



On this day, May 10, 2005,

the U.S. Environmental Protection Agency (U.S. EPA)

City of Dallas

Determines that

*OU 5 Subarea 1 of the RSR Corporation Site is Ready for Industrial Reuse*

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U.S. EPA Region 6

City of Dallas

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Environmental Quality

This Ready for Reuse Determination (RfR) is for OU5 Subarea 1 of the RSR Corporation Superfund Site. This RfR Determination provides information that the U.S. EPA has made a technical determination that OU5 Subarea 1, located in Dallas, Dallas County, Texas, is ready for industrial use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations as described in the Record of Decision (ROD), Remedial Action Completion Report, and the Operations and Maintenance (O&M) Plan, which have been summarized in the attached report, Ready for Reuse Determination, OU5 Subarea 1 of the RSR Corporation Superfund Site, May 10, 2005. This RfR Determination remains valid only as long as the requirements and limitations specified in the ROD, Remedial Action Completion Report and O&M Plan are met.

This Ready for Reuse Determination is a technical decision document and environmental status report and does not have any legally binding effect, nor does it expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities or for any possible or potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with OU5 Subarea 1, including instances when new or additional information has been discovered regarding the contamination or conditions at OU5 Subarea 1 that indicate that the remedy and/or the conditions at OU5 Subarea 1 are no longer protective of human health or the environment for the uses identified in the Ready for Reuse Determination.

No institutional controls are required by the ROD or Remedial Action Completion Report; however, future users of OU5 Subarea 1 should ensure the protectiveness of the remedy by maintaining the soil cover and soil cap to prevent exposure to contaminants that remain on site. Users should also comply with local land use regulations and the operations and maintenance plan in order to ensure the continued protection of human health and the environment. The components of the remedy requiring ongoing operations and maintenance include: annual site inspections of OU5, Subarea 1 and following any event that may cause or be reasonably expected to cause a release of waste material; for the first year and annually thereafter, inspections of the buried slag area and surface impoundment area capped areas and excavation/scrape areas for settlement, condition of vegetation, and erosion; and annual groundwater monitoring of the surface impoundment area. Continuing operation and maintenance of the remedy at OU5 Subarea 1 will be required. The types of uses identified in this RfR Determination remain subject to (i) applicable federal, state, and local regulation, including, but not limited to, zoning ordinances and building codes, and to (ii) title documents, including, but not limited to, easements, restrictions, and institutional controls.

**RSR CORPORATION SUPERFUND SITE  
OPERABLE UNIT 5 SUBAREA 1  
READY FOR REUSE DETERMINATION**

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## **I. Executive Summary**

### *Property Description*

This Ready for Reuse (RfR) Determination is for Operable Unit 5 (OU5) Subarea 1 of the RSR Corporation Superfund (RSR) Site located in Dallas, Dallas County, Texas. OU5 is one of five operable units that make up the RSR Corporation Site. The entire RSR Corporation Site encompasses 13.6 square miles; OU5 Subarea 1 encompasses approximately 18 acres and is located at 2727 North Westmoreland Road. The property is currently owned by Murmur Corporation.

### *Purpose*

The conditions summarized in this RfR Determination are based on limitations and requirements described in U.S. EPA documents for OU5 Subarea 1, including the Record of Decision (ROD), Remedial Action Completion Report, and the Operations and Maintenance (O&M) Plan. U.S. EPA has made a technical determination that OU5 Subarea 1, located in Dallas, Dallas County, Texas, is ready for industrial use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and the limitations identified below, as described in the O&M Plan:

- inspections of the entire site, to be conducted annually and following any event that may have caused or could reasonably be expected to cause a release of waste material, such as severe weather or vandalism; items to be inspected include nuisance conditions, settlement, cover/ditch erosion and vegetation, ditch sedimentation, security, monitoring wells, and vehicle maintenance facility parking lot;
- annual ground water monitoring of the surface impoundment area; and
- maintenance will be required whenever it is determined necessary by the inspections.

No institutional controls are required by the ROD or Remedial Action Completion Report; however, future users of OU5 Subarea 1 should ensure the protectiveness of the remedy by maintaining the soil cover and soil cap to prevent exposure to contaminants that remain on site. Users should also comply with local land use regulations and the O&M Plan in order to ensure the continued protection of human health and the environment at OU5 Subarea 1 of the RSR Corporation Superfund Site. The property owner, Murmur Corporation, is responsible for the continuing operation and maintenance of the remedy at OU5 Subarea 1.

