suitable habitat for marbled murrelet.

- The proposed action will conduct work during the in-water work period, when marbled murrelet could potentially be present within Commencement Bay, and could potentially enter the action area.
- The proposed action has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during pile removal and installation.

A "**not likely to adversely affect**" determination is based on the following.

- Marbled murrelet are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time of year, and would not be affected by activities conducted within those waterways.
- Marbled murrelet are present only infrequently in Commencement Bay, and are not frequently observed in close proximity to the busy industrial areas where pile removal and installation would be occurring.
- Marbled murrelet are not expected to be present within the areas in which underwater or terrestrial noise levels could exceed injury thresholds and would not be exposed to injury.
- Marbled murrelets could be exposed to underwater or terrestrial noise levels that could lead to temporary disturbance, but this would not be expected to rise to the level of take.
- Conservation measures described in Section 3.2, including work within the in-water work window and the use of only treated timber and concrete piles, will be sufficient to ensure that any temporary noise-related impacts will not result in any adverse effects to any marbled murrelet.

9.4.1.6 GB DPS Boccaccio, GB DPS yelloweye rockfish, and GB DPS Canary rockfish

The proposed action "**may affect but is not likely to adversely affect**" GB DPS boccaccio, GB DPS yelloweye rockfish, and GB DPS canary rockfish. A "**may affect**" determination is warranted based on the following:

- The project will require work below the OHWM of portions of inner Commencement Bay and the Sitcum, Blair, and Hylebos waterways which represent potentially suitable habitat for larval or juvenile boccaccio, yelloweye rockfish, and canary rockfish.
- The proposed action has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during pile removal and installation.

A "**not likely to adversely affect**" determination is based on the following:

- The proposed action will conduct all in-water work during the in-water work period.

- Habitat suitability for boccaccio, yelloweye rockfish, and canary rockfish within the portions of the action area that are immediately adjacent to the pile replacement locations is very low.
- Boccaccio, yelloweye rockfish, and canary rockfish habitat within the Sitcum, Blair and Hylebos waterways within the action area is limited to low- to moderate-quality habitat for larval and juvenile rockfish. No freshwater rearing or spawning habitat occurs within this portion of the action area, and there is no habitat for adult rockfish within this portion of the action area.
- Conservation measures described in Section 3.2, including work within the in-water work window and the use of only treated timber and concrete piles will be sufficient to ensure that any temporary noise-related impacts will not result in any adverse effects to any boccaccio, yelloweye rockfish, and canary rockfish.
- Peak underwater noise levels will not rise to levels where injury would be expected and the extent of potential impacts will be limited to temporary avoidance of the action area.
- Cumulative underwater noise impacts are not expected to rise to the level of take, as there is little habitat within the portion of the action area where cumulative noise levels could exceed injury thresholds, and fish would be expected to move quickly through these areas and not be exposed to the entire extent of cumulative impacts.

9.4.1.7 Southern DPS Pacific Eulachon

The proposed action will have "**no effect**" on Southern DPS Pacific eulachon. This determination is based on the following:

- It is unlikely that any eulachon life stages would be present in the action area. There are no documented eulachon spawning sites within the Sitcum, Blair, or Hylebos waterways, or within Commencement Bay. The closest documented eulachon spawning site or migration corridor is the Elwha River on the Olympic Peninsula.

9.4.2 Critical Habitats

9.4.2.1 Designated salmon and bull trout critical habitat

The waterways within the action area have been designated critical habitat for Puget Sound ESU Chinook salmon and Puget Sound DPS bull trout. The effects determination is that the proposed project "**may affect, but is not likely to adversely affect**" these designated critical habitats. A "**may affect**" determination is warranted based on the following rationale.

- The proposed action will require work below the OHWM of portions of inner Commencement Bay and the Sitcum, Blair, and Hylebos waterways that have been designated critical habitat for the ESU/DPS of salmon and bull trout listed above.
- The action area provides for adequate estuarine, marine nearshore, and offshore marine PCEs of critical habitat for the Puget Sound ESU Chinook salmon; and adequate migratory, food base, marine shoreline, water temperature, hydrologic, water quantity and quality, and competitive species PCEs of critical habitat for Puget Sound DPS bull trout.

- The project has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during the proposed action.
- The proposed action will result in temporarily elevated underwater noise levels during impact pile removal and installation.

A "**not likely to adversely affect**" determination is warranted based on the following rationale.

- Water quality and noise impacts that may result during construction will be temporary and will result in no significant effects to any elements that would degrade any PCEs of critical habitat for either of the ESU/DPS of salmon and bull trout listed above.
- Given the condition and degree of use of the habitat, the temporary water quality impacts and temporary noise impacts will not result in any measurable effect on any PCE of critical habitat for either of the ESU/DPS of salmon and bull trout listed above.

9.4.2.2 Designated Eastern DPS Steller sea lion critical habitat

Critical habitat has been designated for Steller sea lion, but none occurs within the action area. The effects determination is that the proposed project will have "**no effect**" on designated critical habitat for Eastern DPS Steller sea lion.

9.4.2.3 Designated Southern Resident DPS orca critical habitat

The waterways within the action area have been designated critical habitat for Southern Resident DPS orca. The effects determination is that the proposed project "**may affect, but is not likely to adversely affect**" this designated critical habitat. A "**may affect**" determination is warranted based on the following rationale.

- The proposed action will require work below the OHWM of portions of inner Commencement Bay that have been designated critical habitat for Southern DPS orca.
- The action area provides for adequate migratory and water quality, prey, and passage PCEs of critical habitat for orca.
- The proposed action has the potential to result in temporarily impaired water quality within the action area, including temporarily elevated turbidity levels during pile removal and installation.
- The proposed action will result in temporarily elevated underwater noise levels during impact pile removal and installation.

A "**not likely to adversely affect**" determination is warranted based on the following rationale.

- Water quality and noise impacts that may result during construction will be temporary and will result in no measurable or significant effects to any elements that would degrade the water quality, prey, or passage PCEs of critical habitat for orca.

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REFERENCE MATERIAL 4

Essential Fish Habitat

Public Law 104-297, the Sustainable Fisheries Act of 1996, amended the Magnuson-Stevens Fishery Conservation and Management Act to establish new requirements for Essential Fish Habitat (EFH) descriptions in federal fishery management plans and to require federal agencies to consult with NMFS on activities that may adversely affect EFH.

The Magnuson-Stevens Act requires all fishery management councils to amend their fishery management plans to describe and identify EFH for each managed fishery. The Pacific Fishery Management Council (1999) has issued such an amendment in the form of Amendment 14 to the Pacific Coast Salmon Plan, and this amendment covers EFH for the Pacific salmon (Chinook salmon, coho salmon and pink salmon) under NMFS jurisdiction that will potentially be affected by the proposed action.

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires consultation for all federal agency actions that may adversely affect Essential Fish Habitat (EFH). The action area is within designated EFH for Pacific salmon, groundfish, and coastal pelagic species.

EFH for groundfish and coastal pelagic species includes all waters from the mean high water line along the coasts of Washington upstream to the extent of saltwater intrusion and seaward to the boundary of the US exclusive economic zone (370.4 km) (PFMC 1998a and 1998b). Designated EFH for salmonid species in estuarine and marine areas includes nearshore and tidally submerged environments within state territorial water out to the full extent of the exclusive economic zone (370.4 km) offshore from Washington (PFMC 1999).

The Magnuson-Stevens Act requires consultation for all federal agency actions that may adversely affect EFH. EFH consultation with NMFS is required by federal agencies undertaking, permitting, or funding activities that may adversely affect EFH, regardless of its location. Under Section 305(b)(4) of the Magnuson-Stevens Act, NMFS is required to provide EFH conservation and enhancement recommendations to federal and state agencies for actions that adversely affect EFH. Wherever possible, NMFS utilizes existing interagency coordination processes to fulfill EFH consultations with federal agencies. For the proposed action, this goal is being met by incorporating EFH consultation into the ESA Section 7 consultation, as represented by this PBE.

Location

As stated above, the proposed activities will occur within the Sitcum, Blair, and Hylebos waterways of Puget Sound, near Tacoma, Washington, in Pierce County (Figure 1). The project site is within WRIA 10 (Puyallup-White), and is located within HUC 17110014 (Puyallup) (see PBE section 3 for a complete description of the project location).

Description of Project Activities

The proposed action will consist of replacement of no more than 200 piles per year at 12 Port wharf/dock facilities. Under the proposed pile replacement program, pile replacement will be conducted on an as-needed basis to maintain the function and structural integrity of the docks and marginal wharves within the Port's Industrial Development District. The numbers and specific locations of piles to be replaced will be dependent upon the number assessed as damaged in each given year. The Port estimates that no more than 200 piles would need to be replaced in any given year. This represents approximately 1% of the total number of piles in place at the 12 facilities. The actual number of piles requiring replacement in any given year could be less than 200.

Potential Adverse Effects of Project Activities

The proposed action has the potential to affect EFH for Pacific salmon, groundfish, and coastal pelagic species. Specific elements of the proposed action that could potentially impact EFH are summarized here (see PBE section 9 for a detailed analysis of the potential effects of the project).

Direct effects of the proposed action will be mostly temporary in nature. The only permanent effects of the project will be a minor increase in water quality within the action area resulting from the removal of creosote-treated timber piles. Piles will be replaced within the footprint of the structure from which they are removed, and there will be no net increase in the amount of benthic impacts or overwater structure as a result of the proposed action.

Temporary impacts associated with pile removal will be limited to temporarily impaired water quality conditions, and temporarily elevated noise levels within the action area.

Pile installation activities could disturb sediments and temporarily increase turbidity within waterbodies that represent EFH for Pacific salmon, groundfish, and coastal pelagic species. There is also slight potential for leaks and spills of fuel, hydraulic fluids, lubricants, and other chemicals from equipment and storage containers associated with the project. Discharge of vehicle and equipment wash water, etc., could also add pollutants to the soil that would then be delivered to waterways.

With any over-water work, there is also the potential for construction debris to enter the waterway. Several Conservation Measures (described in PBE Section 3.2) have been implemented to minimize the potential for debris to enter the waterway during construction.

The most significant potential noise-related effects will result from pile installation activities. The proposed action will install up to 200 12-18-inch timber and/or 12-24-inch concrete piles. Piles will mostly be installed via vibratory hammer, but some piles may need to be proofed or partially installed with an impact hammer. Pile driving activities will be restricted to the approved in-water work window for Puget Sound (July 16–February 14 of each year).

Conservation Measures

Conservation measures that will be implemented by the project are discussed in Section 3.2 of the PBE. The primary conservation measures incorporated into the proposed action include adherence to the in-water work window, implementation of an SPCC plan, the use of small diameter timber and concrete piles, and the use of a vibratory hammer as the primary means of pile installation.

Implementation of these conservation measures will be sufficient to ensure that any impacts to EFH are temporary and insignificant, and do not affect any functional component of EFH for Pacific salmon, groundfish, or coastal pelagic species.

