

Biological Assessment and Compensatory Mitigation Requirements for Upper Columbia River Docks and Watercraft Lifts, 8 August 2012

US Army Corps of Engineers Seattle District Regulatory Branch

INTRODUCTION. The National Marine Fisheries Service (NMFS) requested Biological Assessments for proposed residential pier, ramp, float, and watercraft lift projects in the upper Columbia River mainstem (UCR) incorporate the following information in order to take into consideration habitat conditions within the reach where the proposed structure will be installed, to analyze effects of placing new structure within the reach, to assess the potential effects from multiple actions within the reach over time, and to mitigate for the effects of the action on fish and habitat protected under the Endangered Species Act (ESA) and Magnuson-Stevens Fishery Conservation Management Act (MSA). The Corps has agreed to ensure this information is provided in every Biological Assessment for a pier, ramp, float, or watercraft lift in the UCR. Incorporating this information into your Biological Assessment will ensure a timely ESA and MSA consultation process. You can gather the required information from your local assessor's office, boat survey, and aerial photography.

DEFINITION OF "REACH". For the purposes of this document and UCR Biological Assessments, "reach" is defined as a distance of one-half mile (2640 feet) upstream and downstream from a proposed pier, ramp and/or float project or 200 feet upstream and downstream from a proposed watercraft lift only project.

CALCULATING PROJECT FOOTPRINT. In Attachment 1 we provided an example showing how to calculate the footprint of inwater/overwater structures and the riparian impact area. Calculating the project footprint according to the example is necessary in order to determine the amount of compensatory mitigation required for your project.

CALCULATING THE AMOUNT OF COMPENSATORY MITIGATION REQUIRED. Project sites have different habitat characteristics. In order to compensate for the type of habitat the proposed project will impact, NMFS developed a form to rate the project site's habitat conditions. The amount of compensatory mitigation required for a proposed project depends on the size of the project footprint, the quality of habitat at the project site, and the type of compensatory mitigation proposed by the applicant. NMFS' guidance for determining the habitat conditions at a project site and for calculating the amount of compensatory mitigation required for a project is provided in Attachment 2.

ABBREVIATIONS USED IN THIS DOCUMENT

Corps – U.S. Army Corps of Engineers, Seattle District, Regulatory Branch

ESA – Endangered Species Act

FWS – U.S. Fish and Wildlife Service

IOS – inwater/overwater structure (e.g., pier, marina, watercraft lift, mooring buoy, etc.)

JUA – joint-use agreement

MSA – Magnuson-Stevens Fishery Conservation and Management Act

NAD – North American Datum

NMFS – National Marine Fisheries Service

OHWM – ordinary high water mark

PRF – pier, ramp, and float(s)

RF – ramp and float(s)

UCR – Upper Columbia River (from Chief Joseph Dam to Rock Island Dam)

WCL – watercraft lift

1. SURVEY OF BASELINE CONDITION

- A. Plat Map. Provide a plat map showing waterfront parcels located within the reach. Ensure the parcel number is provided for each property.
- B. Existing Inwater/Overwater Structures (existing IOS). Within the reach, how many existing IOS are there? How many of the IOS are piers, floats, marinas, etc.? For each IOS, what is the size of its footprint? How many piling are associated with each IOS? Where are the existing IOS located? Are the IOS privately- or publically-owned? The following clarifies the type of information required in the Biological Assessment.