The reasonably anticipated future land use of OU5 Subarea 1 is commercial/industrial based on the past and current zoning map for this area. The RfR Determination for OU5 Subarea 1 determines that OU5 Subarea 1 is ready for industrial reuse.

### *Site Summary*

Beginning in the early 1930s, a secondary lead smelting facility in west Dallas, Texas, processed

used batteries and other lead-bearing materials into pure lead, lead alloys, and other lead products. The smelter property makes up OU4 of the RSR Corporation Site. Other industrial property related to the smelter, such as the battery wrecking facility, make up OU5. In the refining process alloy elements, such as antimony, arsenic, and cadmium, were added as necessary to produce the desired product.

During U.S. EPA's investigation of OU5 of the RSR Corporation Site, completed in April 1996, U.S. EPA performed an assessment of the human and environmental risks associated with using OU5 for industrial purposes. The risks that were identified for OU5, Subarea 1 were human and environmental exposure to arsenic, lead, and antimony associated with the buildings, the former surface impoundment, and the slag burial area and other soils through ingestion, inhalation, and direct contact. In its ROD for OU5, U.S. EPA selected response actions to manage these risks to human health and the environment. With the completion of removal and response actions at OU5 in August 2004, U.S. EPA has attained the CERCLA cleanup goals and remedial action objectives for the unacceptable levels of risk to current and future users of OU5 Subarea 1. As a result, based on information available as of this date, U.S. EPA has determined that the unacceptable levels of risk to current and future users of OU5 Subarea 1 have been abated and OU5 Subarea 1 may be used for industrial purposes and will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as described in the Record of Decision, Remedial Action Completion Report, and O&M Plan.

#### *Relevant Documents*

Documents pertaining to the RSR Corporation Site and the RfR Determination are part of the Administrative Record for OU5 Subarea 1, which is available for review at the following address:

U.S. Environmental Protection Agency, Region 6  
U.S. EPA Region 6  
1445 Ross Avenue (65F-P)  
Dallas, TX 75202-2733

Additional information can be obtained from Carlos Sanchez, OU5 Subarea 1's Remedial Project Manager (RPM), who can be reached at 214.665.8507 or [sanchez.carlos@epa.gov](mailto:sanchez.carlos@epa.gov).

#### *Disclaimer*

The attached RfR Determination is a technical document and an environmental status report that does not have any legally binding effect, nor does it expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities or for any possible or potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require

environmental response actions in connection with OU5 Subarea 1, including instances when new or additional information has been discovered regarding the contamination or conditions at OU5 Subarea 1 that indicate that the remedy and/or the conditions at OU5 Subarea 1 are no longer protective of human health or the environment for the uses identified in the RfR Determination. This RfR Determination remains valid only as long as the requirements and limitations specified in the ROD and Remedial Action Completion Report are met. This RfR Determination remains valid only as long as the substantive requirements of the O&M Plan are met.

*Effective Date*

As a result, based on information available as of this date, U.S. EPA has determined that the unacceptable levels of risk to current and future users of OU5 Subarea 1 have been abated for industrial users. Operable Unit 5 Subarea 1 of the RSR Corporation Site is ready for industrial use and its remedy will remain protective of human health and the environment, subject to operation and maintenance of the remedy and limitations as described in the ROD, Remedial Action Completion Report, and O&M Plan.

U.S. EPA Region 6 issued this Ready for Reuse Determination, effective May 10, 2005.

