Memorandum

To	Ms. Loree' Randall Ms. Laura Inouye	File no	0-915-15338-C
		cc	Mr. Mark Knudsen, Pacific International Terminals, Inc. Mr. Ari Steinberg, Pacific International Terminals, Inc Kristie Dunkin, AMEC
From	Mr. Steve Ellis AMEC Earth & Environmental Tel: (425) 921-4000 Fax: (425) 921-4040		
Date	August 1, 2011		

Subject **Response to Ecology Comments on Draft 2011 Sediment Implementation Work Plan**

On July 14, 2011, Laura Inouye (Washington State Department of Ecology [Ecology], Shoreline and Environmental Assistance Program, Sediment Quality Specialist) provided comments on the *Draft 2011 Sediment Implementation Work Plan* (SAP) prepared by AMEC Earth & Environmental, Inc. (AMEC), on behalf of Pacific International Terminals, Inc., for the proposed Gateway Pacific Terminal project in Whatcom County, Washington.

On July 18, 2011, Dr. Steve Ellis (AMEC) discussed the comments with Laura Inouye and reached an agreement on how the comments will be addressed. This memorandum provides a written documentation of the discussions that occurred and, for some comments, additional information to clarify what action will be taken to address the comment.

Ecology Comment #1: Are locations in both Table 2A and Table 2B being sampled (as implied in the plan)? Or only one of the tables based on the final design?

Response: All locations (47) in Tables 2A and 2B are target sediment sampling locations for the 2011 sediment baseline characterization. If a sediment sample cannot be collected at a target location after three attempts, at and near the proposed location, due to rocky substrate, the location will not be sampled.

Ecology Comment #2: What happens with biological assays if reference fails? Will they revert to comparison to controls?

Response: All sediment bioassays have performance standards for reference sediments. Failure of reference sediments to meet these standards can result in a need for retesting or substituting control

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sediments for reference sediments if they have similar characteristics or if the study oversight agencies agree this is appropriate (RSET, 2009). If reference sediments do not meet performance standards, comparisons to controls will be used to determine bioassay results.

Ecology Comment #3: Larval assay. It is critical to use the SAME species for all years of the test, or it may be comparing apples and oranges. This needs to be stated in the plan – that they will at least do their best to remain consistent.

Response: The selection of larval test species is based on the timing of the natural spawning period in Puget Sound (Ecology, 2008) and availability of spawning-ready adults. Based on the timing of the proposed sampling in July, Blue mussel (*Mytilus galloprovincialis*) and Pacific oyster (*Crassostrea gigas*) are possible larval test species. Based on discussions with the bioassay testing laboratory (Brian Hester, Newfields Northwest, LLC, pers. comm., July 18, 2011) the Blue mussel is recommended as the test species. Provided that future sampling is allowed to occur during early summer, this species will be used for future monitoring. The objective to use the same species for future sampling will be added to the SAP.

The final SAP will clarify when bioassay testing will occur. The list of sediment analytes includes sediment quality standard (SQS) chemicals and additional analytes on the standard list of chemicals of concern for the Puget Sound Dredged Material Management Program (DMMP, 2008). Bioassays will be conducted for SQS chemicals if detected concentrations at a location exceed the SQS criteria. Bioassays will not be conducted if a chemical is not detected in any samples, but the reporting limit is above the SQS criteria. At locations where the percent total organic carbon (TOC) is greater than 0.5 percent and less than 4.0 percent, carbon-normalized sediment concentrations will be compared to the SQS carbon-normalized values. Locations where TOC is less than 0.5 percent or greater than 4.0 percent will be compared to lowest apparent effects threshold (LAET) values (SAP, Table 3), which are expressed on a dry-weight basis.

Bioassay triggers for the DMMP are based on sediment concentrations exceeding sediment screening levels (SLs). For DMMP chemicals that do not have SQS criteria, bioassays will be conducted at sampling locations where detected concentrations exceed the SL values. Bioassays will not be conducted if a chemical is not detected in any samples, but the reporting limit is above the SL value.

In June 2011, DMMP revised its standard list of sediment analytes and SL values to be consistent with the RSET Sediment Evaluation Framework (RSET, 2009). Eight compounds (nickel, 1,3-dichlorobenzene, trichloroethene, tetrachloroethene, ethylbenzene, total xylene, hexachlorethane, and lindane) were dropped from the standard list due to a lack of correlation between sediment chemistry

and toxicity (DMMP, 2011a; 2011b). The revisions also lowered screening levels for several chemicals (chromium, hexachlorobutadiene, aldrin, total chlordane, dieldrin, and heptachlor).

