



## **RESPONSIVENESS SUMMARY**

**Remedial Investigation/Feasibility Study/Interim Action**

**Reynolds Metals Aluminum Smelter Site**

**June 1 – August 1, 2014 Public Comment Period**

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## Introduction

This document addresses questions and comments received by the Department of Ecology (Ecology) during the public comment period on the Remedial Investigation (RI), Feasibility Study (FS), and Interim Action (IA) for site cleanup at the former Reynolds Metals Aluminum Smelter in Longview, Washington. The RI determined the nature and extent of the contamination at this site. The FS developed and evaluated potential cleanup alternatives for the site. The IA will address sediment contamination in the Columbia River.

Ecology published notice of an opportunity to comment on the RI/FS and IA in The Daily News on June 1, 2014. In the notice, Ecology invited public review of the Draft RI/FS Report and IA Work Plan and provided a 60-day public comment period. Ecology held a public open house at the Cowlitz County PUD on June 18, 2014. We held another public open house, followed by a meeting and a formal hearing on these actions at the Kelso Red Lion Hotel on July 16, 2014. The deadline for submittal of written comments was August 1, 2014.

A total of 2,898 comments were received by Ecology. We compiled and grouped the comments where appropriate to save time and space. Comments appear in bold italicized text, followed by Ecology's response in regular text. Anyone interested in reading the full text of the comments can view them at <https://fortress.wa.gov/ecy/gsp/DocViewer.ashx?did=29652>.

## Comments and Responses

### Liability for the Investigation and Cleanup

*Many commenters asked that Ecology hold Alcoa and Millennium accountable for the cleanup at the former Reynolds Metals site so taxpayers do not have to pay.*

**Ecology's Response:** Ecology implements the Model Toxics Control Act (MTCA), Chapter 70.105D RCW. This law gives the department authority to take remedial actions or to order persons to conduct remedial actions when a release of hazardous substances has occurred. At the former Reynolds Metals Aluminum Smelter site, Northwest Alloys, Inc. and Millennium Bulk Terminals-Longview, LLC, are Potentially Liable Persons (PLPs) under MTCA and signatories to the agreed order which requires both parties to complete a remedial investigation and feasibility study. A second order or consent decree will require both PLPs to complete a MTCA cleanup at this site. Each liable party is strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or threatened release of hazardous substances at this facility. It is not anticipated that taxpayers will pay for any of the investigation or cleanup of this site.

## Highest Standard

*Many commenters want this cleanup to meet the highest standard to protect future public health, workers' health, and the Columbia River. Many commenters want Ecology to require a cleanup alternative that removes all contamination from the site.*

**Ecology's Response:** MTCA rules establish cleanup standards and requirements to protect the state's citizens and environment. Cleanup standards are comprised of "cleanup levels" and "points of compliance". The cleanup levels establish the concentration of a particular hazardous substance that is protective of human health and the environment, and the points of compliance designate the locations where cleanup levels must be met. MTCA does not require that all risk be eliminated, but contamination remaining onsite must no longer pose an unacceptable threat to human health or the environment. While all cleanup actions must be protective, the MTCA rules do allow costs to be considered. When choosing amongst remedial alternatives, MTCA doesn't require more expensive remedies unless the benefits are commensurate with costs.

Cleanup standards are based on the use of a property. Ecology is required to apply industrial cleanup standards at industrial properties such as the Reynolds site. Industrial properties cleaned up to industrial standards cannot be converted to nonindustrial uses without Ecology's approval and the opportunity for public review and comment. Industrial properties cleaned up to industrial standards must also not pose a threat to human health or the environment in adjacent nonindustrial areas where hazardous substances remain at the property after cleanup. Ecology must ensure that human health and the environment are protected but does not have authority to require the removal of 100% of site contaminants if lower cost alternatives will address the risk.

While the RI/FS may identify a preferred alternative, Ecology is not selecting a final cleanup option at this time. The next step in the cleanup process is for Ecology to prepare a proposed Cleanup Action Plan (CAP). This plan will identify the proposed remedial actions, monitoring, and schedule for cleanup of the site. Ecology will make this plan available for public review and comment before selecting the final remedy for the site.

## River Sediment

*Many commenters want this cleanup to include excavation and removal of polluted river sediment, but want Ecology to require disposal of the sediments at an off-site landfill rather than allowing containment on site.*

**Ecology's Response:** The interim action Engineering Design Report calls for removal of sediments from a localized area in the river for the protection of small, sensitive benthic organisms. The material is to be placed in an on-site upland containment area and covered with a temporary synthetic cover to secure the material. The material will remain in place

pending the final Cleanup Action Plan issued by Ecology for the cleanup of the upland portion of the Former Reynolds Plant. A decision on the final disposition of the dredged river sediment will not be made until the Cleanup Action Plan is finalized, likely sometime in late 2015 or early 2016.

Cleanup levels for river sediments are much lower than those for upland exposure scenarios. The concentrations of contaminants in the sediments removed from the river will be below applicable upland cleanup levels. Therefore, placement of the sediment removed from the river will not pose an unacceptable risk in the upland environment. The upland containment of low-concentration dredge material is consistent with other cleanup actions in Washington.

If the materials are managed on site permanently, they will be placed under a cap with appropriate monitoring, maintenance, and institutional controls. If the decision in the final Cleanup Action Plan is to transport the dredged river sediment off the property, it will be taken to an appropriate facility that is permitted and approved to handle this material.

