

Habitat News



Washington Department of Fish and Wildlife

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Jeff's Welcome

This time of year I reflect on the past year and develop my aspirations for new one. Last year we saw a tough season-setting process at North of Falcon; progress on salmon and steelhead restoration efforts, including removal of fish passage barriers; continued tensions over recreational, commercial and tribal fisheries; and continued progress on hatchery reform.

We also lost Brian Abbott, a dear friend, a phenomenal fisherman, and a huge leader in salmon recovery in Washington State. Brian's contributions to fishing, salmon recovery, and his family (an amazing wife and two amazing children) cannot be adequately captured with words and we will dearly miss him.

Looking into the future, we will see important policy debates that may affect fish such as water policy (instream flows), suction dredging, the Hydraulic Project Approval program - Washington's fish protection authority, simplifying a complex environmental regulatory structure, funding for hatcheries, fisheries monitoring, salmon and steelhead recovery capacity, and fish passage barrier removal funding. All of these are occurring at a time when education, homelessness and other critical social issues demand public policy attention.

The challenges facing our fish populations are increasing. We have changing weather patterns that are influencing ocean productivity, creating more frequent and severe droughts and flooding. Increasing human populations, predation pressures, water quality and quantity challenges are also putting pressure on our fish populations. Many people are working hard to reverse or reduce these pressures.

I believe that we are at a significant crossroads. The growing tension over a limited resource can either have us on a pathway where the fights become fiercer as our fish populations struggle or a pathway that bands us together to ensure we all have robust and healthy fisheries into the future.

It's a time for us to talk about our collective efforts, how they are connected and what success looks like. Such conversations need to happen at all levels. It is important to talk as a whole and also locally to ensure that we are working on the most important issues holding fish populations back.

The future of salmon and steelhead is entirely up to us. We have done a lot of great work together and we have a long way to go. It will take time, investment, patience, open dialogue, trust, and unity to fulfil our responsibility. I'd love to see the recreational anglers, commercial fishers, and salmon recovery voices speaking as one to increase our collective influence. Help us unite in the name of healthy and sustainable fish populations and fisheries.

- Jeff Davis, Habitat Program Assistant Director





Did you know...

The Chehalis Basin contains unique genetic stocks of Spring Chinook salmon, wild coastal cutthroat trout, and the largest diversity of amphibians in the state.

Restoring Chehalis Basin Habitat

The Chehalis Basin is the largest river system located entirely in Washington. It's also the only river system in the state with no ESA-listed salmonids. Perhaps because of the relative health of salmon populations, the Basin has received little attention or restoration dollars leaving both salmonid stocks and their habitats in continued decline.

Over the last 20 years, the Basin has also endured several devastating floods and climate change scenarios indicate the severity of rain events will increase. An increasing awareness of these challenges has prompted state and tribal entities, local leaders and citizens to work together to develop a strategy for habitat restoration and flood control.

The Chehalis Basin Strategy includes innovative solutions to environmental restoration and protection while protecting human livelihoods, reducing flood damage, and increasing resilience to natural disasters. There are a

number of proposed alternatives for achieving this, and the Washington Department of Ecology has been leading a process to assess the impacts, feasibility, and cost of various options. More information on the strategy and proposed actions is available at [Chehalis Basin Strategy](#) and from the [Washington State Department of Ecology](#).

WDFW is helping to lead the Aquatic Species Restoration Plan (ASRP), which is one element of the Chehalis Basin Strategy. The goal of the ASRP is to reverse the downward population trends of salmon, steelhead, and other aquatic species in the basin. WDFW has been working closely with tribal governments, county conservation districts, fishery and habitat restoration groups, and private citizens to identify priorities for the region and to develop strategies that address ecosystem needs on a basin-wide scale.

Please contact our ASRP Manager, [Maria Hunter](#), for more information at (360) 701-6086.

Puget Sound Recovery and Protection

Since 2011, the Puget Sound Marine and Nearshore Grant Program, a WDFW and DNR co-led program funded through the National Estuary Program, has invested over \$17.5 M in Puget Sound recovery. [Grants](#) to local governments, tribes, non-profits and others funded work to protect and restore marine shoreline habitat, remove derelict fishing nets, and address marine invasive species and oil spill threats to Puget Sound—all of which mean positive benefits for ecosystems and the people who work, live, and play in Puget Sound.

In 2015, EPA Region 10 [announced](#) a transition to a new NEP funding model for Puget Sound—comprised of three Strategic Initiatives (Stormwater, Shellfish, and Habitat)—

which would directly fund activities in the Puget Sound [Action Agenda](#). Like the Marine and Nearshore program, the Habitat Strategic Initiative is a partnership between WDFW and DNR. With the help of an advisory team, the Habitat Strategic Initiative focuses on [funding](#) habitat restoration and developing [strategies](#) to achieve Puget Sound recovery goals.



RFEG Spotlight

Like other RFEGs around the state, the [Skagit Fisheries Enhancement Group](#) works with local landowners to remove barriers to migrating salmon and steelhead by fixing broken culverts or replacing culverts with bridges.

This habitat restoration work has an immediate benefit for salmon and steelhead and often provides an added benefit to landowners by improving access to their land.

Over the last 25 years, the Skagit Fisheries Enhancement Group has worked with over 60 landowners to restore access to over 75 miles of upstream habitat for young fish and spawning adults.

Last fall, the Skagit Fisheries Enhancement Group completed a fish passage project on Upper Day Slough. This slough lies along the middle Skagit River and had three failing culverts that blocked fish passage to 2,000 feet of high quality habitat.

These poorly maintained culverts had long been an impediment to chum and Chinook salmon moving

through this Skagit River side channel. Work to replace the old culverts with a new bridge was made possible with grants from the Salmon Recovery Funding Board and Puget Sound Energy. Water flow has been greatly improved and fish are readily using the new migration corridor.

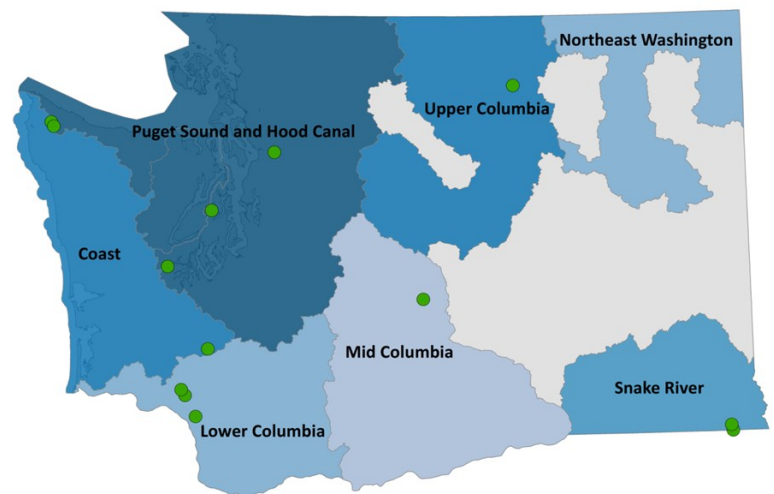


This new bridge across Upper Day Slough along the Skagit River, replaced the former culverts that blocked salmon migration (illustrated by blue circles).

Fish Barrier Removal Board projects move forward

Last fall, the Fish Barrier Removal Board advanced its first project list to the Legislature. The Governor's Budget currently includes the top 13 projects on that list (\$19.7M). The 13 projects would restore access to 42.8 miles of spawning and rearing habitat on these streams:

1. Chico Creek
2. Johnson Creek
3. Buford Creek
4. Middle Fork Newaukum
5. Tributary to Arkansas Creek
6. Coleman Creek
7. Catherine Creek
8. Coffee Creek
9. Johnson Creek
10. Baxter Creek
11. Turner Creek
12. Cottonwood Creek
13. Tributary to Johnson Creek



This funding would remove 8 county, 2 city, 2 state, and 1 private barrier.

The Board is developing a grant program, continuing to coordinate with project sponsors, and implementing communication strategies. Learn more at <http://wdfw.wa.gov/about/advisory/fbrb/>.

Another great way to learn about the Board is a visual story map at <http://arcg.is/2cpc8HS>.

HPA Program's role in protecting fish

Our HPA Program staff helps people with projects that affect the natural flow or bed of waters of the state. Such projects are regulated under the Hydraulic Project Approval program, including:

- Construction or maintenance of bank protection structures like bulkheads
- Water crossing structures like bridges and culverts
- Over-water structures like docks
- Aquatic weed and sediment control, such as dredging projects for channel maintenance or for mineral prospecting

The authority for this protection comes from the state Hydraulic Code law ([RCW Chapter 77.55](#)) and the Hydraulic Code Rules ([Chapter 220.660 WAC](#)) tell people how WDFW will implement that law.

The law was passed in 1943 to ensure that these projects adequately protect fish. Almost anything you do in the water has the potential to harm fish. Fish and shellfish can be killed directly by in-water work or indirectly by the damage caused to their habitat. Damaged habitat can affect fish and shellfish production for as long as the habitat remains altered.

WDFW's role in issuing an [Hydraulic Project Approval \(HPA\)](#) permit is to help you implement your project in a way that protects fish life. Our HPA team can explain how a project could hurt fish, and help you find ways to avoid, minimize, or mitigate that impact. Your HPA permit certifies that the fish protections implemented with your project adequately protect fish.

[Click here](#) for more information about the HPA program and [here](#) for technical assistance. [Contact your local habitat biologist](#) for help determining how your project can be completed while protecting fish life.

"Hydraulic project" means the construction or performance of work that will use, divert, obstruct, or change the natural flow or bed of any of the salt or freshwaters of the state.' 77.55.011(11)RCW



"...in the event that any person or government agency desires to undertake a hydraulic project, the person or government agency shall, before commencing work thereon, secure the approval of the department in the form of a permit as to the adequacy of the means proposed for the protection of fish life." 77.55.021(1)RCW

Fir Island: award winning restoration

In 2016, WDFW and partners completed estuary restoration on Fir Island. This project has since won a Gold Award from the Washington Chapter of the American Council of Engineering Consultants (ACEC) and is a National Finalist for the Water Resources project category. The partnerships formed during this project were the key to its success. We are excited that part of our team is being recognized for their hard work and technical expertise.

"The project design elements included a mile-long levee setback, a 9,000 gallons-per-minute automated pump station, five tide gates, a 50-acre storage pond, and restoration of 130 acres of tidal marsh and estuary habitat critical for juvenile chinook recovery. The project is expected to increase juvenile chinook smolt to between 65,000 and 350,000 each year." - Daily Journal of Commerce

You can read more about the award at <http://www.djc.com/news/ae/12096694.html>.

Film: Making Way for Salmon

We recently completed this short film that highlights the need for increased resources to replace barrier culverts that prevent salmon from reaching their spawning grounds in Washington State. We'd like to thank all those who participated in sharing the importance of removing fish passage barriers. You can watch it on WDFW's YouTube channel at <https://youtu.be/X7z5anXzm0k>.



Fir Island

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Hydraulic Code Implementation Citizen Advisory Group (HCICAG) Charter

Final – July 7, 2015

Introduction

In 2015, with rule changes adopted for the Hydraulic Project Approval program, the Washington Department of Fish and Wildlife (WDFW) Commission recommended the formation of two committees to advise agency staff on hydraulic code issues and implementation: one committee of stakeholders representing industry and regulated entities, identified as the Hydraulic Code Implementation Citizen Advisory Group, and one committee of agency and other quasi-government entities.

This charter establishes the roles and responsibilities for the Hydraulic Code Implementation the Citizen Advisory Group (HCICAG).

Mission of HCICAG

The Hydraulic Code Implementation Citizen Advisory Group provides recommendations to the Washington Department of Fish and Wildlife on the administration of the Hydraulic Code Rules (Chapter 220-660 WAC).

HCICAG Membership

HCICAG members represent a range of stakeholders who are impacted by or have an interest in issues related to the hydraulic code and HPA Program. Members were selected through an open process requiring letters of interest and review and selection by Department staff, with the following considerations:

- Members represent a group or organization affected or impacted, by and/or interested hydraulic code implementation issues;
- Are committed to sharing information and bringing to the group feedback from their respective organizations/constituents; and
- Are interested and committed to working collaboratively; and
- Understand and are comfortable in the role of serving in an advisory capacity.

HCICAG Role & Responsibilities

In addition, the advisory group is expected to:

- Provide recommendations to the Department on the Hydraulic Code regulations and the policies and procedures related to implementation of the hydraulic code.
- Communicate stakeholder opinions, attitudes, and needs to the agency.
- Identify areas of concern and recommend change.
- Understand their group's roles and responsibilities.

- Keep up-to-date on issues and regulations affecting their focus areas.
- Attend public workshops or forums established by the Department.
- Keep the Department advised of current trends and developments.
- Provide advice regarding enforcement and regulatory compliance issues.
- Assist the Department in developing communication strategies and communicating with members of the public regarding the issues that come before the advisory group.
- Be respectful and carefully consider the views of others.
- Attend advisory group meetings or advise the Department of absences. Requests to have an alternate attend should be coordinated with the Department in advance, and may not always be accommodated.

Department Roles & Responsibilities

The role of WDFW staff relative to the HCICAG is to facilitate effective input in hydraulic code implementation issues. The HCICAG is supported by staff from the WDFW HPA program.

Responsibilities include:

- Clearly define the advisory group's role.
- Provide the Department's mission and goals statement.
- Provide timely opportunities for advisors to counsel the agency on policy and provide timely communication on emerging issues.
- Schedule meetings in consultation with advisors and provide meeting places.
- Provide background materials, presentations, decision "maps" and other briefing materials on science, programs, administration and related issues.
- Facilitate meetings and conference calls as needed.
- Develop productive agendas that clearly outline the desired outcomes of each meeting.
- Develop agendas, materials and work products for advisory group review.
- Distribute materials in advance of advisory group meetings.
- Develop and distribute advisory group meeting notes that summarize the key discussion items and recommendations.
- Be respectful of the views of others, including Department staff and advisory group members.
- Communicate the advisory group recommendations, comments, views and perspectives to agency leadership prior to decision making.
- Provide feedback regarding how the Department uses advisory group's input.
- Capture recommendations, viewpoints and opinions by advisory group members including divergent or dissenting views. Abstention is okay.
- Solicit case studies, examples, lessons learned and other information from the group, relevant to agenda topics or other work of the group.
- Identify agency programs, initiatives and processes in progress that are relevant to the group's area of interest and scope.

- Respond to advisors' requests for information including presentations about specific topics.

Operating Guidelines

The following guidelines are recommended for productive discussion and forward progress.

- Advisory group members are expected to attend all advisory group meetings. At their discretion, members may identify and brief an alternate to participate and/or take notes at the meeting. Members will notify Randi Thurston if unable to attend and indicate whether someone will come in their place.
- Advisory group members will review information prior to meetings and come prepared to discuss materials that have been distributed.
- The advisory group shall not communicate its positions and opinions about the advisory group to entities outside the Department without notifying Department staff.
- The advisory group should not meet as a formal group with outside entities unless it has prior approval from Department staff. Nothing prevents an individual advisor from expressing their views as a private citizen.
- Members absent for more than two meetings in a 12-month period may be asked to end their terms and identify a permanent alternate member.
- Advisory group members are responsible for their own travel and meal expenses unless otherwise previously provided.
- Members are expected to serve for no more than three years, but may be reappointed at the Department's discretion.

Meeting Discussion Guidelines

Advisory group members are expected to conduct themselves in a professional manner and be respectful of others. The following discussion guidelines are recommended to facilitate productive meetings and advisory group interactions:

- All members are expected and encouraged to participate
- All members have the chance to be heard; no member should dominate
- Raise your hand to indicate desire to speak
- Share all pertinent information
- Keep an open mind
- Actively listen
- Treat others with respect
- Stay focused on the meeting objectives
- Refrain from side discussions when others are talking
- Ask for clarification when needed
- Recognize the role of the facilitator
- Use the "marina" to document topics for further discussion at a later date.

Meeting Frequency and Location

The advisory committee will meet quarterly, generally from 10 a.m. to 3 p.m. on weekdays. Meeting locations will alternate, as much as possible, between Olympia and North Sound, including locations in Tacoma, Seattle and/or Mill Creek. In-person participation is preferred; however, a conference line will be provided for inclement weather, illness and other unpredictable events.

Public Comment

The purpose of advisory group meetings is primarily for group discussion of participants. This may be supplemented and enhanced with input from members of the public and other interested parties. Advisory group meetings are open to the public and an opportunity for public input will be provided at each meeting. Members of the public will be recognized at the beginning of each HCICAG meeting, and time will be provided at the end of each discussion item for public comment, as time allows. If necessary, time limits may be imposed to allow members enough time for advisory group discussion.

Decision-Making

The HCICAG is not a decision-making body or voting group. Members are expected to “advise” staff about their views on hydraulic code implementation. Consensus of the group is not required, nor will it be specifically sought; however, staff will seek to understand common as well as divergent views, and consider all advisory group input before making and implementing decisions about the hydraulic code.


Advisory Group Roster, Agendas and Meeting Notices

An advisory group roster, identifying members’ names and organizations, in addition to WDFW staff contacts, will be posted on the agency website, along with agendas and meeting notes at <http://wdfw.wa.gov/about/advisory/hcicag/>

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Mineral Prospecting

The purpose of this document is to provide guidance and assistance when reviewing pre-application requests and [hydraulic project applications](#) for mineral prospecting activities not covered by the most current edition of the WDFW [Gold and Fish Pamphlet](#). Typically this includes small-scale mineral prospecting outside of the Gold and Fish Pamphlet allowed equipment and/or Authorized Work Times. The impacts of small-scale mineral prospecting can be minimized primarily through operational restrictions, including the type of mining equipment, limitations on excavation zones and spoil discharges near streams, and allowable work windows (North 1993). The guidance applies to streams where fish life may be impacted by mineral prospecting and provides the biologist with basic information to process an application.

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1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW77.55.021](#). Once the application is Accepted, the Habitat Biologist reviews and processes the application within APPS. There are training [videos](#) and [self-help](#) documents for this process located on SharePoint.

2. Office Review

Purpose

The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable of [Chapter 77.55 RCW](#), [RCW 77.55.091](#), [Chapter 220-660](#)

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[WAC](#) and [WAC 220-660-300](#) since the agency's authority is derived from the RCW and WAC. The biologist must also be familiar with the most current edition of the WDFW [Gold and Fish Pamphlet](#) since the pamphlet provides the necessary provisions to meet all WAC 220-660-300 requirements. During the review the biologist may consult reference materials, agency data and supervisor or coworkers (including Fish Program, other resource agencies, tribes regarding fish life present) as necessary to determine if the application and the project are appropriately designed to protect fish life or if additional information is needed. Presence of fish life, including the species present, strongly influences proper project design. The biologist should be familiar with all types of mineral prospecting equipment and activities that are and are not covered by the current edition of the Gold and Fish Pamphlet.

The biologist first reviews the project location description, equipment, and project timing. Work outside of the authorized work times, in broad areas where spawning and incubation occur, cannot be permitted because it does not protect fish life. Specific and identifiable locations in streams with spawning and incubation may be permitted outside the authorized work times, provided fish life can be protected. Note that some streams in the Gold and Fish Pamphlet do not have identifiable work windows and are labelled as "Submit Application". Most of the stream support spawning and incubation year-round as the timing of emergence of spring spawning fish overlaps the onset of fall spawning fish. Thus, opportunity to issue Hydraulic Project Approvals in these streams is more limited.


Consider potential impacts to spawning and incubation for the locations in the application if the activity is outside the Gold and Fish Pamphlet Authorized Work Times. Four important considerations are: 1) what fish species are present, 2) when is the spawning, incubation and emergence timing, 3) specific location(s) of spawning habitat and 4) other fish habitat types such as adult holding pools or juvenile rearing habitat that may be affected by the proposed hydraulic project.

Information on fish species use, spawning and incubation timing, and location of spawning habitat can be found in existing WDFW, Ecology, DNR, USFWS, Tribal or Forest Service redd and pit tag array information on GIS or other data sources (such as WDFW's [Priority Habitats and Species \(PHS\) on the Web](#), [PTAGIS \(PIT Tag Information System\)](#), Forest Service Reports, USFWS Reports).

If there is any question as to where spawning may occur, the biologist will need to visit the site and document specific locations of spawning habitat relative to the project proposal. Such sites must be avoided or will require protection if work is proposed within the wetted perimeter and outside the authorized work times.


Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources such as government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps) as well as private sources of information. Most of this data is available either through WDFW's GIS database or through various internet websites.

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Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. Fish Program District biologists may have individual stream files with information on fish life presence. All of this information is valuable but ultimately a field visit may be necessary to verify the information. Below is a list of commonly used resources:

- WDFW Publications – [Aquatic Habitat Guidelines](#), [Priority Habitats and Species \(PHS\) on the Web](#), [Salmonscape](#), [Salmonid Stock Inventory \(SaSI\)](#), most current edition WDFW [Gold and Fish Pamphlet](#), and WDFW [Small-Scale Mineral Prospecting White Paper](#).
- WDFW Fish Program – Spawning survey data, redd counts, district fish biologist expertise, and data from [PTAGIS \(PIT Tag Information System\)](#).
- Local, state, and federal government agencies or tribes that also regulate in or near water activities.
- ArcView - WDFW possesses various GIS data sets that include DNR water typing, fish passage barrier inventories, culvert inventories, fish distribution, LIDAR topography, etc. WDFW has created an ArcView project file that allows a biologist to view most if not all of our GIS data. If you are not set up to use this system, work with your supervisor to do so.
- [Department of Ecology](#) - maintains a variety of data including:
 - [The Water Quality Assessment and Clean Water Act 303\(d\) list](#)
 - [Coastal Atlas](#) - detailed shoreline imagery.
- [Department of Natural Resources](#) - There are many data layers on the DNR website that you can download and use on GIS. These include fish passage barriers, water typing layers, forest roads, soil types, and many more.
- County Parcel information - Most if not all counties in the state maintain a GIS database of parcel information in their county. This data may also be available through our existing agency GIS data, but is not updated regularly. Some counties do not release their information. It is best to find the ones that do for your area and upload them into your GIS. Others you will need to locate and create an Internet bookmark for yourself to access.
- [Google Maps](#) - for site context, local characteristics, neighboring properties, potential equipment access, estimation of Ordinary High Water Line (OHWL), upland vegetation, and vicinity of project to waterbody, relative steepness of the bank, and apparent erosion.
- [U.S. Forest Service Stream Systems Technology Center](#) – Resource for tools and science applications including software, educational materials, and videos.

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3. Missing Information

Biologists may request more information before issuing a permit in order to effectively evaluate the project and issue an appropriate permit. New information and feedback to the applicant should happen as soon as possible giving the applicant a reasonable amount of time to reply. Any needed additional information should be requested within 10 days after receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may put it on hold before the end of the 45-day processing period. If these situations occur you should be working closely with your supervisor to avoid conflicts.

Biologists should contact the applicant if the pre-application or accepted application requests a timing or equipment change for a whole or lengthy section of the stream(s). The biologist can ask the applicant to modify the application to limit the size of the requested area so that a site visit may be completed to evaluate the possibility of granting limited entry. It is not feasible or expected for the biologist to review a whole stream, or long stream reaches, for possible exceptions to the Gold and Fish pamphlet. An exception would be the instances where there are likely or known to be, multiple applicants within a specific claim or stream reach. Biologists should work with the applicant early in the process to persuade them to modify the application instead of the application being denied.


4. Site Visit

Purpose

For any type of HPA, site visit reviews typically occur as a pre-application review or the review of an active application in APPS. It is preferable that the biologist speak with the applicant during a pre-application consultation to help them identify the site conditions and stream channel characteristics they should be seeking in which to perform mineral prospecting work outside the work window. More complete hydraulic project applications with specific project locations will improve efficiency in processing Hydraulic Project Approvals.

Site visits are necessary to ensure that WDFW has collected the data needed to defend permit decisions. As shown in the January 15, 2015 Beatty v. WDFW Commission Decision (Case 314090), requests to work outside the authorized work times may be denied if the applicant fails to provide site-specific information that allows WDFW to adequately assess impacts to fish life. During a site visit, the objective of the biologist is to specifically delineate easily identified boundaries and limits for authorized work outside of the standard work window, as well as equipment, operation, or excavation requirements not covered in the current edition of the Gold and Fish Pamphlet.

The biologist will identify the different types of habitat used by the fish species at the location requested to work and prepare clear descriptions of this habitat (photographs are encouraged). Gather all data regarding spawning and incubation, adult holding pools, and juvenile rearing habitat, for example, for the species of fish that are present during the time of the proposed work. If spawning survey or any

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other additional fish habitat data are available, prepare a map in advance in ArcGIS. Pictures edited with identified boundaries and limits of any approved work may also be uploaded. If you are only given a township, range and section, map those areas, then add in the existing data. The map can be converted to a PDF file and loaded to the iPad or smartphone using a free app called "[Avenza](#)." Upload any pdf map files produced to the documents section for the application in APPS. The Avenza app will work in the field without cell service if the map was previously loaded. It will display your exact location referenced on the map. If you load the redd location/spawning habitat data to this map, you can show the applicant the proximity of your current position to documented spawning habitat in the field. Additionally, if PIT Tag Array, smolt trapping, or fish life inventory data is available, include a summary of this information and upload it into the documents section of the application in APPS.

It is not required that the applicant attend the site visit. However, it is helpful to have the applicant present to help ensure a clear understanding of expectations, work limits, and to obtain additional information on the location of the proposed project. If the applicant is unavailable or unable to arrange a site visit within 10 days of receipt of an application, WDFW should put the application on hold until a site visit can be scheduled. If the site is physically inaccessible due to snow or high water, WDFW may put the application on hold until the site is accessible ([WAC 220-660-050 \(13\)](#)).

The biologist should explain to the applicant what they are looking for at the site, such as locations that could support mineral prospecting and not negatively impact fish habitat (typically bedrock, boulders and heavy cobble where spawning and incubation is unlikely and no "pocket spawning exists"). The biologist should also show the applicant how the information will be used to delineate and map the allowed work areas. Allowed work areas should be clearly marked in the field using readily identifiable, permanent physical landmarks. If physical landmarks aren't available to describe metes and bounds (bridges, creek mouths, culverts etc.), the biologist should include GPS coordinates and photos with mark-ups of the allowed in-water work areas' upstream and downstream limits.

Always explain to the applicant the rationale for allowing or denying mineral prospecting in certain reaches of the stream in terms of protection of fish life and fish habitat. While limitations are most often necessary to protect spawning and incubation habitat, protection of other critical habitat or life history stages of fish life may be involved. Allowable exceptions to the stated provisions in the Gold and Fish pamphlet may include: allowing work within areas that are outside the wetted perimeter when there is sufficient area and distance to treat excavation spoils and sediment laden wastewater prior to entering the stream, or wetted areas of bedrock or identified stream reaches where spawning and incubation, or other critical habitat or fish life will not be adversely impacted.

For specific requests to suction dredge outside the authorized work time, dredging may not occur within 200 feet upstream of any spawning and incubation habitat. The 200 foot distance is based on the distance required for the influence of small-scale mineral prospecting generated turbidity and dissolved concentrations of metals (such as dissolved concentrations of copper, lead, zinc and total arsenic) to return to

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ambient levels (Ecology 2005). Greater buffer distances from spawning and incubation areas may be necessary where heavy sediment loads are present as sediment can be delivered downstream to spawning and incubation areas. This can be an important consideration in smaller streams where minimal dilution of mobilized sediment occurs.

If there is a pre-application site visit, let the applicant know what information is needed for a complete application so that you can conduct an efficient site review and expedite permit processing. After a pre-application review, in most cases, another field visit is not necessary, unless the requested work area is such a large stream reach that to survey for spawning habitat would require more than one standard work day to survey.


If there are likely to be multiple applicants for a specific claim within a stream or reach, there is benefit to surveying the habitat and/or areas where certain types of mineral prospecting may be permitted within an entire claim. Mapping the entire claim can preclude the need for repeated site visits and is therefore prudent, as significant time savings in site reviews is realized. This approach also helps provide consistency between Hydraulic Project Approvals within the same stream for similar hydraulic projects. While surveying a claim or reach may take a few days to complete, the biologist then has the collected information available for future applications, if the application matches a previous request (location, equipment and timing).

The biologist should always give the applicant the option to meet on site and explain the approved work locations, even if these locations were previously surveyed for an earlier application. The applicant may decide they do not wish to meet for a site visit and prefer the permit be issued based on the information collected at an earlier date. All previously collected information (maps, photos, GPS locations, etc.) will be uploaded to APPS for each individual application for these same location(s).

When processing either a pre-application or complete application, the purpose of the site review is to gather site-specific information necessary to assess proposed hydraulic project impacts to fish life and habitat. If the biologist finds that the proposed project will not provide for the proper protection of fish life, they provide suggestions to the applicant to modify their application. For example, if suction dredging is not appropriate at the requested location, suggesting an alternative location or equipment type such as a high-banker, may be an alternative the applicant may wish to consider.

Safety Highlights

Field reviews of applications for mineral prospecting frequently occur in forested, remote locations and staff must use caution when working in this environment. Vehicles must be parked in a safe place. When possible, coordinate the field review with another WDFW staff member, such as a district fish biologist, enforcement officer, or other habitat biologist, rather than work alone. Make sure a coworker or


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supervisor knows the location of the field review (e.g. use calendar appointment to include directions to location and expected time of review). Field visits during high flows or floods should be avoided because it may be unsafe to walk the streams or rivers and it may not be possible to observe spawning or other critical types of fish habitat. If the site is physically inaccessible due to snow or high water, the habitat biologist should put the application on hold until the site is accessible. There are many mandatory training and safety aspects to field work. Make sure you have worked through your supervisor in conducting such trainings and reviewing agency policies before conducting field work.

