SECTION 3.0 OREGON'S ENFORCEMENT STRATEGY

This section describes Oregon's strategy to investigate and, if necessary, take remedial action in Port-land Harbor. It outlines Oregon's statutory and regulatory authorities, describes the steps in the investigation and cleanup process, and relates state program elements to those of CERCLA and EPA's National Contingency Plan (NCP). The regulatory enforcement strategy that will be used to implement the Portland Harbor sediment management approach includes both voluntary and enforcement mechanisms, and the framework of the remedial investigations and feasibility studies in which they will be used to ensure that the Portland Harbor investigation, and any necessary remedial actions, are successfully completed.

3.1 Oregon's Cleanup Authority

Oregon passed its most comprehensive cleanup law in 1987 (Oregon Revised Statutes 465-200 et. seq.), commonly known as the Environmental Cleanup Law. The law expanded DEQ's authorities related to identification, investigation, and removal or remedia-tion of hazardous substances and was modeled on CERCLA. DEQ rules adopted under the cleanup law parallel and in many respects exceed the require-ments of the NCP. The Environmental Cleanup Law's similarities to CERCLA include:

- Remedial actions are directed at remedying the release of "hazardous substances" into the environment.

- Procedures are laid out for identifying, investigat-ing, and cleaning up contaminated sites and establishing liability for the associated costs, including oversight costs.

- An Orphan Site Account is available to be used to fund investigation and remedial actions, if necessary, where liable parties are unknown, unwilling, or unable to participate. DEQ uses litigation, if necessary, to recover Orphan Site Account funds from recalcitrant responsible parties. (ORS 465.330)

- All remedies must be protective of human health and the environment and meet substantive requirements of all applicable laws and regula-tions. (ORS 465.315)

Aspects of the Environmental Cleanup Law that exceed CERCLA include:

- A maximum risk level of 1×10^{-6} for individual carcinogens. (ORS 465.315(1)(b)(A)) • Individual threatened and endangered fish and wildlife are expressly protected. (ORS 465.315(1)(b)(A))

- Oil and petroleum products are specifically covered within the cleanup law. (ORS 340-122-115(30)©)

- Generic remedies are available to streamline and expedite remedial actions. (ORS 465.315(1)(f)) Since the cleanup program started in 1987, DEQ has completed preliminary assessments at over 1,500 sites statewide. DEQ has now closed more than 470 of those sites. DEQ closes sites through a certification of completion or a "no further action" (NFA) determination when DEQ concludes, following a preliminary assessment, a risk assessment, or the completion of remedial action, that no unacceptable risk remains to human health or to the environment. About 25 sites have received NFA designation through the Site Response Program. Sites managed in the Site Response Program typically pose significant threats and/or responsible parties are recalcitrant. Over 180 sites have completed risk assessments or remedial actions and received NFA determinations through DEQ's Voluntary Cleanup Program, which began in 1991. The remaining NFA determinations were made in DEQ's Site Assessment Program after a preliminary assessment indicated no unacceptable risk.

The Environmental Cleanup Law applies to the release of a hazardous substance to the environment. A "release" means any "spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping or disposing into the environment… or threat thereof." The term "hazardous substance" encompasses hazardous substances identified by CERCLA, federal Resource Conservation and Recovery Act, and state only hazardous waste, and petroleum products. "Environment" includes ecological receptors, the waters of the State, any drinking water supply, any land surface and subsurface strata, sediments, saturated soils, subsurface gas, or ambient air or atmosphere. DEQ's jurisdiction under the

Environmental Cleanup Law applies to any "facility," which is defined as any site or area where a hazardous substance has been deposited, stored, disposed of, placed, or otherwise come to be located, and where a release has occurred or where there is a threat of a release. (ORS 465.200(2); OAR 340-122-115(26)) Oregon law requires risk assessments, feasibility studies, and remedial action decisions to assure protection of current and future uses in the "locality of the facility." Locality of the facility means "any point where a human or ecological receptor contacts, or is reason-ably likely to come into contact with, facility-related hazardous substances." (OAR 340-122-115(34)) DEQ's authority is thus determined by the actual or threatened extent of a release of a hazardous sub-stance and the risk it poses or may pose in the future, not by property boundaries.