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1. Number and Type of Structures. Identify how many of each different type of IOS currently exist in the reach. Include the number of marinas, piers, floats, ramp-float combinations (RFs), pier-ramp-float combinations (PRFs), houseboats, floating booms, mooring booms, watercraft lifts, etc.
 2. Attributes of the Structures. For each of the existing IOS, provide the following information:
 - a. Type of piling (e.g., 4" steel, 12" timber).
 - b. Number of piling.
 - c. Estimated footprint (area in square feet) of each structure.
 - d. Type of WCL (e.g., floating WCL, ground-based WCL).
 3. Location. For each of the existing IOS, provide the following information:
 - a. Parcel number.
 - b. Coordinates in decimal degrees with 5 decimal places of accuracy based on NAD 83 for marinas, piers, floats, ramp-float combinations (RFs), and PRFs.
 4. Ownership. For each of the existing IOS, identify whether the structure is privately- or publically-owned.
 5. Date the reach was surveyed and survey method.
 6. Photographs showing all existing structures and fill (e.g., bank stabilization, groins) waterward of the ordinary high water mark (OHWM) at the parcel where the project will be constructed. If the project will be constructed on more than one parcel, provide photographs of all parcels where the project will occur.
 7. Project drawings showing all existing structures and fill (e.g., bank stabilization, groins, WCLs) waterward of the OHWM at the parcel(s) where the project will be constructed and at the adjacent parcels. (See *Drawing Checklist* document, which is available at the Corps' website¹.)
- C. Parcels in Reach, Parcels with Existing IOS, Parcels without Existing IOS, Potential for Future IOS.
1. Identify how many waterfront parcels there are within the reach.
 2. How many parcels have existing IOS?
 3. How many waterfront parcels in the reach have no existing marina, pier, float, RF, or PRF? Based on current zoning regulations, on how many of these parcels could one of these structures be constructed?
- D. Authorized but Not-Yet-Built IOS. No information needs to be submitted. The Corps will provide an estimate of not-yet-built marinas, piers, floats, RFs, PRFs, houseboats, floating booms, mooring buoys, watercraft lifts from our database of recently issued permits. We will provide the estimate directly to NMFS in our Memorandum for the Services.
- E. Existing Riparian Condition. Describe the condition of the existing riparian corridor within the project reach.
1. Width of the riparian corridor (distance the vegetation extends landward from the OHWM).
 2. Plant communities/species present.
 3. Average age or height of the woody plant communities.
 4. Proportion of the riparian corridor within the reach that is degraded, altered, or removed. Describe the degraded, altered, or removed conditions.
 5. Photographs, if available.
- F. Existing Nearshore Bathymetry. Describe the nearshore bathymetry in the reach from the OHWM to a depth of 10' below the OHWM or the depth at the waterward edge of the proposed structure, whichever is greater.
- G. Existing Nearshore Substrate Types. Describe the type(s) of nearshore substrate prevalent within the reach from the OHWM to a depth of 10' below the OHWM or the depth of the waterward edge of the proposed structure, whichever is greater.
- H. Existing Nearshore Aquatic Vegetation. Describe the type(s) of aquatic vegetation growing within the reach from the OHWM to a depth of 10' below the OHWM or the depth of the waterward edge of the proposed structure, whichever is greater. At what elevations are the vegetation types prevalent? What proportion of the riverbed in the reach is covered with each of the vegetation types? What proportion of the riverbed is unvegetated?

¹ *Drawing Checklist* is available by clicking onto the "Forms" link at the Corps' website:
[http://www.nws.usace.army.mil/Portals/27/docs/regulatory/forms/Drawing_Checklist_\(4-17-12\).pdf](http://www.nws.usace.army.mil/Portals/27/docs/regulatory/forms/Drawing_Checklist_(4-17-12).pdf)

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- I. Other Habitat Features. Identify other relevant nearshore features such as streams, riparian wetlands, backwater eddies, etc.
- J. For Wells Reservoir Projects. Include in the Biological Assessment a letter from the Douglas County Public Utility District stating your project has undergone internal review by the agency and you are authorized to submit applications to other regulatory agencies, such as the Corps, for the proposed structure.
2. **JOINT-USE INFORMATION**
 - A. For Joint-Use Structures. The Corps defines a 'joint-use structure' as a structure applied for by at least 2 waterfront property owners or by an individual owning at least 2 legally subdivided waterfront lots with a separate tax parcel number assigned to each lot. All property owners proposing a joint-use structure shall be co-applicants for the Corps permit. A copy of the joint-use agreement (JUA), signed and dated by all joint-use applicants, must be provided in the Biological Assessment. At a minimum, the JUA shall include a statement from each property owner that they voluntarily agree to build no overwater structures on their property except for maintenance or modification of the joint-use structure that is subject of the permit application.
3. **CALCULATING PROJECT FOOTPRINT (IOS AND RIPARIAN IMPACT AREA)**. Instructions for calculating IOS and riparian area impact are provided here and an example is given in Attachment 1.
 - A. IOS impact area.
 1. Determine the area of proposed IOS that will be placed waterward from the OHWM. Do not include the area of the proposed structure that will be constructed landward from OHWM. Only include once the area overlapped by 2 parts of the proposed structure. For example, if a ramp rests atop a float, only count the overlapping area one time. In the Biological Assessment, provide the calculations you used to determine the project's IOS impact area.
 - B. Riparian zone impact area.
 1. Determine the width of the riparian area as measured landward from the OHWM and provide in the Biological Assessment the basis for the width you selected.
 2. Calculate the amount of riparian area that has been or will be impacted temporarily or permanently for access to the proposed IOS and to structures serving the IOS such as stairs, bulkheads, and concrete abutments. In the Biological Assessment, provide the calculations you used to determine the project's riparian zone impact area.
4. **AMOUNT OF COMPENSATORY MITIGATION REQUIRED**.
 - A. Mitigation type: conservation bank payment, riparian planting, piling removal, bank armoring removal.
 1. Steps for calculating the amount of compensatory mitigation required (see Attachment 2).
 - a. Determine the Mitigation Category at the project site.
 - b. Select the table of multipliers (ratios) associated with the project site's Mitigation Category.
 - c. From the table, select the type of compensatory mitigation you will provide. The types of compensatory mitigation are found in the table's column headings and include payment to a Columbia River conservation bank, planting riparian vegetation, removing piling, and removing bank armoring.
 - d. Select the multiplier (ratio) from the table that matches with the type of IOS and compensatory mitigation you are proposing.
 - e. Multiply the project footprint (IOS and riparian area impact; see Attachment 1) by the multiplier for the mitigation type you are proposing. The product of this calculation is the area of compensatory mitigation required for your project.
 - B. Mitigation type: overwater structure removal (in-kind mitigation).
 1. Steps for calculating the amount compensatory mitigation required.
 - a. Removal of existing overwater structure is at a 1:1 ratio. For example:
 - 1) Installation of an 8' x 20' float would require removal of 160 ft² of an existing float.
 - 2) Installation of a 4' x 40' gangway would require removal of 160 ft² of an existing gangway.
 - C. Other Mitigation. Other mitigation will be considered by the Corps, NMFS, and U.S. Fish and Wildlife Service (FWS) on a case-by-case basis. Submit your mitigation proposal to the Corps prior to developing the project biological assessment.

