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

REPLY TO
ATTENTION OF

Regulatory Branch

NOV 25 2014

Received
DEC 01 2014
D.N.R. Aquatic Lands

Ms. Lisa Randlette
Washington State Department of Natural Resources
Aquatic Resources Division, Reserves Program
P.O. Box 47027
Olympia, Washington 98504-7027

Reference: NWS-2013-846
WA ST Dept. of
Natural Resources

Dear Ms. Randlette:

Enclosed is a Department of the Army permit which authorizes 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" and then "Contact Us."

If you have any questions please contact Mr. Jim Green at james.d.green@usace.army.mil or at (206) 316-3156.

Sincerely,

Michelle Walker
Chief, Regulatory Branch

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: Washington State Department of Natural Resources

Aquatic Resources Division, Reserves Program
P.O. Box 47027
Olympia, Washington 98504-7027

Permit No: NWS-2013-846

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: Install up to 50 new buoys and anchors and relocate up to 150 privately-owned mooring buoys with anchors on State-owned land. Mooring buoys are to be anchored using embedded helical screw anchors, a fully cured concrete block, or steel anchor. Remove up to 40 existing creosote-treated timber piles and up to 75 existing abandoned private mooring buoys and associated marine debris (in accordance with the plans and drawings dated September 20, 2013, attached hereto which are incorporated in and made a part of this permit). The purpose of the project is to provide private recreational boat moorage, improve navigation safety, and clean up State-owned aquatic land.

Project Location: In Quartermaster Harbor, Puget Sound at Vashon Island, King County, Washington.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on NOV 25 2019. 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 1 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 U.S. Army Corps of Engineers, 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. You must implement and abide by the Endangered Species Act (ESA) requirements and/or agreements set forth in your Reference Biological Evaluation Specific Project Information Form, dated July 31, 2013, in its entirety. The National Marine Fisheries Service (NMFS) concurred with a finding of "may affect, not likely to adversely affect" based on this document on March 11, 2014 (NMFS Reference Number WCR-2014-369). The U.S. Fish and Wildlife Service (USFWS) concurred with a finding of "may affect, not likely to adversely affect" based on this document on March 4, 2014 (USFWS Reference Number 01EWFW00-2014-I-0181). Both agencies will be informed of this permit issuance. Failure to comply with the commitments made in this document constitutes non-compliance with the ESA and your U.S. Army Corps of Engineers (Corps) permit. The USFWS/NMFS is the appropriate authority to determine compliance with ESA.

d. In order to meet the requirements of the Endangered Species Act and for the protection of Chinook salmon, steelhead, and bull trout, you may conduct the authorized activities from July 16 through February 15 in any year this permit is valid. You shall not conduct work authorized by this permit from February 16 through July 15 in any year this permit is valid.

e. You must contact the National Oceanic and Atmospheric Administration, National Ocean Survey, Office of Coast Survey, N/CS261, 1315 East-West Highway, Silver Spring, Maryland, 20910-3283, in writing at least 2 weeks before you begin work to provide notification of the proposed buoy fields and request a determination of the need for designating the proposed buoy fields on navigation charts. Your notification must include a drawing which certifies the location and configuration of the completed activities (an authorized permit may be used).

Further Information:

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

X Section 10 of the Rivers and Harbor Act of 1899 (33 United States Code (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 Kristi Sedell, Aquatics D.M. 11/19/14

Washington State Department of Natural Resources (DATE)

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

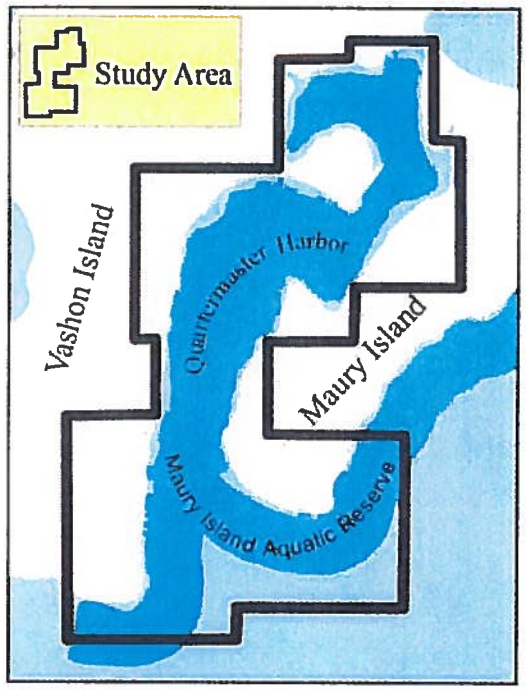
11/25/14

John G. Buck (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)

QUARTERMASTER HARBOR MOORING BUOY MANAGEMENT PLAN



SHEET INDEX

1. COVER SHEET / AREA MAP / STUDY AREA (p. 1)
2. EXISTING CONDITIONS DESCRIPTION (p. 2)
3. MAPS OF EXISTING AND PROPOSED BUOY LOCATIONS (pp. 3-31)
4. END NOTES / SCHEMATIC DRAWINGS FOR EMBEDDED ANCHOR SYSTEM AND CALCULATING VESSEL SWING (pp.32-33)

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 1 of 34 **DATE:** 9/20/13

EXISTING CONDITIONS

Washington State Department of Natural Resources (DNR) inventoried **274** existing recreational mooring buoys throughout Quartermaster Harbor on both state-owned and private tidelands. More than half (**140**) are clustered at Burton Cove, Judd Creek, and Dockton where DNR proposes to establish mooring buoy fields. Of the total number of existing buoys, about **187** buoys are located completely or partially on state-owned aquatic lands. The remaining **87** buoys are located completely on private tidelands, outside of DNR's proprietary jurisdiction, and beyond the scope of this regulatory permit request.

DNR proposes to authorize up to **200** properly-installed buoys on state-owned aquatic lands, consistent with regulatory permit requirements that minimize potential adverse environmental and navigational impacts. DNR anticipates authorizing up to **50** new buoys over time, primarily to waterfront residential property owners. DNR estimates up to **150** existing buoys will be relocated, including some that are currently located on private tidelands whose owners need deeper water to avoid periodic, low-tide boat groundings. Finally, DNR intends to remove up to **75** existing, unclaimed and abandoned buoys over time, along with associated marine debris, as funding becomes available.

To date, DNR has received almost **100** applications for recreational buoy licenses for existing or new buoys. DNR is holding these applications for consideration and formal action until DNR receives the necessary regulatory permits.

Assumed Water Depths in Study Area

- Burton Cove north area assumed depth – 12.5 feet
- Burton Cove south area assumed depth – 10.0 feet
- Judd Creek assumed depths – 10.0 feet, 12.5 feet, 15.0 feet
- Dockton area assumed depths – 10.0 feet, 15.0 feet, 20.0 feet
- Inner Quartermaster Harbor average assumed depth – 15.0 feet
- Outer Quartermaster Harbor average assumed depth – 30.0 feet

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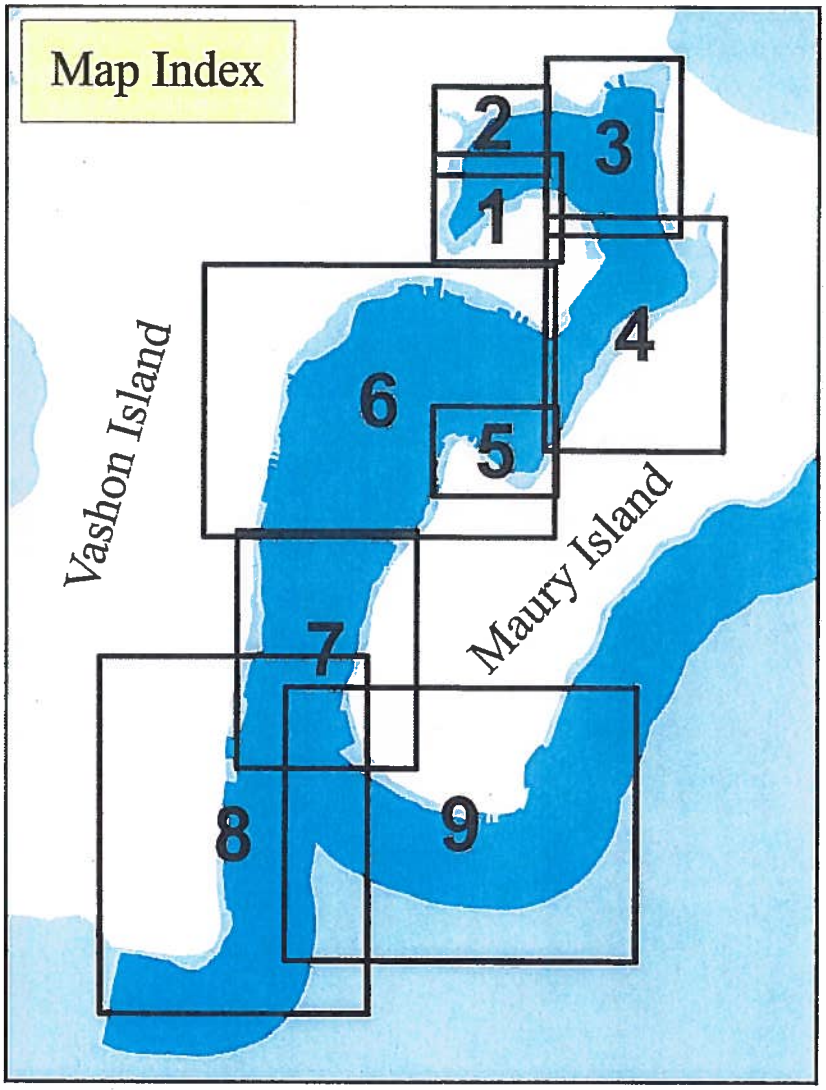

Inner Quartermaster Harbor *(Maps 1 - 5)*
1. Burton Cove (A-D)
2. Judd Creek (A-C)
3. N. Burton Peninsula / Portage (A-C)
4. Jensen Pt. / Raab's Lagoon / S.E. Burton Peninsula / N. Dockton (A-C)
5. Dockton (A-D)

Outer Quartermaster Harbor *(Maps 6 - 9)*
6. W. Dockton / S. Burton / Magnolia Beach / Indian Pt. / (A-D)
7. Harbor Heights / S.W. Maury Island (A-B)
8. S.E. Vashon Island / Neill Pt. (A-B)
9. Piner Pt. (A-B)

