6 FEASIBILITY STUDY TASKS

This section presents the tasks that will be completed in the preparation of a FS report for the Upland Environment (including upland soils, groundwater, and Ennis Creek sediments) at the former Rayonier Pulp Mill Site in Port Angeles, Washington. The FS will be conducted in accordance with the guidance and provisions specified in the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC, and, where appropriate, the U.S. Environmental Protection Agency's guidance document, *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (U.S. EPA, 1988).

The objective of the FS process is to make an informed risk management–based selection of the cleanup action alternative that appears to be the most appropriate for the site. The FS process involves identifying applicable regulatory requirements, establishing cleanup action objectives and cleanup standards that are protective of human health and the environment, identifying and evaluating potentially applicable cleanup technologies, and incorporating the cleanup technologies into cleanup action alternatives to address all aspects of site contamination. The cleanup action alternatives are then evaluated against specific criteria dealing with effectiveness, implementability, and cost to help select a preferred site remedy. Each of these components involves consideration of site-specific data and the findings of the human health and ecological risk analyses. The following sections describe the general tasks that will be performed in completing the FS.

6.1 IDENTIFICATION OF APPLICABLE LOCAL, STATE AND FEDERAL LAWS

The MTCA Cleanup Regulation (WAC 173-340-710) specifies that all cleanup actions shall comply with applicable state and federal laws, which are defined as "legally applicable requirements and those requirements that the department determines…are relevant and appropriate requirements".

MTCA defines two general types of applicable local, state, and federal laws as follows:

- *Legally Applicable Requirements*—cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations adopted under state or federal law that specifically address a hazardous substance, cleanup action, location or other circumstances at the site
- *Relevant and Appropriate Requirements*—cleanup standards, standards of control, and other environmental protection requirements, criteria, or limitations established under state or federal law that address problems or situations

sufficiently similar to those encountered at the site that their use is well suited to the particular site.

Under this task, the applicable local, state, and federal laws will be identified for the Upland Environment at the former Rayonier Pulp Mill Site. The Department of Ecology will make the final determination as to whether the requirements have been appropriately identified and are legally applicable or relevant and appropriate.

6.2 CLEANUP ACTION OBJECTIVES

Cleanup Action Objectives (CAOs) are formal statements of the overall objectives for the remedial action. CAOs are chemical- and media-specific goals for the cleanup action that are protective of human health and the environment. CAOs form a primary basis for the development and evaluation of cleanup action alternatives. A set of CAOs will be developed in the FS.

6.3 CLEANUP LEVELS AND CLEANUP STANDARDS

MTCA stipulates that cleanup levels and cleanup standards be established for any release of a hazardous substance at a site. MTCA defines a cleanup level as the "concentration of a hazardous substance in soil, water, air or sediment that is determined to be protective of human health and the environment under specified exposure conditions." In conjunction with points of compliance, cleanup levels define the area or volume of media at a given site that must be addressed by the cleanup action. Cleanup standards consist of three components:

- Cleanup levels for hazardous substances present at the site;
- The point of compliance (the location where the cleanup levels must be met); and
- Other regulatory requirements (applicable local, state, and federal laws) that apply to the site.

MTCA provides three Methods (A, B, and C) for establishing cleanup levels. Under Method A, cleanup levels are set at concentrations that are at least as stringent as those specified in Tables 720-1, 740-1, and 745-1 of WAC 173-340-700 and in applicable state and federal laws. Method A is applicable to sites that may involve a relatively routine cleanup action or few hazardous substances. MTCA Method B (Universal Method) provides for determination of cleanup levels for all media and sites. MTCA Method C (Conditional Method) applies to sites where compliance to Method A or B may be impossible or may cause greater environmental harm. Under both Methods B and C, cleanup levels are established using applicable local, state, and federal laws and the risk equations and other requirements specified in WAC 173-340-720 through 760.

Final cleanup levels and cleanup standards will be established in the FS Report based on the findings of the RI and the human health and ecological risk analyses.

6.4 DEVELOPMENT OF CLEANUP ACTION ALTERNATIVES

This section describes the FS process by which applicable cleanup action alternatives will be developed for the Upland Environment of the former Rayonier Mill Site. The objective of this process is to develop an appropriate range of cleanup action alternatives for detailed analysis. The process outlined below for the development of cleanup action alternatives is taken from MTCA guidelines (WAC 173-340-350) and, where appropriate, borrows from U.S. EPA guidance (U.S. EPA 1988). In general, the process of developing cleanup action alternatives consists of three phases: development of general response actions, identification and screening of cleanup technologies and process components, and development of cleanup action alternatives.

General response actions are broad actions that, singly or in combination, will meet the site CAOs and cleanup standards, and form the basis for identifying the classes of possible cleanup technologies and process components applicable to the site. General response actions for the Uplands Environment at the site may include: no action, excavation, extraction, ex-situ treatment, in-situ treatment, containment, disposal, and institutional controls. Based on the general response actions, the range of potentially applicable cleanup technologies and specific process components will be identified for remediation of soils, groundwater, and surface water at the former Rayonier Mill Site. For example, ex-situ treatment is a general response action for groundwater, but this could be achieved using either biological or physical/chemical cleanup technologies. Lime precipitation is a specific process component for physical/chemical treatment. Once identified, the cleanup technologies and process components will be analyzed and screened in terms of technical implementability based on site-specific conditions to eliminate infeasible options from further evaluation during the development of cleanup action alternatives. Common factors that influence the screening process include contaminant type and concentration, subsurface conditions (e.g., depth of contamination, geologic matrix), and access restraints (e.g., presence of surface features, such as buildings).