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5. **COMPENSATORY MITIGATION: INFORMATION TO PROVIDE IN BIOLOGICAL ASSESSMENT.**

- A. Columbia River conservation bank payment. There are currently no conservation banks or similar programs operating in the UCR. The Corps and NMFS will advise the public when such programs are available.
1. IOS and riparian area impacts that will result from the proposed project (see above, **CALCULATING PROJECT FOOTPRINT (IOS AND RIPARIAN IMPACT AREA)**).
 2. Mitigation Category form completed for the project site (see Attachment 2, first page).
 3. The value of the multiplier (ratio) and the amount of mitigation you will provide (see Attachment 2, third page).
 4. Conservation bank contact information. The bank's name and address and the name, email address, and telephone number of the bank's point of contact.
 5. Conservation bank use plan and a statement of credit availability from the bank sponsor.
- B. Riparian planting.
1. IOS and riparian area impacts that will result from the proposed project (see above, **CALCULATING PROJECT FOOTPRINT (IOS AND RIPARIAN IMPACT AREA)**).
 2. Mitigation Category form completed for the project site (see Attachment 2, first page).
 3. The value of the multiplier (ratio) and the amount of mitigation you will provide (see Attachment 2, third page).
 4. A planting plan, including drawings, performance standards, annual monitoring reports standards, and contingency standards.
 5. Drawings showing the location of the mitigation relative to the OHWM and proposed IOS. In addition, the drawing must identify the number of plants of each species that will be installed.
 - a. Shrubs and trees shall be planted at intervals of 3' and 10' respectively.
 - b. Trees and shrubs shall be planted at a ratio of 1:10 (1 tree for every 10 shrubs planted).
 - c. At least 1 tree and 8 shrubs shall be included in each 100 ft² area.
 6. Your agreement to comply with the following requirements:
 - a. All mitigation plantings shall be installed prior to or concurrent with the construction of the IOS or WCL. If mitigation is not completed within one year of overwater structure construction, the applicant shall be required (1) to increase the quantity of their mitigation area by 10 percent for each year mitigation is not completed, (2) submit a revised mitigation plan to NMFS for NMFS to approve, (3) submit the NMFS-approved revised mitigation plan to the Corps, and (4) obtain any necessary permit revisions to the Corps authorization prior to completing the revised mitigation plan.
 - b. The planted area shall be maintained at 100% survival of the original planting density for the first five years after planting. After the first 5 years, survival must be maintained at 80% of the initial planting density for shrubs and 100% for trees. Individual plants that die must be replaced in kind (i.e., replace a tree with a tree) with native species. Native shrubs and trees shall be taken from the Washington Native Plant Society list by county² or approved by NMFS. All trees and shrubs shall be maintained (watered, beaver protection installed, and replaced) for as long as the overwater structure is present, regardless of ownership of the overwater structure.
 - c. To ensure the mitigation plantings provide habitat benefits for as long as the inwater or overwater structure remains, the applicant will attach to the property deed a copy of the mitigation planting plan approved by the Corps and NMFS. The applicant will provide proof to the Corps that the mitigation information has been recorded on the property deed within 60 days of permit issuance.
 - d. Non-compliance with the riparian planting performance standards may result in an increase in the required amount of riparian plant mitigation by up to 25%.
 - e. Mitigation as-built report. You must submit an as-built mitigation report with as-built drawing and photographs demonstrating the mitigation has been completed. The report shall be submitted to NMFS and the Corps annually until mitigation construction is completed. The first report shall be submitted to NMFS and the Corps by the first January 31 following permit issuance. All subsequent

