



**NORTHWEST ENVIRONMENTAL DEFENSE CENTER**  
**10015 S.W. Terwilliger Blvd., Portland, Oregon 97219**  
Phone: (503) 768-6673 Fax: (503) 768-6671  
[www.nedc.org](http://www.nedc.org)

June 24, 2013

SUBMITTED VIA EMAIL TO: [dominic.p.yballe@usace.army.mil](mailto:dominic.p.yballe@usace.army.mil)

U.S. Army Corps of Engineers, Portland District  
ATTN: Dominic Yballe  
P.O. Box 2946  
Portland, OR 97208-2946

**Re: Comments on the Interstate 5 Columbia River Crossing Project Addendum to Army Corps of Engineers Section 404 Permit Application, NWP-2008-414**

Dear Mr. Yballe:

The Northwest Environmental Defense Center (“NEDC”) submits the following comments on the Interstate 5 Columbia River Crossing (“Project”) addendum to the application submitted by the Oregon Department of Transportation and Washington Department of Transportation (collectively, “CRC”) for a Clean Water Act (“CWA”) Section 404 dredge and fill permit from the U.S. Army Corps of Engineers (“Corps”), NWP-2008-414 (“addendum”). NEDC has and continues to seek to ensure that all state and federal environmental laws and regulations are complied with throughout the development and planning of this Project. Given NEDC’s mission to protect the environment and natural resources of the Pacific Northwest, we are concerned about the environmental impacts likely to result from the construction of the Project.

Due to numerous failures on the part of the CRC, NEDC requests that the Corps deny the Section 404 permit. First, NEDC is concerned that the CRC’s piecemeal approach to “refining” the bridge design will prevent meaningful public comment. The Corps should recognize that the CRC’s latest iteration of the bridge design is a new proposal, and provide for a full public notice and comment period on the Project as a whole. Second, the addendum lacks essential information and fails to provide the information identified by NEDC as missing in the original Joint Permit Application (“JPA”), submitted by the CRC in January of 2013. Finally, the Corps should deny the permit because the CRC’s Project is inconsistent with the federal requirements under Section 404 of the CWA and the project is likely to negatively impact the public interest. At the very least, the Corps should instruct the CRC to submit additional information to meet the Corps’ own regulations requiring the applicant provide sufficient information for meaningful public comment and for the Corps to make necessary permit determinations.

NEDC submitted comments on April 15, 2013 that identified numerous failures in the CRC’s application for a Section 404 dredge and fill permit. With this second round of review

and comments, even though limited in scope, the Corps has the opportunity to correct the deficiencies of the CRC's original JPA. We hope that the Corps recognizes the magnitude of this multi-year, multi-billion dollar Project and applies the appropriate level of scrutiny to the CRC's information and environmental analysis.

## **Discussion**

Section 404 of the CWA authorizes the Corps to issue permits for the discharge of dredged or fill material into navigable waters. 33 U.S.C. § 1344. Such permits must be compliant with regulations promulgated by the Environmental Protection Agency ("EPA"). 40 C.F.R. § 230 ("404(b)(1) Guidelines" or "Guidelines"). Given the lack of essential information, and the fact that the addendum is inconsistent with the Guidelines and not in the public interest, the Corps should deny the CRC's application for a Section 404 permit.

### **I. Due to new studies, new information, and the growing complexity of the Project, the Corps should provide a new public comment period to analyze the entire Project.**

The addendum states that this amendment is sought "as a result of further refinement in design," but that other elements of the original permit request remain unchanged from the JPA. *See* Addendum, page 1. Since the CRC submitted its application for a Section 404 permit in January of 2013, however, it has completed numerous studies and provided new information to the United States Coast Guard ("USCG") that was not considered by Corps nor available for public review during the comment period for the JPA.

In fact, the CRC has been "refining" and changing the bridge design, and presenting new information, continuously. For example, in 2011 the Federal Highway Administration and Federal Transit Administration issued a Final Environmental Impact Statement ("FEIS") and Record of Decision ("ROD") that identified the locally preferred alternative ("LPA") as the replacement for the Interstate 5 Bridge. The LPA was designed to be 95 feet above zero Columbia River Datum ("CRD") ("95 foot bridge"). In November of 2012, the agencies published an internal re-evaluation to support a design that changed the bridge to 116 feet above zero CRD ("116 foot bridge"). *See* Columbia River Bridge Vertical Clearance NEPA Re-evaluation, December 2012 ("Re-evaluation"). The amount of vertical clearance for a proposed new bridge over a major interstate waterway is a basic and essential element of that proposal. Increasing the amount of vertical clearance by 21 feet (more than 20%) is not a design "refinement." The CRC is now proposing a bridge that is significantly different from the LPA addressed in the FEIS and approved by the 2011 ROD.

In January of 2013, the CRC submitted its JPA to the Department of State Lands ("DSL") and the Corps for various filling, excavation, in-water structures, and maintenance or repair of existing structures related to the Project. NEDC commented on the permit application in April of 2013, highlighting the major reasons why the Corps should deny the CRC's request. NEDC noted that the CRC failed to provide information necessary for the Corps to make a compliance determination, failed to seriously consider a reasonable range of alternatives, failed to clearly identify or mitigate likely adverse impacts, including failing to analyze or mitigate the negative impacts due to extended in-water work windows, and failed to include measures that would protect and preserve critically imperiled salmon species.

Since that time the CRC has conducted additional studies about the probable impacts of the Project. The CRC submitted additional new information to the USCG regarding its application for a General Bridge Permit, after the USCG initially denied that application as incomplete. *See* March 8, 2013 Letter from K. A. Taylor to Paula Hammond, Washington State Department of Transportation, and Matt Garrett, Oregon Department of Transportation; April 5, 2013 Transmittal from Heather Wills to Randall Overton, USCG Bridge Administrator; April 18, 2013 Letter from Matthew Garrett and Lynn Peterson to Rear Admiral Keith A. Taylor, USCG. This new information included reports on economics, necessary changes to the turning basin and navigational channels, marine facilities likely to be impacted by the Project, cultural assessments, and documents supporting the CRC's request to reinitiate consultation with the National Marine Fisheries Service ("NOAA Fisheries") under the Endangered Species Act ("ESA").