By: \_\_\_\_\_

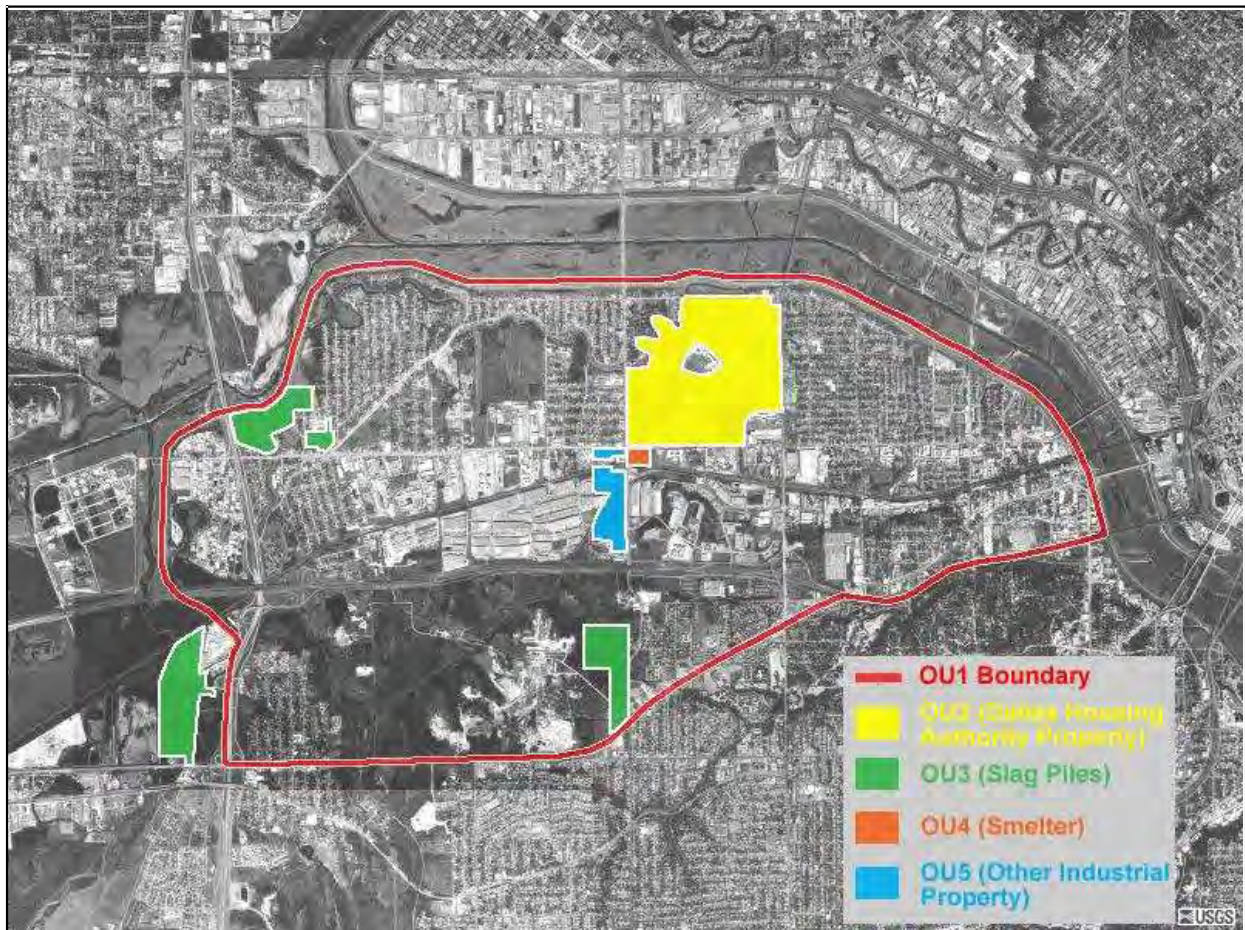
Samuel Coleman, P.E., Director  
Superfund Division  
United States Environmental Protection Agency  
Region 6



## II. Site Location

The RSR Corporation Site, which is made up of five operable units, encompasses approximately 13.6 square miles in west Dallas, Texas. OU5 Subarea 1 is made up of tax parcel #00000700594000000, owned by Murrum Corporation, and is located at 2727 North Westmoreland Road, Dallas, Texas. An aerial photo of the RSR Corporation Site, shown in Exhibit 1, shows the approximate layout of the Site and its operable units. The RSR Corporation Site is very diverse and includes large single and multi-family residential neighborhoods, multi-family public housing areas and some industrial, commercial and retail establishments. In 1997, the population in the area was approximately 17,000. OU5 of the RSR Corporation Site is located on the southwest corner of the Westmoreland Road and Singleton Boulevard intersection.

**Exhibit 1.** RSR Corporation Superfund Site Vicinity Map



The OU5 Site consists of the industrial property located across the street from the former smelter where battery breaking and various disposal practices were performed from the early 1930s until 1984.

The OU5 Site is broken up into four subareas, as shown in Exhibit 2, which has been adapted from the OU5 Record of Decision. Subarea 1, which this RfR Determination addresses specifically, contains approximately 18 acres of land, including Murmur Corporation's current operating facility. Exhibit 3, also adapted from the OU5 Record of Decision, includes a sketch of the structures in Subarea 1. The former battery wrecking facility and a vehicle maintenance building are the only other structures present within this subarea. A former surface impoundment (roughly one acre), where wastewater from the battery crushing and stripping operations was disposed, is located on the west side of the battery wrecking building. This impoundment has been backfilled with soil from other areas of Subarea 1 and forms a mound approximately 20 feet in height. Slag, battery chips, and other waste materials were buried in the southeastern portion of Subarea 1.