As will be discussed, DEQ is vested with a variety of means under the Environmental Cleanup Law to require or undertake removals or remedial actions at facilities. The state law's definitions of removal and remedial action mirror CERCLA's, encompassing the range of site characterization, prevention, mitigation, cleanup, and monitoring actions necessary to protect human health and the environment from a release of hazardous substances. Except for the broader definition of hazardous substances to include oil, the scope of the Environmental Cleanup Law is the same as CERCLA's.

The statute gives DEQ the authority to require liable persons to perform necessary remedial measures. (ORS 465.260 (4)) Categories of persons strictly liable under the statute are:

- The owner or operator of the facility at or during the time of the release;
- Any subsequent facility owner or operator who knew or reasonably should have known of the release at the time of acquisition;
- Any owner or operator who knew of the release and transferred ownership or operation without disclosing such knowledge;
- Any person whose acts or omissions caused, contributed to, or exacerbated the release, unless the acts or omission were in material compliance with applicable law; and • Any person who unlawfully hinders or delays investigation or cleanup.

Oregon's liability scheme (ORS 465.255 (1)) is similar to that under CERCLA § 107. The statute does not expressly provide that liability also is joint and several. However, the statute's legislative history supports application of joint and several liability. (See Testi-mony (SB 122), Senate Agriculture and Natural Resources Committee, March 23, 1987). The statute has been applied numerous times to require multiple liable parties to address commingled waste. ORS 465.255 has been held to apply retroactively to impose liability on pre-enactment owners and opera-tors (Newell v. Weston, 150 Or. 562, 572, 946 P.2d 691 (1997)).

DEQ uses a range of legal vehicles to provide for performance of remedial measures by liable parties under DEQ oversight. Figure 3-1 below illustrates the three routes available to move forward on cleanup of contaminated sites. Two frequently used methods are administrative consent orders issued by the Site Response Program and Voluntary Cleanup Program agreements. (ORS 465.260 (2) and (4)). Consent orders and Voluntary Cleanup Program agreements contain similar terms, schedules, and scopes of work.

Consent orders typically contain stipulated penalties for non-performance by the responsible person and cannot be unilaterally terminated. Both consent orders and Voluntary Cleanup Program agreements are enforceable by administrative penalties under ORS 465.900, or by court action under ORS 465.260 (5). In certain cases, DEQ also enters judicial consent decrees for implementation of remedies pursuant to ORS 465.325, and prospective purchaser agreements with non-liable persons pursuant to ORS 465.327. Where responsible parties refuse to enter into consent orders or voluntary agreements, DEQ issues unilateral administrative orders pursuant to ORS 465.260 (4). Such orders are shielded from pre-enforcement review. ORS 465.260 (6)

All agreements and orders, regardless of the legal vehicle, require investigations or cleanup to be performed on a timely basis and in accordance with DEQ's cleanup rules. If a party performing work under a voluntary agreement or consent order fails to complete work required by the agreement or fails to meet agreed-upon deadlines, DEQ terminates the voluntary agreement and issues a unilateral order. If the order is not complied with, DEQ may itself perform the work using Orphan Site Account funds and seek cost recovery under ORS 465.260(8). Finally, in those instances where liable parties are unknown, unwilling,

or unable to perform required remedial measures, DEQ itself undertakes the work, pursuant to ORS 465.260 (1), using funds from the Orphan Site Account established under ORS 465.381. DEQ recovers its remedial action costs from liable persons, ORS 465.330, and may include treble damages. (ORS 465.260 (8))

These authorities are virtually identical to those vested in EPA under CERCLA. These laws and regulations provide DEQ with the tools necessary to ensure protection of human health and the environ-ment at sites where hazardous substances have been released, to the same level or a more protective level as remedial actions under CERCLA.

3.2 Steps in Oregon's Cleanup Process

To carry out these cleanup authorities, Oregon has developed and codified a multi-step process that parallels the CERCLA investigation and cleanup process. It is illustrated in Figure 3-2 on the following page.

Site discovery is the process of identifying and documenting a release of a hazardous substance to the environment. While releases may be associated with a particular source or source property, hazardous substances may also be detected without a clear source, e.g., public supply well, river sediments. In these cases, site discovery involves release detection and source identification. Release detection is the process of determining that a hazardous substance has entered the environment. This is done through sampling and reviewing records. Source identification is the process of determining the origin of an identi-fied release and identifying potentially responsible parties. The process involves performing research in the form of file reviews and field reconnaissance. Discovered sites are entered into the Environmental Cleanup Site Information (ECSI) database, which is similar to EPA's Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS). Site discovery is described in OAR 340-122-071.