² Washington Native Plant Society lists of native plants are available at: <http://www.wnps.org>

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annual reports shall be due on January 31. Addresses to which the report shall be sent are provided at the end of this document. The report shall include at a minimum:

- 1) Corps permit number and NMFS tracking number. The NMFS tracking number is given on the first page of its biological opinion for the project.
 - 2) Location of mitigation (street address, longitude, latitude).
 - 3) Description of the type of mitigation completed (e.g., planting native riparian vegetation immediately landward of the OHWM).
 - 4) Size of mitigation area (e.g., size of the riparian area planted with trees and shrubs).
 - 5) Species and quantity of riparian trees planted.
 - 6) Species and quantity of riparian shrubs planted.
- f. Mitigation monitoring report. You must submit annual mitigation monitoring reports for 5 years to NMFS and the Corps if riparian plantings were installed as mitigation. The first report shall be submitted to NMFS and the Corps by January 31 of the year following completion of mitigation. All subsequent reports shall be submitted annually to NMFS and the Corps by January 31. Addresses to which the reports shall be sent are provided at the end of this document. The permittee shall report all monitoring items to include, at a minimum, the following
- 1) Corps permit number and NMFS tracking number. The NMFS tracking number is given on the first page of the biological opinion for the project.
 - 2) Location of mitigation site (street address, longitude, latitude).
 - 3) Percent survival of both trees and shrubs each year.
 - 4) Species and quantity of plants replaced each year.

C. Piling removal.

1. IOS and riparian area impacts that will result from the proposed project (see above, **CALCULATING PROJECT FOOTPRINT (IOS AND RIPARIAN IMPACT AREA)**).
2. Mitigation Category form completed for the project site (see Attachment 2, first page).
3. The value of the multiplier (ratio) and the amount of mitigation you will provide (see Attachment 2, third page).
4. A description of the compensatory mitigation you are proposing, including:
 - a. Location of the mitigation site (street address, longitude, and latitude).
 - b. Type of mitigation you will provide (e.g., removal from the Columbia River of existing piling).
 - c. Amount of mitigation you will provide (e.g., the number of piling and type of piling you will remove such as: 2 timber piling 12" in diameter and 4 steel piling 4" in diameter).
 - d. Drawing showing the location of the piling you are proposing to remove relative to the OHWM and other existing IOS on the property.
 - e. Photographs of the existing piling you are proposing to remove.
5. Your agreement to comply with the following requirement:
 - a. Mitigation as-built report. You must submit an as-built mitigation report with as-built drawing and photographs demonstrating the mitigation has been completed. The report shall be submitted to NMFS and the Corps annually until mitigation construction is completed. The first report shall be submitted to NMFS and the Corps by the first January 31 following permit issuance. All subsequent annual reports shall be due on January 31. Addresses to which the report shall be sent are provided at the end of this document. The report shall include at a minimum:
 - 1) Corps permit number and NMFS tracking number. The NMFS tracking number is given on the first page of the biological opinion for the project.
 - 2) Location of mitigation site (street address, longitude, latitude).
 - 3) Description of the type of mitigation completed (e.g., removal of piling from the Columbia River).
 - 4) Number of piling that were removed.
 - 5) As-built drawing(s).
 - 6) Photographs demonstrating the mitigation has been completed.