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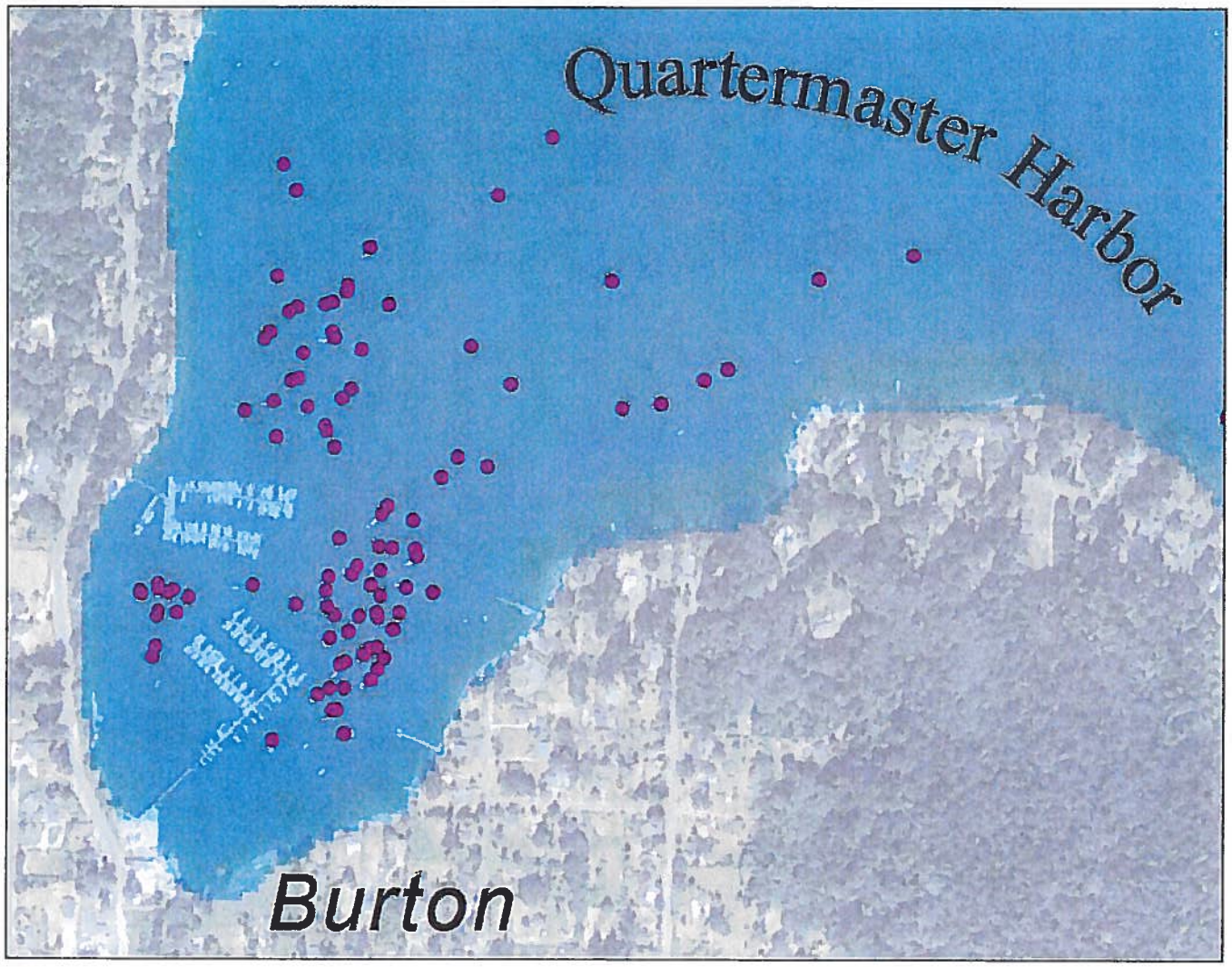
Map 1A BURTON COVE - GENERAL DISTRIBUTION OF EXISTING BUOYS



Not to Scale

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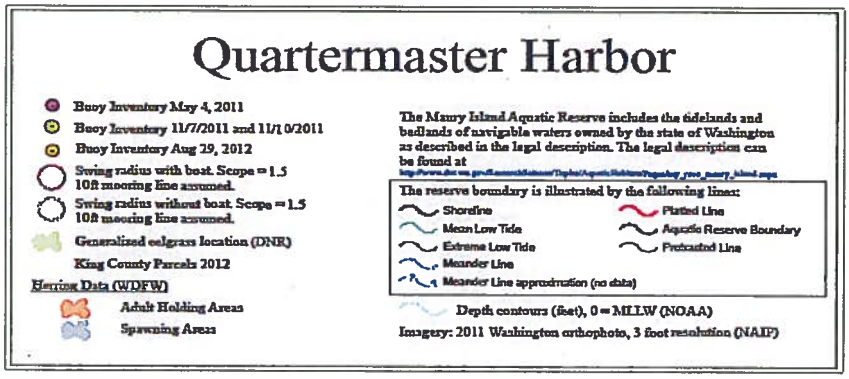
LEGEND FOR DETAILED MAPS



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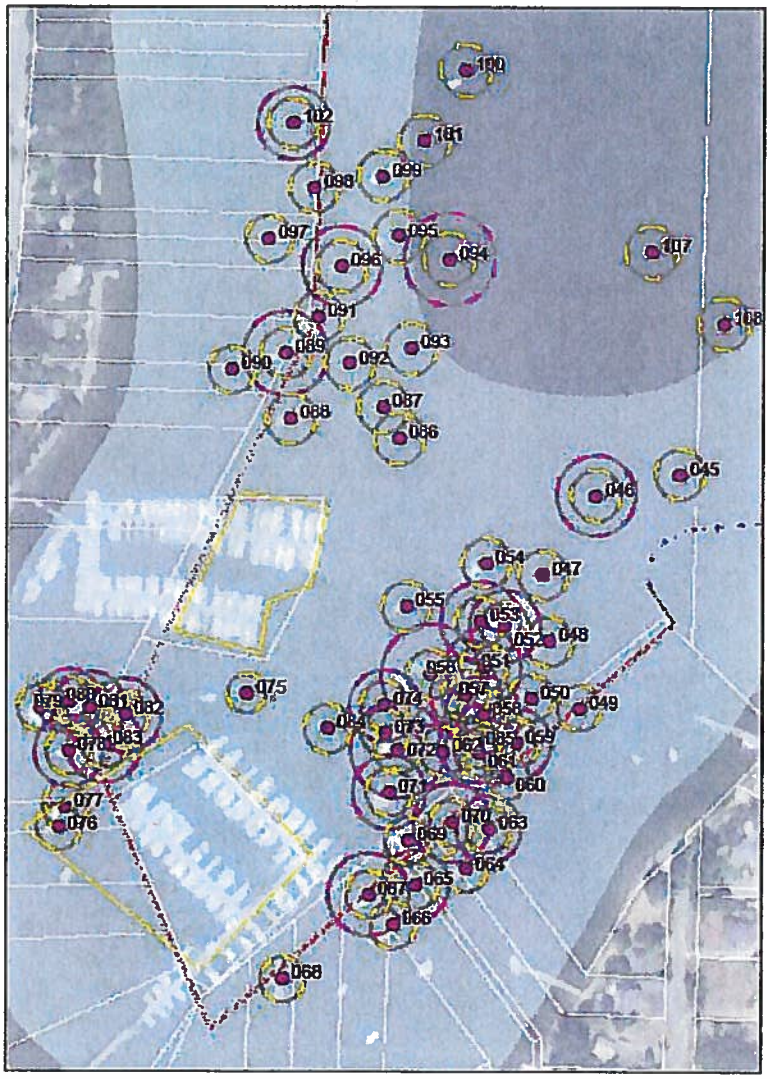
Map 1B BURTON COVE (approx. 63 existing buoys on state-owned and private tidelands)

Match w/ Map 2A



Match w/ Map 1C

Not to Scale

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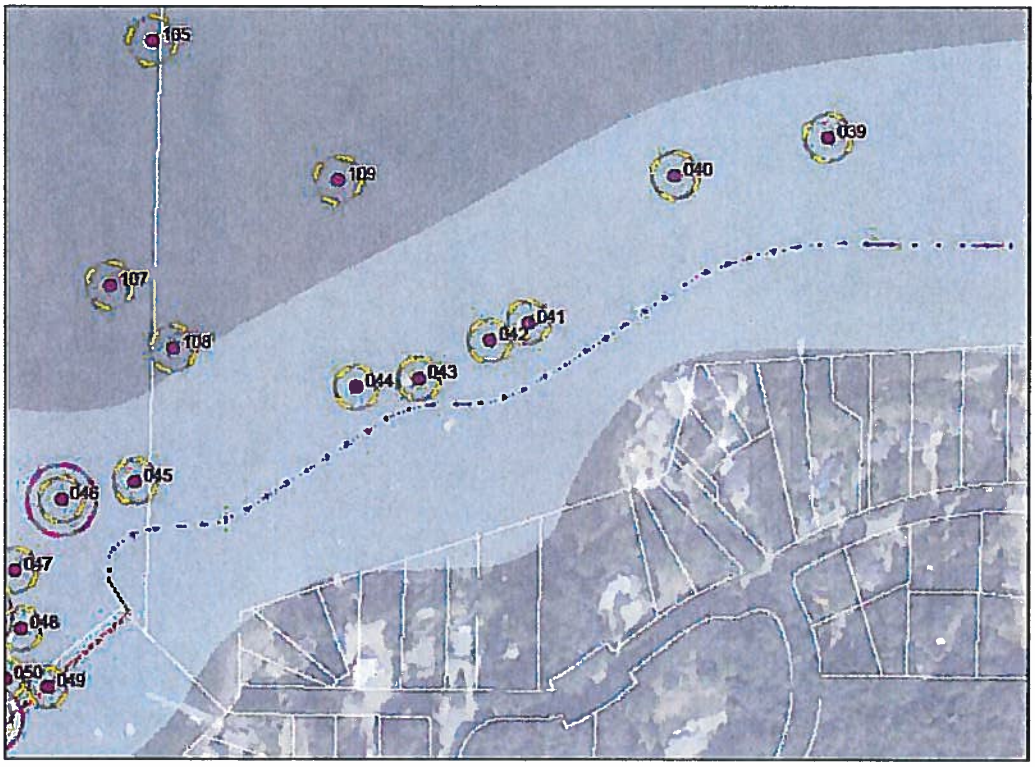
Map 1C E. BURTON COVE (approx. 8 buoys on state-owned aquatic lands)



Match w/ Map 4A

Match w/ Map 1B

Not to Scale

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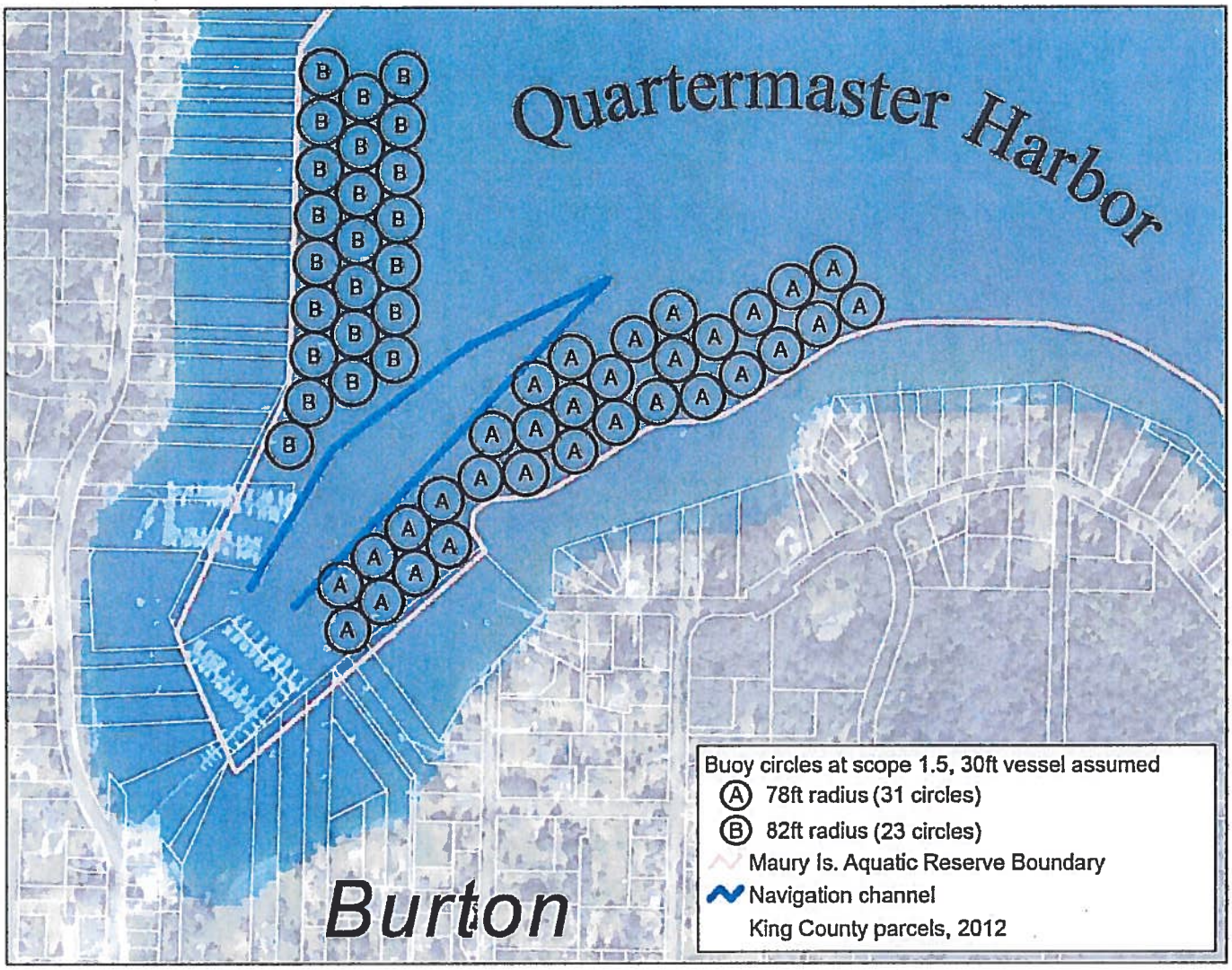
Map 1D BURTON COVE - PROPOSED BUOY FIELD (54 buoys on state-owned aquatic lands)