Field Equipment and Tools

In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit. Staff should enter a calendar event on their calendars indicating the time and location of the site visit. Staff should also follow a check-in/check-out procedure if going to a remote site.

- Portable Radio (if available)
- Copy of application and plans
- Map of proposed work area (upload copy to GPS and iPad/smartphone in advance)
- Camera and spare batteries
- iPad or smartphone (fully charged)
- GPS and spare batteries
- Tape measure (minimum 100 feet – to measure 200 feet upstream between spawning habitat and next allowed upstream work area (see page 6), or to document distances from landmarks)
- Field notebook
- Polarized sunglasses
- Knee or Hip boots or Chest Waders or Wading Boots
- Personal Floatation Device (PFD)
- Rain gear

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Verifying Application Information on Site


Once on site, the biologist should ask the applicant (if present) what kind of equipment they plan to use, where their activities will take place, whether it be the entire mining claim or select locations. This initial conversation may yield useful information; the applicant may only wish to mineral prospect in select areas so the focus would be on these site specific locations rather than the entire proposed location. This can also be done via phone or email prior to the site visit if the applicant does not attend the site visit.

The biologist should walk the stream with the applicant, if available. Start from the downstream end of the requested location and measure spawning habitat and record this information in your notes. Take GPS points, photos, and measurements in presence of the applicant, or ask the applicant to assist. You can explain how spawning habitat is identified, for which species, and if the applicant is proposing to suction dredge, the 200 feet buffer measured from downstream spawning habitat to the upstream start of the next allowable work site. While walking the stream, the biologist should also note streambed material, sediment size, regrade potential, and riparian conditions. Other site characteristics that might influence the project and habitat impacts should also be recorded. For example, if the applicant plans to highbank, spawning habitat may not be affected but the biologist must make sure they are using a compliant fish screen on the water pump. Also, the biologist should determine whether there is a practical means and location to effectively treat wastewater and excavated or dredged spoils on-site to avoid discharge to waters of the state. The biologist should also explain that removal of riparian vegetation is not authorized. Document the site inspection with photos and enter all information in APPS site inspection log and/or the project file in the documents section.

Based on fish life histories present, spawning, other habitat data, and measurements, proposed plans, type and operation of equipment proposed, and project location, the biologist must determine if the proposed activities satisfy the minimum requirements to protect fish life per [WAC 220-660](#). If the proposed activity is not adequately protective of fish, the biologist should suggest possible alternatives that could meet the requirements, or the HPA will have to be denied.

The minimum information that should be recorded in field notes to create a map of allowed work areas will be:

- APP ID or applicant name if no pre-application or application submitted
- Stream name
- Directions to site
- Latitude and longitude coordinates, photos, and/or landmark descriptions and distances for the upstream and downstream claim boundaries or approved work area
- Latitude and longitude coordinates, photos, and/or landmark descriptions and distances for the individual allowed work area upstream and downstream limits/boundaries within the claim or approved work area

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- 200 foot separation from downstream spawning habitat to next allowed upstream work area
- Note fish habitat – especially spawning, but include rearing, holding areas, etc.
- Note riparian habitat – no riparian areas or vegetation shall be removed as part of these projects
- Note fish observations – species and number
- Date and time
- Individuals present (e.g. WDFW Habitat Biologist, WDFW District Fish Biologist, Applicant, etc.)


Identify Project Impacts

Impacts to fish life vary based on site specific conditions and how and when the project will be conducted. During the site review, the biologist should keep in mind the potential impacts and document those impacts to fish and fish habitat that may occur from the project. Negative impacts to fish life and fish habitat by mineral prospecting activities must be avoided. Determine whether limiting the number of pieces of equipment is necessary to avoid impacts, and be sure to include language regarding any limits in the HPA.

Requests for equipment not listed in the current edition of the Gold and Fish pamphlet or sized greater than what is allowed by the current edition of the Gold and Fish pamphlet must also be evaluated for impacts to fish habitat and fish life. Based on the site-specific location and the life history of the fish species present, the biologist must evaluate if the proposed equipment will have an impact on fish life. Primarily, determine whether the equipment will cause significantly greater damage to the bed or banks. If the biologist is unfamiliar with a new type of equipment, request additional information needed to evaluate any impacts from the applicant and consult with supervisor or coworkers.

It is important that the biologist clearly understands the type of mineral prospecting equipment that is proposed, how it operates, and how excavation of material will occur in order to be able to assess the potential impacts to fish life. Important questions to ask or consider regarding proposed work includes:

- Where and how will material be excavated? Suction dredge, shovel?
- What type of equipment is involved? Can I see the equipment or do you have pictures? Can you explain how it works? (Especially significant if it's an unusual type of equipment, or a type the biologist is not familiar with)
- What is the processing rate of the equipment (Cubic feet or yards/hour)?
- How large of a pit will be excavated and where will it be? What is the depth? What is the width? Proximity to the wetted perimeter? Proximity to unstable banks?

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- Where will processing of materials occur? Will there be discharge of sediment laden wastewater? If so, where and how will it be treated to prevent discharge to the stream?
- Where will excavated spoils be placed? What is the risk of loss of sediment into the stream during storm events? Considering the time of year, what's the risk of a storm event? Is there sufficient area out of the wetted perimeter for practical wastewater treatment?
- Will excavation pits and spoil piles be susceptible to inundation due to flow fluctuations in the stream? Will excavation pits be filled in at the end of each day? If not, what will the applicant do to avoid discharging stockpiled sediment into the stream during weather events?
- What if fish are trapped in the excavated pit during flow fluctuations?

Establishing appropriate work window


The biologist should refer to [WAC 220-660-110](#) when determining the appropriate work window. Exceptions to standard work windows should only be issued in instances where site-specific conditions and proposed work is such that impacts to fish life can be avoided. For example, cleaning cracks or crevices in bedrock, or in areas in high gradient stream reaches with boulders or cobble substrate without pocket spawning habitat has minimal potential to impact fish life. Evaluation of fish impacts includes consideration of fish presence, life history stage, and the biologist's assessment of the potential impact of the proposed work. Mineral prospecting should not be authorized where excavation or work is proposed and where accessible spawning habitat or spawning or incubating fish life are present.

5. Mitigation Determination

Mineral prospecting activities must be self-mitigating. The department must deny a HPA if the project will result in direct or indirect harm to fish life, unless enough mitigation can be assured by provisioning the HPA or modifying the proposal ([WAC 220-660-300 \(3\)\(b\)](#)). Mitigation guidance is currently provided in [WAC 220-660-080](#) - Mitigation requirements for hydraulic projects.

6. Rules of Thumb

- The biologist should be very clear with the applicant about the next steps in the process. If the applicant is expected to provide additional information, the biologist should clarify when that information will be provided and how. For example, if a pre-application was submitted and reviewed, let the applicant know what additional information will be required in APPS (either in the application itself or as an additional document) for a complete application. For an accepted application, determine whether the applicant has submitted enough information to approve the application based on fish life and fish habitat. If more information is needed from the applicant to approve the

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application, let them know if the application should be amended or if additional documents are required.


- Once you have drafted the permit in APPS, it is okay to share a draft and supporting documents with the applicant for review, if there is time.
- New employees should go over the application and draft permit with their supervisor or experienced colleague before issuing.
- It's okay to say that you do not know the answer to a question and that you need to consult with your supervisor or district fish biologist.
- You should not feel pressured to issue a Hydraulic Project Approval for an exception to the standard work window. The work windows should prevail unless site-specific conditions and proposed work is such that protection of fish life can be provided.
- Every stream location requested is a bit different and has its own set of challenges.
- Some streams have a long history of prospecting and the spawning habitat areas are well documented. Consult with the fish survey biologists about the location and determine if the site contains known spawning areas. However, be aware that stream characteristics and conditions are dynamic due to flood events, fire, etc. Exercise caution in issuance of multi-year mineral prospecting Hydraulic Project Approvals that provide exceptions to the standard work window in locations where there are dynamic channel conditions and reasonable risk of change at the project site (i.e. what was not spawning and rearing habitat last year could become so after a flood event).
- Remember that Hydraulic Project Approvals can be withdrawn if site conditions change after a permit is issued (generally, an unusual occurrence). If this happens, consult with your supervisor to determine what action needs to be taken.
- When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

7. Relevant WACS

[WAC 220-660-080](#) - Mitigation requirements for hydraulic projects

[WAC 220-660-100](#) - Freshwater habitats of special concern

[WAC 220-660-110](#) - Authorized work times in freshwater areas

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[WAC 220-660-120](#) - Common freshwater construction provisions

[WAC 220-660-300](#) - Mineral Prospecting

8. *Examples of Documentation of Approved Locations*

Plans for mineral prospecting have their own set of challenges. Typically, the only information provided in an application is basic location information (Township, Section, Range, and Latitude and Longitude Coordinates), the type of equipment, and requested work time. Any maps submitted are typically hand drawn and not geo-referenced. Rarely are detailed plans submitted, so it is up to the biologist to provide the documentation of authorized work locations to the applicant and as part of the APPS record, as part of the issuance of the HPA.


Documentation should include the following:

- 1) Photos of upstream and downstream authorized work location limits and boundaries,
- 2) Location information: GPS'd latitude and longitude coordinates (note accuracy to account for any mapping error) and/or landmark descriptions and distances for authorized work locations,
- 3) Map detailing authorized work locations and protected habitat; additional habitat details if available, such as mapped redd locations, etc.
- 4) If necessary for clarity, written description of the boundaries to support the photos and maps

9. *References*

North, P. 1993. A review of the regulations and literature regarding the environmental impacts of suction gold dredges. U.S. Environmental Protection Agency Region 10 Alaska Operations Office.

Washington State Department of Ecology (Ecology). 2005. Effects of small-scale gold dredging on arsenic, copper, lead, and zinc concentrations in the Similkameen River. Publication No. 05-03-007. Olympia, Washington.

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Freshwater Bank Protection Replacement

The purpose of this document is to provide guidance and assistance when reviewing and permitting [hydraulic project applications](#) for the replacement of existing freshwater bank protection including evaluation of the design and development of potential mitigation requirements. The guidance provides the habitat biologist with basic information to process an application.

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1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW 77.55.021](#). Once the application is Accepted, the Habitat Biologist reviews and processes the application within APPS. There are many training [videos](#) and [self-help](#) documents for this process located on SharePoint.

2. Office Review

Purpose


The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable of [RCW 77.55.011\(23\)](#), and [WAC 220-660-130](#) since the RCW and WAC are where the agency's authority comes from. The Biologist reviews proposed plans for pre-existing bank protection (bulkheading, retaining walls, riprap) and the replacement alternative chosen by the applicant. The existing condition is the baseline condition for this project. Presence of fish life, including the species present, strongly influences proper project design. During the review the biologist may consult reference materials, agency data, and supervisor or coworkers as necessary to determine if the application is complete and the project is appropriately designed or if additional information is needed. The biologist should be timely in requesting additional information.

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Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources and may come from government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps), as well as private sources of information. Most of this data is available either through WDFW's GIS database or through various internet websites. Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. All of this information is useful in preparing, but ultimately nothing replaces getting out on the ground for projects. Below is a list of commonly used resources:

- [Integrated Streambank Protection Guidelines](#) – WDFW resource to help determine causes, mechanisms of failure, and potential solutions.
- WDFW Publications – [Aquatic Habitat Guidelines](#)
- [USGS Earthexplorer](#) - provides historic reference aerials and current aerials.
- [USGS Current Water Data](#) – check for gauged river flow data and/or [StreamStats](#) can provide additional insight into expected discharge per basin.
- [County Shoreline Designation](#) - determine if the waterbody is designated Shoreline of the State.
- [Shoreline Characterization Reports](#) – if available from Shoreline Master Program work per county, this may help with site assessment including vegetation, soils, and site conditions.
- [Local County Assessor's parcel search](#) - county permit information, past violations, county planner assigned to project, and parcel data. Confirm ownership.
- [Google Maps and Bing Maps](#) - for site context, local characteristics, neighboring properties, potential equipment access, estimation of Ordinary High Water Line (OHWL), upland vegetation, vicinity of house to waterbody, relative steepness of the bank, and apparent erosion.
- [WDFW PHS on the Web](#) - Locations of Priority Habitats and Species (PHS) that have been mapped. PHS may identify other areas of importance (freshwater shellfish beds, spawning areas), or bald eagle/great blue heron rookeries for which we may request the voluntary application of timing windows during State Environmental Policy Act (SEPA) review (as the HPA can only protect for fish life). These data are not an exhaustive inventory of PHS for the State of Washington. They represent the best knowledge of the WDFW biologists. The database is periodically updated as knowledge improves.
- [WDFW SalmonScape](#) - Stream specific fish and habitat data. Also can find this data in PHS on the Web. This data source is incomplete and has limited use above Grand Coulee Dam.

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- [WDFW ArcMap/ArcMap RDS](#) - WDFW possesses various GIS data sets that includes all data above, as well as a previously issued HPA layer.
- [Ecology Coastal Atlas](#) – Limited to portions of some lakeshores and major rivers in western and eastern Washington. Best imagery we have of older shoreline and current up to 2006.
- [USDA NRCS Soil Survey](#) - Soil data might help to identify erosion risk.

3. Missing Information

Biologists may require more information at any time before issuing a permit in order to effectively evaluate the project and issue an appropriate permit. The biologist should be timely in requesting additional information. This information should be requested within 10 days of receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may put it on hold before the end of the 45-day processing period. If these situations occur you should be working closely with your supervisor to avoid conflicts.


4. Site Visit

Purpose

Site reviews typically occur as a pre-application review or the review of an active application in APPS. During a pre-application meeting, the objective of the biologist is to assist the landowner or agent. This typically occurs in the form of helping them determine appropriate design options and project scope. The biologist should also discuss mitigation and what might be required depending on the impacts of the final project proposal. This is a great time to let the applicant know what will need to be included in their application for it to be considered complete and for you to issue a permit. After a pre-application review, in most cases, another field visit is not necessary. Additional assistance can be found on WDFW's website [here](#).

When processing a formal application, the purpose of the site review is to verify structural measurements, appropriateness of the project proposal, determine project impacts, and appropriate mitigation. The biologist may find the design is inappropriate for the protection of fish life and must provide suggestions for modifying the plans or suggesting an entirely different design.

- Provide educational materials to the applicant if appropriate
- Coordinate with Regional WDFW Hydraulic Engineer if site review reveals the need for technical assistance.
- Coordinate site visit with other agencies with jurisdiction when appropriate and feasible.
- Verify information gleaned from the office review.

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Print out and refer to the [site characterization checklist](#) located in the Integrated Streambank Protection Guidelines Table 2-2, page 2-16.

Site Characterization Checklist	
<input type="checkbox"/> channel geometry: cross section, streambank height, gradient, pool riffle system.	<input type="checkbox"/> flow patterns for existing conditions: flow direction, thalweg, angle of attack on streambank, impacts of physical features.
<input type="checkbox"/> planform: meander bend (how tight?), straight reach, physical features.	<input type="checkbox"/> approximate flow and stage at time of observation (e.g., during a flood, base flow, at bank-full flow).
<input type="checkbox"/> over-bank topography.	<input type="checkbox"/> visualize flow patterns at higher or lower flows (something that may be difficult for the untrained or inexperienced observer).
<input type="checkbox"/> soils in terrace and bank.	<input type="checkbox"/> sediment transport indicators: bed-load caliber, bar formation, deposited material in eddies and backwaters, patterns in deposited sizes on bars.
<input type="checkbox"/> bed materials (bed substrate) and armoring (surficial material).	<input type="checkbox"/> estimate channel roughness values.
<input type="checkbox"/> woody debris abundance and location.	<input type="checkbox"/> man-made features impacting flows: bridges, berms, armored streambanks.
<input type="checkbox"/> geologic features.	<input type="checkbox"/> evidence of animal impacts.
<input type="checkbox"/> vegetation: species, abundance, location on streambank (lower vegetative limit).	<input type="checkbox"/> high-water features and ice scars.
<input type="checkbox"/> indication of the height of flood waters, or the peak erosive energy of such high flows; for example, lichen and moss limits on rocks indicating annual high water mark, debris collected in bushes indicating the height of a flood, and the size of cobbles on bars reflecting the maximum flow over the surface.	<input type="checkbox"/> indicators of historical channel locations in the floodplain: channel scars or meander traces, exposed man-made structures, vegetation locations and deposits on terraces.
<input type="checkbox"/> location and depth of scour holes.	

Table 2-2. Site characterization checklist.

Safety Highlights

Vehicles must be parked in a safe place to not create a hazard for WDFW staff or the public. Site reviews often involve working around deep and/or flowing water which may present a drowning hazard; therefore, a PFD may be necessary to maintain a safe working environment. Be sure to check in/out with a co-worker or supervisor if going to a site visit on your own.

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Field Equipment and Tools


In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit.

- Business card or other agency ID
- Copy of application and plans
- iPad or other mobile device
- 100' tape measure
- Stakes
- Clinometer
- Camera
- Field notebook
- Knee or Hip boots
- Rain gear and/or other appropriate field clothing
- Personal Floatation Device (PFD)
- Optional: laser level

Verifying Application Information at the Site

Once on site, the biologist should offer the applicant or agent time to explain their design proposal and what they wish to accomplish. This initial conversation may yield useful information that may later facilitate discussion if there are problems identified in the design proposal.


- Document the site inspection with photos and enter information in APPS site inspection log and/or as a document attachment in the APPS project file.
- Identify the OHWL. Look for staining, vegetation changes, other on site evidence.
- If site allows, identify opportunities to pull back the bank protection and/or allow for bioengineered opportunities.
- Determine length of existing and proposed bank protection.
- Determine height of existing and proposed bank protection.
- The preferred slope is 2:1 or less (Horizontal: Vertical). Any steeper and there is a greater risk of failure.
- Determine if the cause of erosion is 1) site based (such as vegetation removal at the site) or 2) reach based (such as a stream confined by dikes).

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- Try to determine if the mechanism of failure is 1) toe erosion 2) scour 3) subsurface entrainment 4) mass failure 5) avulsion and chute- cutoff potential (See Attachment 1).
- Estimate height of bank and material composition.
- Consider how deep the toe of the bank protection will need to be buried to ensure it is below the depth of potential scour. Landowner may need to hire an engineer or WDFW Hydraulic Engineer may be able to assist.

Identify Project Impacts and Mitigation Opportunities

- Identify riparian vegetation to be impacted upland and along the water.
 - What species, age class, quantity, and size, if relevant?
- Identify access and work zone impacts.
- How does the applicant plan to control sediment delivery and erosion resulting from the project?
- How will the applicant address potential spills that might occur from equipment use?
- If in-water work is necessary, what measures will be taken to protect fish life and water quality?
- If a bypass, diversion, or coffer dam is needed, what method(s) will be used to isolate the work area?
- How will fish be excluded from the work area?
- What fish removal technique(s) will be used, and who will perform the work?
- How will waste water be treated (water pumped from within the exclusion site), where will it be pumped for filtration before re-entering the water?
- Identify or verify permanent reference points and measure the maximum distance of the waterward face for the new proposed bank protection (corner of house, tree, deck etc.)
- Reference points, measurements, or stake locations should be documented on the plans and scanned into APPS.

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Site visit wrap up

- Before leaving the site clarify with the applicant the next steps in the process and be sure they understand what additional information or tasks they are responsible for.
- Discuss HPA processing timelines with the applicant so they understand the implications.

5. Mitigation Determination

Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function due to impacts of the project. The mitigation document was in development at the time of this guidance, please check with your supervisor for the most up to date mitigation document.

Discuss onsite or after the site visit and be clear with the applicant what is required for mitigation under our authority. Make sure applicants that readily go above and beyond to mitigate understand the additional mitigation is voluntary and provides additional benefits to fish beyond what is required.


Incorporate large woody material or native vegetation into the design of structures as partial or complete mitigation for unavoidable impacts to fish life.

The design of the bank protection project must follow the mitigation sequence to protect fish life and fish habitat consistent with WAC 220-660-130:

“Protect fish life and habitat that supports fish life by using the least-impacting technically feasible alternative. The common alternatives below are in order from most to the least preferred:

- (i) No action – Natural channel processes to occur;
- (ii) Biotechnical techniques;
- (iii) Combination of biotechnical and structural techniques; and
- (iv) Structural techniques.”


- Set back structures or other improvements of value away from the eroding shoreline;
- Remove existing rock and concrete bulkheads whenever feasible;
- Use soft shore protection methods such as beach nourishment, large wood, bank resloping, and revegetation;
- Stress the importance of the use of native riparian plantings in order to improve future conditions for bank stability and ecological function. Prevent impacts to adjacent habitat that supports fish life; and

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- Bury the base of the structure deep enough to prevent undermining. Where scour depth is deep enough, choose a design that adjusts to changing scour depth without compromising the function of the bank protection.

6. Rules of Thumb

- Once you have drafted the permit in APPS, it is okay to share a draft and supporting documents with the applicant for review, if there is time.
- Look for opportunities to move replacement bulkheads further landward of the existing bulkhead if it is removed.
- When feasible, suggest removal of existing rock and concrete bulkheads. Cannot be required.
- Protect fish life and habitat that supports fish by encouraging the least-impacting technically feasible alternative. Common alternatives in order from most to least preferred: 1) no action, 2) biotechnical techniques, 3) combination of biotechnical and structural techniques, and 4) structural techniques.
- Restrict the area of stream bank protection and lake shoreline stabilization to the least amount needed to protect eroding banks.
- Where technically feasible, the toe of the structure must be located landward of the OHWL. Large wood or other materials consistent with natural stream processes can be placed waterward of the OHWL.
- Bury the base of the structure deep enough to prevent undermining.
- Use design flows appropriate for the type of protection and function of the individual bank protection elements.
- Use natural materials whenever feasible, including large wood and vegetation.
- Protect existing spawning and rearing habitat and processes that create and maintain it.
- Recognize that stream bank erosion treatments can cause the need for more stream bank protection projects upstream and downstream of the project site and that the design must prevent or minimize these impacts.
- When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

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7. Relevant WACS

- [WAC 220-660-080](#) - Mitigation requirements for hydraulic projects
- [WAC 220-660-100](#) - Freshwater habitats of special concern
- [WAC 220-660-110](#) - Authorized work times in freshwater areas
- [WAC 220-660-120](#) - Common freshwater construction provisions
- [WAC 220-660-130](#) - Stream bank protection and lake shoreline stabilization

8. Example Plans

See Attachment 1 for example plans and examples of mechanisms of bank failure.

9. References

WDFW Integrated Streambank Protection Guidelines, 2002
<http://wdfw.wa.gov/publications/00046/>

Pend Oreille County Shoreline Bank Stabilization Guide: Box Canyon Reservoir and other water bodies in Pend Oreille County. 2016.
http://pendoreilleco.org/wp-content/uploads/2016/04/PendOreilleShorelineStabilizationGuide_2016_April-8.5x11.pdf

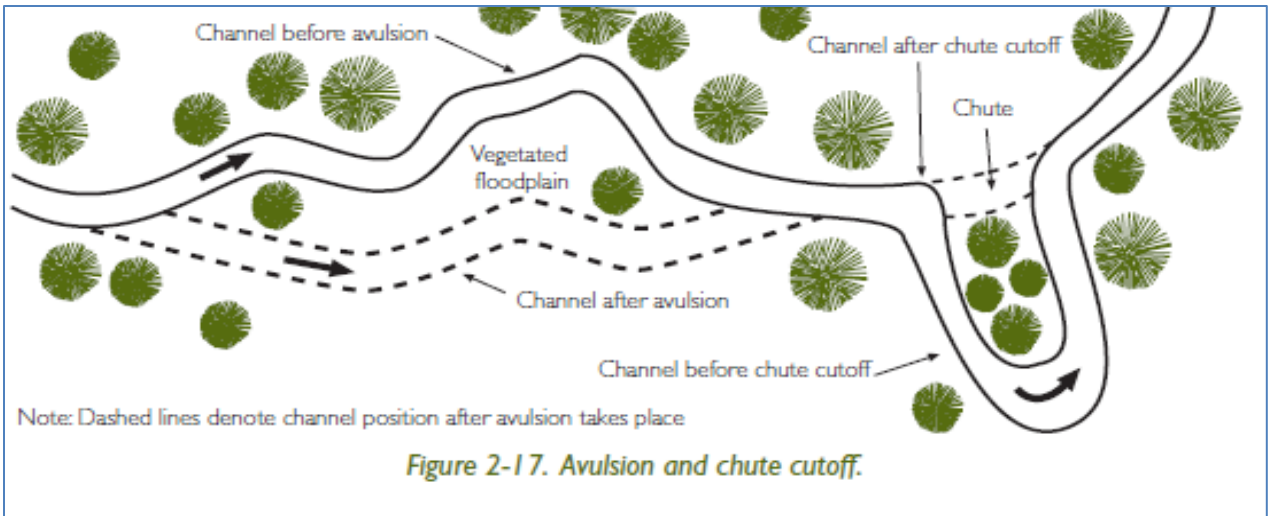
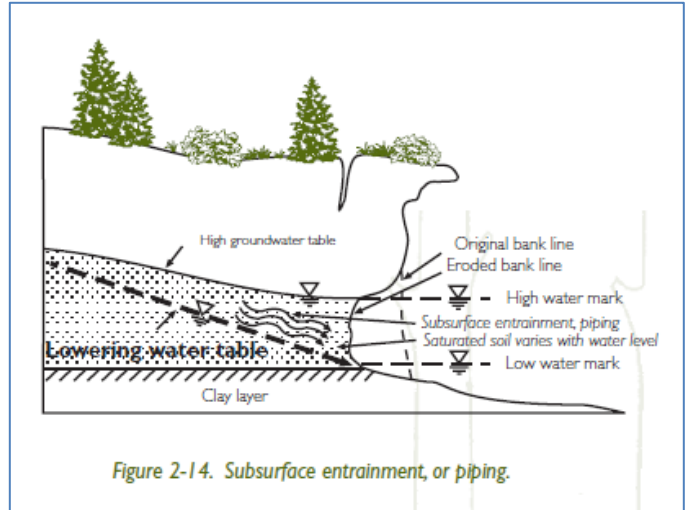
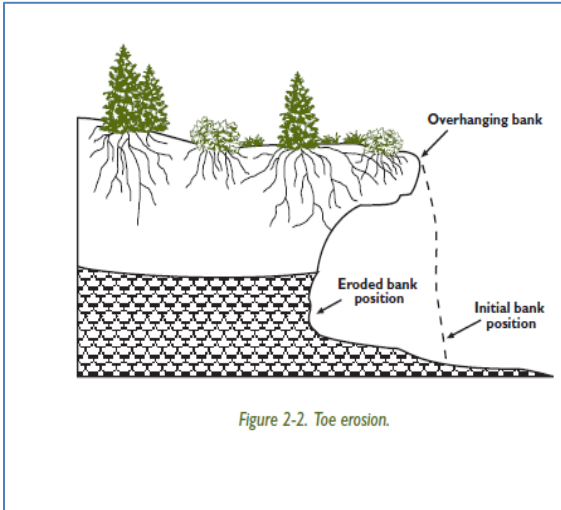
Attachment 1

Example Plans

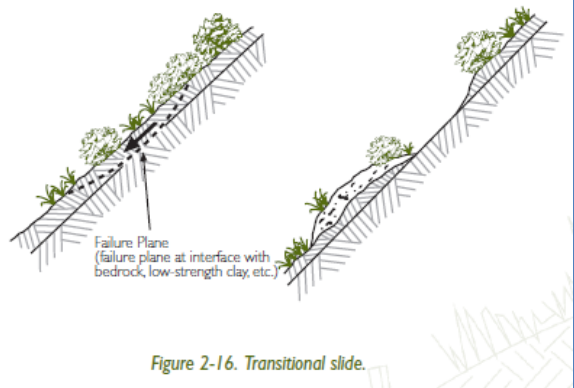
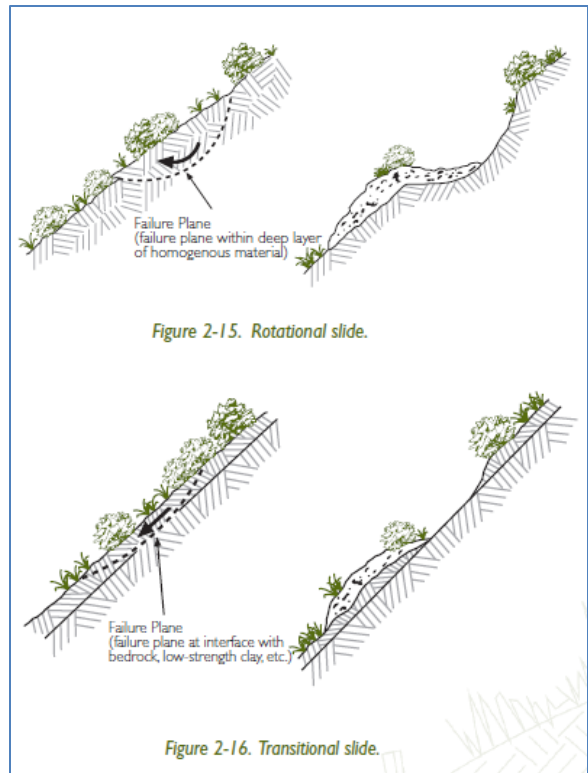
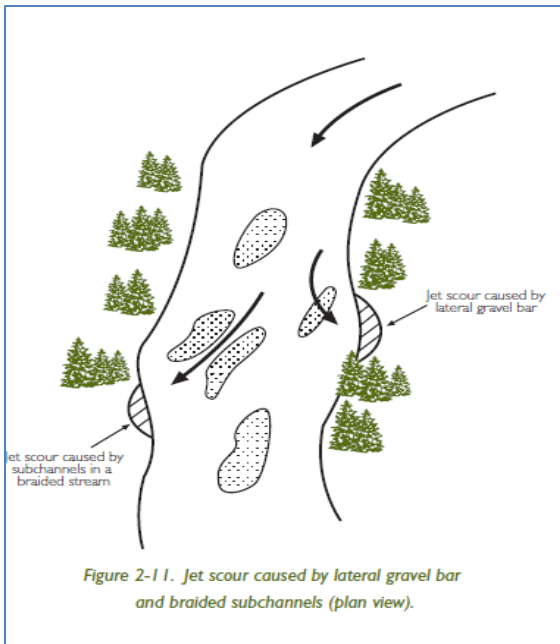
Mechanism of Failure	Possible Site-Based Causes	Possible Reach-Based Causes (Chapter 3)	Habitat Considerations
Toe erosion	Reduced vegetative bank structure from land-clearing activities Smoothed channel Along a bend (bend scour)	Meander migration Aggradation Degradation	Removal of large trees limits stream-side cover and riparian benefits (food source, shade, nutrients, woody debris, wildlife). Smoothing a channel limits diversity and complexity, pools, spawning habitat, and woody debris. Erosion along a bend or adjacent to a mid-channel bar creates deep pools and overhanging streambanks for cover.
Local Scour	Obstruction Tailout or Backwater Bar	Not applicable	Scour creates deep pools and overhanging streambanks that fish use for cover. Scoured sediments deposited downstream from scour hole may create (or smother existing) spawning habitat.
Constriction Scour	Bridge Crossing Existing streambank feature Large woody debris jam	Not applicable	
Drop/Weir Scour	Weir, ledge or sill	Not applicable	
Jet Scour	Lateral bar Sidechannel or tributary Abrupt channel bend (energy sink) Subchannels in a braided channel	Not applicable	
Mass Failure	Saturated soils Increased surcharge Lack of root structure Removal of lateral/underlying support	Meander migration Aggradation Degradation	
Subsurface Entrainment	Groundwater seepage Rapid drawdown	Not applicable	Subsurface flows important for maintaining floodplain connectivity, base flows and temperature.
Avulsion/Chute Cutoff Potential	Floodplain activities, natural conditions	Aggradation, channel relocation, downstream constriction, braided channel, large storm event	Removal of riparian corridor limits stream-side cover.