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- 7) When the Corps, NMFS, and FWS approve your mitigation proposal, the agencies will advise you what type of other specific information, if any, must be included in your annual report(s).
- D. Bank armoring removal.
1. IOS and riparian area impacts that will result from the proposed project (see above, **CALCULATING PROJECT FOOTPRINT (IOS AND RIPARIAN IMPACT AREA)**).
 2. Mitigation Category form completed for the project site (see Attachment 2, first page).
 3. The value of the multiplier (ratio) and the amount of mitigation you will provide (see Attachment 2, third page).
 4. A description of the compensatory mitigation you are proposing, including
 - a. Location of the mitigation site (street address, longitude, and latitude).
 - b. Description of the existing bank stabilization you are proposing to remove, including
 - 1) Type of material from which the existing structure is constructed (e.g., concrete, 2-man rock).
 - 2) Length and width of the existing structure.
 - 3) Position of the existing structure relative to the OHWM (e.g., how far waterward and landward of the OHWM does the bank stabilization extend?).
 - c. Amount of mitigation you will provide, including
 - 1) Length and width of bank stabilization you will remove.
 - 2) Length and width of disturbed area you will replant with native vegetation.
 - 3) Number of each species of native plant you install in the disturbed area.
 - d. Drawing showing the location of the bank stabilization you are proposing to remove relative to the OHWM and other existing IOS on the property.
 - e. Photographs of the existing bank stabilization you are proposing to remove.
 5. Your agreement to comply with the following requirement:
 - a. Mitigation as-built report. You must submit an as-built mitigation report with as-built drawing and photographs demonstrating the mitigation has been completed. The report shall be submitted to NMFS and the Corps annually until mitigation construction is completed. The first report shall be submitted to NMFS and the Corps by the first January 31 following permit issuance. All subsequent annual reports shall be due on January 31. Addresses to which the report shall be sent are provided at the end of this document. The report shall include at a minimum:
 - 1) Corps permit number and NMFS tracking number. The NMFS tracking number is given on the first page of the biological opinion for the project.
 - 2) Location of mitigation site (street address, longitude, and latitude).
 - 3) Type of mitigation completed (e.g., removal of armored bank protection from the Columbia River and planting native riparian vegetation in the area disturbed when the armoring was removed).
 - 4) Size of mitigation area (e.g., removal of xxx ft² of concrete bulkhead from the Columbia River and planting native riparian vegetation in xxx ft² that was disturbed by the bank armoring removal).
 - 5) As-built drawing(s).
 - 6) Photographs demonstrating the mitigation has been completed.
 - 7) When the Corps, NMFS, and FWS approve your mitigation proposal, the agencies will advise you what type of other specific information, if any, must be included in your annual reports.
 6. **REPORT ON CONSTRUCTION OF THE IOS.** Provide in the Biological Assessment a statement that you agree to comply with the following requirement.
 - A. The permittee must submit a report on the construction of the IOS. The report must be submitted to NMFS and the Corps by January 31 of the year following permit issuance. The report must be submitted whether or not the IOS has been constructed. If the IOS has not been constructed, a report shall be submitted annually to NMFS and the Corps by January 31 until such time as the IOS is constructed and the following information is provided or until the Corps permit expires. Addresses to which the reports shall be sent are provided at the end of this document. The report shall include at a minimum, the following information:

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1. Area of floating in-water structures. Report the surface area of the structure constructed in the Columbia River, including the pier, ramp, and float and maximum surface area that could be covered by boats tied to the structure.
 2. Measure and indicate the minimum lateral distance of the floating dock from the OHWM.
 3. Measure and indicate the minimum depth below the structure as measured from OHWM to the most landward side of the float.
 4. Piling. Report the number, size, and type of piling installed.
 5. Piling installation. Describe the type of pile driver used to install the piling. If an impact device was used for driving or proofing piling, report the number of strikes per pile, the number of strikes per day, and total number of days of impact pile driving and proofing that were required.
7. **SEND REPORTS TO THE FOLLOWING ADDRESSES.** As described above, permittees are required prepare and submit the following types of reports to NMFS and the Corps: Mitigation As-Built Report, Mitigation Annual Report, and Report on the Construction of the IOS. The addresses to which the reports shall be sent are as follows:
- A. NMFS. National Marine Fisheries Service, Washington State Habitat Office, ATTN: OWS Team, 304 South Water Street, Suite 201, Ellensburg, Washington 98926.
 - B. Corps. U.S. Army Corps of Engineers, Seattle District, Regulatory Branch, Post Office Box 3755, Seattle, Washington 98124-3755. All reports must prominently display the reference number NWS-201* -****

