



**US Army Corps
of Engineers®**
Seattle District



Grays Harbor Juvenile Detention Center Section 14 Stream bank Protection Project

Appendix B

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Appendix B

Table of Contents

Appendix B.1 Draft Finding of No Significant Impact (FONSI)

Appendix B.2 Detailed Noise Analysis

Appendix B.3 Detailed Endangered Species Act Analysis

Appendix B.4 Section 106 Concurrence Letters

What is this document? This document is the draft Finding of No Significant Impact (FONSI). A FONSI is a National Environmental Policy Act document (NEPA). A FONSI is issued when environmental analysis and interagency review during the EA process find a project to have no significant impacts on the quality of the environment. This draft FONSI is for public review and comment.

**DRAFT FINDING OF NO SIGNIFICANT IMPACT (FONSI)
Grays Harbor Detention Facility Emergency Streambank and Shoreline
Stabilization Project
Aberdeen, Washington
EAXX-202-0-G3-O-1759145337**

The U.S. Army Corps of Engineers, Seattle District (USACE) conducted an environmental analysis in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. The draft Integrated Feasibility Report and Environmental Assessment (EA) dated October 2025, for the Grays Harbor Detention Facility Emergency Streambank and Shoreline Stabilization Project addresses streambank erosion prevention opportunities and feasibility in at the Grays Harbor Juvenile Detention Center in Aberdeen, Washington.

The draft IFR/EA, incorporated herein by reference, evaluates various alternatives to address shoreline erosion threatening the Juvenile Detention Center. One Federal action requiring NEPA compliance is analyzed in the EA summarized below.

Proposed Action: The preferred alternative is Alternative 3: Terraced Riprap Berm. This alternative regrades the eroding shoreline with a stable slope, including a mid-slope bench, that is armored with riprap. Native vegetation is incorporated into the design and large woody material will be anchored along the toe of the newly armored shoreline.

Alternatives: In addition to a “no action” plan (Alternative 1: No Action), two other alternatives were evaluated. These other alternatives are Alternative 2: Riprap Along Eroded Shoreline and Alternative 4: Laid Back Terraced Riprap Berm. All four alternatives are described in section 4 of the draft IFR/EA. For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan are listed in Table 1:

Table 1: Summary of Potential Effects of the Proposed Action

	Insignificant effects	Insignificant effects as a result of impact minimization	Resource unaffected by action
Air Quality and Pollutant Gas Emissions	☒	☐	☐
Geology and Soils	☐	☒	☐
Groundwater	☐	☐	☒
Hydrology and Geomorphology	☒	☐	☐
Hazardous, Toxic, and Radioactive Waste (HTRW)	☐	☐	☒
Land Use, Utilities, and Infrastructure	☒	☐	☐
Noise	☒	☐	☐
Transportation and Traffic	☒	☐	☐
Water Quality	☐	☒	☐
Cultural Resources	☐	☐	☒
Fish and Wildlife	☐	☒	☐
Threatened and Endangered Species	☐	☒	☐
Vegetation	☐	☒	☐
Wetlands	☒	☐	☐
Public Services, Health, and Safety	☒	☐	☐
Recreation and Scenic Value	☐	☐	☒

Impact Minimization: All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the draft IFR/EA will be implemented, if appropriate, to minimize impacts. The proposed action includes measures to minimize impacts from new shoreline armoring to water quality, fish and wildlife, and species and critical habitat protected under the Endangered Species Act. These measures are described in section 9.4.2 of the draft IFR/EA. No compensatory mitigation is currently proposed for any of the alternatives, as coordination under the CWA is still ongoing. However, the cost estimates for each alternative include contingency funds for compensatory mitigation. If compensatory mitigation is ultimately required, it will be incorporated into the final Project.

Public Review: A draft IFR/EA and this draft FONSI are released for a 30-day public review period started October 6, 2025. All comments submitted during the public review period will be considered and responded to in the final IFR/EA and FONSI.

Treaty Tribes: The Confederated Tribes of the Chehalis Reservation, Hoh Indian Tribe, Quileute Tribe of the Quileute Reservation, Quinault Indian Nation, and Shoalwater Bay Indian Tribe of the Shoalwater Bay Indian Reservation were contacted regarding the levee repairs and USACE will continue to coordinate throughout the project to meet Tribal Treaty obligations. To date, two comments have been received. These comments and responses are summarized in section 10.15 of the draft IFR/EA.

