



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

*National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668*

March 5, 2007

Colonel Kevin J. Wilson
U.S. Army Corps of Engineers
P.O. Box 898
Anchorage, Alaska 99506-0898

Re: POA-2003-502-N, Ship Creek

Attn: Ryan Winn - Ryan.H.Winn@poa02.usace.army.mil

Dear Colonel Wilson:

The National Marine Fisheries Service (NMFS) has reviewed the Port of Anchorage (POA) Response to Public and Agency Comments, dated September 25, 2006, for Phase II of the Port of Anchorage expansion project. The Maritime Administration (MARAD) completed an Environmental Assessment (EA) for the port project on behalf of the POA. The applicant's preferred alternative, open cell sheet pile design (OCSP), would discharge fill material over approximately 135 acres of intertidal and subtidal waters of upper Cook Inlet and dredge 235 acres. Phase I of the project permitted 27 acres of intertidal fill area on the north end of the port. Phase II, if permitted as proposed, would discharge approximately 9.4 million cubic yards of material over the remaining 108 acres of intertidal and subtidal habitat and dredge approximately 633,000 cubic yards of material over approximately 47 acres for the construction of the proposed sheet pile dock. To obtain fill material, an additional 34.5 acres of wetlands would be impacted through the development of the Cherry Hill and North End borrow pits.

NMFS continues to have serious concerns about the effects of this project on important salmon habitat and beluga whales. The applicant has not rigorously evaluated the practicability of less damaging alternative designs as we recommended – particularly a partially pile supported design that maintains shallow water fish habitat. NMFS offers the following review of the POA's response to comments per our authorities under the Fish and Wildlife Coordination Act, Magnuson-Stevens Fishery Conservation and Management Act, and Marine Mammal Protection Act.

Port Capacity – Purpose and Need

The Port of Anchorage expansion project is undeniably important to the City of Anchorage and the State of Alaska. NMFS is not opposed to the port expansion. However, NMFS is concerned that opportunities to avoid and minimize impacts to valuable habitat for fish and beluga whales in upper Cook Inlet are precluded by the preferred alternative. The response provided by the POA still does not adequately justify the need for the 135 acres of intertidal and subtidal fill associated with the OSCP design of the preferred alternative.

The EA and Finding of No Significant Impact (FONSI), prepared for this project by MARAD, and POA's Response to Public and Agency Comments do not substantiate that the preferred alternative is the least environmentally damaging practicable alternative (LEDPA). These



documents rely on the POA's analysis of the Purpose and Need for the proposed project and while there are many statements regarding the purported needs, we have not seen supporting documentation to substantiate these needs or demonstrate that a partially pile supported design is infeasible. As specified in 40 CFR 230.10(a), "Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." Further, the Clean Water Act Section 404(b)(1) Guidelines state that an alternative is "practicable" if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."

Reasonable Dock Design Alternatives

The POA's response to resource agency concerns regarding a more comprehensive analysis to examine a smaller dock, pile-supported design, and combination sheet pile/pile supported designs that allow preservation of some intertidal habitat function is based on several factors:

- Size of the Proposed Expansion

Please see the above comments. The applicant should provide a clearer justification for the acreage requirements for the proposed port expansion.

- Costs

The POA states (page 7, paragraph 2) that, "Based on current cost estimates, the cost to construct a completely pile-supported dock would be over three times the cost of an OCSP structure. As this clearly represents an unreasonable expense for the stated project purpose, the following discussions focus only on the OCSP structure instead of a design that incorporates a partially pile-supported dock with an OCSP structure."

The POA continues (page 7, paragraph 4 – Construction Costs), "... based on a detailed, per-square-foot cost estimate provided by the waterfront design team, a combination structure consisting of a 50-foot-wide section of pile-supported platform dock in front of an OCSP section would increase the basic construction cost by \$98.2 million, nearly a 25 percent increase from the current estimated cost. A 100-foot-wide section of pile-supported dock section would represent nearly a 50-percent increase in cost. Any increase in cost would exceed current funding levels for the project."

POA further states (page 10, paragraph 3), "Pile-supported structures will require a larger quantity of concrete, a product currently in high demand within Alaska. It is possible that imports of cement at the current rate would not be sufficient to support the MTR project and other private, municipal, and state projects at the same time. Limitations on material availability could delay construction and increase project costs."