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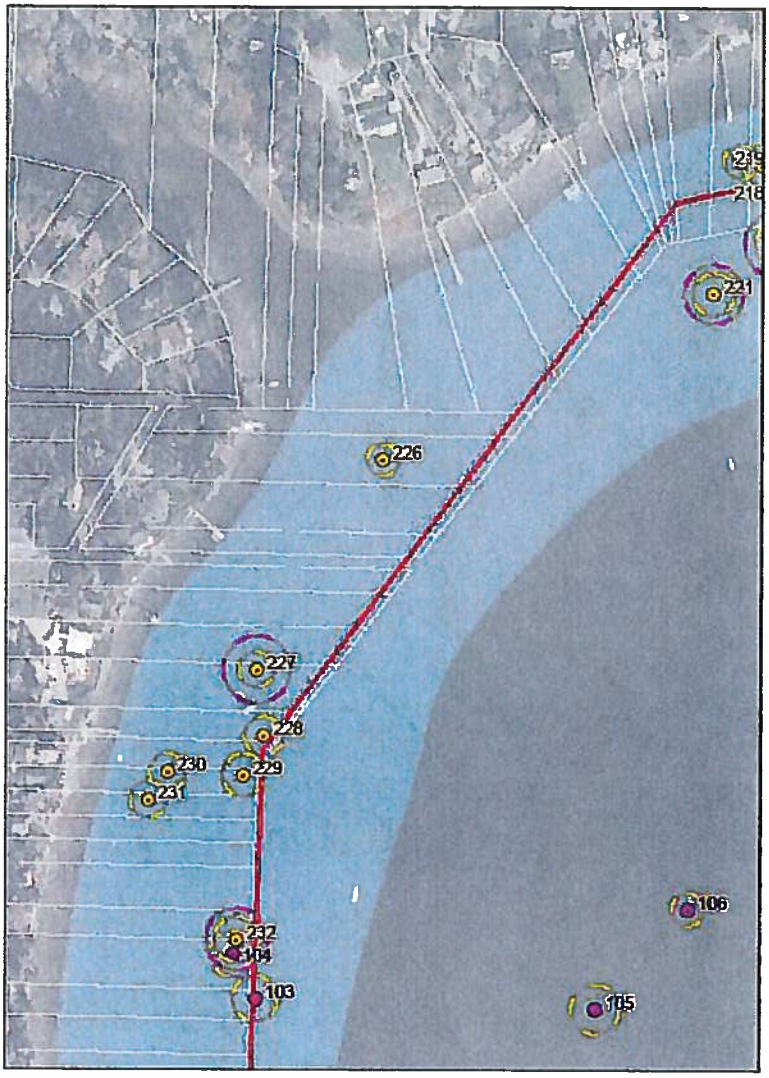
Map 2A S. JUDD CREEK (approx. 11 buoys on state-owned and private tidelands)



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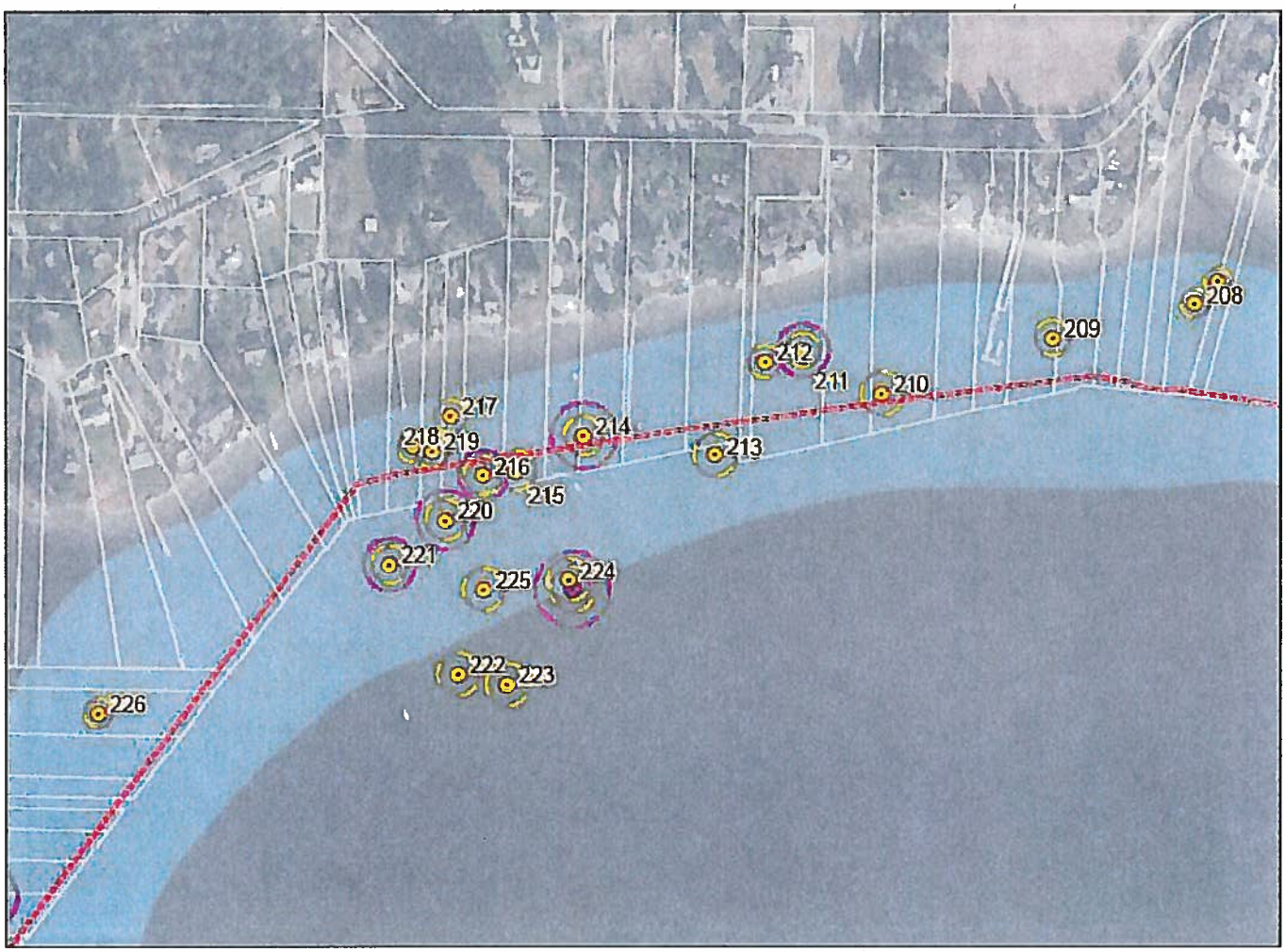
Map 2B JUDD CREEK (approx. 18 buoys on state-owned aquatic lands and private tidelands)



Match w/ Map 2A

Match w/ Map 3A

Not to Scale

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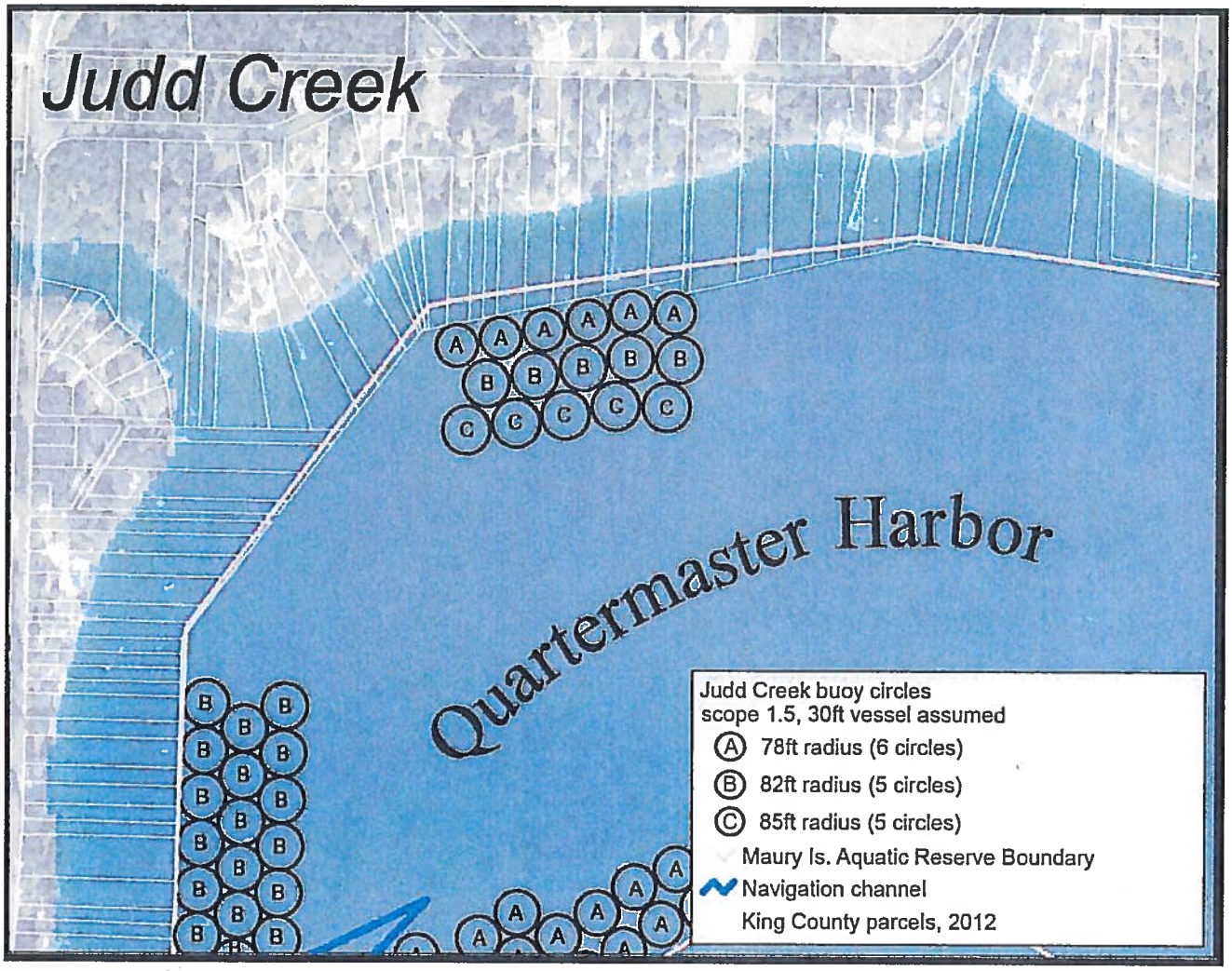
Map 2C JUDD CREEK – PROPOSED BUOY FIELD (16 buoys on state-owned aquatic lands)



