

# **EVALUATION REPORT AND FINDINGS**

on the

Application for Certification  
Pursuant to Section 401 of the  
Federal Clean Water Act

Submitted by  
U.S. Army Corps of Engineers  
for

***Lower Willamette River  
Federal Navigation Channel  
Maintenance Dredging at Post Office Bar  
Portland, Oregon***

*File #CENWP-PM-E-10-04*

Pursuant to Oregon Administrative Rules  
Chapter 340, Division 48



Prepared by:

Oregon Department of Environmental Quality  
Northwest Region  
2020 SW 4th Avenue  
Portland, Oregon 97201

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## **1. INTRODUCTION**

The Department of Environmental Quality (DEQ) received notice of the US Army Corps of Engineers' (USACE) proposed dredging project, via Public Notice of the draft Environmental Assessment issued by the USACE on February 22, 2010.

On April 5, 2010, DEQ advised USACE that a complete application as described in Oregon Administrative Rules (OAR) 340-048-0020 would be required in order to initiate DEQ's evaluation of a request for Clean Water Act (CWA) Section 401 Water Quality Certification (401 WQC) and that DEQ would need to meet public notice requirements described in the OAR. DEQ emphasized the need for an analysis of potential impacts to all state water quality parameters and adjacent landowner information, as specified in the OAR, and also requested additional information including: a Sediment Evaluation Framework (SEF) suitability determination and leave surface management plan; a biological assessment; and resultant Biological Opinion from National Marine Fisheries Service (NMFS).

DEQ received some application materials and the USACE Biological Assessment on April 5, 2010. USACE provided NMFS' completed Biological Opinion on June 1, 2010. A draft of the SEF determination was available on July 7, 2010 and DEQ received the final determination on August 4, 2010, during the public notice period.

DEQ worked collaboratively with USACE, NMFS, US Environmental Protection Agency (EPA) and DEQ's Cleanup program in evaluating the application materials, and has prepared this Evaluation and Findings Report and associated 401 WQC, together referred to as the 401 decision, pursuant to Section 401 of the Clean Water Act (33 U.S.C. Section 1431), Oregon Revised Statutes (ORS 468B) and Oregon Administrative Rules (OAR 340 Division 48).

The record generated in the process of reviewing the application, all supplemental information submitted by the applicant, and all materials received as part of the public review process, are considered part of the record regarding this application.

## **2. REQUIREMENTS FOR CERTIFICATION**

Section 401 of the CWA establishes requirements for state certification of proposed projects or activities that may result in any discharge to navigable waters. Before a federal agency may issue a permit or license for any project that may result in any discharge to navigable waters, the state must certify that the proposed project or activity will comply with applicable effluent limitations, water quality-related effluent limitations, water quality standards and implementation plans, national standards of performance for new sources, and toxic and pretreatment effluent standards (Sections 301, 302, 303, 306, and 307 respectively, of the CWA) and any state regulations adopted to implement these sections. The state is further authorized to condition any granted certificate to require compliance with appropriate water quality-related requirements of state law.

The CWA creates a unique system for protection of water quality. The state has primary responsibility and authority for protecting water quality. The federal law recognizes and supports state requirements as long as they are not less stringent than established federal minimums. Indeed, federally approved state requirements and standards become federal requirements and standards. The U.S. Environmental Protection Agency (EPA) can intervene only if the state refuses to act or if

state requirements do not meet federally prescribed minimums.

In the Section 401 certification process, the state acts pursuant to federal law. However, the state must also comply with any more stringent state laws. In Oregon, statutory authority to implement Section 401 certification is contained in ORS Chapter 468B. The DEQ is the agency of the State of Oregon designated to carry out the certification functions prescribed by Section 401 of the Clean Water Act. DEQ may issue an unconditional certification where a project will not impact water quality. A conditioned certification may be issued in those cases where a project may have an impact on water quality, but implementation of the conditions contained in the certification will assure compliance with standards and other applicable requirements of state law. Certification may be denied in cases where a project cannot be undertaken in accordance with water quality standards.

Administrative rules (OAR Chapter 340 Division 48) prescribe the procedure DEQ is required to follow for Section 401 certifications. The rules identify the information that must be included in an application for Section 401 certification [OAR 340-048-0020(2)]. Aside from general information about the project, the substantive information is that "required by the federal permitting or licensing agency or such other environmental background information as may be necessary to demonstrate that the proposed project or activity will comply with water quality requirements." DEQ may also request any additional information necessary to adequately evaluate the project impacts on water quality [OAR 340-048-0020(3).]

### **3. SUMMARY OF APPLICATION**

#### **3.1 Documents Filed by Applicant**

The following documents are considered to comprise the application, as filed by the applicant, and have become part of the DEQ record:

- Lower Willamette River Federal Navigation Channel, Oregon Maintenance Dredging at Post Office Bar Draft Environmental Assessment. Prepared by USACE. February 22, 2009.
- Request for ODEQ 401 WQ Certification. Prepared by USACE. April 5, 2010.
- Biological Assessment for Fish and Wildlife Species and Their Habitat and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Assessment, Lower Willamette River Maintenance Dredging at Post Office Bar, Multnomah County, Oregon. Prepared by USACE. October 10, 2008.
- Endangered Species Act – Section 7 Biological Opinion & Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Conservation Recommendations, Lower Willamette River Maintenance Dredging at Post Office Bar, Willamette River, Multnomah County, Oregon. Prepared by NMFS. May 13, 2010.
- Responses to groundwater contamination and floodplain inundation concerns at West Hayden Island dredged material placement site raised at August 30, 2010 public hearing. Prepared by Mark Siipola, USACE. September 2010.

The following documents from other agencies were also considered in this evaluation and are part of the DEQ record:

- Analyses of groundwater and floodplain concerns at West Hayden Island dredged material placement site by Bill Mason, DEQ Hydrogeologist. September 2010.
- SEF Project Review Group (PRG) Technical Memorandum for the Sediment Characterization Report for the Federal Project Post Office Bar. Prepared by James McMillan (USACE). August 4, 2010.
- Letter to Port of Portland RE: Beneficial Use Determination BUD20100708 Use of Willamette River Post Office Bar Dredged Sediments as Fill Material at West Hayden Island. Prepared by Audrey O'Brien (DEQ Northwest Region Environmental Partnerships). July 8, 2010.
- Draft SEF PRG Technical Memorandum on suitability for disposal of dredged sediment in water and leave surface management options. July 2, 2010.
- SEF Project Review Group (PRG) Technical Memorandum for the Sediment Characterization Report for the Federal Project Post Office Bar. Prepared by Marci Cook (USACE). June 24, 2009.
- Letter to Port of Portland RE: Placement of Dredge Material / West Hayden Island. Prepared by Wendy Wiles (DEQ Land Quality). May 21, 2009.
- Various verbal and email communications between DEQ and EPA, DEQ Cleanup, NMFS, and USACE, regarding sediment and water contamination levels and management measures.

### **3.2 Notification of Complete Application**

On July 26, 2010, DEQ sent a letter notifying USACE that the application was incomplete. Information outstanding included: an analysis of potential water quality impacts that may result from the project, a Sediment Evaluation Framework (SEF) in-water disposal suitability determination and leave surface management plan; information regarding the proposed project's compliance with other relevant state laws; a Land Use Compatibility Statement (LUCS); and payment of invoice #WQDFC10-0038 dated 5/13/2010.

DEQ agreed to undertake the analyses of potential water quality impacts and compliance with other relevant state laws and prepared relevant sections of a draft Evaluation and Findings Report with regard to these analyses. DEQ has received the final SEF determination on August 4, 2010. DEQ received the LUCS dated August 4, 2010 and, on September 22, 2010, subsequent clarification from the City of Portland that both the dredging and disposal were considered. DEQ received payment of the invoice on July 28, 2010. Following the public hearing, DEQ undertook additional analyses with regard to concerns raised on water quality impacts at the proposed disposal area. The results of the analyses on potential for contamination of surface water, groundwater and wetlands on West Hayden Island and mobilization of contaminants during flooding due to the elevation of the site within the 100 year floodplain have been incorporated into Section 7 of this document.

### **3.3 Legal Name and Address of Project Applicant**

US Army Corps of Engineers  
Attn: CENWP-PM-E  
P.O. Box 2946  
Portland, Oregon 97208-2946

Attn: Carolyn Schneider

### **3.4 Description of Project Location**

The area proposed for dredging is located on the east side of the Federal Navigation Channel, at an area called Post Office Bar, in the Lower Willamette River, at approximately river mile (RM) 2+00 to 2+30, in the City of Portland, Multnomah County, Oregon (Section 22, T2N/R1W).

Due to legacy contamination, EPA has designated a highly industrialized, urban reach of the Willamette River on the National Priority List as the Portland Harbor Superfund Site. While the boundaries of the Superfund Site have not yet been definitively determined, the areas of targeted cleanup span from approximately RM 0 to 12, with areas of interest continuing to approximately RM 14.

The area proposed for disposal of the dredged material is located on the north side of West Hayden Island, in the Columbia River, at approximately RM 105 (approximately 2 miles upriver from the confluence with the Willamette River), in the City of Portland, Multnomah County, Oregon (Section 28, T2N/R1E). The capacity and design of the disposal area allow for complete containment of the dredging slurry and all elutriate, such that no discharge to the Columbia River is anticipated to occur.

### **3.5 Waters of the State Impacted by Project**

The Willamette River and the Columbia River.

### **3.6 Adjacent Landowners**

Port of Portland  
PO Box 3529  
Portland, Oregon 97208

Ash Grove Cement  
13939 North Rivergate  
Boulevard  
Portland, Oregon 97203

Oregon Steel  
14400 North Rivergate  
Boulevard  
Portland, Oregon 97203

## **4. DESCRIPTION OF PROPOSED PROJECT**

In order to maintain safe navigation within the Federal Navigation Channel of the Willamette River, USACE is proposing to remove approximately 75,000 cubic yards (CY) of material which has shoaled at an inside bend on the east bank of the river in an area known as Post Office Bar, which was last dredged in 1989. The material will be removed using a closed-lipped, environmental, clamshell bucket to a depth of approximately -42 feet CRD (including 2 feet of advanced maintenance dredging). Dredged material will be placed on a watertight barge for

transport to a dredged material placement site on West Hayden Island, where it will be offloaded using a mechanical pump with no discharge of decant water to waters of the state.

## **5. ISSUANCE OF PUBLIC NOTICE**

DEQ prepared a draft Evaluation and Findings Report and draft 401 WQC, together referred to as the draft 401 decision, and published them with a request for public comments over a 35 day period, from July 30 to September 3, 2010. On August 4, 2010, DEQ received a request for a public hearing on the draft 401 decision from the Audubon Society of Portland and Willamette Riverkeeper. DEQ published notice of the public hearing on August 11, 2010 and held it on August 30, 2010. The deadline for receipt of public comments was extended to September 7, 2010.

Public comments that were received during the comment periods and public hearing, which are relevant to water quality and beneficial uses, have been summarized. A table assigning numbers to commenters has been included as an Appendix to this document. Comments are discussed within Section 7 of this document and are attributed to commenters using the assigned numbers. Comments related to DEQ's Solid Waste authorities and other topics have not been considered with regard to this document. However, DEQ has prepared a separate response to the issues within DEQ's authority and clarification on those topics that are outside of DEQ's authority, which is included as an attachment to the 401 WQC decision.

## **6. APPLICABLE WATER QUALITY REGULATIONS AND DEQ EVALUATIONS**

Oregon's water quality regulations are contained in Oregon Administrative Rules (OAR) Chapter 340, Divisions 40 through 56 and 71. Division 40 contains the state's groundwater standards. Division 41 entitled "Water Quality Standards: Beneficial Uses, Policies, and Criteria for Oregon" contains the surface water standards, and is the most significant with respect to Section 401 certification evaluation of a proposed project. The requirements and standards set forth in Division 41 were adopted to comply with the surface water quality protection provisions of both state and federal law. The water quality standards in Division 41 are composed of three elements: beneficial uses, water quality criteria (both narrative and numeric), and the antidegradation policy.

### **6.1 Protection of Beneficial Uses**

Both Oregon Law and the federal Clean Water Act are structured to require that water quality be protected and maintained so that existing and potential beneficial uses of public waters are not impaired or precluded by degraded water quality. The regulatory approach used is to:

1. Identify beneficial uses that are recognized as significant with regard to water quality protection;
2. Develop and adopt standards of quality for significant water quality parameters to define the quality that is necessary to protect the identified beneficial uses;
3. Establish and enforce case-by-case discharge limitations for each source that is permitted to discharge treated wastes into public waters to assure that water quality standards are not violated and beneficial uses are not impaired; and



4. Establish and implement “best management practices” for a variety of “land management” activities to minimize their effect to water quality standards or impairment of beneficial uses.

The table below indicates the designated beneficial uses for the Willamette River, as posted on DEQ’s website at: <http://www.deq.state.or.us/wq/rules/div041/dbutables/table340a.pdf>.

<b>Table 1: Beneficial Uses for the Main Stem Willamette River Mouth to Willamette Falls</b>
Public Domestic Water Supply
Private Domestic Water Supply
Industrial Water Supply
Irrigation
Livestock Watering
Fish and Aquatic Life
Wildlife and Hunting
Fishing
Boating
Water Contact Recreation
Aesthetic Quality
Hydro Power
Commercial Navigation & Transportation

The Willamette River in the project reach is designated as a salmon and steelhead migration corridor, as depicted in Figure 340A at: <http://www.deq.state.or.us/wq/rules/div041/fufigures/figure340a.pdf>.

Oregon’s water quality standards have been developed to protect the most sensitive use, which would include any existing use as of 1975. Also, DEQ periodically reviews the standards to make sure they remain protective, and that EPA reviews and approves each standard that is adopted or revised to ensure the standard is protective of designated and existing uses.

## **6.2 Water Quality Standards**

Water quality standards are developed for varying geographic areas to protect beneficial uses. Generally, if a water quality standard fully protects the most sensitive beneficial use, then all beneficial uses are fully protected. Water quality standards have been adopted for water quality parameters that are most significant or useful in regulating pollution. These standards take the form of both numeric limits and narrative criteria and have been established based on best available information at the time they were adopted. Development of standards is a continuing process. As new information becomes available, standards for additional parameters may be added and existing numeric standards or narrative criteria may be revised to better reflect the intent of protection of the identified beneficial uses.

### **6.3 Antidegradation Policy**

Oregon's antidegradation policy (OAR 340-41-0004) applies to all surface waters. In the case of bodies of water that meet water quality standards, it provides for the maintenance of existing water quality. Specifically, it states that the existing quality of high quality waters (i.e., waters meeting water quality standards) shall be maintained and protected unless the Environmental Quality Commission makes certain rigorous findings of need. For water quality-limited waters, water quality may not be lowered except in accord with the specific exceptions in the rule. That is, these waters have a non-degradation status.

## **7. POTENTIAL MODIFICATION OF SURFACE WATER QUALITY**

### **7.1 Antidegradation**

#### **340-041-0004**

- (1) Purpose. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. The standards and policies set forth in OAR 340-041-0007 through 340-041-0350 are intended to supplement the Antidegradation Policy.
- (2) Growth Policy. In order to maintain the quality of waters in the State of Oregon, it is the general policy of the Commission to require that growth and development be accommodated by increased efficiency and effectiveness of waste treatment and control such that measurable future discharged waste loads from existing sources do not exceed presently allowed discharged loads except as provided in section (3) through (9) of this rule.
- (3) Non-degradation Discharges. The following new or increased discharges are subject to this Division. However, because they are not considered degradation of water quality, they are not required to undergo an antidegradation review under this rule:
  - (a) Discharges Into Existing Mixing Zones. Pollutants discharged into the portion of a water body that has been included in a previous mixing zone for a permitted source, including the zones of initial dilution, are not considered a reduction in water quality, so long as the mixing zone is established in accordance with OAR 340-041-0053, there are no other overlapping mixing zones from other point sources, and the discharger complies with all effluent limits set out in its NPDES permit.
  - (b) Water Conservation Activities. An increase in a pollutant concentration is not considered a reduction in water quality so long as the increase occurs as the result of a water conservation activity, the total mass load of the pollutant is not increased, and the concentration increase has no adverse effect on either beneficial uses or threatened or endangered species in the water body.

