

**EPA Superfund  
Explanation of Significant Differences:**

**MARTIN-MARIETTA ALUMINUM CO.  
EPA ID: ORD052221025  
OU 01  
THE DALLES, OR  
09/28/1994**

EXPLANATION OF SIGNIFICANT DIFFERENCES

FOR

MARTIN MARIETTA SUPERFUND SITE

THE DALLES, OREGON

SEPTEMBER 1994

**1.0 INTRODUCTION**

1.1 SITE NAME AND LOCATION

Martin Marietta Aluminum Reduction Facility  
The Dalles, Oregon

1.2 LEAD AND SUPPORT AGENCIES

U.S. Environmental Protection Agency (EPA)  
Oregon Department of Environmental Quality (ODEQ)

1.3 APPLICABLE STATUTES REQUIRING AN EXPLANATION OF SIGNIFICANT DIFFERENCES (ESD)

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 117 (c),  
42 U.S.C. § 9617 (c), as amended by the 1986 Superfund Amendments Reauthorization Act, and  
National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. § 300.435 (c)

Decree, because they were active components of the Martin Marietta Aluminum Reduction facility at the time the ROD was signed. However, the Feasibility Study (FS) did discuss remedial actions for these areas, when and if these units were temporarily or permanently taken out of operation.

Based upon the information obtained since the ROD, a number of changes warrant an ESD but do not fundamentally alter the basic features of the remedy selected for the Site. The following narrative will present the changes and describe the differences in relation to the ROD.

## 1.5 ADMINISTRATIVE RECORD

The ESD will become part of the Administrative Record for the Martin Marietta Superfund site. The Administrative Record is available at the following two locations:

U.S. Environmental Protection Agency  
1200 Sixth Avenue  
7th Floor Superfund Records Center  
Seattle, Washington 98101

The Dalles/Wasco County Library  
722 Court Street  
The Dalles, Oregon 97058

In addition, an information repository is maintained at:

Oregon Department of Environmental Quality  
811 SW Sixth Avenue  
Portland, Oregon 97204-1390

## 2.0 SITE BACKGROUND

### 2.1 SUMMARY OF SITE HISTORY AND CONTAMINATION PROBLEMS

The Martin Marietta Reduction Facility (MMRF) Superfund site (Site) is located in The Dalles, Oregon, Wasco County, just west of the Columbia River and east of the Union Pacific Railroad tracks, as shown in Figure 1. Operations were begun at the Site by Harvey Aluminum, Inc. in 1958. Harvey Aluminum, Inc. became a wholly owned subsidiary of Martin Marietta Corporation (MMC) in 1970. The MMRF continued operations until 1984, when the plant was shut down. In September of 1986, MMC leased a portion of the MMRF to Northwest Aluminum Company (NWA), which resumed primary aluminum operations in late 1986. In October 1991, MMC sold the portion of the MMRF not affected by EPA's deed restrictions to NWA. The NWA plant still produces aluminum by electrolytic reduction of alumina.

During facility operation, waste constituents were stored, treated and disposed of at the MMRF. Hazardous substances generated by the MMRF included fluoride, sodium, sulfate, cyanide, and polynuclear aromatic hydrocarbons (PAHs). The waste included spent potliner (cathode waste) from the alumina reduction cells. The cathode wastes contain cyanide compounds which form during the reduction process. Fluoride compounds were also present in the waste generated from the alumina reduction process.

A landfill located in the northern portion of the MMRF was used to dispose of, primarily construction debris from the plant (Figure 2). Other materials disposed of in this landfill included asbestos insulation, coke, pitch, and cathode waste. In 1980 MMC installed a surface water drainage ditch and a leachate collection ditch and sump to try and control runoff and

leachate from this landfill. After the signing of the ROD, this landfill was known as the "CERCLA Landfill" or "Landfill".

In the spring of 1983, the presence of cyanide compounds was detected in the ground water. EPA ranked the MMRF for inclusion on the National Priorities List (NPL). The MMRF was proposed for inclusion on the NPL in October 1984. In 1987 the Site was formally listed on the NPL

In September 1985 MMC and EPA entered into a Consent Order to conduct a remedial investigation/feasibility study (RI/FS) for the Site. Twenty-three areas were initially designated as potential contaminant source areas at the MMRF. The RI/FS concluded that thirteen source areas and a portion of the shallow ground-water bearing zone had contaminant concentrations that exceeded federal or state applicable relevant and appropriate requirements (ARARs) or acceptable lifetime non-cancer or cancer risk levels.