Not to Scale

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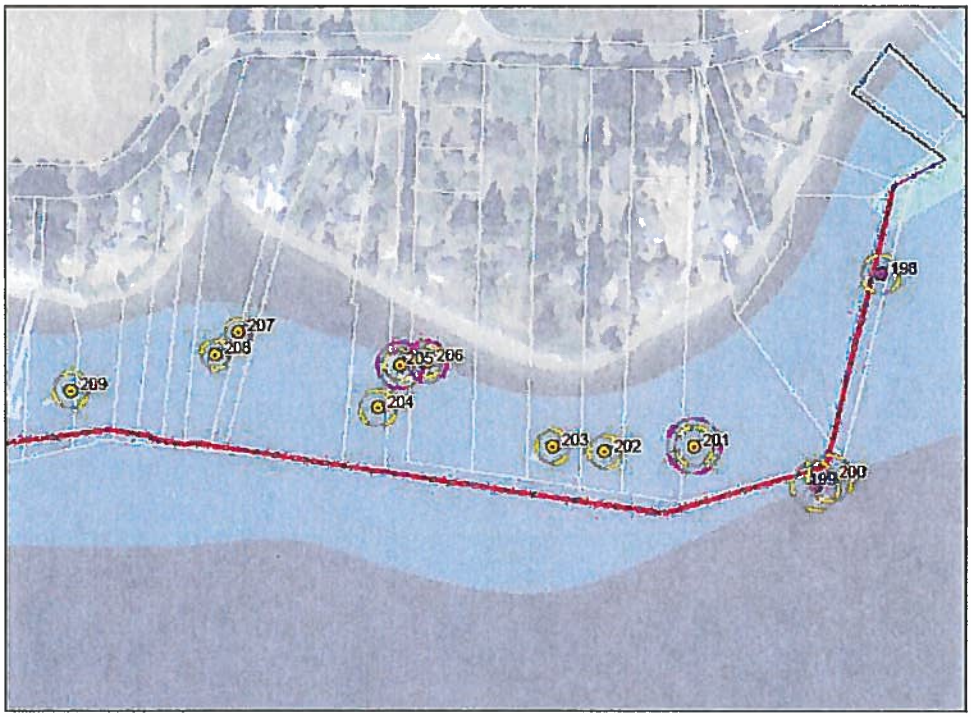
Map 3A W. PORTAGE (approx. 10 buoys on state-owned and private tidelands)



Match w/ Map 3B

Match w/ Map 2B

Not to Scale

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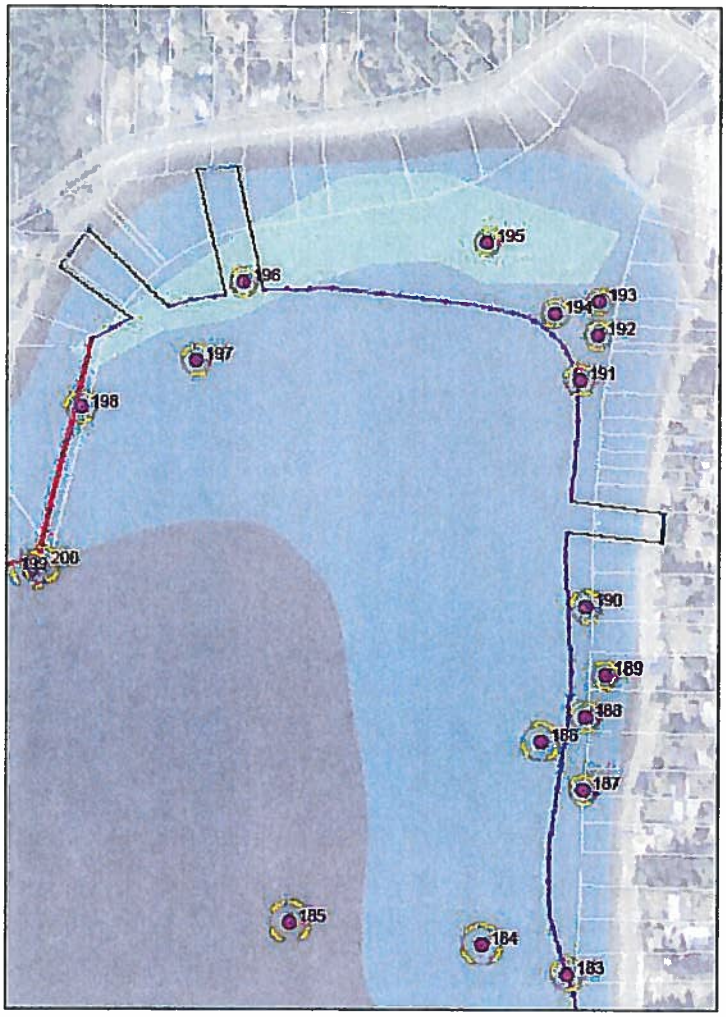
Map 3B PORTAGE (approx. 15 buoys on state-owned and private tidelands)

Match w/ Map 3A



Match w/ Map 3C

Not to Scale

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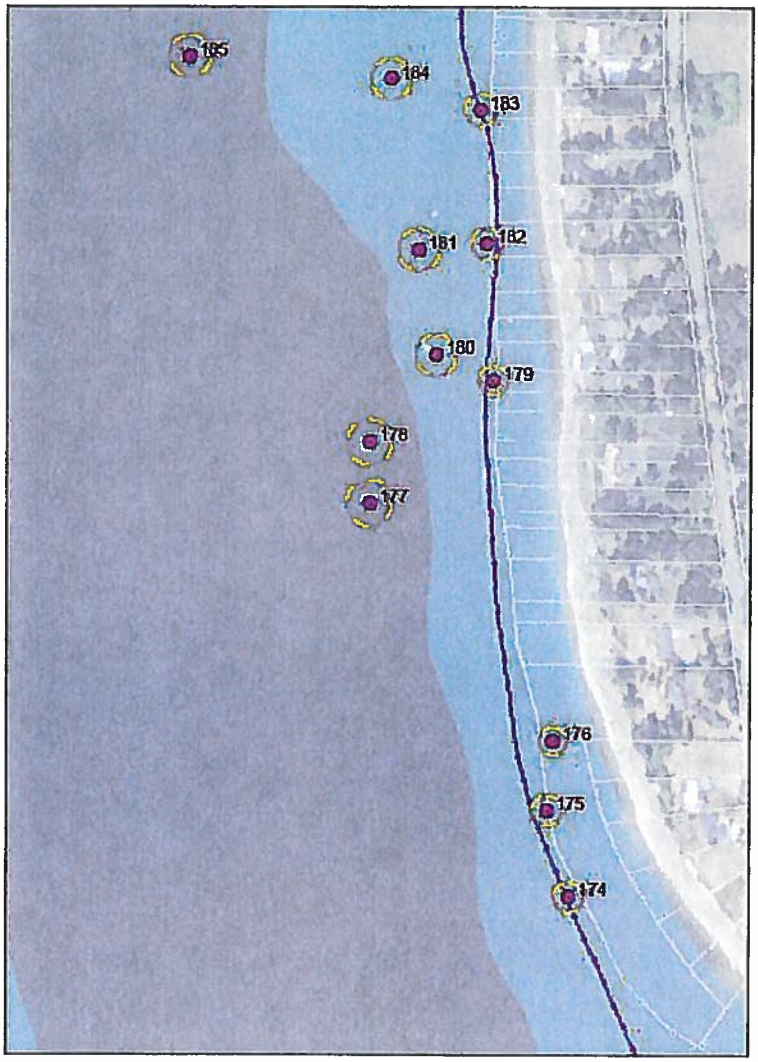
Map 3C S.E. PORTAGE (approx. 12 buoys on state-owned and private tidelands)

Match w/ Map 3B



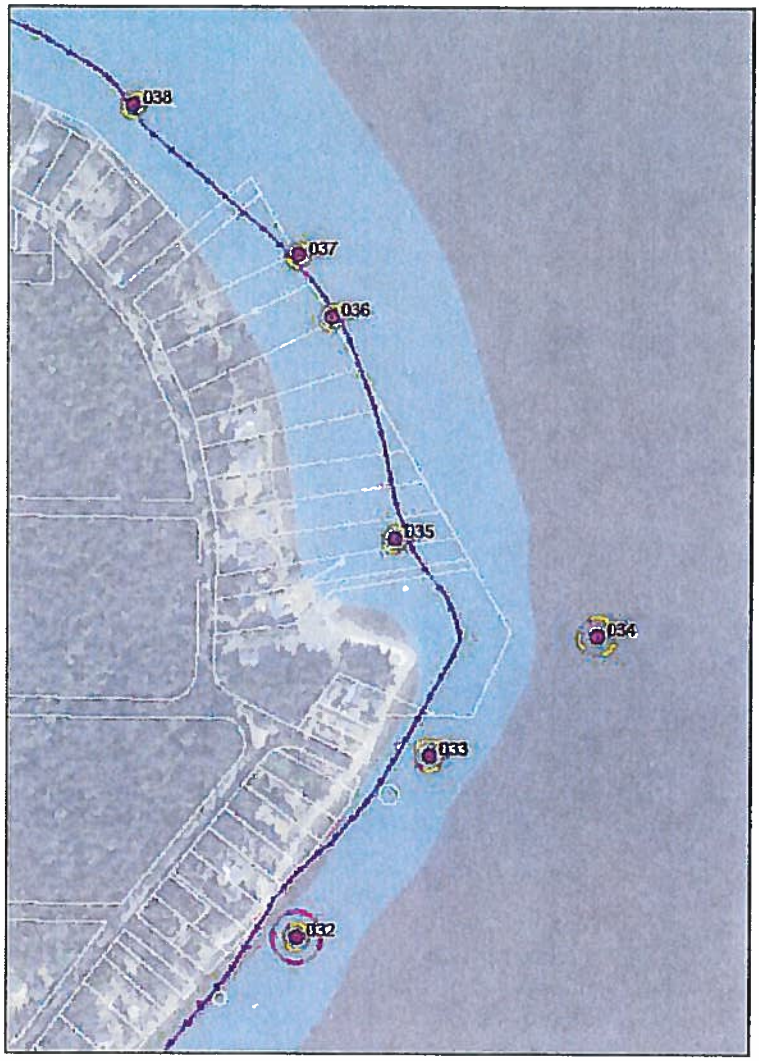
Match w/ Map 4B

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 14 of 34 **DATE:** 9/20/13

Map 4A JENSEN PT. (approx. 7 buoys on state-owned and private tidelands)

Match w/ Map 1B



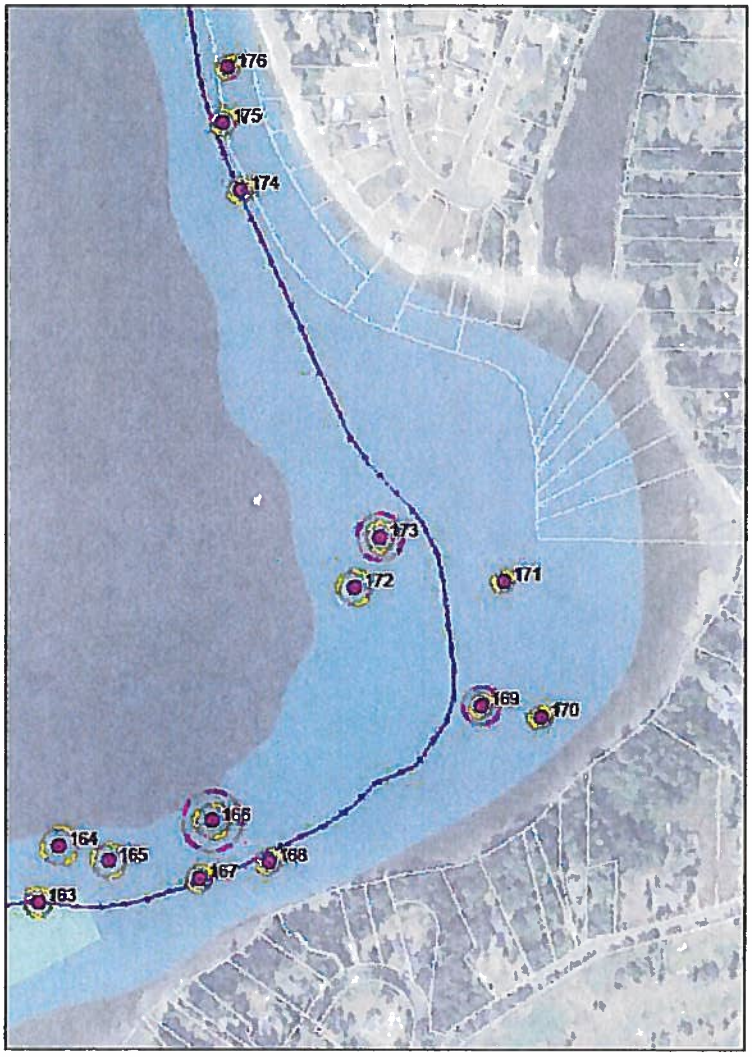
Match w/ Map 4C

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 15 of 34 **DATE:** 9/20/13

Map 4B RAAB'S LAGOON (approx. 14 buoys on state-owned and private tidelands)