I Temperature. Insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality.

(d) Dissolved Oxygen. Up to a 0.1 mg/l decrease in dissolved oxygen from the upstream end of a stream reach to the downstream end of the reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species.

(4) Recurring Activities. Since the baseline for applying the antidegradation policy to an individual source is the water quality resulting from the source's currently authorized discharge, and since regularly-scheduled, recurring activities remain subject to water quality standards and the terms and conditions in any applicable federal and state permits, certifications and licenses, the following activities will not be considered new or increasing discharges and will therefore not trigger an antidegradation review under this rule so long as they do not increase in frequency, intensity, duration or geographical extent:

(a) Rotating grazing pastures,

(b) Agricultural crop rotations, and

I Maintenance dredging.

(5) Exemptions to the Antidegradation Requirement. Some activities may, on a short term basis, cause temporary water quality degradation. However, these same activities may also have substantial and desirable environmental benefits. The following activities and situations fall into this category. Such activities and situations remain subject to water quality standards, and must demonstrate that they have minimized adverse affects to threatened and endangered species in order to be exempt from the antidegradation review under this rule:

(a) Riparian Restoration Activities. Activities that are intended to restore the geomorphology or riparian vegetation of a water body, or control invasive species need not undergo an antidegradation review so long as the Department determines that there is a net ecological benefit to the restoration activity. Reasonable measures that are consistent with the restoration objectives for the water body must be used to minimize the degradation;

(b) Emergency Situations. The Director or a designee may, for a period of time no greater than 6 months, allow lower water quality without an antidegradation review under this rule in order to respond to public health and welfare emergencies (for example, a significant threat of loss of life, personal injury or severe property damage); and

I Exceptions. Exceptions authorized by the Commission or Department under (9) of this rule.

(6) High Quality Waters Policy: Where the existing water quality meets or exceeds those levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, and other designated beneficial uses, that level of water quality must be maintained and protected. However, the Environmental Quality Commission, after full satisfaction of the intergovernmental coordination and public participation provisions of the continuing planning

process, and with full consideration of sections (2) and (9) of this rule, and 340-041-0007(4), may allow a lowering of water quality in these high quality waters if it finds:

- (a) No other reasonable alternatives exist except to lower water quality; and
- (b) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and section 401 water quality certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference;

I All water quality standards will be met and beneficial uses protected; and

- (d) Federal threatened and endangered aquatic species will not be adversely affected.
- (7) Water Quality Limited Waters Policy: Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.
- (8) Outstanding Resource Waters Policy. Where existing high quality waters constitute an outstanding State or national resource such as those waters designated as extraordinary resource waters, or as critical habitat areas, the existing water quality and water quality values must be maintained and protected, and classified as "Outstanding Resource Waters of Oregon."
  - (a) The Commission may specially designate high quality water bodies to be classified as Outstanding Resource Waters in order to protect the water quality parameters that affect ecological integrity of critical habitat or special water quality values that are vital to the unique character of those water bodies. The Department will develop a screening process and establish a list of nominated water bodies for Outstanding Resource Waters designation in the Biennial Water Quality Status Assessment Report (305(b) Report). The priority water bodies for nomination include:
    - (A) Those in State and National Parks;
    - (B) National Wild and Scenic Rivers;
    - (C) State Scenic Waterways;
    - (D) Those in State and National Wildlife Refuges; and
    - (E) Those in federally designated wilderness areas.
  - (b) The Department will bring to the Commission a list of water bodies that are proposed for designation as Outstanding Resource Waters at the time of each triennial Water Quality Standards Review; and
  - (c) When designating Outstanding Resource Waters, the Commission may establish the water

quality values to be protected and provide a process for determining what activities are allowed that would not affect the outstanding resource values. After the designation, the Commission may not allow activities that may lower water quality below the level established except on a short term basis to respond to public health and welfare emergencies, or to obtain long-term water quality improvements.

- (9) Exceptions. The Commission or Department may grant exceptions to this rule so long as the following procedures are met:
- (a) In allowing new or increased discharged loads, the Commission or Department must make the following findings:
    - (A) The new or increased discharged load will not cause water quality standards to be violated;
    - (B) The action is necessary and benefits of the lowered water quality outweigh the environmental costs of the reduced water quality. This evaluation will be conducted in accordance with DEQ's "Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications," pages 27, and 33-39 (March 2001) incorporated herein by reference; and
    - (C) The new or increased discharged load will not unacceptably threaten or impair any recognized beneficial uses or adversely affect threatened or endangered species. In making this determination, the Commission or Department may rely upon the presumption that if the numeric criteria established to protect specific uses are met the beneficial uses they were designed to protect are protected. In making this determination the Commission or Department may also evaluate other State and federal agency data that would provide information on potential impacts to beneficial uses for which the numeric criteria have not been set;
    - (D) The new or increased discharged load may not be granted if the receiving stream is classified as being water quality limited under sub-section (a) of the definition of "Water Quality Limited" in OAR 340-041-0002, unless:
      - (i) The pollutant parameters associated with the proposed discharge are unrelated either directly or indirectly to the parameter(s) causing the receiving stream to violate water quality standards and being designated water quality limited; or
      - (ii) Total maximum daily loads (TMDLs), waste load allocations (WLAs) load allocations (LAs), and the reserve capacity have been established for the water quality limited receiving stream; and compliance plans under which enforcement action can be taken have been established; and there will be sufficient reserve capacity to assimilate the increased load under the established TMDL at the time of discharge; or
      - (iii) Effective July 1, 1996, in water bodies designated water-quality limited for dissolved oxygen, when establishing WLAs under a TMDL for water bodies meeting the conditions defined in this rule, the Department may at its discretion provide an allowance for WLAs calculated to result in no measurable reduction of dissolved oxygen (DO). For this purpose, "no measurable

reduction" is defined as no more than 0.10 mg/L for a single source and no more than 0.20 mg/L for all anthropogenic activities that influence the water quality limited segment. The allowance applies for surface water DO criteria and for Inter-gravel dissolved oxygen (IGDO) if a determination is made that the conditions are natural. The allowance for WLAs applies only to surface water 30-day and seven-day means; or

(iv) Under extraordinary circumstances to solve an existing, immediate and critical environmental problem, the Commission or Department may, after the completion of a TMDL but before the water body has achieved compliance with standards, consider a waste load increase for an existing source on a receiving stream designated water quality limited under sub-section (a) of the definition of "Water Quality Limited" in OAR 340-041-0002. This action must be based on the following conditions:

(I) That TMDLs, WLAs and LAs have been set; and

(II) That a compliance plan under which enforcement actions can be taken has been established and is being implemented on schedule; and

(III) That an evaluation of the requested increased load shows that this increment of load will not have an unacceptable temporary or permanent adverse effect on beneficial uses or adversely affect threatened or endangered species; and

(IV) That any waste load increase granted under subparagraph (iv) of this paragraph is temporary and does not extend beyond the TMDL compliance deadline established for the water body. If this action will result in a permanent load increase, the action has to comply with subparagraphs (i) or (ii) of this paragraph.

(b) The activity, expansion, or growth necessitating a new or increased discharge load is consistent with the acknowledged local land use plans as evidenced by a statement of land use compatibility from the appropriate local planning agency.

(c) Oregon's water quality management policies and programs recognize that Oregon's water bodies have a finite capacity to assimilate waste. Unused assimilative capacity is an exceedingly valuable resource that enhances in-stream values and environmental quality in general. Allocation of any unused assimilative capacity should be based on explicit criteria. In addition to the conditions in subsection (a) of this section, the Commission or Department may consider the following:

(A) Environmental Effects Criteria:

(i) Adverse Out-of-Stream Effects. There may be instances where the non-discharge or limited discharge alternatives may cause greater adverse environmental effects than the increased discharge alternative. An example may be the potential degradation of groundwater from land application of wastes;

(ii) In-stream Effects. Total stream loading may be reduced through elimination or reduction of

other source discharges or through a reduction in seasonal discharge. A source that replaces other sources, accepts additional waste from less efficient treatment units or systems, or reduces discharge loadings during periods of low stream flow may be permitted an increased discharge load year-round or during seasons of high flow, so long as the loading has no adverse affect on threatened and endangered species;

(iii) Beneficial Effects. Land application, upland wetlands application, or other non-discharge alternatives for appropriately treated wastewater may replenish groundwater levels and increase streamflow and assimilative capacity during otherwise low streamflow periods.

(B) Economic Effects Criteria. When assimilative capacity exists in a stream, and when it is judged that increased loadings will not have significantly greater adverse environmental effects than other alternatives to increased discharge, the economic effect of increased loading will be considered. Economic effects will be of two general types:

(i) Value of Assimilative Capacity. The assimilative capacity of Oregon's streams is finite, but the potential uses of this capacity are virtually unlimited. Thus it is important that priority be given to those beneficial uses that promise the greatest return (beneficial use) relative to the unused assimilative capacity that might be utilized. In-stream uses that will benefit from reserve assimilative capacity, as well as potential future beneficial use, will be weighed against the economic benefit associated with increased loading;

(ii) Cost of Treatment Technology. The cost of improved treatment technology, non-discharge and limited discharge alternatives may be evaluated.

### **7.1.1 Application of Antidegradation Policy**

The above rule is generally designed to address new or increased pollutant loads, such as in a National Pollutant Discharge Elimination System (NPDES) permitted discharge. However, applicability can also be drawn for use in 401 WQC evaluation of new or increased pollutant loads or potential for impairment.

The above rule sections require that existing high quality waters, where quality exceeds the levels necessary to protect fish, shellfish, wildlife, and recreation, must be maintained and protected. Exceptions are delineated and include a determination by the Environmental Quality Commission (EQC) or DEQ to allow lowered water quality for justifiable reasons, such as short-term (one month or less) lowering of water quality to respond to emergencies or otherwise protect public health and welfare. These sections also require DEQ to minimize degradation of water quality limited waters and protect the recognized beneficial uses of such waters by requiring the highest and best practicable control of all waste discharges and activities. These sections, in conjunction with other provisions of the water quality standards contained in OAR 340- 41 are intended to assure that water quality is not changed so as to impair designated beneficial uses of the water.

DEQ is required to interpret and apply the EQC adopted water quality standards, including the antidegradation policy, in a manner consistent with the guiding federal rules. DEQ has developed an internal management directive (IMD) to guide interpretation of the antidegradation policy when considering issuance of water quality permits and certifications.

The IMD details the following steps:

1. Determine if an Antidegradation Review is needed;
2. If needed, determine if a significant lowering of water quality will occur;
3. Factors to consider in allowing a lowering of water quality include:
  - a. The classification of the waterbody (outstanding, high, or limited);
  - b. Consideration of alternative treatments; and,
  - c. Comparison of the economic or social benefits with the environmental costs;
4. Determine whether or not the permit or certification should be drafted. DEQ typically allows approval of new discharges or activities that may have some theoretical or detectable impact on quality of waters provided that:
  - a. Adverse impact on water quality will not be significant;
  - b. Any change in water quality will not adversely affect existing, designated and potential beneficial uses; and,
  - c. Highest and best practicable treatment and control of waste discharges and activities is employed to minimize any adverse effects on water quality.
5. Publish the Antidegradation review for public comment.

Under ordinary circumstances, compliance with the water quality standards in OAR 340-041 would be considered sufficient to assure that beneficial uses will be protected. However, if a standard has not been adopted for a pollutant parameter of concern, or if new information indicates that an existing standard is not adequate to prevent adverse water quality impact on a beneficial use in the particular situation, DEQ is required to impose more stringent water quality protection measures to protect designated beneficial uses, including denial of project approval if necessary.

### **7.1.2 Present Condition of Antidegradation**

The Willamette River is not currently designated as outstanding or high quality water. The Willamette River is classified as water quality limited under the federal CWA. US Environmental Protection Agency (EPA) approved Total Maximum Daily Loads (TMDLs) have been developed for the parameters of Bacteria, Dioxin and Temperature and it is on Section 303(d) list of impaired waterbodies for the parameters of Mercury, Dissolved Oxygen, Iron, DDT, DDE (DDT metabolite), PCBs, Arsenic, Aldrin, Dieldrin, PAHs, Manganese, Pentachlorophenol, and Biological Criteria. Other parameters listed for potential concern include: Hexavalent Chromium, Lead, Copper, Nickel, Zinc, Parathion, Malathion, Fluoranthene, Chrysene, DDD, Benzo(A)pyrene, and Benzo(A)anthracene.

The Portland Harbor Superfund Site has been designated by EPA, initiating an assessment and remediation process to address widespread legacy contamination that is present in the lower reaches of the Willamette River. Areas targeted for cleanup span from approximately RM 0 to 12, with areas of interest continuing to approximately RM 14.

### **7.1.3 Applicant's Position on Antidegradation**

The applicant did not provide any discussion on the Antidegradation Policy or any data or evaluation on the potential impacts to the river as a result of the proposed project. However, the applicant submitted a response to concerns raised at the public hearing regarding potential toxics exposure and distribution to the Columbia River, groundwater, and wetlands on Hayden Island



following placement of dredged material and subsequent flooding or infiltration of elutriate and future stormwater. The information submitted discussed a berm created by the Port of Portland from prior placed dredged material that surrounds the placement area and the elevation of which is approximately five feet above the 100 year floodplain. The submittal also included an analysis of the likelihood for groundwater to become contaminated by water leaching through the dredged material after placement on Hayden Island, which concluded this was not a realistic possibility.

#### **7.1.4 Public Comment on Antidegradation**

Commenter 5 stated that allowing the proposed dredging would be inconsistent with the Antidegradation standard because DEQ's analysis lacks full protection of all beneficial uses. This was because NMFS' Biological Opinion indicates adverse impacts to individual salmonids from the dredging proposal and temporary turbidity exceedances and toxics exposure will be significant for these species on the brink of extinction, such that the 401 should be denied. Commenter 1 was concerned that listed salmonids and other wildlife and people would be exposed to toxics due to flooding of the disposal site or its hydrologic connection to the river, groundwater, and wetlands and that this would degrade multiple beneficial uses. Other commenters (3, 4, 7, 8) shared similar concerns with regard to flooding or placement of contaminants in the floodplain.

#### **7.1.5 DEQ Evaluation on Antidegradation**

The Willamette River is classified as a water quality limited water. Therefore, further degradation of listed parameters or degradation that would cause new parameters to be listed is not permissible. While 340-041-0004 (4)(c) exempts maintenance dredging from triggering an Antidegradation review, DEQ understands that this section of the river was last dredged in 1989, such that a proposal for dredging in 2010 cannot be considered a regular recurring activity as described in the rule. As such, DEQ considers the proposed dredging as a new discharge with the potential to cause degradation and DEQ undertook an Antidegradation Review for a water quality limited water.

Initial concerns for potential degradation relate to the Toxic Substances and Total Dissolved Solids standards criteria because dredging is proposed within the Portland Harbor Superfund site, which has known levels of contamination in exceedance of multi-agency Sediment Evaluation Framework screening levels and DEQ Bioaccumulation screening levels. Further, because EPA has not yet completed a Record of Decision for the Portland Harbor, with selected remedies and allowable levels of contaminants, there is uncertainty with regard to levels of contaminants of concern to target in monitoring.