Site assessment begins when the available information on a site in the ECSI database is compiled and a strategy recommendation prepared. A screening step is used at this point, which includes a quick review of a site, particularly to assess priority for follow-up. Priority may be based on the adequacy of the data linking a site to a release or on the presence of potentially impacted receptors. Sites receiving a high priority ranking at this point will be assigned to a DEQ project manager for immediate follow-up. Sites receiving a medium or low priority will be invited to participate in the Voluntary Cleanup Program. Medium or low priority sites not entering the Voluntary Cleanup Program are retained on the inventory list as needing further action. Site assessment is described in OAR 340-122-072.

Removal actions may be conducted at any point in the site response process. This may include source control measures, removal of highly contaminated material, and/or posting warning signs or constructing fences around a contaminated site. Removal actions are described in OAR 465.200 (24).

Remedial investigations (RI) are initiated to characterize the full nature and extent of contamination. A remedial investigation typically includes characterization of hazardous substances, characterization of the facility, performance of human health and ecological risk assessments (described below), and collection and evaluation of information relevant to the identification of hot spots of contamination. Where relevant, the remedial investigation will address constituents that may be commingled from various sources, constituents arising from multiple sources, and constituents whose source is unknown or for which there is no responsible party with clear responsibility. Remedial investigations are described in OAR 340-122-080.

Risk assessment is used to characterize current and reasonably likely future risks posed by a site to human health and the environment. Baseline human health and ecological risk assessments describe the risk posed by the contamination identified in the remedial investigation. Residual risk assessments evaluate the risk remaining after implementation of possible remedial actions. Risk assessments are described in OAR 340-122-084.

Feasibility studies (FS) are conducted if the risk assessment for the site establishes that remedial action is warranted. A feasibility study develops and screens potential remedial action alternatives and analyzes likely alternatives in detail for protectiveness and feasibility (effectiveness, long-term reliability, implementability, implementation risk, and reasonable-ness of cost). Alternatives for remedial action for contaminated sediments may include natural recovery, removal and treatment, in-situ treatment, removal and disposal, capping/containment, institutional or engineering controls, and no action. Feasibility studies are described in OAR 340-122-085.

Remedy selection is made by DEQ following approval of the feasibility study. The remedy must be protective. If more than one potential remedy is protective, DEQ selects a recommended remedy by balancing the feasibility of the potential remedies. DEQ then prepares a record of decision explaining its remedy selection and seeks public review and comment on the remedy before finalizing its decision. Remedial design/remedial action begins after the record of decision is signed. DEQ maintains records and establishes ongoing review procedures for any sites where the remedy results in contamination remaining in place, which requires long-term monitoring, control, or management. DEQ is committed to providing opportunities for public involvement throughout all phases of implementation, including the remedial investigation, risk assessment, feasibility study, and record of decision.

3.3 Enforcement Strategy to Implement PHSMP

DEQ will use a combination of voluntary and en-forcement mechanisms to investigate and, if neces-sary, remediate Portland Harbor. Many existing voluntary agreements and consent orders are in place at key sites within Portland Harbor (see Section 5). In general, these sites are those at which the highest sediment chemical concentrations were observed. In order to continue investigations of Portland Harbor most expediently, existing orders and agreements will be retained to the maximum extent possible. Other identified sites will be categorized in terms of their priority and addressed through either voluntary or enforcement mechanisms. DEQ will use its authority to issue unilateral orders to recalcitrant parties as needed to support continued timely action in Portland Harbor.

Figures 3-3 and 3-4 illustrate the process of ensuring sites are prioritized, investigated, and cleaned up, using Oregon's voluntary and enforcement tools. Both high (Figure 3-3) and medium/low priority (Figure 3-4) sites will be addressed, through enforce-ment or by agreement, as long as pertinent criteria are met and site progress and compliance are main-tained. Steps are illustrated that DEQ takes to assess whether progress is adequate and determine whether an alternative approach is indicated. DEQ intends to carry forward existing orders and agreements in Portland Harbor to maintain momen-tum and minimize disruption. In order to ensure that work under those existing orders and agreements continues to proceed in a timely fashion, however, DEQ will use the following criteria to determine when termination of a voluntary cleanup agreement or consent order is appropriate and another mechanism is needed:

- Responsible party fails to meet agreed-upon deadlines, in a manner which prejudices the harbor-wide RI/FS project schedule.
- Responsible party fails to obtain data necessary for implementation of the harbor-wide RI/FS.
- Responsible party consistently submits deficient documents.