### **III. Site Summary**

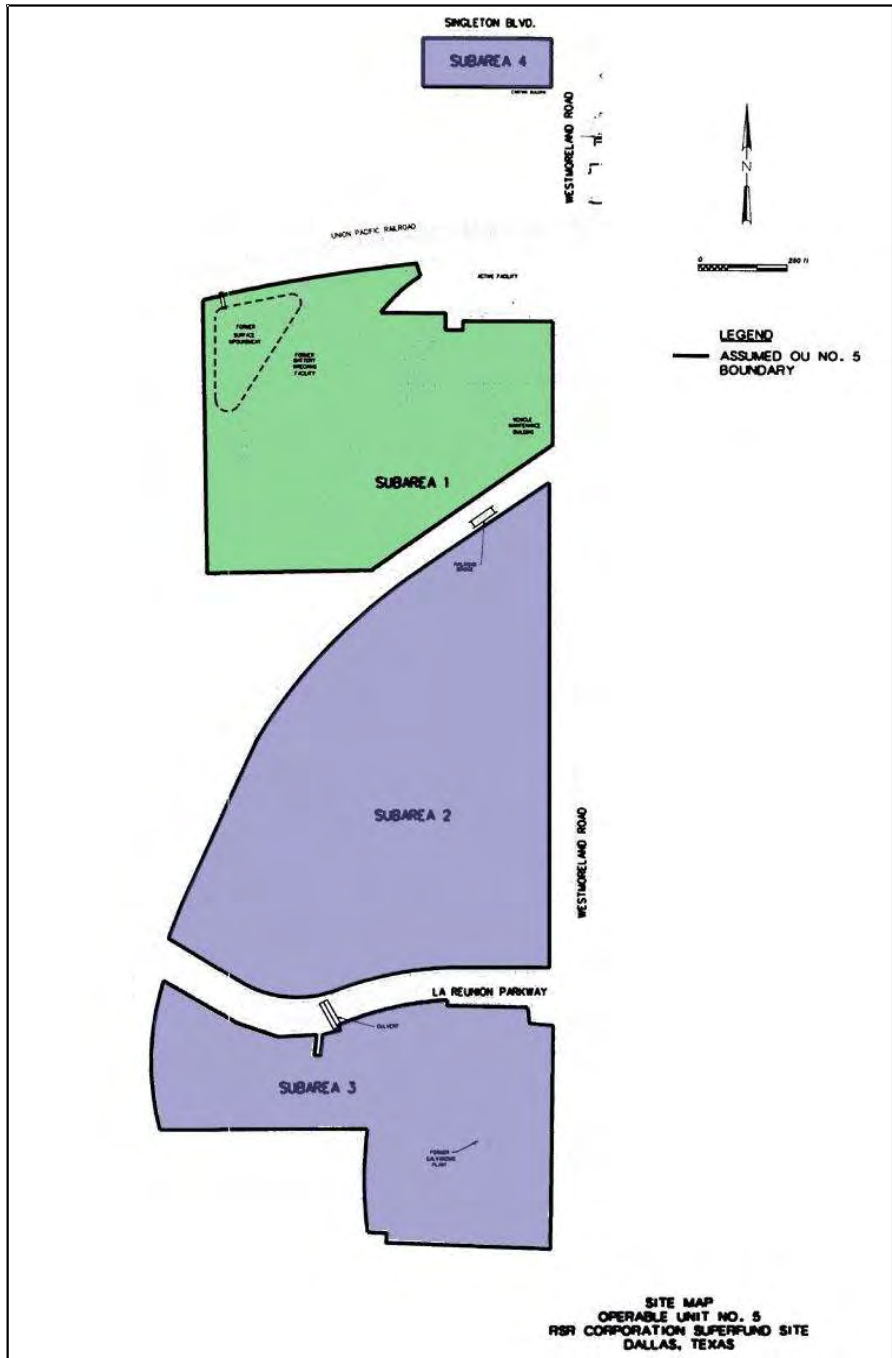
#### *Site and Contaminant History*

Beginning in the early 1930s, a secondary lead smelting facility processed used batteries and other lead-bearing materials into pure lead, lead alloys, and other lead products. The smelter property makes up OU4 of the RSR Corporation Site. Other industrial property related to the smelter, as listed above, make up OU5. Secondary lead smelting operations were conducted on OU4 from the early 1930s until 1984. The basic inputs into the smelting process were lead scrap and lead from used car batteries. In the first step of the smelting process the batteries were disassembled at the battery wrecking facility (OU5) using hammer-mills to break the batteries into small pieces. The lead posts and grids were then sent across the street to the smelter facility (OU4) to produce soft pure lead or specialty alloys. In the refining process alloy elements, such as antimony, arsenic, and cadmium, were added as necessary to produce the desired product.