Sediment samples will be analyzed for the eight compounds dropped from the June 2011 DMMP standard list of sediment analytes. Bioassays will be conducted if these compounds are detected at concentrations that exceed the 2008 SL values (DMMP, 2008). Bioassays for chemicals without SQS criteria listed on the June 2011 DMMP standard list of sediment analytes will be conducted if sediment concentrations exceed the June 2011 SL values.

Ecology Comment #4: Microtox: Last year at SWARM, a presentation was given regarding issues with holding times and Microtox. Waiting for chemistry results for this bioassay may be problematic. I strongly suggest they either just run Microtox on all samples WITHOUT waiting for chemistry, or they should use one of the chronic bioassays that uses invertebrates. The second option is the preferred option.

Response: The draft SAP stated that bioassay species would be selected in consultation with Ecology and the bioassay testing laboratory. AMEC has completed this requirement and will replace the chronic Microtox test with the chronic 20-day juvenile polychaete (*Neanthes arenaceodentata*) bioassay.

Ecology Comment #5: Section 5.1.1., second paragraph. How long are organisms being acclimated for?

Response: All organisms received by the laboratory for bioassay testing will be held for a minimum of 24 hours to assess organism health and monitor any adverse stress from shipping.

Ecology Comment #6: Section 6.2.4 – comparability. Again it is critical that larval assays use the same species to the best ability of the labs. Additionally, I have some concerns about the ability to sample in some locations AFTER the project is completed. I note that a few of the samples will be under the structure.

Response: Section 2.0 of the draft SAP lists the objectives for the 2011 sediment sampling program. The proposed sampling is intended to provide a baseline characterization of sediment chemistry and then use the collected data to determine the statistical variance of SQS chemicals within the project footprint. The variance will be used to develop a robust statistical design for future monitoring to detect changes from baseline conditions. It is anticipated that future monitoring will occur at a subset of the baseline stations and that these stations will not be located under the trestle or wharf structures.

Ecology Comment #7: They need to include a Table with holding time conditions and limits for sediment samples.

Response: This table will be added to the final SAP.

Ecology Comment #8: Section 6.3, field quality assurance: how are decontamination blanks being collected? Water rinse of equipment, solvent rinse, wipe tests, etc.?

Response: Decontamination blanks will be distilled water rinses of sediment processing equipment.

Ecology Comment #9: Section 10 has what I believe is an error – they say bioassays are being run first, chemistry make take an additional 12 weeks.

Response: This statement is incorrect and will be fixed in the final SAP. Chemistry is being run first with a target turnaround time of 2 weeks. If bioassays are required, an additional 8 to 10 weeks will be required for testing and reporting.

REFERENCES

DMMP (Dredged Material Management Program), 2008, Dredged Material Evaluation and Disposal Procedures (Users' Manual): U.S. Army Corps of Engineers, Seattle District, U.S. Environmental Protection Agency, Region 10, Washington State Department of Natural Resources, and Washington State Department of Ecology.

DMMP (Dredged Material Management Program), 2011a, Clarification Paper – Marine Sediment Quality Screening Levels, Adopting RSET Marine SLs for Use in DMMP: http://www.nws.usace.army.mil/PublicMenu/documents/DMMO/110426_SL_paper.pdf

DMMP (Dredged Material Management Program), 2011b, DMMP Guideline Chemistry Values, Updated June 2011: http://www.nws.usace.army.mil/PublicMenu/documents/DMMO/revised_COC_list_2011.pdf

Ecology (Washington State Department of Ecology), 2008, Sediment Sampling and Analysis Plan Appendix – Guidance on the Development of Sediment Sampling and Analysis Plans Meeting the Requirements of the Sediment Management Standards (Chapter 173-204 WAC): Ecology, Publication Number 03-09-043, Olympia.

RSET (Regional Sediment Evaluation Team), 2009, Sediment Evaluation Framework for the Pacific Northwest: Prepared by U.S. Army Corps of Engineers, U.S. Environmental Protection

Agency, Washington State Department of Ecology, Washington Department of Natural Resources, Oregon Department of Environmental Quality, Idaho Department of Environmental Quality, National Marine Fisheries Service, and U.S. Fish and Wildlife Service.