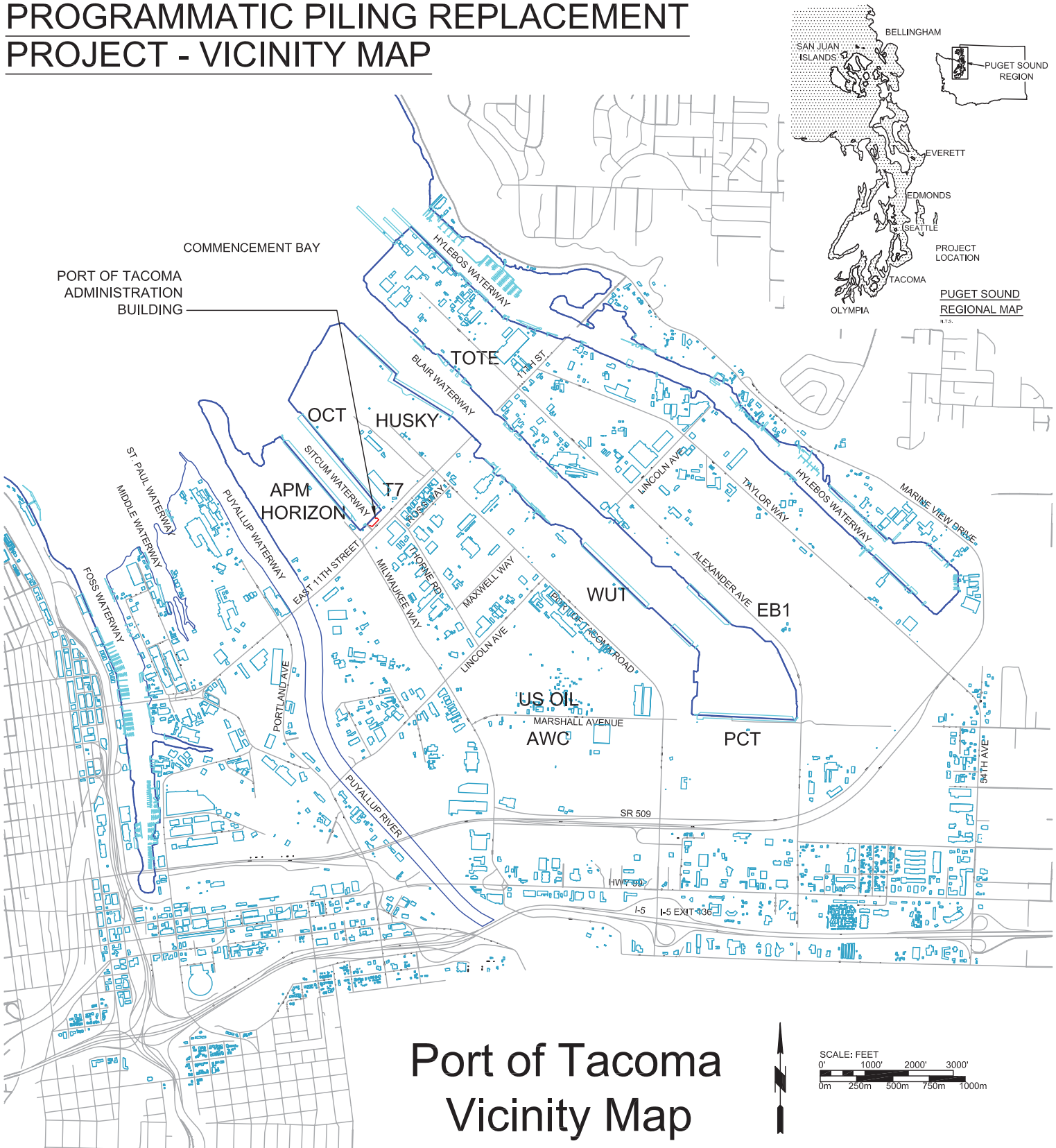
Conclusions

In accordance with the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act, it has been determined that the project "**will not adversely affect**" EFH for Pacific salmon, groundfish, or coastal pelagic species.

The proposed action has incorporated several conservation measures intended to avoid and/or minimize potential effects to habitat. Water quality and noise impacts that may result during construction will be temporary and will result in no significant effects to any functional component of EFH for Pacific salmon groundfish, and/or coastal pelagic species.

REFERENCE MATERIAL 5

PROGRAMMATIC PILING REPLACEMENT PROJECT - VICINITY MAP



Port of Tacoma Vicinity Map

SCALE: FEET
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0m 250m 500m 750m 1000m

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Reference: NWS-2011-0089-WRD

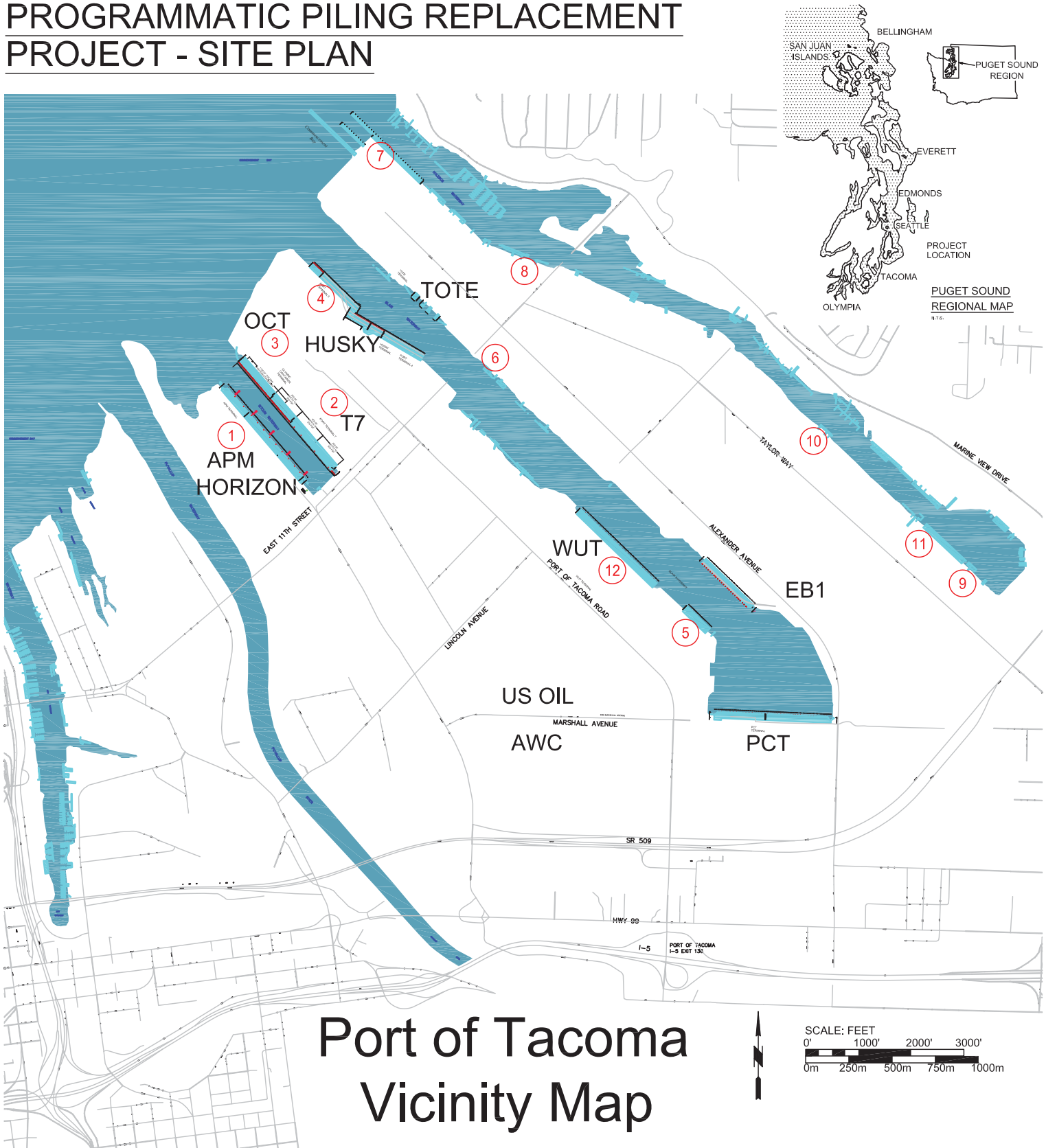
PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 01

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 1 OF: 10 DATE: 10/07/2011

PROGRAMMATIC PILING REPLACEMENT PROJECT - SITE PLAN



Port of Tacoma Vicinity Map

SCALE: FEET
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1 APM TERMINALS	5 BLAIR DOCK	9 PARCEL 86
2 TERMINAL 7	6 PARCEL 115	10 PARCEL 99
3 OCT	7 TRIDENT	11 PARCEL 105
4 HUSKY TERMINAL	8 BRAC PROPERTY	12 WUT

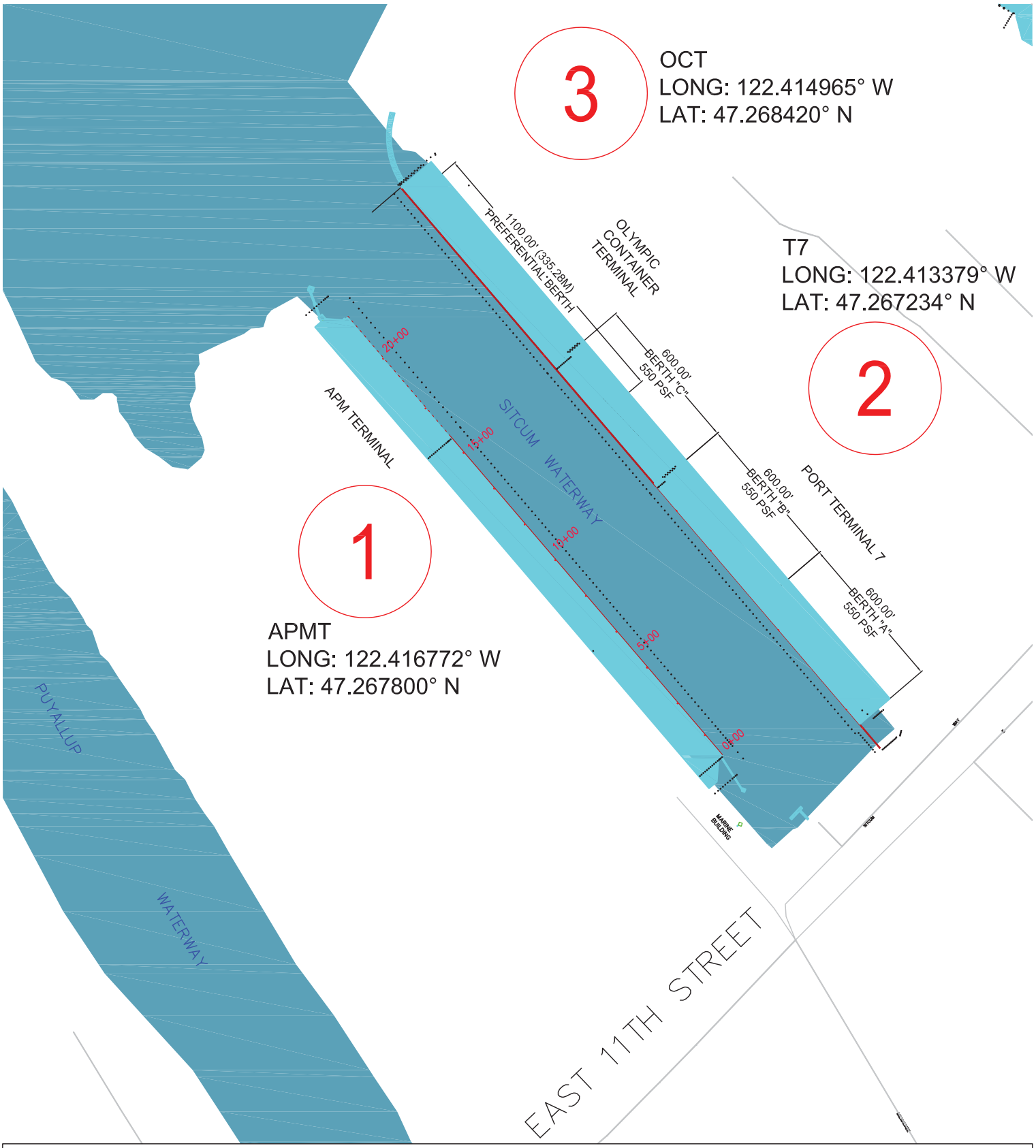
Reference: NWS-2011-0089-WRD

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 02

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 2 OF: 10 DATE: 10/07/2011



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1. APM TERMINAL
2. T7 TERMINAL
3. OCT TERMINAL

Reference: NWS-2011-0089-WRD

0' 500' 1000'