Activities at the Site led to arsenic, cadmium, and lead contamination of dust and residual materials present on and within the buildings, structures, equipment, and soils. A large part of this contamination was a result of fallout of emissions from the smelter stack. Throughout the many years that the smelter operated, the practice of disposing slag and battery chips on the smelter facility property also contributed to the contamination.

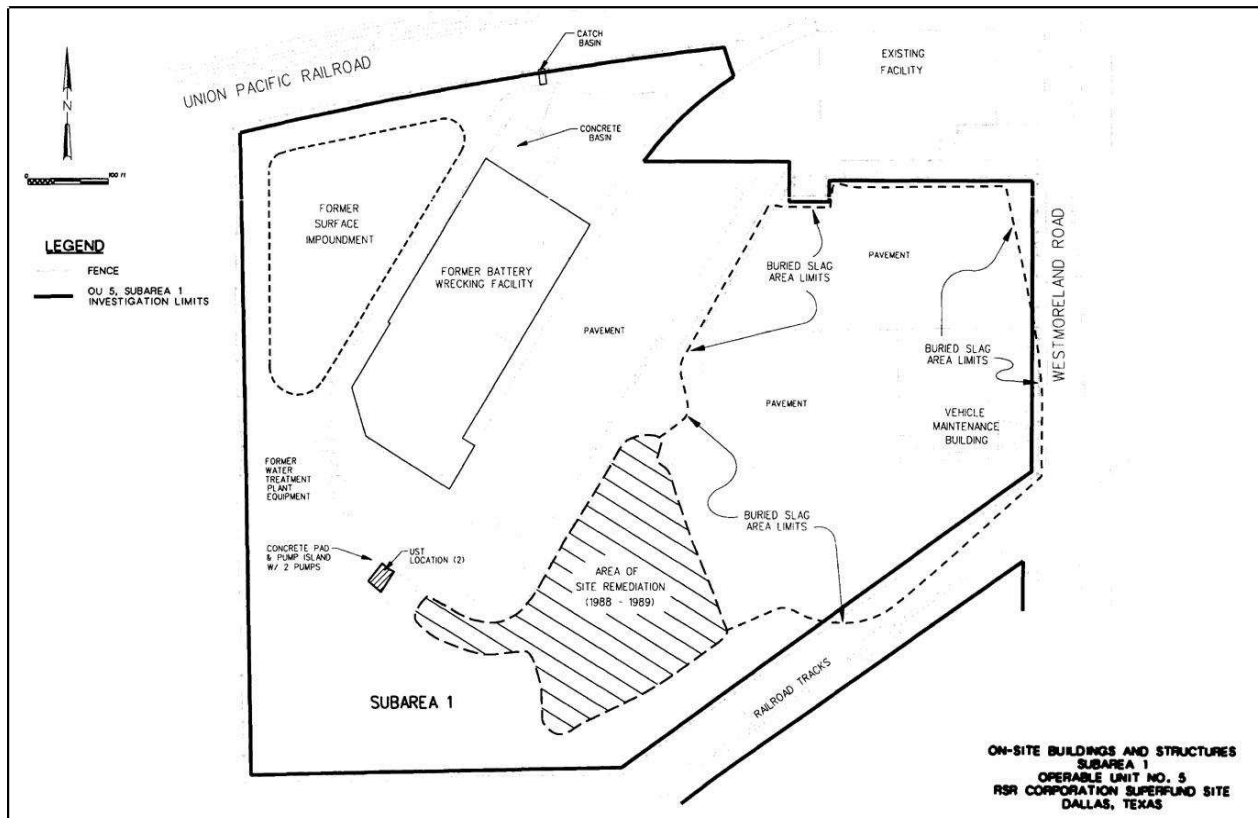
From approximately 1934 until 1971 the lead smelting facility and associated battery wrecking operations were operated by Murph Metals, Inc. or its predecessors. In 1971, RSR Corporation acquired the lead smelting operation and operated under the name Murph Metals. RSR continued to operate the smelter and associated battery wrecking operations until the acquisition of the facility by Murmur Corporation (Murmur). In 1984, the City of Dallas declined to renew the smelter's operating permit—the smelter and associated battery wrecking facility have not been operated since that time.