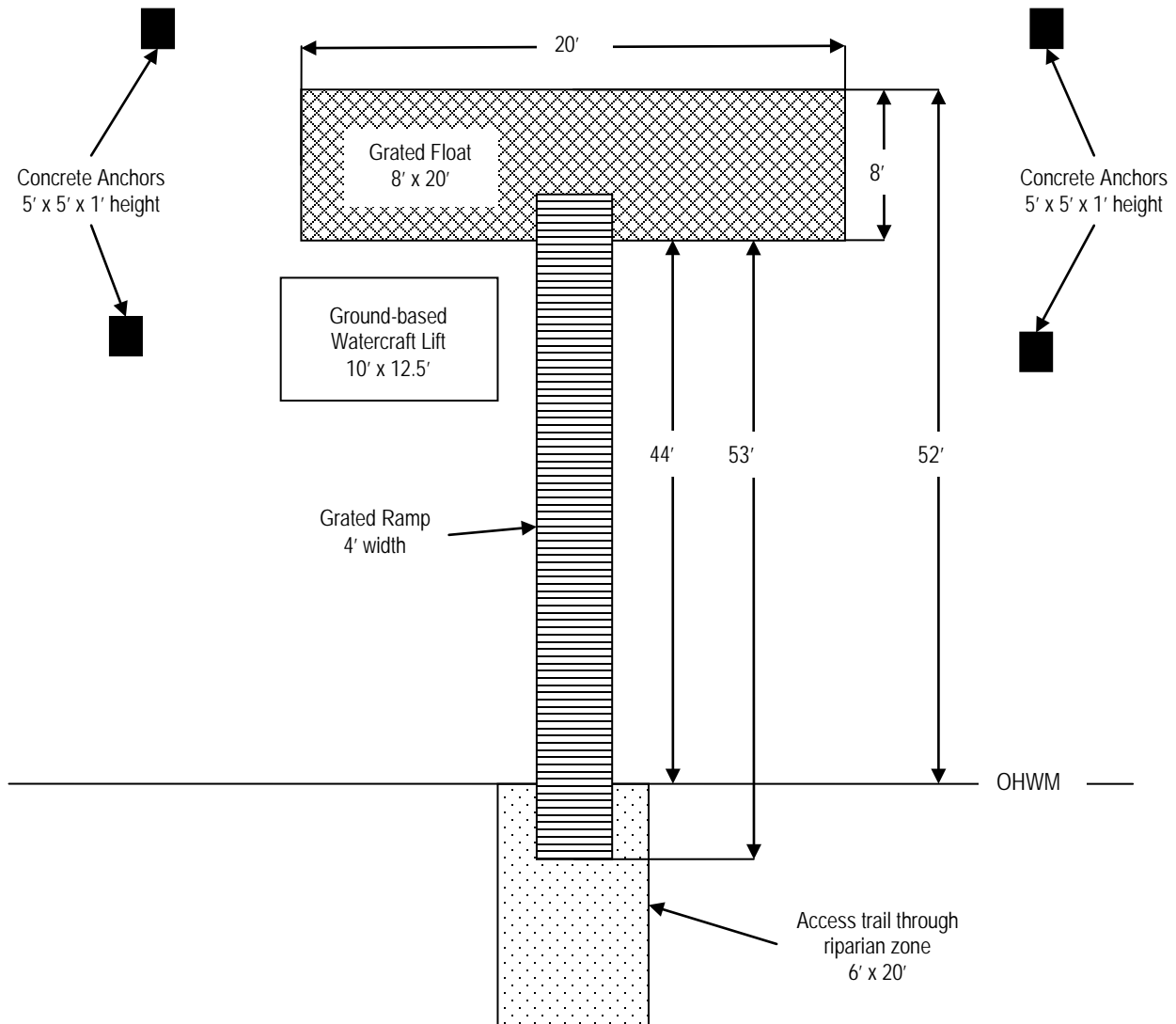
Attachment 1. Calculating Project Footprint

EXAMPLE: Calculating Area of Inwater & Overwater Structures and Riparian Impact Area

Inwater and Overwater Structures. Waterward of the ordinary high water mark (OHWM), the structure would have a footprint of 561 ft² as shown below. Note this footprint calculation does not include structure that will be located landward of the OHWM and the portion of the ramp that will rest atop the float.

Ramp (4' x 44')	= 176 ft ²
Moorage float (8' x 20')	= 160 ft ²
4 Anchors ³ (each at 5' x 5')	= 100 ft ²
Watercraft lift ⁴ (10' x 12.5')	= 125 ft ²

Riparian Area. Landward of the OHWM, the structure will be anchored to the shoreline and a permanent access trail will be maintained. The impact area for the trail and ramp anchorage would be 120 ft².