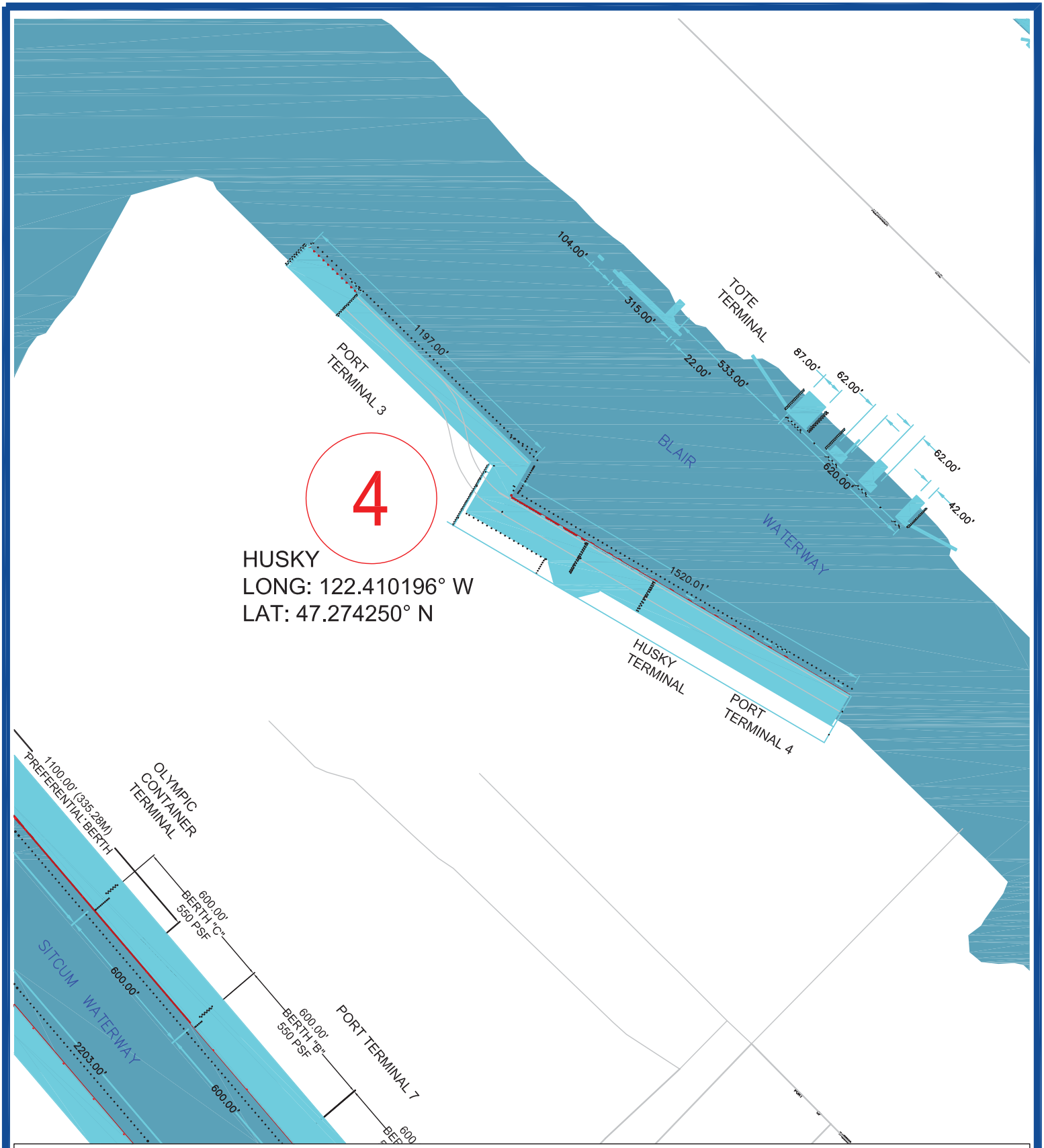
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 03

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 3 OF: 10 DATE: 10/07/2011



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4 HUSKY TERMINAL

Reference: NWS-2011-0089-WRD

0' 500' 1000'

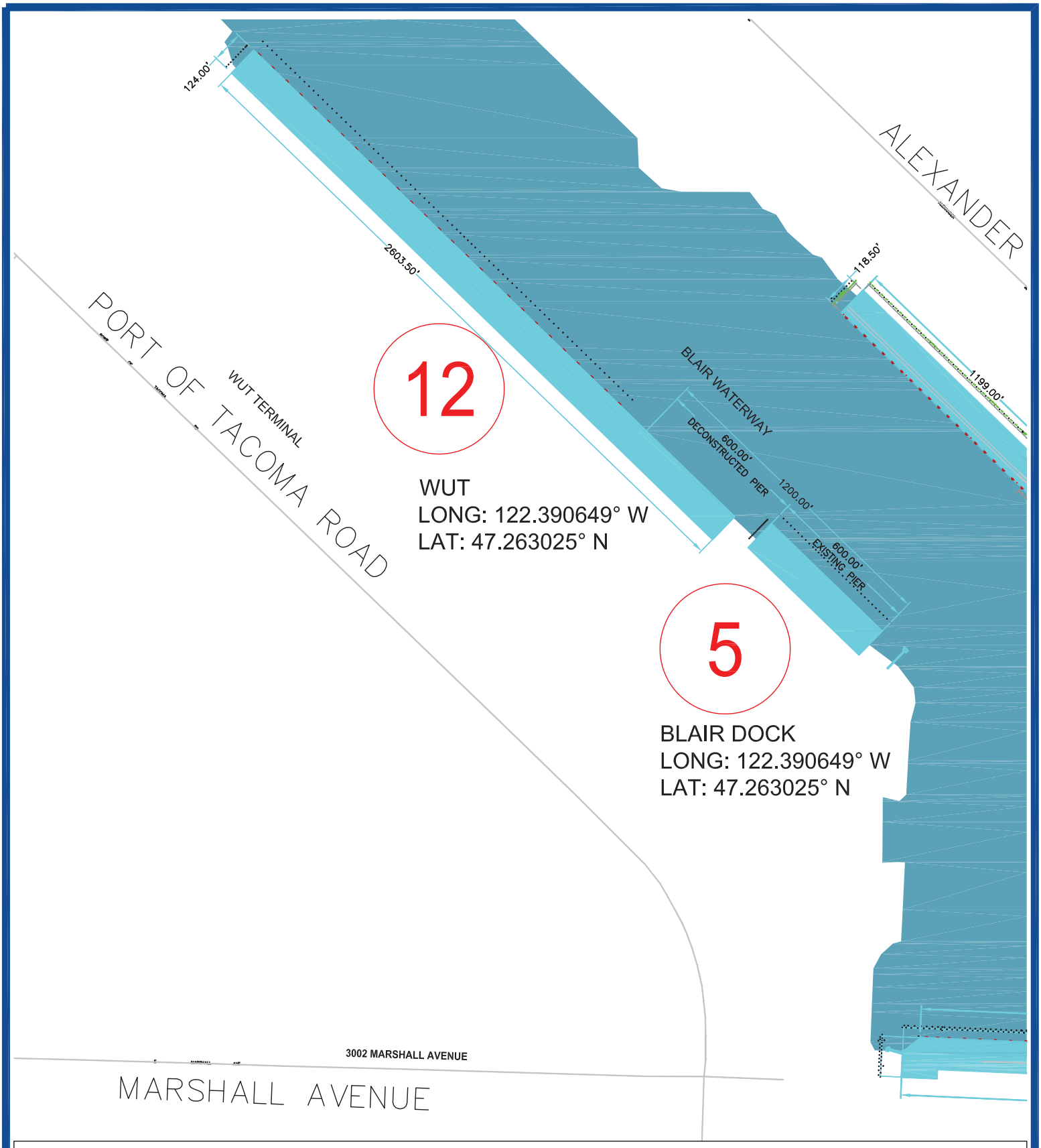
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 04

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 4 OF: 10 DATE: 10/07/2011



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(12) WUT
(5) BLAIR DOCK

Reference: NWS-2011-0089-WRD

0' 500' 1000'

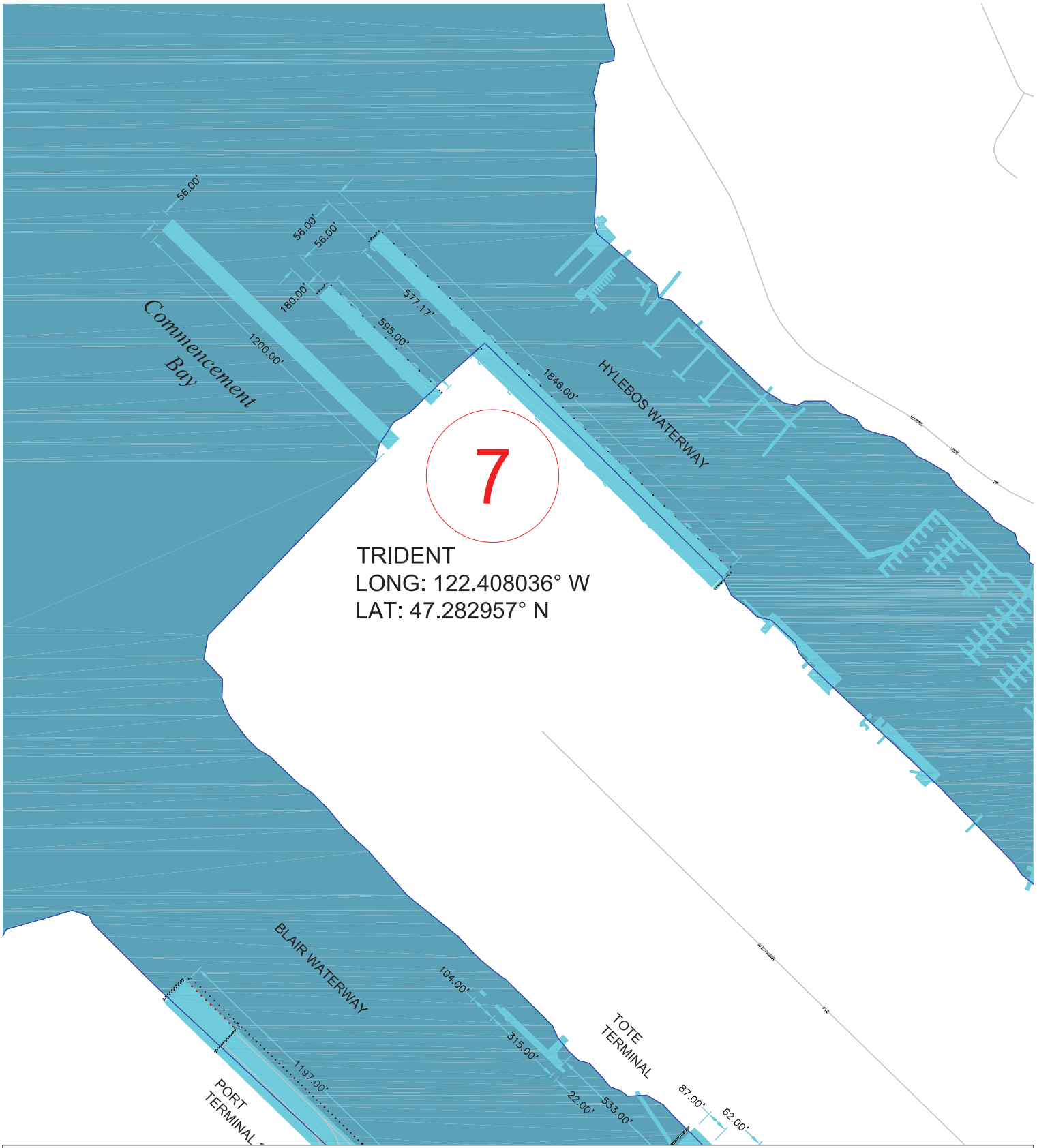
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 05