Exhibit 2. OU5 Subareas 1-4





**Exhibit 3.** On-Site Buildings and Structures, OU5 Subarea 1



*Description of Risks*

The baseline risk assessment assumed that the reasonably anticipated future land use of OU5 would be commercial/industrial, based on the City of Dallas zoning map at that time. U.S. EPA completed this assessment of the human and environmental risks associated with using OU5 of the RSR Corporation Site for industrial purposes in April 1996. The risks that were identified for OU5, Subarea 1 were human and environmental exposure to arsenic, lead, and antimony associated with the buildings, the former surface impoundment, and the slag burial area and other soils. The risk assessment considered exposure scenarios to be both trespassers and industrial workers; under these scenarios, the exposure pathways considered were ingestion, inhalation, and direct contact.

The greatest excess lifetime cancer risk posed by various exposure pathways and scenarios in the former surface impoundment, buildings, soils (and slag burial area), and sediment in OU5, Subarea 1 exceeded the acceptable risk range of one in ten thousand to one in a million ( $1 \times 10^{-4}$  to  $1 \times 10^{-6}$ ). Non-cancer risks also existed in OU5, Subarea 1. These risks were found to be above the upper limit of acceptable non-cancer risks. Arsenic contributed most to the cancer and non-cancer risks at OU5 and antimony contributed greatly to the non-cancer risk. Lead concentrations were also present at an unacceptable level based on the lead exposure evaluation

conducted during the risk assessment.

The shallow ground water in the vicinity of OU4 and OU5 was not considered a potential water supply, nor is it expected to be used as a water supply. The drinking water supply for the west Dallas community is provided by the City of Dallas water system which draws from surface water reservoirs located many miles from the RSR Corporation Site. The Texas Department of Health and the Dallas City Code requirements limit the installation of private wells in the RSR Corporation Site area (general vicinity of Westmoreland Road and Singleton Boulevard) in any ground water aquifer. Due to these factors, ingestion of ground water was not considered a complete pathway for purposes of the risk assessment, and further evaluation of ground water in the risk evaluation was not conducted.

Appendix A provides additional information on the risk assessment for OU5 Subarea 1.

*Summary of Cleanup Activities*

Exhibit 4 shows a time line of U.S. EPA activities performed to date at OU5 of the RSR Corporation Superfund Site.

**Exhibit 4.** Time Line of Site Activities

<b>Date</b>	<b>Activity</b>
1930s	Lead smelter begins operating
1984	Lead smelter stops operating after smelting permit is not renewed
1984-1985	Texas Natural Resource Conservation Commission (TNRCC) inspects the smelter and battery wrecking facilities and finds several hazardous waste violations
June 1991	Site was submitted to the Superfund program after the owner was unable to obtain final closure from TNRCC for portions of the battery wrecking facility due to a dispute with its contractor
1991	U.S. EPA begins to collect soil samples in west Dallas to determine the presence of lead after residents complained that slag and battery chips were used as fill material in their yards
1993	U.S. EPA began remedial investigations of the smelter and related properties
May 1993	U.S. EPA proposed that the RSR Corporation Site be added to the NPL
June 1994	Due to lead contamination in residential soils near the smelter, an emergency removal action to remove them was completed
July 1995	A non-time-critical removal action of waste drums, uncontained residual waste/debris piles, and laboratory containers was completed
September 1995	RSR Corporation Superfund Site was listed on the NPL
April 1997	U.S. EPA issued ROD for remedial action at OU5

Date	Activity
January 2004	Remedial Action at OU5 Subarea 1 begins
August 2004	Remedial Action completed at OU5 Subarea 1

### Removal Actions

After failed attempts to develop a plan to remediate the property, the Texas Natural Resource Conservation Commission (TNRCC) referred the Site to the Superfund program for assessment. Almost immediately, TNRCC began receiving complaints from residents alleging that slag and battery chips had been disposed of on their properties. In 1991, U.S. EPA began soil sampling in west Dallas to determine the presence of soil lead contamination. The results indicated that contamination existed in some residential areas (OU1) near the smelter where fallout of contamination from the smelter stack had occurred and where battery chips or slag had been used as fill in residential yards and driveways. Consequently, U.S. EPA initiated an emergency removal action in the residential areas consisting of removal and off-site disposal of contaminated soil and debris in excess of removal action cleanup levels. This removal action in the residential area (OU1) was completed in June 1994.

In 1993, U.S. EPA initiated remedial investigations of the smelter and related properties (OU4 and 5) and alleged smelter waste disposal areas (OU3). In addition, a removal action at OU2, the public housing residential area, was initiated by the Dallas Housing Authority under U.S. EPA oversight. On May 10, 1993, U.S. EPA proposed the RSR Site to the National Priorities List (NPL) of Superfund sites.