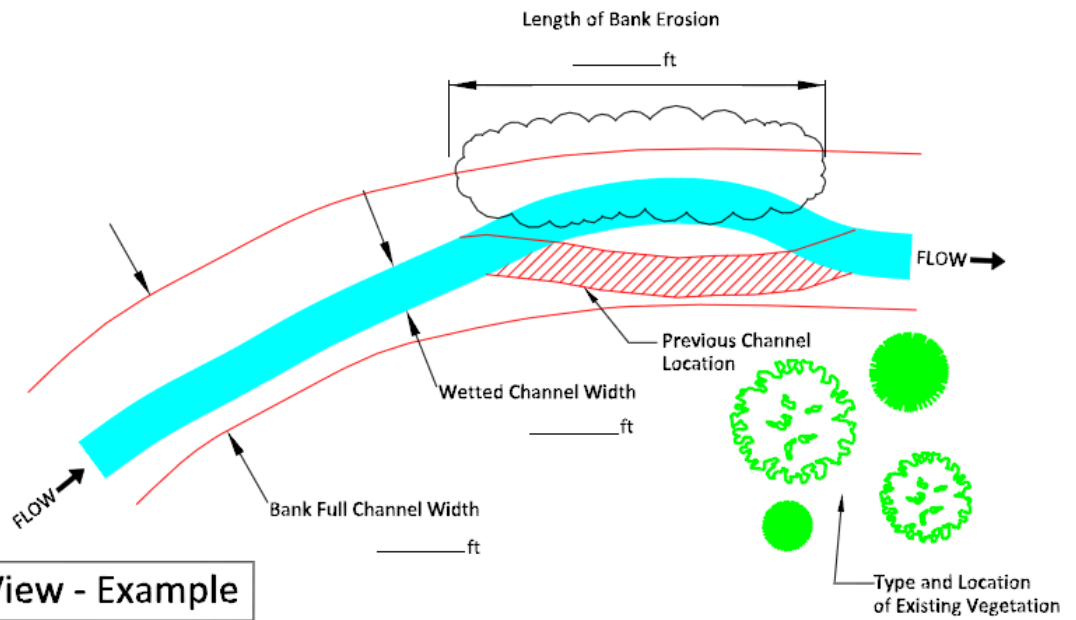
Mechanisms of failure, site and reach-based causes, and habitat considerations.

Examples of mechanisms of failure from the ISPG.



Examples of mechanisms of failure from the ISPG





Plan View - Example

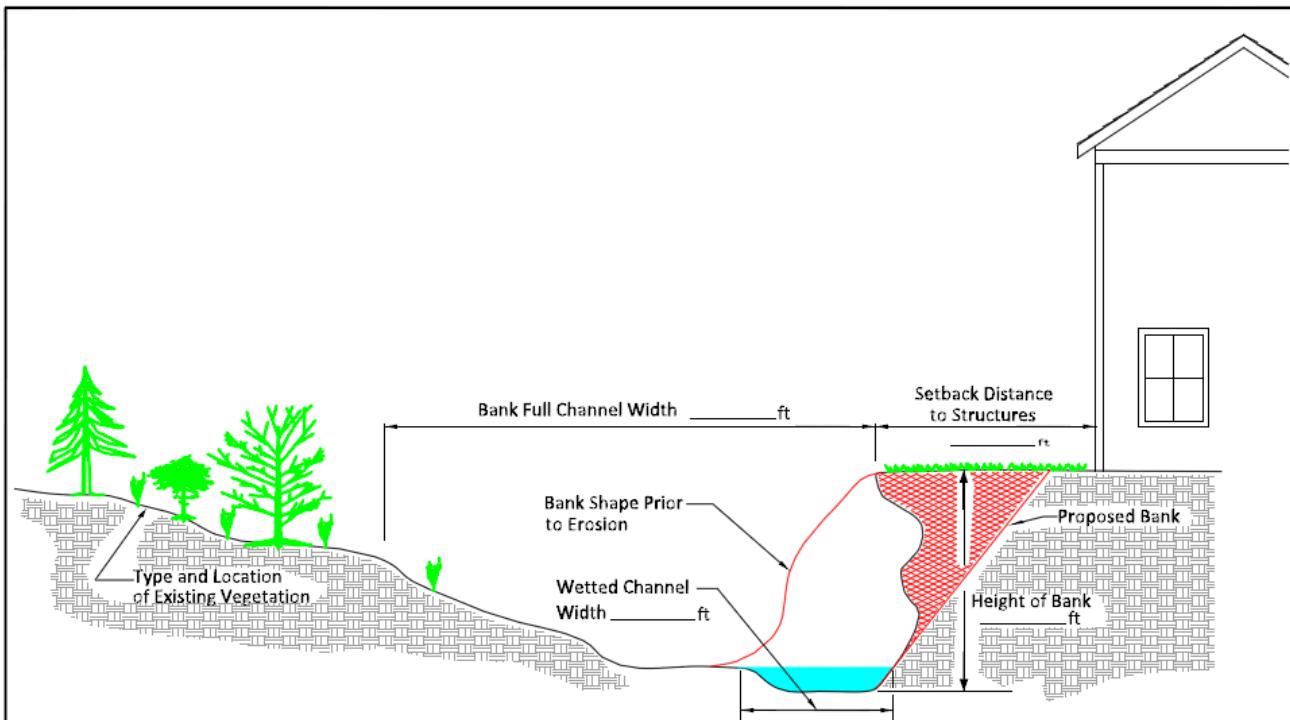
Not to scale



Engineer:
 Drawn by: J. Query
 Reviewed by:
 Approved by:

**Example Drawing S-6a
 Bank Erosion Detail - Plan View**

Date:
 6 - 3 - 15
 Sheet:
 1 of 1



Section View - Example


Not to scale



Engineer:
 Drawn by: J. Query
 Reviewed by:
 Approved by:

**Example Drawing S-6b
 Bank Erosion Detail - Section**

Date:
 6 - 3 - 15
 Sheet:
 1 of 1

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Freshwater Overwater Structure New/Replacement

The purpose of this document is to provide guidance and assistance when reviewing and permitting [hydraulic project applications](#) for new and replacement freshwater overwater structures (including docks, piers, ramps, floats, watercraft lifts, and buoys). The guidance provides the biologist with basic information to process an application.

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2.	Office Review.....	1
3.	Missing Information	3
4.	Site Visit	3
5.	Mitigation Determination	5
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7.	Relevant WACS.....	9
8.	Example Plans.....	9
9.	References	9


1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW77.55.021](#). Once the application is Accepted, the Habitat Biologist reviews and processes the application within APPS. There are many training [videos](#) and [self-help](#) documents for this process located on SharePoint.

2. Office Review

Purpose

The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable on [RCW 77.55](#), [WAC 220-660](#), and [WAC 220-660-140](#) since the RCW and WAC are where the agency's authority comes from. The biologist should also be very familiar with the [Overwater Structures and Non-Structural Piling White Paper](#) and the [White Paper - Over-Water Structures: Freshwater Issues](#). Presence of fish life, including the species present, strongly influences proper project design. During the review, the biologist may consult literature, local reference materials, fish use data, and local experts to determine if the application is


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appropriately designed or if additional information is needed. The biologist should be timely in requesting additional information.

Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources and may come from government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps), as well as private sources of information. Most of this data is available either through WDFW's GIS database or through various internet websites. Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. All of this information is useful in preparing, but ultimately nothing replaces getting out on the ground for projects. Below is a list of commonly used resources:

- WDFW Publications – [Aquatic Habitat Guidelines](#)
- WDFW Spawning/Shellfish Maps – site context and developing appropriate work windows for protecting sites with documented lake spawning sockeye, stream spawning salmonids, and/or protecting shellfish beds.
 - Consultation may be necessary with WDFW's district fish biologist to confirm spawn timing, locations of documented sites, and/or recent changes in fish populations, distributions, and/or habitat use.
- [WDFW PHS on the web](#) - known locations of priority habitats and species (PHS). PHS may identify other species of importance such as shellfish beds (where barge grounding should be limited) or bald eagle/great blue heron rookeries for which we may request the voluntary application of timing windows (as the HPA can only protect for fish life unless we comment during the State Environmental Policy Act [SEPA] review).
 - The Statewide Washington Integrated Fish Distribution (GIS - Swifdee) layer can identify fish species that are known to be present at the project location.
- [WDFW SalmonScape](#) - stream specific fish and habitat data.
- ArcView - WDFW possesses various GIS data sets that include DNR water typing, fish passage barrier inventories, culvert inventories, fish distribution, LIDAR topography, etc. WDFW has created an ArcView project file that allows a biologist to view most if not all of our GIS data. If you are not set up to use this system, work with your supervisor to do so.
- [Department of Ecology](#) - maintains a variety of data including:
 - [The Water Quality Assessment and Clean Water Act 303\(d\) list](#)
 - [Coastal Atlas](#) - detailed shoreline imagery.
- [Department of Natural Resources](#) - There are many data layers on the DNR website that you can download and use on ArcGIS. These include fish passage barriers, water typing layers, forest roads, soil types, and many more.

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- [Forest Practice Application Mapping Tool \(DNR Stream Typing Map\)](#) - information on streams and stream reaches, including whether there is documented fish use.
- County Assessor's parcel search - most if not all counties in the state maintain a GIS database of parcel information in their county. County permit information, past violations, county planner assigned to project, parcel data (i.e. King County i-Map, Snohomish County Online Property Information, etc.) are sometimes available.
- Google Maps, Google Earth, and Bing Maps (provides birds eye view) - site context, local characteristics, neighboring properties, potential equipment access (barge vs upland), estimation of Ordinary High Water Line (OHWL), upland vegetation, and vicinity of upland structures.
 - <https://www.google.com/maps/>
 - <https://www.google.com/earth/>
 - <http://www.bing.com/mapspreview>


3. Missing Information

Biologists may require more information at this time or after the site visit in order to evaluate the project. Examples include: a bathymetry survey (to justify proposed pile diameter, pier length, etc.), specifications of proposed materials (i.e. percent open space for grated decking, type of wood used, etc.), detailed planting plan, and/or enhancement plan to mitigate for new impacts. The biologist should be timely in requesting additional information. Any needed additional information should be requested within 10 days after receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may put it on hold before the end of the 45-day processing period. If these situations occur, you should be working closely with your supervisor to avoid conflicts.

4. Site Visit

Purpose

Site reviews typically occur as a pre-application review or the review of an active application in APPS. During a pre-application meeting, the objective of the biologist is to assist the landowner or agent. This typically occurs in the form of helping them determine appropriate design options and project scope. The biologist should also discuss mitigation and what might be required depending on the impacts of the final project proposal. This is a great time to let the applicant know what will need to be included in their application for it to be considered complete and for you to issue a permit. After a pre-application review, in most cases, another field visit is not necessary. Additional assistance can be found on WDFW's website [here](#).

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When processing a formal application, the purpose of the site review is to verify structural measurements, appropriateness of the project proposal, determine project impacts, and appropriate mitigation. The biologist may find the design is inappropriate for the protection of fish life and must provide suggestions for modifying the plans or suggesting an entirely different design.

Safety Highlights

Vehicles must be parked in a safe place to not create a hazard for WDFW staff or the public. Site reviews often involve working around deep and/or flowing water which may present a drowning hazard; therefore, a PFD may be necessary to maintain a safe working environment. Be sure to check in/out with a co-worker or supervisor if going to a site visit on your own.

Field Equipment and Tools


In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit.

- Business card or other agency ID
- Copy of application and plans
- iPad or other mobile device
- Camera
- GPS
- Tape measure
- Field notebook
- Knee or Hip boots
- Rain gear and/or other appropriate field clothing
- Personal Floatation Device (PFD)
- Disinfection supplies

Verifying application information on site

Once on site, the biologist should offer the applicant or agent time to explain their design proposal and what they wish to accomplish. This initial conversation may yield useful information that may later facilitate discussion if there are problems identified in the design proposal.

- Verify information gleaned from the office review.
- Identify if the existing site conditions are accurate as portrayed in the project plans.

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- It may be necessary to measure the length/width/height of the existing structure.
- Do the existing conditions meet current WAC or can an existing structure be updated to meet current standards for protection of fish?
 - Updating the structure may not be necessary, but may be perceived as an enhancement or mitigation option.
- Document with photos and enter in APPS inspection log and/or project file.

Identify Project Impacts and Mitigation Opportunities


- Identify impacts to aquatic habitat (including spawning, rearing, and migratory habitat).
- Perhaps certain site characteristics dictate the design or can be avoided to better mitigate project impacts.
 - Identify vegetation to be impacted upland and along the shoreline.
 - Identify non-native or mature native plants, what species, age class, how many?
 - Are there measures in place to control aquatic invasive species? If so, are they permitted by an individual HPA or permissible under the [Aquatic Plants and Fish pamphlet HPA](#) (July 2015)?
- Identify access and work zone impacts (barge grounding, excavator tracks).
- Identify if any other mitigation and/or enhancement opportunities are on site (i.e. modification and/or removal of overwater cover [i.e. unpermitted floats], addition of shoreline plantings, removal of derelict materials [i.e. pilings, mooring buoys, concrete, trash], reduction/modification of shoreline lighting, gravel nourishment in urbanized lakes, etc.).

Site visit wrap up

- Before leaving the site clarify with the applicant the next steps in the process and be sure they understand what additional information or tasks they are responsible for.
- Discuss HPA processing timelines with the applicant so they understand the implications. Let them know if you are short on time and waiting on them for additional information and potential remedies such as placing the project on hold.

5. Mitigation Determination

Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function due to the impacts of the project. The mitigation document was in development at the time of this guidance, please check with your supervisor for the most up to date mitigation document.

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Discuss mitigation measures onsite with applicant/agent if obvious during the site visit or after the site visit if additional information or time is needed to evaluate the project. Be sure to keep the applicant/agent engaged in your review process and be sure they are aware if compensatory mitigation may be needed to mitigate unavoidable impacts. Guidance may include both agency and regional documents including [State of Washington Alternative Mitigation Policy Guidance For Aquatic Permitting Requirements from the Departments of Ecology and Fish and Wildlife; Mitigation for better projects.](#)


- [Region 4 – Fresh Water Residential Pier Guidance for Lakes](#) can be consulted when determining appropriate mitigation for project impacts. Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function.

Imposing Minimization Requirements

- Confirm that the project plans include best management practices (BMPs) to minimize impacts of construction.
- Determine if additional measures are needed to protect the resource and include necessary provisions accordingly.
- BMPs may require additional project plans from the applicant/agent depending on the complexity of the project.
- Some BMPs can be provisioned using standard provisions provided in [WAC 220-660-140](#) and/or input into APPS.
- Determine the Appropriate In-Water Work Windows – key to minimizing impacts to fish resources identified at the site during both office and field review of the project.
- This includes taking into consideration fish presence and life history stage, expected impact of construction activities, and best management practices proposed by the applicant. Consulting with your local WDFW district fish biologist may be necessary to determine approximate timing for egg incubation, fry emergence, and critical shallow water juvenile rearing periods.
- Refer to [WAC 220-660-110](#) and local/regional guidelines for allowable in-water work periods (i.e. *Chinook, Steelhead and Bull Trout Work Windows for the Lake Washington System*). Reference [TIMES WHEN SPAWNING OR INCUBATING SALMONIDS ARE LEAST LIKELY TO BE WITHIN WASHINGTON STATE FRESHWATERS](#) when determining the appropriate work window.


Requiring Compensatory Mitigation

- All new impacts must be fully mitigated. Refer to WDFW’s Mitigation policy for sequencing ([POL- M5002](#)).
- Determine a prioritization sequence and list of options that could work for your watershed. See the example below used in WRIA 8.

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Mitigation (In order of WDFW preference)

- Work with applicant/agent to decrease the size of the structure, remove skirting, and/or add or increase the grated portion of the pier or dock (particularly the near shore portion).
- Remove derelict pilings, piers, docks, and/or floats.
- Shoreline softening: removal of hard shorelines (rock, rip rap, and/or concrete bulkheads or bank protection) and replacement with beach coves, sloped shorelines that include native plantings, and large wood to stabilize and protect slopes.
- Partial planting plan (two trees and three shrubs).
 - Mitigation plantings should be installed within 10 feet of the OHWL to provide positive benefits to fish life (leaf litter and shade).
 - Plantings should be installed during fall or spring dormant period (can be done outside of the approved in-water work window).
 - Example: two trees (defined as woody vegetation with the potential to achieve heights of 40 feet or greater; e.g., Douglas fir, western red cedar, western hemlock, black cottonwood, red alder, paper birch, quaking aspen, Pacific willow, Pacific dogwood, Oregon white oak, red oak, grand fir) and three shrubs (defined as woody vegetation with the potential to achieve heights of 4 feet or greater; e.g., Sitka willow, Scouler willow, red-osier dogwood, black twinberry, Pacific ninebark, cascara, salmonberry, red elderberry, Douglas' spiraea, ocean spray, vine maple, snowberry, Indian plum).
 - Exceptions/credits include:
 - Three shrubs can be substituted for one tree (e.g. some municipalities have height restrictions, view ordinances, etc.).
 - Can consider existing on site vegetation towards mitigation, but typically this cannot comprise all of the mitigation.
- Gravel nourishment (typically applies to urbanized lakes only).
 - Must be placed during the approved in-water work window.
 - Typically require 25 cubic yards per 50 linear feet of shoreline; however, U.S. Army Corps of Engineers has a threshold at 25 cubic yards, so this may be a reasonable amount to benefit fish life but not push them into additional permitting.
 - In and within 100 yards of a documented sockeye spawning area, we recommend a 2-inch minus mix (100% less than 2 inches, 85% less than 1 inch, and greater than 40% between 0.25 and 0.75 inch).
 - Outside of sockeye spawning areas, we recommend a 1-inch minus mix (100% less than 1 inch, 85% less than 0.5 inch, and 40% less than 0.25 inch).

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- Remove trash, debris, etc. (e.g. 5, 10, or 15 cubic yards with photo documentation, during the approved in-water work window).
-

6. Rules of Thumb

Once you have drafted the permit in APPS, it is okay to share a draft and supporting documents with the applicant for review, if there is time.

Residential and Public Recreational Dock, Pier, Ramp and Float Design

New and repair/replacement pier, dock, ramp, and float designs may or may not be required to incorporate functional grating depending on site specific fish use WAC only requires grating if the structure has the potential to introduce shading impacts to juvenile salmonid migration, feeding, and rearing areas. These impacts are not an issue in put and take lakes with no anadromy or lakes without ambush predators. Reference local/regional guidance and WAC to maintain project/regional consistency.


Pile Design

[WAC 220-660-140](#) states that "steel piling used to construct residential docks should not exceed six inches in diameter." Yet it is also states "use the smallest diameter and number of pilings required to construct a safe structure." An engineer's justification may be needed to write a defensible permit.

Lakeshore Enhancement

Large woody material should only be placed in areas and water depths to benefit targeted species and avoid providing habitat for predatory fish species. Anchors are often necessary to maintain functional habitat and avoid boating/navigation hazards.

Beach nourishment may be necessary due to impacted/disturbed shoreline processes caused by bank protection or upland land uses. The appropriate specification is site specific, but it may be useful to development some standard specifications to recommend as a starting point. For example, in Lake Washington and Lake Sammamish it is recommended that a 2-inch minus mix be installed in sockeye spawning areas (100% less than 2 inches, 85% less than 1 inch, and greater than 40% between 0.25 and 0.75 inch) and outside of sockeye spawning areas, it is recommended to use a 1-inch minus mix (100% less than 1 inch, 85% less than 0.5 inch, and 40% less than 0.25 inch).

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Compliance Inspections

When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

7. Relevant WACS

[WAC 220-660-080](#) - Mitigation requirements for hydraulic projects

[WAC 220-660-110](#) - Authorized work times in freshwater areas

[WAC 220-660-120](#) - Common freshwater construction provisions

[WAC 220-660-140](#) - Residential and public recreational docks, piers, ramps, floats, watercraft lifts, and buoys in freshwater areas

8. Example Plans

Plans for overwater structures have their own set of challenges. Ultimately the written plan in APPS and the information on any drawings needs to support a project that meets our standards for the protection of fish life. See Attachment 1 for Example Plans.

9. References

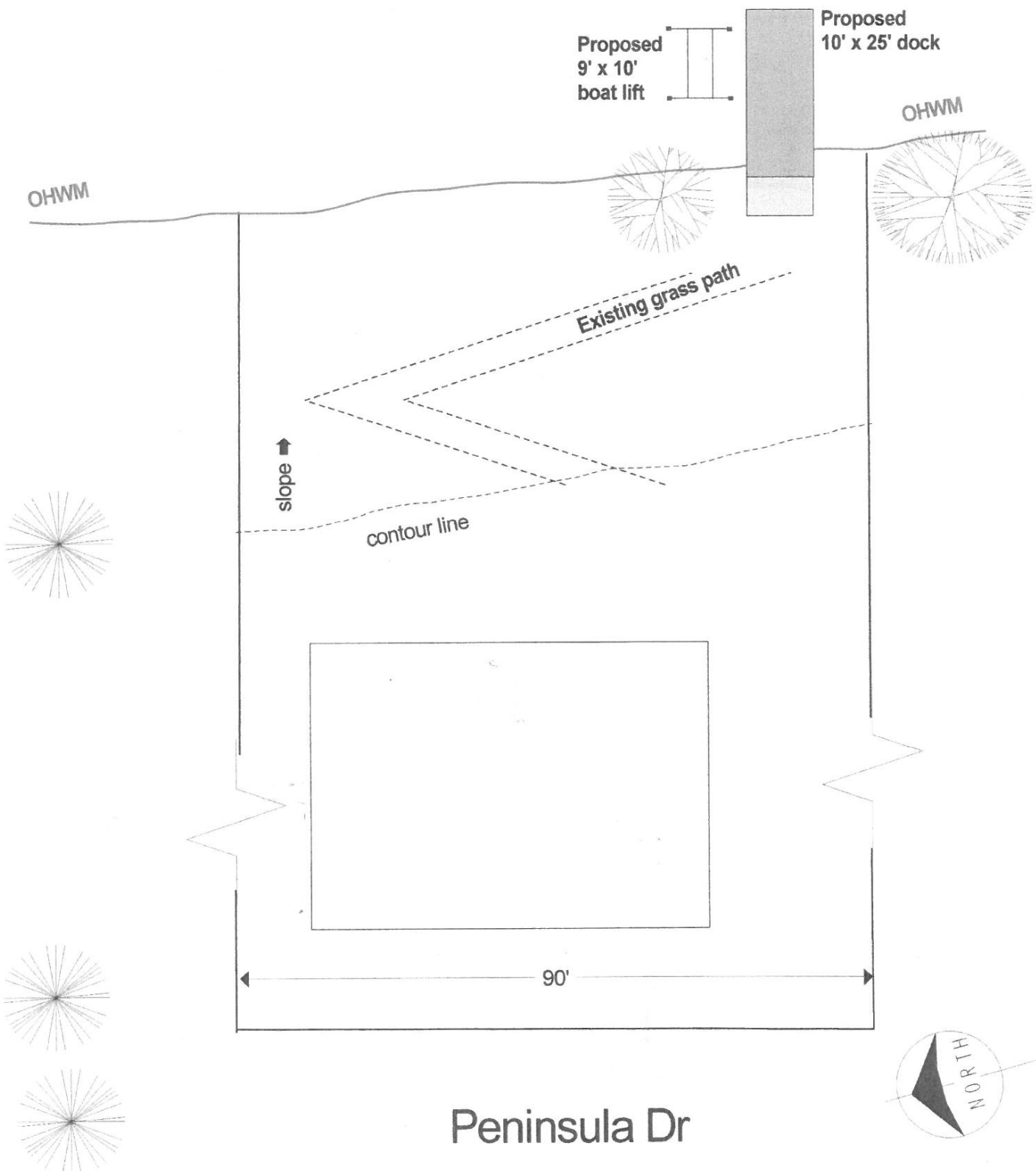
Carrasquero, J. 2001. Over-Water Structures: Freshwater Issues. Prepared for Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation by Herrera Environmental Consultants, Seattle, Washington. April 2001

Jones and Stokes. 2006. Overwater Structures and Non Structural Piling (White Paper). Prepared by Jones and Stokes Associates, in association with Anchor Environmental, L.L.C., and R2 Consultants for the Washington Department of Fish and Wildlife, Olympia, Washington

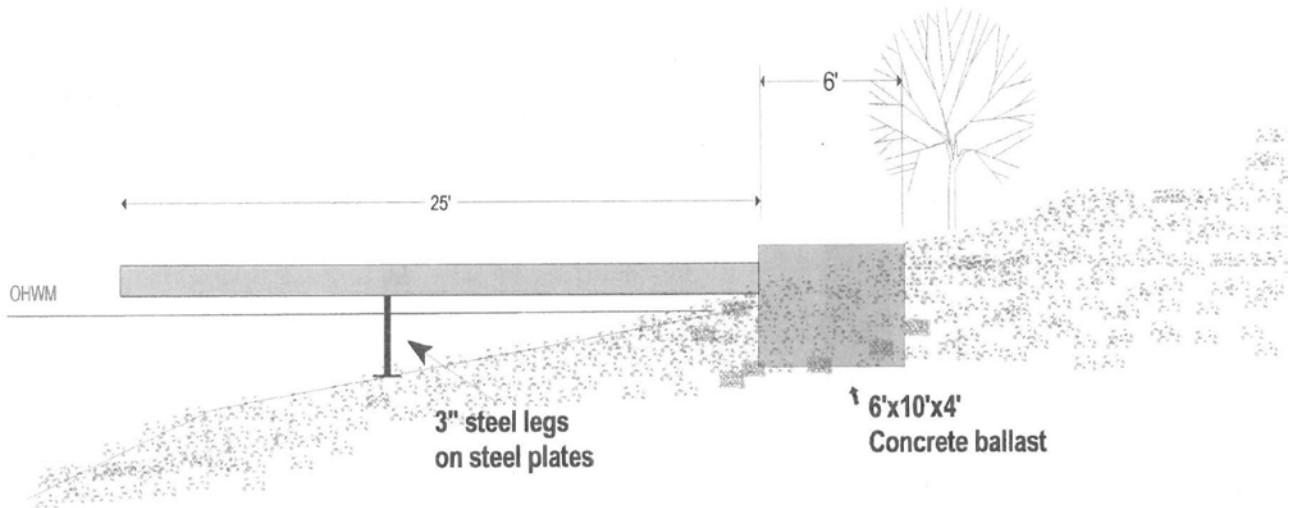
Poston, T. 2001. Treated Wood Issues Associated with Overwater Structures in Marine and Freshwater Environments White Paper. Olympia, Washington: Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation

Attachment 1

Example Plans



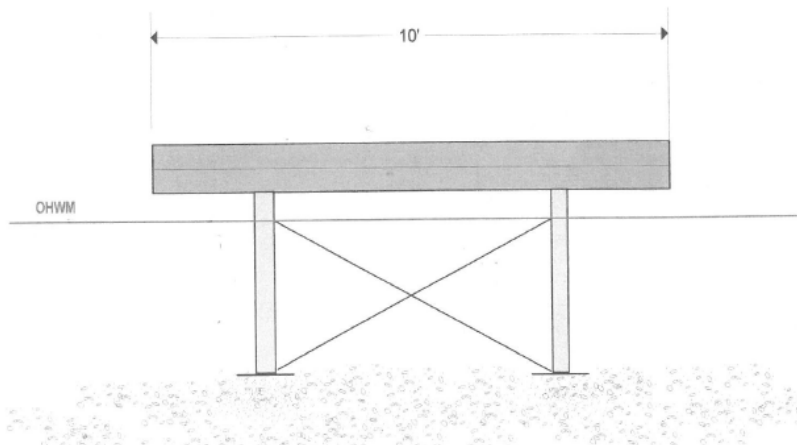
Example plan view from a small overwater structure project.