Match w/ Map 3C



Match w/ Map 4C

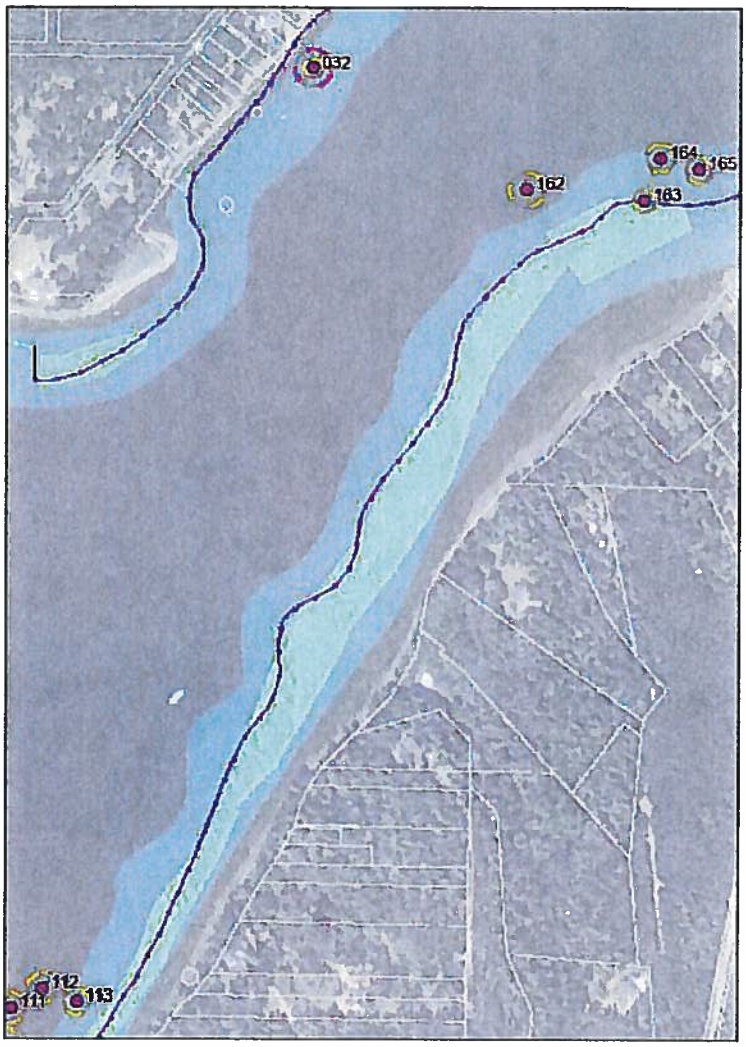
Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 16 of 34 **DATE:** 9/20/13

Map 4C S.E. BURTON PENINSULA /N. DOCKTON (approx. 8 buoys on state-owned tidelands)

Match w/ Map 4A

Match w/ Map 6B



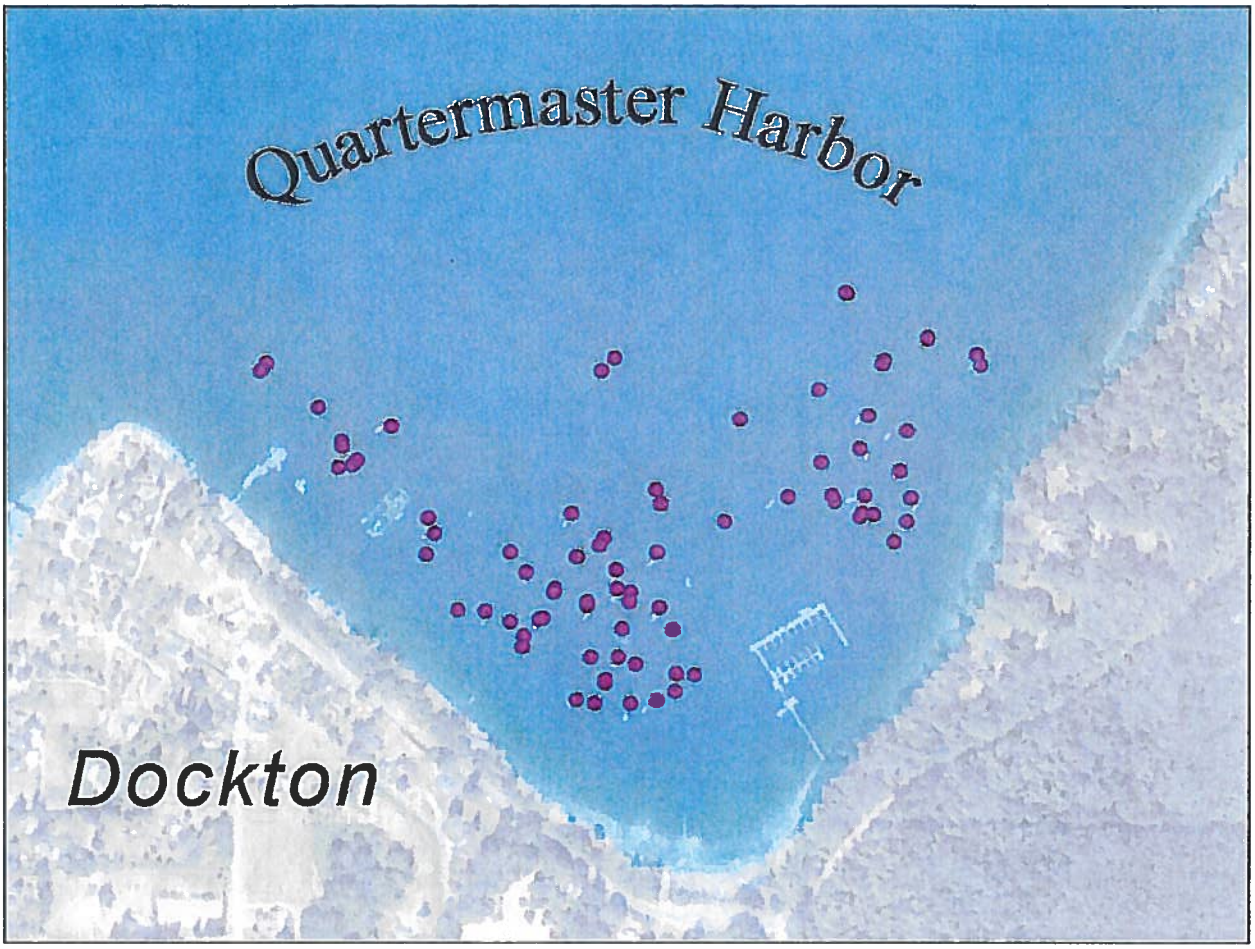
Match w/ Map 4B

Match w/ Map 5B

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 17 of 34 **DATE:** 9/20/13

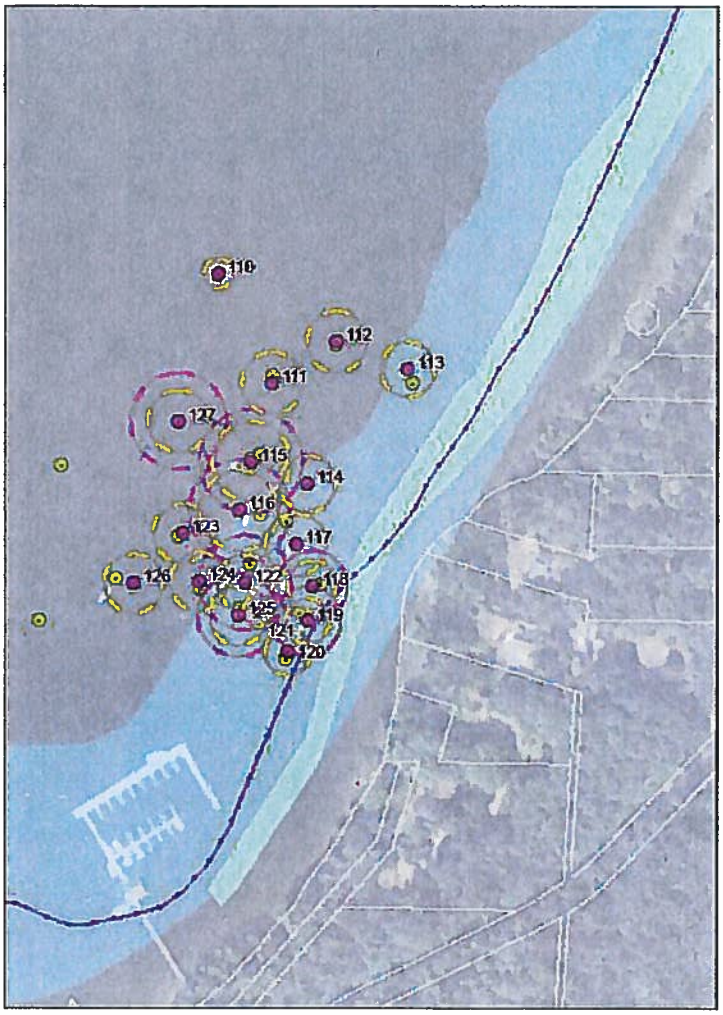
Map 5A DOCKTON - GENERAL DISTRIBUTION OF EXISTING BUOYS
(approx. 51 on state-owned aquatic lands and private tidelands)



Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page **18** ~~of~~ 34 **DATE:** 9/20/13

Map 5B E. DOCKTON (18 buoys on state-owned and private tidelands)



Match w/ Map 4C

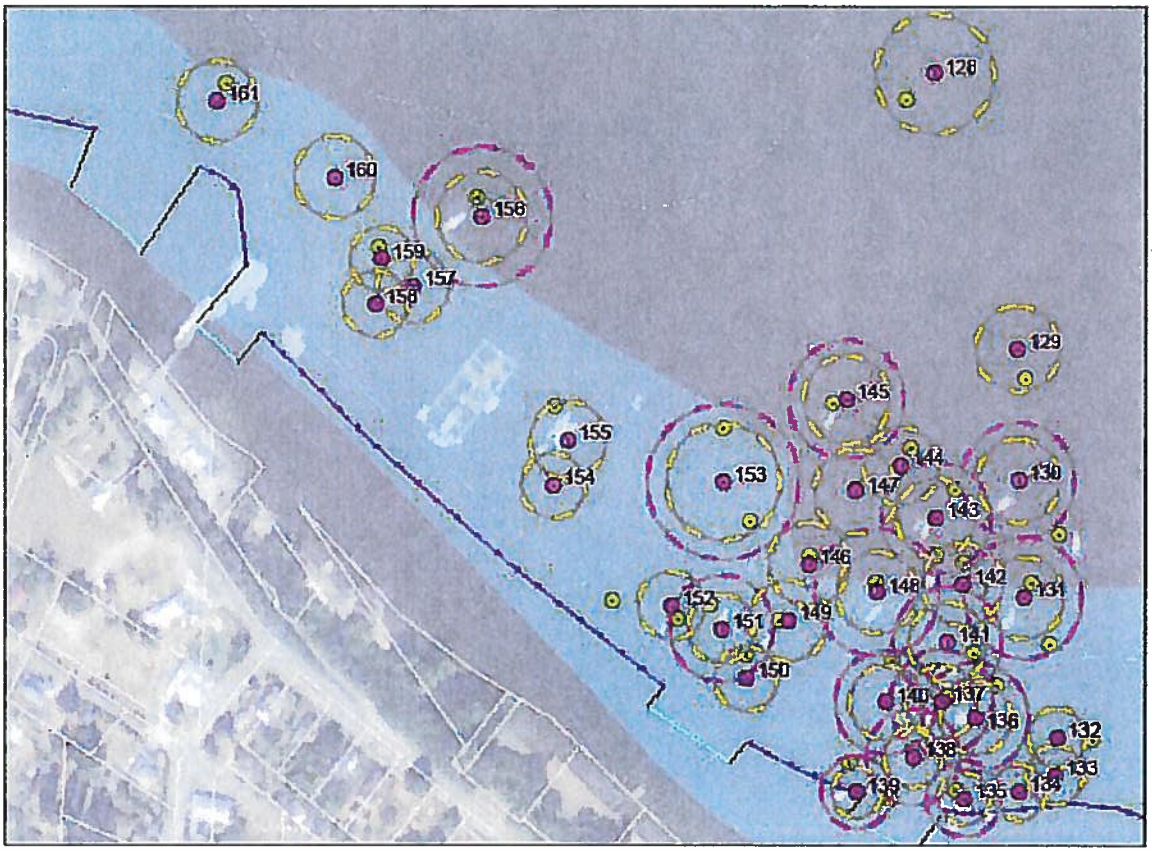
Match w/ Map 5C

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 19 of 34 **DATE:** 9/20/13

Map 5C W. DOCKTON (approx. 33 buoys on state-owned and private tidelands)