³ **Anchors.** Anchors shall be helical screws, where possible. Where not possible, submerged float anchors will be constructed out of concrete and shall be horizontally compressed in form, by a factor of 5 or more, for a minimum profile above the stream bed (the horizontal length and width will be at least 5 times the vertical height).

⁴ **Watercraft Lifts.** Lifts should be placed at a location where water depth is at least 10' relative to the ordinary high water mark.

Attachment 2. Compensatory Mitigation

U.S. Army Corps of Engineers, Seattle District
 Compensatory Mitigation for Overwater Structures on the Upper Columbia River
 June 22, 2012

Determining the Mitigation Category

For each of the three categories below, circle the points for the one description that best describes the majority of your site conditions. Add the three circled amounts together to determine the mitigation category. Definitions are provided on the following page.

<u>Habitat in Riparian Zone</u>	<u>Points</u>
Naturally vegetated riparian, vegetation 10 feet or higher	3
Naturally vegetated riparian, vegetation under 10 feet high	2
Orchard/shrub-steppe/invasive species/grass	1
Unvegetated/bare ground/paved	0

<u>Slope</u>	<u>Points</u>
Slope is 5:1 or less	2
Slope is greater than 5:1 and equal or less than 2.5:1	1
Slope is greater than 2.5:1	0

<u>Streambank Type</u>	<u>Points</u>
Naturally sloped bank/unarmored	2
Sloped bank modified by bank stabilization	1
Vertical bank/bulkhead	0

Total Points: _____

Mitigation Category 1 (High) = score of 4 to 7
 Mitigation Category 2 (Moderate) = score of 2 to 3
 Mitigation Category 3 (Low) = score of 0 to 1

Mitigation Category: _____

Attachment 2. Compensatory Mitigation

Definitions and Descriptions

Riparian Zone

This is the area along the shoreline approximately 50 feet on each side of the proposed ramp, from the ordinary high water mark (OHWM) to approximately 25 feet landward.

Naturally vegetated riparian with vegetation 10 feet or higher

The riparian zone has a majority of native riparian vegetation with some trees or bushes taller than 10 feet as measured from the exposed base of the plant to the highest point.

Naturally vegetated riparian with vegetation under 10 feet high

The riparian zone has no native riparian vegetation taller than 10 feet.

Orchard/shrub-steppe/invasive species/grass

Dominant habitat in the riparian zone consists of orchard, shrub-steppe, invasive species, grass, or a combination of these habitat types.