Terminated voluntary agreements will be replaced with consent orders or enforcement orders that provide for stipulated penalties when the responsible party misses clearly defined time-frames or submits obviously deficient documents. Terminated consent orders will first be followed by unilateral orders or court enforcement, but may be declared orphan sites due to the responsible party's unwillingness to pro-ceed with the necessary work. For orphan sites, funds from the Orphan Site Account will be made available to perform the work necessary to implement the PHSMP. DEQ will use its statutory authorities to recover its costs, including treble damages, from uncooperative responsible parties.

3.4 Source Control

Source control is an integral part of DEQ's cleanup program, and will be an integral portion of implementing the PHSMP. DEQ recognizes that unless sources of sediment contamination are controlled, recontamination may render sediment cleanup actions ineffective. Key elements of source control include making source control a priority at individual cleanup sites, completion of a sediment transport study to quantify the extent to which upstream contaminants are contributing to Portland Harbor sediment contamination, and cross-program coordination with other DEQ programs (e.g., water quality) to address non-point sources of contamination. Non-point sources that will be considered include releases from recreational boats, commercial shipping operations, and urban and agricultural runoff.

In addition to upstream and non-point sources of sediment contamination, coordinated across DEQ programs, site-specific work will also focus on source control. In order to facilitate source control at individual cleanup sites, DEQ will seek and amend existing agreements and consent orders to require the evaluation and implementation of source control measures. In addition, all new agreements and consent orders for sites within Portland Harbor will include language that requires the evaluation and implementation of source control measures. In general, DEQ will require the following:

• **Implementation of source control measures to address direct discharges to the Willamette River.** Direct discharges include free product or direct runoff of contaminants. For existing sites, DEQ will require that these actions be undertaken by October 1, 2000. For new sites, DEQ will require these actions to be undertaken within 1 year of the effective date of the agreement or consent order. Source control measures to address direct discharges include the installation of extraction wells and interceptor trenches to recover free product, the implementation of best management practices to prevent direct runoff, and stormwater management. Examples of sites at which these actions have already been implemented include McCormick and Baxter and the Willbridge and Arco bulk fuel facilities (free product recovery) and the Port of Portland, Terminal 4 (best management practices). In addition, at some facilities at which active free product recovery is already taking place, DEQ will evaluate the effectiveness of the existing system to determine whether an upgrade of the system is necessary. For example, the new consent order for the Rhone Poulenc site includes a requirement to evaluate the effective-ness of the current groundwater extraction and treatment system.

• **Evaluation of source control measures to address groundwater discharges to the Willamette River.** Many sites along the Willamette River have dissolved groundwater contamination that is discharging to the Willamette River. The first step in the evaluation will be an assessment of the extent to which dis-solved groundwater contamination contributes to harbor-wide sediment contamination. If it is determined that groundwater contamination is adversely effecting Willamette River sediments, an evaluation of the feasibility of source control measures such as hydraulic control and the installation of barriers to address dissolved groundwater contamination. For example, many sites have monitoring wells installed along the Willamette River at multiple depths to monitor contaminant levels discharging to the river. Groundwater data will be used to estimate the flux of contaminants to the Willamette River. In addition, upcoming sediment work will include an evaluation of the extent to which groundwater contaminants are impacting the benthic environment adjacent to the site. If it is determined that dissolved contaminants are causing an adverse effect on the benthic environment, DEQ will require a focused feasibility study to evaluate source control measures to prevent further migration of dissolved contaminants to the Willamette River. At existing sites, DEQ will require the evaluation of source control measures to address groundwater contamination by October 1, 2002. At new sites, DEQ will require evaluation within 3 years of the effective date of the agreement or consent order.

- The implementation of source control measures to address groundwater discharges to the Willamette River. If DEQ determines that control of dissolved groundwater contamination is feasible and will be effective at addressing Willamette River sediment contamination, implementation of appropriate control measures will be required. If necessary, DEQ will take appropriate enforcement actions to ensure implementation of source control measures. For example, if DEQ determines that source control measures to address dissolved groundwater contamination are warranted, DEQ will use a focused feasibility study or removal authority to implement an appropriate source control measure on an expedited basis. At existing sites, DEQ will require the implementation of source control measures

to address groundwater contamination by October 1, 2003. At new sites, DEQ will require implementation within 4 years of the effective date of the agreement or consent order.