Cost is a legitimate consideration in determining the practicability of alternatives. However, the aforementioned statements are broad and unsubstantiated. NMFS understands the "detailed, per-square-foot cost estimate" was based on conceptual drawings (available on POA web site, Diana

Carlson, ICRC pers. comm.) rather than the standard 35% plan set. Where is this comparative cost analysis? How accurate can a “detailed, per-square-foot cost estimate” be based on conceptual design drawings?

POA states (page 9, paragraph 5), “The technology required to meet the overall project purpose and need using each of the three alternatives exists. The differences in the available technologies are primarily a function of increased cost to achieve the same function with a pile-supported dock that could be achieved by an OCSP structure.”

This last comment by the POA illustrates the importance of an accurate, detailed, and independent cost analysis, as cost is the primary factor affecting the range of practicable alternatives. In other words, all alternatives are technologically feasible and will meet the project’s purpose and need, and cost is the key factor in identifying whether a partially pile supported design is the LEDPA. Given the overall costs of the project, what is the incremental cost of a partially pile supported design versus OCSP?

- Technology

POA states (page 9, paragraph 8), “Since OCSP structures have greater internal stability than pile-supported structures during seismic events, they are likely to survive a significant seismic event with less damage. As previously noted, a combination structure may be more vulnerable to seismic damage unless specific design features are incorporated.”

POA states (page 12, paragraph 6), “the Port and MARAD have completed comprehensive and detailed analyses that definitively demonstrate that the proposed OCSP design performs as well as or better than any of the alternatives, based on the industry-recommended level of seismic loading and extreme events. From the standpoint of safety, stability, and survivability, the preferred alternative is the most practicable.”

POA states (page 13, paragraph 6), “The OCSP structure exhibits global stability similar to a pile supported dock structure. The OCSP structures were found to have the internal stability needed under required seismic loading. The deflections and settlements were found to be within acceptable tolerances. Although the pile- supported dock concept is stable for probable seismic events, it is not as stable as the OCSP concept under higher seismic loadings equivalent to those of the 1964 earthquake. Based on seismic performance, cost, and constructability, MARAD selected the OCSP structure as the preferred alternative for the Port expansion.”

These statements are unsubstantiated in the document and contrary to our understanding of guidelines and standards used in the design of container ports in other seismically active areas (e.g. Port of Long Beach, Port of Los Angeles, Port of Oakland, Port of Seattle). The American Society of Civil Engineers has a committee working on the seismic design of piers and wharves. This committee is focusing on pipe pile supported structures rather than OCSP and is incorporating state of the art design methodologies into this standard.

A review of alternative structural concepts cites concern over a low Factor-Of-Safety for the interlock stresses, the extreme height of the vertical face (80-90 feet), lack of structural redundancy in a “lifeline” facility, as well as overall global stability of the OCSP design

(Chapman and Fernandez 2002, Moffatt & Nichol 2002). Alternatively, pile supported docks are predictable, redundant, and much lighter in terms of seismic mass, thereby reducing the forces due to acceleration during a seismic event, ultimately increasing global stability. The authors also list four alternative designs, including partial pile design. Have these alternative designs been considered? If so, where are the cost and performance data associated with POA's review?

Due to the increased design requirements (U.S. Army Engineer Research and Development Center, ERDC review), including soils improvements, extra long tail walls, a reinforced concrete deck, piling under the crane rails, a concrete girder at the face of the dock etc., it seems that there may be more tonnage of materials in the sheet pile dock than a pile supported dock. Have the added requirements of the ERDC review, as well as the escalating price of sheet pile, been factored into current cost estimates? Driving long flat sheets of steel underwater and keeping them straight and plumb for a 90 foot high sheet pile dock is unprecedented and will be extremely difficult affecting construction costs.

NMFS has no expertise in geotechnical matters related to the POA's design, however we have a history of working with dock and harbor design projects to minimize effects to marine resources. More importantly, we are interested in clarifying the technical project design issues insofar as that helps inform the identification of the LEPDA for the project. The August 15, 2005, letter from the Geotechnical Advisory Committee (GAC) to POA suggests that engineering professionals have many questions and concerns about the project design, in particular issues related to global stability of the earth filled wall in a seismic event [Chapman and Fernandez 2002, Moffatt & Nichol 2002; see also John Daley letters to GAC (July 24, 2006) and the Corps (February 6, 2007)].