Compliance:

a. Endangered Species Act:

The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) are responsible for the Endangered Species Act of 1973 (ESA). USACE evaluated potential effects to endangered species in a Biological Assessment (BA) and determined the proposed action would require formal consultation with NMFS and the USFWS. Coordination with the USFWS and NMFS was initiated through the submission of the BA on 8 August 2025. Consultation is ongoing.

b. Manguson-Stevens Fishery Conservation and Management Act:

The BA also contained USACE's determination that the proposed action may affect Essential Fish Habitat for federally managed fish species in the project area.

c. Coastal Zone Management Act (CZMA):

When the site-specific construction drawings and contract are prepared in the design and implementation phase, USACE will provide a Federal consistency determination and all other necessary documentation to the Washington Department of Ecology (Ecology) as part of the request for a Water Quality Certificate. USACE will receive CZMA concurrence from Ecology prior to the construction contract award.

d. Clean Water Act:

USACE policy states that during the feasibility phase, a project recommended for construction authorization must show reasonable assurance that all applicable environmental compliance has been or can be obtained. Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the United States, including wetlands, and generally requires a permit from USACE. While USACE administers Section 404, it does not issue permits to itself for its own civil works activities. Instead, USACE assumes responsibility for ensuring compliance with Section 404 requirements for jurisdictional activities associated with its projects. Ecology will not issue a letter of support or a WQC based on feasibility level design and requires more detail that will be developed during the design and implementation phase. For the proposed action, USACE is evaluating potential project-induced effects based on the feasibility-level design and will prepare a draft Section 404(b)(1) evaluation for inclusion in the final IFR/EA. Completion of the final 404(b)(1) evaluation is anticipated during the design and implementation phase of the project. Based on current analysis, the proposed action is not expected to result in significant effects to the human environment. USACE is currently coordinating with Ecology to see what response Ecology can provide during the feasibility phase. USACE will submit a 401 WQC request to Ecology when designs have been further developed in the design and implementation phase.

Appendix B.1 – draft Finding of No Significant Impact (FONSI)

Section 402 of the CWA is triggered when a construction site would have greater than 1 acre of ground disturbance. The proposed action does not exceed 1 acre of ground disturbance.

e. National Historic Preservation Act:

On 19 May 2025, USACE initiated consultation with the State Historic Preservation Officer (SHPO) and affected Tribes with an area of potential effect (APE) letter. The Quinault Indian Nation responded to the letter and conveyed that there were no specific concerns and would like the USACE to ensure that the construction crew has an inadvertent discovery plan on hand. The USACE intends to create such a plan and instruct the construction crew to follow it. USACE received APE concurrence from SHPO on May 19, 2025. On July 17, 2025, USACE provided the SHPO with all necessary NHPA documentation for consultation. The SHPO concurred with USACE's determination of no historic properties affected for the proposed project on July 17, 2025, with the stipulation of an inadvertent discovery plan. The USACE will include such a plan in the final construction plans

f. Other Significant Environmental Compliance:

The following applicable environmental laws and regulations have also been considered and coordination with appropriate agencies and officials has been completed.

- American Indian Religious Freedom Act
- Bald and Golden Eagle Protection Act
- Marine Mammal Protection Act of 1972
- Executive Order 11988 Floodplain Management
- Executive Order 11990 Protection of Wetlands
- Executive Order 13175 Consultation and Coordination with Indian Tribal Governments

Finding: All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives. Based on the analysis presented in the EA, which has incorporated or referenced the best information available; the reviews by other Federal, State, and local agencies, and Tribes; input of the public; and the review by my staff; it is my determination that the recommended plan would not cause significant effects on the quality of the human environment. Therefore, preparation of an Environmental Impact Statement is not required.

Date

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What is this document? This document is a detailed noise analysis for the Section 14 Grays Harbor Juvenile Detention Center Emergency Streambank Stabilization Project in Aberdeen, Washington.

Effects of Noise

Airborne noise in this section is primarily referred to in weighted decibels (dBA) perceived by the human ear. In water noise is primarily referred to in decibels (dB).

Airborne Noise

In WSDOT's Construction Noise Impact Assessment (2020), factors including estimated construction equipment noise, estimated background noise, estimated traffic noise, ground conditions, and point or line source noise are used to determine the maximum distance needed for construction related noise to attenuate to background levels.

Construction Equipment

- Heavy equipment used in the project could include a crane, excavator, dump truck, and bulldozer. The maximum average noise generated from each piece of equipment at 50 feet ($L_{\max}^b$) is listed below in *Table 1*:

Table 1. WSDOT's (2020) estimated maximum average noise and vibration potential (impact device) of construction equipment used for the project in dBA.

Equipment	Impact Device (Y/N)	Maximums Average Noise at 50 feet ($L_{\max}^b$)
Bulldozer	No	86 dBA
Crane	No	79 dBA
Dump Truck	No	73 dBA
Excavator	No	87 dBA

Appendix B.2 Detailed Noise Analysis

- To account for more than one piece of equipment being used at a time WSDOT (2020) provides rules for adding different noise sources together for a given project (*Table 2*).

Table 2. Addition rules for combining weighted decibels (dBA) together to account for the operation of different equipment at the same time.