Example Profile View of a small overwater structure.

End View (looking landward)

1/2" = 1' approx



Example Cross Section View of a small overwater structure.

PROJECT INFORMATION

OWNER:
MARK SELLAND
JAMES THORP

DRAWINGS BY:
ECCO DESIGN INC.
203 N 36TH ST SUITE 201
SEATTLE, WA 98103
206-706-3937

SITE ADDRESS:
4017 & 4023 WILLIAMS AVE N
RENTON, WA 98056

PARCEL NUMBER:
(4017) 0518500460 & (4023) 0518500450

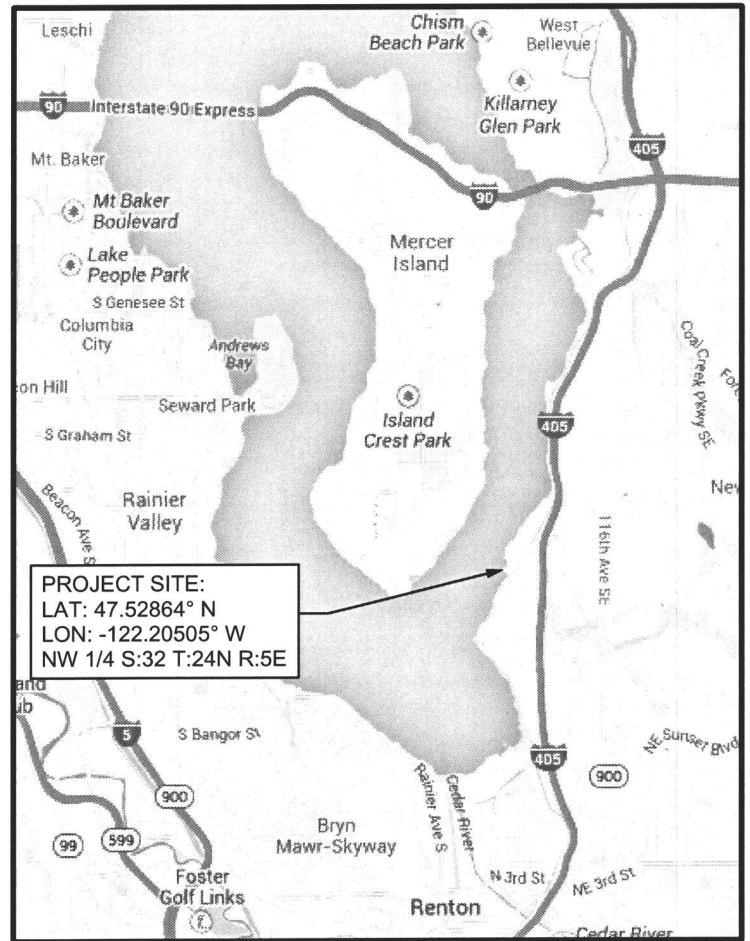
BODY OF WATER:
LAKE WASHINGTON

LEGAL DESCRIPTION:
(0518500460) BARBEE MILL TGW UND INT IN TRS
A,B,C,D,E,F,G, H,I,K,L,M,N,O & P

(0518500450) BARBEE MILL TGW UND INT IN TRS
A,B,C,D,E,F,G, H,I,K,L,M,N,O & P

PROJECT DESCRIPTION:
CONSTRUCT NEW PIER (400 SQUARE FEET) AND
INSTALL TWO NEW BOAT LIFTS. PLANT NATIVE
VEGETATION ALONG THE SHORELINE.

VICINITY MAP



PURPOSE: Boat Moorage

DATUM: C.O.E. Locks Datum
Est. 1919

ADJACENT PROPERTY OWNERS:

1. Charles & Elaine Wu
2. Peng Jiang

NAME: Mark Selland &
James Thorp

REFERENCE #:

SITE LOCATION ADDRESS:
4017 & 4023 Williams Ave. N
Renton, WA 98056

PROPOSED: Pier & Boat Lifts

IN: Lake Washington

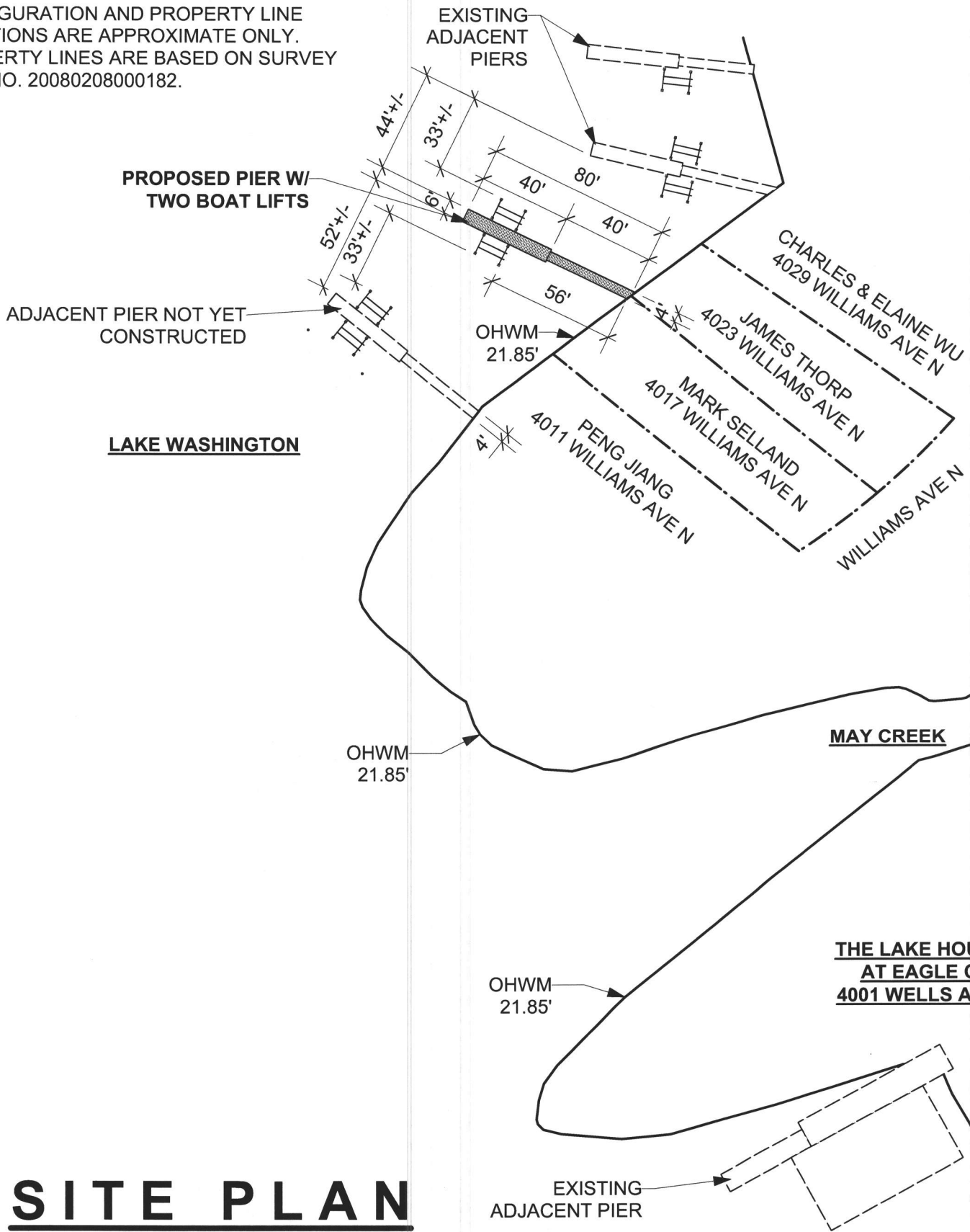
AT: Renton

COUNTY: King **STATE:** WA

SHEET 1 of 7

DATE: September 16, 2015

PLEASE NOTE THAT THE SHORELINE CONFIGURATION AND PROPERTY LINE LOCATIONS ARE APPROXIMATE ONLY. PROPERTY LINES ARE BASED ON SURVEY REC. NO. 20080208000182.



LAKE WASHINGTON

MAY CREEK

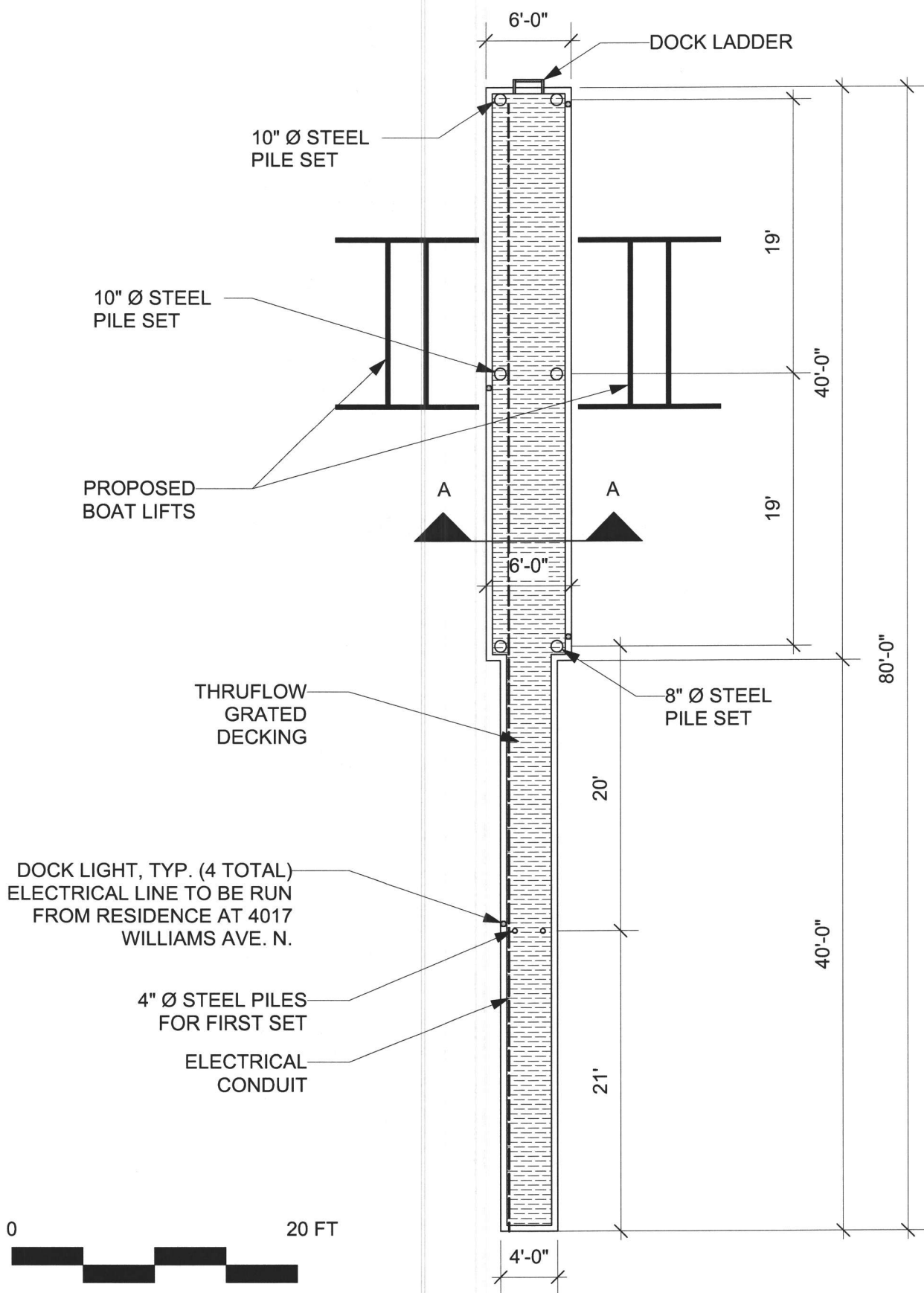
**THE LAKE HOUSES
AT EAGLE CO
4001 WELLS AVE N**

SITE PLAN

SCALE 1" = 60'-0"



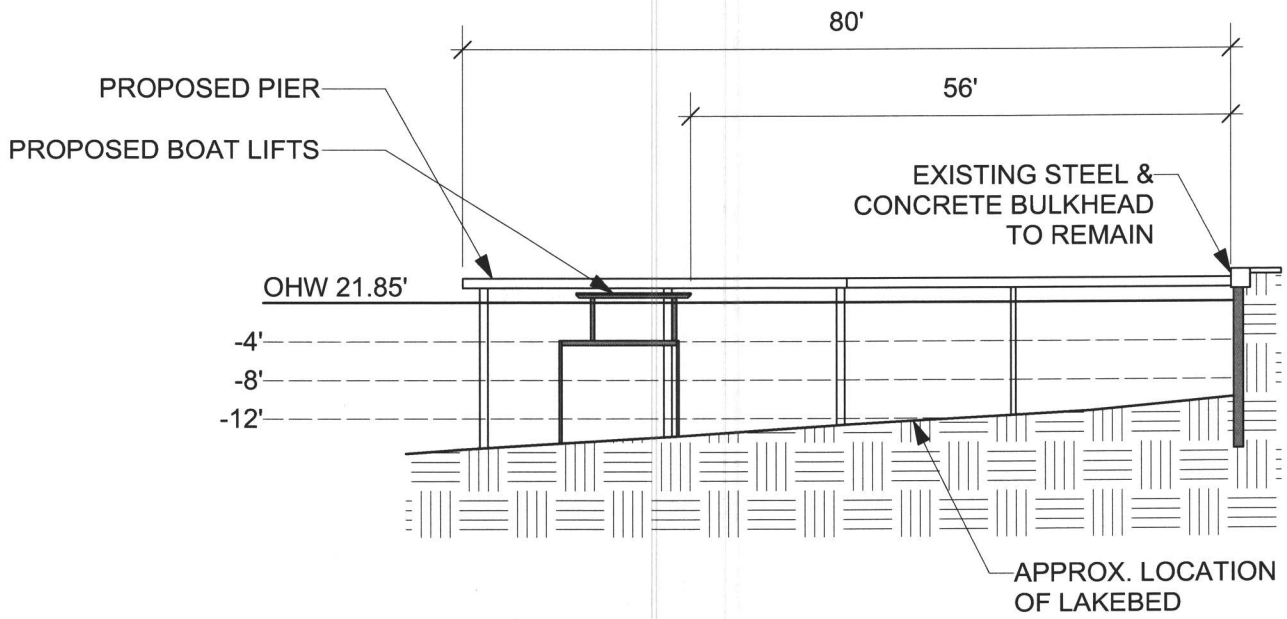
Reference:
Applicant: Mark Selland & James Thorp
Proposed: Pier & Boat Lifts
At: Renton, WA



PLAN VIEW

SCALE 1" = 10'-0"

Reference:
 Applicant: Mark Selland &
 James Thorp
 Proposed: Pier & Boat Lifts
 At: Renton, WA

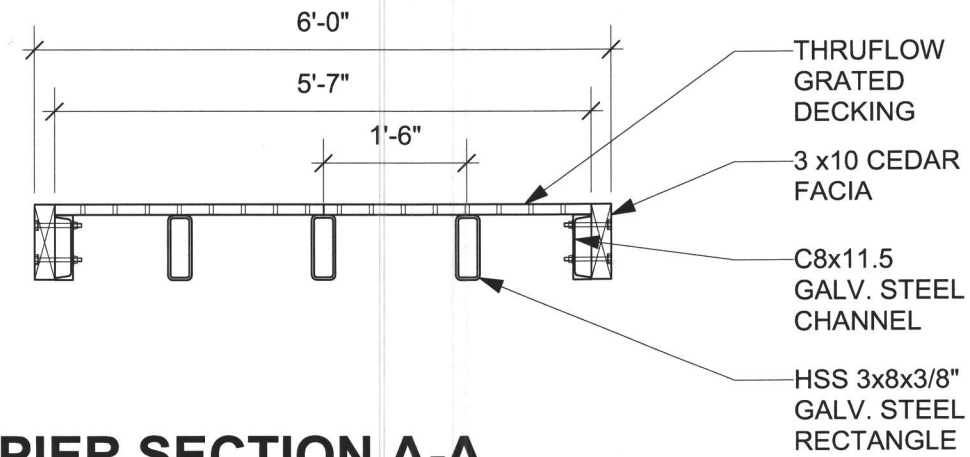


ELEVATION VIEW

SCALE 1" = 20'-0"



Reference:
Applicant: Mark Selland & James Thorp
Proposed: Pier & Boat Lifts
At: Renton, WA



PIER SECTION A-A

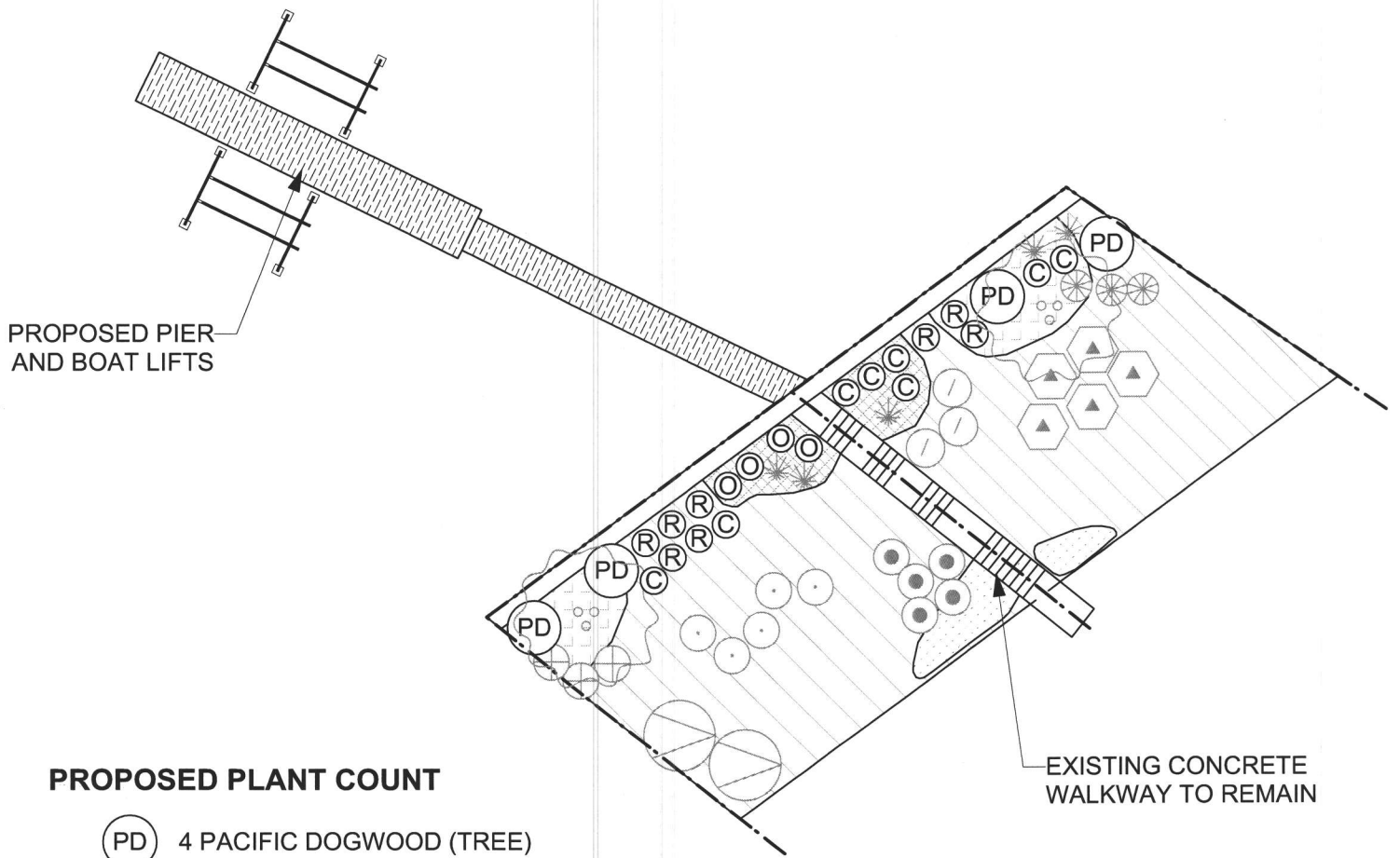
SCALE 1/2" = 1'-0"

Reference:

Applicant: Mark Selland &
James Thorp

Proposed: Pier & Boat Lifts

At: Renton, WA



PROPOSED PIER AND BOAT LIFTS

EXISTING CONCRETE WALKWAY TO REMAIN

PROPOSED PLANT COUNT

- Ⓟ 4 PACIFIC DOGWOOD (TREE)
- Ⓡ 8 NOOTKA ROSE (SHRUB)
- Ⓒ 8 RED-FLOWERING CURRANT (SHRUB)
- Ⓞ 4 TALL OREGON GRAPE (SHRUB)

NOTE: EXISTING PLANTINGS ARE SHOWN IN GRAY

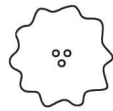


PLANTING PLAN

SCALE 1" = 20'-0"

Reference:
Applicant: Mark Selland & James Thorp
Proposed: Pier & Boat Lifts
At: Renton, WA

EXISTING PLANT LEGEND



AMELANCHIER ALNIFOLIA / SERVICEBERRY



CORNUS STOLONIFERA / RED TWIG DOGWOOD



MAHONIA AQUIFOLIUM / TALL OREGON GRAPE



MAHONIA NERVOSA / LOW OREGON GRAPE



RIBES SANGUINEUM / RED FLOWERING CURRANT



ROSA NUTKANA / NOOTKA ROSE



SYPHORICARPOS ALBUS / BALD-HIP ROSE



VACCINIUM OVATUM / EVERGREEN HUCKLEBERRY



HELICTOTRICHON SEMPERVIRENS / BLUE OAT GRASS



ALLIUM CERNUUM / NODDING ONION



ARCTOSTAPHYLOS UVA-URSI / KINNIKINNIK



FRAGARIA CHILOENSIS / BEACH STRAWBERRY



GAULTHERIA SHALLON / SALAL

Reference:

Applicant: Mark Selland &
James Thorp

Proposed: Pier & Boat Lifts

At: Renton, WA



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Marine Bulkhead Replacement

The purpose of this document is to provide guidance and assistance when reviewing and permitting [hydraulic project applications](#) for the replacement of an existing marine bulkhead including evaluation of the design and development of potential mitigation requirements. The guidance provides the habitat biologist with basic information to process an application.

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1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW77.55.021](#). Once the application is Accepted, the Habitat Biologist reviews and processes the application within APPS. There are many training [videos](#) and [self-help](#) documents for this process located on SharePoint.


2. Office Review

Purpose

The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable on [RCW 77.55](#), [WAC 220-660](#), and [WAC 220-660-370](#) since the RCW and WAC are where the agency’s authority comes from. Presence of fish life, including the species present, strongly influences proper project design.

Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources and may come from government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps), as well as private sources of information. Most of this data is available either through the WDFW GIS database or through various internet


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websites. Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. All of this information is useful in preparing, but ultimately nothing replaces getting out on the ground for projects. Below is a list of commonly used resources:

- [NOAA Tides and Currents](#) program- Provides the localized elevation for MHHW.
- Google Maps and Bing Maps (provides birds eye view)- for site context, local characteristics, neighboring properties, potential equipment access (barge vs upland), estimation of Ordinary High Water Mark (OHWM), upland vegetation, vicinity of house to bluff, relative size of bluff, fetch, and orientation.
- County Assessor's parcel search- County permit information, past violations, county planner assigned to project, and parcel data. Some counties have great GIS tools with recent photo imagery to document recent changes and even violations.

Resource Information

- [WDFW Forage fish map](#)- Documented spawning locations of Pacific Sand Lance, Surf Smelt, and Pacific Herring. The measuring tool is useful for identifying distance to documented beaches and for measuring fetch. Forage fish are identified critical species which are important prey for salmonids, birds, and marine mammals. Timing provisions should be included for both beach spawning forage fish (surf smelt and sand lance) and for off-shore (pacific herring) forage fish if they may be impacted by construction activities (e.g. barge operations, heavy siltation, etc.) Beaches that are documented or have documented surf smelt spawning adjacent to a project site, and where spawning closure windows are longer than 6 months, may allow some work where [forage fish survey protocols](#) are conducted and no eggs are found. The forage fish surveys are conducted for surf smelt only, sand lance spawning beaches are a hard closure during the spawning season. See [WAC 220-660-340](#) for more details. Not all herring spawning beaches require a closure if the bulkhead is being replaced. WDFW can ask the agent for a barge access plan, or show upland access areas if they proposing to conduct work from the upland. The biologist should check in with Fish Program Herring samplers to get the most recent use of a stock's spawning range and any updates on recent spawning activity.
- [WDFW PHS on the web](#)- Known location of priority habitats and species (PHS). PHS may identify other species of importance (oyster/shellfish beds) where barge grounding should be limited or bald eagle/great blue heron rookeries which we may request the voluntary application of timing windows (as the HPA can only protect for fish life unless we comment during State Environmental Policy Act [SEPA] review). For example, if the beach is a privately owned SFR, then they own the shellfish and can crush with a barge if they want. If the beach is public or the beach is not owned by the uplands,

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then perhaps shellfish minimization and mitigation should be considered. Also consider that tribes harvest shellfish commercially on many beaches, you may need to contact the tribal shellfish biologist to determine impacts.

- [WDFW Fish Passage Map](#)- Stream specific fish and habitat data if a stream is located at the site and may need a culvert upgrade associated with the project, this is rare, but certainly can occur. Also can find this data in PHS on the web.
- WDFW ArcMap- includes all data above with a previously issued HPA location layer.
- [DNR Eelgrass map](#) – Spatially limited but good data for documented beds. This is important if a barge is going to be used to bring in material or equipment. Also to identify depths at which eelgrass may be growing in the vicinity. Generally we allow barges to cross eelgrass when accessing sites without monitoring for eelgrass impacts. It may be wise to restrict access over eelgrass during herring spawning windows if eelgrass is present. Link to [eelgrass surveys](#) should you choose to require them.
- [Ecology Coastal Atlas](#) – Drift cells, coastal landforms (including feeder bluffs), eelgrass (data not as accurate), best imagery we have of older shoreline and current up to 2006. This is reportedly being updated in fall/winter 2016/17.
- County drift-cell maps where available.
- Shipman’s (2008) Geomorphic Classification of Puget Sound Nearshore Landforms.
- WDFW’s “[Marine Shoreline Design Guidelines](#)” and “[Your Marine Waterfront, A Guide to Protecting your Property](#)”.

3. Missing Information

Biologists may require more information at this time in order to evaluate the project. An example may be a geotechnical report (if available); however, assuming the project is in accepted status, the regulatory review clock would not stop while you are seeking this additional information. You could ask the applicant to place the application on hold while they obtain the information. Geotechnical reports are typically required for new construction, and they are also commonly completed for replacement bulkheads to show “need” but that varies with jurisdictions.

The biologist should be timely in requesting additional information. Any needed additional information should be requested within 10 days after receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may put it on hold before the end of the 45-day processing period. If these situations occur you should be working closely with your supervisor to avoid conflicts.

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4. Site Visit

Purpose


Site reviews typically occur as a pre-application review or the review of an active application in APPS. During a pre-application meeting, the objective of the biologist is to assist the landowner or agent. This typically occurs in the form of helping them determine appropriate design options and project scope. The biologist should also discuss mitigation and what might be required depending on the impacts of the final project proposal. This is a great time to let the applicant know what will need to be included in their application for it to be considered complete and for you to issue a permit. After a pre-application review, in most cases, another field visit is not necessary. Additional assistance can be found on WDFW's website [here](#).

When processing a formal application, the purpose of the site review is to verify structural measurements, appropriateness of the project proposal, determine project impacts, and appropriate mitigation. Once on site, the biologist should offer the applicant or agent time to explain their design proposal and what they wish to accomplish. The biologist may find the design is inappropriate for the protection of fish life and must provide suggestions for modifying the plans or suggesting an entirely different design.