Although the CRC now seeks an addendum to its JPA, the addendum is expressly cabined to cover only the modified bridge design for the North Portland Harbor portion of the project. The addendum thereby ignores a multitude of new reports and information developed since the CRC submitted the JPA to the Corps, all of which are directly relevant to the Corps' analysis of whether to issue a Section 404 permit. Also not included in the addendum, as noted below, is the seismic calculations that apparently were the reason for changing the design of the bridge over North Portland Harbor.

In addition, the Corps' failure to provide a full comment period regarding the entirety of the CRC's proposal as it currently exists, instead of an abbreviated public comment period on a limited portion of the project, subverts the purpose of a public notice and precludes meaningful public comment. One of the most obvious reasons to provide a full comment period is the forthcoming Biological Opinion ("BiOp"), which will describe impacts to listed species and designated critical habitat at the Project site. *See* May 13, 2013 Letter from Michael P. Tehan, NOAA Fisheries, to John McAvoy, Federal Highway Administration, and R.F. Krochlis, Federal Transit Administration. NOAA Fisheries has explained that the BiOp will be done no later than August of 2013. *Id.* Thus the CRC has had knowledge of a forthcoming BiOp since May of this year. Rather than include that information in its addendum to the JPA, however, the CRC has chosen to ignore the forthcoming BiOp.

The information in the BiOp is important because it is likely to inform this Section 404 permit application. In an April, 2013 letter, the CRC cites two factors as triggering the re-initiation of formal consultation under Section 7(a)(2) of the ESA: (1) modifications to the original action that are likely to affect listed species in a manner not previously considered and (2) new designation of critical habitat. *See* April 4, 2013 Letter from John McAvoy, Federal Highway Administration, and R.F. Krochalis, Federal Transit Administration, to Kim Kratz, NOAA Fisheries. Of particular concern is the increased amount of in-water work during extended in-water work windows, much of which is the subject of this permit. The CRC's re-initiation of ESA consultation states that "[r]ather than a concentrated in-water construction effort spanning approximately *five* years as proposed in the 2010 [biological assessment ("BA")], sequencing will require approximately *nine* years of in-water work, with impact pile driving occurring in *seven* of those years." *See* Columbia River Crossing, Endangered Species Act Reinitiation (April 2013), page 2-3 (emphasis added). The CRC admits that there will be more

in-water work than previously planned. Because the information in the BiOp is likely to inform this permit application, and the BiOp is currently being drafted by NOAA Fisheries, the Corps should provide a new comment period to review the entirety of the CRC's Project and any impacts identified in the BiOp.

The Corps should provide a second, full comment period to allow the public to assess the entirety of the CRC's application. The CRC has repeatedly attempted to evade the public process by parsing the Project and making so-called refinements, to the extent that the current Project no longer reflects the Project approved in the ROD. The massive scope, overwhelming complexity, and ongoing controversy surrounding the Project support the need for greater public scrutiny at all stages of the authorization process. The Corps has not, however, provided for a comprehensive analysis of the impacts of the entire project. Because of the numerous changes to the project design and the fact that new information resulting from additional studies drastically converted the proposed Project, the Corps should reissue the entire permit application for a full public comment period.

## **II. The CRC's amended application lacks essential information.**

Not only does the addendum fail to provide a complete picture of the Project as a whole and fail to account for critical information that has arisen since the submission of the JPA, the addendum also lacks sufficient information for the Corps to make a permit determination. An application for a Section 404 permit must contain, *inter alia*, "a complete description of the proposed activity including necessary drawings, sketches, or plans sufficient for public notice," a description of "the location, purpose and need for the proposed activity" and "scheduling of the activity." 33 C.F.R. § 325.1(d). The Corps' public notice must also contain information sufficient to allow the public to make a meaningful comment. *See* 33 C.F.R. § 325.3(a) (noting that a public notice must "include sufficient information to give a clear understanding of the nature and magnitude of the activity to generate meaningful comment"). In addition to the information NEDC identified as missing from the JPA in the first round of comments, the CRC again has again omitted information that is essential for the Corps to demonstrate the Project is compliant with the CWA or the Guidelines and to allow for meaningful public comment.

In particular, the CRC's addendum omits the forthcoming BiOp, the new calculations regarding seismic standards that triggered the need for this addendum, the specific in-water work windows for installing the additional cofferdams identified in the addendum, and information necessary to determine the scope of adverse impacts on water quality. Because the CRC has not provided sufficient information to demonstrate compliance with the Guidelines, the Corps should deny the permit addendum.

First and foremost, the Corps should not be considering amendments until the new BiOp has been completed. As explained above, NOAA Fisheries expects to complete the BiOp in August of this year. Since the BiOp will identify the likely impacts of the Project on listed species and designated critical habitat, from the perspective of the expert Federal agency charged with ensuring the protection of those species, it will contain information directly relevant to the Corps' analysis of the proposed dredge and fill activities. *See* 40 C.F.R. § 230.10(b)(3) (prohibiting the discharge of dredged or fill material if it "jeopardizes the continued existence of species listed as endangered or threatened . . . or results in likelihood of the destruction or

adverse modification of a habitat” designated as critical). The BiOp is essential information that should be included in the Corps’ analysis and should be available for public review and comment. *See* 33 C.F.R. § 325.1(a)(11) (requiring each public notice to include “[a] statement of the district engineer’s current knowledge on endangered species”).