Despite these uncertainties, the proposal includes measures to avoid potential degradation. DEQ acknowledges that successful containment of all decant water and placement of all material and water removed in a contained disposal facility will eliminate many of the potential risks for water quality degradation. DEQ undertook additional analyses in response to concerns raised at DEQ's public hearing with regard to potential contamination of surface and ground waters due to the elevation of the dredged material placement facility being within the 100 year floodplain and its potential to allow contaminants to infiltrate to the Columbia River, groundwater, and connected wetlands. The results of these analyses found that there will be virtually no impact to the river, groundwater or wetlands as a result of the placement of contaminated dredged material and subsequent infiltration of elutriate or future stormwater or from flood waters overtopping the berms (Mason, 2010). This is because: 1) the material is largely silt and clay; 2) the contaminants of

concern are hydrophobic (meaning they adhere readily to silt, clay and organics rather than becoming dissolved in water); 3) there is adequate organic material present at the placement site to accommodate additional adsorption of contaminants as water infiltrates there; 4) the flow path for groundwater from beneath the placement area to the Columbia is approximately 2 years; 5) any chemicals that could partition into groundwater would comprise a very low flow rate (0.3 cfs); 6) the dilution ratio of groundwater into the Columbia is over 2 million to 1; 7) wetlands are unlikely to be affected by groundwater which occurs approximately 10 to 15 feet below the surface; and 8) under a worst case scenario of all 75,000 cy of dredged material being discharged to the Columbia River during a flood, the fine material will be dispersed widely such that toxic concentrations will dissipate.

In addition, DEQ findings on Toxic Substances (Section 7.11) and Total Dissolved Solids (Section 7.10) describe the assessment of risk by EPA and DEQ with regard to the dredging proposal, indicating there is minimal risk for degradation of these standards. Even so, robust monitoring of the monitored natural recovery proposal for management of the newly exposed surface must be a required component of confirming this assessment. The certification must include contingency measures in the event of unforeseen circumstances or faulty assessment results in unacceptable risk. Finally, additional conditions with best management practices and control measures that are designed to be protective of water quality must be included in the certification.

#### **7.1.6 DEQ Finding on Antidegradation**

DEQ's Antidegradation Review for this proposal determined that any theoretical or detectable lowering of water quality as a result of the proposed dredging and disposal would not be significant. This is supported by the evaluation and findings on each water quality criteria (Section 7.2 through 7.13 of this document) that conclude that either: the numeric or narrative criteria will not be negatively affected by the proposed actions; conditions can be imposed to avoid impairment; or contingency measures can be implemented to mitigate unexpected impairment.

With no significant lowering of water quality, DEQ determined that beneficial uses are not adversely affected.

Provided that all of the conditions identified in this Findings document for inclusion in a 401 WQC are implemented, the proposed action will be in compliance with DEQ's Antidegradation policy.

## **7.2 Statewide Narrative Criteria**

### **340-041-0007**

- (1) Notwithstanding the water quality standards contained in this Division, the highest and best practicable treatment and/or control of wastes, activities, and flows must in every case be provided so as to maintain dissolved oxygen and overall water quality at the highest possible levels and water temperatures, coliform bacteria concentrations, dissolved chemical substances, toxic materials, radioactivity, turbidities, color, odor, and other deleterious factors at the lowest possible levels.
- (2) Where a less stringent natural condition of a water of the State exceeds the numeric criteria set out in this Division, the natural condition supersedes the numeric criteria and becomes the

standard for that water body. However, there are special restrictions, described in OAR 340-041-0004(9)(a)(D)(iii), that may apply to discharges that affect dissolved oxygen.

- (3) For any new waste sources, alternatives that utilize reuse or disposal with no discharge to public waters must be given highest priority for use wherever practicable. New source discharges may be approved subject to the criteria in OAR 340-041-0004(9).
- (4) No discharges of wastes to lakes or reservoirs may be allowed except as provided in section OAR 340-041-0004(9).
- (5) Logging and forest management activities must be conducted in accordance with the Oregon Forest Practices Act to minimize adverse effects on water quality.
- (6) Log handling in public waters must conform to current Commission policies and guidelines.
- (7) Sand and gravel removal operations must be conducted pursuant to a permit from the Division of State Lands and separated from the active flowing stream by a watertight berm wherever physically practicable. Recirculation and reuse of process water must be required wherever practicable. Discharges or seepage or leakage losses to public waters may not cause a violation of water quality standards or adversely affect legitimate beneficial uses.
- (8) Road building and maintenance activities must be conducted in a manner so as to keep waste materials out of public waters and minimize erosion of cut banks, fills, and road surfaces.
- (9) In order to improve controls over nonpoint sources of pollution, federal, State, and local resource management agencies will be encouraged and assisted to coordinate planning and implementation of programs to regulate or control runoff, erosion, turbidity, stream temperature, stream flow, and the withdrawal and use of irrigation water on a basin-wide approach so as to protect the quality and beneficial uses of water and related resources. Such programs may include, but not be limited to, the following:
  - (a) Development of projects for storage and release of suitable quality waters to augment low stream flow;
  - (b) Urban runoff control to reduce erosion;
  - (c) Possible modification of irrigation practices to reduce or minimize adverse impacts from irrigation return flows;
  - (d) Stream bank erosion reduction projects; and
  - (e) Federal water quality restoration plans.
- (10) The development of fungi or other growths having a deleterious effect on stream bottoms, fish or other aquatic life, or that are injurious to health, recreation, or industry may not be

allowed;

- (11) The creation of tastes or odors or toxic or other conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water or the palatability of fish or shellfish may not be allowed;
  - (12) The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed;
  - (13) Objectionable discoloration, scum, oily sheens, or floating solids, or coating of aquatic life with oil films may not be allowed;
  - (14) Aesthetic conditions offensive to the human senses of sight, taste, smell, or touch may not be allowed;
  - (15) Radioisotope concentrations may not exceed maximum permissible concentrations (MPC's) in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard;
  - (16) Minimum Design Criteria for Treatment and Control of Wastes. Except as provided in OAR 340-041-0101 through 340-041-0350, and subject to the implementation requirements set forth in OAR 340-041-0061, prior to discharge of any wastes from any new or modified facility to any waters of the State, such wastes must be treated and controlled in facilities designed in accordance with the following minimum criteria.
    - (a) In designing treatment facilities, average conditions and a normal range of variability are generally used in establishing design criteria. A facility once completed and placed in operation should operate at or near the design limit most of the time but may operate below the design criteria limit at times due to variables which are unpredictable or uncontrollable. This is particularly true for biological treatment facilities. The actual operating limits are intended to be established by permit pursuant to ORS 468.740 and recognize that the actual performance level may at times be less than the design criteria.
- (A) Sewage wastes:
- (i) Effluent BOD concentrations in mg/l, divided by the dilution factor (ratio of receiving stream flow to effluent flow) may not exceed one unless otherwise approved by the Commission;
  - (ii) Sewage wastes must be disinfected, after treatment, equivalent to thorough mixing with sufficient chlorine to provide a residual of at least 1 part per million after 60 minutes of contact time unless otherwise specifically authorized by permit;
  - (iii) Positive protection must be provided to prevent bypassing raw or inadequately treated sewage to public waters unless otherwise approved by the Department where elimination of inflow

and infiltration would be necessary but not presently practicable; and

(iv) More stringent waste treatment and control requirements may be imposed where special conditions make such action appropriate.

(B) Industrial wastes:

(i) After maximum practicable in-plant control, a minimum of secondary treatment or equivalent control (reduction of suspended solids and organic material where present in significant quantities, effective disinfection where bacterial organisms of public health significance are present, and control of toxic or other deleterious substances);

(ii) Specific industrial waste treatment requirements may be determined on an individual basis in accordance with the provisions of this plan, applicable federal requirements, and the following:

(I) The uses that are or may likely be made of the receiving stream;

(II) The size and nature of flow of the receiving stream;

(III) The quantity and quality of wastes to be treated; and

(IV) The presence or absence of other sources of pollution on the same watershed.

(iii) Where industrial, commercial, or agricultural effluents contain significant quantities of potentially toxic elements, treatment requirements may be determined utilizing appropriate bioassays;

(iv) Industrial cooling waters containing significant heat loads must be subjected to off-stream cooling or heat recovery prior to discharge to public waters;

(v) Positive protection must be provided to prevent bypassing of raw or inadequately treated industrial wastes to any public waters;

(vi) Facilities must be provided to prevent and contain spills of potentially toxic or hazardous materials.

### **7.2.1 Application of Standard for Narrative Criteria**

This standard is self-explanatory in its purpose to prohibit degradation of water quality, particularly with respect to aesthetic offenses, and to ensure that where natural (non-anthropogenic) causes result in water quality that exceeds the numeric criteria, that the naturally occurring condition shall be the standard.

## **7.2.2 Present Condition of Narrative Criteria**

### **7.2.2.1 Fungi and Other Growths**

There is no current information available as to unacceptable deleterious effect on stream bottoms, fish or other aquatic life; or demonstrating that fungi or other growths are injurious to health, recreation, or industry in the Willamette River.

### **7.2.2.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability**

There is no current information available as to unacceptable taste or odor of Willamette and Columbia River waters. Toxics are discussed in Section 7.11 of this document. The Willamette and Columbia Rivers are listed as impaired for multiple parameters which may contribute to deleterious conditions for fish and aquatic life. Drinking water is not drawn from these reaches of the Willamette and Columbia Rivers. While fishing and shellfish harvest occurs in the Willamette and Columbia Rivers, no information is available to indicate any adverse affects to fish or shellfish palatability.

### **7.2.2.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits**

The location and orientation of the project area within the channel results in accumulation of appreciable bottom deposits. However, these deposits are a natural component of river action, rather than a formation as a result of specific action by the applicant. The intent of the project is to remove these appreciable bottom deposits, with the understanding that they will accumulate once again.

### **7.2.2.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films**

No information is available that indicates that any of these issues are currently present in the Willamette River at this location. However, the potential for sheens to appear due to accidental spills or incidental to industrial uses is present in the area.

### **7.2.2.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch**

No information is available that indicates that any of these issues are currently present in the Willamette River at this location.

### **7.2.2.6 Radioisotope Concentrations**

No information is available that indicates exceedance of maximum permissible concentrations in drinking water, edible fishes or shellfishes, wildlife, irrigated crops, livestock and dairy products, or pose an external radiation hazard.

### **7.2.2.7 Minimum Design Criteria for Treatment and Control of Wastes**

Not applicable.

### **7.2.3 Applicant's Position on Narrative Criteria**

#### **7.2.3.1 Fungi and Other Growths**

#### **7.2.3.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability**

#### **7.2.3.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits**

#### **7.2.3.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films**

#### **7.2.3.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch**

#### **7.2.3.6 Radioisotope Concentrations**

#### **7.2.3.7 Minimum Design Criteria for Treatment and Control of Wastes**

The applicant did not provide data or evaluation on the potential impacts to Narrative Criteria in the Willamette River as a result of the proposed project.

### **7.2.4 Public Comment on Narrative Criteria**

#### **7.2.4.1 Fungi and Other Growths**

#### **7.2.4.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability**

#### **7.2.4.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits**

#### **7.2.4.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films**

#### **7.2.4.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch**

#### **7.2.4.6 Radioisotope Concentrations**

#### **7.2.4.7 Minimum Design Criteria for Treatment and Control of Wastes**

No public comments were received specific to most of the Narrative Criteria listed above. Several commenters (1, 2, 3, 4, 5, 7, 8) raised concern about creation of toxic conditions that would be deleterious to fish or aquatic life due to placement of contaminants in the floodplain on Hayden Island.

## **7.2.5 DEQ Evaluation on Narrative Criteria**

### **7.2.5.1 Fungi and Other Growths**

### **7.2.5.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability**

### **7.2.5.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits**

### **7.2.5.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films**

### **7.2.5.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch**

### **7.2.5.6 Radioisotope Concentrations**

### **7.2.5.7 Minimum Design Criteria for Treatment and Control of Wastes**

DEQ believes that most of the narrative criteria will remain unaffected by the proposed dredging and disposal activities.

As described in the evaluation and findings for each water quality criterion (Section 7.2 through 7.13 of this document), the proposed activity is unlikely to result in creation of conditions deleterious to fish or aquatic life or to worsen currently degraded conditions.

While accidental sheens are a risk of mechanical dredging operations, conditions can be imposed for protection of aquatic life, recreational and industrial uses.

## **7.2.6 DEQ Finding on Narrative Criteria**

### **7.2.6.1 Fungi and Other Growths**

### **7.2.6.2 Creation of Taste, Odor, Toxic or Other Conditions Deleterious to Fish, Aquatic Life, Drinking Water Potability or Fish or Shellfish Palatability**

### **7.2.6.3 Appreciable Bottom or Sludge Deposits or any Organic or Inorganic Deposits**

### **7.2.6.4 Objectionable Discoloration, Scum, Oil Sheens, or Floating Solids or Coating of Aquatic Life with Oil Films**

### **7.2.6.5 Aesthetic Conditions Offensive to the Human Senses of Sight, Taste, Smell or Touch**

### **7.2.6.6 Radioisotope Concentrations**

### **7.2.6.7 Minimum Design Criteria for Treatment and Control of Wastes**

While the applicant has proposed preventative measures and monitoring for accidental or incidental



release of fluids which may cause sheens, conditions requiring spill prevention and response measures should be imposed to minimize impacts from potential sheens.

### 7.3 Bacteria

#### 340-041-0009

- (1) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) may not exceed the criteria described in paragraphs (a) and (b) of this paragraph:
  - (a) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:
    - (A) A 30-day log mean of 126 *E. coli* organisms per 100 milliliters, based on a minimum of five (5) samples;
    - (B) No single sample may exceed 406 *E. coli* organisms per 100 milliliters.
  - (b) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.
- (2) Raw Sewage Prohibition: No sewage may be discharged into or in any other manner be allowed to enter the waters of the State, unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;
- (3) Animal Waste: Runoff contaminated with domesticated animal wastes must be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;
- (4) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health may not be allowed;
- (5) Effluent Limitations for Bacteria: Except as allowed in subsection I of this section, upon NPDES permit renewal or issuance, or upon request for a permit modification by the permittee at an earlier date, effluent discharges to freshwaters, and estuarine waters other than shellfish growing waters may not exceed a monthly log mean of 126 *E. coli* organisms per 100 ml. No single sample may exceed 406 *E. coli* organisms per 100 ml. However, no violation will be found, for an exceedance if the permittee takes at least five consecutive re-samples at four-hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the log mean of the five re-samples is less than or equal to 126 *E. coli*. The following conditions apply:
  - (a) If the Department finds that re-sampling within the timeframe outlined in this section would pose an undue hardship on a treatment facility, a more convenient schedule may be negotiated in the permit, provided that the permittee demonstrates that the sampling delay will result in no

increase in the risk to water contact recreation in waters affected by the discharge;

(b) The in-stream criterion for chlorine listed in Table 20 must be met at all times outside the assigned mixing zone;

I For sewage treatment plants that are authorized to use reclaimed water pursuant to OAR 340, division 55, and that also use a storage pond as a means to dechlorinate their effluent prior to discharge to public waters, effluent limitations for bacteria may, upon request by the permittee, be based upon appropriate total coliform, limits as required by OAR 340, division 55:

(A) Level II limitations: No two consecutive samples may exceed 240 total coliform per 100 milliliters.

(B) Level III and Level IV limitations: No single sample may exceed 23 total coliform per 100 milliliters.

I No violation will be found for an exceedance under this paragraph if the permittee takes at least five consecutive re-samples at four hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample(s) were taken; and in the case of Level II effluent, the log mean of the five re-samples is less than or equal to 23 total coliform per 100 milliliters or, in the case of Level III and IV effluent, if the log mean of the five re-samples is less than or equal to 2.2 total coliform per 100 milliliters.