3.5 Implementing Harbor-Wide Strategies

To accomplish the harbor-wide elements of the phased RI/FS (areas not within specific identified sites), DEQ will establish a cooperative agreement with currently and newly identified parties within the Harbor. Implementation of harbor-wide activities will be performed by DEQ. All existing agreements and orders will be reviewed to determine if amendments are necessary to collect additional data to support implementation of the harbor-wide RI/FS.

The Portland Harbor Group provided the funding necessary to develop the PHSMP and has indicated a willingness to contribute to harbor-wide investigation activities as they become necessary. The Portland Harbor Group has also stated its intent to assist DEQ in the identification and pursuit of other potentially responsible parties. DEQ intends to use a cooperative agreement among DEQ, members of the Port-land Harbor Group, and other parties to fund harbor-wide remedial investigation activities. If the investigation indicates contamination requiring remediation in non-site-specific areas, DEQ will proceed with a feasibility study as indicated. DEQ will use its enforcement authorities described in this section to compel recalcitrant responsible parties to contribute to harbor-wide activities, or, if necessary, will use its own funds and seek cost recovery from uncooperative responsible parties. In any event, using available state resources and existing state statutes, DEQ will ensure that Portland Harbor does not pose a threat to human health or the environment.

3.6 Consideration of CERCLA Requirements

The following is a brief comparison of additional elements of the NCP and Oregon's Environmental Cleanup Law. EPA uses the NCP as the basis for selecting remedies at sites addressed under CERCLA.

Protection of human health and the environment. The NCP requires that remedies meet two "threshold" criteria: (1) overall protection of human health and the environment, and (2) compliance with applicable or relevant and appropriate requirements (ARARs). Factors that are considered in determining overall protection include a protective risk range of 10 -4 to 10 -6 for known or suspected carcinogens, a Hazard Index of 1 for non-carcinogens, and no significant adverse impact on ecological receptors. Typical ARARs include the Safe Drinking Water Act maximum contaminant levels (MCLs), non-zero maximum contaminant level goals (MCLGs), and water quality criteria established under the Clean Water Act.

Oregon's environmental cleanup rules require all remedies to be protective of human health and the environment. Protectiveness is defined as meeting specific acceptable risk levels specified in OAR 340-122-115 for individual carcinogens (10^{-6}), multiple carcinogens (cumulative 10^{-5}), non-carcinogens (Hazard Index of 1), individual threatened and endangered ecological receptors and populations of other ecological receptors. Furthermore, these levels are based on exposures resulting from current and reasonably likely future land and water uses.

Compliance with ARARs. Under CERCLA, all remedies leaving hazardous substances onsite must comply with ARARs. Under DEQ's cleanup law, remedies must meet substantive requirements of applicable laws and regulations. In addition, DEQ requires treatment to the extent feasible to address hot spots of contamination. For groundwater and surface water, hot spots are generally determined by exceedance of applicable standards, criteria, or guidance. Because the PHSMP addresses protection of beneficial water uses, applicable water quality standards will also be met.

Use of permanent solutions and treatment or recovery to the maximum extent practicable:

Oregon's Environmental Cleanup Law specifies that remedial actions may achieve protection of human health and the environment through treatment that eliminates or reduces the toxicity, mobility or volume of hazardous substances. The law also requires evaluation of the feasibility of remedial actions to treat hot spots of contamination. The preference for treating hot spots where feasible and choosing the least costly alternative for non-hot spot material closely parallels EPA's expectations for principal threats and material posing a relatively low, long-term threat. Principal threats are generally defined as areas contaminated with high concentrations of toxic compounds, liquids and other highly mobile materials or contaminated media that pose significant risk of exposure, or media containing contaminants several orders of magnitude above health-based levels. Oregon's environmental cleanup rules require that hot spots of contamination be treated to the extent feasible. For groundwater or surface water, hot spots of contamination are defined as hazardous substances having a significant adverse effect on beneficial uses of water or waters to which the hazardous sub-stances would be reasonably likely to migrate *and* for which treatment is reasonably likely to restore or protect such beneficial uses within a reasonable time, as determined in the feasibility study. For media other than water, including sediments, hot spots are defined by the presence of high concentrations of contaminants that present an unacceptable risk to human health or the environment, by the presence of contaminants that are likely to migrate and create a hot spot of contamination elsewhere, or by the presence of contaminants that are not reliably confinable as determined in a feasibility study.