Difference in dBA	Added dBA
0 to 1	3
2 to 3	2
4 to 9	1
10 or more	0

- *Table 2* was used to account for the combined noise impact of the listed equipment (WSDOT 2020). The three highest noise levels were identified (87 dBA, 86 dBA, and 79 dBA) and the lowest two of the three were subtracted (87 dBA- 79 dBA). Since the difference was 7, 1 dBA was added to 86 dBA. Then, the first highest noise source (87 dBA) was subtracted by the second highest noise source (86 dBA). Since the difference was 1 dBA, 2 dBA were added to the highest noise source. As a result, the highest estimate noise generated from the project is 90 dBA.

Ambient/Traffic Noise

- Given the population of Grays Harbor, ambient noise is estimated around 65 dBA (WSDOT 2020). Traffic noise on the arterial roadway in front of the project is assumed to be an average of 65 dBA as well (WSDOT 2020).

Ground Conditions

- The action area has a mixture of hard and soft ground conditions. The condition of the ground in each area can affect how effectively noise travels. In areas with softer ground, noise travels at less of a distance than areas with hard ground (WSDOT 2020). This analysis will be performed for hard ground to ensure the greatest distance of noise impacts are considered.

Point or Line Source

Appendix B.2 Detailed Noise Analysis

- Noise generation that continues for a certain distance, like traffic, is considered a line source, while noise that travels from one, localized position is considered a point source. Generally, all construction activities are considered a point source (WSDOT 2020).

Based on these factors (*Table 3*), the WSDOT (2020) equation used to measure the distance that sound will attenuate to background is as follows:

$$D = D_0 \times 10^{(\text{Construction Noise} - \text{Ambient Level in dBA})/\alpha}$$

Table 3. WSDOT's (2020) variables used in an equation to determine the distance that noise attenuates to background/ambient levels.

Variable	Definition
D	Distance needed for noise to attenuate to background
D ₀	Reference distance for average maximum noise (50 feet)
Construction Noise	Maximum construction noise from equipment (90 dB)
Ambient Level	Traffic or ambient sound level for the given area (the largest value is used, in this case it's 65 dB)
α	20 for hard ground and 25 for soft ground (20 used)

Based on WSDOT (2020) guidelines, the following equation was used:

$$D = 50 \times 10^{(90 \text{ dba} - 65 \text{ dBA})/20}$$

As a result, airborne noise is expected to attenuate to background noise at 890 feet. The action area encompasses an 890-foot radius from the project location (*Table 2*).

It is expected that most terrestrial species will avoid the action area. Animals can be affected by sound at varying levels that are influenced by weather, topography of the area, time of day, reproductive status, and exposure to similar noises (Delaney and Grubb 2003). Rock transport and placement operations would

Appendix B.2 Detailed Noise Analysis

produce noise above ambient levels, so some disturbance to feeding activities could occur. There are no sources readily available, that have been studied and quantified, of airborne disturbance that may be similar to the noise and impact vibration of the process of placing and manipulating armor stone to key in each piece. However, as a conservative analogy, this analysis applies the airborne effects of use of hammer drill equipment, which would generate approximately 75 dBA at 50 feet (WSDOT 2020). Noise of this magnitude will not alter the maximum airborne noise generated from project activities. The impact of vibration on animals is not yet well understood.

In-Water Noise

The sound waves generated by the project could affect in-water animals in several ways including altered behavior, physical injury, or mortality. More is known about the potential effects of anthropogenic sounds on marine mammals than on fish and marine turtles. There is such limited information on turtle hearing that, currently, fish provide a better analog for turtles as turtles' hearing range more approximates that of fishes than of any marine mammal (Popper et al. 2014).

Fish and marine mammals have been divided up into categories to determine exposure:

- Marine mammals are divided according to their hearing ranges: low-frequency cetaceans (baleen whales), mid-frequency cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales), high-frequency cetaceans (true porpoises, Kogia, river dolphins, etc.), Phocid pinnipeds (true seals) and Otariid pinnipeds (sea lions and fur seals) (NMFS 2016).
- Fish are divided in categories based on the presence or absence of a swim bladder: fishes with no swim bladder or other gas chamber (flatfish), fishes with swim bladders in which hearing does not involve the swim bladder or other gas volume (salmonids and sturgeon), and fishes in which hearing involves a swim bladder or other gas volume (Atlantic cod and herring) (Popper et al. 2014).

More has been learned about the potential death or injury to aquatic species as a result of anthropogenic sound, and efforts to remain in compliance with applicable laws and regulations have required the development of guidance by resource

Appendix B.2 Detailed Noise Analysis

agencies to assess the effects of anthropogenic sound on aquatic species. The following are interim noise thresholds for salmonids and sturgeon for pile driving (Hastings 2002, NMFS et al. 2008), which can be conservatively analogized to the underwater noise and vibration consequences of placement and manipulation of armor stone pieces of up to 55T:

- 150 dB_{RMS}¹ for harassment for continuous noise² for fish of all sizes
- 187 dB cumulative SEL³ for injury of fish ≥ 2 grams⁴
- 183 dB cumulative SEL for injury of fish < 2 grams
- 206 dB_{peak}⁵ for injury of fish of all sizes

Continuous sound (drilling and vibratory pile driving):

- For fish with swim bladders that are involved in hearing (e.g. minnows)
 - 170 dBRMS for 48 hours for recoverable injury
 - 158 dBRMS for 12 hours for TTS (Temporary Threshold Shift, or complete recovery of hearing loss)
- There is no direct evidence for mortality or potential mortal injury for continuous noise.
- There are no continuous noise thresholds set for fish without swim bladders or those with bladders that are not involved in hearing (salmonids & sturgeon).