According to the Federal Highway Administration’s April 4, 2013 letter requesting to reinstate consultation under the ESA, this new BiOp is necessary because of changes to the project that will cause impacts to listed species and because of newly designated critical habitat. Thus the BiOp resulting from the reinstated consultation process will differ materially from the previously issued BiOp. Because the analysis in the BiOp is essential both for the Corps to make its determinations under the Guidelines and for the public to understand the nature and magnitude of the CRC’s Project, the BiOp should have been included in this public notice.

Second, between the CRC’s submittal of its JPA in January of 2013 and the submission of this addendum in May of 2013, the addendum explains that the “project team conducted additional calculations to ensure proposed structures would meet seismic standards.” *See* Addendum, page 1. Nowhere in the addendum does the CRC explain what those calculations are or why they necessitated a change in the North Portland Harbor bridge design, except for the vague statement that the changes were necessary to meet seismic standards. Without knowledge of what those seismic standards are, or the specifics from the evaluation of the original bridge design, the public has no idea of the actual need for this addendum. *See* 33 C.F.R. § 325.1(a)(5) (requiring each public notice to include “[a] brief description of the proposed activity, its purpose and intended use, so as to provide sufficient information concerning the nature of the activity to generate meaningful comments”). The Corps’ public notice for the addendum violates the Corps’ own regulations by failing to provide sufficient detail for the Corps to render the required determinations and decisions, and by failing to provide sufficient information for the public to make meaningful comment.

Finally, the addendum lacks essential information regarding impacts to water quality and aquatic life. The addendum fails to provide information regarding the scheduling of the in-water installation of the proposed cofferdams. *See* 33 C.F.R. § 325(a)(8) (requiring the Corps’ public notice include “[a] list of other government authorizations obtained or requested by the applicant, including required certifications related to water quality”). *See also id.* § 325(a)(13) (requiring a public notice include “[a]ny other available information which may assist interested parties in evaluating the likely impact of the proposed activity, if any, on factors affecting the public interest”). The JPA, at least, outlined the expected timing of various activities, including in-water work windows for installing cofferdams on the Columbia River bridges. *See* JPA, page 10. This section notes that the installation and removal of cofferdams for the construction of the Columbia River bridges would take place year-round. The addendum, however, states only that the cofferdams will be required for about 30 to 36 days. *See* Addendum, pages 1 and 3. It does not specify whether the cofferdams will be used only within designated in-water work windows, extended in-water work windows, or year-round.

Without this essential information about when the in-water work windows are expected to occur, whether the windows will need to be extended beyond existing guidelines, and which agencies have approved those windows, the public is precluded from making a meaningful comment. Further, without the details for *when* the CRC plans to install the additional

cofferdams proposed in this addendum, the Corps cannot make a determination as to the adverse impacts of the proposed Project or the mitigation necessary to offset such impacts as required by the Guidelines, much less weigh the benefits of the proposed action against detriments to the public interest.

NEDC noted in its first round of comments that the CRC failed to provide information necessary for the Corps to make the determinations required under the Guidelines regarding water quality. Here, again, the CRC's addendum lacks essential information regarding impacts to water quality. For example, the addendum states that the drilled shafts will be constructed within drilled shaft casing, and material excavated "will be disposed of in accordance with relevant permits." *See* Addendum, page 2. The CRC does not explain how or where the dredged material will be disposed. It also fails to outline the relevant permit requirements, or how those requirements might avoid or minimize adverse impacts from the removal activities.

Similarly, the addendum explains that water from within the cofferdams will be pumped to a holding tank and then "disposed of in accordance with permit requirements." *See* Addendum, page 2. Again, the CRC does not outline the relevant permit requirements or how those requirements might avoid or minimize adverse impacts to water quality. The CRC plans to pour a concrete seal around the drilled shaft casing within each cofferdam at the mudline to prevent water from entering. The top of the seal will be flush with the mudline or within one foot below existing mudline. The CRC fails to recognize or account for potential spills involved with the sealing.

The CRC also fails to provide information regarding adverse impacts to salmon. For example, the addendum states that the CRC will conduct fish salvage during and after isolation. Yet it does not explain what "fish salvage" measures will be used. The addendum states that "the project will perform measures to remove fish from the work area during and after the installation of casings/cofferdams." *See* Addendum, page 6. The CRC does not provide information about the specific measures it plans to use, does not identify who will be responsible for monitoring and ensuring fish are protected, and does not provide a schedule for conducting such monitoring. Without this information, NEDC is left to believe that the CRC has no plans and thus the permit application is incomplete.

At bottom, the lack of information prevents meaningful public comment. The lack of critical information also precludes the Corps from making the determinations under the Guidelines necessary before issuing a Section 404 permit. The Corps must have a basis for its determinations under the Guidelines. *See* 40 C.F.R. § 230.5 (requiring the Corps to, *inter alia*, review factual determinations in § 230.11 "to determine whether the information in the project file is sufficient to provide the documentation required by § 230.11" for making factual determinations in § 230.11 and findings of compliance in § 230.12). The Corps should either deny the CRC's addendum as incomplete or require the CRC to submit the information necessary to make the permit determinations required by the Guidelines and the Corps' own regulations.

/// /// ///

**III. The Corps should deny the CRC's addendum to its application for a Section 404 permit because the amended Project design is inconsistent with the Guidelines and contrary to the public interest.**

Any permit that does not conform to the Guidelines is invalid. *Bersani v. Robichaud*, 850 F.2d 36, 39-40 (2d Cir. 1988), *cert denied*, 489 U.S. 1089 (1989). Because, as explained in NEDC's first round of comments, the Project is inconsistent with the Guidelines, the Corps should deny the permit. This addendum only exacerbates the deficiencies of the CRC's application. Specifically, the addendum fails to consider alternatives to the proposed changes in the North Portland Harbor bridge design, ignores likely significant adverse impacts and fails to provide commensurate mitigation. The addendum is also contrary to the public interest. If the Corps decides to issue a Section 404 permit despite these failures, it should include permit conditions that limit the duration and mitigate probable adverse impacts on the public interest.