Match w/ Map 6A

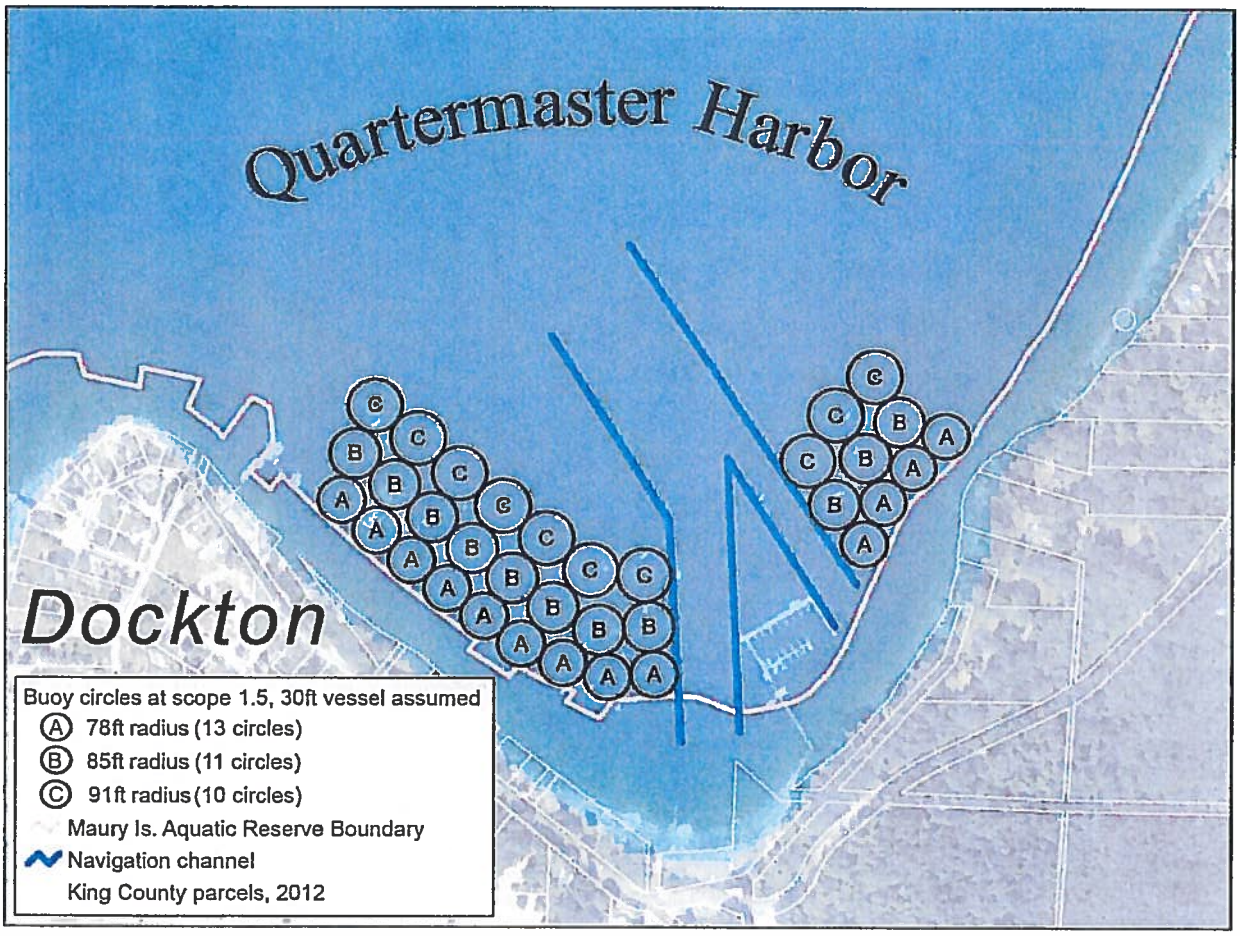


Match w/ Map 5B

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 20 of 34 **DATE:** 9/20/13

Map 5D DOCKTON – PROPOSED BUOY FIELD (34 buoys on state-owned aquatic lands)

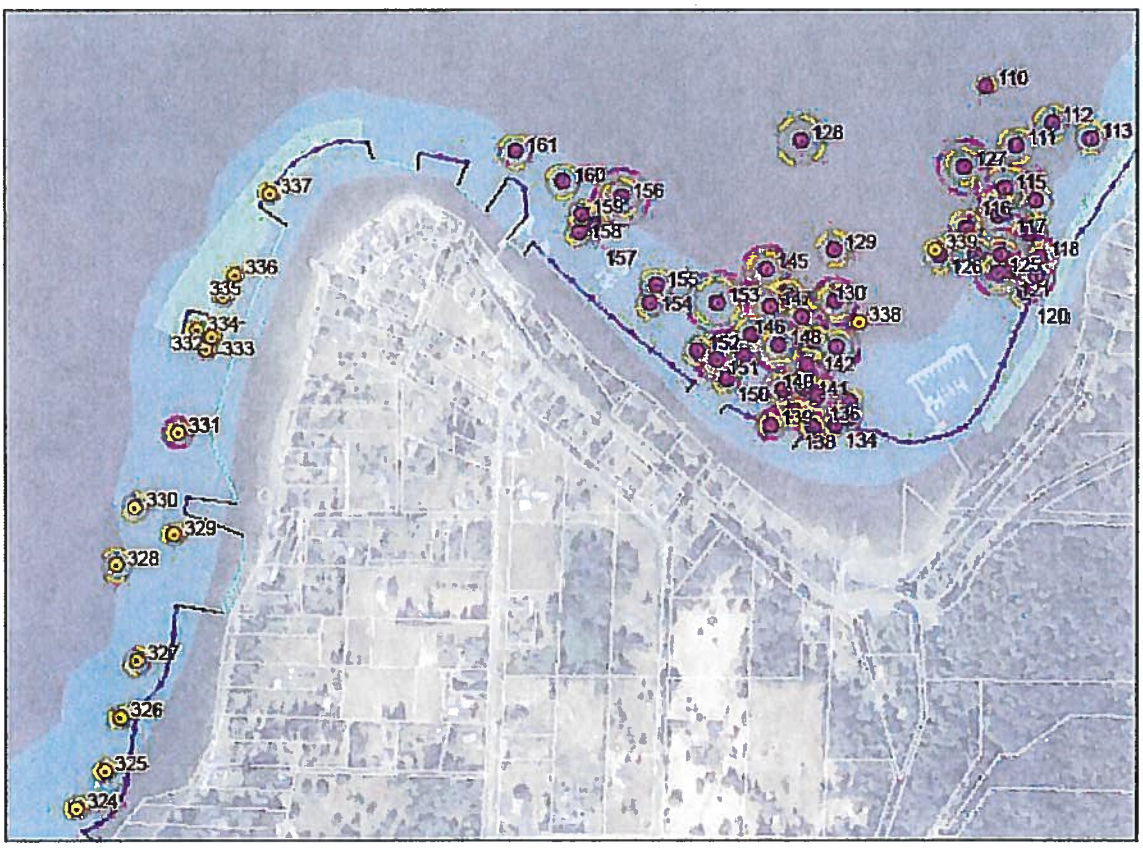


Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page **21** of **34** **DATE:** 9/20/13

Map 6A W. DOCKTON (approx. 14 buoys on state-owned and private tidelands)

Match w/ Map 5A



Match w/ Map 7B

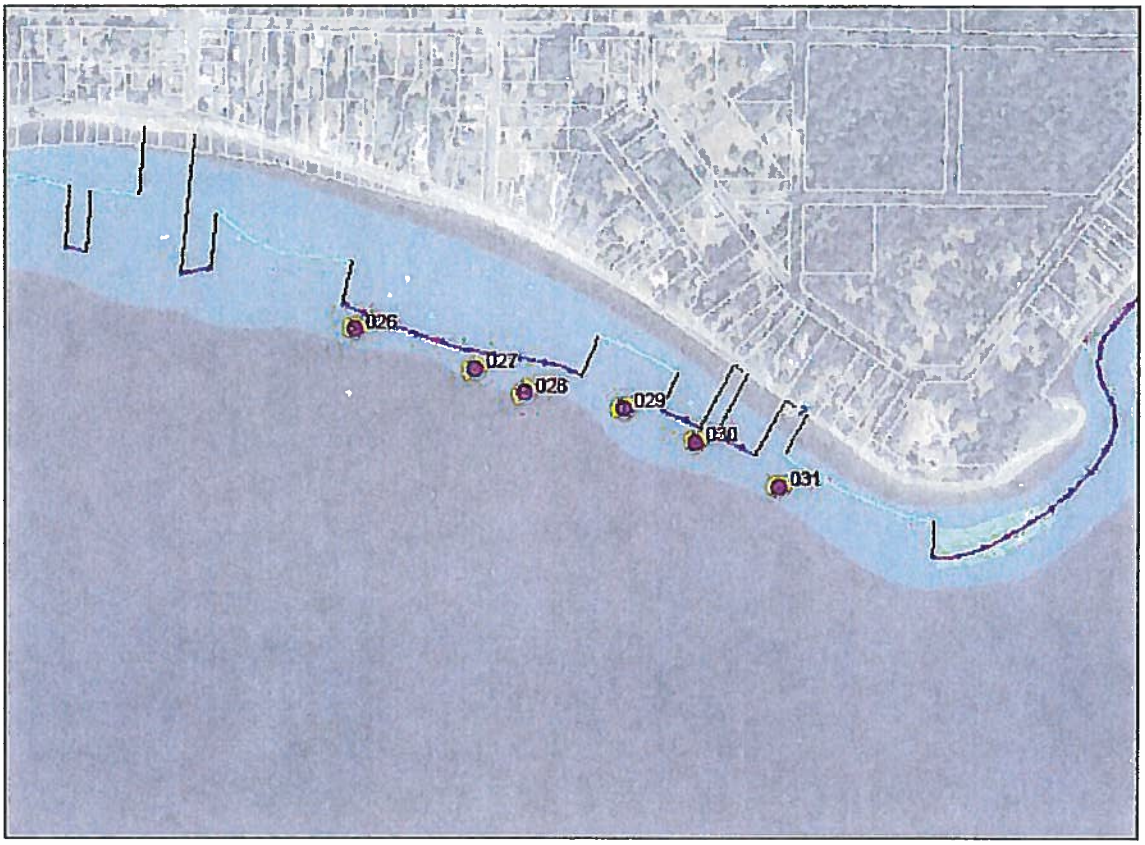
Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 22 of 34 **DATE:** 9/20/13

Map 6B S. BURTON (approx. 6 buoys on state-owned and private tidelands)

Match w/ Map 6C

Match w/ Map 4C



Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page **23** of **34** **DATE:** 9/20/13

Map 6C INDIAN POINT (approx. 16 buoys on state-owned and private tidelands)