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 5 OF: 10 DATE: 10/07/2011



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(7) TRIDENT

Reference: NWS-2011-0089-WRD

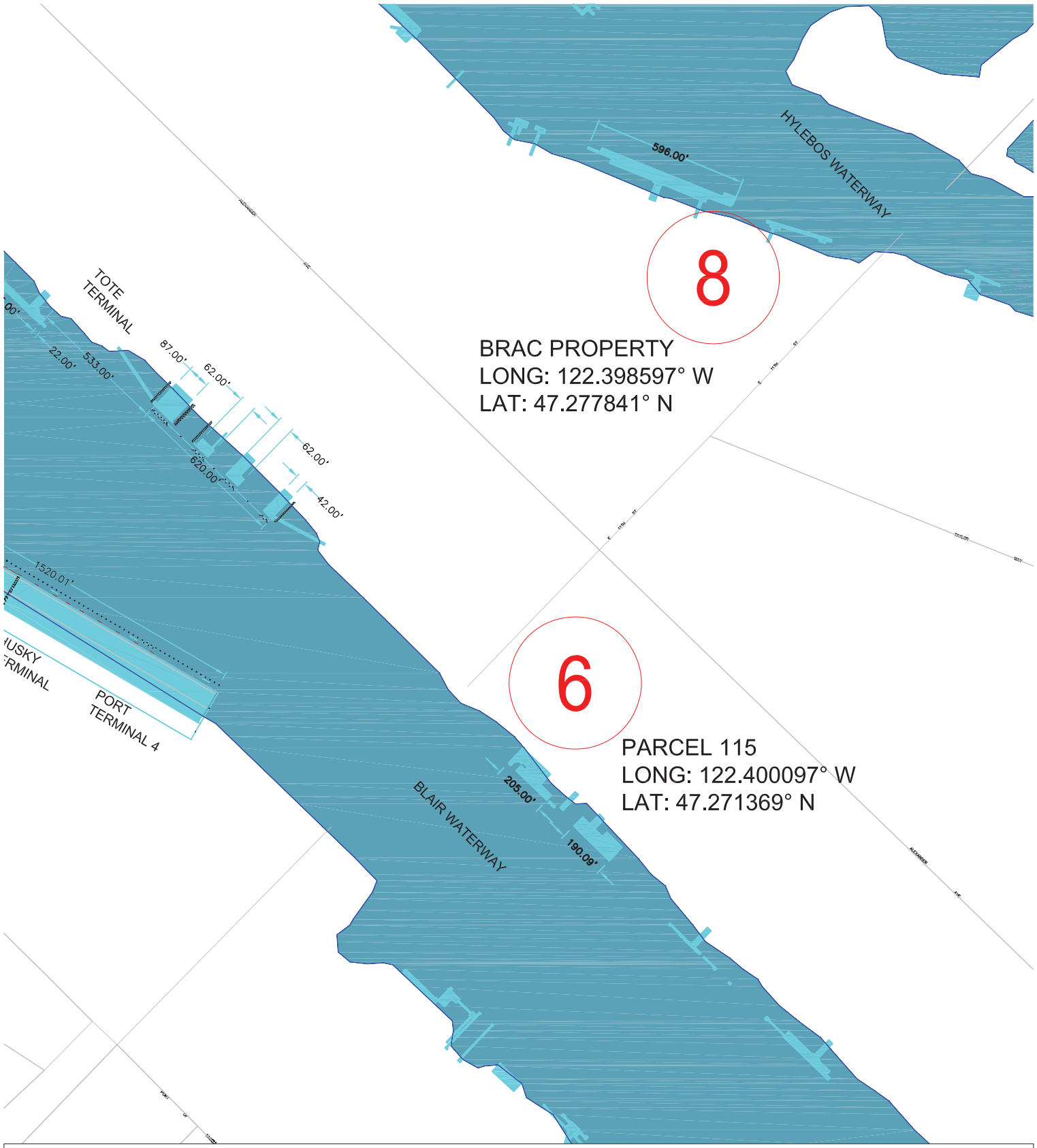
0' 500' 1000'

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 06

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 6 OF: 10 DATE: 10/07/2011



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(8) BRAC PROPERTY
(6) PARCEL 115

Reference: NWS-2011-0089-WRD

0' 500' 1000'

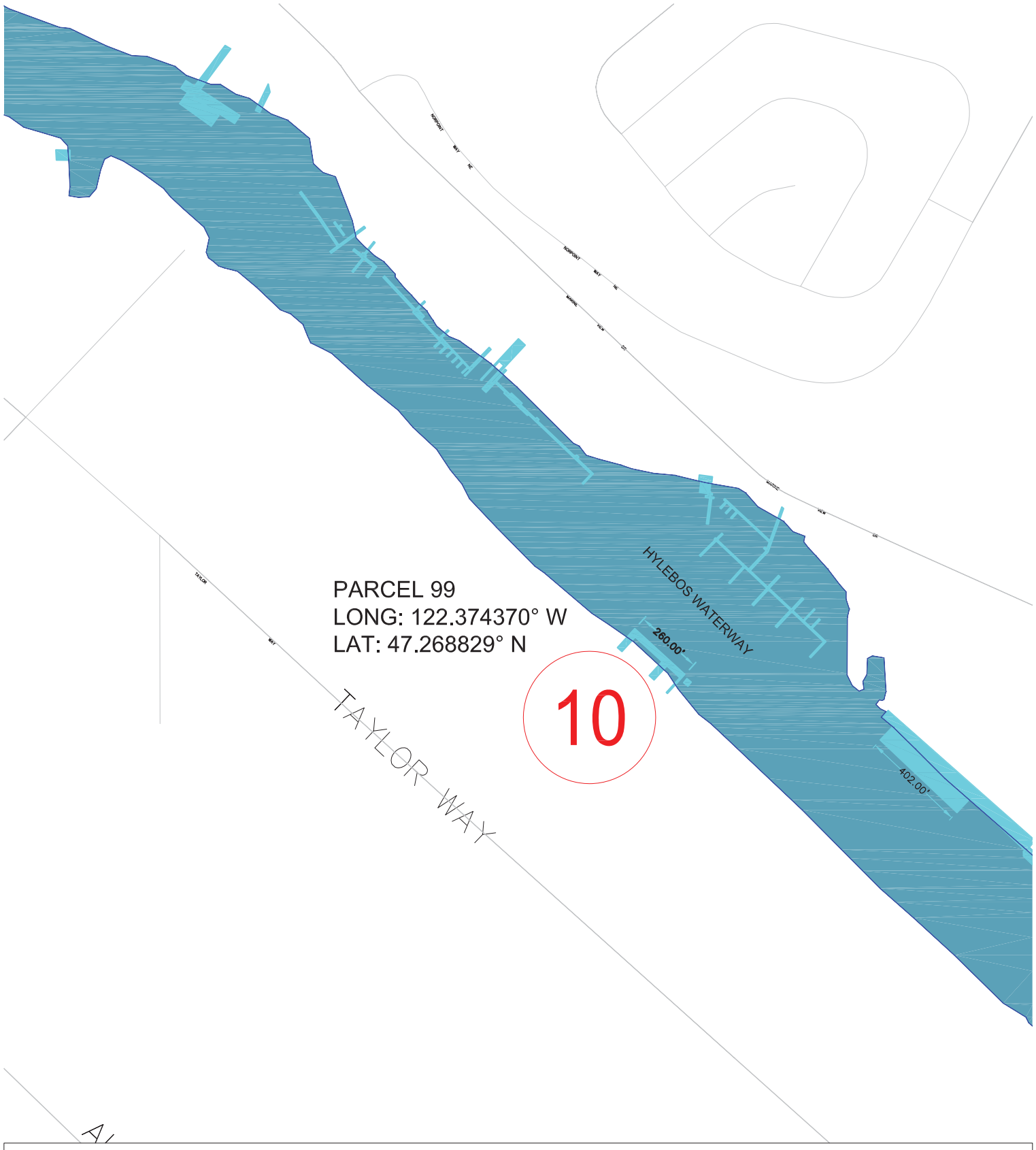
PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 07

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 7 OF: 10 DATE: 10/07/2011



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(10) PARCEL 99

Reference: NWS-2011-0089-WRD

0' 500' 1000'

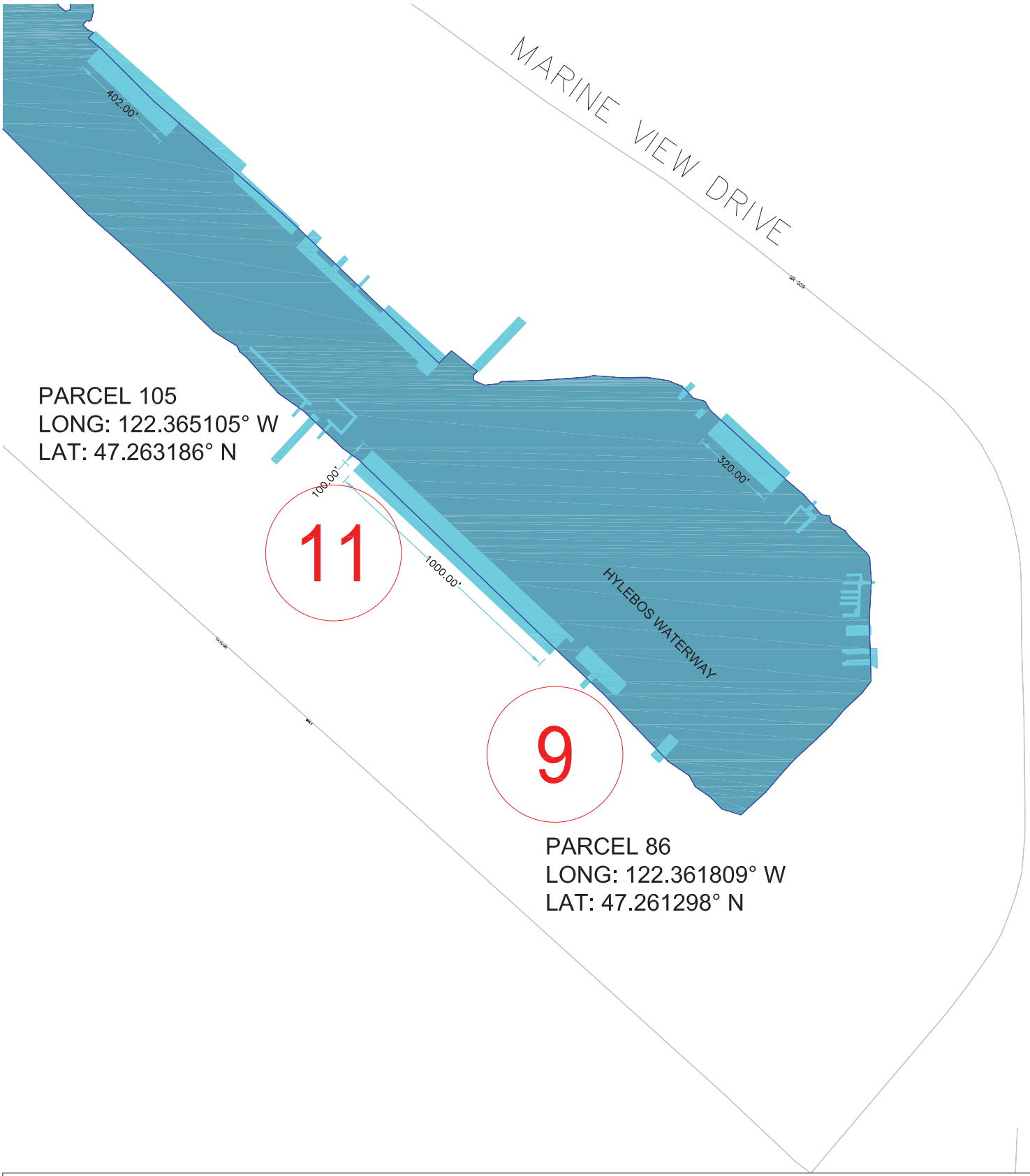
PORT OF TACOMA

P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 08

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROGRAM

PROJECT NO: N/A
SHEET: 8 OF: 10 DATE: 10/07/2011



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(11) PARCEL 105
(9) PARCEL 86