**A. The CRC's addendum fails to substantiate the need and fails to consider reasonable alternatives.**

The application must include a statement of the purpose and need for the proposed activity, 33 C.F.R. § 325.1(d), yet Corps need not accept the applicant's statement of purpose and need. The Corps has an independent obligation to define the project purpose and need "from both the applicant's and the public's perspective." 33 C.F.R. Part 325, App. B, Section 9(b)(4). The statement of purpose and need then forms the basis for the Corps' consideration of a reasonable range of alternatives. *See id.*, App. B, Section 9(b)(5)(a) (stating that "[r]easonable alternatives must be those that are feasible and such feasibility must focus on the accomplishment of the underlying purpose and need"). Here, the addendum explains this change in the North Portland Harbor bridge design was necessary "to ensure the proposed structures would meet seismic standards."

The permit application must also include an analysis of a reasonable range of alternatives. 40 C.F.R. § 230.10(a) (prohibiting a discharge "if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem"); 33 C.F.R. Part 325, App. B, Section 9(b)(5)(a) (explaining that "[o]nly reasonable alternatives need be considered in detail" and "[t]he alternatives analysis should be thorough enough to use for both the public interest review and the 404(b)(1) guidelines"). The alternatives analysis is essential because although the CRC may be given deference for the "need" of improving the structural integrity and seismic stability of the bridge, the Corps has a duty to ensure that the CRC has presented sufficient information on the available means for meeting that need.

In this case, the CRC failed to consider any alternative to the design proposed in the addendum. Contrary to the requirements in the Guidelines and the Corps' own regulations, the CRC only considered different forms of construction. The addendum states that to install the drilled shafts at each pier the CRC will need to use casings or cofferdams seated into the sediment with a vibratory driver. Yet the CRC offers no alternative to this installation process or an evaluation of those alternatives. The CRC's failure to identify any alternatives, much less a reasonable range of alternatives, is in blatant contravention of the Guidelines and the Corps' own regulations. The Corps should either deny the CRC's permit application, or require additional information under 33 C.F.R. § 325.1(d)(1) and (e) to complete the required alternatives analysis.

**B. The CRC's addendum fails to identify significant adverse impacts that will result from the Project.**

An overriding policy of the Guidelines is that “dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated that such a discharge will not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern.” 40 C.F.R. § 230.1(c). This policy has been articulated as requiring the Corps to identify the least environmentally damaging practicable alternative. Basically, if destruction of waters of the United States may reasonably be avoided, the Corps' regulations require that it be avoided. To meet this requirement, the permit application must identify the adverse impacts that will result from the project. The CRC's addendum is inconsistent with this requirement because it fails to identify the adverse impacts to water quality and fish populations that will result from the Project, as explained below. As a result, the Corps should either deny the CRC's permit application or in the very least request additional information from the CRC to allow the Corps to complete the necessary analysis under the Guidelines.

The activities proposed in this addendum will undoubtedly have significant short and long term adverse impacts on the North Portland Harbor and the surrounding region. The addendum states that the modified bridge design will require about twice the number of shafts at each pier to maintain stability, resulting in, *inter alia*, more hydroacoustic impacts, a greater permanent footprint in the bed of the river, a higher project cost, reduced width available for watercraft (with safety implications), an increased volume of fill in the floodplain, restricted hydraulic flows, and a rise in water surface elevation. A major difference in the amended design is that the CRC intends to drill for the shafts below the mudline, in contrast to above the ordinary high watermark as originally planned. As a result, the CRC will need to use additional cofferdams and concrete seals to complete the work below ordinary high watermark. This additional in-water work will result in additional direct, adverse impacts. The modified design will negatively and permanently impact water quality of the Columbia River and the vitality of salmon populations that depend on that water quality.

**1. The Corps should deny the permit because the discharge is likely to cause or contribute to violations of water quality standards and it is likely to cause or contribute to significant degradation of waters of the United States.**

The CRC fails to identify significant adverse impacts to water quality that are likely to result from the proposed design changes. The addendum notes that the use of over-sized casings or cofferdams will cause impacts to water quality from turbidity, specifically from the vibratory drilling methods and removal of cofferdams. *See* Addendum, page 6. Yet the CRC fails to mention the increased turbidity and sedimentation that is likely to result when the first 6 feet of sediment is removed to create a stable foundation for concrete seal. The addendum also explains that any elevated turbidity resulting from the installation of cofferdams is expected to extend only 25 feet from the cofferdams. *Id.* This analysis, however, fails to account for the cumulative adverse effect on water quality. The addendum notes that as many as 16 of the 36 over-sized cofferdams will be placed in the water at any one time. *Id.*, page 2. The CRC's addendum fails



to identify the significant adverse impact on water quality that is likely to result from the installation of multiple cofferdams at one time.

When viewed in the cumulative or as a combined action, the proposed cofferdam installation is likely to cause significant direct adverse impacts in a localized region. Pursuant to the Guidelines, which prohibit a discharge if it “[c]auses or contributes . . . to violations of any applicable State water quality standard” or if it “will cause or contribute to significant degradation of the waters of the United States,” 40 C.F.R. § 230.10(b), (c), the Corps may not issue a Section 404 permit to the CRC.