Match w/ Map 6B

Match w/ Map 6D

Not to Scale

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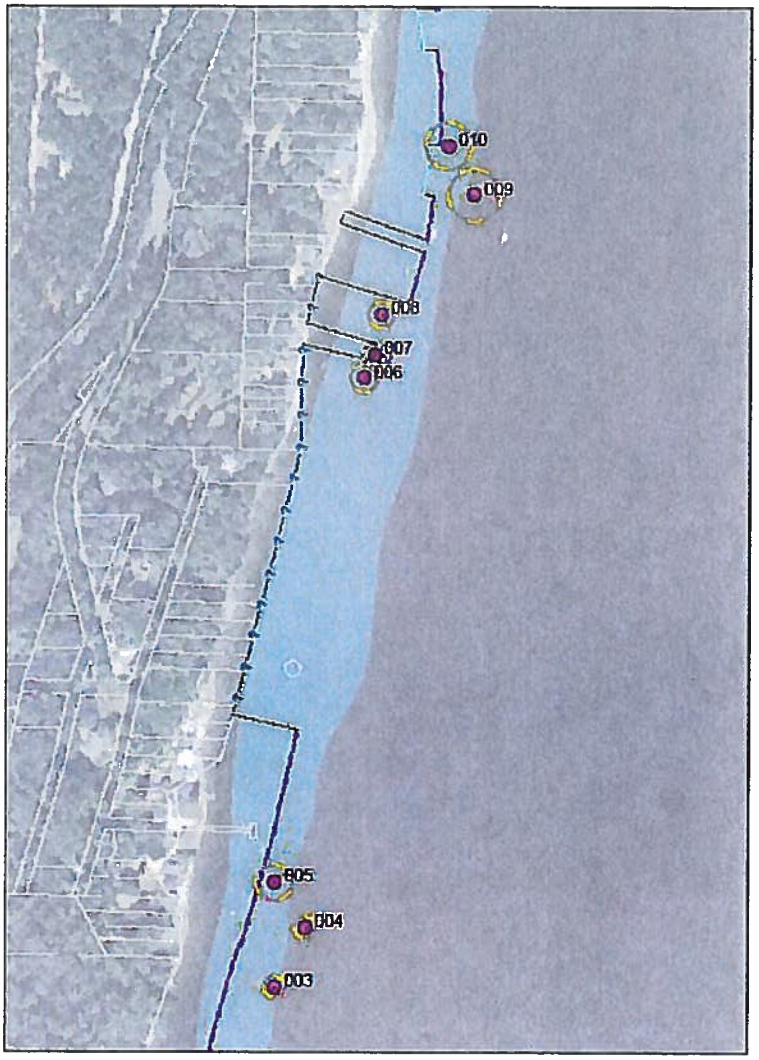
Map 6D MAGNOLIA BEACH (8 buoys on state-owned and private tidelands)

Match w/ Map 6C



Match w/ Map 7A

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page **25** of **34** **DATE:** 9/20/13

Map 7A HARBOR HEIGHTS (3 buoys on state-owned and private tidelands)

Match w/ Map 6D

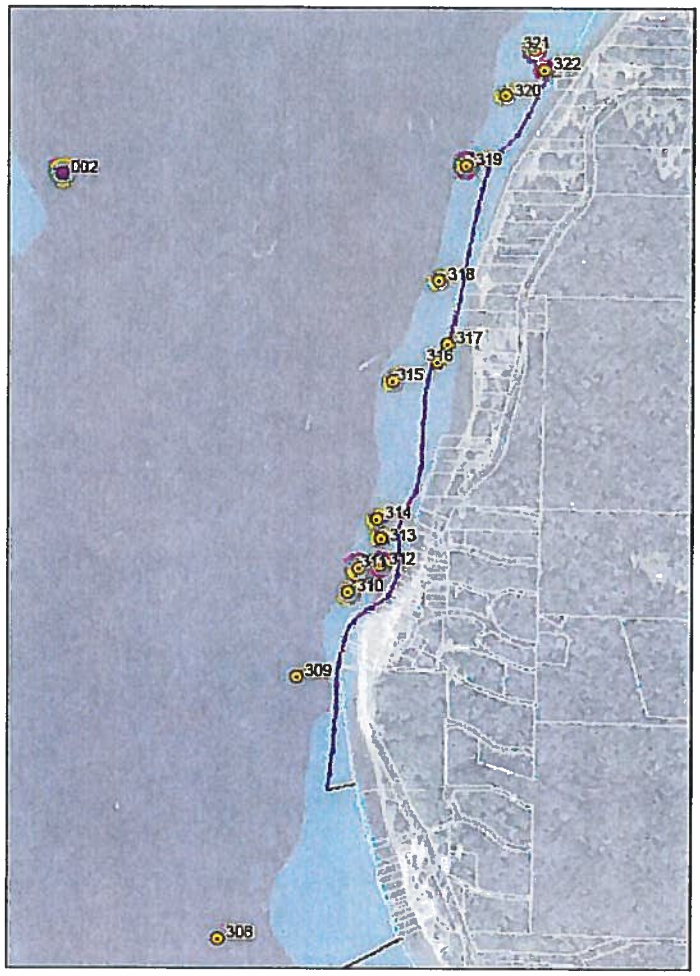
Match w/ Map 8A

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 26 of 34 **DATE:** 9/20/13

Map 7B S.W. MAURY ISLAND (15 buoys on state-owned and private tidelands)

Match w/ Map 6A



Match w/ Map 8A

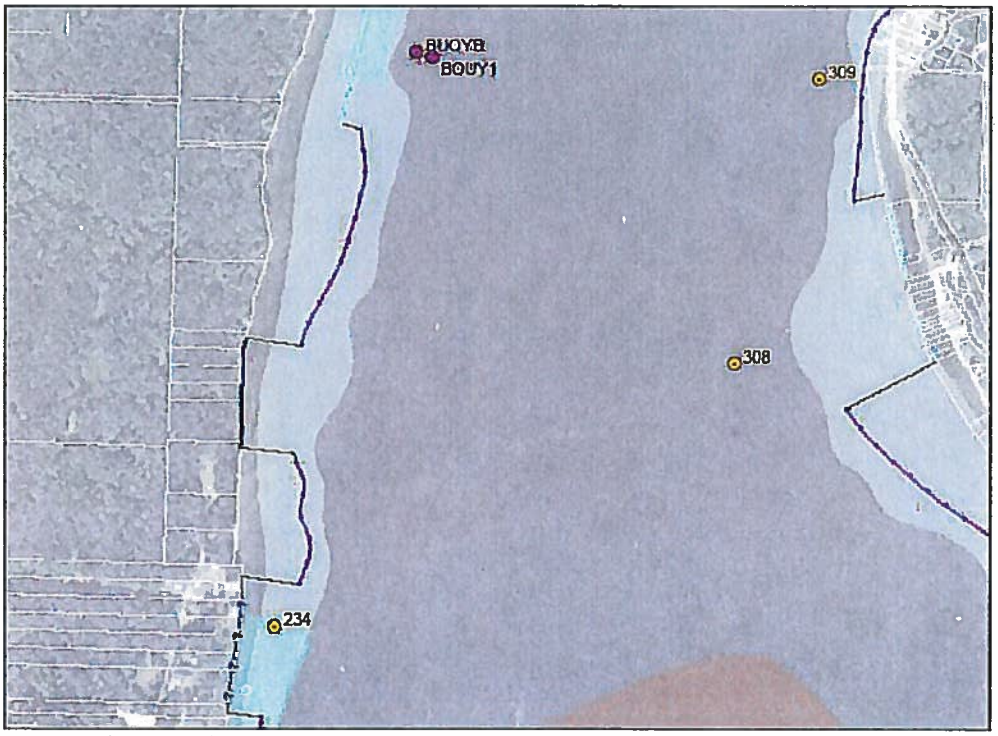
Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 27 of 34 **DATE:** 9/20/13

Map 8A S.E. VASHON ISLAND (1 buoy on state-owned aquatic lands)

Match w/ Map 7A

Match w/ Map 7B



Match w/ Map 9A

Match w/ Map 8B

Not to Scale

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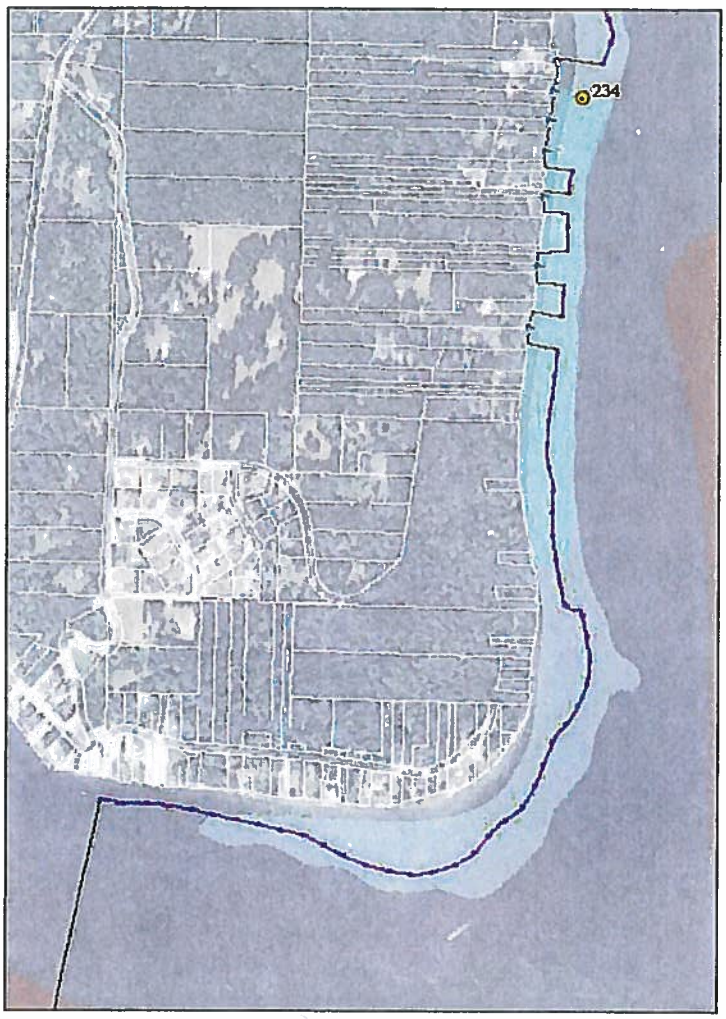
Map 8B NEILL POINT (1 buoy on state-owned aquatic lands)

Match w/ Map 8A

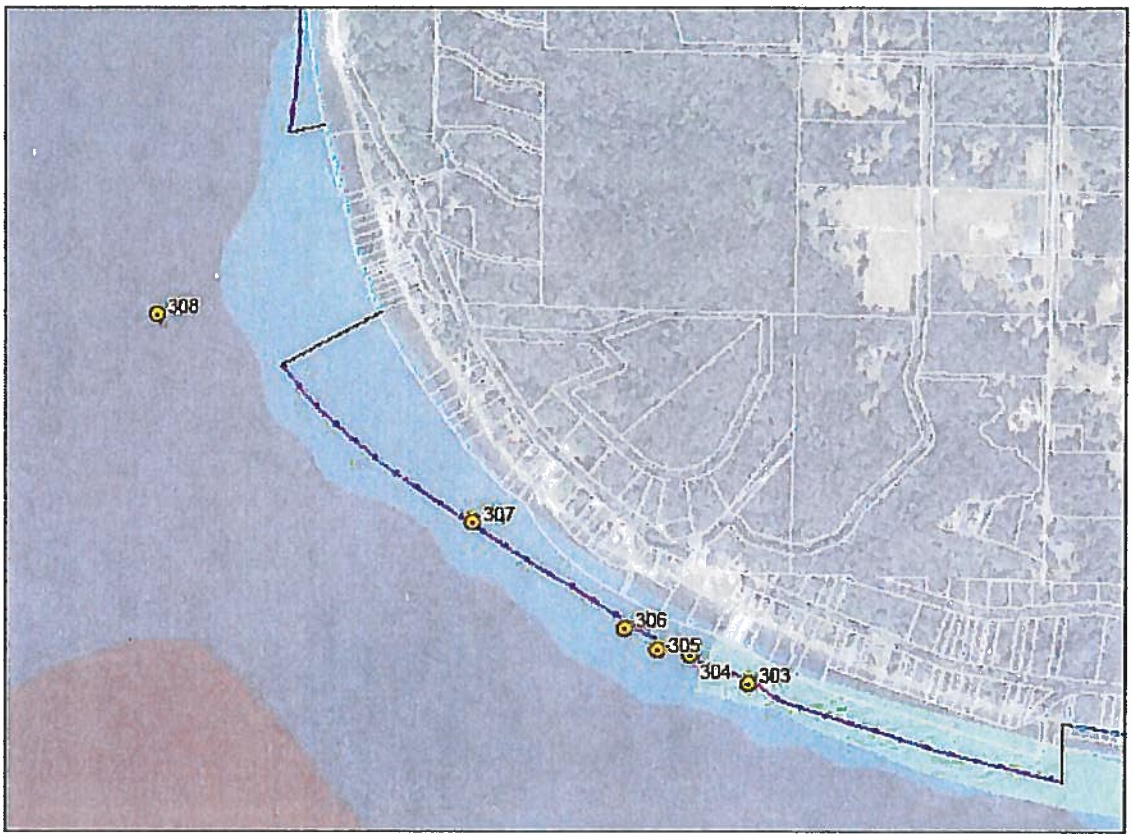


Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page 29 of 34 **DATE:** 9/20/13