(6) Sewer Overflows in winter: Domestic waste collection and treatment facilities are prohibited from discharging raw sewage to waters of the State during the period of November 1 through May 21, except during a storm event greater than the one-in-five-year, 24-hour duration storm. However, the following exceptions apply:

(a) The Commission may on a case-by-case basis approve a bacteria control management plan to be prepared by the permittee, for a basin or specified geographic area which describes hydrologic conditions under which the numeric bacteria criteria would be waived. These plans will identify the specific hydrologic conditions, identify the public notification and education processes that will be followed to inform the public about an event and the plan, describe the water quality assessment conducted to determine bacteria sources and loads associated with the specified hydrologic conditions, and describe the bacteria control program that is being implemented in the basin or specified geographic area for the identified sources;

(b) Facilities with separate sanitary and storm sewers existing on January 10, 1996, and which currently experience sanitary sewer overflows due to inflow and infiltration problems, must submit an acceptable plan to the Department at the first permit renewal, which describes actions that will be taken to assure compliance with the discharge prohibition by January 1, 2010. Where discharges occur to a receiving stream with sensitive beneficial uses, the Department may negotiate a more aggressive schedule for discharge elimination;

I On a case-by-case basis, the beginning of winter may be defined as October 15, if the permittee so requests and demonstrates to the Department's satisfaction that the risk to beneficial uses,

including water contact recreation, will not be increased due to the date change.

(7) Sewer Overflows in summer: Domestic waste collection and treatment facilities are prohibited from discharging raw sewage to waters of the State during the period of May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm. The following exceptions apply:

(a) For facilities with combined sanitary and storm sewers, the Commission may on a case-by-case basis approve a bacteria control management plan such as that described in subsection (6)(a) of this rule;

(b) On a case-by-case basis, the beginning of summer may be defined as June 1 if the permittee so requests and demonstrates to the Department's satisfaction that the risk to beneficial uses, including water contact recreation, will not be increased due to the date change;

I For discharge sources whose permit identifies the beginning of summer as any date from May 22 through May 31: If the permittee demonstrates to the Department's satisfaction that an exceedance occurred between May 21 and June 1 because of a sewer overflow, and that no increase in risk to beneficial uses, including water contact recreation, occurred because of the exceedance, no violation may be triggered, if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

(8) Storm Sewers Systems Subject to Municipal NPDES Stormwater Permits: Best management practices must be implemented for permitted storm sewers to control bacteria to the maximum extent practicable. In addition, a collection-system evaluation must be performed prior to permit issuance or renewal so that illicit and cross connections are identified. Such connections must be removed upon identification. A collection system evaluation is not required where the Department determines that illicit and cross connections are unlikely to exist.

(9) Storm Sewers Systems Not Subject to Municipal NPDES Stormwater Permits: A collection system evaluation must be performed of non-permitted storm sewers by January 1, 2005, unless the Department determines that an evaluation is not necessary because illicit and cross connections are unlikely to exist. Illicit and cross-connections must be removed upon identification.

(10) Water Quality Limited for Bacteria: In those water bodies, or segments of water bodies identified by the Department as exceeding the relevant numeric criteria for bacteria in the basin standards and designated as water-quality limited under section 303(d) of the Clean Water Act, the requirements specified in section 11 of this rule and in OAR 340-041-0061(12) must apply.

(11) In water bodies designated by the Department as water-quality limited for bacteria, and in accordance with priorities established by the Department, development and implementation of a bacteria management plan may be required of those sources that the Department determines to be contributing to the problem. The Department may determine that a plan is not necessary for a particular stream segment or segments within a water-quality limited

basin based on the contribution of the segment(s) to the problem. The bacteria management plans will identify the technologies, best management practices and/or measures and approaches to be implemented by point and nonpoint sources to limit bacterial contamination. For point sources, their National Pollutant Discharge Elimination System permit is their bacteria management plan. For nonpoint sources, the bacteria management plan will be developed by designated management agencies (DMAs) which will identify the appropriate best management practices or measures and approaches.

### **7.3.1 Application of Standard of Bacteria**

This is a stream standard of public health significance which takes into account the cumulative impacts of all coliform bacteria discharges; however, its major emphasis is on the control of human fecal coliform bacteria sources.

### **7.3.2 Present Condition of Bacteria**

Livestock and other sources of fecal related bacteria that could enter the Willamette River exist upstream of the project area. Multiple municipal and industrial waste water discharges, which may contain bacteria, are permitted into the Willamette River. Multiple streams in the Willamette Basin are listed as impaired for the parameter of Bacteria and an EPA approved TMDL has been developed. Associated Water Quality Management Plans have been developed by various Designated Management Agencies to attain reductions in Bacteria toward improving stream conditions for this criterion.

### **7.3.3 Applicant's Position on Bacteria**

The applicant did not provide data or evaluation on the potential impacts to Bacteria in the Willamette River as a result of the proposed project.

### **7.3.4 Public Comment on Bacteria**

No public comments were received specific to the Bacteria criterion.

### **7.3.5 DEQ Evaluation on Bacteria**

The proposed dredging and disposal are unlikely to result in any addition or mobilization of Bacteria.

### **7.3.6 DEQ Finding on Bacteria**

Bacteria levels will not be impaired or improved by the proposed action.

## **7.4 Biocriteria**

### **340-041-0011**

Waters of the State shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.

### **340-041-0002**

Defines “without changes in the resident biological community” as “no loss of ecological integrity when compared to natural conditions at an appropriate reference site or region.” “Ecological integrity” is defined as “the summation of chemical, physical and biological integrity capable of supporting and maintaining a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat for the region.” An “appropriate reference site or region” is further defined as “a site on the same water body, or within the same basin or eco-region that has similar habitat conditions, and represents the water quality and biological community attainable within the area of concern.”

#### **7.4.1 Application of Biocriteria Standard**

The biocriteria standard is meant to complement the other parameter-specific criteria in the following manner. The parameter-specific criteria are designed to give full protection to the most sensitive beneficial use, with the implicit assumption that if the most sensitive beneficial use is protected, then all uses will be protected. However, the application of these criteria is very limited in considering multiple stressors and cumulative effects. By contrast, the biocriteria are aimed at gaining the ability to assess total impact to the community in situ. Biocriteria make it possible to evaluate the impact of a source without a need for measuring every possible water quality variable. Thus, the standard is applied as a measure of the impact of a source by comparing the biological integrity (as represented by appropriate expressions) downstream of the source with that at a reference site or region.

#### **7.4.2 Present Condition of Biocriteria**

The main stem Willamette River is listed on the CWA 303 (d) list of impaired waterbodies for the parameter of Biocriteria.

The documented biological community within the Willamette River includes resident and anadromous fish, turtles, amphibians, aquatic invertebrates, passerine birds, shore birds, raptors, and small mammals, though the water quality criteria of Biocriteria applies only to aquatic life. Some of the aquatic species of this community are listed as threatened or endangered under the Federal and State Endangered Species Acts, as detailed in the NMFS Biological Opinion and on ODFW lists. The ecological integrity of the lower Willamette River is degraded due to continued anthropogenic disturbance associated with the current and historic land use practices, particularly urban stormwater runoff and legacy toxic streambed and upland contamination.

Appropriately representative reference sites for this area have not been identified. However, extensive bank hardening structures throughout the Lower Willamette River, intensive industrial use of the reach, as yet unaddressed legacy contamination, and on-going maintenance of the navigation channel are likely to limit biological diversity and integrity. This is limiting for any meaningful comparisons.

#### **7.4.3 Applicant’s Position on Biocriteria**

The applicant did not provide data or evaluation specific to the potential impacts to the criterion of Biocriteria in the Willamette River as a result of the proposed project. The applicant prepared a Biological Assessment with respect to potential impacts to the trust species of NMFS and USFWS that were listed as of 2008. This assessment provides some information on salmonids, their habitat needs, and potential impacts related to dredging, but it does not address the aquatic ecosystem as a whole.

#### **7.4.4 Public Comment on Biocriteria**

No public comments were received specific to the criterion of Biocriteria. However, several commenters (1, 2, 3, 4, 5, 7, 8) expressed concerns for the effects of toxics exposure on different components of the biological community, most prominently listed salmonids.

#### **7.4.5 DEQ Evaluation on Biocriteria**

Consultation on impacts to threatened and endangered species with NMFS provided provisions which, if implemented, will be protective of the listed species. Assessment of preservation of the biological integrity of the system is a more complex task than protection of salmonids, the most sensitive use. However, the designation of the Lower Willamette River as a salmonid and steelhead migration corridor indicates the importance of chiefly considering salmonids as an indicator for the overall health of the system.

As an historic “working harbor,” this stretch of the Lower Willamette River has been transformed from a natural system with abundant habitat opportunities to a controlled system with hardened banks and limited vegetative inputs. Despite impaired water quality, presence of toxics, and limited stream diversity and refugia opportunities, salmonid migration still occurs through this reach. Thus, the supports of adequate prey species and other food sources and suboptimal refugia opportunities must be available to these resilient fish. These supports for migration are undoubtedly found in areas outside of the navigation channel and industrial berthing areas, which see heavy vessel traffic.

In the larger context of this industrialized system, there appears to be capacity within the ecological system to continue to support some level of integrity. Provided USACE carefully implements adequate controls, monitoring and contingency measures during and after dredging, relative to the potential distribution of existing toxics, it is unlikely that the minimal amount of dredging proposed in this short bend of the highly used navigation channel will pose significant risk to the existing level of ecological integrity of the system.

#### **7.4.6 DEQ Finding on Biocriteria**

Based on the available information and existing levels of ecological integrity in the Lower Willamette River, risks to Biocriteria are minimal and related to potential distribution of existing toxic contamination. As determined in Section 7.11.6 DEQ Finding on Toxic Substances, direct exposure and subsequent distribution are anticipated to be low provided adequate, clean material is deposited as anticipated in the newly dredged area. In order to confirm this, baseline contaminant levels and periodic monitoring of sediment quantity and quality accumulated over the newly exposed surfaces must be undertaken. Further, contingency measures must be developed and implemented in the event that monitoring demonstrates that actual exposure levels and durations are having an unacceptable risk to aquatic life. In the unlikely event that adverse effects to the ecological integrity of the area are identified as a result of exposure to contamination following dredging and despite implementation of monitored natural recovery and contingency efforts, additional measures that could include on-site or off-site compensatory mitigation must be required.

## 7.5 Dissolved Oxygen (DO)

### 340-041-0016

No wastes may be discharged and no activities may be conducted that either alone or in combination with other wastes or activities will cause violation of the following standards: The changes adopted by the Commission on January 11, 1996, become effective July 1, 1996. Until that time, the requirements of this rule that were in effect on January 10, 1996, apply:

- (1) For water bodies identified as active spawning areas in the places and times indicated on the following Tables and Figures set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, 121B, and 190B, and Figures 130B, 151B, 160B, 170B, 180A, 201A, 220B, 230B, 260A, 271B, 286B, 300B, 310B, 320B, and 340B, (as well as any active spawning area used by resident trout species), the following criteria apply during the applicable spawning through fry emergence periods set forth in the tables and figures and, where resident trout spawning occurs, during the time trout spawning through fry emergence occurs:
  - (a) The dissolved oxygen may not be less than 11.0 mg/l. However, if the minimum intergravel dissolved oxygen, measured as a spatial median, is 8.0 mg/l or greater, then the DO criterion is 9.0 mg/l;
  - (b) Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 11.0 mg/l or 9.0 mg/l criteria, dissolved oxygen levels must not be less than 95 percent of saturation;

I The spatial median inter-gravel dissolved oxygen concentration must not fall below 8.0 mg/l.
- (2) For water bodies identified by the Department as providing cold-water aquatic life, the dissolved oxygen may not be less than 8.0 mg/l as an absolute minimum. Where conditions of barometric pressure, altitude, and temperature preclude attainment of the 8.0 mg/l, dissolved oxygen may not be less than 90 percent of saturation. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 8.0 mg/l as a 30-day mean minimum, 6.5 mg/l as a seven-day minimum mean, and may not fall below 6.0 mg/l as an absolute minimum (Table 21);
- (3) For water bodies identified by the Department as providing cool-water aquatic life, the dissolved oxygen may not be less than 6.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 6.5 mg/l as a 30-day mean minimum, 5.0 mg/l as a seven-day minimum mean, and may not fall below 4.0 mg/l as an absolute minimum (Table 21);
- (4) For water bodies identified by the Department as providing warm-water aquatic life, the dissolved oxygen may not be less than 5.5 mg/l as an absolute minimum. At the discretion of the Department, when the Department determines that adequate information exists, the dissolved oxygen may not fall below 5.5 mg/l as a 30-day mean minimum, and may not fall below 4.0 mg/l as an absolute minimum (Table 21);

- (5) For estuarine water, the dissolved oxygen concentrations may not be less than 6.5 mg/l (for coastal water bodies);
- (6) For ocean waters, no measurable reduction in dissolved oxygen concentration may be allowed.

### **7.5.1 Application of Standard of DO**

Dissolved oxygen is essential for maintaining aquatic life. Historically, the depletion of dissolved oxygen was one of the most frequent water pollution problems. Its effect on aquatic organisms, especially at low concentrations, has been studied extensively. Sensitivity to low dissolved oxygen concentrations differs between species, between various life stages (egg, larvae, and adults), and between different life processes (feeding, growth, and reproduction).

### **7.5.2 Present Condition of DO**

The upper Willamette River is currently listed as impaired for the parameter of Dissolved Oxygen. Additionally, Dissolved Oxygen levels in temperature impaired portions of the Willamette River may be reduced during summer low flows when river temperatures are at their highest. However, according to the NMFS Biological Opinion on Willamette Basin dam operation, Dissolved Oxygen in the lower Willamette River is improved by augmented flows released from tributary dams during the summer months (NMFS, 2008).

Compilation of data in DEQ's Laboratory Analytical Storage and Retrieval (LASAR) Database from seven sampling sites in the immediate area of the Ross Island complex indicates Dissolved Oxygen levels measured at approximately 7 to 10 mg/L between May and September and 11 to 13 mg/L in November and December.

### **7.5.3 Applicant's Position on DO**

The applicant did not provide data or evaluation on the potential impacts to Dissolved Oxygen in the Willamette River as a result of the proposed project.

### **7.5.4 Public Comment on DO**

No public comments were received specific to the criterion of Dissolved Oxygen.

### **7.5.5 DEQ Evaluation on DO**

In-stream and inter-gravel Dissolved Oxygen levels can be influenced by many factors. For this project area, potential factors include mobilization of existing toxics and levels of total suspended solids.

Sediment sampling in accord with the protocols of the multi-agency Sediment Evaluation Framework (USACE et al, 2009) found elevated levels of DDT, PCBs, Cadmium and Zinc. While clamshell dredging has a high likelihood of re-suspending sediments and associated contaminants (Bridges et al, 2008), elutriate testing was not performed to determine potential concentrations of these chemicals likely to become suspended or dissolved in the water column. While DDT and PCBs have hydrophilic properties, given the magnitude of dilution offered by the volume of water



in the Willamette River, it is unlikely that any potential changes in Dissolved Oxygen levels will be measureable as a result of mobilization of any of these chemicals of concern into the water column.

### **7.5.6 DEQ Finding on DO**

While some potential for changes in the above noted factors influencing Dissolved Oxygen does exist, impairment of Dissolved Oxygen levels can be prevented or minimized through implementation of control measures and monitoring coupled with contingency measures, which should be included as conditions in the 401 WQC decision.

## **7.6 Nuisance Phytoplankton Growth**

### **340-041-0019**

(1)(a) The following values and implementation program must be applied to lakes, reservoirs, estuaries and streams, except for ponds and reservoirs less than ten acres in surface area, marshes and saline lakes:

(b) The following average Chlorophyll a values must be used to identify water bodies where phytoplankton may impair the recognized beneficial uses:

(A) Natural lakes that thermally stratify: 0.01 mg/l;

(B) Natural lakes that do not thermally stratify, reservoirs, rivers and estuaries: 0.015 mg/l;

(C) Average Chlorophyll a values may be based on the following methodology (or other methods approved by the Department): A minimum of three samples collected over any three consecutive months at a minimum of one representative location (e.g., above the deepest point of a lake or reservoir or at a point mid-flow of a river) from samples integrated from the surface to a depth equal to twice the secchi depth or the bottom (the lesser of the two depths); analytical and quality assurance methods must be in accordance with the most recent edition of Standard Methods for the Examination of Water and Wastewater.