The CRC also fails to identify wetlands impacted and the addendum lacks a compensatory wetland mitigation plan. In determining whether a discharge will “cause or contribute to significant degradation of the waters of the United States,” the Corps must consider “[s]ignificantly adverse effects of the discharge of pollutants on . . . the capacity of a wetland to assimilate nutrients, purify water, or reduce wave energy.” 40 C.F.R. § 230.10(c)(3). The CRC’s website, [www.columbia.rivercrossing.org](http://www.columbia.rivercrossing.org), provides a link to a Wetland Delineation Report and DSL Concurrence Letter. *See* Columbia River Crossing Library/Maps, Oregon Removal-Fill Joint Permit Application – Attachment H, Wetland Delineation Report and DSL Concurrence Letter (2008). DSL’s concurrence letter states that “[w]ithin the study area, 4 wetlands, totaling 2.61 acres . . . were identified.” The addendum, however, states that “no jurisdictional wetlands will be impacted within Oregon during construction or operation of the project.” *See* Addendum, page 4. The information in the addendum contradicts the conclusions of the CRC and DSL in the wetland delineation report.

The determination of whether wetlands will be impacted is critical to the Corps’ analysis under the Guidelines, as it dictates whether the permit applicant faces a presumption that alternatives will lesser environmental impacts exist. *See* 40 C.F.R. § 230.10(a)(3). Wetlands are a special aquatic site. *Id.* § 230.41. The Guidelines explain that “the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by these Guidelines.” 40 C.F.R. § 230.1(d). Although the CRC is water dependent insofar as its purpose is to provide transportation over the Columbia River, the CRC does not require proximity to or siting within the wetlands that appear to be in the project area. Rather, any impact to these wetlands is likely a side effect of the CRC’s siting. The lack of clarity regarding the location of and impacts to wetlands prevents the Corps from completing the analysis required by the Guidelines. Because the CRC’s addendum fails to identify impacts to waters of the state it is inconsistent with the Guidelines and the Corps should deny the permit.

**2. The Corps should deny the permit because the CRC’s discharges will jeopardize the continued existence of listed species.**

The CRC’s addendum not only fails to identify adverse impacts to water quality and wetlands, but it also fails to adequately identify adverse impacts to aquatic life and habitat. To issue this permit, the Corps must determine the Project will not “[j]eopardize[] the continued existence of species listed as endangered or threatened under the Endangered Species Act.” 40 C.F.R. § 230.10(b)(3). The modified bridge design described in the addendum will have direct adverse impacts on salmon and will negatively impact salmon habitat. The increased turbidity,

described above, will also likely indirectly impact salmon by causing fish avoidance in work area, reducing fish foraging success, reducing eulachon spawning, and causing physiological stress to fish. Because the proposed discharge will jeopardize the continued existence of listed species, the Corps should deny the permit.

The CRC's addendum identifies some direct and indirect impacts to fish that will result from the proposed Project. For example, the addendum notes the Project will cause a temporary loss of shallow-water habitat, direct effects to fish from work area isolation and fish salvage (including adverse effects from the noise and visual disturbance during the installation of cofferdams), fish avoidance during construction of cofferdams, and a risk that fish will be caught in the cofferdams. *See* Addendum, page 6. The CRC explains the installation of the cofferdams through vibratory drilling "is likely to generate low level noise and visual disturbance." *Id.* Such vibratory drilling, however, is likely to produce noise in excess of the threshold at which sound may cause behavioral interference with fish. *See* Anthony Hawkins, et al., *Assessing the impact of pile driving upon fish*, Proceedings of the 2005 International Conference on Ecology and Transportation (2006) (Abstract) (attached hereto as Attachment 1) (explaining that even with bubble curtains to minimize the impacts, the level of sound from vibratory pile driving was well above the hearing thresholds of fish and there was a risk that upstream migration may have been delayed or prevented with consequent effects on spawning populations).

The addendum also notes that the proposed Project will have a net areal increase of permanent structure below the ordinary high water mark and increase the volume of fill material placed into the river. *Id.*, page 7. Yet the CRC fails to identify this permanent loss of fish habitat as a direct adverse impact on salmon. The permanent new structures are also likely to modify salmon migration patterns. The addendum notes that habitat will not be accessible while the cofferdams are installed, which is for about 30-36 days per cofferdam. This means that salmon will be unable to reach up-river spawning habitat, resulting in negative impacts on the reproductive success of the fish and negative impacts on the salmon population as a whole.

Finally, the CRC points to "measures to remove fish from the work area during and after the installation of casings/cofferdams" as a way to minimize impacts to fish, yet this measure itself is a direct impact to the fish. *See* Addendum, page 6. As noted above, the addendum does not describe the measures it will use to remove fish, but those measures are likely to result in stress and disorientation to the fish, if not direct physical harm. The Corps' regulations require an application to include "a statement describing how impacts to waters of the United States are to be avoided and minimized" and "a statement describing how impacts to waters . . . are to be compensated for or a statement explaining why compensatory mitigation should not be required for the proposed project." 33 C.F.R. § 325.1(d)(7). A necessary prerequisite to identifying the required mitigation is an outline of the expected adverse impacts resulting from the proposed Project. The CRC's failure to identify the adverse impacts to salmon not only directly contradicts the Corps' requirements for a permit application, but also obscures the true impacts of the proposed Project. By concealing certain adverse impacts to water quality, wetlands and aquatic life, the CRC flouts the Guidelines and improperly discounts the impact of its proposed actions. The Corps cannot issue a Section 404 permit in this context without ignoring the Guidelines or its own regulations. Thus we urge the Corps to seek more information regarding the impact of the proposed Project on salmon.

An action is deemed to jeopardize the continued existence of a species if it “reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery” of the species. 50 C.F.R. § 402.02. As the National Marine Fisheries Service (“NMFS”) has stated:

impeding a species’ progress toward recovery exposes it to additional risk, and so reduces its likelihood of survival. Therefore, in order for an action to not “appreciably reduce” the likelihood of survival, it must not prevent *or appreciably delay recovery*.