- Verify information assembled from the office review.
- Identify the OHWM and determine if the OHWM has re-established behind the existing bulkhead. This usually takes about one to three years and things like pickle weed, barnacles and a wrack line may help with this determination. If a new OHWM has been established, then that is the new location for the bulkhead. If an application for an HPA is submitted for repairs within three years of the breach, the bank protection structure may be repaired or replaced in the original footprint, see [WAC 220-660-370\(3\)a](#).
- Determine if the site allows for opportunities to pull back the bulkhead and/or allows for soft shore opportunities. (This cannot be required; however, soft shore approaches should be mentioned as an option where appropriate, See [Marine Shoreline Design Guidelines](#) or [Your Marine Waterfront](#) for guidance).
- Confirm Mean Higher High Waterline (MHHW) matches the plans and datum. Projects located below the MHHW line currently are in USACE jurisdiction and they should be consulted as well. Additionally, knowing the correct location of tidal elevations on the plans help to provide advice and information to applicants on armoring design (For example: will soft armoring work at the site?).
- Identify mode of bulkhead failure if possible.
- Determine length of existing and proposed bulkhead.
 - This should follow the natural curve of the bank and be measured according to the guidelines which can be found in the Marine Shorelines Design Guidelines.

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- Document with photos and enter in APPS site inspection.
 - *Identify Project Impacts and Mitigation Opportunities*
- Identify shorelines and upland vegetation to be impacted.
 - Non-native or mature native vegetation, what species, age class, how many?
 - Flag vegetation you want to preserve.
 - Discuss with property owner about removal of non-native species and replanting with native species.
 - Typically require 5:1 mitigation for removing large mature native trees. Additionally, the trees should be incorporated into the beach or bulkhead design. Removal of smaller bushes and vegetation can be 1:1 mitigation, but the plantings should be dense enough to minimize being overtaken by non-native vegetation. Generally, try to encourage applicants to plant heavy for loss and that way they don't have to deal with future weeding as much, shade out the weeds approach.
- Note the position of the bulkhead in drift-cell zone(s): erosion, transport, and/or accretion beach. Note the location of the nearest feeder bluffs to the bulkhead site.
- Identify access and work zone impacts (barge grounding, excavator tracks, etc.).
- Document beach substrate class size (cobble, hardpan, sand, etc.) relative to bluff type. This will help to determine if the site could potentially be used by forage fish if documented spawning has not occurred at the site. In addition, this information is used if beach nourishment is determined to be required for mitigation. Beach nourishment may not be appropriate for the site if the bulkhead is already at MHHW or if the site is all non-native fill.
- Estimate height of the bluff and material composition. This will also be used in the formula for calculating beach nourishment if applicable.
- Estimate natural erosion rate (potential). If a geotechnical report is not available, these metrics will be used to help develop the beach nourishment proposal:
 - Low energy (lagoon) 2"/year
 - Moderate 4"/year
 - High energy (big cobble/ bluff) 6"/year
 - (note: Shipman 2010, defined erosion rates)
- Identify if any other mitigation opportunities that are on site (derelict materials that can be removed, pull the bulkhead face back landward, creation of pocket beach, etc.).

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- Identify permanent reference points or bench marks and measure/record those distances on the approved plans. The reference points should be taken from the waterward face for the replaced bulkhead (corner of house, tree, deck etc.). See Attachment 1 – Example Plans.
- Optional staking of proposed bulkhead location (not preferred as the stakes could be moved or dislodged, but at the base of a bluff it may be the only option). The method for staking is to place an offset stake to either side of the parcel, so the barge has a landing area, where the bulkhead will be replaced. Stretch a line between stakes, measure from the line to the bulkhead face every 10 to 20 feet. An example of this is shown in Attachment 1. Staking is typically completed with the contractor, measurements recorded on the plans, those plans signed and dated by the contractor and the biologist, and the plans uploaded to APPS. Compliance needs to be done shortly after or during bulkhead installation in case stakes are disturbed. Ideally stake location would be repeatable with triangular measurements.
- Reference points, measurements, or stake locations should be documented on the plans and scanned into APPS.


Safety Highlights

Vehicles must be parked in a safe place to not create a hazard for WDFW staff or the public. Site reviews often involve working around deep and/or flowing water which may present a drowning hazard; therefore a PFD may be necessary to maintain a safe working environment. Be sure to check in/out with a co-worker or supervisor if going to a site visit on your own.

Field Equipment and Tools

In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit.

- Business card or other agency ID
- Copy of application and plans
- iPad or other mobile device
- 100' tape measure
- Stakes
- Clinometer
- Camera
- Field notebook
- Knee or Hip boots
- Personal Floatation Device (PFD)
- Rain gear and/or other appropriate field clothing

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5. Mitigation Determination

Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function due to the impacts of the project. Discuss onsite or after the site visit:

- Project impacts to fish and fish habitat,
- Project design and alternatives – as needed,
- Construction techniques proposed and alternatives – as needed
- Mitigation measures for impacts to fish and fish habitat.


Do not surprise the applicant or contractor with mitigation in an HPA not discussed previously. As discussed above, mitigation could include any or all of the following, see Attachment 2:

- Beach nourishment,
- Riparian plantings,
- Removal of derelict debris-generally required in addition to other mitigation but significant or offsite debris could be in place of other mitigation,
- Relocating structure landward-minimizing armoring footprint,
- Placement of large woody debris if appropriate,
- Shellfish seeding - typically only if damage to existing public shellfish resources.

Generally, by the time you are on-site with a contractor or an application is already in the permitting process, the applicant has made up their mind on what kind of structure they want. However, it's never a bad time to discuss soft-shore alternatives provided in WDFW's "Marine Shoreline Design Guidelines" and "Your Marine Waterfront, A Guide to Protecting your Property" if the site is applicable to a less hardened structure.


6. Rules of Thumb

- Once you have drafted the permit in APPS, it is okay to share a draft and supporting documents with the applicant for review, if there is time.
- If the previously existing bulkhead was constructed out of creosote piles, remove and dispose of contaminated soils 1 foot behind creosote bulkhead and cap with imported clean beach nourishment.
- At no time shall more than one cubic yard of material for one foot of lineal length on the beach be placed. Material may be placed off site but within

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same drift cell or over time within the five year permit. Basically we want to keep the material as high up on the beach, above MHHW. Below MHHW may require a USACE permit or may bury eggs.

- If a barge is used for construction in an area where eelgrass is documented or the biologist has concerns about eelgrass and prop scour, an eelgrass survey and/or barge operation plan can be requested.
- Ecology blocks and redi rock are not preferred materials for bulkheads primarily because they are prone to failure due to poor drainage. Drainage is difficult to achieve behind structures made out of this material. In addition, the flat surface of ecology blocks typically exacerbates vertical erosion. If ecology blocks are unavoidable, they should be constructed perpendicular to the shore, not parallel, that is the short side of the block should be parallel with the beach and the long side of the block perpendicular. This will allow for optimum stability and drainage; however, it will require extra blocks and extra excavation.
- The waterward face of the replacement bulkhead should not exceed the waterward face of previously existing bulkhead.
- The bulkhead should be buried a minimum of 18 inches below existing grade.
- The bulkhead footprint should only be constructed waterward of existing bulkhead if justified for safety concerns. Mitigation will be required for the increased footprint.
- Large woody material should only be placed on the beach for mitigation if it can be placed above MHHW. Use of chains should be limited to minimize damage to the bulkhead and instead be buried half way into the substrate. An anchored log that floats at high water can act as a battering ram on bulkheads and damage them.
- Beach nourishment specifications should be consistent with [Penttila, D. 2007](#), or should attempt to mimic on-site conditions. A sediment grain size analysis could be appropriate for some projects. But generally, the material excavated for bulkhead footings is decent material to place on the beach as beach nourishment. The exception would be when there is an excess of clay or extremely fine sediments.
- When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

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7. Relevant WACs

This guidance is for bulkhead replacements only.

[WAC 220-660-310](#) - Tidal reference areas

[WAC 220-660-320](#) - Saltwater habitats of special concern

[WAC 220-660-360](#) - Common saltwater technical provisions

[WAC 220-660-330](#) - Prohibited work times in saltwater areas

[WAC 220-660-370](#) - Bulkheads and bank protection in saltwater areas

Hopefully in the future additional guidance will be available for new marine bank protection. It is important to read and understand the differences between RCW [77.55.141](#) which applies to single-family residence bank protection that will **not** result in a permanent loss of critical food fish and shellfish habitat, and RCW [77.55.021](#) which applies to nonsingle-family residence bank protection and single-family residence bank protection that does **not** comply with the criteria in RCW 77.55.141. The department may deny bank protection applications processed under RCW 77.55.021 that do not provide proper protection of fish life. Appropriate methods to design marine bank protection are available in the department's [Marine Shoreline Design Guidelines](#), as well as other published manuals and guidelines.

8. Example Plans

Please see Attachment 1 for example plans.

9. References

Penttila, D. 2007. Marine Forage Fishes in Puget Sound. Puget Sound Nearshore Partnership Report No. 2007-03, Seattle, WA.

Shipman, H. 2008. Geomorphic Classification of Puget Sound Nearshore Landforms

Shipman, H., 2010, The geomorphic setting of Puget Sound: implications for shoreline erosion and the impacts of erosion control structures, in Shipman, H., Dethier, M.N., Gelfenbaum, G., Fresh, K.L., and Dinicola, R.S., eds., 2010, Puget Sound Shorelines and the Impacts of Armoring—Proceedings of a State of the Science Workshop, May 2009: U.S. Geological Survey Scientific Investigations Report 2010-5254, p. 19-34.

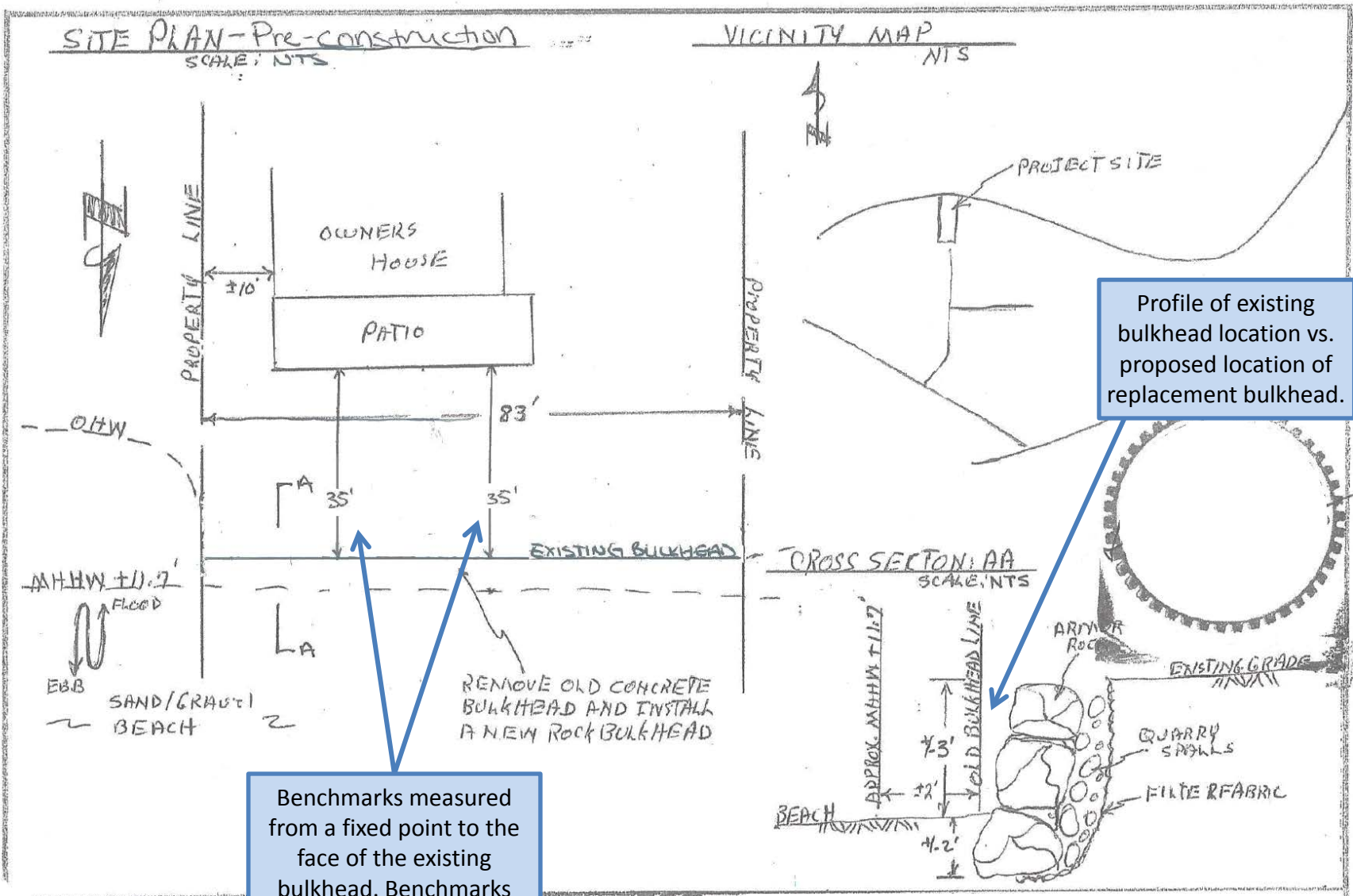
Johannessen and MacLennan; Borde, et.al., East Kitsap County Nearshore Habitat Assessment and Restoration Prioritization Framework

Net Shore-drift in Washington State, Volume 4: Hood Canal Region WDOE

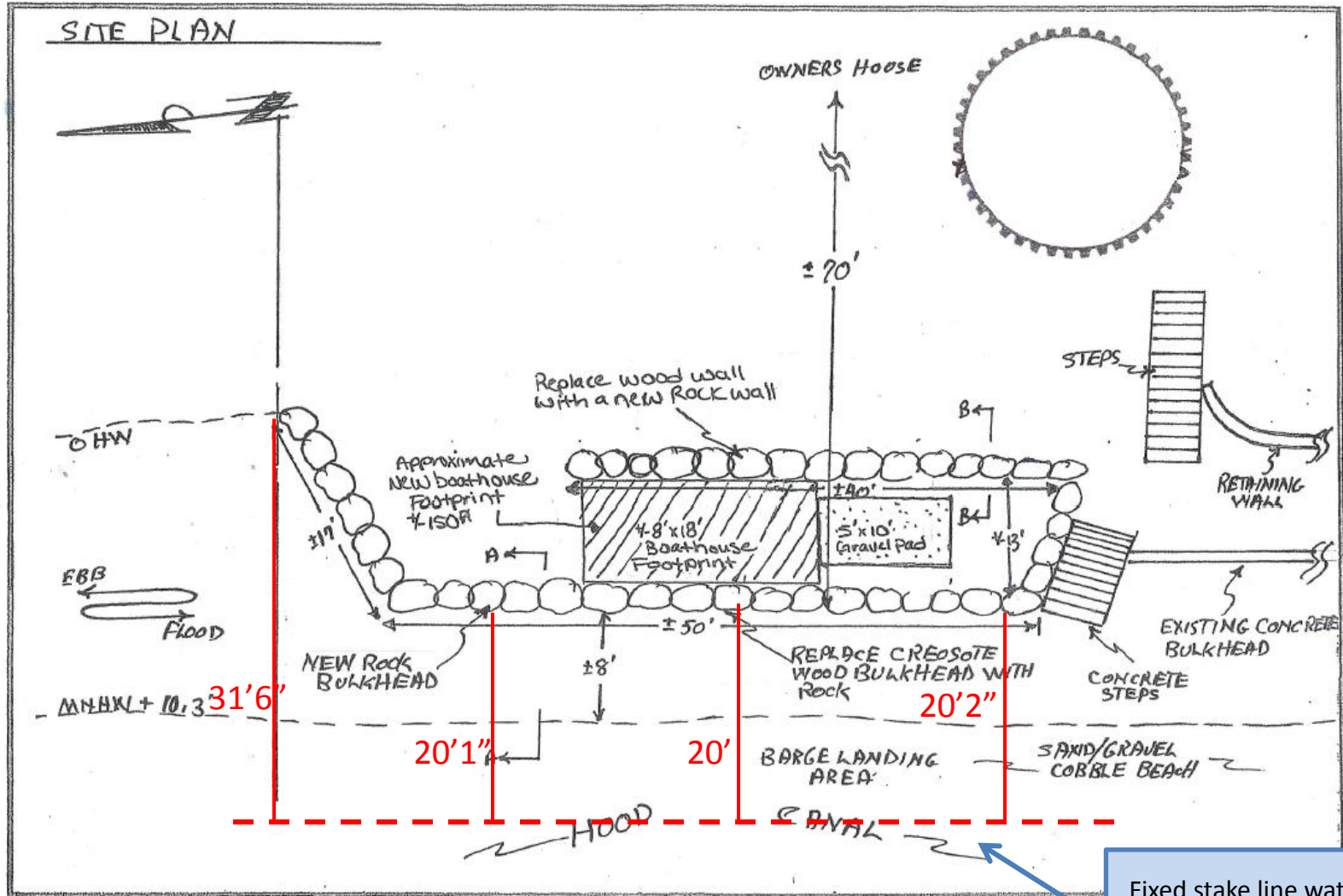
Attachment 1

Example Plans

Engineered Drawing Example – Bulkhead Replacement



Engineered Drawing Example – Bulkhead Replacement

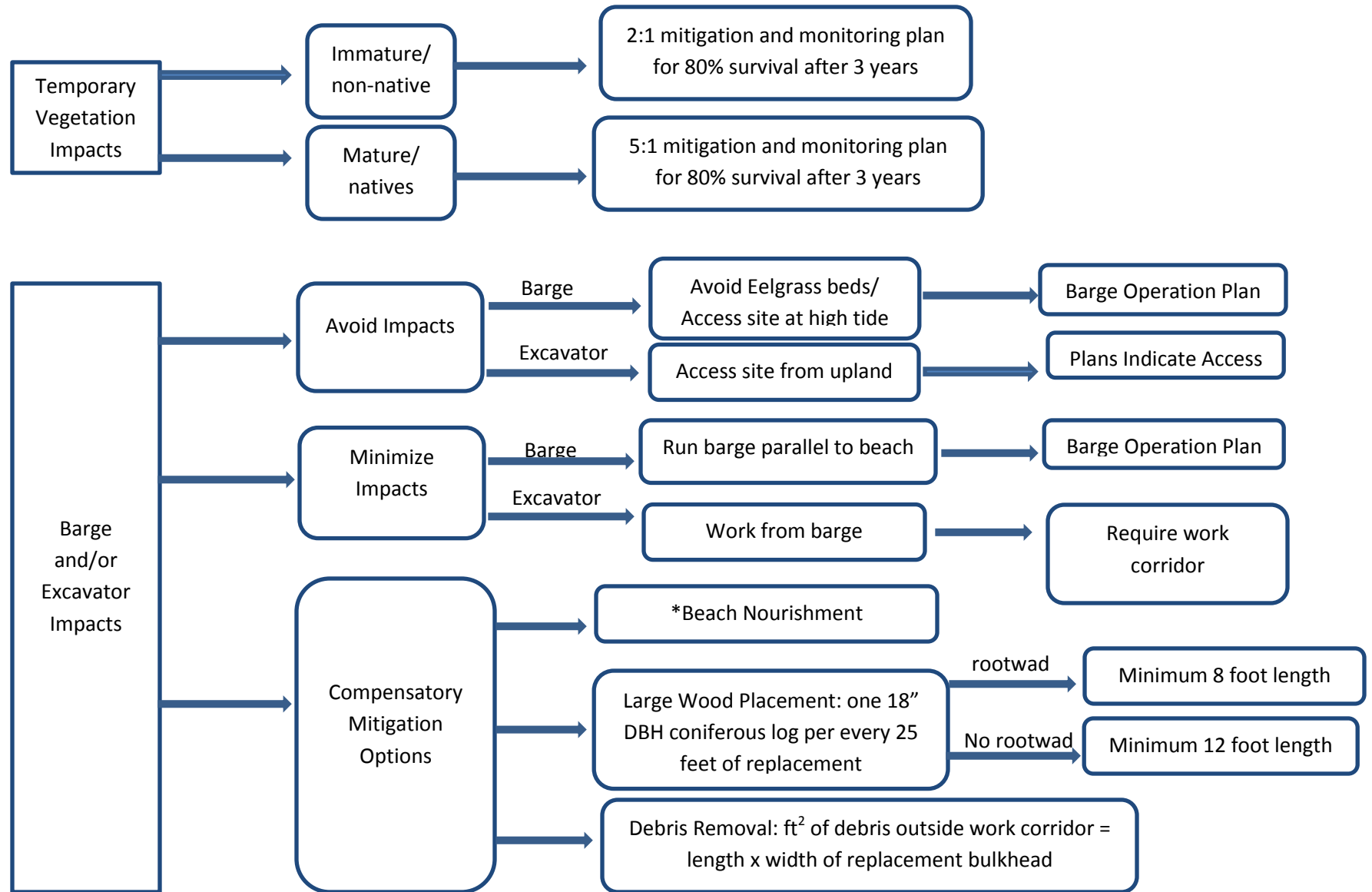


Fixed stake line waterward of bulkhead using rebar, or GPS coordinates.


Attachment 2

Mitigation Chart

Attachment 2: Bulkhead Replacement Mitigation



*We currently have methods for calculating beach nourishment for replacement bulkheads:
 (Erosion rate (inches/12)) x (Length of Project (ft))x(Height of Bluff(ft))= (X ft²)/(27) = (X yd³)x (5year permit)
OR
 1/2foot deep and 9 feet waterward for the length of the bulkhead

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Marine-Overwater Structure New/Replacement

The purpose of this document is to provide guidance and assistance when reviewing and permitting [hydraulic project applications](#) for new and replacement overwater structures (including docks, piers, ramps, floats, watercraft lifts, and buoys). The guidance provides the biologist with basic information to process an application.

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1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW77.55.021](#). Once the application is accepted, the Habitat Biologist reviews and processes the application within APPS. There are many training [videos](#) and [self-help](#) documents for this process located on SharePoint.

2. Office Review

Purpose

The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable on [RCW 77.55](#), [WAC 220-660](#), and [WAC 220-660-380](#) since the RCW and WAC are where the agency's authority comes from. The biologist should also be very familiar with the [Overwater Structures and Non-Structural Piling White Paper](#) and the [Overwater Structures: Marine Issues](#). Presence of fish life, including the species present, strongly influences proper project design. During the review, the biologist may consult literature, local reference materials, fish use data,


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and local experts to determine if the application is appropriately designed or if additional information is needed.

Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources and may come from government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps), as well as private sources of information. Most of this data is available either through the WDFW GIS database or through various internet websites. Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. All of this information is useful in preparing, but ultimately nothing replaces getting out on the ground for projects. Below is a list of commonly used resources:

- WDFW Publications – [Aquatic Habitat Guidelines](#)
- [WDFW Forage fish map](#) - Documented spawning locations of Pacific Sand Lance, Surf Smelt, and Pacific Herring. The measuring tool is useful for identifying distance to documented beaches and for measuring fetch. Forage fish are identified as critical species which are important prey for salmonids and marine mammals. Timing provisions should be included for both beach spawning forage fish (surf smelt and sand lance) and for off-shore (pacific herring) forage fish if they may be impacted by construction activities (e.g. barge operations, pile driving/removal, etc.).
- [WDFW PHS on the web](#) - Known location of priority habitats and species (PHS). PHS may identify other species of importance (PHS shellfish, marbled murrlets, rock fish and lingcod settlement and nursery areas) where construction activities should be prevented or limited. Identification through PHS of bald eagle/great blue heron rookeries for which we may request the voluntary application of timing windows (as the HPA can only protect for fish life unless we comment during State Environmental Policy Act [SEPA] review).
- [Eelgrass/Macroalgae Habitat Interim Survey Guidelines](#) - Not required for replacement within existing footprint. Necessary for new structures or expansion of existing structures in order to perform mitigation sequencing.
- WDFW ArcMap - Includes all data above with a previously issued HPA layer.
- ArcView - WDFW possesses various GIS data sets that include DNR water typing, fish passage barrier inventories, culvert inventories, fish distribution, LIDAR topography, etc. WDFW has created an ArcView project file that allows a biologist to view most if not all of our GIS data. If you are not set up to use this system, work with your supervisor to do so.
- [Department of Ecology](#) - maintains a variety of data including:
 - [The Water Quality Assessment and Clean Water Act 303\(d\) list](#)
 - [Coastal Atlas](#) - detailed shoreline imagery.
- [Department of Natural Resources](#) - There are many data layers on the DNR website that you can download and use on ArcGIS. These include fish

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passage barriers, water typing layers, forest roads, soil types, and many more.

- [DNR Eelgrass map](#) – Spatially limited but good data for documented beds. This is important if a barge is going to be used to bring in material or equipment.
- County Assessor’s parcel search - Most if not all counties in the state maintain a GIS database of parcel information in their county. County permit information, past violations, county planner assigned to project, parcel data (i.e. King County i-Map, Snohomish County Online Property Information, etc.) are sometimes available.
- Google Maps, Google Earth, and Bing Maps (provides birds eye view) - site context, local characteristics, neighboring properties, potential equipment access (barge vs upland), estimation of Ordinary High Water Line (OHWL), upland vegetation, and vicinity of upland structures.
 - <https://www.google.com/maps/>
 - <https://www.google.com/earth/>
 - <http://www.bing.com/mapspreview>
- Tides and Currents program- Provides the localized elevation for Mean Higher High Water (MHHW) Line.


Resource Information

- Consultant/Agent Biological Evaluation (BE) – Used for Endangered Species Act (ESA) review and habitat information.

3. Missing Information

Biologist may require more information at this time or after the site visit in order to evaluate the project. Examples include a bathymetry survey (to justify proposed pile diameter, pier length, etc.), specifications of proposed materials (i.e. percent open space for grated decking, type of wood used, etc.), detailed planting plan, enhancement plan to mitigate for new impacts, a Biological Evaluation (if available), and/or eelgrass survey.

The biologist should be timely in requesting additional information. Any needed additional information should be requested within 10 days after receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may put it on hold before the end of the 45-day processing period. If these situations occur, you should be working closely with your supervisor to avoid conflicts.

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4. Site Visit

Purpose

Site reviews typically occur as a pre-application review or the review of an active application in APPS. During a pre-application meeting, the objective of the biologist is to assist the landowner or agent. This typically occurs in the form of helping them determine appropriate design options and project scope. The biologist should also discuss mitigation and what might be required depending on the impacts of the final project proposal. This is a great time to let the applicant know what will need to be included in their application for it to be considered complete and for you to issue a permit. After a pre-application review, in most cases, another field visit is not necessary. Additional assistance can be found on WDFW's website [here](#).

When processing a formal application, the purpose of the site review is to verify structural measurements, appropriateness of the project proposal, determine project impacts, and appropriate mitigation. The biologist may find the design is inappropriate for the protection of fish life and must provide suggestions for modifying the plans or suggesting an entirely different design.


Safety Highlights

Vehicles must be parked in a safe place to not create a hazard for WDFW staff or the public. Site reviews often involve working around deep and/or flowing water which may present a drowning hazard; therefore a PFD may be necessary to maintain a safe working environment. Be sure to check in/out with a co-worker or supervisor if going to a site visit on your own.

Field Equipment and Tools

In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit.

- Business card or other agency ID
- Copy of application and plans
- iPad or other mobile device
- Camera
- GPS
- Tape measure
- Field notebook
- Knee or Hip boots
- Rain gear and/or other appropriate field clothing
- Personal Floatation Device (PFD)
- Disinfection supplies

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Verifying application information on site

Once on site, the biologist should offer the applicant or agent time to explain their design proposal and what they wish to accomplish. This initial conversation may yield useful information that may later facilitate discussion if there are problems identified in the design proposal.

- Verify information assembled from the office review.
- Identify the OHWM and determine the intersection point of the pier with the upland. Want the point to be as high as possible and landward of OHWM. [WAC 220-660-380\(4\)\(a\)](#).
- Ascertain if the site allows for opportunities to reposition the new or replacement structure to avoid and minimize impacts to critical habitat (eelgrass). Can the structure be repositioned to allow for eelgrass recovery if there are existing impacts? (This cannot be required; however, relocation of the structure should be mentioned as an option where appropriate).
- Confirm MHHW matches the plans and datum (construction waterward of MHHW is within U.S. Army Corps of Engineers jurisdiction, see Attachment 1) (<http://www.nws.usace.army.mil/Missions/Civil-Works/Regulatory/Permit-Guidebook/Corps-Permit/Limits-of-Jurisdiction/>)
- Determine length of existing and proposed structure.
- Document with photos and enter in APPS site inspection log and/or project file.


Identify Project Impacts and Mitigation Opportunities

- Identify vegetation to be impacted intertidally (cannot protect non-native species such as Japanese eelgrass, *Zostera japonica*).
- Identify non-native or mature native plants, what species, age class, how many?
- Identify access and work zone impacts (barge grounding, spud piles, pile driving methods).
- If a barge is used for construction, an eelgrass survey and/or barge operation plan should be submitted.

5. Mitigation Determination

Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function due to impacts of the project.