*Saying these soils will be reused beneficially as upland fill when they are moved to an already existing fill area, which would then have to be temporarily capped until the final CAP is written, in my opinion, is not beneficial to the site or operations. Would this not require additional monitoring, when offsite removal would require no monitoring?*

**Ecology's Response:** If on-site containment of upland wastes is part of the selected cleanup alternative for the site, additional fill material will be needed to grade the containment areas so they will drain properly. In this context, the material removed from the river could be reused to reduce the amount of imported fill needed.

No additional monitoring would be required for the consolidation onto already existing fill areas since these areas will already be subject to monitoring, maintenance and institutional controls.

*Since the final CAP may be a year away, how can we depend on an undetermined plan as acceptable remediation if the sediment is consolidated upland?*

**Ecology's Response:** An Interim Action Work Plan and Engineering Design Report (EDR) have been developed for this site. The work plan outlines the specific components of the sediment cleanup including: dredging, backfilling, placement area preparation, transloading, temporary placement and covering of the dredged material, and permitting requirements. The EDR provides detailed engineering assumptions, a water quality monitoring plan, and a compliance monitoring plan to ensure cleanup levels have been met in the river. These steps will ensure a successful remediation and safe handling of sediments until a final decision regarding management of the dredged material is made in the Cleanup Action Plan.

*The Short-term Effectiveness ranking for Alternative 3 is 7, and for Alternative 4 is 5, with only longer hauling distance as the reason for the difference. There is no consideration for interim exposure onsite where the contaminated sediment will be stored until final disposition is determined. Please reevaluate this score.*

**Ecology's Response:** As mentioned earlier, the material will be covered during temporary placement and the concentrations of contaminants will be below upland cleanup levels. Therefore there will be no interim exposure to levels of contaminants that could pose an unacceptable risk.

*How will the river water be protected during the interim action and what measures or back up plans are ready in case of a release to the river?*

**Ecology's Response:** The Engineering Design Report for the remediation of sediments in the Columbia River includes a number of Best Management Practices (BMPs) that will be followed to protect the river during the interim action and in case of a release. Permitting requirements by other agencies will also ensure protection of the Columbia River. Some of the key elements of these BMPs include the following:

- Performing work within the in-water work window to minimize potential impacts to protected species during critical periods
- Ensuring appropriate training (e.g., 40-hour hazardous materials and other applicable OSHA/WISHA requirements) for dredge workers
- Developing and following a site-specific Spill Prevention Plan to be used for the duration of the project
- Equipping dredge equipment with appropriate response tools, such as absorbent oil booms
- Performing water quality monitoring during sediment removal
- Using dredge/transloading equipment and practices that minimize the potential for release to the river
- Treating water generated during dredging and transloading prior to discharge back to the river

## **Certified Contractor**

*Many commenters want the work done by certified contractors who will oversee and undertake all cleanup actions—not Millennium Bulk Terminals – Longview, LLC.*

**Ecology's Response:** The Cleanup Action Plan and Consent Decree will require that all remediation work performed at the site be under the direct supervision of a professional engineer or a qualified technician under the direct supervision of a professional engineer. The professional engineer must be registered by the State of Washington, except as otherwise

provided for by RCW 18.43.130. The contractors hired by Northwest Alloys, Inc. (NWA) and/or Millennium Bulk Terminals - Longview, LLC (MTBL) to do the cleanup work at the site will have to meet this requirement. The contractors will also need to have 40 hour hazardous materials training and meet other applicable health and safety requirements. Ecology will oversee the work to ensure that applicable state and federal laws and regulations are complied with. Ecology will conduct regular site visits and be in regular contact with the responsible parties to ensure that work is being properly performed.

## Cleanup Alternatives

*Several commenters had concerns about how the cleanup alternatives were screened and evaluated.*

**Ecology's Response:** MTCA rules describe the criteria that cleanup alternatives must meet. Certain minimum requirements must be met for all cleanup actions, including compliance with cleanup standards, compliance with applicable state and federal laws, protecting human health and the environment, providing compliance monitoring, using permanent solutions to the maximum extent practicable, providing a reasonable restoration time frame, and considering public concerns. Cleanup alternatives may use one or more treatment technologies, containment actions, removal actions, engineered controls, institutional controls or other actions to meet the requirements in the rules. Typically, at a large site, several remedial technologies are blended to make up the final cleanup action.

In the case of the former Reynolds Metals site, certain technologies were screened out because they would not remediate chemicals of concern or because they were not able to be implemented. Retained technologies were grouped into alternatives and then evaluated against MTCA criteria for each media of concern. The study identified Alternative 4 as the remedial alternative that meets the required thresholds in MTCA and is permanent to the maximum extent practicable.

## Disproportionate Cost Analysis

*Many people expressed concern that the Disproportionate Cost Analysis (DCA) appeared to be too subjective or used the wrong criteria. Why didn't Ecology consider the benefits of a wider range of redevelopment options? Some people felt that some alternatives were scored too high and others too low. Others felt also that the DCA did not consider the cost of cleaning up the site in the future if hazardous waste is spread around due to flooding or earthquakes. Some commenters felt the cost/benefits of Alternatives 4 and 5 cannot be the same when Alternative 5 costs 3 times more than Alternative 4. How will public concern be considered and integrated into the final benefit score?*

**Ecology's Response:** MTCA rules require that cleanups must be “permanent to the maximum extent practicable”. To determine which cleanup action uses permanent solutions to the maximum extent practicable, a Disproportionate Cost Analysis (DCA) is conducted to compare the costs and benefits of the alternatives identified in the feasibility study. MTCA specifies how a DCA is conducted. The criteria used in the DCA evaluation include: protectiveness, permanence, cost, effectiveness over the long term, management of short-term risks, technical and administrative implementability, and consideration of public concerns. These criteria are weighted to reflect their relative importance. Typically the benefits are scored from 1 to 10 with an overall score of 10 representing an alternative that satisfies the criterion to the highest degree. MTCA also does not allow the use of criteria other than those listed.