Actions can cause noise impacts under water, even if they occur above ground. Noise generating activities below the high tide line include work to prepare and place armor rock. The effects of rock placement underwater have not been studied in detail (Wyatt et al. 2008, Kongsberg Maritime Limited 2015), however it is expected that noise generated from the project may be lower than the noise generated from dredging and pile driving projects. For an analysis of noise impacts from the project, underwater pile driving was used as a proxy since its

¹ Decibels root mean square over a period of time

² Vibratory pile driving is characterized as continuous noise

³ Decibels sound exposure level over a 24 hour period (cumulative)

⁴ Injury thresholds are based on pile driving (pulsed noise)

⁵ Peak sounds in decibels

Appendix B.2 Detailed Noise Analysis

impacts on aquatic species have been measured, and the project will generate similar rumbling of equipment and impact noise of placement of rock (Table 4 and Table 5).

Table 4. Proxy pile driving project for estimating underwater noise.

Project Location	Water Depth (m)	Pile Size (inches)	Pile Type	Hammer Type	Attenuation rate (dB/10m)
Entrance Channel, Grays Harbor	5	24	Steel Pipe	Vibratory	3

Table 5. Proxy project-based estimates of underwater noise caused by pile driving.

Type of Pile	Hammer Type	Estimated Peak Noise Level (dB_{peak})	Estimated Pressure Level (dB_{RMS})	Estimated Single Strike Sound Exposure Level (dB_{SEL})
24" Steel Pipe	Vibratory	193	179	168

Based on this analysis, noise impacts from pile driving will cause fish harassment (150 dB). Noise from this action can cause temporary injury to fish with swim bladders if they are exposed to the continuous sound for over 48 hours. However, they would likely swim away from the area of noise before injury could happen. Impacts from underwater pile driving are not expected to cause injury to fish without swim bladders regardless of their size.

Other factors like ambient noise and depth of the action area need to be considered to understand the effects of the project on aquatic species. Ambient sound level data has been recorded at some open water locations on the West Coast. Ambient sound levels for a large marine bay and heavy commercial boat traffic, a large marine inlet, and some recreational boat traffic are 147-156 dB, 132-

Appendix B.2 Detailed Noise Analysis

143 dB, and 115-135dB, respectively. In areas with less boat traffic, average ambient noise has been estimated to be 75 dB in the Strait of Juan de Fuca and coasts of British Columbia and Washington (Erbe 2002, Erbe et al 2012). Grays Harbor likely ranges between 75-132 dB depending on the given location. Work on the project below the high tide line will occur during low tides. As depth increases, sound can travel greater distances underwater (Kongsberg Maritime Limited 2015). Since work will occur during low tide when water is not present or very shallow (no more than a foot), noise is expected to attenuate close to the shoreline. Due to the frequency of pile driving (50- 1,000 hz) the soft sediment type often found in mudflats, like those in the action area, and a low water depth of approximately 1 foot or less, noise is not expected to propagate (WSDOT 2020).

Since the project is expected to generate less noise than pile driving, no injury to fish from noise impacts is expected. Noise from the project in the direct vicinity of construction activity could cause fish harassment and would likely to cause fish to avoid the action area. Avoidance of working below the water elevation in the action area when activities take place below the high tide line will lower the chances of noise propagation from areas away from the project.

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Appendix B.2 Detailed Noise Analysis

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What is this document? This document is a detailed analysis on impacts to species and critical habitat protected under the Endangered Species Act affected by the Grays Harbor Detention Facility Emergency Streambank and Shoreline Projection Project in Aberdeen, Washington.

EFFECTS OF THE FEDERAL ACTION ON LISTED SPECIES AND CRITICAL HABITAT

Bull Trout

Known Occurrences in the Action Area

Grays Harbor and the Chehalis River watershed likely supported spawning populations of bull trout in the past based on historical accounts. Today, only foraging individuals from other core areas use these systems and in much lower numbers (Henning et al. 2007). Survey work by USACE for bull trout found them present in Grays Harbor from early March to mid-June (Jeanes et al 2003). These individuals are likely from populations in the Olympic Peninsula watersheds that are known for their extensive and complex migratory behavior (Goetz et al. 2004; Brenkman et al. 2007). The closest natal river for bull trout is the Hoh, Queets, and Quinault Rivers. Individuals from these watersheds may be present in the action area foraging between Spring and early summer (March to mid-June). This overlaps with the start of the in-water work window in the action area.