Discuss mitigation measures onsite with applicant/agent if obvious during the site visit or after the site visit if additional information or time is needed to evaluate the project. Be sure to keep the applicant/agent engaged in your review process and be

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sure they are aware if compensatory mitigation may be needed to mitigate unavoidable impacts. Guidance may include both agency and regional documents including [State of Washington Alternative Mitigation Policy Guidance For Aquatic Permitting Requirements from the Departments of Ecology and Fish and Wildlife; Mitigation for better projects.](#)


Discuss

- Project impacts to fish and fish habitat.
- Project design and alternatives – as needed.
- Construction techniques proposed and alternatives – as needed.
- Mitigation measures for impacts to fish and fish habitat.
- A new overwater structure, or a replacement structure outside the previously approved footprint will require an eelgrass and macroalgae survey (WAC 220-660-350) <http://wdfw.wa.gov/publicatios/00714>

6. Rules of Thumb

Once you have drafted the permit in APPS, it is okay to share a draft and supporting documents with the applicant for review, if there is time. When conducting a site review always keep in mind potential impacts to:

- Salmon migration corridor – what are the impacts? Grounding blocks migration corridor and potentially impacts epibenthos.
- Shade effect – forces juvenile salmon out of their preferred migration pattern, potentially forcing them into deeper water and increasing risk of predation.
- Macroalgae – provides epibenthic habitat, so need to limit shading.
- Saltmarsh – high intertidal vegetation, provides detritus (food) for epibenthic production
- Eelgrass habitat – refuge and feeding
- Forage fish habitat - cobble, gravel, hardpan, sand. This will be to help determine if the site has a possibility of forage fish if not documented.
- When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

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7. Relevant WACS

- [WAC 220-660-310](#) - Tidal reference areas
- [WAC 220-660-320](#) - Saltwater habitats of special concern
- [WAC 220-660-330](#) - Authorized work times in saltwater areas
- [WAC 220-660-340](#) - Intertidal forage fish spawning surveys
- [WAC 220-660-350](#) - Seagrass/macroalgae habitat surveys
- [WAC 220-660-360](#) - Common saltwater construction provisions
- [WAC 220-660-380](#) - Residential and public recreational docks, piers, ramps, floats, watercraft lifts, and buoys in saltwater areas

8. Example Designs

Plans for overwater structures have their own set of challenges. Ultimately the written plan in APPS and the information on any drawings needs to support a project that meets our standards for the protection of fish life. See Attachment 2 for Example Plans.

9. References

Nightingale, B. and C. A. Simenstad. 2001, Overwater structures: Marine Issues (White Paper). Washington State Department of Transportation Report number WA-RD 508.1 Prepared for Washington State Transportation Center, University of Washington, Seattle, Washington. 133 plus appendices

Jones and Stokes. 2006. Overwater Structures and Non Structural Piling (White Paper). Prepared by Jones and Stokes Associates, in association with Anchor Environmental, L.L.C., and R2 Consultants for the Washington Department of Fish and Wildlife, Olympia, Washington

Poston, T. 2001. Treated Wood Issues Associated with Overwater Structures in Marine and Freshwater Environments White Paper. Olympia, Washington: Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation



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10. Saltwater Flow Chart Overwater Structures

**WAC 220-660-380
Residential and Public Recreational Pier, Ramp, Float (PRF)
New Structure**

Replacement projects (see page 4) are those PRF completed within original footprint. Replacement of more than 33% or 250 sq. feet decking or replacement of decking requires functional grating

PRF not within the original footprint or structure absent and not usable for greater than one year = **NEW**

New Structure -Pier and ramp design (See Below)

New Structure -Perform Preliminary Eelgrass/Macroalgae Survey (See Page 3)

Pier and Ramp Design must, wherever feasible, span the intertidal area. Bottom of pier must be six feet above the bed at landward end

Residential Pier and Ramp

Public Recreational Pier and Ramp

Limit width of residential piers to no more than six feet. Limit width of residential ramps to no more than four feet. Cover entire ramp surface with grating

Limit the width of public recreational piers to the minimum width needed to accommodate intended use. Limit the width of public recreational ramps to the minimum width needed to accommodate intended use. Cover the entire ramp surface with grating

North/south oriented piers greater than 4 feet in width must have at least 30% of entire deck surface covered in functional grating. The grating must be installed parallel to length of pier for the entire length of the pier.

East/west oriented piers must have at least 50% of the entire deck surface covered in functional grating regardless of width. The grating must be installed parallel to width of pier, evenly spaced along the entire length of the pier.

If minimum deck surface covered in grating then open area = 60%

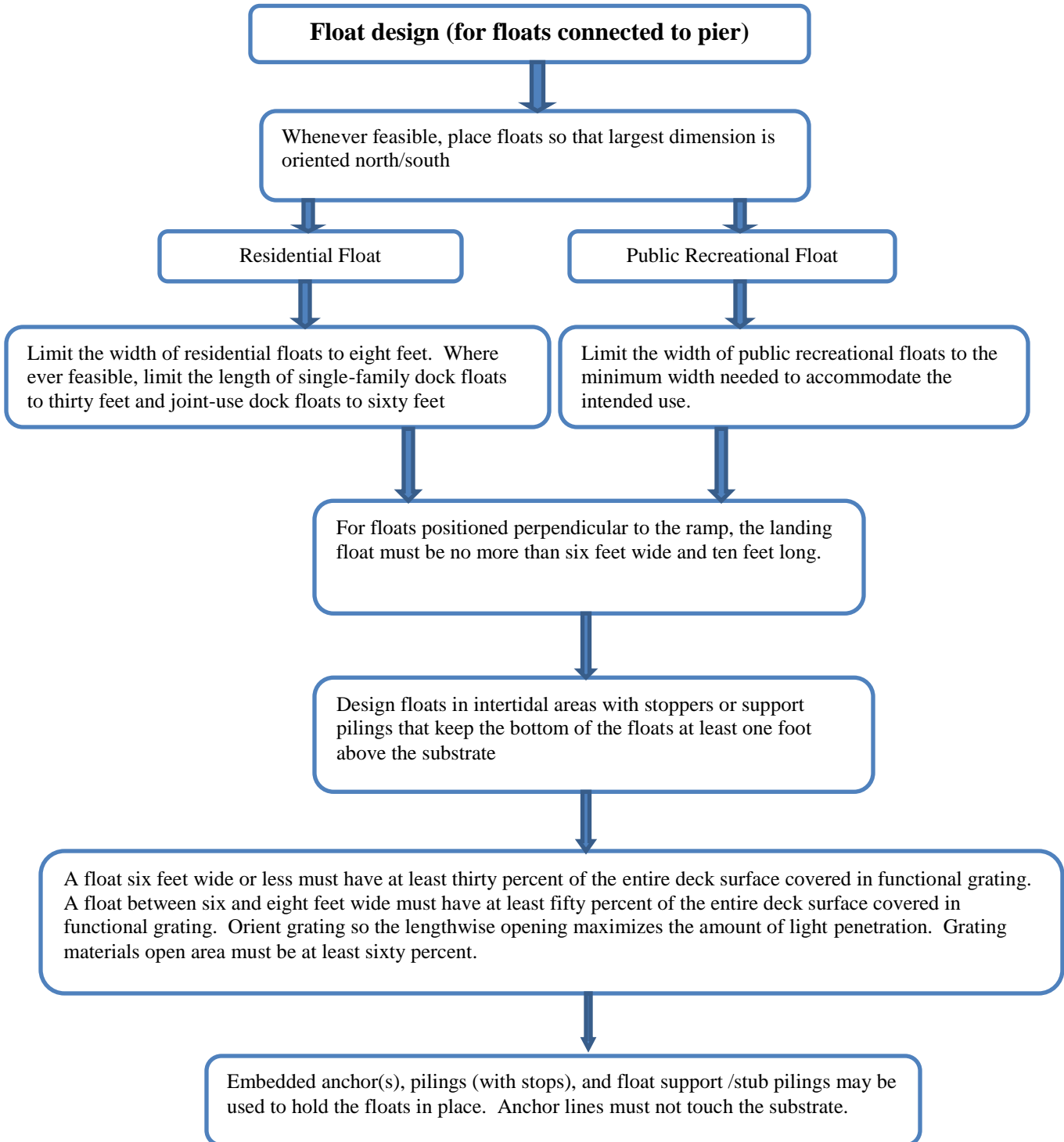
If grating covers more than minimum then open area = 40%

If minimum deck surface covered in grating then open area = 60%

If grating covers more than minimum then open area = 40%



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NEW STRUCTURE
Preliminary Eelgrass/Macroalgae Survey required.

Eelgrass/macroalgae absent within project area

Proceed with project

Eelgrass/macroalgae present within project area

Buffer Requirement: Structure must be located at least 25 feet (measured horizontally from the nearest edge of the structure) and 4 vertical feet (measured at extreme low water) from seagrass and kelp beds and from macroalgae beds if project is within a documented herring spawning area.

Structure can be positioned to meet the buffer Requirement

Proceed with project

Structure cannot be positioned to meet buffer Requirement from eelgrass/kelp/macroalgae

Department-approved, advanced eelgrass/macroalgae survey required.

Applicant submits a Department-approved monitoring and compensatory mitigation plan as a condition for project approval. (Project impacts can be calculated as the total area of eelgrass/macroalgae affected by the project and applicant proceeds with advanced mitigation, or project impacts can be monitored to determine eelgrass/macroalgae loss and required mitigation.)

Mitigation plan is adequate to compensate for impacts

Proceed with project

Mitigation plan is inadequate to compensate for impacts

Recommend project be denied



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**WAC 220-660-380
Residential and Public Recreational Pier, Ramp, Float (PRF)
Replacement Structure**

Structures within original footprint = **REPLACEMENT**
Replacement of more than 33% or 250 sq. feet decking or replacement of decking substructure requires functional grating in replaced section only

Grating Requirements per structure orientation

North/south oriented piers greater than 4 feet in width must have at least 30% of entire deck surface covered in functional grating. The grating must be installed parallel to length of pier for the entire length of the pier.

East/west oriented piers must have at least 50% of the entire deck surface covered in functional grating regardless of width. The grating must be installed parallel to width of pier, evenly spaced along the entire length of the pier.

If minimum deck surface covered in grating then open area = 60%

If grating covers more than minimum then open area = 40%

If minimum deck surface covered in grating then open area = 60%

If grating covers more than minimum then open area = 40%



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Replacement Float design (for floats connected to pier)

Afloat six feet wide or less must have at least thirty percent of the entire deck surface covered in functional grating. Afloat between six and eight feet wide must have at least fifty percent of the entire deck surface covered in functional grating. Orient grating so the lengthwise opening maximizes the amount of light penetration. Grating materials open area must be at least sixty percent.

Piling Design: Replacement and New

Use the smallest diameter and number of pilings for a sage structure. Wood piles replaced with steel typically require fewer piles

Steel pilings used to construct residential docks should not exceed twelve inch diameter. For public recreational docks limit the diameter of steel piling to the minimum diameter needed to accommodate the intended use.

New and replacement piling can be steel, concrete, recycled plastic, or untreated or treated wood approved by the Department. No creosote or pentachlorophenol is allowed

Treated wood piling must incorporate design features to minimize abrasion of the piling from contact with vessels, floats, or other objects

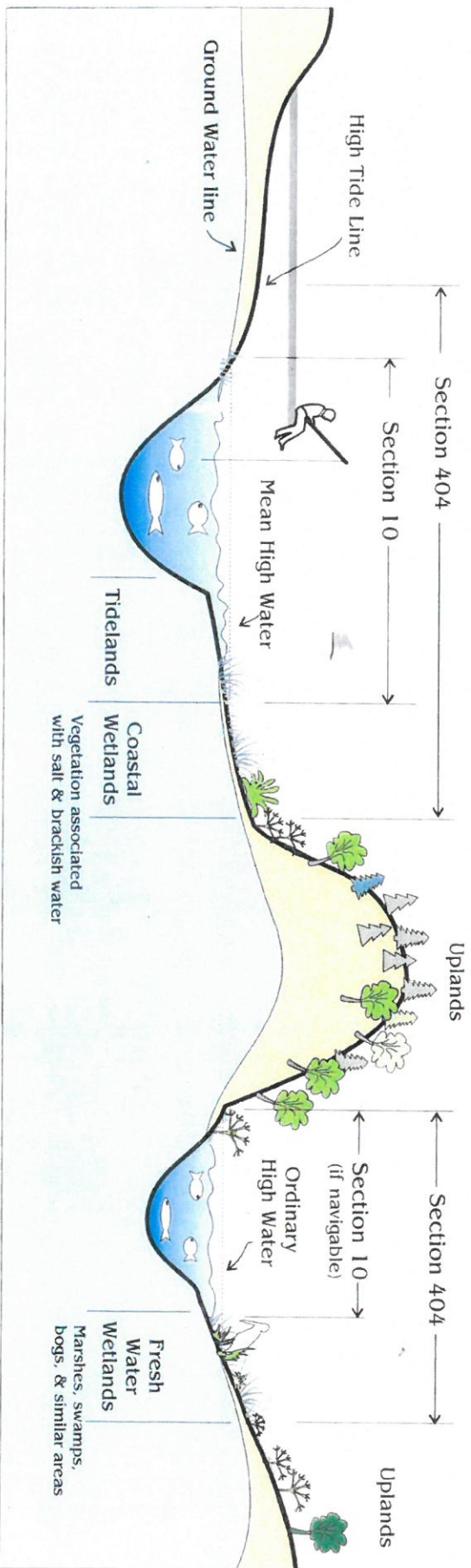
Attachment 1

U.S. Army Corps

CORPS OF ENGINEERS REGULATORY JURISDICTION

Tidal Waters

Fresh Waters



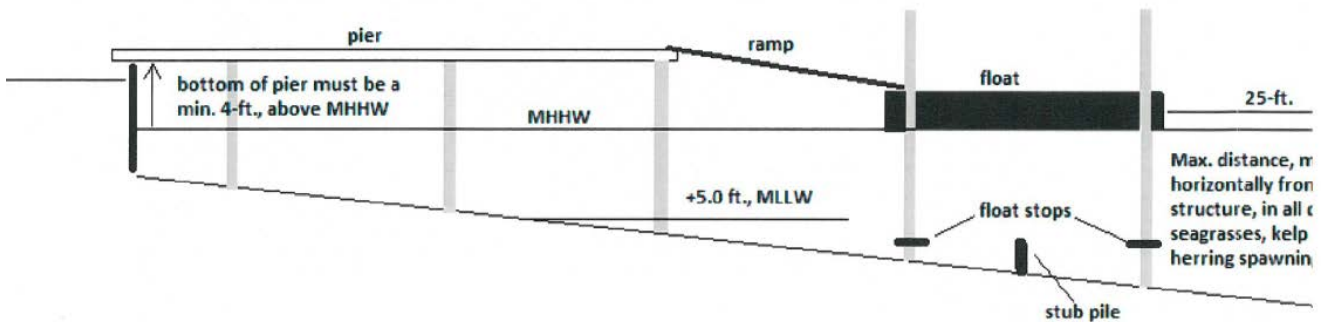
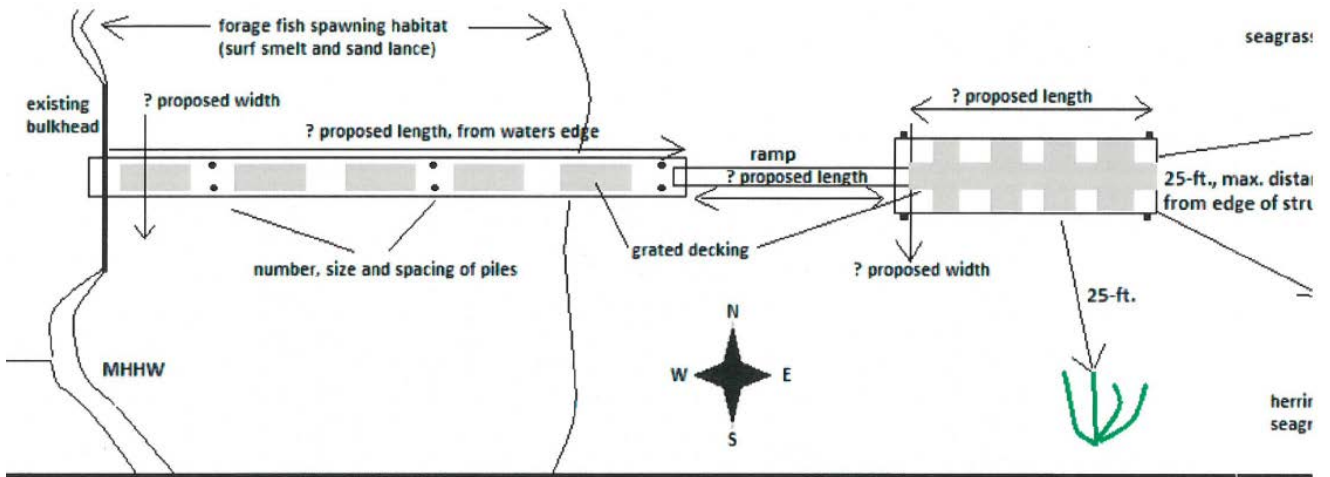
Section 103
 Ocean Discharge
 of Dredged Material
 Typical examples
 of regulated activities
 Ocean discharges of
 dredged material

Section 404
 Disposal of Dredged or Fill Material
 (all waters of the U.S.)
 All filling activities, utility lines, outfall structures,
 road crossings, beach nourishment, riprap,
 jetties, some excavation activities, etc.

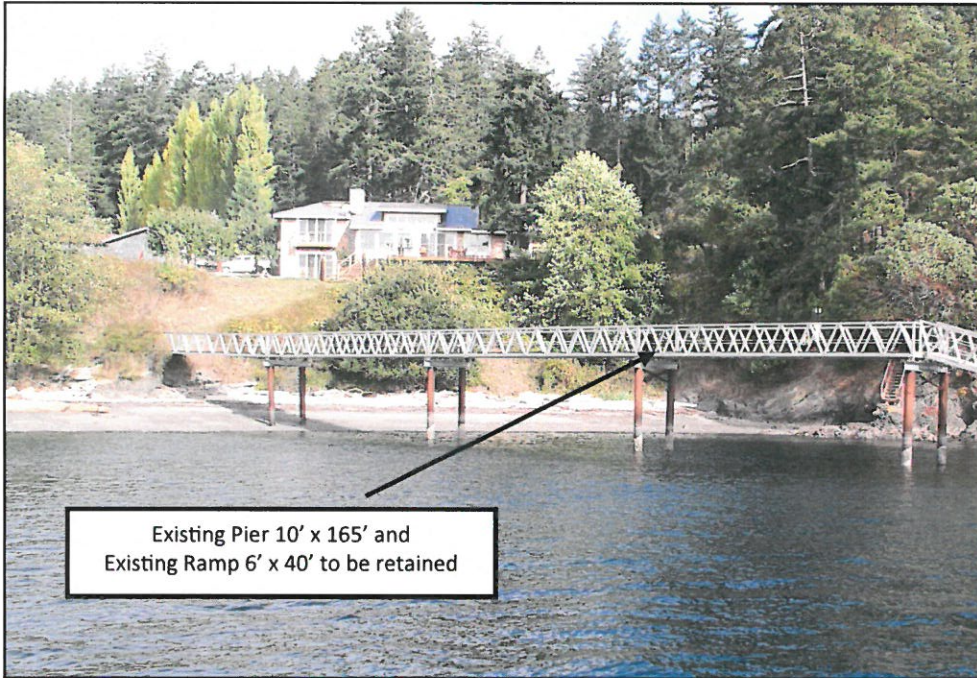
Section 10
 All Structures and Work
 (navigable waters)
 Dredging, marinas, piers, wharves,
 floats, intake / outtake pipes,
 pilings, bulkheads, ramps, fills,
 overhead transmission lines, etc.

Attachment 2

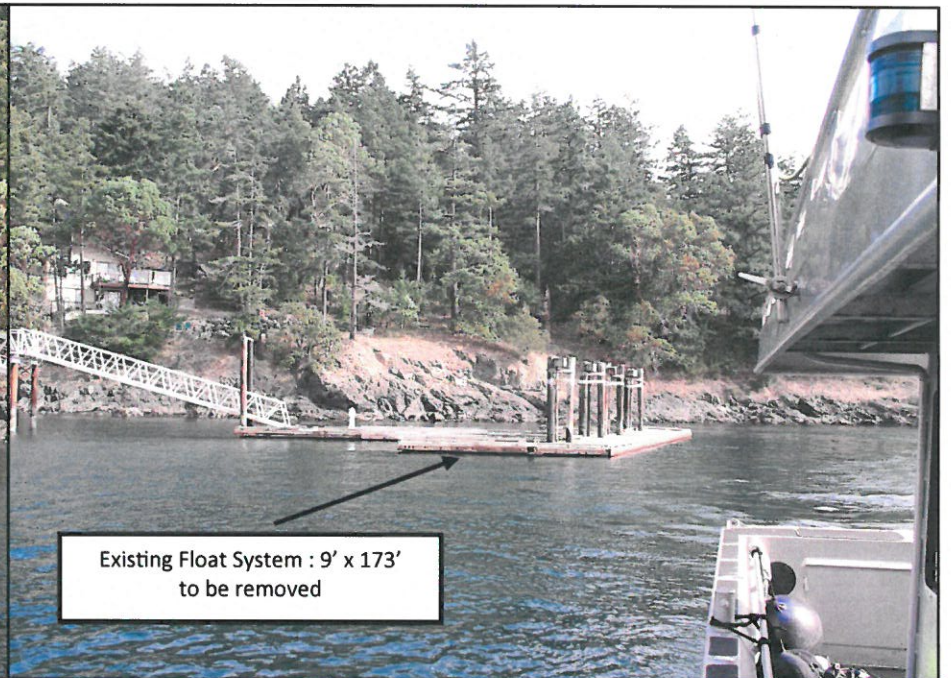
Example Plans



Example plans from a small overwater structure project.



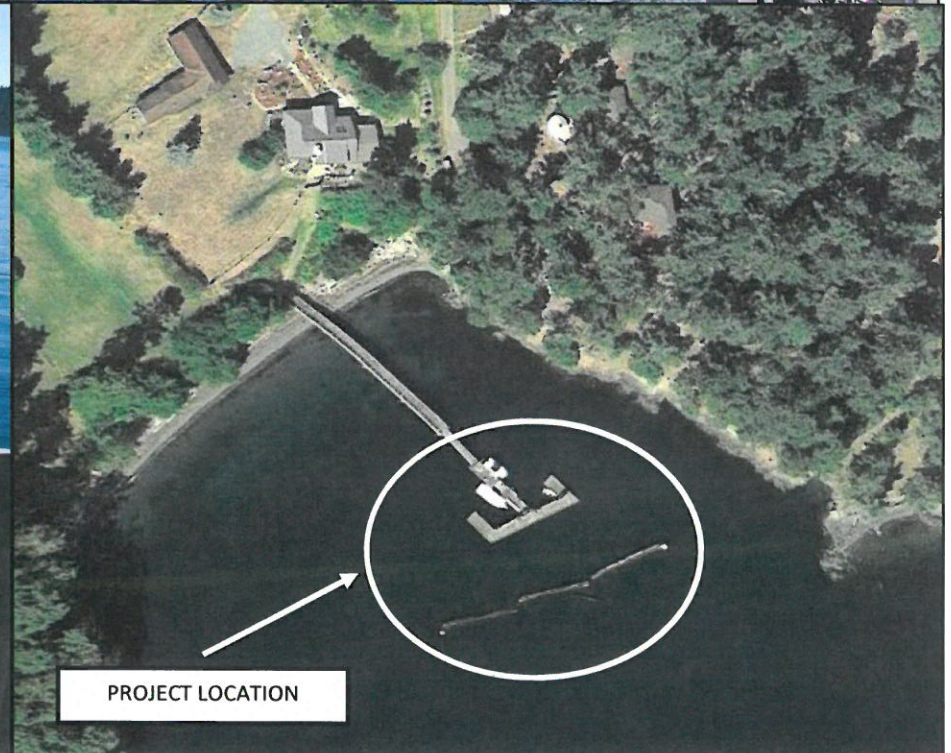
Existing Pier 10' x 165' and Existing Ramp 6' x 40' to be retained



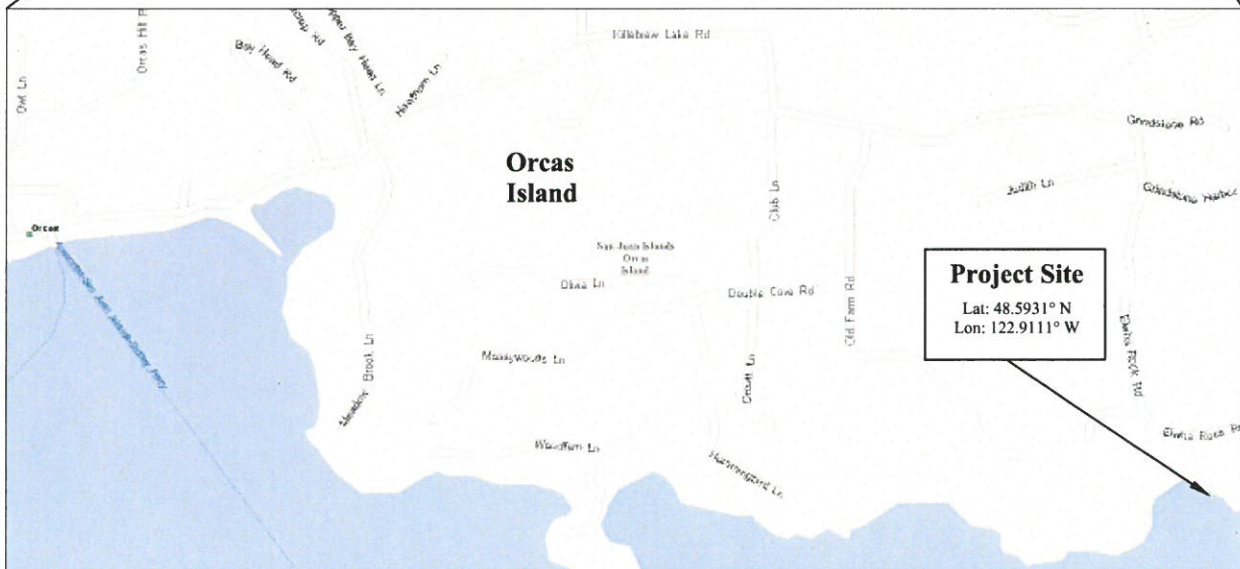
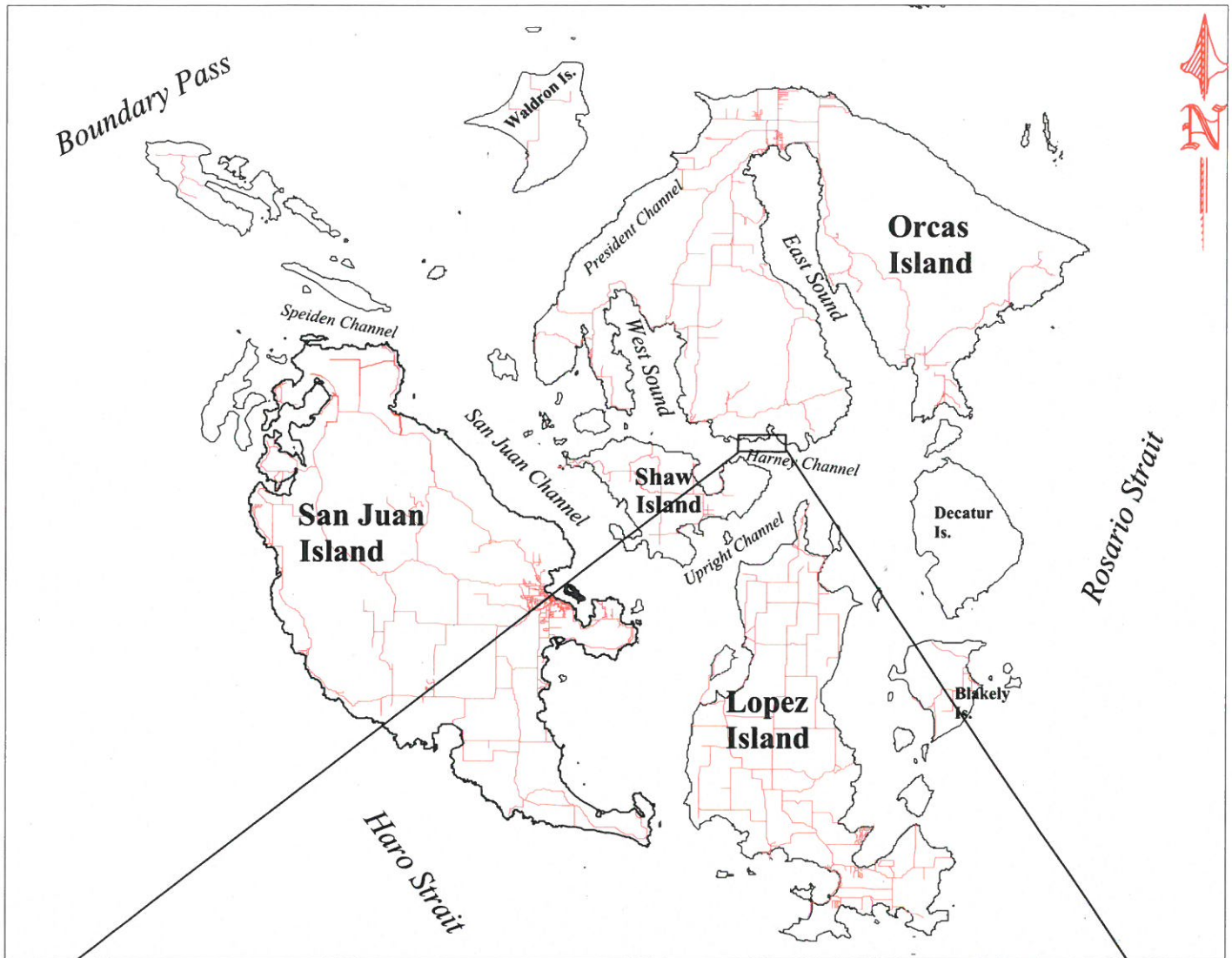
Existing Float System : 9' x 173' to be removed