The DCA is used to screen out alternatives with disproportionately higher costs. Costs are considered disproportionate if the incremental cost of the alternative over that of a lower cost alternative exceeds the incremental benefits achieved by that alternative over the lower cost alternative. The DCA balances the most cost-effective use of technology with the highest degree of environmental benefit. Even under the process outlined in MTCA, scoring is somewhat subjective and best professional judgment and precedent from other sites must be used in the analysis.

A new column was added to the DCA to factor in public concerns that Ecology received during the comment period. While the environmental benefit scores changed as a result, it did not change the evaluation preference. This was primarily due to the large difference in cost between on-site containment and off-site disposal. The DCA found that the additional costs of Alternatives 5 and 6 were disproportionate to the benefits when compared to Alternative 4.

***Protectiveness is given the highest weight of 30% in this analysis. Protectiveness is only an immediate achievement and is not the most important criteria to any industrial remediation. Without long-term effectiveness there would be no protection.***

**Ecology's Response:** The weighting factor used is consistent with what has been used at other large sites. As noted above, Ecology added a column in the final DCA scoring table to reflect public concerns. Since the category weightings must add up to 100%, the weightings of other categories were adjusted when the new column was added. Protectiveness is assigned a weight of 25% in the final DCA.

Under MTCA, protectiveness is defined as “Overall protectiveness of human health and the environment, including the degree to which existing risks are reduced, time required to reduce risk at the facility and attain cleanup standards, on-site and off-site risks resulting from implementing the alternative, and improvement of overall environmental quality.” As such, it is not limited to an immediate achievement.

*In the DCA, permanence is weighted at 25%, but as stated, treatment actions that destroy contaminants (thereby reducing toxicity, mobility, and volume) are considered under MTCA to be more permanent than containment actions (which only reduce the mobility). Please explain why Alternatives 4 and 5 are given the same score of 8 when Alternative 4 removes 400 cy of soil for off-site disposal and Alternative 5 removes 134,000 cy of soil offsite. This scoring seems inconsistent.*

**Ecology's Response:** Although the volume of material removed off-site is greater in Alternative 5, contaminant mobility and toxicity are the same for the two alternatives. The volume that would be removed in Alternative 5 is simply moved somewhere else.

*Effectiveness over the Long Term is weighted with 20%, but it should be the most important criteria in the analysis. Long-Term Effectiveness, I would think, is what environmental remediation is all about. Shouldn't Long-Term Effectiveness be given the highest weight in this analysis?*

**Ecology's Response:** Although weighting of the criteria in a DCA is somewhat subjective, the weighting used for the Reynolds site is consistent with that used at many other sites in the state.

*The implementability score for Alternative 3 is 8, and for Alternative 4 is 7. And yet the report repeatedly says standard practices are already developed and easily implemented and that local contractors and regional landfill operations are available. Alternative 4, is a quicker route to Permanence, Protectiveness, and Long-term Effectiveness. Please reevaluate this score.*

**Ecology's Response:** The implementability score for Alternative 3 is 8.5, and Alternative 4 is 8. The low permeability caps that will be used in Alternative 4 are more complex than in Alternative 3, and more material will be excavated and consolidated. So it is reasonable to score Alternative 4 slightly lower than Alternative 3 for implementability because the cleanup action will be more complicated and require more time to implement than Alternative 3.

## **Restoration Timeframe**

*Several commenters did not understand what is meant by a reasonable restoration timeframe, or how it applies to this site.*

**Ecology's Response:** MTCA determines a reasonable restoration timeframe by considering the following factors: potential risks, practicality of achieving a shorter restoration time frame, current use of site, potential future use, availability of alternative water supplies, likely effectiveness of institutional controls, ability to monitor and control migration of



hazardous substances, toxicity of hazardous substances, and presence of natural processes that reduce concentrations of hazardous substances. There is some subjectivity in evaluating these factors. Best professional judgment and experience at other sites are used in evaluating what constitutes a reasonable restoration timeframe.

At the former Reynolds Metals site, surface water cleanup standards within the Columbia River and ditches are already being met. So the restoration timeframe for humans and ecological receptors is zero for surface water (i.e. no additional restoration time is needed to meet standards). Soil cleanup standards will be met as soon as engineering controls are constructed and additional institutional controls are put in place. Fluoride in the groundwater will continue to be present for many years using any of the alternatives. It would not be practicable to remove all affected soil and associated groundwater in an effort to shorten the restoration timeframe. In this case, it is acceptable to extend the restoration timeframe since active measures to remediate the groundwater are not practicable.

## **Earthquakes**

*Many people expressed concern about how potentially large earthquakes might impact the integrity of caps used to contain wastes on-site.*

**Ecology's Response:** Many areas in the State of Washington are designated as being in a seismic impact zone by the United States Geological Survey (USGS), and Longview is included in that designation. Seismic zones are defined as areas where there is at least a 10 percent probability that horizontal seismic accelerations equal to or greater than 0.1 g (acceleration of gravity at the earth's surface) will occur within a 250-year period.