Effects to Species

For our effects analysis of the project to bull trout, we have used the presence of this species to determine exposure to project impacts. In short, bull trout could be present in the action area in June, which partly overlaps with the start of the in-water work window (June 1 to October 31). During this time, bull trout could experience impacts from construction related activities, hazardous materials and chemical spills, and increased turbidity.

Construction Related Activities

The project includes operation of heavy machinery and construction equipment that may expose individuals to elevated noise levels or physical contact with equipment and construction materials during their construction operations. Exposure to these activities has the potential to displace, injure, or kill individuals.

The offset measures will be taken to avoid and minimize these effects, including the following:

Appendix B.3 Detailed Endangered Species Act Analysis

- Construction activities below the high tide line will occur during low tide conditions to avoid and minimize in-water work.
- Construction activities below the high tide line will occur during the approved in-water work window of June 1 to October 31.

In the rare case that bull trout are present in the wetted channel during in-channel construction (expected to be limited to June), exposure to construction activities would be limited to minor levels of noise pollution and vibrations from placement of rock slope protection that at most would cause individuals to temporarily relocate to areas lateral or downstream of the construction site that have suitable habitat during daytime construction operations. Therefore, effects from construction related activities on listed species are expected to be insignificant.

Hazardous Materials and Chemical Spills

The project includes activities involving hazardous construction materials (e.g., fuels, petroleum-based lubricants) that could spill or fall into the wetted channel during construction. Exposure to these hazardous materials may affect individuals by increasing physiological stress, reducing biodiversity, altering primary and secondary production, interfering with fish passage, and causing direct mortality. For example, construction equipment and heavy machinery will be present in the action area and metals may be deposited through their use and operation (Paul and Meyer 2001). These materials have been shown to alter juvenile salmonid behavior through disruptions to various physiological mechanisms including sensory disruption, endocrine disruption, neurological dysfunction and metabolic disruption (Scott and Sloman 2004). Oil-based products used in combustion engines are known to contain polycyclic aromatic hydrocarbons (PAHs) which have been known to bio-accumulate in other fish taxa such as flatfishes (order Pleuronectiformes) and have carcinogenic, mutagenic and cytotoxic effects (Johnson et al. 2002). The exact toxicological effects of PAHs in juvenile salmonids are not well understood, although studies have shown that increased exposure of salmonids to PAHs reduced immunosuppression, increasing their susceptibility to pathogens (Arkoosh et al. 1998, Arkoosh and Collier 2002). Listed fish could also be affected by a pollution event if contaminants were to settle within the wetted channel and later become disturbed, thereby exposing individuals to the remobilized hazardous materials.

The measures will be taken to avoid and minimize these effects, including the following:

- Do not operate vehicle drive trains in-water.
- Use biodegradable hydraulic fluids in construction equipment.
- Comply with state water quality standards as outlined in the project's Section 401 Water Quality Certificate.

Appendix B.3 Detailed Endangered Species Act Analysis

- Prepare and implement a Stormwater Pollution Prevention Plan.
- Prepare and implement a Spill Prevention and Control Plan.
- Clean construction material and equipment of contaminants such as oils and excessive sediment before bringing to the project site.
- Remove and properly dispose of trash and unauthorized fill in the project footprint, including old fencing, concrete blocks, bricks, asphalt, metal, treated wood, glass, floating debris, and paper.

With these avoidance and minimization measures in place and the in-water work window, exposure to hazardous materials and chemical spills are not expected to occur and therefore the effects to individuals are discountable.

Increased Turbidity

Project construction activities could expose individuals to increased turbidity and suspended sediment plumes. Increased levels of turbidity can affect listed species physiology through such physical mechanisms as gill-occlusion and/or through behavioral changes, such as disruption of feeding activities or avoidance or displacement of fish from preferred habitat (Bilotta and Brazier 2008).

Measures will be taken to avoid and minimize these effects, including the following:

- Conduct construction activities below the high tide line during low tide conditions to avoid and minimize in-water work.
- Conduct construction activities below the high tide line during the approved in-water work window of June 1 to October 31.
- Do not operate vehicle drive trains in-water.
- Do not end dump rock armor onto the shoreline slope or in-water.
- Comply with state water quality standards as outlined in the project's Section 401 Water Quality Certificate.
- Prepare and implement a Stormwater Pollution Prevention Plan.
- Clean construction material and equipment of contaminants such as oils and excessive sediment before bringing to the project site.
- Remove and properly dispose of trash and unauthorized fill in the project footprint, including old fencing, concrete blocks, bricks, asphalt, metal, treated wood, glass, floating debris, and paper.
- Disturb only those properties that are necessary for construction within the project footprint and restore those properties to their original or better condition once work is complete (e.g., remove gravel used to traverse grassed areas, repair and replant disturbed landscape, hydroseed bare areas).