A field investigation was conducted in the Spring of 1994 on OU4 and 5. During this investigation three areas of immediate concern were identified. More than 500 waste drums, 73 uncontained residual waste/debris piles and approximately 50 laboratory containers were found on OU4 and 5. To abate the immediate threat to human health and the environment posed by the presence of these materials, U.S. EPA completed a removal action in July 1995. Waste materials present at 90 residual/debris piles and drum locations were remediated during the removal.

### Remedial Actions

U.S. EPA issued a ROD for remedial action at OU5 in April 1997. The selected remedy included decontamination of buildings and demolition of the former battery wrecking building and off-site disposal; containment of the former surface impoundment, former landfill, slag burial area, and other soils; and no action on the ground water portion of OU5.

The cleanup activities completed at OU5 Subarea 1 consisted of the following:

- decontamination, demolition, and disposal of the former battery wrecking facility building;

- decontamination of the vehicle maintenance facility;
- regrading steep areas around the former surface impoundment to achieve a 3:1 slope, increasing the thickness of the cap in certain areas, and revegetating the area;
- consolidation of slag, battery chips, and similar waste material in the buried slag area, capping the buried slag area, and revegetating;
- sampling of other areas of concern to evaluate the arsenic and lead concentrations present in soils at OU5 Subarea 1;
- excavation of soils around the vehicle maintenance facility to a depth of two feet and relocation of the excavated soil into the buried slag area;
- monitoring well protection work and the abandonment of one monitoring well on OU5 Subarea 1;
- removal of metal, concrete debris, transformers, and power poles from OU5 Subarea 1.
- backfilling of subsurface structures and general site grading to provide storm water drainage across OU5 Subarea 1;
- repair of fencing;
- patching of asphalt in the vehicle maintenance facility parking lot;
- removal of two underground storage tanks; and
- placing erosion protection elements on the northern bank of the drainage swale (a shallow trough created for storm water drainage purposes) adjacent to the buried slag area and on select portions of the southern bank to repair existing erosion areas and to prevent further erosion into the buried waste material.

The remedial activities conducted at OU5 Subarea 1 were completed in August 2004 and achieved industrial cleanup goals.

#### *Redevelopment/Reuse History*

OU5 of the RSR Corporation Site has been vacant since 1984 when smelter operations ceased. The four Subareas designated in OU5 are all located in an area zoned commercial/industrial by the City of Dallas. Areas surrounding OU5 comprise a mixture of residential, commercial, and industrial facilities. Based on the 1994 City of Dallas zoning map, Subareas 1 and 4 or OU5 are currently zoned as Industrial Manufacturing (IM). IM zoning for the City of Dallas includes industrial, wholesale distribution and storage, and support office and retail uses. The reasonably anticipated future land use of OU5 is commercial/industrial based on the past and current zoning map for this area.

#### **IV. U.S. EPA's Basis for the Ready for Reuse (RfR) Determination**

The reasonably anticipated future land use of OU5 Subarea 1 is commercial/industrial based on the past and current zoning map for this area. The RfR Determination for OU5 Subarea 1 declares that OU5 Subarea 1 is ready for industrial reuse.

This RfR Determination for OU5 Subarea 1 is based upon the Record of Decision, Remedial Action Completion Report, and Operations and Maintenance Plan. Prior to remediation, OU5

Subarea 1 posed unacceptable risks for industrial use. The OU5 ROD states that the selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action. The Remedial Action Completion Report documents the completion of remedy construction activities and initiation of operations and maintenance activities at OU5, “This RA Completion Report documents the completion of construction activities and initiation of operation and maintenance (O&M) activities, conducted as described by... [the] RA Work Plan.” The Remedial Action Completion Report provides evidence that OU5 Subarea 1 is ready for industrial use and its remedy will remain protective of human health and the environment, subject to inspection of the remedy and the continued use of operations and maintenance controls as described in the ROD, Remedial Action Completion Report, and O&M Plan.

## **V. Ongoing Limitations and Responsibilities Previously Established by U.S. EPA**

### *Institutional and Engineering Controls*

No institutional controls are required by the ROD or Remedial Action Completion Report; however, future users of OU5 Subarea 1 should ensure the protectiveness of the remedy by maintaining the soil cover and soil cap to prevent exposure to contaminants that remain on site. Users should also comply with local land use regulations and the O&M Plan, described below, in order to ensure the continued protection of human health and the environment at OU5 Subarea 1 of the RSR Corporation Superfund Site.