Reference: NWS-2011-0089-WRD

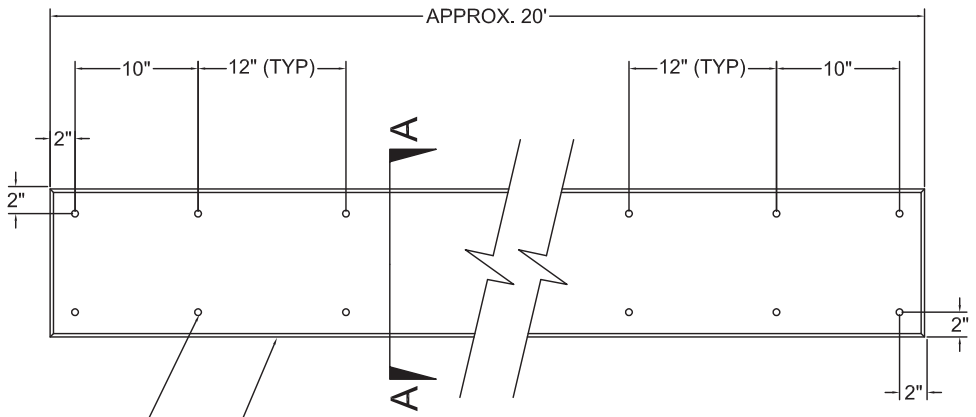
0' 500' 1000'

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

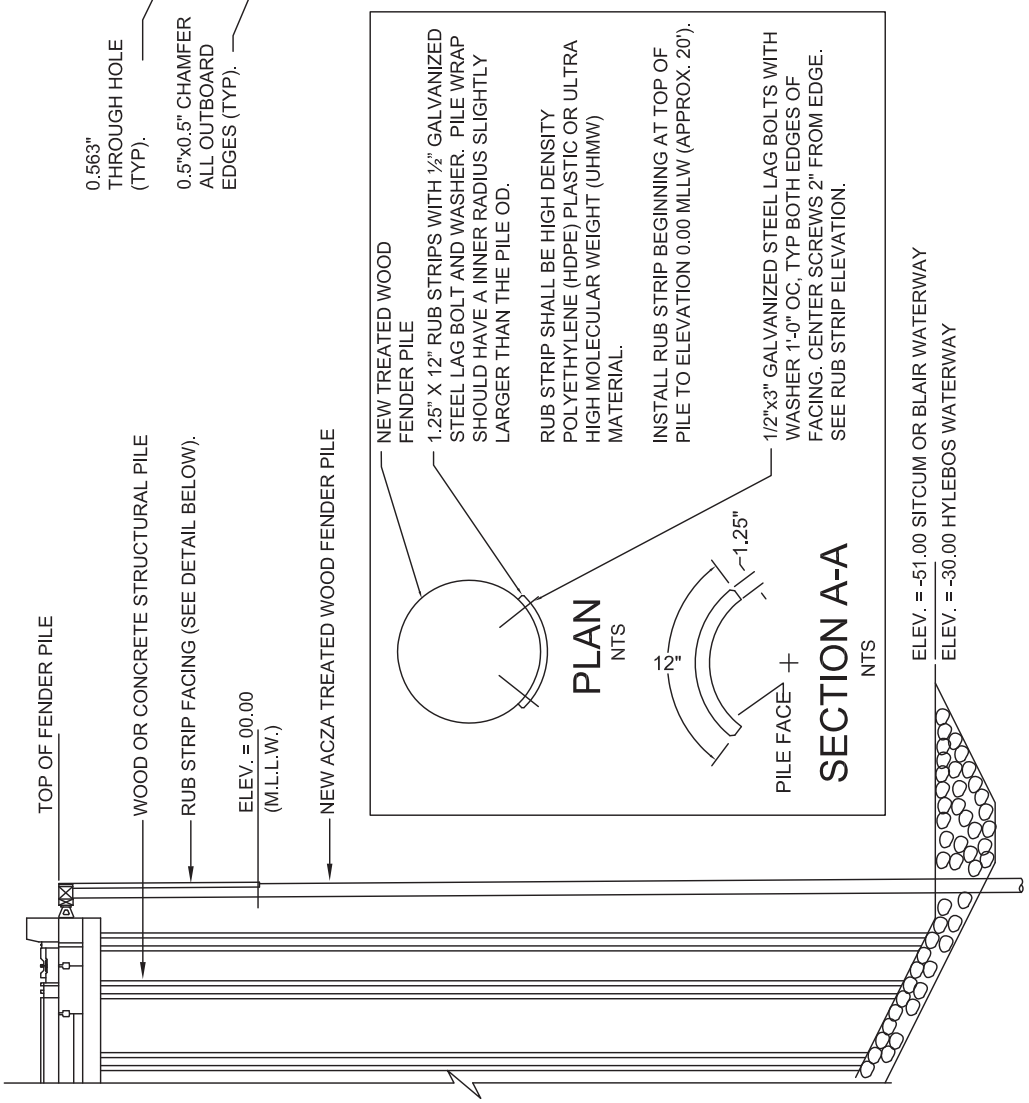
FIGURE 09

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROGRAM

PROJECT NO: N/A
SHEET: 9 OF: 10 DATE: 10/07/2011



RUB STRIP ELEVATION
NTS



TYP. FENDER SECTION
NTS

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Reference: NWS-2011-0089-WRD

PORT of TACOMA U.S.A.

PORT OF TACOMA
P.O. BOX 1837 TACOMA, WA 98401
(253)383-5841

FIGURE 10

STATE: WA
COUNTY: PIERCE
CITY/PORT: PORT OF TACOMA
LOCATION: PORT OF TACOMA
PURPOSE: PILING REPLACEMENT PROJECT

PROJECT NO: N/A
SHEET: 10 OF: 10 DATE: 10/07/2011

Figure 11 - Action Area Reference: NWS-2011-0089-WRD

Port of Tacoma - Programmatic Pile Replacement BE
P.O. Box 1837
Tacoma, WA 98401

0 0.5 1 2 3 Miles

Source: Pierce County GIS (2011)

Q:\Vancouver\2012\VAVAN-12-024\Planning\Graphics\latest pdfs - 04-05-2012\Fig11_ActionArea.mxd

REFERENCE MATERIAL 6

Compliance Form

PORT OF TACOMA PILING REPLACEMENT PROGRAM

Corps Reference #: NWS-2011-89-WRD
NMFS Reference #:
FWS Reference #:
Reporting Period:
Date of Report:
Report Preparer:

By March 15th of each year in which work under the above referenced permit is conducted, this compliance form will be filled out, signed and submitted to: U.S. Army Corps of Engineers, Regulatory Branch, P.O. Box 3755, Seattle, WA 98124-3755.

1. Permittee:

   Port of Tacoma
   PO Box 1837
   Tacoma, Washington 98401-1837

2. Summary of completed work:

Waterway Name	# Concrete Replacement Piling Installed	# AZCA Timber Replacement Piling Installed	Linear Feet Waterway Impact*
Blair Waterway			
Hylebos Waterway			
Sitcum Waterway			
Commencement Bay			
Totals			

   * Linear feet of waterway impact is calculated as the maximum linear distance between two piles at each structure where pile replacement is conducted. The number reported is the sum total of linear feet impacted in each waterway.

3. Additional Notes:

I hereby certify that the above-described work has been conducted in compliance with the terms and conditions of this permit, including any project specific conditions required by the District Engineer to ensure that this work would have no more than minimal adverse impact on the aquatic environment.

Signature of Permittee Date

REFERENCE MATERIAL 7

BergerABAM
1111 Main Street, Suite 300, Vancouver, Washington 98660-2958
360/823-6100 • 360/823-6101 Fax • www.abam.com

PORT OF TACOMA
MARINE MAMMAL MONITORING PLAN
FOR PROGRAMMATIC PILE REPLACEMENT ACTIVITIES

INTRODUCTION

The Port of Tacoma (Port) proposes to conduct pile replacement activities (the proposed action) at 12 wharf/dock structures located in the Sitcum, Blair, and Hylebos waterways and in inner Commencement Bay in Tacoma, Washington (Figure 1).

Figure 1 is an aerial photograph of the project vicinity and displays the action area for the proposed action, which has been established based on the extent of the zones of influence from the following components of the project (Temporary Effects Areas):

- Project Footprint (In-Water)
- Terrestrial Noise
- Underwater noise during impact pile installation (Impact Temporary Effect Area)
- Underwater noise during vibratory pile removal and installation (Vibratory Temporary Effect Area)

Noise levels during both impact pile installation and vibratory pile removal and/or installation could exceed the noise thresholds National Marine Fisheries Service (NMFS) has established for underwater disturbance of marine mammals within portions of the action area at each of the 12 sites. The Programmatic Biological Evaluation (PBE) prepared for this project states that a marine mammal monitoring plan will be implemented during pile removal or installation conducted between October 1 and February 14, to avoid impacts to orca (*Orcinus orca*), humpback whale (*Megaptera novaeangliae*), or Steller sea lions (*Eumatopius jubatus*). The areas in which monitoring is proposed in this plan is dependent upon the location and type of activity being conducted (vibratory removal and/or installation or impact installation). Some sites will not require monitoring.

DISCUSSION

In-Water Vibratory Pile Removal and Installation

The National Marine Fisheries Service (NMFS) has established an underwater noise disturbance threshold of 120 dB_{RMS} for non-impulse, continuous industrial noises for cetaceans and pinnipeds.[1] Noise levels during vibratory pile removal and installation would exceed this

[1] RMS=root mean square

threshold within a portion of the action area (Vibratory Temporary Effect Area) at each of the 12 sites.

The proposed action will consist of the removal and installation of up to 200 piles in each year of the program (July 16, 2012 to February 14, 2017). The proposed action will replace a combination of load-bearing structural piles and fender piles. Most of the piles are treated wood piles (including creosote-treated and ACZA-treated piles), but some are concrete. The proposed action will not install creosote-treated timber piling. ACZA-treated wood piling of a similar size and diameter will replace both creosote-treated and ACZA-treated wood piling. The largest timber piling to be replaced is 18 inches in diameter. Concrete piling of a similar size and diameter will replace concrete piling. The largest concrete piling that will be replaced is 24 inches in diameter. Most of the piling to be replaced is less than 18 inches in diameter. The proposed action will replace no more than an estimated 4 concrete piling with diameters 18 inches or greater in a single year.

There is little data available regarding underwater noise levels associated with vibratory removal or installation of 12- to 18-inch timber piles, or of 12-24-inch concrete piles. A review of existing literature including CALTRANS' Compendium of Pile Driving Data (Reyff 2007), and project specific data published by WSDOT (Laughlin 2007, 2011) indicate that 160 dB_{RMS} is an appropriate worst case estimate of the maximum sound levels likely to be produced during vibratory removal or installation of timber or concrete piles, for the following reasons.

- In 2010 WSDOT collected hydroacoustic data during vibratory pile removal at its Port Townsend Ferry Terminal (Laughlin 2011). The results of this monitoring indicated that average dB_{RMS} values during vibratory pile removal ranged between 149 and 152, with an overall average of 152 dB_{RMS}.

- WSDOT reports that, on average, vibratory noise levels are between 10 and 20 dB lower than those produced by impact pile driving (WSDOT 2011). Underwater noise from impact installation of 12-18" timber piles typically produces maximum underwater noise levels of 170 dB_{RMS}. Impact installation of concrete piles have been shown to produce a range of underwater sound levels (see below), but for purposes of this consultation have been assumed to not exceed 176 dB_{RMS}. If a 10-16 dB reduction is assumed, on average, the underwater noise would be expected to not exceed 160 dB_{RMS} during vibratory removal or installation of timber or concrete piles.