Appendix B.3 Detailed Endangered Species Act Analysis

Exposure to increased turbidity from the project will likely be minor as any increase in turbidity is likely to be brief and localized, attenuating downstream as suspended sediment settles out of the water column, and returning rapidly to baseline conditions. We expect that any listed species exposed to these temporary and localized areas of turbidity generated during construction will respond by temporarily relocating to areas lateral or downstream of the affected area that have suitable habitat during daytime construction operations. Therefore, effects from increased turbidity are expected to be insignificant. Following construction, disturbed areas will be revegetated, therefore, no long-term turbidity-related effects are expected.

Effects to Critical Habitat

The project overlaps with bull trout critical habitat and will impact approximately 300 linear feet of critical habitat along the shoreline by armoring it with Class IV riprap. The project is expected to have short- and long-term effects to some of the primary constituent elements (PCEs) of bull trout critical habitat. These PCEs are listed below in italics, followed by a description of the project's impact.

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

The project will not impact this PCE.

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

When assessing the small footprint of the rock slope protection relative to the adjacent habitat available within the action area, and accounting for the avoidance and minimization measures, the project will not create physical, biological, or water quality impediments between spawning, rearing, overwintering, and freshwater and marine foraging habitats. Construction activities may result in temporary and localized increase in noise, vibration, and turbidity, but the amount of increase is expected to be minimal and not prevent bull trout from swimming around the work during construction.

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

Construction will clear minimal vegetation (i.e. herbaceous species, grasses, and willow). Riparian vegetation contributes to the food base of fish through allochthonous input of terrestrial insects and enhancing the productivity of aquatic macro invertebrates (Pusey and Arthington 2003, Anderson and Sedell 1979). To minimize the effects of riparian vegetation removal, impacted areas will

Appendix B.3 Detailed Endangered Species Act Analysis

be revegetated with riparian native vegetation following construction activities. Riparian vegetation are generally fast-growing and are expected to recovery any lost ecological function of removed non-woody riparian vegetation within 1-2 years following construction. The project will replace natural shoreline below the high tide line with rock armor, which will displace littoral habitat and benthic substrate. Displacement of littoral habitats and benthic substrate by rock slope protection can decrease the food base of fish species by reducing the habitat available for primary producers and benthic macroinvertebrates. To minimize the effects of displacing littoral habitat and benthic substrate on the food base, a mid-slope terrace with estuarine plantings and, above the mid-slope terrace, willow plantings/stakes will be installed within the rock slope protection and anchored LWM will be installed at the toe within the project footprint. The input of terrestrial insects and leaf litter from estuarine plantings, willow plantings, and the installation of LWM, will support the bull trout food base by providing cover and food for aquatic macroinvertebrates and forage fish.

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

The shoreline habitat in the action area contains some armor rock but is largely unarmored and undergoing rapid erosion from natural sources (stream flow, wind, waves, etc.). Construction will simplify the shoreline by replacing a largely natural bank with a rock slope to address shoreline erosion. To offset this impact the project includes the placement of anchored LWM and incorporate plantings along the bank and in the armored slope.

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

The project is not expected to alter water temperatures in the Chehalis River from baseline conditions. However, at a site-specific scale where the shoreline is armored with stone, local water temperatures are expected to increase. Modified beaches have significantly higher daily mean light intensity, air temperature, and substrate temperature, and significantly lower daily mean relative humidity (Rice 2006). To offset this impact the project includes the placement of anchored LWM and incorporate plantings along the bank and in the armored slope that will provide shade.

Appendix B.3 Detailed Endangered Species Act Analysis

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

The project will not impact this PCE.

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

The project will not impact this PCE.

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

Construction activities may result in temporary and localized increase in turbidity, but the amount of increase is expected to be minimal and not prevent bull trout from swimming around the work during construction. Furthermore, BMPs will be implemented during construction that address water quality concerns (runoff, water quality monitoring, contaminant discharge). Construction activities will not affect the quantity of water available or impede its flow.

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

Nonnative predatory fish compete, and in some cases prey on, bull trout (USFWS 2010; Guy et al. 2011). Three nonnative fish predators are present in the Chehalis River basin: small mouth bass, largemouth bass, and rock bass (Winkowski 2023). These species, while freshwater, could occur in the project footprint. Their presence could fluctuate depending on tides, sea level rise, and other conditions that change salinity at the site. Nevertheless, the project will create a rockier shoreline that may attract nonnative predators such as smallmouth and rock bass.

Southern DPS North American Green Sturgeon

Known Occurrences in the Action Area

Subadult green sturgeon from both nDPS and sDPS populations spend substantial time in marine and estuarine waters. In Washington, sDPS green sturgeon can be found in Willapa Bay, Grays Harbor, and the Columbia River estuary (Moser et al 2016, Schreier

Appendix B.3 Detailed Endangered Species Act Analysis

et al 2016). During summer and early fall (i.e. June to mid-October) subadult and adult green sturgeon congregate in coastal bays and estuaries, with particularly large concentrations in the Columbia River estuary, Willapa Bay, and Grays Harbor (Lindley et al. 2011). This corresponds to the in-water work window (June 1 to October 31) for the project. Therefore, subadult and adult green sturgeon could occur in the action area during construction.