See NMFS, *The Habitat Approach, Implementation of Section 7 of the Endangered Species Act for Actions Affecting the Habitat of Pacific Anadromous Salmonids*, 3 (1999) (emphasis added). NMFS has also explained that “[s]almon survival in the wild depends upon the proper functioning of certain ecosystem processes, including habitat formation and maintenance” and “[r]estoring functional habitats depends largely on allowing natural processes to increase their ecological function, while at the same time removing adverse impacts of current practices.” *Id.*

The proposed Project will have significant direct and indirect adverse impacts on water quality in the Columbia River, and in turn will reduce appreciably the likelihood of survival and recovery of various listed species. The proposed site for the Project contains multiple listed species, including Lower Columbia River (LCR) Chinook salmon, Upper Willamette River (UWR) Chinook salmon, Upper Columbia River (UCR) spring-run Chinook salmon, Snake River (SR) spring/summer run Chinook salmon, SR fall-run Chinook salmon, Columbia River (CR) chum salmon, LCR coho salmon, SR sockeye salmon, LCR steelhead, UWR steelhead, Middle Columbia River steelhead, UCR steelhead, Snake River Basin steelhead, eulachon, southern green sturgeon, eastern Stellar sea lion, and southern resident killer whale. It is also designated critical habitat for some of these species.

The adverse impacts likely to result from the proposed activities include re-suspending sediment (including contaminated sediment), resulting in increased sedimentation and turbidity in the water column, blocking sunlight and reducing available oxygen levels for aquatic species. The dredging will also alter and destabilize the channel and basin floors, degrading or destroying designated critical habitat for fish. These impacts will, in turn, have significant adverse impacts on coho salmon and green sturgeon. Because the Project is likely to jeopardize the continued existence of listed species, the Corps should deny the Section 404 permit.

**C. The Corps should deny the permit because the CRC does not plan to mitigate for the direct, adverse impacts likely to result from the proposed Project, in direct contravention of the Guidelines.**

Due to these direct adverse impacts resulting from the proposed discharges, the Corps must ensure the CRC takes appropriate and practicable steps to minimize the potential adverse impacts of the discharge on the aquatic system. The Guidelines preclude the discharge of dredged material unless appropriate and practicable steps have been taken to minimize any potential adverse impacts. 40 C.F.R. § 230.10(d). Plus, a Section 404 permit application must include “a statement describing how impacts to waters of the United States are to be avoided and minimized” and “a statement describing how impacts to waters . . . are to be compensated for or a statement explaining why compensatory mitigation should not be required for the proposed

project.” 33 C.F.R. § 325.1(d)(7). *See also* 33 C.F.R. § 332.4(b)(1) (requiring the public notice contain “a statement explaining how impacts associated with the proposed activity are to be avoided, minimized, and compensated for.”).

To achieve the least environmentally damaging result, EPA provides a three-step sequence: (1) avoid adverse impacts to the maximum extent possible; (2) minimize the impacts to the maximum extent possible; and (3) mitigate or compensate the impacts to the maximum extent possible. The Corps must describe in sufficient detail how it will ensure that the dredging and filling operations proposed under this permit will meet these important requirements.

Based on the limited information provided in the addendum, it is unlikely that the Corps will be able to determine that the CRC has adequately mitigated the impacts to water and aquatic life that will result. Lack of information aside, the CRC does *not propose any* additional mitigation for those adverse impacts that the CRC did identify in the addendum. *See* Addendum, page 7 (stating that “the CRC project team feels additional mitigation actions or areas are not required to mitigate for impacts presented in the DSL JPA and this amendment”). This is likely the most blatant violation of DSL’s regulations, given the certainty of additional direct, adverse effects resulting from this design modification.

As explained above, the proposed Project will have direct, adverse impacts. The revised project design will require twice the number of shafts at each pier and will result in more hydroacoustic impacts for driven temporary piles and drilling equipment platforms, an increased permanent footprint in bed of river, a higher project cost, reduced safe width available for watercraft, increased volume of fill in the floodplain, restricted hydraulic flows, and a rise in water surface elevation. *See* Addendum, page 6. Ultimately the modified design will result in a net increase of permanent structure below the ordinary high watermark.

The CRC blindly points only to the volume of fill that will result in permanent impacts, and considers existing mitigation measures sufficient. This approach ignores the major additional impacts that will result from the increased in-water work, even if the ultimate structures are only in the water temporarily. The amendment wholly fails to support that no mitigation is necessary for the proposed additional physical obstructions, additional noise levels due to drilling, and increased turbidity. In fact, these are actual, direct impacts that must be mitigated.

The addendum states that the impacted region contains extremely limited spawning habitat with low primary and secondary productivity, and that the compensatory mitigation is approximately 5.8:1. *See* Addendum, page 7. Thus the CRC did not add mitigation for the changes presented in this amendment. The proposed changes, however, represent additional adverse impacts to the path for migrating fish. Regardless of whether this is spawning or rearing habitat, the additional in-water work will directly impact fish, migration patterns, and thereby require additional mitigation. The mitigation along the Sandy River, identified in the JPA, is largely worthless if fish are unable to pass through the Columbia River due to the actions outlined in this addendum. The CRC’s failure to provide additional mitigation to offset the expected impacts from this addendum flouts the Guidelines and the Corps’ own regulations. The Corps should deny the permit application for failing to provide all practicable mitigation to reduce the adverse effects of the proposed removal and fill activities.

In the alternative, the Corps should require the CRC to take all available steps to avoid adverse impacts from the Project and reduce any resulting impact to the aquatic ecosystem. The Corps should develop a detailed and supported mitigation and restoration plan that addresses the additional adverse impacts that will result from this revised bridge design. The Corps may not leave these important permit elements to the discretion of the CRC. The Corps must follow its own sequential preference and first ensure that the impacts are not avoidable, then require the CRC to make all efforts to minimize remaining impacts, and only thereafter consider compensatory mitigation. In addition, the Corps must require new mitigation, rather than repeat mitigation efforts from previous permits for similar activities or activities affecting this region. Given the numerous adverse impacts likely to result from the proposed dredge and fill activities, absent sufficient mitigation and restoration plans, and absent a scientific based management plan, the Corps cannot comply with the Guidelines and must deny the requested Section 404 permit.