(2) Upon determination by the Department that the values in section (1) of this rule are exceeded, the Department may:

(a) In accordance with a schedule approved by the Commission, conduct such studies as are necessary to describe present water quality; determine the impacts on beneficial uses; determine the probable causes of the exceedance and beneficial use impact; and develop a proposed control strategy for attaining compliance where technically and economically practicable. Proposed strategies could include standards for additional pollutant parameters, pollutant discharge load limitations, and other such provisions as may be appropriate. Where natural conditions are responsible for exceedance of the values in section (1) of this rule or beneficial uses are not impaired, the values in section (1) of this rule may be modified to an appropriate value for that water body;

(b) Conduct necessary public hearings preliminary to adoption of a control strategy, standards or

modified values after obtaining Commission authorization;

- (c) Implement the strategy upon adoption by the Commission.
- (3) In cases where waters exceed the values in section (1) of this rule and the necessary studies are not completed, the Department may approve new activities (which require Department approval), new or additional (above currently approved permit limits) discharge loadings from point sources provided that it is determined that beneficial uses would not be significantly impaired by the new activity or discharge.

### **7.6.1 Application of Standard for Nuisance Phytoplankton**

Certain types of wastes in water, under proper ambient conditions, may stimulate nuisance algal growths. The magnitude of such growths is determined by measuring chlorophyll a, a photosynthetic pigment which is very closely correlated to biomass. OAR 340-41-0019 sets forth a process for determining when phytoplankton growths may be reaching nuisance proportions. This rule is designed to trigger further study and control strategies if the chlorophyll a values exceed specified levels in streams or lakes. Where natural conditions are responsible for the algal blooms, the existing level of chlorophyll is considered to be the upper level of acceptability.

### **7.6.2 Present Condition of Nuisance Phytoplankton**

No data is available specific to Nuisance Phytoplankton levels in the subject waterways. The surface waters in the area are not listed as impaired for aquatic weeds and algae.

### **7.6.3 Applicant's Position on Nuisance Phytoplankton**

The applicant did not provide data or evaluation on the potential impacts to Nuisance Phytoplankton in the Willamette River as a result of the proposed project.

### **7.6.4 Public Comment on Nuisance Phytoplankton**

No comments were received with regard to Nuisance Phytoplankton concerns.

### **7.6.5 DEQ Evaluation on Nuisance Phytoplankton**

Multiple wastewater treatment facilities (domestic and industrial) are permitted to discharge to the Willamette River, so this common source of nutrients for nuisance phytoplankton is present. The deep, fast flowing waters of the Willamette, however, are typically contrary to the favorable conditions (warm, slow, nutrient rich waters) which promote nuisance phytoplankton growth and algal blooms. In addition, light penetration may be slightly reduced with deepening of the small area where the shoal is currently present, which would further reduce conditions favorable to nuisance phytoplankton growth.

### **7.6.6 DEQ Finding on Nuisance Phytoplankton**

The proposed dredging and disposal will not result in additional sources of nuisance phytoplankton nor will it produce more favorable conditions for nuisance phytoplankton growth. Therefore, increases in nuisance phytoplankton and associated algal blooms are not likely as a result of the project.

## **7.7 pH**

### **340-041-0021**

(1) Unless otherwise specified in OAR 340-041-0101 through 340-041-0350, pH values (Hydrogen ion concentrations) may not fall outside the following ranges:

(a) Marine waters: 7.0-8.5;

(b) Estuarine and fresh waters: See basin specific criteria (OAR 340-041-0101 through OAR 340-041-0350).

(2) Waters impounded by dams existing on January 1, 1996, which have pHs that exceed the criteria are not in violation of the standard, if the Department determines that the exceedance would not occur without the impoundment and that all practicable measures have been taken to bring the pH in the impounded waters into compliance with the criteria.

### **7.7.1 Application of Standard for pH**

The values measured for pH relate to the balance of acid and alkaline substances in the water. The theoretical range is from 1 (very acid) to 14 (very alkaline). Most streams in Oregon have pH values falling somewhere between 6.5 and 8.5. There may be seasonal fluctuations in the pH number due to substances entering the water from land or bio-chemical activity in the water. Since the fish and other aquatic life in any particular stream have evolved under rather specific pH conditions, it is important to set a pH standard that reflects natural conditions and will prevent any intolerable acid/alkalinity imbalances.

### **7.7.2 Present Condition of pH**

A compilation of available data in DEQ's Laboratory Analytical Storage and Retrieval (LASAR) Database is limited to grab samples from two sampling sites at the mouth of the Willamette River (near the confluence with the Columbia River) from 1966 to 2005. This data indicates pH measured within a range of approximately 7.0 and 9.9 over the entire time span and 7.0 to 8.0 from 2001 to 2005.

### **7.7.3 Applicant's Position on pH**

The applicant did not provide data or evaluation on the potential impacts to pH in the Willamette River as a result of the proposed project.

### **7.7.4 Public Comment on pH**

No comments were received specific to the criterion of pH.

### **7.7.5 DEQ Evaluation on pH**

The current pH standard for fresh waters in the Willamette Basin is between 6.5 to 8.5. While suspension of sediments can result in pH changes where acidic or carbonaceous substances are

present, the sediment chemistry data analyzed during the Sediment Evaluation Framework process indicate that substances present do not have a tendency to alter pH.

### 7.76 DEQ Finding on pH

Alterations to pH are unlikely as a result of the proposed dredging and disposal actions.

## 7.8 Temperature

### 340-041-0028

- (1) **Background.** Water temperatures affect the biological cycles of aquatic species and are a critical factor in maintaining and restoring healthy salmonid populations throughout the State. Water temperatures are influenced by solar radiation, stream shade, ambient air temperatures, channel morphology, groundwater inflows, and stream velocity, volume, and flow. Surface water temperatures may also be warmed by anthropogenic activities such as discharging heated water, changing stream width or depth, reducing stream shading, and water withdrawals.
- (2) **Policy.** It is the policy of the Commission to protect aquatic ecosystems from adverse warming and cooling caused by anthropogenic activities. The Commission intends to minimize the risk to cold-water aquatic ecosystems from anthropogenic warming, to encourage the restoration and protection of critical aquatic habitat, and to control extremes in temperature fluctuations due to anthropogenic activities. The Commission recognizes that some of the State's waters will, in their natural condition, not provide optimal thermal conditions at all places and at all times that salmonid use occurs. Therefore, it is especially important to minimize additional warming due to anthropogenic sources. In addition, the Commission acknowledges that control technologies, best management practices and other measures to reduce anthropogenic warming are evolving and that the implementation to meet these criteria will be an iterative process. Finally, the Commission notes that it will reconsider beneficial use designations in the event that man-made obstructions or barriers to anadromous fish passage are removed and may justify a change to the beneficial use for that water body.
- (3) **Purpose.** The purpose of the temperature criteria in this rule is to protect designated temperature-sensitive, beneficial uses, including specific salmonid life cycle stages in waters of the State.
- (4) **Biologically Based Numeric Criteria.** Unless superseded by the natural conditions criteria described in section (8) of this rule, or by subsequently adopted site-specific criteria approved by EPA, the temperature criteria for State waters supporting salmonid fishes are as follows:
  - (a) The seven-day-average maximum temperature of a stream identified as having salmon and steelhead spawning use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 130B, 151B, 160B, 170B, 220B, 230B, 271B, 286B, 300B, 310B, 320B, and 340B, may not exceed 13.0 degrees Celsius (55.4 degrees Fahrenheit) at the times indicated on these maps and tables;
  - (b) The seven-day-average maximum temperature of a stream identified as having core cold water habitat use on subbasin maps set out in OAR 340-041-101 to 340-041-340: Figures 130A,

151A, 160A, 170A, 180A, 201A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 16.0 degrees Celsius (60.8 degrees Fahrenheit);

- (c) The seven-day-average maximum temperature of a stream identified as having salmon and trout rearing and migration use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130A, 151A, 160A, 170A, 220A, 230A, 271A, 286A, 300A, 310A, 320A, and 340A, may not exceed 18.0 degrees Celsius (64.4 degrees Fahrenheit);
  - (d) The seven-day-average maximum temperature of a stream identified as having a migration corridor use on subbasin maps and tables OAR 340-041-0101 to 340-041-0340: Tables 101B, and 121B, and Figures 151A, 170A, 300A, and 340A, may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit). In addition, these water bodies must have coldwater refugia that are sufficiently distributed so as to allow salmon and steelhead migration without significant adverse effects from higher water temperatures elsewhere in the water body. Finally, the seasonal thermal pattern in Columbia and Snake Rivers must reflect the natural seasonal thermal pattern;
  - (e) The seven-day-average maximum temperature of a stream identified as having Lahontan cutthroat trout or redband trout use on subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Tables 121B, 140B, 190B, and 250B, and Figures 180A, 201A, 260A and 310A may not exceed 20.0 degrees Celsius (68.0 degrees Fahrenheit);
  - (f) The seven-day-average maximum temperature of a stream identified as having bull trout spawning and juvenile rearing use on subbasin maps set out at OAR 340-041-0101 to 340-041-0340: Figures 130B, 151B, 160B, 170B, 180A, 201A, 260A, 310B, and 340B, may not exceed 12.0 degrees Celsius (53.6 degrees Fahrenheit). From August 15 through May 15, in bull trout spawning waters below Clear Creek and Mehlhorn reservoirs on Upper Clear Creek (Pine Subbasin), below Laurance Lake on the Middle Fork Hood River, and below Carmen reservoir on the Upper McKenzie River, there may be no more than a 0.3 degrees Celsius (0.5 Fahrenheit) increase between the water temperature immediately upstream of the reservoir and the water temperature immediately downstream of the spillway when the ambient seven-day-average maximum stream temperature is 9.0 degrees Celsius (48 degrees Fahrenheit) or greater, and no more than a 1.0 degree Celsius (1.8 degrees Fahrenheit) increase when the seven-day-average stream temperature is less than 9 degrees Celsius.
- (5) Unidentified Tributaries. For waters that are not identified on the “Fish Use Designations” maps referenced in section (4) of this rule, the applicable criteria for these waters are the same criteria as is applicable to the nearest downstream water body depicted on the applicable map. This section (5) does not apply to the “Salmon and Steelhead Spawning Use Designations” maps.
- (6) Natural Lakes. Natural lakes may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of a natural lake is the same as its natural thermal condition.

- (7) Oceans and Bays. Except for the Columbia River above river mile 7, ocean and bay waters may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the natural condition unless a greater increase would not reasonably be expected to adversely affect fish or other aquatic life. Absent a discharge or human modification that would reasonably be expected to increase temperature, DEQ will presume that the ambient temperature of the ocean or bay is the same as its natural thermal condition.
- (8) Natural Conditions Criteria. Where the department determines that the natural thermal potential of all or a portion of a water body exceeds the biologically-based criteria in section (4) of this rule, the natural thermal potential temperatures supersede the biologically-based criteria, and are deemed to be the applicable temperature criteria for that water body.
- (9) Cool Water Species.
- (a) No increase in temperature is allowed that would reasonably be expected to impair cool water species. Waters of the State that support cool water species are identified on subbasin tables and figures set out in OAR 340-041-0101 to 340-041-0340; Tables 140B, 190B and 250B, and Figures 180A, 201A and 340A.
- (b) See OAR 340-041-0185 for a basin specific criterion for the Klamath River.
- (10) Borax Lake Chub. State waters in the Malheur Lake Basin supporting the Borax Lake chub may not be cooled more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) below the natural condition.
- (11) Protecting Cold Water.
- (a) Except as described in subsection (c) of this rule, waters of the State that have summer seven-day-average maximum ambient temperatures that are colder than the biologically based criteria in section (4) of this rule, may not be warmed by more than 0.3 degrees Celsius (0.5 degrees Fahrenheit) above the colder water ambient temperature. This provision applies to all sources taken together at the point of maximum impact where salmon, steelhead, or bull trout are present.
- (b) A point source that discharges into or above salmon & steelhead spawning waters that are colder than the spawning criterion, may not cause the water temperature in the spawning reach where the physical habitat for spawning exists during the time spawning through emergence use occurs, to increase more than the following amounts after complete mixing of the effluent with the river:
- (A) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is 10 to 12.8 degrees Celsius, the allowable increase is 0.5 Celsius above the 60 day average; or
- (B) If the rolling 60 day average maximum ambient water temperature, between the dates of spawning use as designated under subsection (4)(a) of this rule, is less than 10 degrees Celsius,

the allowable increase is 1.0 Celsius above the 60 day average, unless the source provides analysis showing that a greater increase will not significantly impact the survival of salmon or steelhead eggs or the timing of salmon or steelhead fry emergence from the gravels in downstream spawning reach.

(c) The cold water protection narrative criteria in subsection (a) do not apply if:

(A) There are no threatened or endangered salmonids currently inhabiting the water body;

(B) The water body has not been designated as critical habitat; and

(C) The colder water is not necessary to ensure that downstream temperatures achieve and maintain compliance with the applicable temperature criteria.

(12) Implementation of the Temperature Criteria.

(a) Minimum Duties. There is no duty for anthropogenic sources to reduce heating of the waters of the State below their natural condition. Similarly, each anthropogenic point and nonpoint source is responsible only for controlling the thermal effects of its own discharge or activity in accordance with its overall heat contribution. In no case may a source cause more warming than that allowed by the human use allowance provided in subsection (b) of this rule.

(b) Human Use Allowance. Insignificant additions of heat are authorized in waters that exceed the applicable temperature criteria as follows:

(A) Prior to the completion of a temperature TMDL or other cumulative effects analysis, no single NPDES point source that discharges into a temperature water quality limited water may cause the temperature of the water body to increase more than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after mixing with either twenty five (25) percent of the stream flow, or the temperature mixing zone, whichever is more restrictive; or

(B) Following a temperature TMDL or other cumulative effects analysis, waste load and load allocations will restrict all NPDES point sources and nonpoint sources to a cumulative increase of no greater than 0.3 degrees Celsius (0.5 Fahrenheit) above the applicable criteria after complete mixing in the water body, and at the point of maximum impact.

(C) Point sources must be in compliance with the additional mixing zone requirements set out in OAR 340-041-0053(2)(d).

(D) A point source in compliance with the temperature conditions of its NPDES permit is deemed in compliance with the applicable criteria.

(c) Air Temperature Exclusion. A water body that only exceeds the criteria set out in this rule when the exceedance is attributed to daily maximum air temperatures that exceed the 90th percentile value of annual maximum <sup>se</sup>ven-day average maximum air temperatures calculated using at least 10 years of air temperature data, will not be listed on the section 303(d) list of

impaired waters and sources will not be considered in violation of this rule.

- (d) **Low Flow Conditions.** An exceedance of the biologically-based numeric criteria in section (4) of this rule, or an exceedance of the natural condition criteria in section (8) of this rule will not be considered a permit violation during stream flows that are less than the 7Q10 low flow condition for that water body.
- (e) **Forestry on State and Private Lands.** For forest operations on State or private lands, water quality standards are intended to be attained and are implemented through best management practices and other control mechanisms established under the Forest Practices Act (ORS 527.610 to 527.992) and rules thereunder, administered by the Oregon Department of Forestry. Therefore, forest operations that are in compliance with the Forest Practices Act requirements are (except for the limits set out in ORS 527.770) deemed in compliance with this rule. DEQ will work with the Oregon Department of Forestry to revise the Forest Practices program to attain water quality standards.
- (f) **Agriculture on State and Private Lands.** For farming or ranching operations on State or private lands, water quality standards are intended to be attained and are implemented through the Agricultural Water Quality Management Act (ORS 568.900 to 568.933) and rules thereunder, administered by the Oregon Department of Agriculture. Therefore, farming and ranching operations that are in compliance with the Agricultural Water Quality Management Act requirements will not be subject to DEQ enforcement under this rule. DEQ will work with the Oregon Department of Agriculture to revise the Agricultural Water Quality Management program to attain water quality standards.
- (g) **Agriculture and Forestry on Federal Lands.** Agriculture and forestry activities conducted on federal land must meet the requirements of this rule and are subject to the department's jurisdiction. Pursuant to Memoranda of Agreement with the U.S. Forest Service and the Bureau of Land Management, water quality standards are expected to be met through the development and implementation of water quality restoration plans, best management practices and aquatic conservation strategies. Where a Federal Agency is a Designated Management Agency by the Department, implementation of these plans, practices and strategies is deemed compliance with this rule.
- (h) **Other Nonpoint Sources.** The department may, on a case-by-case basis, require nonpoint sources (other than forestry and agriculture), including private hydropower facilities regulated by a 401 water quality certification, that may contribute to warming of State waters beyond 0.3 degrees Celsius (0.5 degrees Fahrenheit), and are therefore designated as water-quality limited, to develop and implement a temperature management plan to achieve compliance with applicable temperature criteria or an applicable load allocation in a TMDL pursuant to OAR 340-042-0080.
- (A) Each plan must ensure that the nonpoint source controls its heat load contribution to water temperatures such that the water body experiences no more than a 0.3 degrees Celsius (0.5 degree Fahrenheit) increase above the applicable criteria from all sources taken together at the maximum point of impact.