Effects to the Species

For our effects analysis of the project to sDPS green sturgeon, we have used the presence of this species to determine exposure to project impacts. In short, sDPS green sturgeon could be present in the action area during construction. During this time, sDPS green sturgeon experience impacts from construction related activities, hazardous materials and chemical spills, and increased turbidity.

The effects of construction related activities, hazardous materials and chemical spills, and increased turbidity to sDPS green sturgeon are consistent with the effects to bull trout discussed above. We therefore incorporate those effects by reference and no further effects are anticipated.

Effects to Critical Habitat

The project overlaps with sDPS green sturgeon critical habitat. The project is expected to have short- and long-term effects on some of the six PCEs of sDPS green sturgeon critical habitat in estuarine areas. These PCEs are listed below in italics, followed by a description of the project's impact.

PCE #1. Food resources. Abundant prey items within estuarine habitats and substrates for juvenile, subadult, and adult life stages. Prey species for juvenile, subadult, and adult green sturgeon within bays and estuaries primarily consist of benthic invertebrates and fishes, including crangonid shrimp, burrowing thalassinidean shrimp (particularly the burrowing ghost shrimp), amphipods, isopods, clams, annelid worms, crabs, sand lances, and anchovies. These prey species are critical for the rearing, foraging, growth, and development of juvenile, subadult, and adult green sturgeon within the bays and estuaries.

The effects of the project to the food resources PCE of sDPS green sturgeon designated critical habitat are consistent with the effects to the food base PCE of bull trout designated critical discussed above in PCE #3. We therefore incorporate those effects by reference and no further effects are anticipated.

PCE #2. Water flow. Within bays and estuaries adjacent to the Sacramento River (i.e., the Sacramento-San Joaquin Delta and the Suisun, San Pablo, and San Francisco bays), sufficient flow into the bay and estuary to allow adults to successfully orient to the

Appendix B.3 Detailed Endangered Species Act Analysis

incoming flow and migrate upstream to spawning grounds. Sufficient flows are needed to attract adult green sturgeon to the Sacramento River to initiate the upstream spawning migration.

The project will not impact this PCE.

PCE #3. Water quality. Water quality, including temperature, salinity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages. Suitable water temperatures for juvenile green sturgeon should be below 24 °C. At temperatures above 24 °C, juvenile green sturgeon exhibit decreased swimming performance and increased cellular stress. Suitable salinities range from brackish water (10 ppt) to salt water (33 ppt). Juveniles transitioning from brackish to salt water can tolerate prolonged exposure to salt water salinities, but may exhibit decreased growth and activity levels and a restricted temperature tolerance range, whereas subadults and adults tolerate a wide range of salinities. Subadult and adult green sturgeon occupy a wide range of dissolved oxygen levels, but may need a minimum dissolved oxygen level of at least 6.54 mg O₂ /l. As described above, adequate levels of dissolved oxygen are also required to support oxygen consumption by juveniles. Suitable water quality also includes water with acceptably low levels of contaminants (e.g., pesticides, PAHs, elevated levels of heavy metals) that may disrupt the normal development of juvenile life stages, or the growth, survival, or reproduction of subadult or adult stages.

The effects of the project to water quality in consistent with the effects discussed in PCE #5 and PCE #8 for bull trout designated critical habitat. We therefore incorporate those effects by reference and no further effects are anticipated. Furthermore, dissolved oxygen in the area is generally considered good by Ecology but low dissolved oxygen levels in 2013 were detected that did not meet state standards (Ecology 2025). Disruption of sediment can cause changes in the sediment oxygen demand. When sediment is disturbed, the oxygen loss rate can increase exponentially (Coenen et al 2019). Since changes in turbidity are expected to be localized to the action area, impacts from changes in dissolved oxygen will be insignificant. Salinity will not change from ambient conditions because material placement cannot change these characteristics of the surrounding estuarine water. All material used for the project will be inspected to ensure it is clean and does not contain pollutants. Additionally, construction equipment will be inspected and cleaned off site to limit the chance of petroleum or oil discharge into the water. As such, a change in contaminants in the water column is not expected.

PCE #4. Migratory corridor. A migratory pathway necessary for the safe and timely passage of Southern DPS fish within estuarine habitats and between estuarine and

Appendix B.3 Detailed Endangered Species Act Analysis

riverine or marine habitats. We define safe and timely passage to mean that human-induced impediments, either physical, chemical, or biological, do not alter the migratory behavior of the fish such that its survival or the overall viability of the species is compromised (e.g., an impediment that compromises the ability of fish to reach thermal refugia by the time they enter a particular life stage). Within the bays and estuaries adjacent to the Sacramento River, unimpeded passage is needed for juvenile green sturgeon to migrate from the river to the bays and estuaries and eventually out into the ocean. Passage within the bays and the Delta is also critical for adults and subadults for feeding and summer holding, as well as to access the Sacramento River for their upstream spawning migrations and to make their outmigration back into the ocean. Within bays and estuaries outside of the Delta and the Suisun, San Pablo, and San Francisco bays, unimpeded passage is necessary for adult and subadult green sturgeon to access feeding areas, holding areas, and thermal refugia, and to ensure passage back out into the ocean.