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On September 29, 1988, EPA signed a Record of Decision (ROD) that addressed the potential sources of contamination as identified in the RI/FS. Remedial action objectives for the MMRF included both source control and ground-water management for the protection of human health and the environment. Specific objectives for source control at the Site included:

- ! Minimization of the migration of contaminants from the source areas to the ground-water system, surface water, or soils;
- ! Protection of human health and the environment from potential adverse effects caused by direct contact with contaminants; and
- ! Protection of human health and the environment from potential adverse effects due to exposure to airborne contaminants.

## 2.2 SUMMARY OF THE REMEDIAL ALTERNATIVE SELECTED IN THE ROD:

The ROD addressed source control of the on-Site contamination through excavation and consolidation of contaminated soils into two former scrubber sludge pond areas and into the existing Landfill.

The remedial activities required by the ROD included the following:

- ! Consolidate the residual cathode waste material and underlying fill material from the former Cathode Waste Management Areas into the existing Landfill;
- ! Consolidate the cathode waste material from the Unloading Area into the existing Landfill;
- ! Cap the existing Landfill in place with a multi-media cap meeting Resource Conservation and Recovery Act (RCRA) performance criteria;
- ! Place a soil cover over the Scrubber Sludge Ponds 2 and 3;
- ! Plug and abandon nearby production wells and connect users to the City of The Dalles water supply system;
- ! Collect and treat leachate generated from the Landfill, and perched water from

east of River Road and from the former Cathode Waste Management Areas;

- ! Recover and treat contaminated groundwater from the Unloading Area;
- ! Prepare ground-water quality monitoring and contingency plans to perform additional recovery of ground water in the event that further contamination is detected above ARARs or health-based standards; and
- ! Implement institutional controls, including deed restrictions and fencing, to assure that the remedial action will protect human health and the environment during and after implementation.
- ! Indicates remedial action was not fully implemented.

### 3.0 DESCRIPTION AND EXPLANATION OF SIGNIFICANT DIFFERENCES

#### 3.1 MODIFICATIONS TO LEACHATE COLLECTION SYSTEM

The Landfill Leachate Collection System (LCS) was constructed by MMC in the summer and fall of 1990. Leachate collection commenced in December 1990. The ROD anticipated that leachate from the Landfill would gradually decrease to negligible levels within 5 years after construction of the Landfill due to the dry climate at the site. Construction of the Landfill cap was completed by MMC in April 1991. The initial leachate volume decreased after cap completion from approximately 1,750 gallons per day down to 570 gallons per day by late fall 1991. However, with the onset of wet weather, leachate levels began to rise again, to as much as 3,100 gallons per day. The source of the increased leachate flow was believed to be perched ground water infiltrating through fractured basalt bedrock from south of the Landfill into the LCS. The presence of ponded water on the Landfill surface in the southwestern portion of the Landfill appeared to offer a continual source for recharge. Fluoride concentrations of the leachate ranged from 1,490 - 2,440 parts per million (ppm) prior to completion of construction of the Landfill cap. Free cyanide concentrations ranged between 0.01 - 4.7 ppm, and total cyanide concentrations ranged between 0.11 - 31.0 ppm. Current post-Landfill cap concentrations have decreased to dry season averages of 22.7 ppm fluoride, 0.60 ppm free cyanide, and 15.7 total cyanide. Concentrations of fluoride, free cyanide, and total cyanide during the wet season are more dilute. This indicates that surface water infiltration to the LCS through the cap is unlikely, and that the cap is functional.

Based on the conclusion that the perched and ponded waters were the driving force behind the infiltration to the LCS, several activities were undertaken by MMC from the fall of 1992 through 1993, in response to the increased leachate flow. In October 1992 a dewatering trench was constructed to prevent perched water from flowing into the LCS while an underground pipe was installed to lower and divert ponded surface water around the Landfill. In addition, the surface-water drainage system was modified to increase drainage. Despite these initial modifications to the Landfill, infiltration of precipitation to the LCS continued to be a problem.

In March 1993 MMC conducted a dye tracer study to investigate potential pathways and sources of the infiltration. The two pathways studied were surface water runoff above the LCS percolating through the soils and entering the LCS through fractures in the basalt and perched water flow in the vicinity of the LCS infiltrating via basalt fractures.

Based on the findings of the dye tracer study and a review of the Landfill construction diagrams, MMC determined that the modified surface water drainage system intersected a basalt ridge in the southern portion

the summer of 1993, MMC replaced the sand backfill with concrete, and expanded the surface water drainage system to include a new surface water drainage ditch parallel to and upslope of the

As part of the actual remediation, contaminated soil in the Unloading Area was removed. The purpose of the removal in the unloading area was to remove a potential source to ground-water contamination, which was the potlining material known to have been placed in the area. The soil and potlining material were removed down to the basalt bedrock. Approximately 2,000 cubic yards of potlining material and affected soil were removed and transported to the on-Site Landfill. Upon completion of the removal, verification sampling was conducted for fluoride along the exposed excavation faces, and the area was backfilled to the existing grade.