A slope stability and deformation analysis will be performed for the landfills and fill deposits at this site as part of the engineering design to verify that the low permeability caps will remain serviceable after a 1 in 2,500-year seismic event.

## **Flooding and Sea Level Rise**

*Many people expressed concern about containing wastes on-site given the proximity to the Columbia River and the potential for periodic flooding or inundation due to sea level rise.*

**Ecology's Response:** There are multiple dams and storage basins on the Columbia River which work together to regulate the flow of the river.

At the former Reynolds Metals site, the Consolidated Diking Improvement District (CDID) flood control levee provides another level of protection to the site from exposure to high river current velocities during flood events. The levee is approximately 32 feet above sea level and protects the site from scour or erosion of the landfills and fill deposits during flood

events with recurrence intervals of greater than 500 years. If fill deposits and landfills become saturated for a relatively short time period during a major flood, scouring would not be expected. Since the natural geochemistry at this site is effectively controlling migration of fluoride, any short term contact with groundwater due to such flooding should not pose significant risk of contaminant migration.

### **Consolidated Diking Improvement District No.1 (CDID No.1)**

*Several commenters are concerned that the CDID pumps will fail and then the system will not prevent flooding.*

**Ecology's Response:** The CDID follows an operations and maintenance plan to handle stormwater and flooding emergencies. Annual inspections are performed to ensure structural integrity and conformance with federal standards, and the dike is federally certified every 10 years. Pump stations are physically monitored and the pumps are regularly maintained. A computer system is used to track surface water elevations, operational status, and alarm conditions which provides a safeguard and quick response in case of a diking system failure. Historical failure of individual pumps has not affected the level of water in the ditches due to the large volume of water in the system. The ditches, sloughs, and drains are also maintained on a regular basis. The system must function properly to ensure the public safety of many of the residents of Longview and Kelso. The ditch system is extensive and necessary to prevent flooding of residential neighborhoods and public services (i.e., hospitals).

### **Exposure to Contamination**

*Many commenters expressed concern about being exposed to contamination that will remain on-site under the preferred alternative.*

#### **Ecology's Response:**

The former Reynolds Metals facility is an industrial property adjacent to other industrial properties where access to the site is controlled. An on-site drainage system controls runoff and groundwater has been monitored for a number of years. Several independent cleanup actions have already occurred on the property. Potential for exposure to contamination that would remain on-site in each media under Alternative 4 is discussed below:

#### Soil

Areas containing soil with elevated total petroleum hydrocarbons (TPH) or polycyclic aromatic hydrocarbons PAHs have already been isolated from dermal contact with soil covers or have been excavated and removed from the property. Under Alternative 4, the two remaining uncovered and isolated areas (pitch and flat storage areas) would be excavated to

remove any potential remaining exposure pathway. Fluoride and cyanide contamination in the soil do not exceed industrial cleanup levels protective of direct contact anywhere on the site. The proposed consolidation and capping would address long term protection against direct contact exposure.

#### Groundwater

Extensive testing at the site shows that no site-related impacts are present in drinking water sources. The proposed groundwater remedial action will ensure that current or future sources of drinking water for the community will continue to be protected. There is an upward hydraulic gradient at the site which is protecting the 200 foot deep industrial and municipal water supply from shallow groundwater contamination. There is also a thick, low-permeability, confining layer between the deeper drinking water aquifer and the shallow groundwater. In addition, geochemical processes are occurring in site soils and shallow groundwater that limit fluoride migration. The City of Longview has established a Wellhead Protection Plan to regularly sample the eight shallow and nine deeper monitoring wells around the Mint Farm, adding additional protection for municipal drinking water.

#### Ditch and Surface Water

During the remedial investigation of the site, extensive testing of the ditch and surface water occurred and no site-related impacts were identified above applicable cleanup levels. The natural processes currently limiting fluoride transport will continue to provide long-term protection of surface water quality in the river and CDID ditches. The proposed permeable reactive barrier walls in Alternative 4 would further reduce contaminant mobility, providing additional protection of ditch and surface water.

#### Sediments

During testing of river sediments, no impacts to benthic organisms were found except for a localized area near Outfall 002A. The Interim Action will remove the affected sediment to protect benthic organisms.

### **Permanent Solution**

*Many people expressed concern that Alternative 4 is not a permanent solution since it will leave contaminants on-site.*

**Ecology's Response:** Under MTCA, a permanent solution is defined as one where further action is not required after cleanup standards that protect human health and the environment have been met. A permanent solution does not mean all contamination above cleanup levels must be removed from a site. The disproportionate cost analysis establishes the alternative that is "permanent to the maximum extent practicable". For this site, this analysis identified Alternative 4 as permanent to the maximum extent practicable.

## **Long Term Human Health Protection**

*Some people expressed concern that future activities on this site would not be protective of human health in the long term.*

**Ecology's Response:** Where an industrial cleanup level is used at a site undergoing MTCA cleanup, institutional controls are required. These controls limit or prohibit activities that may interfere with the integrity of the cleanup action or result in exposure to hazardous substances. Institutional controls may include engineered controls, fences, land use restrictions, maintenance requirements, educational programs, environmental covenants, or financial assurances. Engineered controls are containment and/or treatment systems to prevent or limit the movement of or exposure to hazardous substances, such as a layer of clean soil or concrete paving. Environmental covenants that limit certain activities or land uses at this site will be recorded at Cowlitz County, protecting human health and the environment for the long term. The Cleanup Action Plan and Consent Decree will require that any future activities at the site that may affect the capped areas will have to be reviewed and approved by Ecology.