When assessing the small footprint of the rock slope protection relative to the adjacent habitat available within the action area, and accounting for the avoidance and minimization measures, the project will not create physical, chemical, or biological impediments between feeding areas, holding areas, thermal refugia, and passage back out into the ocean. Construction activities may result in temporary and localized increase in noise, vibration, and turbidity, but the amount of increase is expected to be minimal and not prevent bull trout from swimming around the work during construction.

PCE #5. Water depth. A diversity of depths necessary for shelter, foraging, and migration of juvenile, subadult, and adult life stages. Subadult and adult green sturgeon occupy a diversity of depths within bays and estuaries for feeding and migration. Tagged adults and subadults within the San Francisco Bay estuary primarily occupied waters over shallow depths of less than 10 m, either swimming near the surface or foraging along the bottom (Kelly et al. 2007). In a study of juvenile green sturgeon in the Delta, relatively large numbers of juveniles were captured primarily in shallow waters from 1-3 meters deep, indicating juveniles may require even shallower depths for rearing and foraging (Radtko 1966). Thus, a diversity of depths is important to support different life stages and habitat uses for green sturgeon within estuarine areas.

There is a wide variety of depths across Grays Harbor and the Chehalis River. While depths along the project footprint may change from construction of the shoreline armoring, there will be no significant change across the basin.

PCE #6. Sediment quality. Sediment quality (i.e., chemical characteristics) necessary for normal behavior, growth, and viability of all life stages. This includes sediments free of elevated levels of contaminants (e.g., selenium, PAHs, and

Appendix B.3 Detailed Endangered Species Act Analysis

pesticides) that can cause adverse effects on all life stages of green sturgeon (see description of “Sediment quality” for riverine habitats above).

The project will not impact sediment quality. Construction equipment will be inspected and cleaned off site to limit the chance of petroleum or oil discharge into the water and sediment. As such, a change in contaminants in the sediment is not expected.

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Allyson Brooks Ph.D., Director
State Historic Preservation Officer

May 19, 2025

Vanessa Pepi
Environmental Resources Section
Corps of Engineers – Seattle District
PO Box 3755
Seattle, Washington 98124-3755

Re: FY25 Gray Harbor Juvenile Detention Center Streambank
Protection Project
Log No.: 2024-12-09069-COE-S

Dear Vanessa Pepi:

Thank you for contacting our department. We have reviewed the materials you provided for the Area of Potential Effect (APE) for the proposed *FY25 Gray Harbor Juvenile Detention Center Streambank Protection Project* along the eastern edge of the city of Aberdeen, just upstream of where Elliott Slough enters the Chehalis River, Grays Harbor County, Washington

We concur with your determination of the Area of Potential Effect (APE) as described and presented in your figures and text.

We look forward to further consultation as you consult with the concerned tribal governments, the results of your identification efforts, and your determination of effect.

We would also appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4).

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised. Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', with a long horizontal flourish extending to the right.

Robert G. Whitlam, Ph.D.
State Archaeologist
(360) 890-2615
email: rob.whitlam@dahp.wa.gov





Allyson Brooks Ph.D., Director
State Historic Preservation Officer

July 17, 2025

Vanessa E. Pepi
Seattle District
Corps of Engineers
PO Box 3755
Seattle, Washington 98124

ReFY25 Gray Harbor Juvenile Detention Center Streambank
Protection Project
Log No.: 2024-12-09069-COE-S

Dear Vanessa E. Pepi:

Thank you for contacting our department. We have reviewed the information and professional cultural resources review you provided for the proposed *FY25 Gray Harbor Juvenile Detention Center Streambank Protection Project* at the Grays Harbor County Juvenile Detention Facility, Grays Harbor County, Washington.

We concur with your Determination of No Historic Properties Affected with the stipulation for an unanticipated find plan.

We would appreciate receiving any correspondence or comments from concerned tribes or other parties that you receive as you consult under the requirements of 36CFR800.4(a)(4). Should archaeological or historic materials be encountered during project activities, work in the immediate vicinity must stop, the area secured, and the concerned tribe's cultural staff and cultural committee and this department notified.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in compliance with the Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations 36CFR800.4. Should additional information become available, our assessment may be revised, including information regarding historic properties that have not yet been identified. Thank you for the opportunity to comment and a copy of these comments should be included in subsequent environmental documents.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Whitlam', followed by a horizontal line.

Robert G. Whitlam, Ph.D.
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