**D. The amended Project design is contrary to the public interest.**

Even if the Corps determines that the CRC's Project would comply with the Guidelines, the Corps may not issue the Section 404 permit if doing so would be contrary to the public interest. 33 C.F.R. § 323.6(a). As part of the public interest review, the Corps must evaluate the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest. *Id.* § 320.4(a)(1). The regulations specify numerous elements to consider in the public interest review, such as: water quality, conservation, aesthetics, fish and wildlife values, navigation, shore erosion and accretion, recreation, general environmental concerns, and the needs and welfare of the people. *Id.* The Corps must weigh the "benefits which reasonably may be expected to accrue . . . against its reasonably foreseeable detriments." *Id.* The central criteria of the public interest analysis are: (1) the relative public and private need for the proposed activity; (2) the practicability of using alternative methods to meet unresolved conflicts as to resource use; and (3) the effect the proposed project will have on "the public and private uses to which the area is suited." *Id.* § 320.4(a)(2).

As noted above, the public notice fails to identify the need for the Project. The stated purpose for the addendum, "to ensure the proposed structures would meet seismic standards," gives no indication of the need for the proposed design changes, whether and to what extent the previous bridge design was insufficient, a comparison of the improved seismic stability before and after the design changes, or an estimate of the improved seismic stability of the bridge as a result of the design changes.

Assuming the need for seismic upgrades to the initial design in the JPA exists and cannot be met based on alternative designs (none of which were provided in the public notice), the Corps must still balance this potential benefit against the reasonably foreseeable detriments. The dredge and fill activities associated with the new design are likely to have a negative impact on numerous valuable resources at the location. The Columbia River and North Portland Harbor is the source of environmental, aesthetic, and economic benefits to a wide range of people. From impacts on the listed fish species and designated critical habitat in the region, to the extensive recreational and commercial opportunities that will be negatively impacted by the proposed construction, the reasonably foreseeable detriments resulting from Project are likely to be

extensive. Based on the careful balancing required under the public interest review, the Corps should deny the Section 404 permit.

If the Corps decides to issue the Section 404 permit,<sup>1</sup> it should impose special conditions and limit the duration of the authorization to reduce the negative impacts that are likely to result. *See* 33 C.F.R. § 325.4(a) (stating that “[d]istrict engineers will add special conditions to [Corps] permits when such conditions are necessary to satisfy the legal requirements or to otherwise satisfy the public interest requirement”). The Corps must impose such conditions to satisfy not only the public interest requirements, but also its legal requirements under the Guidelines, the ESA, and requirements imposed by the states pursuant to the Section 401 water quality certification.

### **Conclusion**

NEDC again urges the Corps to address the aforementioned deficiencies in the CRC’s application for a Section 404 permit before authorizing any dredge or fill activities for the Project. Issuing the permit would turn a blind eye to the CRC’s cursory and piecemeal approach to meeting the statutory and regulatory requirements under the Clean Water Act. Doing so would also prevent the public from providing meaningful comments on the entirety of the proposed Project because the public notice lacks essential information. Finally, authorizing the Section 404 permit as proposed would contravene EPA’s Guidelines and the Corps’ own regulations. If the Corps decides to authorize the requested removal-fill permit, it should include permit conditions that will ensure the protection, conservation, and best use of Oregon’s water resources, to ensure the public interest is protected consistent with the Corps regulations.

Respectfully submitted,



Jeff Speir  
Law Clerk

---

<sup>1</sup> If the Corps determines that special conditions are necessary to ensure the project comports with the public interest but the conditions are not reasonably implementable or enforceable, the Corps must deny the permit. 33 C.F.R. § 325.4(c).



**Title:**

Assessing the impact of pile driving upon fish

**Author:**

[Hawkins, Anthony](#), Loughine Ltd., Kincaig, Blairs, Aberdeen

**Publication Date:**

08-29-2005

**Series:**

[Recent Work](#)

**Publication Info:**

Recent Work, Road Ecology Center, John Muir Institute of the Environment, UC Davis

**Permalink:**

<http://escholarship.org/uc/item/28n858z1>

**Additional Info:**

Hawkins A. 2006. Assessing the impact of pile driving upon fish. IN: Proceedings of the 2005 International Conference on Ecology and Transportation, Eds. Irwin CL, Garrett P, McDermott KP. Center for Transportation and the Environment, North Carolina State University, Raleigh, NC: p. 22. (Abstract)

**Keywords:**

reconstruction, jetty, monitored, harbor, Scotland, sound, levees, percussive, vibratory pile driving

**Abstract:**

Pile driving associated with the removal and reconstruction of a jetty was monitored at a busy harbor in the North East of Scotland, adjacent to an important Atlantic salmon river. The main concern was with the impact of noise upon salmon migrating through the lower part of the river estuary. Pile driving was allowed to proceed subject to an agreed program of works to monitor sound levels and ensure least disturbance to salmon. Both percussive and vibratory pile driving took place. Sound-pressure levels from both were measured. Percussive pile driving involved the repeated striking of the head of a steel pile by a double-acting hydraulic hammer, with a 5 tonne ram weight operated with a mean stroke of about 1 m. Vibratory pile driving was achieved by means of a variable eccentric vibrator attached to the head of the pile. The majority of piles were initially driven into the substrate by vibration, over a period of several minutes. Each pile was then subsequently driven to its full depth with a sequence of repeated hammer blows. Steel facing piles were inserted adjacent to the quayside and subsequently backfilled to provide a new frontage to the quay. Diagonal-bearing piles were also inserted well behind the quay to strengthen the adjacent roadway. Sound pressure levels generated by pile driving in water were measured using a calibrated hydrophone suspended 1 m above the bottom. The hydrophone was connected to a low-noise amplifier, which controlled the signal gain and bandwidth. The output was connected to