## **Black Mud Pond**

*Many commenters want the remedy to include the removal and off-site disposal of the Black Mud Pond.*

**Ecology's Response:** The 33-acre Black Mud Pond (BMP) contains residual carbon and was formally closed in 1991. The closure plan for the BMP required installation of a landfill cap, recording of restrictive covenants, maintenance of the cap and a surface runoff system, and long-term ground water monitoring. The landfill cap design consists of an engineered multi-layer, low permeability cover and drainage conveyance system. Concentrations of fluoride and alkalinity appear to be decreasing in groundwater monitoring wells indicating that the containment system for the waste is working. Removal of this 33-acre containment area that was closed under applicable regulations and appears to be working as designed would not be practicable and would not increase protection of human health or the environment.

## **Economic Redevelopment/Job Creation**

*Several commenters are concerned that leaving contamination on site after cleanup will foreclose business opportunities to re-develop parts of the site. What future activities will be allowed on the landfills/surface deposits if Alternative 4 is implemented? What kind of*

*construction and development took place at the Troutdale and Vancouver sites on the landfills/surface deposits after cleanup, and will Longview be able to do the same?*

**Ecology's Response:** Under all six alternatives, capped landfills and surface deposits would remain on site after cleanup activities are completed. Alternative 6 would leave the Black Mud Pond (BMP) on site. Alternatives 3, 4, and 5 would consolidate some of the surface deposits. Although future use of these localized areas of the site would be restricted, redevelopment of the site is still possible. The Vancouver and Troutdale sites have been able to re-develop and employ many people. At both the Troutdale and Vancouver sites, landfills and waste deposits were also capped as part of the cleanup action. Engineering design of these caps can support certain development activities and can be integrated into future redevelopment.

It should be noted that MTCA does not include the ease of redevelopment as one of the benefit categories to be used in evaluating alternatives.

*Some commenters are concerned that we need to consider the economic benefit of preserving the fishing industry for tourism, recreation, cultural and commercial interests.*

**Ecology's Response:** Ecology agrees that fisheries resources must be protected. Surface water cleanup standards are already being met at the site and sediment contamination will be removed as part of the Interim Action. Therefore fisheries resources would be protected under any of the alternatives evaluated in the FS.

## **Ecology Must Choose Alternative 6**

*Most commenters want Ecology to choose Alternative 6 since it will remove the most contaminated soil and allow for the widest range of redevelopment opportunities.*

**Ecology's Response:** MTCA specifies Ecology's powers and duties to require cleanup. Ecology can require responsible parties to conduct remedial actions for releases or threatened releases of hazardous substances. However, Ecology cannot go beyond the authority established in the law or require actions that are not consistent with the rules.

Ecology must apply industrial clean-up standards at properties zoned for industrial use. County authorities decide zoning. A property cleaned up to industrial standards cannot be converted to non-industrial uses without approval from Ecology and an opportunity for public review and comment.

Ecology must also follow the remedy selection process and criteria specified in MTCA. This process includes a disproportionate cost analysis that compares the costs and environmental benefits of cleanup alternatives. The analysis for this site concluded that the additional costs incurred for Alternatives 5 and 6 do not add proportionately greater benefits. While some

commenters believe that alternatives that would enable a wider range of redevelopment should be favored, the MTCA rules do not include this as part of the analysis.

As noted previously, while the RI/FS may identify a preferred alternative, Ecology is not selecting a final cleanup option at this time. The next step in the cleanup process is for Ecology to prepare a draft Cleanup Action Plan which describes the proposed remedial actions, monitoring and schedule for cleanup of the site. The public will have an opportunity to review and comment on that plan before it is finalized.

### **On Site Landfills and Surface Deposits**

*Several commenters believe the landfills and surface deposits on site are not “certified” landfills and thus should not continue to be used as part of the selected remedy. Why would it be OK to leave contamination on-site in landfills or surface deposits when they do not meet the same design criteria as “certified” landfills?*

**Ecology’s Response:** Several of the alternatives in the RI/FS include on-site containment. Containment structures used in MTCA cleanups are designed to prevent contact with the material and to control migration. They must also be designed to be stable and able to withstand the elements and other natural phenomena like earthquakes. Cleanup containment structures are purpose-built to contain the specific type of materials at the site. This is different than commercial landfills which must be designed to contain many different types of waste. As with commercial landfills, containment structures used in MTCA cleanups must include provisions for on-going maintenance, monitoring, and financial assurance should there be repairs needed.

### **Assessed Value of Property Affected**

*Several commenters are concerned that leaving contamination on site after cleanup activities are completed will lower the assessed value and result in less taxes coming back to the county.*

**Ecology’s Response:** Ecology’s role under the MTCA is to ensure that cleanup of contaminated sites will be protective of human health and the environment. In general, the assessed value of a property is lower if there has been a release of hazardous substances at that property. When a site undergoes final cleanup and is redeveloped, the assessed value of the property often increases. Ecology does not consider impacts to assessed value as part of the feasibility study or in the selection of a remedy. All of the cleanup options in the RI/FS will allow for reuse of the property. In the future, the property will be appraised based on its value as it is used.