- Concrete and timber piles produce much lower underwater sound pressures than similarly sized steel piles (Reyff 2007). CALTRANS' Compendium of Pile Driving Data (Reyff 2007), provides information regarding vibratory installation of: 12-inch steel pipe

piles (150 dB_{RMS}), 12-inch steel pipe piles (155 dB_{RMS}), 24-inch AZ steel sheet pile (160 dB_{RMS}), and 36-inch steel pipe piles (170 dB_{RMS}). Given these sound pressure levels, it is safe to assume that the sound pressure levels associated with vibratory removal and/or installation of 12-18" timber piles or 12-24-inch concrete piles would not exceed 160 dB_{RMS} on average.

The following assumptions underlay the vibratory pile removal and installation noise attenuation analysis:

- Background in-water noise levels in the action area are not available, so the analysis used a marine mammal vibratory guideline threshold of 120 dB_{RMS}.
- A worst-case estimate of noise level from vibratory removal and installation of concrete and timber piles is 160 dB_{RMS}.
- Noise will attenuate at a rate of 4.5 dB per doubling distance.
- Sound will stop when it reaches the nearest land mass.

The distance at which 160 dB_{RMS} is expected to attenuate to 120 dB_{RMS} using the practical spreading loss model is approximately 2.8 miles. Figures 2-13 show the Vibratory Temporary Effect Area for each of the 12 sites.

The Port may collect site-specific, in-water noise background data before the start of the project to determine if the monitoring area can be reduced.

In-Water Impact Pile Installation

NMFS has established impact pile driving underwater noise injury thresholds of 180 dB_{RMS} for cetaceans and 190 dB_{RMS} for pinnipeds, and impact pile driving disturbance thresholds of 160 dB_{RMS} for both cetaceans and pinnipeds. Noise levels during impact pile installation are not expected to exceed the injury thresholds for either pinnipeds or cetaceans, but will likely temporarily exceed the disturbance threshold of 160 dB_{RMS} within a portion of the action area at each of the 12 sites (Impact Temporary Effect Area).

Data published by WSDOT indicates that impact installation of timber piles, irrespective of diameter, typically produces underwater noise levels as high as 180 dB_{Peak}, 170 dB_{RMS}, and 160 dB_{SEL} (WSDOT 2011). This same data indicates that impact installation of concrete piles, irrespective of diameter, typically produces single strike sound pressure levels of 192 dB_{Peak}, 176 dB_{RMS}, and 174 dB_{SEL} (WSDOT 2011). WSDOT has published project-specific data documenting significantly lower decibel levels (184 dB_{Peak}, 170 dB_{RMS}, and 159dB_{SEL}) during impact driving of 24-inch concrete piles. This analysis uses higher decibel levels for a conservative estimate of the extent of underwater noise.

The distance at which 176 dB_{RMS} is expected to attenuate to 160 dB_{RMS} using the practical spreading model is approximately 382 feet. Figures 2-13 show the Impact Temporary Effect Area for each of the 12 sites.

SPECIES PRESENCE

Orca, humpback whale, and Steller sea lions are not expected to be present within the Sitcum, Blair, or Hylebos waterways at any time, and are therefore unlikely to be exposed to elevated underwater noise associated with any pile removal or installation conducted at Parcels 86, 99, and 105 (sites 9, 10, and 11 on Figures 10, 11, and 12).

Additionally, pile removal or installation conducted at the Blair dock, Parcel 116, BRAC property, and the Washington United Terminal (WUT) (sites 5, 6, 8, and 12 on Figures 6, 7, 9, and 13) is only expected to elevate sound levels within Commencement Bay within a small area, where ESA-listed marine mammals are unlikely to be present, or within such a small area that the noise would be insignificant.

As presented in the PBE, orca, humpback whale, and Steller sea lion are unlikely to be present within Commencement Bay between July 16 and September 30, and pile removal and installation conducted during this time period would not be expected to affect any ESA-listed marine mammals (Osborne 2008; Mongillo 2012). Orcas are most commonly observed in Commencement Bay between approximately October and January, with the greatest potential for occurrence being the months of December and January (Osborne 2008). Humpback whales are sighted only occasionally in south Puget Sound, and are unlikely to occur within the waters of inner commencement Bay at any time of year. Similarly, Steller sea lions do not occur frequently in the inland waters of Washington, and occur only occasionally in the waters of Commencement Bay.

MONITORING SCHEDULE

Marine mammal monitoring will be implemented between October 1 and February 14 to avoid impacts to orca, humpback whale, or Steller sea lion as determined by the PBE prepared for this project. The monitoring will be implemented at the pile replacement activity-specific locations identified below under Monitoring Areas and as detailed below under Monitoring Protocol.

MONITORING AREAS (VIBRATORY & IMPACT PILE REPLACEMENT ACTIVITIES)

The sites at which vibratory pile removal and/or installation could potentially affect orca, humpback whale, or Steller sea lions are the APM Terminal, Terminal 7, Olympic Container Terminal (OCT), Husky Container Terminal and Trident piers 24 and 25 (sites 1-4 and 7 on Figures 2—5 and 8). Therefore, during any vibratory pile removal or installation conducted at these sites (sites 1-4 and 7 on Figures 2-5 and 8), the Vibratory Monitoring Area within the 120 dBRMS Vibratory Temporary Effect Area identified on the respective figures will be monitored and maintained as a marine mammal buffer area. Vibratory pile removal or installation will not commence or will be suspended temporarily if any orca, humpback whale, or Steller sea lion is present within the Vibratory Monitoring Area (i.e., marine mammal buffer) for the respective site at which vibratory pile replacement activities are being conducted (sites 1-4 and 7 on Figures 2-5 and 8).

The only site at which impact pile installation could potentially affect orca, humpback whale, or Steller sea lions is at Trident piers 24 and 25 (site 7 on Figure 8). Therefore, during any impact pile installation conducted at site 7, the respective Impact Monitoring Area within the 160 dBRMS Impact Temporary Effect Area identified on Figure 8 will be will be monitored and maintained as a marine mammal buffer area. Impact pile installation will not commence or will be suspended temporarily if any orca, humpback whale, or Steller sea lion is present within the site 7 (Figure 8) Impact Monitoring Area (i.e., marine mammal buffer).

The Port may collect site-specific in-water noise background data before the start of a pile replacement project, to determine if the monitoring areas can be reduced.

MONITORING PROTOCOL

The Port will conduct the following marine mammal monitoring activities during the timeframe indicated under the Monitoring Schedule above, and at the locations and during the activities described above under Monitoring Areas:

1. Qualified biologists or other trained marine mammal observers who meet the attached list of qualifications for marine mammal observers will be present on site at all times during pile

removal/driving activities per the Monitoring Schedule and at the Monitoring Areas described above.

2. Two observers will monitor the Vibratory Monitoring Area as required by the Monitoring Schedule and Monitoring Areas detailed above (October 1 to February 14, see above for respective sites and figures). The first observer will be in the vicinity of the proposed pile replacement activity. The second observer will be either at a land-based location or on a boat travelling within the area of vibratory impact. The most likely land based locations for the second observer would be either at a location on Browns Point, along Marine View Drive, or along the southwestern shoreline of Commencement Bay.
3. A single observer will monitor the Impact Monitoring Area as required by the Monitoring Schedule and Monitoring Areas detailed above (October 1 to February 14, site 7 only, Figure 8).
4. The observer(s) will use binoculars and visual observation to scan the waters within the respective Monitoring Area.
5. The observer(s) will scan the waters 20 minutes before the beginning of pile removal/driving activities and during all pile removal/driving activities. The observer(s) will notify the on-site operator in charge if Southern Resident orca, humpback whale, or Steller sea lion enter or are observed within the respective Monitoring Area 20 minutes prior to or during pile driving. The operator in charge will require the contractor to not begin or to cease work until the animal has moved outside of the Monitoring Area.

MINIMUM QUALIFICATIONS FOR MARINE MAMMAL OBSERVERS

1. Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface and to estimate target size and distance. Use of binoculars may be necessary to identify the target correctly.
2. Advanced education in biological science, wildlife management, mammalogy, or related field (bachelor's degree or higher is preferred).
3. Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
4. Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).
5. Sufficient training, orientation, or experience with the construction operation to preserve personal safety during observations.
6. Ability to communicate orally, by radio or in person, with project personnel to provide real time information on marine mammals observed in the area as necessary.

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Washington State Department of Transportation (WSDOT). 2011. Biological Assessment Preparation – Advanced Training Manual Version 02-2011. February 2011.

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Figure 1 - Action Area

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan

N
S

0 0.5 1 2 3 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

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Figure 2 - Site 1

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

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Figure 3 - Site 2

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

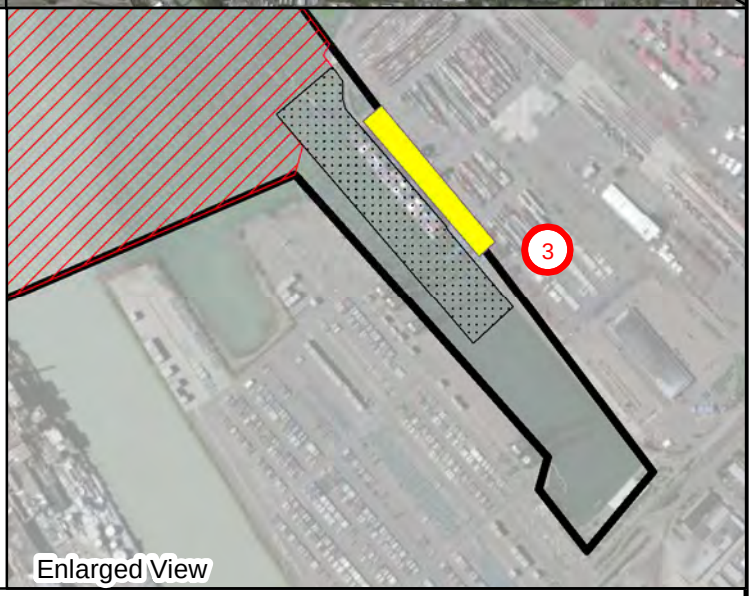

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Figure 4 - Site 3

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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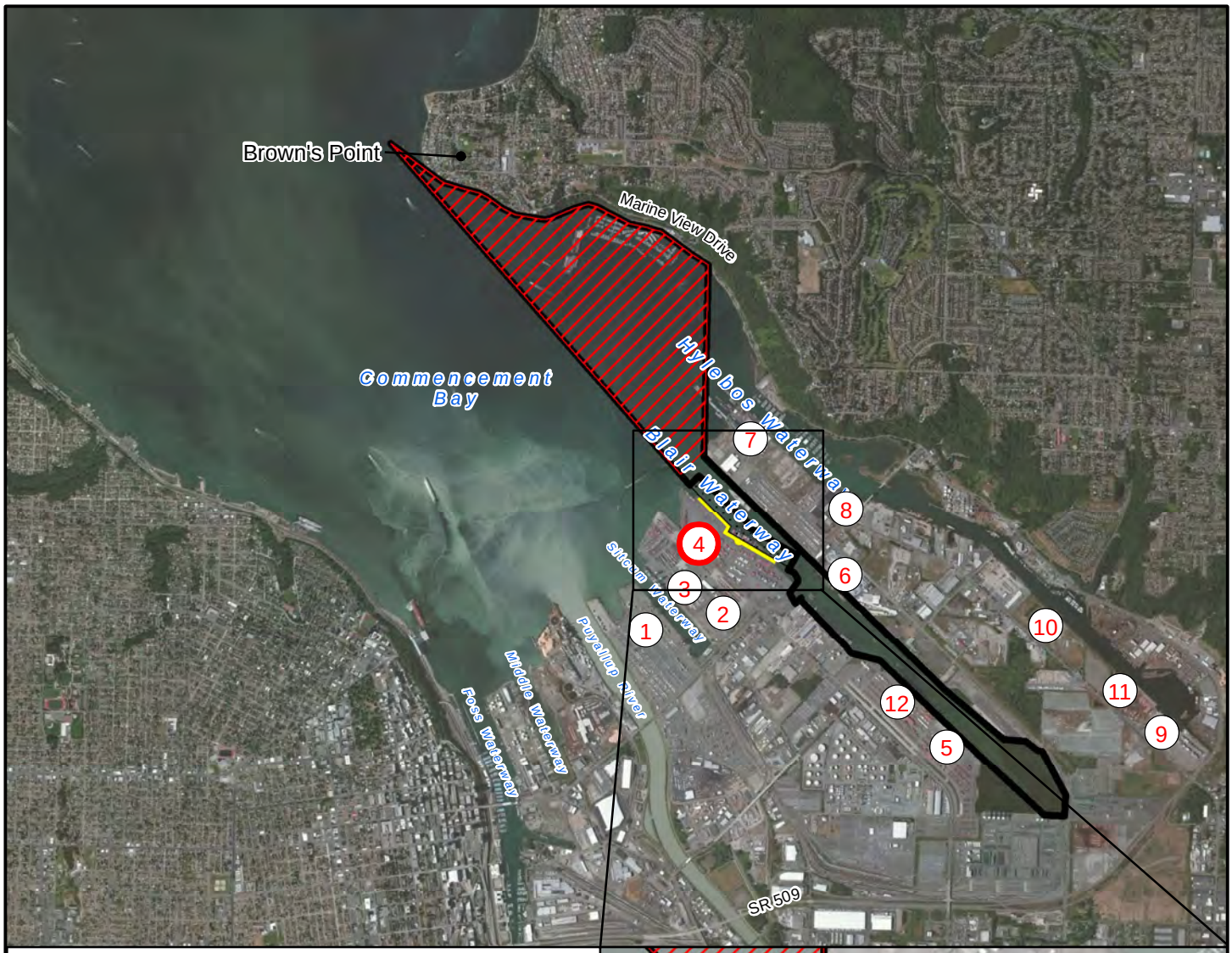

Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

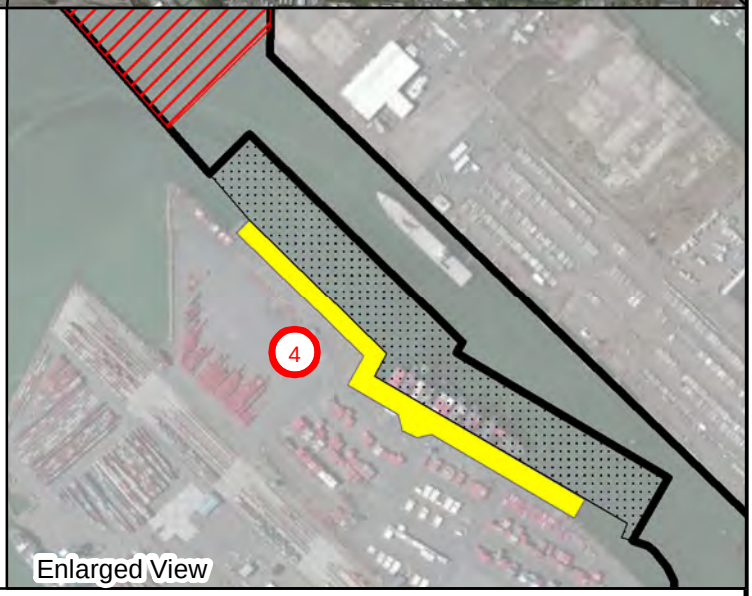

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Figure 5 - Site 4

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

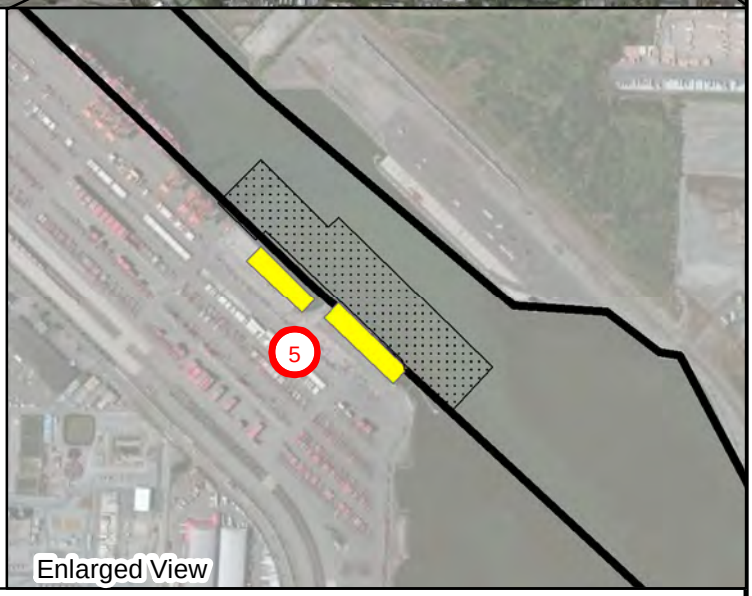

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Figure 6 - Site 5

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

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Figure 7 - Site 6

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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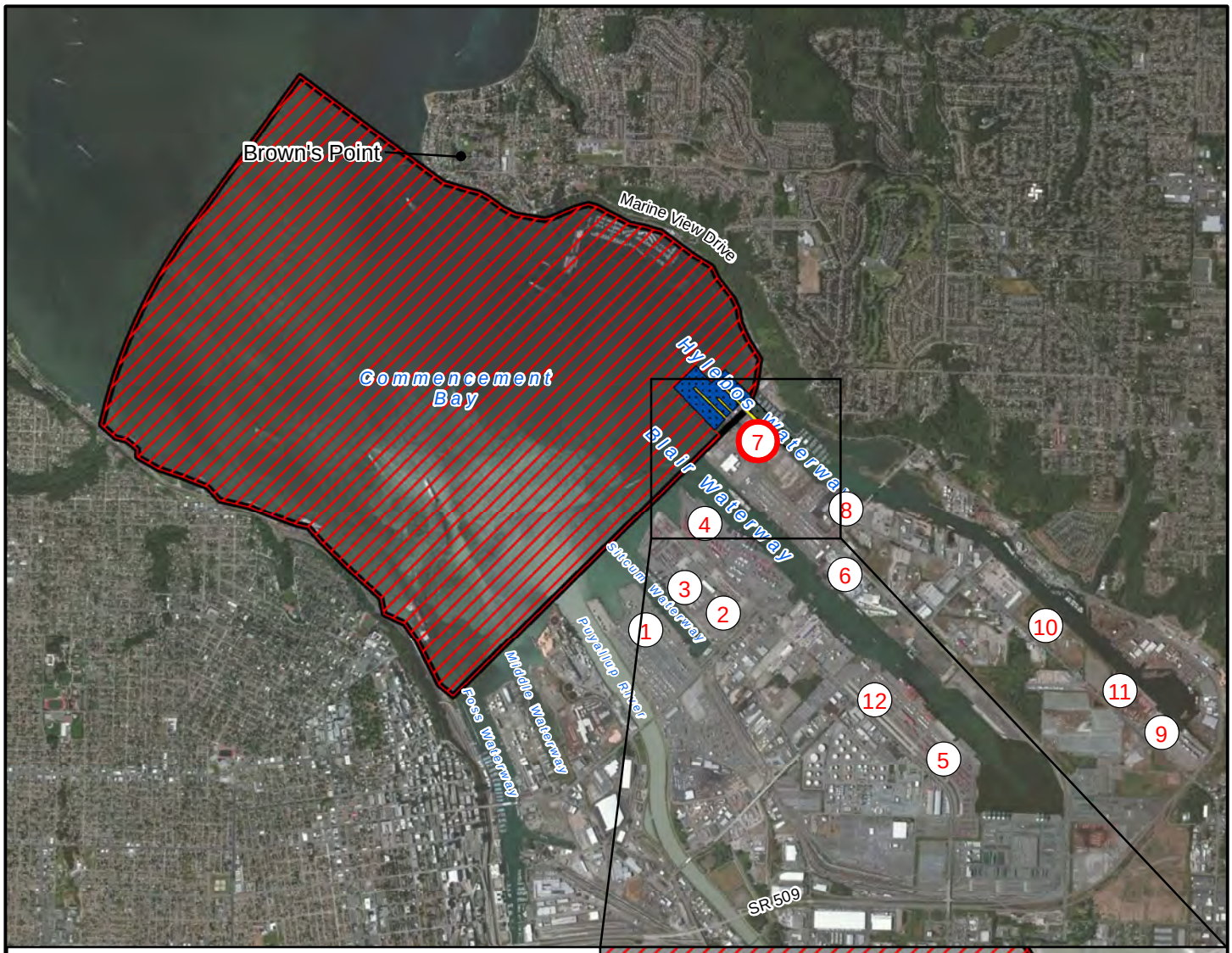

Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

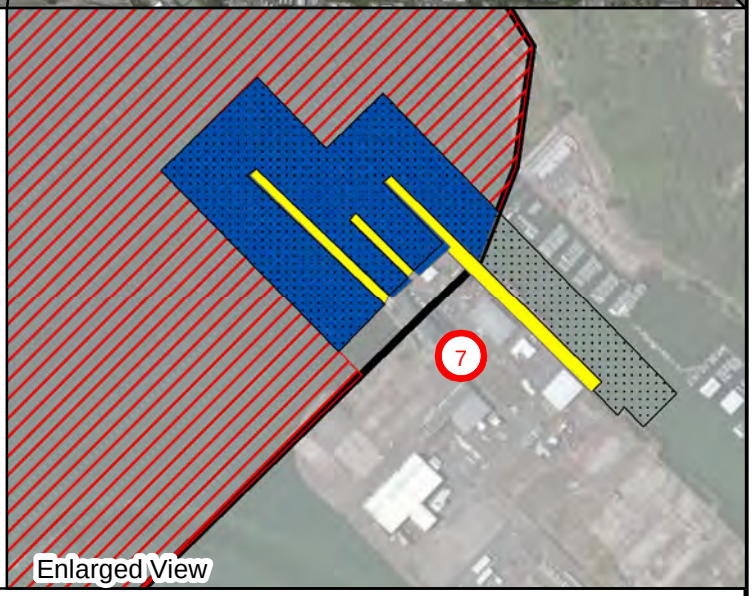

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Figure 8 - Site 7

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
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0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

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Figure 9 - Site 8

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

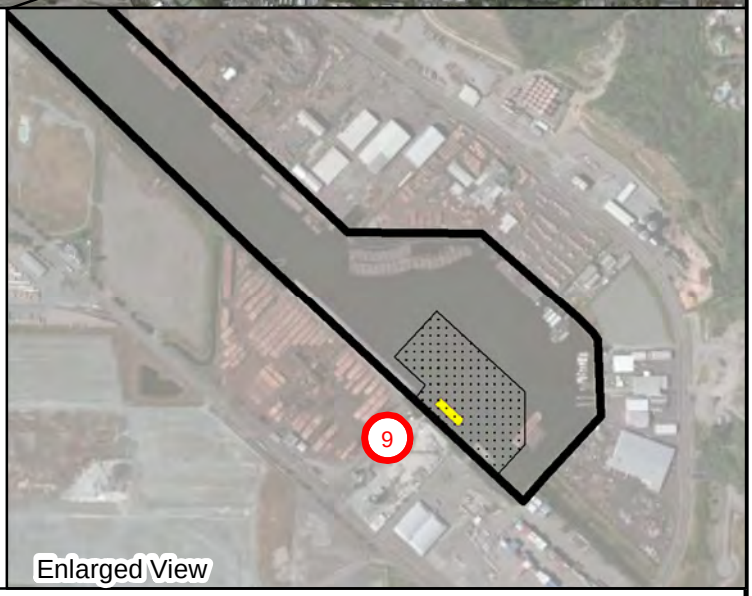

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Figure 10 - Site 9

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

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Figure 11 - Site 10

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

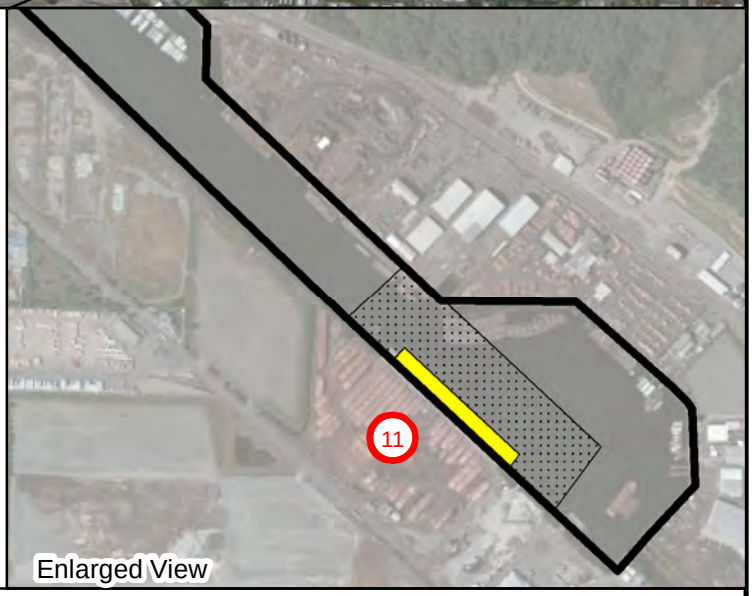

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Figure 12 - Site 11

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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Vibratory Temp. Effect Area (Removal/Installation)