a laptop PC by a digital audio interface. When recording at close range, where sound levels were especially high, a less-sensitive hydrophone transducer was used, connected directly to the audio interface. All sound recordings were made as 16-bit WAV files. For some of the piles, particle-velocity amplitudes were measured by means of an assembly of three orthogonally mounted, calibrated geophones placed on the seabed. The sound-pressure levels (SPL) of the background noise and vibro-piling noise were measured as a root-mean-square (rms) level expressed in decibels relative to a reference level of one micro Pascal (dB re 1 $\mu$ Pa). The shorter-duration impulsive sounds generated by the individual blows of the pile-driver hammer were measured in several different ways: the peak pressure reached during the impulse, the rms pressure measured over the time period that contained 90% of the sound energy (rms impulse), and as the sound-exposure level (SEL) expressed in dB re 1 $\mu$ Pa<sup>2</sup>-s. The latter was defined as the constant sound level of 1s duration that would contain the same acoustic energy as the original sound. Sound levels were converted to source levels (SL), i.e., normalized to an equivalent noise level at a distance of 1 m. In all SL calculations, it was assumed that the spreading loss was represented by the expression 15 log R where R was the distance in meters. Received sound level in water may be expressed in terms of sound pressure, particle velocity, or intensity, all of which can vary with time over the duration of the sound. In this study, the majority of measurements were expressed in terms of sound pressure. However, it was recognised that it was really necessary to determine the particle velocities as this is the stimulus which is received by the ear of a fish like the salmon. On a few occasions, the particle velocities were measured and the acoustic intensity calculated. Background-noise levels within the harbor and even within the river itself were high, within the range 118 – 149 dB re 1 $\mu$ Pa rms over a bandwidth of 10 Hz-10 kHz. Much of the noise derived from manoeuvring and stationary ships. The sound-pressure levels generated in water by percussive pile driving were very high, but variable depending on the pile type, the substrate being penetrated, the distance from the source, and whether the bubble curtain was in operation. Within the harbor, they ranged from 142-176 dB re 1 $\mu$ Pa peak, with sound exposure levels (SELs) of between 133-154 dB re 1 $\mu$ Pa<sup>2</sup>-s, without the bubble curtain in operation. Estimated source levels ranged from 177-202 dB re 1 $\mu$ Pa peak. Within the river, more than 220 meters away from the pile driver and separated from it by a spit of land, the soundpressure levels reaching the fish ranged from 162-168 dB re 1 $\mu$ Pa peak, with SELs of between 129-145 dB re 1 $\mu$ Pa<sup>2</sup>-s. Sounds measured at a distance from the source within the harbor consisted of a low-frequency pre-pulse, followed by the main sound pulse. In this case, and in the river itself, the sound was propagated through the substrate, as well as the water, perhaps accompanied by flexural waves at interfaces between strata. Particle velocities within the harbor and in the river reached 110 dB re 1 nms<sup>-1</sup>, mainly in a vertical direction, and intensities of up to 0.023 Wm<sup>-2</sup> were registered. Chapter 2 22 ICOET 2005 Proceedings The main energy generated by the percussive pile driver extended up to and above 10 kHz close to the source, with most of the energy below 2 kHz. By the time the sound reached the river the higher frequencies had been removed and the predominant frequencies were below 1 kHz, still with considerable energy within the hearing range of salmon (which declines above 250 Hz). Vibro-piling also generated high sound levels in water, with sound-pressure levels within the harbor ranging from 142- 155 dB re 1 $\mu$ Pa rms and source levels between 173-185 dB re 1 $\mu$ Pa rms. Levels in the river ranged from 140-143 dB re 1 $\mu$ Pa rms. A bubble curtain was successful in reducing the peak amplitude of the sound from the pile driver by up to 5 dB and in reducing the high-frequency content of the sound. The bubbles therefore reduced the likelihood of damage or injury to fish. However, they did not reduce energy at the lower frequencies to which fish are sensitive, especially at a distance from the source. The principal purpose of monitoring the pile driving was to assess the impact upon salmon. There is some controversy and uncertainty about the actual levels of pile-driving sound which affect fish adversely. It is evident that sound affects different species to a differing degree. Thus, although in some instances a level of 180 db re 1 $\mu$ Pa has been adopted as a standard, above which sounds are likely to kill or cause damage to fish, this is a very uncertain figure which is open to question. It was concluded that the sound pressure levels (SPLs) and sound exposure levels (SELs) generated by percussive pile driving within the harbor were not likely to have killed fish, whether the fish were within the river or the harbor itself. However, the sound levels were high enough close to the pile driver to injure or induce hearing





loss in some species of fish. The noise from pile driving in the harbor was certainly high enough to be detected by salmon in the river at considerable distances from the source. The levels of sound from both percussive and vibro-piling were well above the hearing thresholds of the fish. As salmon could not be observed during this exercise, it was not possible to determine whether salmon reacted adversely to the sounds. However, there was a risk that their upstream migration may have been delayed or prevented with consequent effects upon spawning populations. The measurements indicated that any pile driving within the river itself would have the potential to injure or induce hearing loss in salmon and might have adverse effects upon their behavior. During this exercise, trains of low frequency 'thumping' sounds were recorded within the River Dee, similar to those made by fish. The sounds may be emitted by European eels, which are common at the location.



**eScholarship**  
University of California

eScholarship provides open access, scholarly publishing services to the University of California and delivers a dynamic research platform to scholars worldwide.