## Long-Term Groundwater Monitoring

*Several commenters did not understand how long term groundwater monitoring will be conducted and how long it will last. The City of Longview requests that the responsible parties comply with the provisions of LMC 17.100, Water Supply Protection, and install a new deep monitoring well in the NE corner of the property with the frequency of sampling and pollutants monitored in accordance with the City's wellhead protection monitoring program.*

**Ecology's Response:** Long-term monitoring is required under MTCA if on-site disposal, isolation, or containment is part of a selected cleanup action at a site. The description of groundwater monitoring in the feasibility study is only rough at this point. The Cleanup Action Plan will provide more detail and require long term groundwater monitoring to be performed by the responsible parties as long as contamination remains on site above cleanup levels. The compliance groundwater monitoring plan developed in conjunction with the Cleanup Action Plan will provide specific details about the long term groundwater monitoring at the site. Following completion of cleanup, Ecology is responsible for reviewing the cleanup project every 5 years. During Ecology's subsequent 5-year reviews, the need for continued groundwater monitoring, scope, and frequency of monitoring will be re-assessed.

Ecology appreciates the City of Longview's comment regarding its wellhead protection program. As discussed above, the detailed groundwater monitoring program will be developed in conjunction with the Cleanup Action Plan. Ecology will consult with the City and evaluate the need for additional monitoring wells during preparation of the draft Cleanup Action Plan.

## Comparison between Longview, Vancouver, and Troutdale Alcoa Sites

*Many commenters want this site to be 100% cleaned up, similar to what was they believe was done for the closed aluminum smelters in Troutdale, Oregon and Vancouver, Washington. They also want to know why Ecology is proposing to spend less money on the cleanup of Reynolds Metals Longview than either of the Alcoa cleanups in Troutdale or Vancouver?*

**Ecology's Response:** Although there are similarities between cleanups completed at different aluminum smelter sites, every project is unique. Cleanup requirements differ between smelter sites because of differences in historical smelter operations, resulting in differences in the types and concentrations of chemicals present at each site. There are also significant differences in geology, hydrogeology and soil chemistry that can affect cleanup requirements. These factors can differ substantially even between aluminum smelters constructed within the same region, as with the former smelters in Troutdale, Vancouver, and

Longview. That said, regardless of the remedial technologies implemented, all three sites were (or will be) cleaned up to the same standard, which is an industrial/commercial-use scenario.

Understanding these site-specific issues is one focus of the RI/FS process. After thorough study, cleanup alternatives appropriate to each site are developed and evaluated. The final cleanup decision established by EPA or Ecology at each site considers this information to ensure that the final cleanup remedies are protective under site-specific conditions.

The cleanup at the former Reynolds Metals site in Longview is less complex than the one at Vancouver. The Longview site doesn't have some of the same contamination problems that were present in Vancouver, such as high levels of PCBs in soils and sediments, or the presence of solvent contamination. The geology and site geochemistry are also different at the Longview site, which combine to immobilize the fluoride contamination in place within the site soils.

Despite some differences between the smelter sites, the study's preferred alternative would use many of the same technologies that were successfully applied in the cleanups at Troutdale and Vancouver. These include localized soil and sediment removals, soil and sediment consolidation, landfill capping, treatment, natural attenuation, institutional controls, and monitoring. These technologies represent best practices for cleanups of smelter sites, and are typically used in combination with each other.

Sediments removed from the river during the interim action at Longview will be temporarily placed in a containment cell within the footprint of an upland fill deposit pending completion of the Cleanup Action Plan. This sediment material may be reused to re-grade and cap the fill deposit during the final cleanup action or it may be taken to an appropriate landfill off-site. A similar approach was used in Vancouver to contain low-level impacted sediments at that site within an on-site landfill. This provides for safe and efficient management of sediment.

The cost of cleaning up Troutdale was approximately \$18 million and the cleanup cost for Vancouver was approximately \$25 million. Implementation of Alternative 4 at Reynolds Metals Longview is estimated to cost \$27.7 million.

## **Former Employees**

*Were former employees of Reynolds contacted concerning dumping of wastes? If so, how did that affect sampling locations?*

**Ecology's Response:** Yes, during the remedial investigation, several employees were contacted concerning possible locations of waste and this resulted in focused sampling in some of these areas. Several independent cleanups based upon employee information have occurred over time as well.



## South Plant Pot Room

*The South Plant pot rooms were not constructed with concrete flooring, and fluoride and cryolite are reported to have been released there. After plant demolition, is soil/groundwater sampling going to be done within the building footprint?*

**Ecology's Response:** The South Plant pot rooms were constructed with concrete flooring, and the flooring was routinely maintained during South Plant pot room operations. All pot rooms must be constructed with concrete floors to insulate electrical components from underlying shallow groundwater. As part of the South Plant demolition, underlying soils are being visually inspected to ensure that they were not impacted from operations.

## Environmental Justice

*Have you explored environmental justice concerns for this economically disadvantaged community? How?*

**Ecology's Response:** Ecology strives for meaningful public involvement and works to line this up with one of its core values, environmental justice. This includes public outreach planning that addresses income disparities. Indicators of an economically disadvantaged community include low-literacy and lack of personally owned computer/electronic devices and transportation.

We provided the following public involvement opportunities and notices for the former Reynolds Metals draft RI/FS:

- Collected names and contact information of interested persons. Created and maintained an interested parties list for all notifications.
- Notified all owners/residents of property within and contiguous to the site. These are the parties most immediately impacted by cleanup activities.
- Developed and maintained a webpage dedicated to the cleanup.
- Advertised in The Daily News and worked with the local news media to publish stories.
- Reviewed and considered all comments received during comment periods, and made appropriate changes before finalizing our decisions.