In order to resolve this issue the Corps should direct a detailed independent review, based on 35% design plan, of the OCSP design and a partial pile supported design, by someone not currently involved in the project. NMFS previously requested an independent review in a letter to the Corps dated March 20, 2006. NMFS applauds the ERDC review you commissioned, but it did not address our request. As stated on page 1 of the ERDC report, "The review objective was to determine if the structure could suffer structural damage or failure during a seismic event as a result of Corps of Engineers construction or maintenance dredging operations." NMFS objective was different, "an independent third party review to assist the Corps in evaluating the practicability of less damaging designs for the project." This review would include a comparison of technology, seismic safety and stability, and cost analysis for both the OCSP and partial pile-supported designs. Cost analysis should include comparable cost factors such as: quantities of steel, concrete, and fill as well as constructability estimates.

NMFS recommends that the Corps and MARAD jointly select the review panel in concert with the GAC, thereby removing the Port of Anchorage and its consultants from that role. NMFS understands the GAC (comprised of volunteers from various engineering firms in Anchorage) is interested in being involved in some capacity and would lend valuable local expertise for any review panel, such as one developed via the American Society of Civil Engineers committee on seismic design standards for container ports. Resolving questions about the design alternatives via a clearly independent review would greatly benefit the public review process for this important project. ERDC also recognized the value of an independent review to address stability

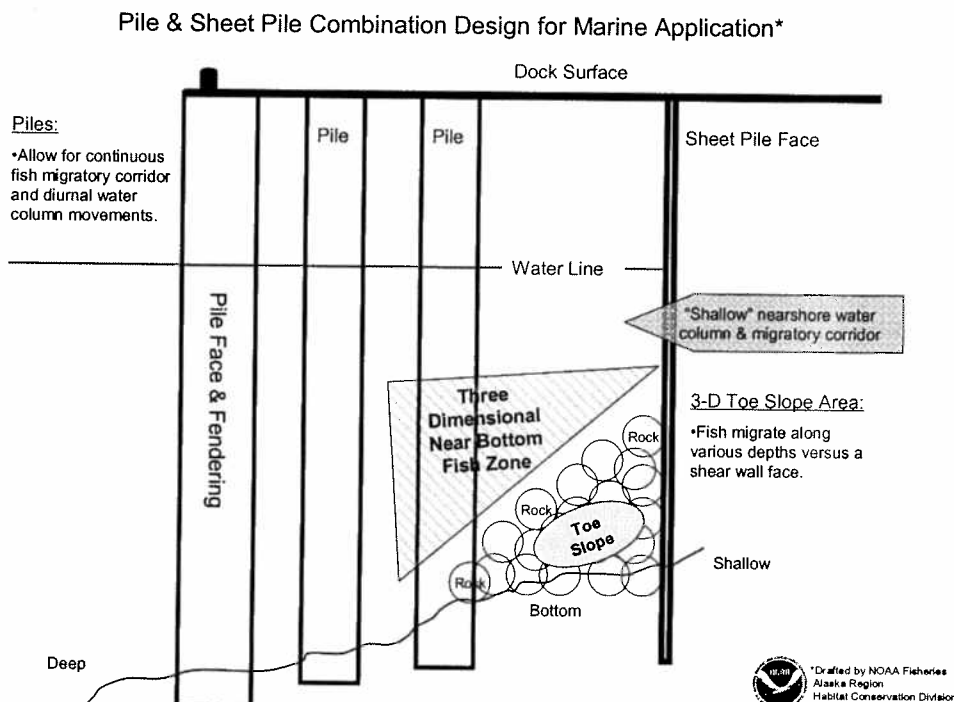
issues, stating on page 7 of its report: “An independent review and design panel, truly apart from the design team, is strongly recommended to instill confidence in the final result.”

- Environmental Impacts

In its response the POA states (page 10, paragraph 7), “An OCSP structure is considered to offer the least potential for overall adverse impacts to the aquatic habitat.” The POA conclusions regarding nearshore aquatic habitats in upper Cook Inlet are subjective and not supported by data from studies completed for this project (Pentec 2005a) and the proposed Knik Arm bridge (Pentec 2005b), nor other studies in the vicinity (Dames and Moore 1983, Moulton 1996). These studies document that shallow waters in this area provide migrating, rearing, and foraging habitat for all five species of Pacific salmon, saffron cod, and a variety of prey species such as eulachon and longfin smelt.