- (B) Each plan must include a description of best management practices, measures, effluent trading, and control technologies (including eliminating the heat impact on the stream) that the nonpoint source intends to use to reduce its temperature effect, a monitoring plan, and a compliance schedule for undertaking each measure.
- (C) The Department may periodically require a nonpoint source to revise its temperature management plan to ensure that all practical steps have been taken to mitigate or eliminate the temperature effect of the source on the water body.
- (D) Once approved, a nonpoint source complying with its temperature management plan is deemed in compliance with this rule.
- (i) Compliance Methods. Anthropogenic sources may engage in thermal water quality trading in whole or in part to offset its temperature discharge, so long as the trade results in at least a net thermal loading decrease in anthropogenic warming of the water body, and does not adversely affect a threatened or endangered species. Sources may also achieve compliance, in whole or in part, by flow augmentation, hyporheic exchange flows, outfall relocation, or other measures that reduce the temperature increase caused by the discharge.
- (j) Release of Stored Water. Stored cold water may be released from reservoirs to cool downstream waters in order to achieve compliance with the applicable numeric criteria. However, there can be no significant adverse impact to downstream designated beneficial uses as a result of the releases of this cold water, and the release may not contribute to violations of other water quality criteria. Where the Department determines that the release of cold water is resulting in a significant adverse impact, the Department may require the elimination or mitigation of the adverse impact.
- (13) Site-Specific Criteria. The Department may establish, by separate rulemaking, alternative site-specific criteria for all or a portion of a water body that fully protects the designated use.
  - (a) These site-specific criteria may be set on a seasonal basis as appropriate.
  - (b) The Department may use, but is not limited by the following considerations when calculating site-specific criteria:
    - (A) Stream flow;
    - (B) Riparian vegetation potential;
    - (C) Channel morphology modifications;
    - (D) Cold water tributaries and groundwater;
    - (E) Natural physical features and geology influencing stream temperatures; and

- (F) Other relevant technical data.
- (c) DEQ may consider the thermal benefit of increased flow when calculating the site-specific criteria.
- (d) Once established and approved by EPA, the site-specific criteria will be the applicable criteria for the water bodies affected.

### **7.8.1 Application of Standard for Temperature**

Oregon's water temperature standard was adopted by the Environmental Quality Commission (EQC) based on research regarding effects of water temperature on salmonid productivity, modeling temperature effects of various activities, and identification of sensitive habitats.

Water quality criteria produced by national fishery experts, and provided by the federal Water Pollution Control Administration, recommended a maximum not-to-be exceeded temperature of 68°F (20°C) for salmonid growth and migration routes and 55.4°F (13°C) for salmonid spawning and egg development waters. Because of the number of trout and salmon waters that had been destroyed or made marginal or non-productive nationwide, it was further recommended that the remaining trout and salmon waters be protected. More specifically that inland trout streams and headwaters of salmon streams should not be warmed.

As temperatures increase above the optimal range, spawning and egg development becomes rapidly impaired, thus limiting reproduction. With increasing temperature, salmonids and trout experience sublethal effects of impaired feeding, decreased growth rates, reduced resistance to disease and parasites, increased sensitivity to toxics, intolerance with migration, reduced ability to compete with more temperature resistant species, and increased vulnerability to predation. If temperatures are high enough for sustained periods, mortality occurs. In addition, other water quality parameters (such as dissolved oxygen) may also be adversely affected by elevated temperatures. Based on the available information, the temperature standard was established with the primary intent of protecting the most temperature sensitive species occurring in the subject stream. It was recognized that natural temperatures may exceed the desirable upper limit for protection. However, the determination made in the adoption of the standard was that when temperatures are above the optimum established as the upper limit in the standard, discharges of waste or activities which cause a measurable increase should not be allowed.

DEQ has traditionally applied the temperature standard to activities that cause a change in temperature as well as to discharges that cause a change in temperature. The intent is to protect the fishery values that the standard was adopted to protect. Thus, if natural temperatures are above the optimum specific to the waterbody, a point source discharge will not be approved if it will cause a 0.5°F (0.3°C) or more increase in temperature outside of a limited size "mixing zone" which is established in the waste discharge permit for the source. (The mixing zone size and shape is established to assure that beneficial uses are not impaired, including fishery uses.) Similarly, an activity or project that does not result in a discharge of waste but would cause a 0.5°F (0.3°C) or more increase in the temperature of the stream compared to the temperature that would exist without the activity or project would not be approved.

### **7.8.2 Present Condition of Temperature**

The standard for streams designated as a salmon and steelhead migration corridor is that the seven-day average temperature does not exceed 20.0°C (68°F), as well as preserving cool water refugia areas that are sufficiently distributed to allow migration despite temperature impairments elsewhere in the stream. The Willamette River is currently listed as impaired for the parameter of Temperature, and a TMDL has been developed and approved by EPA to address Temperature throughout the Willamette Basin. A compilation of data in DEQ's LASAR Database is limited to grab samples from two sampling sites at the mouth of the Willamette River (near the confluence with the Columbia River) from 1966 to 2005 indicates field temperature measured at approximately 3.8°C to 10°C between November to March, 10°C to 16°C between April and May, and 11°C to 25°C between June and October.

### **7.8.3 Applicant's Position on Temperature**

The applicant did not provide data or evaluation on the potential impacts to Temperature in the Willamette River as a result of the proposed project.

### **7.8.4 Public Comment on Temperature**

No comments were received specific to the criterion of Temperature.

### **7.8.5 DEQ Evaluation on Temperature**

As discussed in the Willamette Basin TMDL, ample literature exists regarding Temperature impairment in small streams, due to lowered flows, increased sediment, decreased streamside vegetation, and interruption of hyporheic exchange regimes. These impairment factors are further exacerbated during summer when stream flows are naturally lower, air temperatures are higher, and solar radiation is more frequent. Thus, the Willamette Basin TMDL for temperature focuses on main stem Temperature decreases through cumulative decreases from tributaries.

Of the factors discussed above that may increase Temperature, only suspension of sediment is likely during dredging activities. While suspension of the fine sediments present will result in Visible plumes with longer suspension times than coarse material, use of a closed-lipped clamshell bucket and techniques to improve bucket control and transfer of sediment to barges will limit suspension of sediment. Temperature increases due to suspended sediment can occur in small streams with limited heat loading capacity and unnaturally high levels of suspended sediment throughout the watercourse for extended periods of time, typically weeks to months, during warm seasons with ample solar radiation. In contrast, the proposed dredging will suspend sediment for a period of hours to days, during the fall months with moderate temperatures and within a stretch of a large river with large flow volumes providing sufficient heat loading capacity to render any potential Temperature increase from suspended sediment immeasurable.

### **7.8.6 DEQ Finding on Temperature**

The proposed dredging and disposal actions are unlikely to result in any impairment or improvement to Temperature in the Willamette River.

## 7.9 Total Dissolved Gas

### 340-041-0031

- (1) Waters will be free from dissolved gases, such as carbon dioxide hydrogen sulfide, or other gases, in sufficient quantities to cause objectionable odors or to be deleterious to fish or other aquatic life, navigation, recreation, or other reasonable uses made of such water.
- (2) Except when stream flow exceeds the ten-year, seven-day average flood, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 110 percent of saturation. However, in hatchery-receiving waters and other waters of less than two feet in depth, the concentration of total dissolved gas relative to atmospheric pressure at the point of sample collection may not exceed 105 percent of saturation.

### 7.9.1 Application of Standard for Total Dissolved Gas

Part (1) of this rule refers to noxious gases that sometimes result from putrescible substances in the water. Putrescible substances may be from discharged wastes or they may be from accumulations of naturally occurring organic debris settled in stream or reservoir bottoms. Such gases have two primary adverse properties when in excess concentrations:

1. Some can be directly toxic to aquatic life; and,
2. Others consume dissolved oxygen which may lead to indirect mortalities.

Part (2) of this rule involves the supersaturation of atmospheric gases in water may cause either crippling or lethal gas bubbles to form in the tissues of fish. The standard, based on scientifically derived evidence, is designed to prohibit discharges or activities that will result in atmospheric gases reaching known harmful concentrations. The EPA and the American Fisheries Society have identified six ways that total dissolved gas supersaturation can occur:

1. Excessive biological activity--dissolved oxygen concentrations often reach supersaturation because of excessive algal photosynthesis. Gas bubble disease in fishes results, in part, from algal blooms. Algal blooms often accompany an increase in water temperature and this higher temperature further contributes to supersaturation.
2. Water spillage at hydropower dams caused supersaturation. When excess water is spilled over the face of a dam, it entrains air as it plunges to the stilling or plunge pool at the base of the dam. The momentum of the fall carries the water and entrained gases to great depths in the pool; and, under increased hydrostatic pressure, the entrained gases are driven into solution, causing supersaturation of dissolved gases.
3. Natural waterfalls with deep plunge basins can cause supersaturation and subsequent adverse effects to fish.
4. The use of air in turbine intakes to avoid cavitation creates supersaturation--a condition that can be avoided if identified.

5. Improper engineering of hatchery water supplies can cause Venturi action.

6. Gas bubble disease may be induced by discharges from power-generating and other thermal sources. Cool, gas-saturated water is heated as it passes through the condenser or heat exchanger. As the temperature of the water rises, percent saturation increases because of the reduced solubility of gases at high temperatures. Thus, the discharged water becomes supersaturated with gases and fish or other organisms living in the heated water may exhibit gas bubble disease.

### **7.9.2 Present Condition of Total Dissolved Gas**

The Willamette River is not listed as impaired for the parameter of Total Dissolved Gas. While the Willamette River is listed as impaired for the parameter of Dissolved Oxygen, given the flow volumes, velocities, and depths of the lower reaches, this impairment is unlikely to be caused by putrescible substances in the lower reach. Further, Dissolved Oxygen in the lower Willamette River is likely improved by augmented flows released from upstream tributary dams during the summer months (NMFS, 2008). Total Dissolved Gas is not an issue of concern in the NMFS Biological Opinion on Willamette Basin dam operation.

### **7.9.3 Applicant's Position on Total Dissolved Gas**

The applicant did not provide data or evaluation on the potential impacts to Total Dissolved Gas in the Willamette River as a result of the proposed project.

### **7.9.4 Public Comment on Total Dissolved Gas**

No comments were received specific to the criterion of Total Dissolved Gas.

### **7.9.5 DEQ Evaluation on Total Dissolved Gas**

Despite the typical high flow levels and velocities in the Willamette River, tidal influence, low flows and off channel features may contribute to favorable conditions for putrescence or algal blooms at some times of the year. However, quiescent waters that would allow putrescence or promote algal blooms are not characteristic of the Willamette River, especially within the navigation channel.

Thirteen USACE dams at 250 feet or greater and multiple other private dams exist on the major tributaries to the Willamette River and these could promote entrainment of large quantities of air and its subsequent compression into solution at depth. However, these are all located on tributaries at great distances upstream of the project location, are not considered by NMFS to pose a Total Dissolved Gas concern for salmonids, and their operation is not influenced in any way by the proposed activities.

### **7.9.6 DEQ Finding on Total Dissolved Gas**

The proposed dredging and disposal activities are unlikely to cause impairment for any parameters related to Total Dissolved Gas in the Willamette River or Columbia River.

## **7.10 Total Dissolved Solids (TDS)**

### **340-041-0032**

Total Dissolved Solids: The concentrations listed in the basin specific criteria found in OAR 340-041-0101 through 340-041-0350, may not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary.

#### **7.10.1 Application of Standard for Total Dissolved Solids**

Certain dissolved chemicals in water are known to be toxic to aquatic life and antagonistic to higher animals when in drinking water at low concentrations. Maximum allowable concentrations of the known toxic or offensive substances have been incorporated in standards for the protection of both aquatic and human life.

Water quality may also be affected by a number of other substances (e.g., calcium, sodium, phosphorus, iron, etc.) that may be undesirable either individually or collectively to domestic, industrial, or agricultural uses when in high concentrations. A measurement of their collective concentration in water is specific conductance, which can be used as a surrogate for total dissolved solids.

#### **7.10.2 Present Condition of Total Dissolved Solids**

The Willamette River is not listed as impaired for the parameter of Total Dissolved Solids, however, multiple parameters that could be related to Total Dissolved Solids are listed as impaired or with potential concern for impairment. These include Dioxin, Mercury, Iron, DDT, DDE, PCBs, Arsenic, Aldrin, Dieldrin, PAHs, Manganese, Pentachlorophenol, Hexavalent Chromium, Lead, Copper, Nickel, Zinc, Parathion, Malathion, Fluoranthene, Chrysene, DDD, Benzo(A)pyrene, and Benzo(A)anthracene. Some of these substances currently exist within sediment in areas of the lagoon under caps placed for containment purposes.

#### **7.10.3 Applicant's Position on Total Dissolved Solids**

The applicant did not provide data or evaluation specific to potential impacts to Total Dissolved Solids in the Willamette River as a result of the proposed project. The draft Environmental Assessment and Biological Assessment include increases in dissolved contaminants in the environmental effects discussions, with the conclusion that effects will be localized and short-lived and will occur during a time when endangered fish are least likely to be present, such that impacts are negligible.

In response to concerns raised at DEQ's public hearing regarding potential release of dissolved contaminants to the Columbia River, groundwater and wetlands following placement of dredged material on West Hayden Island and subsequent infiltration of elutriate and future stormwater, USACE provided a statement indicating that groundwater contamination was not a realistic possibility.

#### **7.10.4 Public Comment on Total Dissolved Solids**

No comments were received specific to the criterion of Total Dissolved Solids. However, several commenters (1, 2, 3, 4, 5, 7, 8) expressed concern for contaminants in dredged material to become dissolved and enter the Columbia River, groundwater or wetlands.

#### **7.10.5 DEQ Evaluation on Total Dissolved Solids**

Sediment sampling in accord with the protocols of the multi-agency Sediment Evaluation Framework (USACE et al, 2009) found elevated levels of DDT, PCBs, Cadmium and Zinc (See Section 7.11.2 Present Condition of Toxics Substances below for levels reported). While clamshell dredging has a high likelihood of re-suspending sediments and associated contaminants (Bridges et al, 2008), elutriate testing was not performed to determine potential concentrations of these chemicals likely to become suspended or dissolved in the water column. Cadmium and Zinc are anticipated to be strongly associated with organic portions of sediments present and the proposed dredging disturbance is unlikely to cause dissociation or partitioning of these metals to a dissolved state. In contrast, DDT and PCBs have hydrophilic properties, and PCBs have been shown to be released into the water column during dredging in amounts of 2 to 3% of the mass present (Bridges, 2008).

Concentrations of total PCB Aroclors in the samples of sediments to be dredged range from non-detect to 154 µg/kg [or parts per billion (ppb)]. Assuming 3% of 154 ppb will become dissolved indicates that approximately 4.6 ppb could potentially become available to the water column over the disturbed area. Given the dilution volume of the Willamette River, it is unlikely that the acute freshwater water quality standard for PCBs of 2.0 µg/L [or parts per billion (ppb)] will be exceeded as a result of mobilization into the water column, even using this conservative approach.