Based upon removal of the potential source material, it was anticipated that the concentrations in the ground-water at MW-5S would decrease over time. The sample results from MW-5S have varied seasonally and were statistically analyzed in September 1992 to determine if ground-water treatment was still necessary in the Unloading Area. As shown in Table 1, sampling analyses of MW-5S indicate that groundwater recovery and treatment is not currently necessary at the Unloading Area because the fluoride concentrations have statistically been at or near the ACL. Based on the evaluation of results in Table 1, EPA believes that active recovery and treatment is no longer required in this area. However, the need for future recovery and treatment in the Unloading Area will be analyzed by EPA during the mandatory 5-year review of the selected remedy. This analysis will incorporate an historical and statistical evaluation of chemical concentrations in well MW-5S. EPA anticipates that this evaluation of well MW-5 and the mandatory 5-year review of the selected remedy will occur in September 1995.

### 3.3 REMEDIATION OF FORMER OPERATING UNITS

Remediation of the Lined Pond, Recycle Pond, and Discharge Channel was not required in the ROD because these units were part of the operating facility when the ROD was signed. However, these areas were investigated as part of the RI/FS. The location of these units is shown in Figure 2. Analysis of soil and sediment samples collected from these operating units during the RI indicated the presence of elevated amounts of fluoride and polyaromatic hydrocarbons (PAHs). The RI/FS concluded that under existing conditions, the operating units would not pose an unacceptable risk to human health and the environment. Nonetheless, the FS evaluated remedial alternatives for these areas when and if the units were taken out of operation.

TABLE 1

SUMMARY OF FLUORIDE CONCENTRATIONS FOR WELL MW-5S

SAMPLING DATE	FLUORIDE CONCENTRATION (mg/L)
Sep-1991	19.0
Dec-1991	10.0
Mar-1992	14.8
Jun-1992	12.0
Aug-1992	10.1
Sep-1992	11.0
Nov-1992	7.9*
Nov-1992	7.7*
Feb-1993	13.0
Mar-1993	7.4
May-1993	15.0
Aug-1993	9.7
Dec-1993	7.4
Mar-1994	9.0

mg/L = milligram per liter

\*Duplicate samples were analyzed on this sampling date





The remediation of the Discharge Channel and Recycle Pond included the following:

- ! flushing of sediments in the upper portion of the Discharge Channel to the Recycle Pond;
- ! removal of surface waters by discharging to the Columbia River under the

The revised remedy complies with the NCP and other federal and state requirements that are applicable or relevant and appropriate to this remedial action. The requirements include RCRA and the NPDES regulations under the Clean Water Act.

#### **6.0 PUBLIC PARTICIPATION ACTIVITIES**

This ESD, supporting information, and EPA's response to any comments from the public will become a part of the Administrative Record for the site. EPA invites the public to view the Administrative Record at the information repositories listed in Section 1.5. For additional information regarding this ESD, please contact the Superfund Site Manager for the Martin Marietta Reduction Facility site:

Howard Orlean  
1200 Sixth Avenue, HW-113  
Seattle, Washington 98101  
(206) 553-6903

\_\_\_\_\_  
Howard Orlean, Superfund Site Manager

\_\_\_\_\_  
Date

Approved by:

\_\_\_\_\_  
Carol Rushin, Chief, Superfund Remedial Branch

\_\_\_\_\_  
Date

September 22, 1994

Oregon  
DEPARTMENT OF  
ENVIRONMENTAL  
QUALITY

Catherine Krueger  
Environmental Protection Agency  
Region 10  
1200 SW Sixth Avenue  
Seattle, Washington 98101

Re: Martin Marietta Reduction Facility  
Draft Final ESD Concurrence

Dear Catherine:

My staff has reviewed the Draft Final Explanation of Significant Differences for Martin Marietta Superfund Site, The Dalles, Oregon, which Howard Orlean submitted to DEQ for review on August 23, 1994. Our comments that we had on the previous version of the draft ESD have been addressed. We have no additional comments on this document.

The DEQ concurs with the Draft Final Explanation of Significant Differences.

Please let me know if we can be of further assistance on this matter.

Sincerely,

Thomas Miller  
Manager, Site Response Section  
Waste Management and Cleanup Division

cc: Howard Orlean, EPA  
Jill Kiernan, DEQ

811 SW Sixth Avenue