NMFS has consistently recommended pursuing an alternative design for the project that would significantly reduce impacts to living marine resources. Specifically, NMFS has recommended the use of a combination pile support and sheet pile design such as Alternative B in the Environmental Assessment or the Pile-Supported Dock with Slope (see Environmental Assessment page 2-30). Such a design would minimize the loss of nearshore habitat and provide shallow water, contoured slope refuge for out-migrating juvenile salmon and adults. Details on effects of the OCSP alternative on fish and EFH are outlined in our previous letters.

The following figure illustrates conceptually the type of design we would like to see analyzed in more detail. Although NMFS does not have expertise in structural engineering, this concept is based on our experience working on many port and harbor development projects in Alaska that incorporate cost effective design features to minimize impacts to fish habitat.



Summary

In summary, the Clean Water Act Section 404(b)(1) Guidelines contain substantive environmental criteria used in evaluating discharges of dredged or fill material. Under these guidelines, no discharge can be permitted if a practicable alternative with less adverse impact on the aquatic environment is available. NMFS would like to work with the Corps to try to reach consensus on the LEDPA as well as mitigation before the Corps issues a draft decision document. In order to resolve this issue the Corps should: 1) clarify and substantiate the project purpose and need as detailed above; 2) expand and clarify the alternatives analysis by directing a detailed independent review of the practicability of a partially pile supported design (based on technology, seismic stability, cost, and environmental impacts) by someone not currently involved in the project; and 3) engage in an open, collaborative process involving NMFS and other resource agencies to identify suitable mitigation to offset the unavoidable impacts of this project.

Our recommendations regarding the minimization of fill and evaluation of a partially pile-supported alternatives are intended to conserve nearshore fish habitat, primarily for coho and Chinook salmon. Additionally, we remain concerned with the impacts of the port expansion project on Cook Inlet beluga whales, as outlined in our letter dated January 31, 2007. Those concerns deal largely with construction and operation of the port, rather than specific design alternatives. We have requested that any permit issued by the Corps include specific mitigation and monitoring conditions necessary to promote the conservation of Cook Inlet beluga whales.

If you have questions regarding this letter, please contact Brian Lance at (907) 271-1301 or brian.lance@noaa.gov.

Sincerely,



Robert D. Mecum
Acting Administrator, Alaska Region

cc:

POA - Bill Sheffield, 2000 Anchorage Port Road, Anchorage, Alaska 99501

MARAD - Michael.Carter@marad.dot.gov

ADNR/OHMP - stewart_seaberg@dnr.state.ak.us

EPA - dean.heather@epa.gov

USFWS - phil_brna@fws.gov

Barbara Mahoney – Barbara.Mahoney@noaa.gov

Records

REFERENCES

- Chapman, D. R. and G. Fernandez. 2002. Port of Anchorage Potential Expansion Project, Open Cell Sheet Pile Design Concept Independent Geotechnical Review. Lachel and Associates.
- Dames & Moore. 1983. Knik Arm Crossing. Marine Biological Technical Memorandum No. 15. Prepared for the U.S. Department of Transportation, Federal Highway Administration and the Alaska Department of Transportation and Public Facilities
- Geotechnical Advisory Commission, Municipality of Anchorage. 2005. June 2005 Briefing on Port Expansion Status to Geotechnical Advisory Commission and Clarification of GAC Resolution 2004-01.
- Maritime Administration. 2005. Port of Anchorage Marine Terminal Redevelopment Environmental Assessment.
- Maritime Administration. 2006. Geotechnical Process: Port of Anchorage Intermodal Expansion Project. Submitted to the US Army Corps of Engineers.
- Moffatt and Nichol Engineers. 2002. Port of Anchorage Expansion Project, Review of Alternative Structural Concepts. Long Beach, CA.
- Moulton, L.L. 1996. Early Marine Residence, Growth, and Feeding by Juvenile Salmon in Northern Cook Inlet, Alaska. Alaska Fishery Research Bulletin 4: 154-177.
- Pentec Environmental. 2004-2005. Marine Fish and Benthos Studies – Port of Anchorage, Anchorage, Alaska. Prepared for Knik Arm Bridge and Toll Authority and HDR Alaska, Inc by J. Houghton., J. Starkes, M. Chambers, and D. Ormerod
- Pentec Environmental. 2004-2005. Marine Fish and Benthos Studies in Knik Arm, Anchorage, Alaska. Prepared for Knik Arm Bridge and Toll Authority and HDR Alaska, Inc by J. Houghton., J. Starkes, M. Chambers, and D. Ormerod

COE Ship Creek POA 2003-502-N response phase II BL 3-4-07