Concentrations of DDT in the samples of sediments to be dredged range from less than 1.0 ppb to 4.0 ppb. Assuming 3% of the highest mass will become dissolved indicates that approximately 0.12 ppb could potentially become available to the water column. Given the dilution volume of the Willamette River, it is unlikely that the acute freshwater water quality standard for DDT of 1.1 ppb will be exceeded as a result of mobilization into the water column, even using this conservative approach.

In response to concerns raised at DEQ's public hearing regarding dissolved contaminants being released to surface and ground waters after disposal of dredged material at West Hayden Island, DEQ's analyses found the risk to be negligible. This is because: 1) the material is largely silt and clay; 2) the contaminants of concern are hydrophobic (meaning they adhere readily to silt, clay and organics rather than becoming dissolved in water); 3) there is adequate organic material present at the placement site to accommodate additional adsorption of contaminants as water infiltrates there; 4) the flow path for groundwater from beneath the placement area to the Columbia is approximately 2 years; 5) any chemicals that could partition into groundwater would comprise a very low flow rate (0.3 cfs); and, 6) the dilution ratio of groundwater into the Columbia is over 2 million to 1 (Mason, 2010).

### 7.10.6 DEQ Finding on Total Dissolved Solids

Based on the available information, the levels of existing contamination do pose risks for exposed aquatic life. However, given the relatively low levels of contamination and low potential for dissolved partitioning, magnitude and duration of exposure is anticipated to be limited. As all decant water will be contained without discharging to waters of the state, it is unlikely that dissolved levels of PCBs, DDT, Cadmium or Zinc will exceed water quality standards as a result of either the dredging or disposal actions.

## 7.11 Toxic Substances

### 340-041-0033

- (1) Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare or aquatic life, wildlife, or other designated beneficial uses.
- (2) Levels of toxic substances in waters of the state may not exceed the applicable criteria listed in Tables 20, 33A, and 33B. Tables 33A and 33B, adopted on May 20, 2004, update Table 20 as described in this section.
  - (a) Each value for criteria in Table 20 is effective until the corresponding value in Tables 33A or 33B becomes effective.
    - (A) Each value in Table 33A is effective on February 15, 2005, unless EPA has disapproved the value before that date. If a value is subsequently disapproved, any corresponding value in Table 20 becomes effective immediately. Values that are the same in Tables 20 and 33A remain in effect.
    - (B) Each value in Table 33B is effective upon EPA approval.
  - (b) The department will note the effective date for each value in Tables 20, 33A, and 33B as described in this section.
- (3) To establish permit or other regulatory limits for toxic substances for which criteria are not included in Tables 20, 33A, or 33B, the department may use the guidance values in Table 33C, public health advisories, and other published scientific literature. The department may also require or conduct bio-assessment studies to monitor the toxicity to aquatic life of complex effluents, other suspected discharges, or chemical substances without numeric criteria.

### 7.11.1 Application of Standard for Toxic Substances

This standard provides protection for humans, wildlife, and aquatic life from adverse effects resulting from the presence of toxic substances above natural levels, either alone or in combination with other chemicals or substances. Where needed, DEQ can consider additional studies reported in the scientific literature to review applicability of numeric criteria, or to set guidance values.



Bioassays can be used to determine effects of site-specific effluents or chemical substances on aquatic life.

### **7.11.2 Present Condition of Toxic Substances**

The Willamette River is currently listed as impaired or with potential concern for impairment for multiple Toxic Substances. These include Dioxin, Mercury, Iron, DDT, DDE, PCB, Arsenic, Aldrin, Dieldrin, PAHs, Manganese, Pentachlorophenol, Hexavalent Chromium, Lead, Copper, Nickel, Zinc, Parathion, Malathion, Fluoranthene, Chrysene, DDD, Benzo(A)pyrene, and Benzo(A)anthracene.

Further, legacy toxic contamination is widespread in the lower Willamette River as indicated by the designation as the Portland Harbor Superfund Site.

Results of the Sediment Evaluation Framework process indicate the presence of several toxic substances in some of the samples of sediment proposed to be dredged, in exceedance of screening levels, at the following concentrations: PCBs at 56 ppb, 79 ppb and 154 ppb; DDT increasing with depth from 9.4 ppb to 14.5 ppb and 8.4 ppb to 11.9 ppb; Cadmium at 1.49 ppm (or 1490 ppb); and Zinc at 156 ppm and 226 ppm (or 156,000 ppb and 226,000 ppb).

### **7.11.3 Applicant's Position on Toxic Substances**

The applicant provided data on sediment evaluation, but no data or evaluation specific to potential impacts to the water column from Toxic Substances in the Willamette River as a result of the proposed project. Discussions in the draft Environmental Assessment and Biological Assessment indicate expected increases in toxics in the water column, but conclude that effects will be of short duration and localized, and will occur during a time when endangered fish are least likely to be present, such that impacts are negligible.

### **7.11.4 Public Comment on Toxic Substances**

Commenter 5 stated at the public hearing that toxic substances are significant for listed species and beyond and should be considered so. Other commenters (1, 2, 3, 4, 7, 8) expressed concern for exposure and distribution of Toxic Substances placed on Hayden Island through flooding and migration to the Columbia River, groundwater, and wetlands.

### **7.11.5 DEQ Evaluation on Toxic Substances**

Disturbance of in-stream sediments can cause highly localized increases in Toxic Substances as they are released into or suspended in the water column, for varying durations that depend on the nature of the sediment, properties of the substance and dilution capacity of the stream. The history and location of the site indicate the presence of toxics that could become mobilized as a result of disturbance. Additional potential distribution of toxics may occur through uncontrolled discharges of dredged material or decant water during dredging, placement onto barges, transfer to the disposal site, and offloading at the disposal site, as well as operation of mechanized equipment in or near water with the potential for incidental spills of Toxic Substances.

Sediment sampling in accord with the protocols of the multi-agency Sediment Evaluation Framework (USACE et al, 2009) found elevated levels of DDT, PCBs, Cadmium and Zinc, as

described above. Further, levels of DDT and PCBs will be higher in the newly exposed surfaces than in the existing river bed surface.

The applicant did not perform elutriate testing to determine potential concentrations of these chemicals likely to become suspended or dissolved in the water column. Additionally, EPA has not yet determined acceptable levels of these chemicals of concern to be targeted by the overall remedy to the Portland Harbor Superfund site. However, based on levels found in sediments to be dredged and surfaces to be left newly exposed, EPA and DEQ Cleanup have determined that the risk of mobilization at levels and durations harmful to aquatic life is low. This assessment is based on: 1) the fact that contaminant levels are relatively low compared to levels of PCBs and DDTs in specific source locations elsewhere in the Portland Harbor study area; and, 2) though bioaccumulation screening levels have been exceeded, the potential duration of exposure is not anticipated to have adverse effects, provided that adequate, cleaner material is deposited as anticipated within a reasonable time frame (Humphrey & Freedman, 2010). Rigorous monitoring must be a component of the project in order to confirm this assessment.

DEQ analyses regarding the potential for Toxic Substances to reach waters of the state following placement of dredged materials on West Hayden Island and subsequent infiltration of elutriate or future stormwater or from flood waters overtopping the berms found the risk to be very low (Mason, 2010).

#### **7.11.6 DEQ Finding on Toxic Substances**

Based on the available information, the levels of existing contamination do pose risks for exposed aquatic life. However, given the relatively low levels of contamination, low potential for dissolved partitioning and depositional nature of the area, limited magnitude and duration of exposure is anticipated. Therefore, increased risk to aquatic life, over the existing conditions, is not anticipated to be significant.

In order to confirm this, baseline contaminant levels and periodic monitoring of sediment quantity and quality accumulated over the newly exposed surfaces must be undertaken. Further, contingency measures must be developed and implemented in the event that monitoring demonstrates that actual exposure levels and durations are having an unacceptable risk to aquatic life. In the unlikely event that adverse effects to the ecological integrity of the area are identified, as a result of exposure to contamination following dredging and despite implementation of monitored natural recovery and contingency efforts, additional measures that could include on-site or off-site compensatory mitigation must be required.

While disposal of dredged sediment and all decant water is proposed at a contained disposal facility, care must be taken in transferring dredged material and water during all aspects of the dredging and disposal operation. Spills prevention, control, equipment inspection and maintenance, and cleanup measures must be incorporated into conditions in the certification and implemented by the applicant.

## **7.12 Turbidity**

### **340-041-0036**

Turbidity (Nephelometric Turbidity Units, NTU): No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

- (1) Emergency activities: Approval coordinated by the Department with the Oregon Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;
- (2) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of section 401 or 404 (Permits and Licenses, Federal Water Pollution Control Act) or OAR 14I-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

#### **7.12.1 Application of Standard for Turbidity**

Turbidity is a measure of the optical properties of water and is used to indicate the lack of clarity in water. Turbidity results from particulate and dissolved phase matter being held in suspension which increases scattering and absorption of light rather than its transmittance along straight lines. The standard is designed to minimize the addition of soil particles or any other suspended substances that would cause significant increases in the river's normal, seasonal turbidity pattern.'

#### **7.12.2 Present Condition of Turbidity**

The Willamette River is a large system fed by multiple major and minor tributaries and flowing through areas with land use practices varying from rural areas to intensive agricultural use to highly urban and industrial uses. As a result of these various land use practices, both point source discharges and non-point source (runoff) discharges to the Willamette River and its tributaries contribute to increased turbidity at varying levels seasonally. Thus, turbidity in the system is widely variable and typically higher during winter high flow conditions.

#### **7.12.3 Applicant's Position on Turbidity**

Discussions in the draft Environmental Assessment and Biological Assessment indicate expected increases in Turbidity in the water column due to the direct disturbance of fine materials during dredging. However, the discussions conclude that effects will be of short duration and localized, and will occur during a time when endangered fish are least likely to be present, such that impacts are negligible.

USACE submitted 401 WQC application materials indicating the proposed dredging is "essential." Reasoning included, the fact that this section of the Willamette River is within the Federal Navigation Channel, as authorized by Congress, and that the shoaling has reduced depth of the

channel such that, at some tidal stages, outbound ships can no longer safely transit the channel without using the inbound lane.

#### **7.12.4 Public Comment on Turbidity**

Commenter 5 stated at the public hearing that the proposed dredging had not been established as “essential,” which is a requirement under DEQ rules in order to allow limited duration and magnitude exceedances of turbidity.

#### **7.12.5 DEQ Evaluation on Turbidity**

Potential sources for turbidity increases at the project areas include: channel bottom disturbance during dredging and uncontrolled discharges of dredged material or decant water during dredging, placement onto barges, transfer to the disposal site, and offloading at the disposal site.

As the proposed maintenance dredging of the navigation channel is considered essential, a turbidity exceedance over a short duration and limited magnitude may be allowed per the language of the standard in rule, provided all practicable control measures and adaptive management are applied.

However, in determining practicality of controls and management practices to be applied, consideration must be given to the levels of contaminants present in the sediments to be dredged. Monitoring the magnitude and duration of turbidity plumes can give an indication of the extent of potential contaminant distribution.

As the material proposed for dredging has been determined to be primarily fine materials (clayey silts and clayey sandy silts), incidence of turbidity plumes is expected to be high and extent of plumes great.

#### **7.12.6 DEQ Finding on Turbidity**

While multiple potential sources exist for the proposed dredging and disposal activities to increase turbidity in the Willamette River, effective controls can be used to prevent turbidity increases and potential toxics distribution. However, effective implementation, monitoring, and adaptive management of appropriate controls are essential in order for successful prevention of increased turbidity and toxics distribution and the ensuing impacts on the biota and their habitat. Appropriate conditions, including incrementally more controlling best management practices and work stoppages, must be incorporated into the 401 WQC and be implemented by the applicant.

### **7.13 Basin-Specific Criteria (Willamette)**

#### **340-041-0340 Beneficial Uses to be Protected in the Willamette Basin**

(1) Water quality in the Willamette Basin (see Figure 1) must be managed to protect the designated beneficial uses shown in Table 340A (August 2005).

(2) Designated fish uses to be protected in the Willamette Basin are shown in Figures 340A (November 2003) and 340B (August 2005).

#### **340-041-0345 Water Quality Standards and Policies for the Willamette Basin**

(1) pH (hydrogen ion concentration). pH values may not fall outside the following ranges:

(a) All basin waters (except main stem Columbia River and Cascade lakes): 6.5 to 8.5;

(b) Cascade lakes above 3,000 feet altitude: 6.0 to 8.5.

(2) Total Dissolved Solids. Guide concentrations listed may not be exceeded unless otherwise specifically authorized by DEQ upon such conditions as it may deem necessary to carry out the general intent of this plan and to protect the beneficial uses set forth in OAR 340-041-0340: Willamette River and Tributaries --100.0 mg/l.

(3) Minimum Design Criteria for Treatment and Control of Sewage Wastes:

(a) Willamette River and tributaries except Tualatin River Subbasin:

(A) During periods of low stream flows (approximately May 1 to October 31): Treatment resulting in monthly average effluent concentrations not to exceed 10 mg/l of BOD and 10 mg/l of SS or equivalent control;

(B) During the period of high stream flows (approximately November 1 to April 30): A minimum of secondary treatment or equivalent control and unless otherwise specifically authorized by the Department, operation of all waste treatment and control facilities at maximum practical efficiency and effectiveness so as to minimize waste discharges to public waters.

(b) Main stem Tualatin River from mouth to Gaston (river mile 0 to 65):

(A) During periods of low stream flows (approximately May 1 to October 31): Treatment resulting in monthly average effluent concentrations not to exceed 10 mg/l of BOD and 10 mg/l of SS or equivalent control;

(B) During the period of high stream flows (approximately November 1 to April 30): Treatment resulting in monthly average effluent concentrations not to exceed 20 mg/l of BOD and 20 mg/l of SS or equivalent control.

(c) Main stem Tualatin River above Gaston (river mile 65) and all tributaries to the Tualatin River: Treatment resulting in monthly average effluent concentrations not to exceed 5 mg/l of BOD and 5 mg/l of SS or equivalent control;

(d) Tualatin River Subbasin: The dissolved oxygen level in the discharged effluents may not be less than 6 mg/l;

(4) Nonpoint source pollution control in the Tualatin River subbasin and lands draining to Oswego Lake:

(a) Subsection (5)(b) of this rule applies to any new land development within the Tualatin River and Oswego Lake subbasins, except those developments with application dates prior to January 1,

1990. The application date is the date on which a complete application for development approval is received by the local jurisdiction in accordance with the regulations of the local jurisdiction;

(b) For land development, no preliminary plat, site plan, permit or public works project may be approved by any jurisdiction in these subbasins unless the conditions of the plat permit or plan approval include an erosion control plan containing methods and/or interim facilities to be constructed or used concurrently with land development and to be operated during construction to control the discharge of sediment in the stormwater runoff. The erosion control plan must include the following elements:

(A) Protection techniques to control soil erosion and sediment transport to less than one ton per acre per year, as calculated using the Natural Resources Conservation Service's Universal Soil Loss Equation or other equivalent methods (see Figures 1 to 6 in Appendix 1 for examples). The erosion control plan must include temporary sedimentation basins or other sediment control devices when, because of steep slopes or other site specific considerations, other on-site sediment control methods will not likely keep the sediment transport to less than one ton per acre per year. The local jurisdictions may establish additional requirements for meeting an equivalent degree of control. Any sediment basin constructed must be sized using 1.5 feet minimum sediment storage depth plus 2.0 feet storage depth above for a settlement zone. The storage capacity of the basin must be sized to store all of the sediment that is likely to be transported and collected during construction while the erosion potential exists. When the erosion potential has been removed, the sediment basin, or other sediment control facilities, can be removed and the site restored as per the final site plan. All sediment basins must be constructed with an emergency overflow to prevent erosion or failure of the containment dike; or

(B) A soil erosion control matrix derived from and consistent with the universal soil equation approved by the jurisdiction or the Department.