To ensure people in rural areas and people with low-literacy have access to information, and to address challenges with computer/electronic access, we:

- Gave a presentation and held a question and answer session during the 2012 Community Conversation series held at Lower Columbia College in Longview.
- Were available at, and participated in, public community advisory board meetings starting in 2012, held in Longview.

- Provided a hard copy of comment information and documents at the Longview Public Library. Internet access at the library is available for free.
- Held community in-person open houses and a public hearing on the RI/FS. These included an open house at the Cowlitz PUD Auditorium on June 18, 2014 and an open house followed by a public hearing at the Kelso Red Lion Hotel on July 16, 2014. The hearing provided the opportunity to submit comments verbally and have them transcribed, rather than in writing.

All events were held at locations meeting the Americans with Disabilities Act criteria. River Cities Transit provides transportation within walking distance to the event locations. Ecology is currently working on environmental justice guidance which will provide us with additional environmental justice tools as we move toward cleanup of this site.

### **Consolidate on Black Mud Pond**

*Why not consolidate all contaminated soil atop the closed BMP so the rest of the land is un-encumbered, and thus, there will be more tax dollars, development space, and more jobs.*

**Ecology's Response:** Sufficient clearance must be maintained between the surface of the closed BMP and nearby Bonneville Power Administration (BPA) high voltage transmission lines. The closed BMP is located between two large transmission towers, and as such, is directly below the transmission lines. Consolidation of all soil atop the closed BMP would not be possible while maintaining the required clearances to prevent grounding of transmission lines.

### **Final Site Unit Depths**

*What will be the depth of contaminated soil on each site unit (SU) after proposed consolidation and caps?*

**Ecology's Response:** The depth/thicknesses of capped waste deposits will be determined during final design and will vary due to grading and drainage requirements. Approximate thicknesses of waste to be consolidated on site were calculated based on material volumes and areas provided for the SUs in Appendix L, Table L-2, and are provided in the following table. Please note, these material thicknesses include 2 feet for low-permeability caps.

Site Unit	Approximate Material Thickness (feet)
SU1 and SU2	12 – 16
SU6	20
SU7	17

### Existing Operation Impacts

*In the RI/FS, it states that Alternatives 5 and 6 are less implementable because the volume of soil to be removed would impact existing operations. What are the operations and how would they be impacted?*

**Ecology’s Response:** As discussed in the Executive Summary, MBTL currently operates a bulk products terminal on the site that handles multiple products, including the alumina required for operation of an active Alcoa aluminum manufacturing facility near Wenatchee. Increased truck traffic associated with Alternatives 5 and 6 has a greater potential to disrupt these operations as compared to the other alternatives.

### Hillsboro Landfill

*Why was Site Unit 11’s soil with polycyclic aromatic hydrocarbons (PAHs) above cleanup levels disposed of at the Hillsboro solid waste landfill instead of a hazardous waste landfill in December 2012?*

**Ecology’s Response:** The soil did not designate as hazardous waste.

### Conflict of Interest

*Why did Ecology allow Alcoa and Ambre to develop the RI/FS (potential conflict of interest) when Ecology could have hired an independent contractor and billed the responsible parties? Was Anchor QEA also a contractor to Chinook Ventures?*

**Ecology’s Response:** The Model Toxics Control Act encourages cooperative cleanups rather than state-conducted actions. This results in faster and more efficient cleanups. There are thousands of cleanup sites state-wide. MTCA requires potentially liable persons to assume responsibility for cleaning up contaminated sites. Ecology’s role is to carefully review work plans, the remedial investigations, review the analysis and direct the cleanup process. Ecology’s oversight costs are paid by the liable party. Using this approach has meant that cleanups happen faster and with less impact to taxpayers.

Northwest Alloys, Inc. and Millennium Bulk Terminals hired Anchor QEA to complete the 2014 RI/FS. The previous 2007 RI/FS submitted by Chinook Ventures was also prepared by Anchor QEA. It is common practice for the responsible parties to hire an experienced environmental consulting firm to conduct cleanup studies. This is not considered to be a conflict of interest.

### **Permeable Reactive Barrier Walls**

*How will the Permeable Reactive Barrier (PRB) walls reduce the elevated concentrations of other contaminants found onsite (PAHs, arsenic, cadmium, chromium, benzo(a)pyrene, naphthalene, total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), Carbazole, dibenzofuran)? Because the highest and deepest concentrations of fluoride are in the northeastern Site Units 6, 7, and 8, why not use PRBs there to achieve compliance and reduce restoration timeframe?*

**Ecology's Response:** The proposed PRB walls will be constructed of material designed to reduce the concentrations of fluoride in the groundwater. The PRBs will not be designed to reduce the concentration of the other listed contaminants because they are not chemicals of concern in groundwater at these locations. SU8 is proposed under Alternative 4 to be excavated and consolidated so would not need a PRB. As shown in Figure 7-1 of the RI/FS, groundwater flow from SU6 and SU7 is toward the northeast (toward top of figure), and fluoride concentrations in the monitoring well pair (G4-S and G4-D) immediately downgradient of these SUs meet the cleanup level. Dissolved concentrations beneath and to the east of SU6 are significantly lower than those measured near SU3 (which will be backfilled with reactive media similar to PRBs).