Existing Breakwater (3) 64' sections to be removed



PROJECT LOCATION



Severson Dock Project

APPLICANT: TPN 262342006000
 Cory Severson
 227 18th Street
 Huntington Beach, CA 92648

ADJACENT PROPERTIES:

1. Jeffrey & Mary Quinn TPN 262342008000
 2439 Pine Street
 San Diego, CA 92103-1041
2. Tom and Nancy Christie TPN 262331001000
 2105 Via Visalia
 Palos Verdes Est., CA 90274-2152

VICINITY MAP

Site Address: 330 Elwha Rock
 Orcas, WA 98280
TPN# 262342006, Section 23,
 Township 36N, Range 2W
LAT/LONG: 48.592613 N,
 -122.910332 W

DATUM: N.O.S. MLLW=0'

SHEET: 1 of 6

PROPOSED: Existing Dock and Breakwater Modification

IN: Harney Channel, Orcas Island

AT/NEAR: Harney Channel

COUNTY: San Juan County

STATE: WA

DATE: January 2015

REFERENCE: #

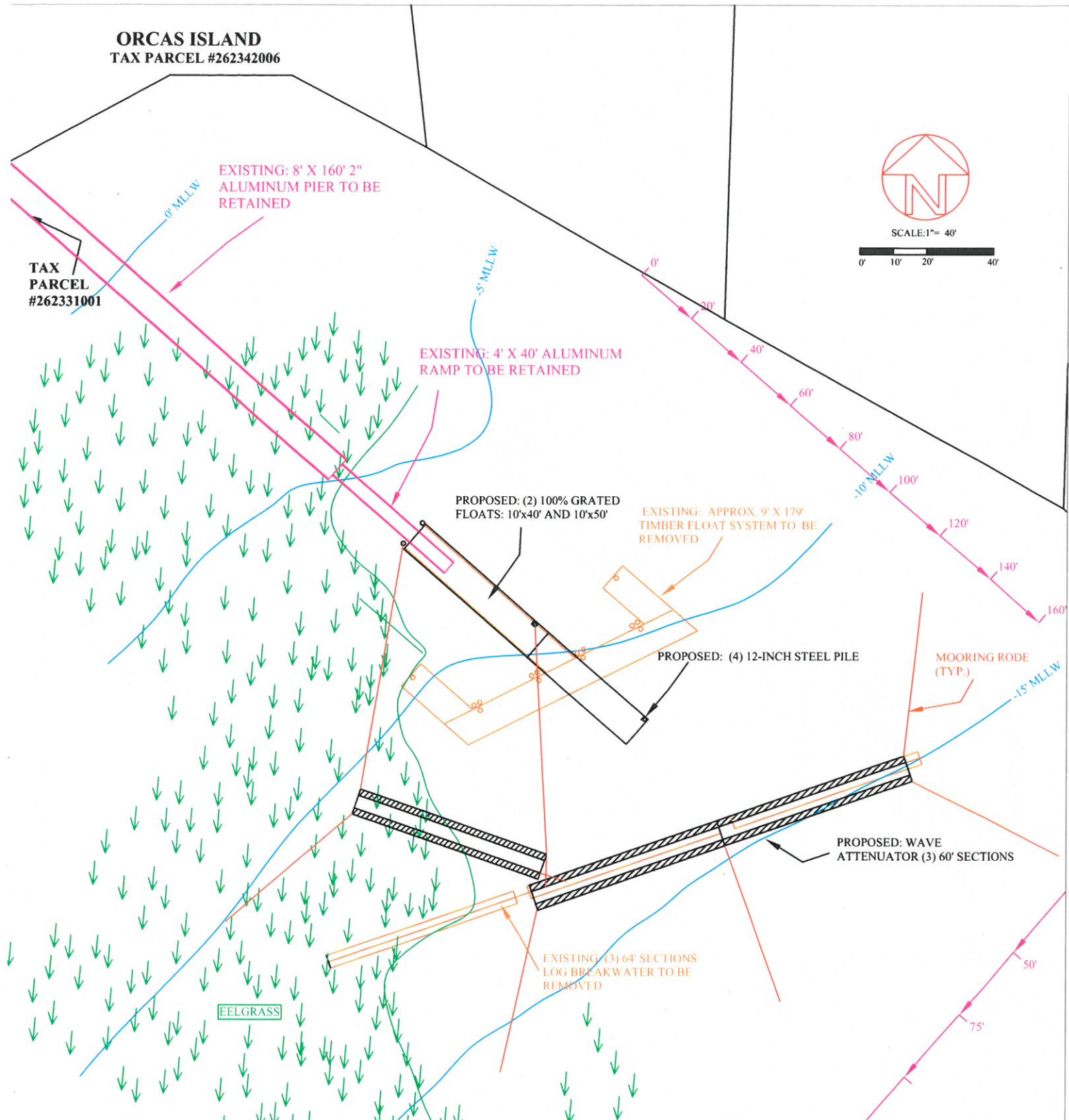
PROPOSED AND EXISTING DOCK SYSTEM

ORCAS ISLAND
TAX PARCEL #262342006

TAX
PARCEL
#262331001



SCALE: 1" = 40'



Severson Dock Project

APPLICANT: Cory Severson TPN 262342006000
17520 Newhope Street, Suite 120
Fountain Valley, CA 92708

1. Jeffrey & Mary Quinn TPN 262342008000
2439 Pine Street
San Diego, CA 92103-1041
2. Tom and Nancy Christie TPN 262331001000
2105 Vja Visalia
Palos Verdes Est., CA 90274-2152

SITE PLAN

Site Address: 330 Elwha Rock
Orcas, WA 98280
TPN# 262342006: Section 23,
Township 36N, Range 2W
LAT/LONG: 48.592613 N,
-122.910332 W

DATUM: N.O.S. MLLW=0'

SHEET: 2 of 6

PROPOSED: Existing Dock
Modification and
Breakwater Replacement

IN: Harney Channel, Orcas Island

AT/NEAR: Harney Channel

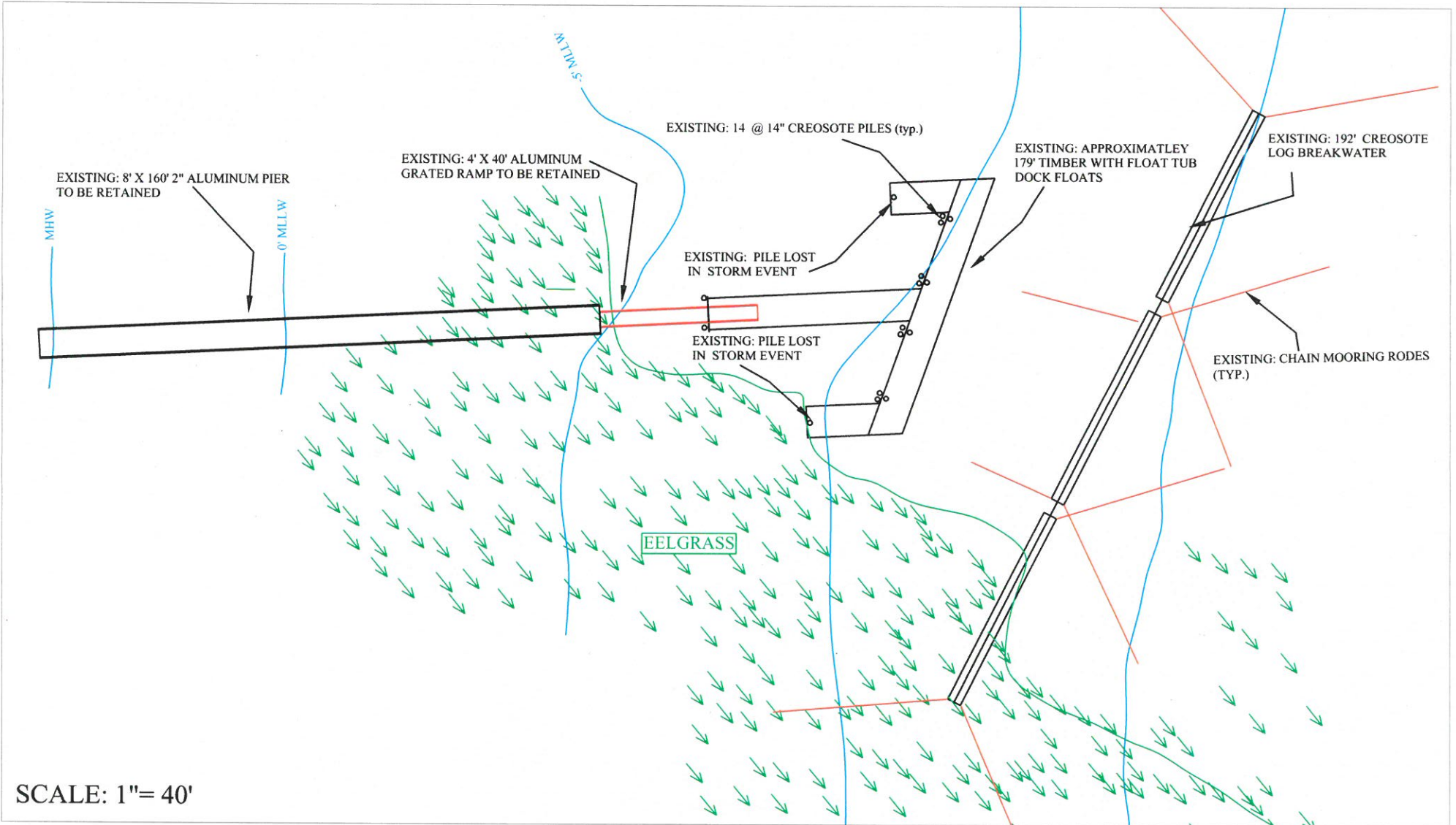
COUNTY: San Juan County

STATE: WA

DATE: January 2015 (Revised 2/15/16)

REFERENCE: #

EXISTING DOCK SYSTEM



SCALE: 1" = 40'

Severson Dock Project

EXISTING PLAN VIEW

APPLICANT: Cory Severson TPN 262342008000
17520 Newhope Street, Suite 120
Fountain Valley, CA 92708

1. Jeffrey & Mary Quinn TPN 262342008000
2439 Pine Street
San Diego, CA 92103-1041

2. Tom and Nancy Christie TPN 262331001000
2105 Via Visalia
Palos Verdes Est., CA 90274-2152

Site Address: 330 Elwha Rock
Orcas, WA 98280

TPN# 262342006: Section 23,
Township 36N, Range 2W
LAT/LONG: 48.592613 N,
-122.910332 W

DATUM: N.O.S. MLLW=0'

SHEET: 3 of 6

PROPOSED: Existing Dock and
Breakwater Modification

IN: Harney Channel, Orcas Island

AT/NEAR: Harney Channel

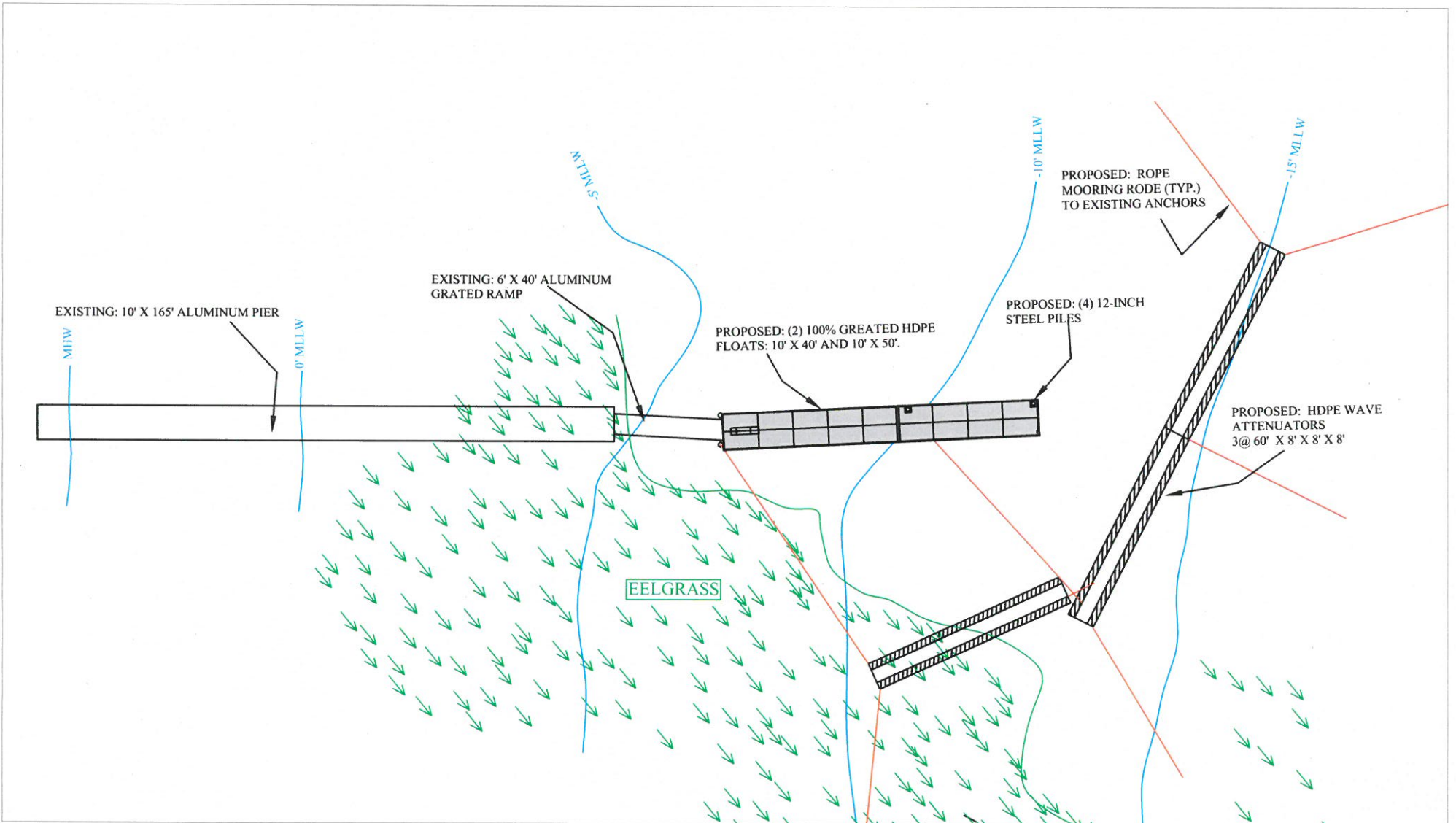
COUNTY: San Juan County

STATE: WA

DATE: January 2015 (revised 2/15/16)

REFERENCE: #

PROPOSED DOCK SYSTEM



Severson Dock Project

APPLICANT: TPN 262342006000
Cory Severson
227 18th Street
Huntington Beach, CA 92648

ADJACENT PROPERTY OWNERS:

1. Jeffrey & Mary Quinn TPN 262342008000
2439 Pine Street
San Diego, CA 92103-1041
2. Tom and Nancy Christie TPN 262331001000
2105 Via Visalia
Palos Verdes Est., CA 90274-2152

PLAN VIEW

Site Address: 330 Elwha Rock
Orcas, WA 98280
TPN# 262342006: Section 23,
Township 36N, Range 2W
LAT/LONG: 48.592613 N,
-122.910332 W

DATUM: N.O.S. MLLW=0'

SHEET: 4 of 6

PROPOSED: Existing Dock and
Breakwater Modification

IN: Harney Channel, Orcas Island

AT/NEAR: Harney Channel

COUNTY: San Juan County

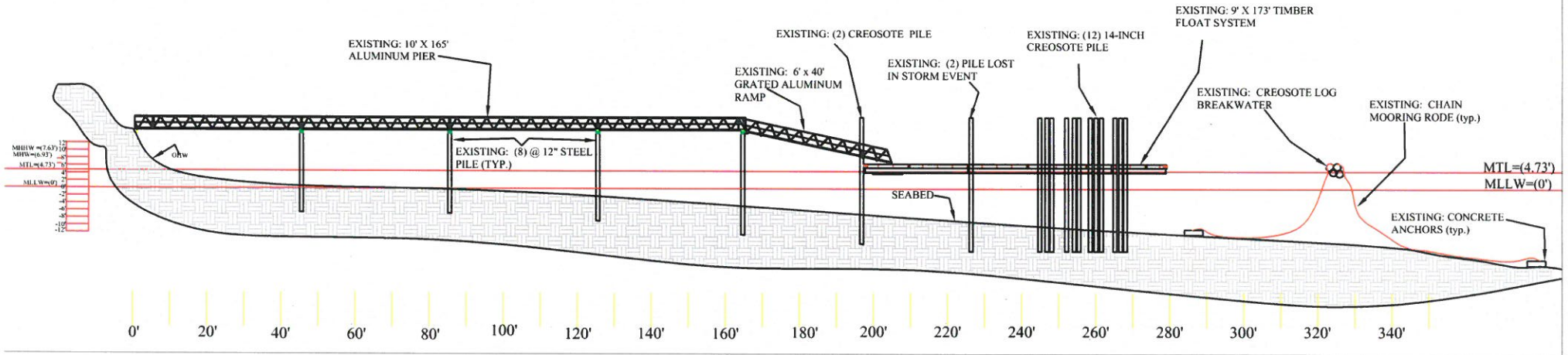
STATE: WA

DATE: January 2015

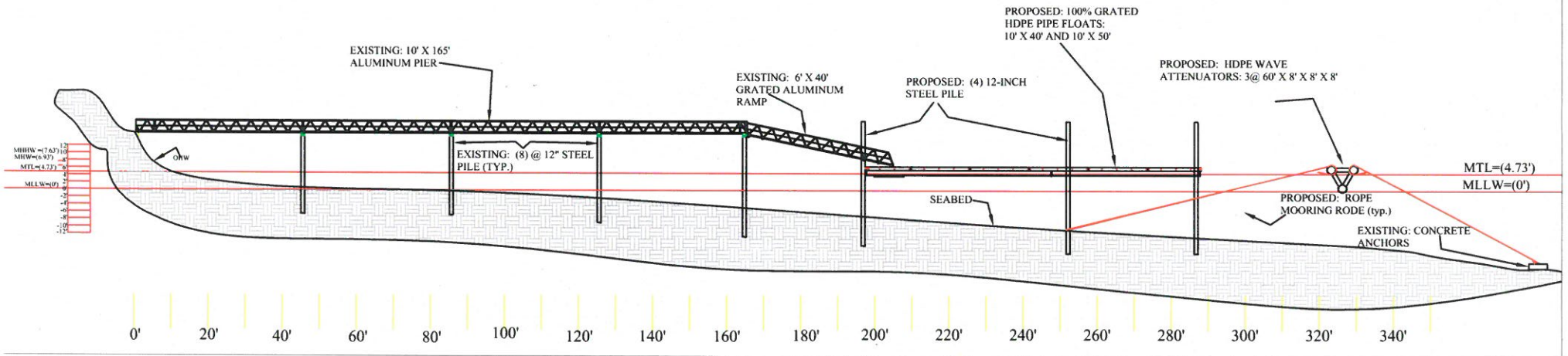
REFERENCE: #

SCALE: 1"= 40'

EXISTING



PROPOSED



Severson Dock Project

APPLICANT: TPN 262342006000
Cory Severson
227 18th Street
Huntington Beach, CA 92648

ADJACENT PROPERTY OWNERS:

1. Jeffrey & Mary Quinn TPN 262342008000
2439 Pine Street
San Diego, CA 92103-1041
2. Tom and Nancy Christie TPN 262331001000
2105 Via Visalia
Palos Verdes Est., CA 90274-2152

ELEVATION

Site Address: 330 Elwha Rock
Orcas, WA 98280
TPN# 262342006; Section 23,
Township 36N, Range 2W
LAT/LONG: 48.592613 N,
-122.910332 W

DATUM: N.O.S. MLLW=0'

SHEET: 5 of 6

PROPOSED: Existing Dock and
Breakwater Modification

IN: Harney Channel, Orcas Island

AT/NEAR: Harney Channel

COUNTY: San Juan County

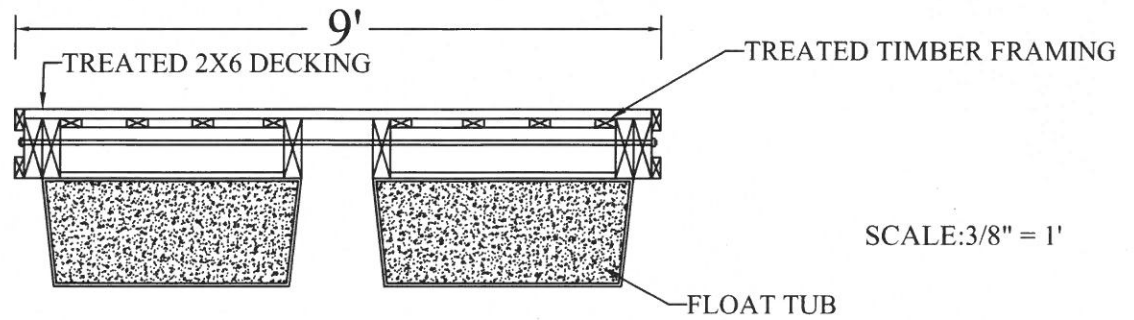
STATE: WA

DATE: January 2015

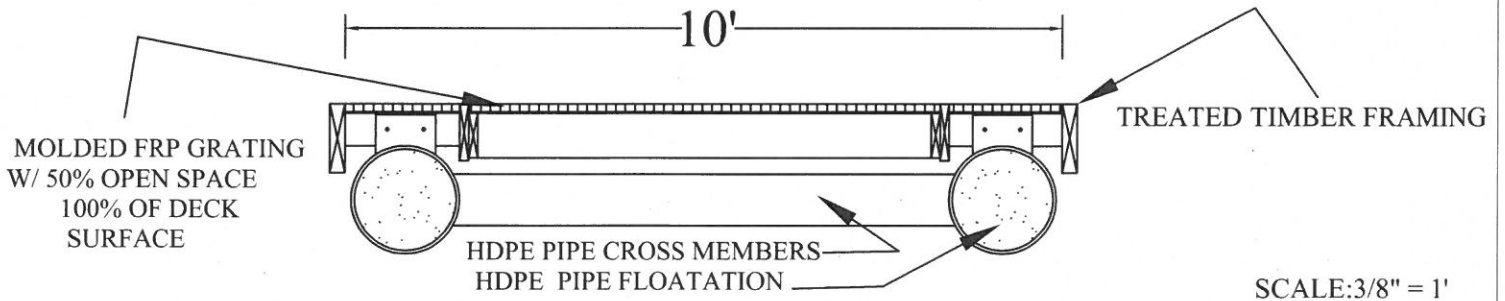
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SCALE: 1" = 40'

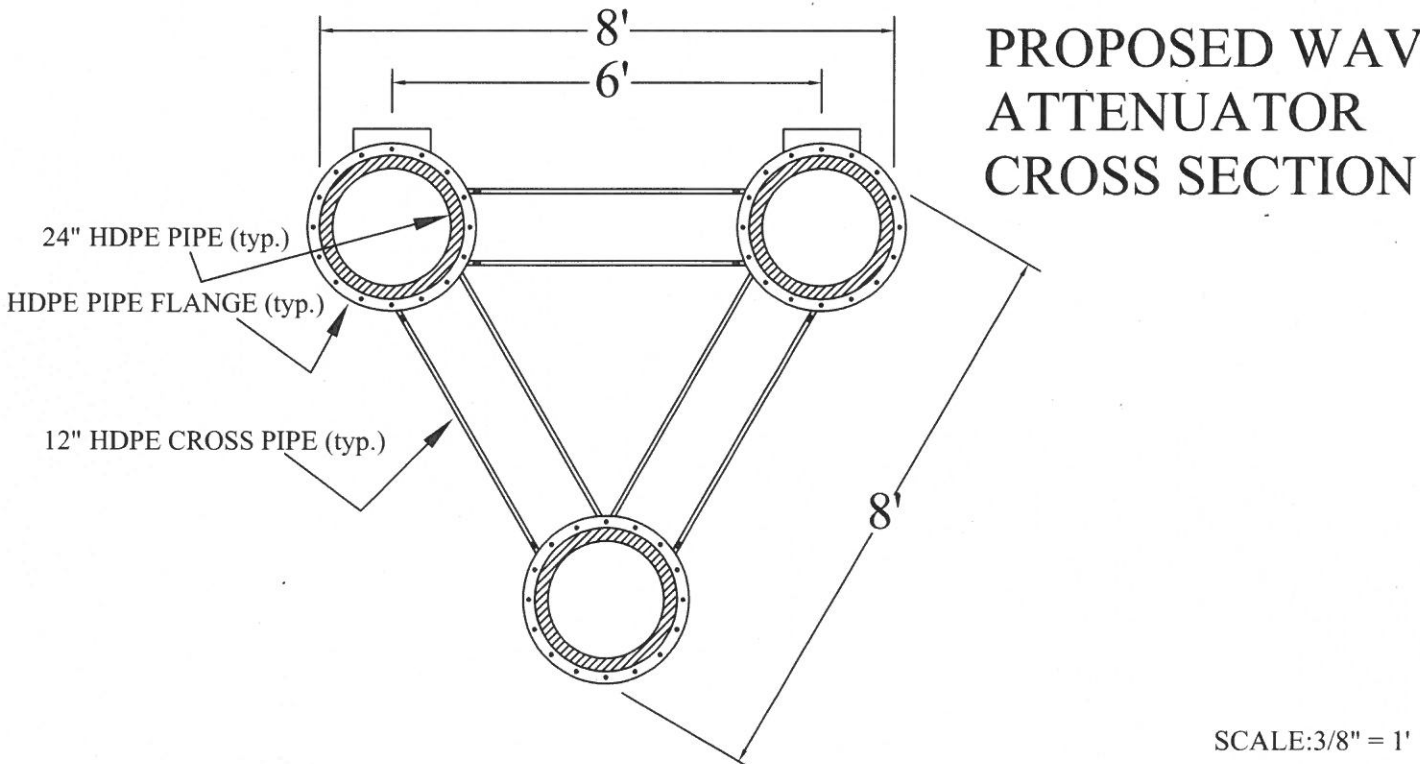
EXISTING FLOAT CROSS SECTION



PROPOSED FLOAT CROSS SECTION



PROPOSED WAVE ATTENUATOR CROSS SECTION



Severson Dock Project

APPLICANT: TPN 262342006000
Cory Severson
227 18th Street
Huntington Beach, CA 92648

ADJACENT PROPERTY OWNERS:

1. Jeffrey & Mary Quinn TPN 262342008000
2439 Pine Street
San Diego, CA 92103-1041
2. Tom and Nancy Christie TPN 262331001000
2105 Via Visalia
Palos Verdes Est., CA 90274-2152

CROSS SECTION

Site Address: 330 Elwha Rock
Orcas, WA 98280
TPN# 262342006: Section 23,
Township 36N, Range 2W
LAT/LONG: 48.592613 N,
-122.910332 W

DATUM: N.O.S. MLLW=0'

SHEET: 6 of 6

PROPOSED: Existing Dock and
Breakwater Modification
IN: Harney Channel, Orcas Island

AT/NEAR: Harney Channel

COUNTY: San Juan County

STATE: WA

DATE: January 2015

REFERENCE: #



JEN-JAY, INC.

Preliminary Eelgrass Macro Algae Habitat Survey
Cory Severson Dock Survey
13 September 2013

LOCATION: Harney Channel, Orcas Island, San Juan County.

PURPOSE: Repair and maintenance of a private joint-use dock and floating breakwater.

TIME: 10:00 a.m. to 1:30 p.m.

DEPTH CALCULATIONS: Measurements were made with a submersible electronic computer with the accuracy of +/- two feet. Corrections were made using the Port Townsend tide tables, corrected to Orcas, Orcas Island tide station #1207 with 0'=MLLW.

BOTTOM TYPE: A variation of mud plus zero to 10" rock, sandy mud, shelly mud or mud as shown on attached drawing.

VEGETATION: *Agarum*, *Chondracanthus*, *Cryptopleura*, *Fucus*, *Laminaria*, *Mastocarpus*, *Mazzella*, *Palmaria*, *Prionitis*, *Sargassum* and *Ulva* with zero to 30% cover as shown on attached drawing. *Zostera marina* (eelgrass) found in the survey area as shown on attached drawing.

SURVEY PATTERN: A line was ran down the centerline of the existing dock structure out past the seaward end of the float 80' to encompass the existing floating breakwater. Additional, parallel lines were run at 25', 50' and 75' to the northeast and 25', 50', 75', 100', 125', 150' and 175' to the southwest. These lines encompassed the existing floating breakwater and extended to an area for potentially shifting the floating breakwater to the southwest. All lines had 20' transects.

VISIBILITY: 15'±.

VERTEBRATE and INVERTEBRATE SPECIES: None with numbers enough to be significant.

FORAGE FISH: The shoreline in the +7' to +9' tidal zone has substrate that is potential forage fish habitat.

Any questions regarding this survey should be addressed to:

Chris Betcher
JEN-JAY DIVING, INC.