(c) The Director may modify Appendix 1 as necessary without approval from the Environmental Quality Commission. The Director may modify Appendix 1 to simplify it and to make it easier for people to apply;

(d) Subsection (5)(e) of this rule applies to any new land development within the Tualatin River and Oswego Lake subbasins, except:

(A) Those developments with application dates prior to June 1, 1990. The application date is the date on which a complete application for development approval is received by the local jurisdiction in accordance with the regulations of the local jurisdiction;

(B) One and two family dwellings on existing lots of record;

(C) Sewer lines, water lines, utilities or other land development that will not directly increase nonpoint source pollution once construction has been completed and the site is either restored to or not altered from its approximate original condition;

(D) If the Environmental Quality Commission determines that a jurisdiction does not need to

require stormwater quality control facilities for new development;

(E) When a jurisdiction adopts ordinances that provide for a stormwater quality program equivalent to subsection (e) of this section. Ordinances adopted to implement equivalent programs must:

(i) Encourage on-site retention of stormwater, require phosphorus removal equivalent to the removal efficiency required by subsection (e) of this section, provide for adequate operation and maintenance of stormwater quality control facilities, and require financial assurance, or equivalent security that assures construction of the stormwater quality control facilities required by the ordinance;

(ii) If the ordinances provide for exemptions other than those allowed for by paragraphs (B) and (C) of this subsection, the ordinances must provide for collection of in-lieu fees or other equivalent mechanisms that assure financing for, and construction of, associated, off-site stormwater quality control facilities. No exemption may be allowed if the jurisdiction is not meeting an approved schedule for identifying location of the off-site stormwater quality control facility to serve the development requesting an exemption.

(e) For new development, no plat, site plan, building permit or public works project may be approved by any jurisdiction in these subbasins unless the conditions of the plat, permit or plan approval require permanent stormwater quality control facilities to control phosphorus loadings associated with stormwater runoff from the development site. Jurisdictions must encourage and provide preference to techniques and methods that prevent and minimize pollutants from entering the storm and surface water systems. Permanent stormwater quality control facilities for phosphorus must meet the following requirements:

(A) The stormwater quality control facilities must be designed to achieve a phosphorus removal efficiency as calculated from the following equation:

$$R_p = 100 - 24.5/R_v$$

Where:

$R_p$  = Required phosphorus removal efficiency

$R_v$  = Average site runoff coefficient

The average site runoff coefficient can be calculated from the following equation:

$$R_v = (0.7 \times A_1) + (0.3 \times A_2) + (0.7 \times A_3) + (0.05 \times A_4) + (A_5 \times 0.0)$$

Where:

$A_1$  = fraction of total area that is paved streets with curbs and that drain to storm sewers or open

ditches.

A2 = fraction of total area that is paved streets that drain to water quality swales located on site.

A3 = fraction of total area that is building roof and paved parking that drains to storm sewers.

A4 = fraction of total area that is grass, trees and marsh areas.

A5 = fraction of total area for which runoff will be collected and retained on site with no direct discharge to surface waters.

(B) A jurisdiction may modify the equation for  $R_v$  to allow the application of additional runoff coefficients associated with land surfaces not identified in this subsection. The Department must be notified in writing whenever an additional runoff coefficient is used. The use of additional runoff coefficients must be based on scientific data. The jurisdiction must discontinue use of an additional runoff coefficient if the Department objects to its use in writing within ten days of receiving notification;

(C) The stormwater quality control facilities must be designed to meet the removal efficiency specified in paragraph (A) of this subsection for a mean summertime storm event totaling 0.36 inches of precipitation with an average return period of 96 hours;

(D) The removal efficiency specified in paragraph (A) of this subsection specify only design requirements and are not intended to be used as a basis for performance evaluation or compliance determination of the stormwater quality control facility installed or constructed pursuant to this subsection;

(E) Stormwater quality control facilities required by this subsection may be approved by a jurisdiction only if the following are met:

(i) For developments larger than one acre, the plat or site plan must include plans and a certification prepared by an Oregon registered, professional engineer that the proposed stormwater control facilities have been designed in accordance with criteria expected to achieve removal efficiencies for total phosphorus required by paragraph (A) of this subsection;

(ii) The plat or site plan must be consistent with the area and associated runoff coefficients used to determine the removal efficiency required in paragraph (A) of this subsection;

(iii) A financial assurance, or equivalent security acceptable to the jurisdiction, must be provided by the developer with the jurisdiction that assures that the stormwater control facilities are constructed according to the plans established in the plat or site plan approval. Where practicable, the jurisdiction must combine the financial assurance required by this rule with other financial assurance requirements imposed by the jurisdiction;

(iv) Each jurisdiction that constructs or authorizes construction of permanent stormwater quality control facilities must file with the Department, an operation and maintenance plan for the



stormwater quality control facilities within its jurisdiction. The operation and maintenance plan must allow for public or private ownership, operation, and maintenance of individual permanent stormwater quality control facilities. The jurisdiction or private operator must operate and maintain the permanent stormwater control facilities in accordance with the operation and maintenance plan.

(f) Except as required by paragraph (D) of this subsection, the jurisdiction may grant an exception to subsection (e) of this section if the jurisdiction chooses to adopt and, on a case-by-case basis, impose a one time in-lieu fee. The fee will be an option where, because of the size of the development, topography, or other factors, the jurisdiction determines that the construction of on-site permanent stormwater treatment systems is impracticable or undesirable:

(A) The in-lieu fee will be based upon a reasonable estimate of the current, prorated cost for the jurisdiction to provide stormwater quality control facilities for the land development being assessed the fee. Estimated costs include costs associated with off-site land and rights-of-way acquisition, design, construction and construction inspection;

(B) The jurisdiction must deposit any in-lieu fees collected pursuant to this paragraph in an account dedicated only to reimbursing the jurisdiction for expenses related to off-site land and rights-of-way acquisition, design, construction and construction inspection of stormwater quality control facilities;

(C) The ordinance establishing the in-lieu fee must include provisions that reduce the fee in proportion to the ratio of the site's average runoff coefficient ( $R_v$ ), as established according to the equation in paragraph (6)(e)(A) of this rule;

(D) No new development may be granted an exemption if the jurisdiction is not meeting an approved time schedule for identifying the location for the off-site stormwater quality control facilities that would serve that development.

(g) The Department may approve other mechanisms that allow jurisdictions to grant exemptions to new development. The Department may only approve those mechanisms that assure financing for off-site stormwater quality control facilities and that encourage or require on-site retention where feasible;

(h) Subsection (b) of this section apply until a jurisdiction adopts ordinances that provide for a program equivalent to subsection (b) of this section, or the Environmental Quality Commission determines such a program is not necessary when it approves the jurisdiction's program plan required by OAR 340-04'-0470(2)(g).

(5) In order to improve water quality within the Yamhill River subbasin to meet the existing water quality standard for pH, the following special rules for total maximum daily loads, waste load allocations, load allocations and program plans are established:

(a) After completion of wastewater control facilities and program plans approved by the Commission under this rule and no later than June 30, 1994, no activities may be allowed and no wastewater may be discharged to the Yamhill River or its tributaries without the authorization of

the Commission that cause the monthly median concentration of total phosphorus to exceed 70 ug/1 as measured during the low flow period between approximately May 1 and October 31\*\*\* of each year;

(b) Within 90 days of adoption of these rules, the Cities of McMinnville and Lafayette must submit a program plan and time schedule to the Department describing how and when they will modify their sewerage facility to comply with this rule;

(c) Final program plans will be reviewed and approved by the Commission. The Commission may define alternative compliance dates as program plans are approved. All proposed final program plans must be subject to public hearing prior to consideration for approval by the Commission;

(d) The Department will within 60 days of adoption of these rules distribute initial waste load allocations and load allocations to the point and nonpoint sources in the basin. These allocations are considered interim and may be redistributed based upon the conclusions of the approved program plans.

\*\*\*Precise dates for complying with this rule may be conditioned on physical conditions (i.e., flow, temperature) of the receiving water and may be specified in individual permits or memorandums of understanding issued by the Department. The Department may consider system design flows, river travel times, and other relevant information when establishing the specific conditions to be inserted in the permits or memorandums of understanding.

These specific standards are each addressed in the appropriate preceding sections.

## **8. EVALUATION OF WATER QUALITY-RELATED REQUIRMENTS OF STATE LAW**

DEQ has reviewed the information in the record and the requirements of the state laws to determine the water quality-related requirements that may be applicable to the applicant's proposed project. In determining whether particular requirements may be water quality-related, DEQ has relied on the following considerations:

- a. The statute, or rules promulgated pursuant to the statute, contain explicit reference to water quality and are applicable to the proposed project.
- b. The statute, or rules promulgated pursuant to the statute, address factors that are necessary for maintenance of water quality in conjunction with the proposed project, or for evaluation of water quality impacts of the proposed project.
- c. The statute, or rules promulgated pursuant to the statute, authorize, require, or control actions or activities that may, in conjunction with the proposed project, be reasonably expected to impact water quality.

Based on these initial criteria, DEQ has identified the following as potential water quality-related requirements of state law:

### **8.1 Laws Administered by the Oregon Department of State Lands**

ORS 196.795 to 196.990 requires that permits be obtained from the Division of State Lands prior to any fill and removal of material from the bed or banks of any stream. Such permits, when issued, may be expected to contain conditions to assure protection of water quality so as to protect fish and aquatic habitat.

### **8.2 Laws Administered by Oregon Department of Fish and Wildlife**

ORS 496.012 sets wildlife policy for prevention of depletion of indigenous species and toward wildlife resource decisions to be made in the best social, economical and recreational interests of all user groups

ORS 496.164 provides for cooperation and technical assistance to other agencies with regard to wildlife resource management

ORS 496.170 to 496.192 requires collection and analysis of scientific data to determine and inventory biological status of species, develop conservation strategies, and provide recommendations to other agencies regarding actions affecting threatened or endangered species

OAR 635-007-0502 et. seq. native fish conservation policy – protection of natural ecological communities and habitats tailored to individual watersheds and situations

OAR 635-059-0000 et. seq. aquatic invasive species control

OAR 635-100-0150 requires consultation with ODFW on affects to endangered species

OAR 635-410-0000 natural resource losses

OAR 635-412-0005 et. seq. addresses fish passage

OAR 635-413-0000 et. seq. fish habitat mitigation policy

OAR 635-500-0002 et. seq. addresses fish management plans

### **8.3 Laws Administered by Department of Environmental Quality**

ORS 468B.155 prevention of groundwater contamination

ORS 468B.160 (5) triggers action to prevent groundwater contamination or restore acceptable levels

OAR 340-040-0030 permitted operation (5) action requirements and (6) remedial action requirements

OAR 340-045 pertaining to NPDES and WPCF permits

ORS 466.635 to 466.645 requirements for reporting and cleanup of spills of petroleum products and hazardous materials

#### **8.4 Laws Administered by Department of Land Conservation and Development**

ORS Chapter 197 contains provisions of state law requiring the development and acknowledgement of comprehensive land use plans. This chapter also requires state agency actions to be consistent with acknowledged local land use plans and implementing ordinances. The City of Portland has provided a signed statement indicating dredging is exempt from city Greenway Review and that the placement of dredged material on Hayden Island is consistent with the local comprehensive plan.

#### **8.5 Laws Administered by Oregon Watershed Enhancement Board**

ORS 541-351 et. seq. Oregon Plan for Salmon and Watersheds

#### **8.6 Summary**

Pursuant to 33 USC 1341(d) and OAR 340-048-0025, DEQ has included conditions in the 401 WQC that are consistent with these other requirements of state law. However, issuance of a 401 WQC does not obviate the need for any applicable permits, licenses, or other permissions required by local, state, or federal laws as interpreted by the agency charged with implementing the laws.

### **9. EVALUATION OF COMPLIANCE WITH SECTIONS 301, 302, 303, 306, AND 307 OF THE CLEAN WATER ACT**

In order to certify a project pursuant to Section 401 of the federal Clean Water Act, DEQ must find that the project complies with Sections 301, 302, 303, 306, and 307 of the Act and state regulations adopted to implement these sections, provided appropriate permits are obtained as required.

Sections 301, 302, 306, and 307 of the federal Clean Water Act deal with effluent limitations, water quality related effluent limitations, national standards of performance for new sources, and toxic and pretreatment standards. All of these requirements relate to point source discharges and are the foundation for conditions to be incorporated in National Pollutant Discharge Elimination System (NPDES) permits issued to the point sources.

Section 303 of the Act relates to Water Quality Standards and Implementation Plans. The EPA has adopted regulations to implement Section 303 of the Act. The EQC has adopted water quality standards consistent with the requirements of Section 303 and the applicable EPA rules. The EQC standards are codified in Oregon Administrative Rules Chapter 340, Division 41. The EPA has approved the Oregon standards pursuant to the requirements of Section 303 of the Act. Therefore, the applicant's project must comply with Oregon Water Quality Standards and TMDLs to qualify for certification. The Water Quality Standards Section of this evaluation and findings report detailed the considerations necessary for DEQ to include in the 401 WQC decision as conditions in order to ensure compliance with water quality standards, TMDLs, and other policies.

#### **9.1 Finding**

DEQ is reasonably assured that conducting these projects will comply with Sections 301, 302,

303, 304, 306, and 307 of the Clean Water Act if the applicants meet the conditions provided in the certification for these projects.

## **10. CONCLUSIONS**

As described in the individual findings sections above, DEQ is reasonably assured that the proposal will be in compliance with: the relevant sections of the Clean Water Act; other relevant state laws; and water quality standards and policies, including Antidegradation; provided USACE applies all proposed best management practices and control measures, including total containment and disposal of all dredged sediment and associated water; complies with all conditions of the 401 certification; and confers with DEQ and EPA to implement appropriate contingency measures in the event required monitoring indicates unacceptable risks to the aquatic environment.

## **11. REFERENCES**

Bridges, T.S., Ellis, S., Hayes, D., Mount, D., Nadeau, S.C., Palermo, M.R., Patmont, C. and Schroder, P. 2008 (February). The Four R's of Environmental Dredging: Resuspension, Release, Residual and Risk. US Army Corps of Engineers, Environmental Research and Development Center. ERDC/ EL TR-08-04.

Department of Environmental Quality (DEQ). 2001 (March). Antidegradation Policy Implementation Internal Management Directive for NPDES Permits and Section 401 Water Quality Certifications.

Humphrey, Chip and Freedman, Jonathan. 2010 (June 28). Email to Alex Liverman (DEQ) discussing contaminant levels and risk to aquatic life. US Environmental Protection Agency.

Mason, Bill. 2010 (September). Email to Alex Liverman (DEQ) discussing analysis of groundwater and floodplain concerns at West Hayden Island dredged material placement site. Department of Environmental Quality.

National Marine Fisheries Service (NMFS). 2008 (July 11). Endangered Species Act Section 7(a)(2) Consultation Biological Opinion & Magnuson-Stevens Fishery Conservation & Management Act Essential Fish Habitat Consultation on the Willamette River Basin Flood Control Project (Continued Operation of 13 Dams and Maintenance of 43 Miles of Revetments).

Rosetta, Tom. 2005 (October). Draft Technical Basis for Revising Turbidity Criteria. Oregon Department of Environmental Quality.

US Army Corps of Engineers, National Marine Fisheries Service, US Fish and Wildlife Service, US Environmental Protection Agency, Oregon Department of Environmental Quality, Washington Department of Natural Resources, Washington Department of Ecology, and Idaho Department of Environmental Quality. May 2009. Sediment Evaluation Framework for the Pacific Northwest.

**Appendix:  
Water Quality Commenter List**

1	Bob Sallinger - for Audubon Society of Portland, Willamette Riverkeeper, Hayden Island Manufactured Home Community Homeowners Association, Coalition for a Livable Future, & Columbia Riverkeeper
2	Tim Helzer
3	Lynn Herring
4	Ariana Longamecker
5	Dan Rohlf
6	Eric Burnette
7	Linda Robinson
8	Judith Werner