### **SU 11 Size Change**

*In the 2012 draft RI/FS, SU11 was 1.2 acres and now it is 0.2 acre – why?*

**Ecology's Response:** SU11 was re-sampled in late 2012 following removal of petroleum coke and the concrete pad from the Flat Storage Area. The coke and concrete pad removal provided better access for sampling within SU11. The more comprehensive sampling resulted in a better delineation of the impacted area. Note that the area of SU11 listed in Figure 10-3 is the estimated area of impacts to be addressed by the FS, not the actual area of the SU that was investigated.

## RI/FS Cost Comparison

*In reviewing the three Draft RI/FS reports showing Total Estimated Costs for the highest level of cleanup for the Reynolds property, the differences in costs are hard to comprehend. The costs shown are:*

*Draft RI/FS 2007 - \$146,974,800*

*Draft RI/FS 2012 - \$236,084,100*

*Draft RI/FS 2014 - \$229,593,000*

*Of course costs increase over time and additional testing has been required. Please explain why estimated costs in 2012 are higher than the estimated costs in 2014? Why would the Total Estimated Costs in 2014 be almost \$100,000,000 more than those in 2007, 7 years later?*

**Ecology's Response:** The remedial alternatives are completely different and not comparable between the 2007 and 2012 FS versions. For example, although 2007 Alternative 5 is called "Full Removal", it is actually described in Section 6.2.3 as:

"In this alternative all accessible affected soils and nearly half of the waste materials would be removed and disposed of in an off-site, permitted facility....No [groundwater] treatment would be performed under this alternative."

In comparison, 2012 Alternative 6 includes removal of affected soils and [all] waste to achieve cleanup levels and groundwater treatment using PRBs and reactive backfill.

Between 2007 and 2012, additional investigation showed that the area east of the cryolite plant contained waste material (black mud), not just impacted soil. This changed cost assumptions quite a bit in each removal scenario given the large volume of waste that needed to be addressed. Also, a new waste deposit was discovered (outside levee) and the flat storage area was added which required changed g unit volumes. Accordingly, soil/waste disposal volumes for 2012 Alternative 6 are more than 900,000 tons, and for 2007 Alternative 5 are about 700,000 tons.

Also, landfill costs for non-hazardous wastes have significantly increased since 2007 (almost doubled). Assumptions about hazardous waste disposal costs have also changed. The alternatives include conservative costs pending final profiling.

Considerable supplemental RI work was completed between the fall of 2012 and spring of 2013 that was incorporated into the 2014 version of the RI/FS, in response to Ecology comments on the 2012 version. This work included test pit excavation in the fill deposits/landfills. This information was used to update volumes of the various waste deposits. In some FS Site Units the volumes decreased, in others they increased. Costs for Alternative 6 are very sensitive to volumes since it consists of complete removal and disposal. Also, analytical data from the fill deposits was used to refine disposal cost estimates.

## Cap Replacement

*Nothing in the RI/FS discusses the need to repair/replace the caps if they should fail in the future. Who will do that?*

**Ecology's Response:** The Cleanup Action Plan and Consent Decree between the PLPs and Ecology will require long term maintenance of the caps and any repair or replacement of the caps if necessary. The low-permeability caps will be constructed using clay and soil and are considered permanent structures (i.e., not a roof that could rust or has a limited design life). Routine maintenance of the caps is included in the cost estimates for the applicable alternatives.

## Mercury Release

*In the 1970s, a reported release of mercury may have occurred to the ground as the result of a tear out at the electrical sub-station site located at the west end of the project. Was any sampling done looking for mercury contamination in this area?*

**Ecology's Response:** As discussed in Section 5.2.5 of the RI/FS, soils in the rectifier yards were sampled for mercury to verify that historical use of mercury-containing electrical components did not impact site soils. No mercury was detected in these soil samples (see Table 5-13). Mercury arc rectifiers were also used historically in the rectifier building located in the South Plant. The rectifiers were located on the second floor of the building. The mercury arc rectifiers were removed and replaced in the 1960s with semiconductor rectifiers. There are no known residual mercury impacts under the rectifier building.

## **Presence of Asbestos**

*Is there any asbestos still remaining at the Reynolds Metals site?*

**Ecology's Response:** Yes, asbestos exists in older structures at the site. MBTL performs an annual asbestos survey of structures and manages any asbestos removal according to local, state, and federal regulations. Additionally, MBTL conducts an asbestos survey prior to demolishing structures at the site. All demolition work is performed by asbestos abatement contractors; appropriate permits are secured from regulatory agencies, and work is conducted according to local, state, and federal regulations.

## **Truck/Rail Safeguards**

*What safeguards will be taken by truck or rail transport?*

**Ecology's Response:** The Cleanup Action Plan will require that material from SU 9 and SU 11 be transported by truck to a facility permitted and approved to handle these wastes. Truck drivers will be required to be certified for transporting materials of this nature and local, state and federal regulations must be followed when transporting these materials. Specific details concerning these safeguards have yet to be developed.

## **Soil Disposition**

*When contaminated soil arrives at its destination, will it be neutralized/treated or just dumped?*

**Ecology's Response:** There currently are no plans to neutralize or treat the contaminated soil taken off the property. Treatment of contaminated materials is governed by the receiving facility's permit. Any material removed from the site will be taken to a facility permitted or approved for disposal of this material. Fluoride in soils cannot be treated or destroyed, but it can be immobilized much like the natural geochemical processes occurring at the site.

## **Alternative 4 Support**

*Several commenters supported the selection of Alternative 4 because it is protective of human health and allows for future economic development. They also commented that the implementation of the interim action in 2014 is in the best interest of fish recovery strategies.*

**Ecology's Response:** Comment noted.