P.O. Box 278, Deer Harbor, WA 98243-0278

Ph: (360) 376-4664 Fax: (360) 376-6446 Boat: (360) 317-5373 Email: jenjay@rockisland.com

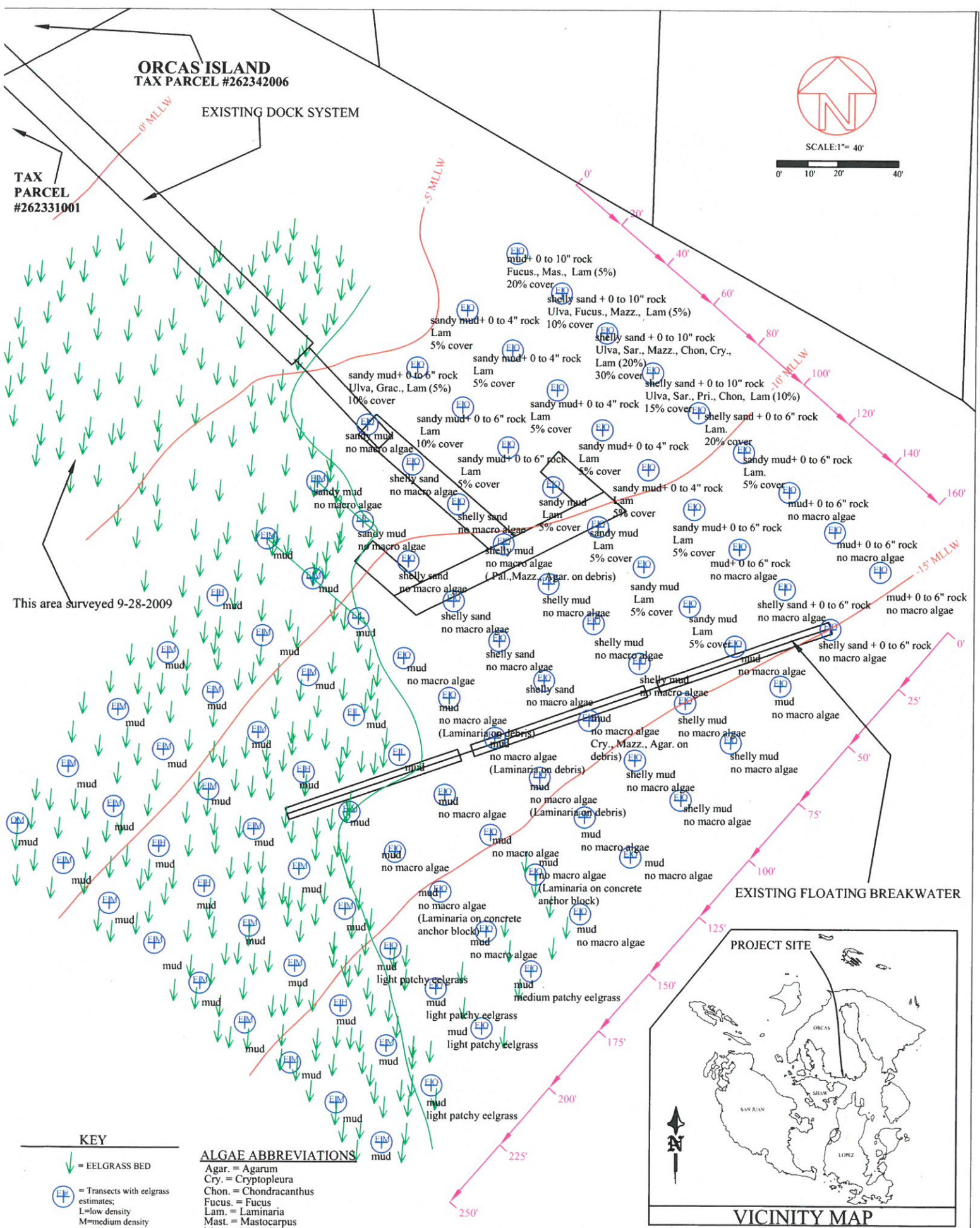
ORCAS ISLAND
TAX PARCEL #262342006

EXISTING DOCK SYSTEM

TAX PARCEL #262331001



SCALE: 1" = 40'



KEY


- ↓ = EELGRASS BED
- ⊕ = Transsects with eelgrass estimates; L=low density M=medium density H=high density 0=No eelgrass
- # MLLW = Contour lines corrected to 0=0' MLLW by Jen-Jay Diving Inc.

ALGAE ABBREVIATIONS

- Agar. = Agarum
- Cry. = Cryptopleura
- Chon. = Chondracanthus
- Fucus. = Fucus
- Lam. = Laminaria
- Mast. = Mastocarpus
- Mazz. = Mazzella
- Pal. = Palmaria
- Pri. = Prionitis
- Sar. = Sargassum
- Ulva. = Ulva

PRELIMINARY EELGRASS MACROALGAE HABITAT SURVEY
FOR: SEVERSON/CHRISTIE
BY: JEN-JAY INC.
DATE: SEPTEMBER 13, 2013

NOT CONSTRUCTION DRAWINGS
DEPTH CONTOURS AND ORIENTATION TO
LAND FEATURES ARE APPROXIMATE

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Stream Crossings

The purpose of this document is to provide guidance and assistance when reviewing and permitting [hydraulic project applications](#) for new and replacement stream crossing structures. The guidance applies to both fish and non-fish streams and provides the biologist with basic information to process an application.

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1. Application Receipt

Applications or pre-applications are submitted to [Aquatic Protection Permitting System](#) (APPS). The application and plans are reviewed in Olympia for statutory completeness under [RCW77.55.021](#). Once the application is Accepted, the Habitat Biologist reviews and processes the application within APPS. There are many training [videos](#) and [self-help](#) documents for this process located on SharePoint.

2. Office Review

Purpose


The office review allows the biologist to become familiar with the project details, location, and determine if the project was designed to meet WAC. The biologist must be knowledgeable on [RCW 77.55](#), [WAC 220-660](#), and [WAC 220-660-190](#) since the RCW and WAC are where the agency's authority comes from. The biologist must also be very familiar with the [Water Crossing Design Guidelines](#) since the manual provides the necessary design guidance to meet all WAC 220-660-190 requirements. Presence of fish life, including the species present, strongly influences proper project design. During the review the biologist may consult reference materials, agency data, and supervisor or coworkers as necessary to determine if the application is complete and the project is appropriately designed or if additional information is needed.

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Tools and Resources

Data for reviewing hydraulic projects comes from a variety of sources and may come from government agencies (local County GIS), Non-Governmental Organizations (Wild Fish Conservancy Maps) as well as private sources of information. Most of this data is available either through WDFW's GIS database or through various internet websites. Other data may be in the form of hardcopy records acquired over time or from coworkers in the agency. All of this information is useful in preparing but nothing ultimately replaces getting out on the ground for projects. Below is a list of commonly used resources:

- WDFW Publications – [Aquatic Habitat Guidelines](#)
- ArcView - WDFW possesses various GIS data sets that include DNR water typing, fish passage barrier inventories, culvert inventories, fish distribution, LIDAR topography, etc. WDFW has created an ArcView project file that allows biologists to view most if not all of our GIS data. If you are not set up to use this system, work with your supervisor to do so.
- [Department of Ecology](#) - maintains a variety of data including:
 - [The Water Quality Assessment and Clean Water Act 303\(d\) list](#)
 - [Coastal Atlas](#) - detailed shoreline imagery.
- [Department of Natural Resources](#) - There are many data layers on the DNR website that you can download and use on GIS. These include fish passage barriers, water typing layers, forest roads, soil types, and many more.
- County Parcel information - Most if not all counties in the state maintain a GIS database of parcel information in their county. This data may also be available through our existing agency GIS data, but is not updated regularly. Some counties do not release their information. It is best to find the ones that do for your area and upload them into your GIS. Others you will need to locate and create an Internet bookmark for yourself to access.
- [Google Maps](#) - for site context, local characteristics, neighboring properties, potential equipment access, estimation of Ordinary High Water Line (OHWL), upland vegetation, vicinity of house to waterbody, relative steepness of the bank, and apparent erosion.
- [U.S. Forest Service Stream Systems Technology Center](#) – Resource for tools and science applications including software, educational materials, and videos.
- [Stream Restoration, A Natural Channel Design Handbook](#)

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Resource Information

The biologist looks for critical details (channel width, gradient, bed material) in the application and plans to determine if the application is complete and the design is appropriate for the stream while referencing the [Water Crossing Design Guidelines \(2013\)](#). Three important things to determine: 1) what design methodology are they using, 2) water type, and 3) location of crossing. If the water type is Type S or F, the design methodology must meet [WAC 220-660-190](#) requirements for fish passage. Fish passage is not required on Type N or Np streams. Whenever possible crossing locations should be chosen in stable straight reaches of stream avoiding meander bends.

Determining water type is done by reviewing existing water type information on GIS or other data sources. It is also important to keep in mind the water typing system was created for regulating forestry activities and is frequently inaccurate in urban and some forested areas. If the applicant indicates the stream is greater than two feet wide and not fish bearing, the biologist should attempt to verify the water type if unfamiliar with the stream. If there is any question, the biologist will need to visit the site to make a determination. The state definition for F water is found in the [Forest Practice Rules](#) and the guidelines for determining water types are found in [Board Manual 13](#).

There are specific situations that don't fit WDFW guidelines, linked above, and require alternative analysis and decision making. Examples may be:

- Non-Fish streams – Structures on non-fish streams do not require fish passage, but may impact fish and fish habitat downstream. In many cases, best management practices such as bypassing stream flow or constructing the project during low flows will mitigate impacts to fish habitat downstream. The crossing must also be designed to withstand a 100-year flood event and pass all material likely to move during the event.
- Tidally affected – Stream crossings that are tidally affected also require special considerations and should be reviewed by a Habitat Program Environmental Engineer.
- Limited fish habitat – Fish habitat above or below a stream crossing may have little functional fish habitat. In some cases, the biologist may determine that fish passage is not required. This situation may occur when the stream crossing is immediately upstream or downstream of a natural fish passage barrier. In other cases, the habitat upstream of the crossing may be so severely impacted that it makes more sense to mitigate the loss of access to the habitat. Your immediate supervisor should be consulted prior to determining that fish passage is not required. This exception does not apply to Washington State Department of Transportation (WSDOT) projects that are part of the culvert lawsuit. The culvert case injunction affects Watershed Resource Inventory Area's 1 – 23. If you get a WSDOT project assigned to you, check with your supervisor as WDFW has specific staff that work on these projects.

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- Sediment management culverts – culverts constructed with a sump to collect excess bedload transported. This is often a chronic condition that must be well documented and monitored for the life of the structure. See document entitled [Sediment Management Culvert](#) dated July 1, 2014 by Bob Barnard.
- Road impounded wetlands – Crossings in wetlands require advanced analysis of the design and impacts to wetlands. Wetlands may be providing habitat for state listed fish and wildlife species and alterations of the wetland may significantly impact fish and wildlife using the wetland.

3. Missing Information

Biologists may require more information before issuing a permit in order to effectively evaluate the project and issue an appropriate permit. New information and feedback to the applicant should happen as soon as possible giving the applicant a reasonable amount of time to reply. Any needed additional information should be requested within 10 days after receiving the complete application. If information needed to issue a permit is not provided, the agency may deny the application or the applicant may choose to put it on hold, the agency cannot, before the end of the 45-day processing period. If these situations occur you should be working closely with your supervisor to avoid conflicts.


4. Site Visit

Purpose

Site reviews typically occur as a pre-application review or the review of an active application in APPS. During a pre-application meeting, the objective of the biologist is to assist the landowner or agent. This typically occurs in the form of helping them determine critical stream measurements, appropriate crossing location, and suggest an appropriate design option and project scope. The biologist should also discuss mitigation and what might be required depending on the impacts of the final project proposal. This is a great time to let the applicant know what will need to be included in their application for it to be considered complete and for you to issue a permit. After a pre-application review, in most cases, another field visit is not necessary. Additional assistance can be found on WDFW's website [here](#).

When processing a formal application, the purpose of the site review is to verify critical stream measurements, appropriateness of the project proposal, determine project impacts, and appropriate mitigation. The biologist may find the design is inappropriate for the stream and must provide suggestions for modifying the plans or suggesting an entirely different design.

If the applicant proposes an alternative design such as other [agency approved guidelines](#), the biologist should arrange to visit the site with an agency environmental engineer. Agency engineer visits can be conducted with any application depending on complexity. In this situation, the biologist works with the

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engineer to determine if the proposed alternative meets the WAC and agency guidance for fish passage.

Safety Highlights

Field reviews of applications for water crossings frequently occur along busy roadways and staff must use caution when working in this environment. Vehicles must be parked in a safe place and not create a safety hazard for staff or the traveling public. Field visits during floods should be avoided unless necessary as part of an emergency response. There are many mandatory training and safety aspects to field work. Make sure you have worked through your supervisor in conducting such trainings and reviewing agency policies before conducting field work.

Field Equipment and Tools


In addition to the basic safety equipment, staff should also bring the tools and equipment listed below. Conditions on site will dictate which equipment is used during the field visit.

- Business card or other agency ID
- High Visibility Safety Vest for Roadside Inspections
- Copy of application and plans
- iPad or other mobile device
- Camera
- GPS
- Tape measure
- Clinometer
- Level (stadia) rod
- Laser level and tripod
- Field notebook
- Knee or Hip boots
- Personal Floatation Device (PFD)
- Rain gear

Verifying Application Information on Site

Once on site, the biologist should offer the applicant or agent time to explain their design proposal and what they wish to accomplish. This initial conversation may yield useful information that may later facilitate discussion if there are problems identified in the design proposal.

The biologist should then walk the stream with the applicant or agent and measure stream width and slope and record this information in their notes. Take

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measurements in presence of the applicant or ask the applicant to assist and explain how stream widths are measured. While walking the stream, the biologist should also note streambed material, sediment size, regrade potential, and riparian conditions. Other site characteristics that might influence project design, habitat impacts and mitigation should also be recorded. Document the site inspection with photos and enter information in APPS site inspection log and/or the project file.

Based on the stream measurements, proposed plans, and design methodology you must determine if the project satisfies the minimum requirements outlined for each methodology in the [Water Crossing Design Guidelines \(2013\)](#) and supported by [WAC 220-660-190](#). If the proposed plan is not appropriate for the site, the biologist would need to work with the applicant to propose an acceptable design that meets the requirements.


The minimum information that should be verified from application material or recorded in field notes (guidelines for determining these metrics are located in the Water Crossing Design Guidelines):

- Stream width
- Stream slope
- Channel pattern type
- Flow Condition
- Substrate material and size
- Habitat – Spawning, rearing, etc. (to assess impacts)
- Riparian cover - 0, 25, 50, 100 percent (to assess impacts)
- Fish observations – species and number
- Date and time
- Individuals present

Identify Project Impacts and Mitigation Opportunities

Impacts to fish life vary based on site specific conditions and how the project is going to be constructed. During the site review, the biologist should keep in mind the potential impacts and document those impacts to fish and fish habitat that may occur from the project. In the case of water crossing replacement projects that will correct a fish passage barrier, the project is usually considered [self-mitigating](#) through best management practices to avoid and minimize impacts to fish life.

Project impacts that are not self-mitigating would require some form of mitigation. These impacts may include construction impacts and loss of riparian and stream habitat. Stream crossing replacement projects that increase the size of the crossing footprint may also require mitigation.

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Establishing Appropriate Work Window

The biologist should refer to [WAC 220-660-110](#) when determining the appropriate work window. This includes taking into consideration fish presence and life history stage, expected impact of construction activities, and best management practices proposed by the applicant. A work window may not be necessary if the work can be conducted at any time with no impacts (direct or indirect) to fish life.

5. Mitigation Determination

Always keep in mind mitigation is based on existing conditions and must be adequate to ensure no net loss of habitat function due to the impacts of the project. The mitigation document was in development at the time of this guidance, please check with your supervisor for the most up to date mitigation document.


6. Rules of Thumb

- The biologist should be very clear with the applicant or agent what the next steps in the process are. If the applicant/agent is expected to provide additional information, the biologist should clarify when that information will be provided.
- Once you have drafted the permit in APPS it is okay to share a draft with the applicant for review, if there is time.
- New employees should go over the application and draft permit with your supervisor or trusted colleague before issuing.
- It's okay to say that you do not know the answer and that you need to consult with your supervisor or environmental engineer.
- Every water crossing location is a bit different and has its own set of challenges.
- When time and workload allow, it is strongly recommended that a post-construction compliance inspection is scheduled with the applicant and/or agent. The purpose of this inspection is to ensure the project was constructed according to the permit conditions required for the protection of fish-life. Large, complex, or high risk projects should be prioritized for inspection. Additionally, any project that implements novel, nonstandard construction techniques or structures should be inspected. This compliance inspection should be done preferably when the contractor is still on site so as to correct any issues and be recorded in APPS or other permitting databases in a timely fashion.

7. Relevant WACS

[WAC 220-660-080](#) - Mitigation requirements for hydraulic projects

[WAC 220-660-100](#) - Freshwater habitats of special concern

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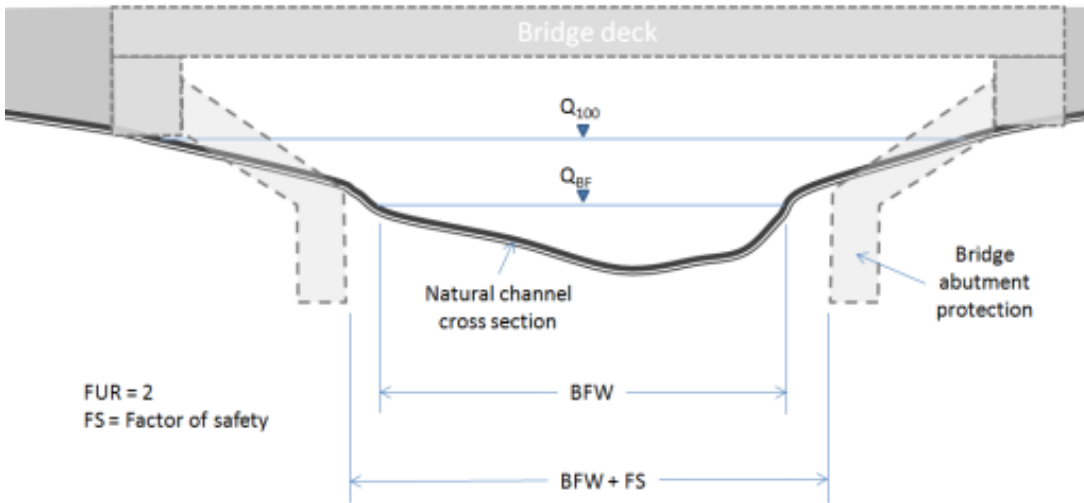
- [WAC 220-660-110](#) - Authorized work times in freshwater areas
[WAC 220-660-120](#) - Common freshwater construction provisions
[WAC 220-660-190](#) - Water Crossing Structures

8. *Example Plans*

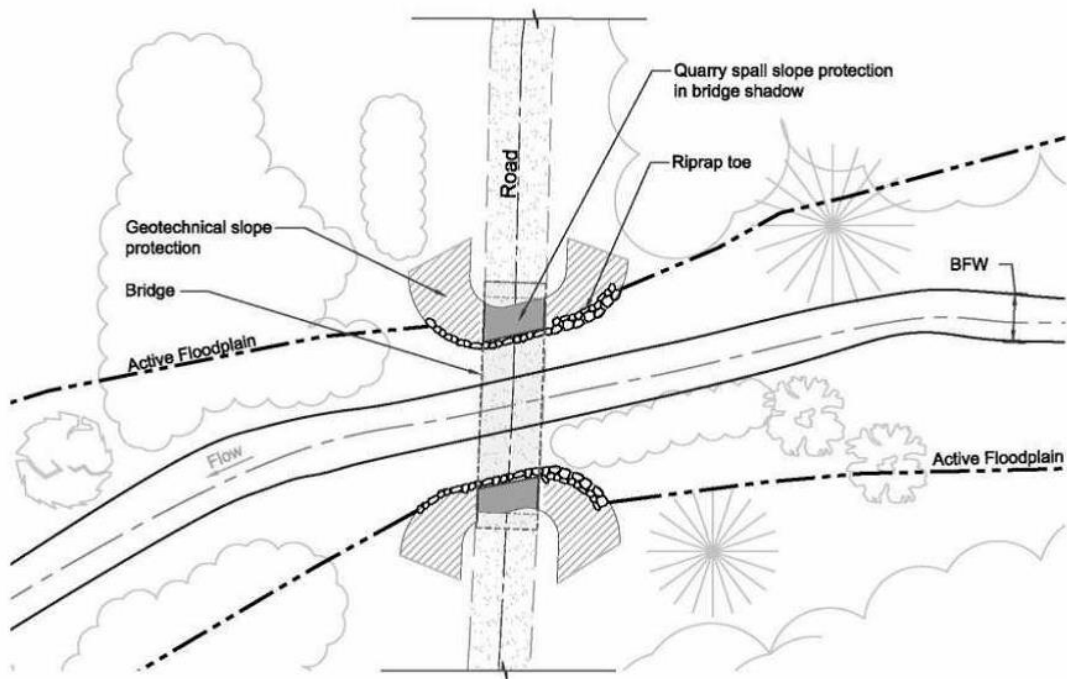
Plans for culvert crossings and bridge crossings have their own set of challenges. Ultimately the written plan in APPS and the information on any drawings needs to support a project that meets our standards for fish passage and avoids impacts to fish life. Important metrics for this may be but aren't limited to: Bank Full Width, Bank Full Elevation, Bench Mark Elevation, 100 Year Flood Elevation, Dewatering Plans, Cofferdam Plans, Cross Section and Plan View Drawings. See Attachment 1 for Example Plans.

Attachment 1

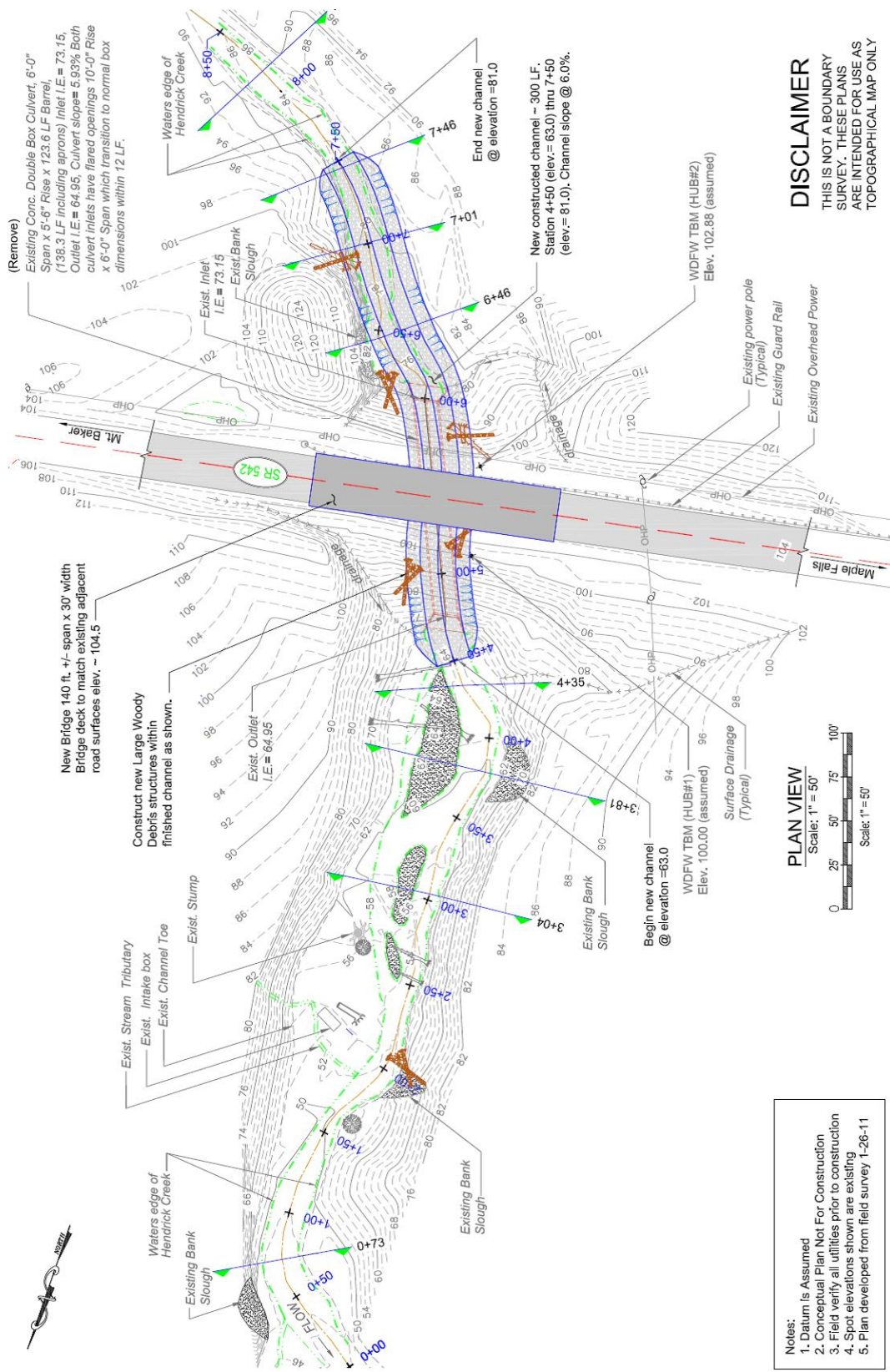
Example Plans



Bridge cross section over a confined channel showing the relationship between the bankfull width and the recommended width between abutment protection. The factor of safety is determined by the designer. The bridge may also be founded on piling or drilled shafts and the scour risk would be eliminated.

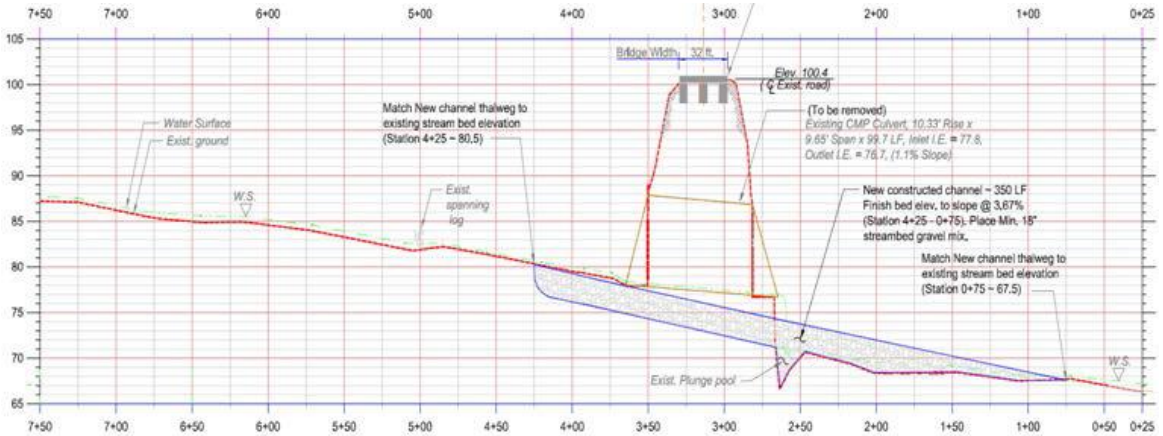


A plan view of a bridge showing reinforcements to the road embankment.

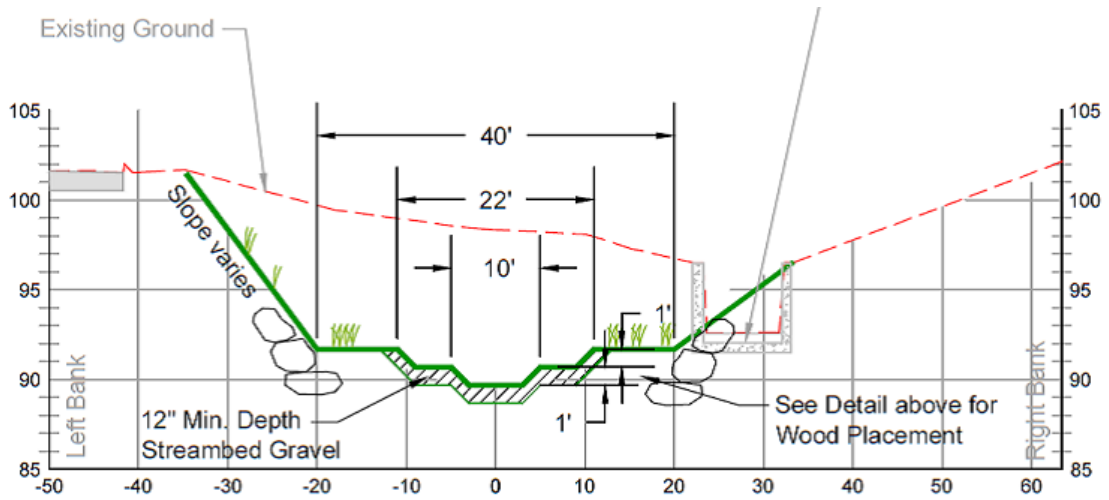


DISCLAIMER
THIS IS NOT A BOUNDARY
SURVEY. THESE PLANS
ARE INTENDED FOR USE AS
TOPOGRAPHICAL MAP ONLY

A more complex example site plan showing principle channel and infrastructure features (WDFW project files).



Channel profile showing existing and proposed crossing, proposed excavation and placed bed materials (WDFW project files).



Channel cross section which includes the main channel and a vegetated floodplain, buried scour protection at the margins and the depth of placed gravel (WDFW project files).