Map 9A W. PINER POINT (7 buoys on state-owned and private tidelands)

Match to Map 8A



Match w/ Map 9B

Not to Scale

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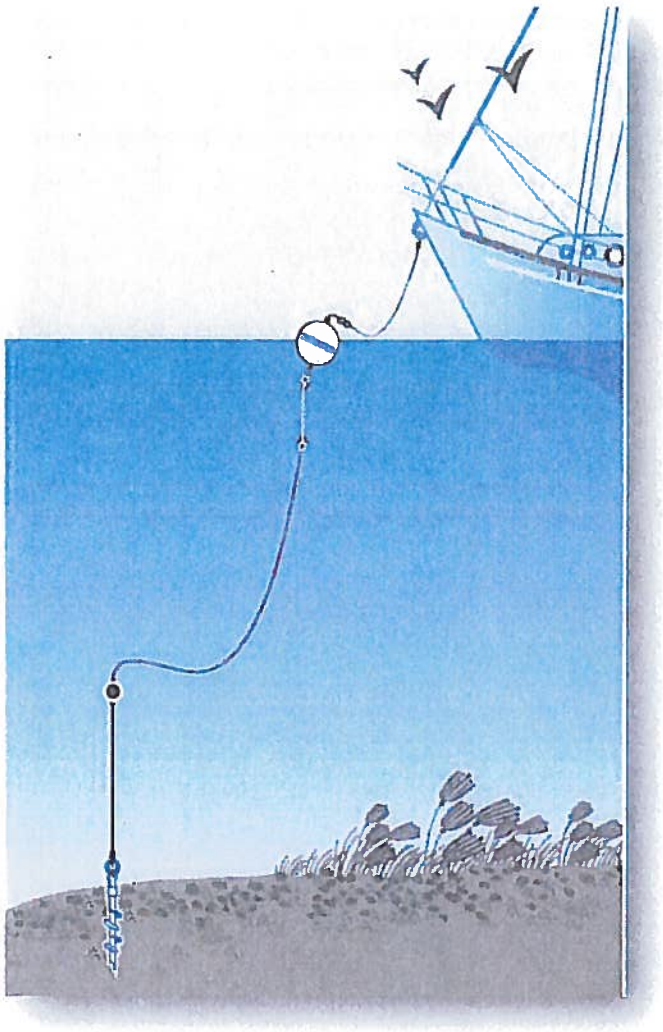
Map 9B PINER POINT (2 buoys on state-owned and private tidelands)

Match w/ Map 9A

Not to Scale

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page **31** of 34 **DATE:** 9/20/13

END NOTES



Schematic Drawing for Embedded Anchor Mooring Buoy System with midline float
Embedded helical anchor systems consist of a shaft made of 1¼-inch or 1 ½-inch solid, galvanized steel with two or three anchor plates that are hydraulically screwed into the substrate. Double-braided anchor lines are connected to the shaft by a shackle with plastic thimbles and then connected from the shackle to a swivel and 6 feet of chain that passes through the buoy. Midline floats attached on the anchor line minimize line dragging or scouring the substrate.

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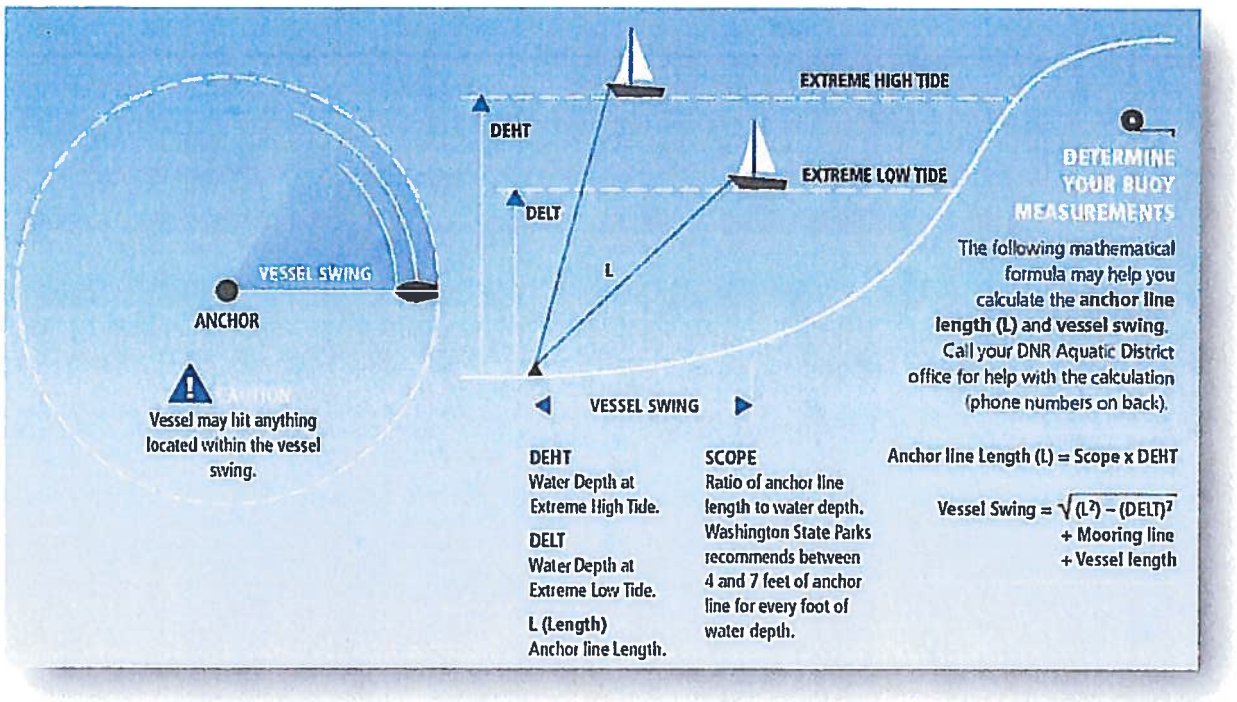

Schematic Drawing for Calculating Vessel Swing

Vessel Swing Radius, Scope = 1.5

Anchor line length and vessel swing radius calculated as follows:
Measured depths were adjusted by adding an assumed 1 foot depth-finder transducer offset and the tidal height for each buoy site. Proposed buoy fields assume 30-foot average vessel and 10-foot buoy line.
Using tide data from the National Oceanic and Atmospheric Administration website (http://tidesandcurrents.noaa.gov), depth relative to the tidal datums was corrected for each buoy using the following datum information:

Station: 9446484	12.39 Mean Higher-High Water (MHHW)
Name: Tacoma, WA	0.58 Mean Lower-Low Water (MLLW)
Units: Feet	0.00 Station Datum
Tidal Epoch: 1983-2001	15.15 Highest Observed Water Level (EHT)
	-4.11 Lowest Observed Water Level (ELT)

The extremes were then used to find anchor line length and swing radius by the following formulas:
Anchor line length (L) = SCOPE x EHT where SCOPE is the ratio of anchor line length to water depth.
SCOPE = 1.5 was used in these calculations.

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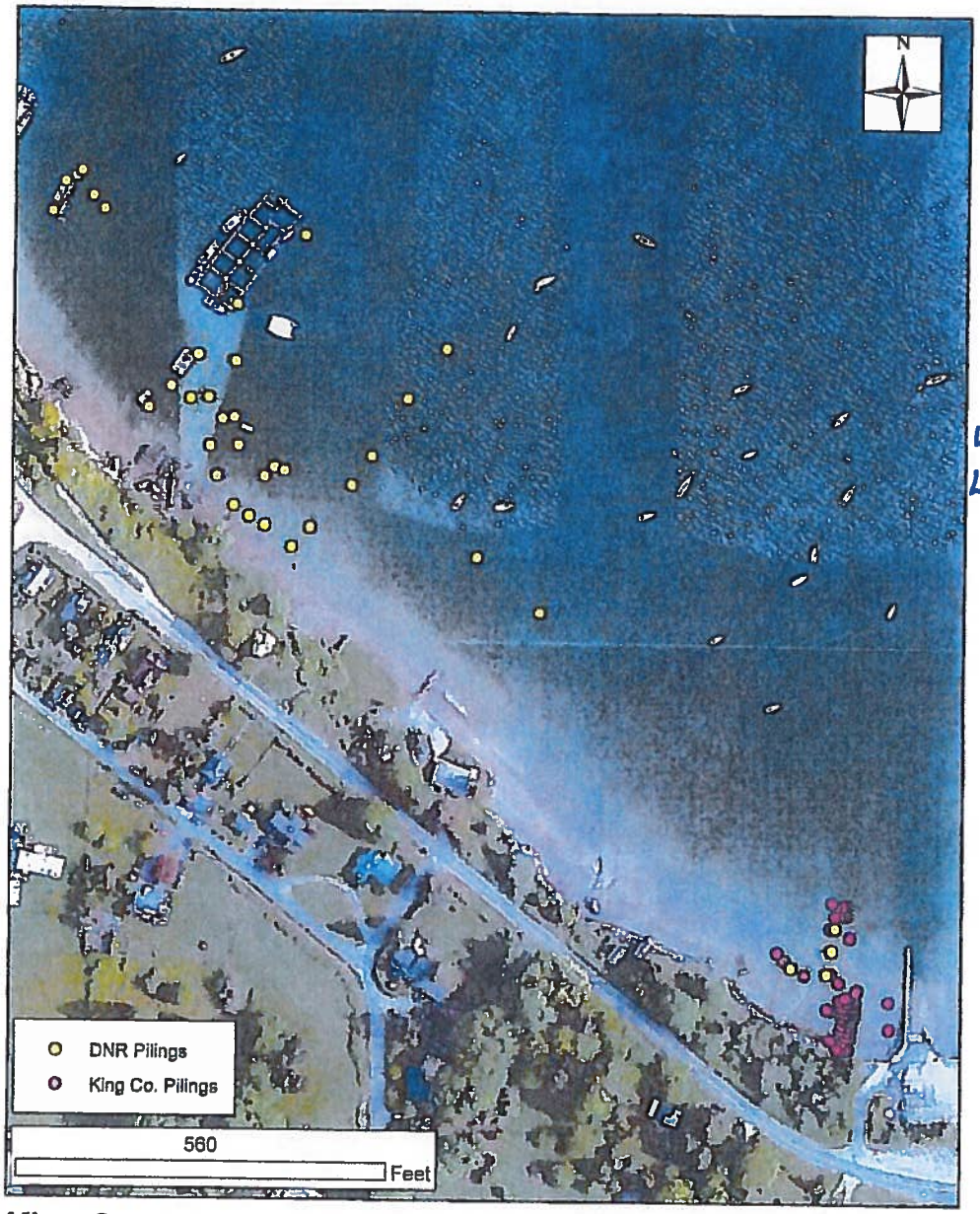
APPENDIX A - CREOSOTE PILINGS TO BE REMOVED IN DOCKTON



Lat. 47.372761
Long. -122.458579

King Co. and WA DNR Pilings to be Removed

Dockton Shoreline Restoration Project

King County

PURPOSE: Habitat restoration in the Maury Island Aquatic Reserve **DATUM:** MLLW = 0.58 [TACOMA, WA, 1983-2001 EPOCH] **ADJACENT PROPERTY OWNERS:** See JARPA Application **SITE PROPERTY OWNER:** State of Washington, managed by the Department of Natural Resources	**APPLICANT:** Washington State Dept. of Natural Resources / Aquatic Resources Division / P.O. Box 47027, Olympia, WA 98504-7027 **PROPOSED:** Authorize initial placement, relocation, and/or reinstallation in place of up to 200 privately-owned recreational mooring buoys on state-owned aquatic lands. Remove up to 75 abandoned buoys and associated debris from state-owned aquatic lands.	**USACE REFERENCE #:** NWS-2013-846 **IN:** Quartermaster Harbor **COUNTY:** King **SHEET:** Page **34** of **34** **DATE:** 9/20/13