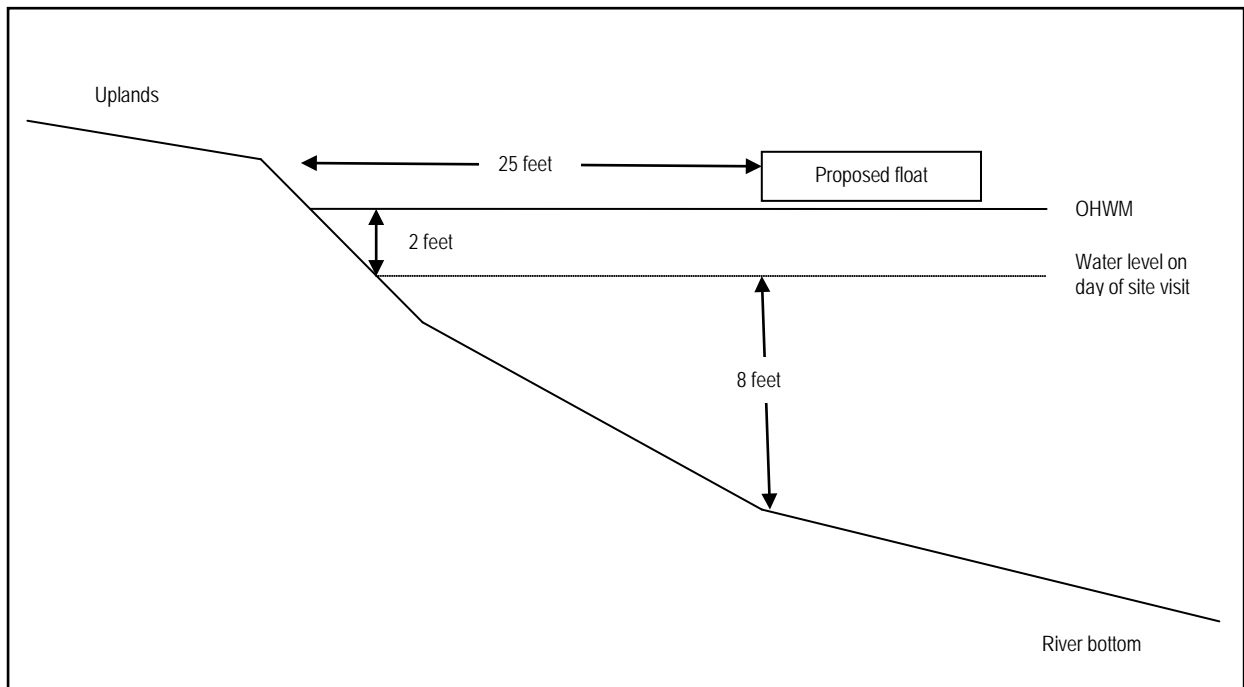
Unvegetated/bare ground/paved

Little to no vegetation is present in the riparian habitat zone.

Slope

To measure the slope use one of the following methods:

1. Use the cross-sectional drawing in the application package to find the horizontal distance between the OHWM on the river bank (uplands) and the landward edge of the proposed float. In the drawing below this distance is 25 feet. Divide this horizontal distance by the depth of the water at the landward edge of the float, measuring from the plane of OHWM to the river bottom. In the drawing the depth is 10 feet. The slope in the drawing is 25/10 or 2.5:1.



Attachment 2. Compensatory Mitigation

2. If drawings have not been prepared, you can calculate the slope with the following method. Using a plumb bob and boat, measure the water depth at the location where the landward edge of the float will be installed. This measurement is 8 feet in the figure above. Next, measure the distance between the water surface elevation and the OHWM elevation. A simple way to do this is to extend a level line (use a string with an attached bubble level or use a carpenter's level) from the OHWM on the bank to the water's edge. Measure the distance from the level line to the water's surface. This measurement is 2 feet in the above figure. Combining these two measurements shows the water depth from the OHWM to the river bottom is 10 feet at the location where the landward edge will be placed. To determine the slope of the riverbed, divide the horizontal distance of 25 feet by the vertical distance of 10 feet. In this example the slope is 2.5: 1.

Streambank Types

This is the area approximately 50 feet on each side of the proposed ramp along the shoreline from the ordinary low water mark (OLWM) to the top of the bank.

Natural bank

Little or no bank armoring with a natural slope.

Armored bank

Bank armoring consists of loose rock placed on the river bank to curtail erosion. Vegetative cover will vary. Bank armoring is sloped and not vertical.

Bulkhead

Vertical retaining walls, generally composed of concrete, timber, or sheet pile.

Attachment 2. Compensatory Mitigation

Calculating the Area of Required Compensatory Mitigation

Find your Mitigation Category (1-high, 2-moderate, or 3-low) using the rating form above. Then multiply the footprint of your proposed overwater structures or watercraft lift with the appropriate multiplier for the mitigation type (riparian vegetation planted, piling removal, armored bank removal) you have proposed. If you choose a conservation bank, you just buy the number of designated units from the bank.

Category 1

High Quality Habitat

	Footprint of your project	Columbia River Conservation Bank	Riparian Vegetation Planted	Piling Removal	Armored Bank Removal
	Sq. ft.	DSAYs	Multiplier	Multiplier	Multiplier
Single Residential Dock		0.179	3.75	0.90	0.50
Joint-Use Residential Dock		0.214	3.46	0.83	0.47
Watercraft Lift		0.036	3.38	0.8	0.43

Category 2

Moderate Quality Habitat

	Footprint of your project	Columbia River Conservation Bank	Riparian Vegetation Planted	Piling Removal	Armored Bank Removal
	Sq. ft.	DSAYs	Multiplier	Multiplier	Multiplier
Single Residential Dock		0.154	3.23	0.78	0.44
Joint-Use Residential Dock		0.189	3.06	0.74	0.41
Watercraft Lift		0.036	3.38	0.8	0.43

Category 3

Low Quality Habitat

	Footprint of your project	Columbia River Conservation Bank	Riparian Vegetation Planted	Piling Removal	Armored Bank Removal
	Sq. ft.	DSAYs	Multiplier	Multiplier	Multiplier
Single Residential Dock		0.139	2.25	0.54	0.30
Joint-Use Residential Dock		0.173	2.79	0.69	0.37
Watercraft Lift		0.036	3.38	0.8	0.43