The next step of the process is to develop the cleanup action alternatives for addressing any contamination present in the Uplands Environment at the former Rayonier Mill Site. Each cleanup action alternative is a unique assemblage of remedial process components which, in concert, are intended to achieve the site CAOs and cleanup standards. Alternatives will be assembled from the general response actions, available remediation technologies, and process components retained from the screening process described above, with the specific intent of identifying alternatives that have a high probability of meeting site CAOs and cleanup standards.

6.4.1 SCREENING OF CLEANUP ACTION ALTERNATIVES

When appropriate, MTCA allows for an initial screening of cleanup action alternatives such that the number of alternatives carried forward to the detailed analysis is reduced. MTCA guidance stipulates that the following cleanup action alternatives or components may be eliminated from further consideration in the FS:

- Alternatives or components that clearly do not meet the minimum requirements established for cleanup actions under WAC 173-340-360, including those alternatives for which costs are clearly disproportionate.
- Alternatives or components which are not technically possible.

If the complexity and number of the cleanup action alternatives warrants it, the FS will include this initial screening process. However, it is recognized that Ecology will make the final determination of which alternatives must be carried forward for detailed analysis in the FS.

6.4.2 CLEANUP ACTION ALTERNATIVES AND REMEDIATION LEVELS

Often site conditions dictate that a flexible strategy be taken for site cleanup and that the selected cleanup actions use a combination of cleanup action components to address varying conditions at the site. To address this issue, MTCA (WAC 173-340-355) allows for the development of remediation levels "to identify concentrations (or other methods of identification) of hazardous substances at which different cleanup action components will be used." Remediation levels differ from cleanup levels in that cleanup levels define the concentration above which some cleanup action (e.g., treatment, containment, institutional controls) must be taken, while remediation levels define which particular cleanup action component will be taken. Remediation levels will be considered, as appropriate, during the FS process for the Uplands Environment of the former Rayonier Mill Site.

6.4.3 QUANTITATIVE RISK ASSESSMENT OF CLEANUP ACTION ALTERNATIVES

As specified in WAC 173-340-360, a primary requirement of a cleanup action is that the action be protective of human health and the environment. In some cases, a quantitative risk assessment is required to demonstrate that the selected cleanup action meets this requirement. MTCA provides general guidelines for conducting such an assessment in WAC 173-340-357. If necessary, the FS will include a quantitative risk assessment per MTCA guidelines to support the selection of the cleanup action alternative for the Uplands Environment of the former Rayonier Mill Site.

6.5 DETAILED ANALYSIS OF CLEANUP ACTION ALTERNATIVES

This section describes the process by which the preferred cleanup action alternative for the Uplands Environment will be selected in the FS. The primary criteria for evaluating cleanup action alternatives are the minimum requirements established by MTCA. As defined in WAC 173-340-360, the selected cleanup action must meet the minimum "threshold" requirements described below.

- Protect human health and the environment.
- Comply with cleanup standards (WAC 173-340-700 through 760).
- Comply with applicable local, state, and federal laws.
- Provide for compliance monitoring (WAC 173-340-410 and 173-340-720 through 760).

In addition, the selected cleanup action shall:

- Use permanent solutions to the maximum extent practicable (as defined in WAC 173-340-360, subsection 3),
- Provide for a reasonable restoration time frame (as defined in WAC 173-340-360, subsection 4), and
- Consider public concerns (per WAC 173-340-600).

MTCA also provides specific requirements regarding groundwater cleanup actions; cleanup actions for soils at current or potential future residential areas and for soils at schools and child care centers; institutional controls; releases and migration; dilution and dispersion; and remediation levels. These requirements will be considered in the FS during the development and evaluation of cleanup action alternatives.

MTCA guidance stipulates that preference shall be given during selection of a cleanup action alternative to those that use permanent solutions to the maximum extent possible. Evaluation of whether an alternative uses permanent solutions to the maximum extent possible is performed through the use of a disproportionate cost analysis, which provides for the comparison of the costs and benefits of the cleanup action alternatives using the following evaluation criteria:

- *Protectiveness*. Overall protectiveness of human health and the environment;
- *Permanence*. The degree to which the alternative permanently reduces the toxicity, mobility or volume of hazardous substances;
- *Cost*. The cost to implement the alternative;
- *Effectiveness over the long term*. The degree of certainty of success, the reliability of the alternative, the magnitude of residual risk, and the effectiveness of controls;

- *Management of short-term risks*. The risk to human health and environment associated with construction and implementation of the alternatives;
- *Technical and administrative implementability*. Technical feasibility of the alternative and administrative requirements; and
- *Consideration of public concerns.* Whether the community has concerns regarding the alternative and, if so, the extent to which the alternative addresses those concerns.

A detailed, comparative analysis of the cleanup action alternatives that meet the MTCA minimum requirements will be developed in the FS based on the above criteria. This evaluation will provide the basis for selection of a preferred alternative.

6.6 FEASIBILITY STUDY REPORT

A draft FS Report will be prepared to present the components of the FS process described above in a manner that is consistent with the guidance and provisions specified in the MTCA (WAC 173-340).