Vibratory Monitoring Area (Removal/Installation)

Impact Temp. Effect Area (Installation)

Impact Monitoring Area (Installation)

Site

1 APM TERMINALS
2 TERMINAL 7
3 OCT
4 HUSKY TERMINAL
5 BLAIR DOCK
6 PARCEL 115
7 TRIDENT
8 BRAC PROPERTY
9 PARCEL 86
10 PARCEL 99
11 PARCEL 105
12 WUT

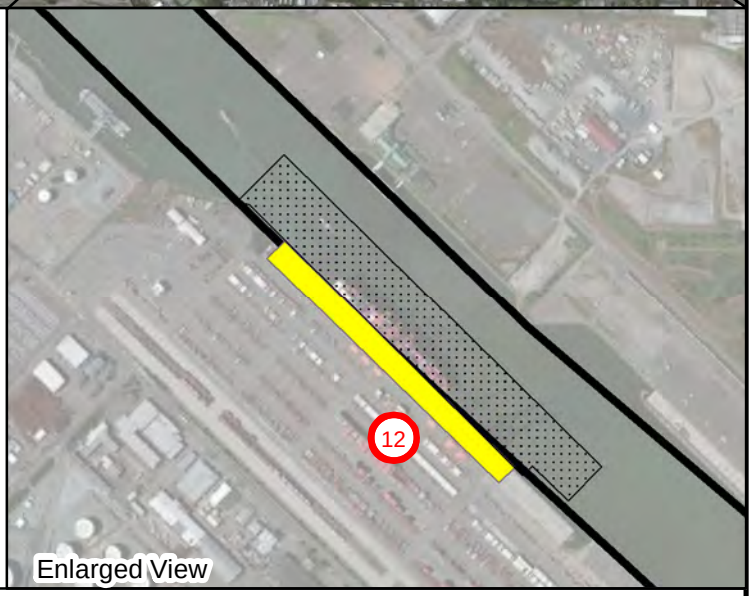

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Figure 13 - Site 12

Programmatic Piling Repair Project - Biological Evaluation
Appendix C: Marine Mammal Monitoring Plan
Temporary Effect and Monitoring Areas

N
S

0 0.25 0.5 1 1.5 Miles

Source: Pierce County GIS (2011)

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REFERENCE MATERIAL 8

Endangered Species Act Status of West Coast Salmon & Steelhead

(Updated Aug. 11, 2011)

Species[1]			*Current Endangered Species Act Listing Status*[2]	*ESA Listing Actions Under Review*
Sockeye Salmon (*Oncorhynchus nerka*)	1	Snake River	***Endangered***	
	2	Ozette Lake	***Threatened***	
	3	Baker River	*Not Warranted*	
	4	Okanogan River	*Not Warranted*	
	5	Lake Wenatchee	*Not Warranted*	
	6	Quinalt Lake	*Not Warranted*	
	7	Lake Pleasant	*Not Warranted*	
Chinook Salmon (*O. tshawytscha*)	8	Sacramento River Winter-run	***Endangered***	
	9	Upper Columbia River Spring-run	***Endangered***	
	10	Snake River Spring/Summer-run	***Threatened***	
	11	Snake River Fall-run	***Threatened***	
	12	Puget Sound	***Threatened***	
	13	Lower Columbia River	***Threatened***	
	14	Upper Willamette River	***Threatened***	
	15	Central Valley Spring-run	***Threatened***	
	16	California Coastal	***Threatened***	
	17	Central Valley Fall and Late Fall-run	***Species of Concern***	
	18	Upper Klamath-Trinity Rivers	*Not Warranted*	
	19	Oregon Coast	*Not Warranted*	
	20	Washington Coast	*Not Warranted*	
	21	Middle Columbia River spring-run	*Not Warranted*	
	22	Upper Columbia River summer/fall-run	*Not Warranted*	
	23	Southern Oregon and Northern California Coast	*Not Warranted*	
	24	Deschutes River summer/fall-run	*Not Warranted*	
Coho Salmon (*O. kisutch*)	25	Central California Coast	***Endangered***	
	26	Southern Oregon/Northern California	***Threatened***	
	27	Lower Columbia River	***Threatened***	• Critical habitat
	28	Oregon Coast	***Threatened***	
	29	Southwest Washington	*Undetermined*	
	30	Puget Sound/Strait of Georgia	***Species of Concern***	
	31	Olympic Peninsula	*Not Warranted*	
Chum Salmon (*O. keta*)	32	Hood Canal Summer-run	***Threatened***	
	33	Columbia River	***Threatened***	
	34	Puget Sound/Strait of Georgia	*Not Warranted*	
	35	Pacific Coast	*Not Warranted*	
Steelhead (*O. mykiss)*	36	Southern California	***Endangered***	
	37	Upper Columbia River	***Threatened***	
	38	Central California Coast	***Threatened***	
	39	South Central California Coast	***Threatened***	
	40	Snake River Basin	***Threatened***	
	41	Lower Columbia River	***Threatened***	
	42	California Central Valley	***Threatened***	
	43	Upper Willamette River	***Threatened***	
	44	Middle Columbia River	***Threatened***	
	45	Northern California	***Threatened***	
	46	Oregon Coast	***Species of Concern***	
	47	Southwest Washington	*Not Warranted*	
	48	Olympic Peninsula	*Not Warranted*	
	49	Puget Sound	***Threatened***	• Critical habitat
	50	Klamath Mountains Province	*Not Warranted*	
Pink Salmon *(O. gorbuscha)*	51	Even-year	*Not Warranted*	
	52	Odd-year	*Not Warranted*	

1 The ESA defines a "species" to include any distinct population segment of any species of vertebrate fish or wildlife. For Pacific salmon, NOAA Fisheries Service considers an evolutionarily significant unit, or "ESU," a "species" under the ESA. For Pacific steelhead, NOAA Fisheries Service has delineated distinct population segments (DPSs) for consideration as "species" under the ESA.

ESA-Listed Marine Mammals

Under the jurisdiction of NOAA Fisheries that may occur:

off Washington & Oregon

- Southern Resident killer whale (*Orcinus orca*) (E); critical habitat
- humpback whale *(Megaptera novaeangliae)* (E)
- blue whale *(Balaenoptera musculus)* (E)
- fin whale (*Balaenoptera physalus)* (E)
- sei whale (*Balaenoptera borealis)* (E)
- sperm whale (*Physeter macrocephalus)* (E)
- Steller sea lion *(Eumetopias jubatus)* (T); critical habitat

in Puget Sound

- Southern Resident killer whale *(Orcinus orca)* (E); critical habitat
- humpback whale *(Megaptera novaeangliae)* (E)
- Steller sea lion *(Eumetopias jubatus)* (T); critical habitat

(E) = Endangered
(T) = Threatened

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Other ESA-Listed Species

Under the jurisdiction of NOAA Fisheries that may occur off Washington & Oregon:

- distinct population segment, or DPS, of bocaccio *(Sebastes paucispinis)* (E) in Puget Sound
- distinct population segment, or DPS, of canary rockfish *(Sebastes pinniger)* (T) in Puget Sound
- distinct population segment, or DPS, of yelloweye rockfish *(Sebastes ruberrimus)* (T) in Puget Sound
- southern distinct population segment, or DPS, of eulachon (Columbia River smelt) *(Thaleichthys pacificus)* (T)
- southern distinct population segment, or DPS, of north American green sturgeon (*Acipenser medirostris*) (T), listed in the NOAA Fisheries Southwest Region

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LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN IN PIERCE COUNTY AS PREPARED BY THE U.S. FISH AND WILDLIFE SERVICE WASHINGTON FISH AND WILDLIFE OFFICE

(Revised August 1, 2011)

LISTED

Bull trout (*Salvelinus confluentus*) – Coastal-Puget Sound DPS
Canada lynx (*Lynx canadensis*)
Gray wolf (*Canis lupus*)
Grizzly bear (*Ursus arctos = U. a. horribilis*)
Marbled murrelet (*Brachyramphus marmoratus*)
Northern spotted owl (*Strix occidentalis caurina*)

Major concerns that should be addressed in your Biological Assessment of project impacts to listed species include:

1. Level of use of the project area by listed species.

2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.

3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

Arenaria paludicola (marsh sandwort) [historic]
Castilleja levisecta (golden paintbrush) [historic]
Howellia aquatilis (water howellia)

Major concerns that should be addressed in your Biological Assessment of project impacts to listed plant species include:

1. Distribution of taxon in project vicinity.

2. Disturbance (trampling, uprooting, collecting, etc.) of individual plants and loss of habitat.

3. Changes in hydrology where taxon is found.

DESIGNATED

Critical habitat for bull trout
Critical habitat for the marbled murrelet
Critical habitat for the northern spotted owl

PROPOSED

None

CANDIDATE

Fisher *(Martes pennanti)* – West Coast DPS
Mardon skipper (*Polites mardon*)
(Roy Prairie and Tacoma) Mazama pocket gopher (*Thomomys mazama* ssp. *glacialis* and *tacomensis* [historic])
North American wolverine *(Gulo gulo luteus)* – contiguous U.S. DPS
Oregon spotted frog (*Rana pretiosa*)
Streaked horned lark (*Eremophila alpestris strigata*)
Taylor's checkerspot (*Euphydryas editha taylori*)
Yellow-billed cuckoo (*Coccyzus americanus*)
Whitebark pine *(Pinus albicaulis*)

SPECIES OF CONCERN

Bald eagle (*Haliaeetus leucocephalus*)
Cascades frog (*Rana cascadae*)
Fender's soliperlan stonefly (*Soliperla fenderi*)
Larch Mountain salamander (*Plethodon larselli*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Northern goshawk (*Accipiter gentilis*)
Northern sea otter (*Enhydra lutris kenyoni*)
Northwestern pond turtle (*Emys* (= *Clemmys*) *marmorata marmorata*)
Olive-sided flycatcher (*Contopus cooperi*)
Oregon vesper sparrow (*Pooectetes gramineus affinis*)
Pacific lamprey (*Lampetra tridentata*)
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)
Peregrine falcon (*Falco peregrinus*)

River lamprey (*Lampetra ayresi*)
Slender-billed white-breasted nuthatch (*Sitta carolinensis aculeata*)
Tailed frog (*Ascaphus truei*)
Valley silverspot butterfly (*Speyeria zerene bremeri*)
Western gray squirrel (*Scirius griseus griseus*)
Van Dyke's salamander (*Plethodon vandykei*)
Aster curtus (white-top aster)
Botrychium ascendens (triangular-lobed moonwort)
Castilleja cryptantha (obscure paintbrush)
Cimicifuga elata (tall bugbane)
Cypripedium fasiculatum (clustered lady's slipper)
Lathyrus torreyi (Torrey's peavine)