### *Operations & Maintenance Requirements*

Operations and maintenance (O&M) activities at OU5 Subarea 1, provided in the O&M Plan, are as follows:

- Annual site inspections of OU5, Subarea 1, and following any event that may cause or reasonably be expected to cause a release of waste material, such as severe weather or vandalism. Quarterly for the first year and annually thereafter, inspections of the buried slag area and surface impoundment area capped areas, excavation/scrape areas, and monitoring wells. Annual site inspections of drainage swale along southern boundary, vehicle maintenance facility parking lot, and ground water sampling.
- General inspection activities include nuisance conditions (e.g., blowing dust), site security, settlement, indications of cover or ditch erosion, indications of ditch sedimentation, security, indications of damage to monitoring wells, and indications of damage to vehicle maintenance facility parking lot.
- Annual ground water monitoring of the surface impoundment area, which includes sampling for lead and arsenic from monitoring wells 5-G001, 5-G002, 5-G003, 5-G006, 5-G007, and 5-G008.

Maintenance will be required whenever it is determined necessary by the inspections. The type and extent of maintenance will be handled on a case-by-case basis. Maintenance activities may



include repairing areas that have settled, eroded, and/or lack positive drainage; revegetation; repairs to cracks in the vehicle maintenance facility asphalt parking lot; maintaining perimeter fence and locks; repairs to concrete pads, protective casings, and locks on monitoring wells; and sediment control. Emergency repairs will be completed immediately in the event that waste material is, or is reasonably expected to be released from OU5 Subarea 1. O&M activities will be documented in operations and maintenance status reports.

The property owner, Murmur Corporation, is responsible for the continuing operation and maintenance of the remedy at OU5 Subarea 1. U.S. EPA will perform reviews at OU5 Subarea 1 of the RSR Corporation Site every five years to ensure that the remedy continues to provide adequate protection of human health and the environment.

## **VI. Provisos**

This RfR Determination is a technical decision document and environmental status report and does not have any legally binding effect and does not expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits of any party. U.S. EPA assumes no responsibility for reuse activities and/or for any potential harm that might result from reuse activities. U.S. EPA retains any and all rights and authorities it has, including, but not limited to legal, equitable, or administrative rights. U.S. EPA specifically retains any and all rights and authorities it has to conduct, direct, oversee, and/or require environmental response actions in connection with OU5 Subarea 1, including but not limited to instances when new or additional information has been discovered regarding the contamination or conditions at OU5 Subarea 1 that indicate that the response and/or the conditions at OU5 Subarea 1 are no longer protective of human health or the environment for the types of uses identified in the Ready for Reuse Determination.

The types of uses identified as protective in this RfR Determination remain subject to (i) applicable federal, state, and local regulation and to (ii) title documents, including, but not limited to, easements, restrictions, and institutional controls.

This RfR Determination remains valid only as long as the requirements described in the ROD, Remedial Action Completion Report, other response decision documents, O&M Plan, and the land title documents are met.

## APPENDIX A

### RISK ASSESSMENT SUMMARY

A risk assessment is defined by U.S. EPA as a qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants. A risk assessment characterizes the current or potential threat to public health and the environment that may be posed by chemicals originating at or migrating from a contaminated site. Information used in the risk assessment is taken from the remedial investigation, the stage of the U.S. EPA pipeline of activities that characterizes site conditions and determines the levels of contamination at a site.

The risk assessment for OU5 of the RSR Corporation Site evaluated potential risks to human health and the environment using two measures: Excess Lifetime Cancer Risks (ELCRs) and Hazard Indices (HIs). ELCRs describe whether exposure to cancer-causing contaminants at a site poses an unacceptable health risk to humans. A carcinogenic risk of  $1 \times 10^{-6}$  means that one out of 1,000,000 people exposed over a 70-year lifetime could potentially develop cancer as a result of the exposure. The carcinogenic risk range established under CERCLA designates risks less than  $10^{-4}$  to  $10^{-6}$  as acceptable and protective of human health. Risks greater than this range indicate that the risks pose an unacceptable cancer risk to human health.

The hazard index (HI) describes whether exposure to non-cancer-causing contaminants at a site poses an unacceptable health risk to humans. An HI greater than one indicates that under U.S. EPA's Hazard Indices guidelines, the contaminants pose an unacceptable risk to human health, and an HI less than one indicates that the contaminants pose an acceptable risk.

The reasonable maximum exposure (RME) is the highest exposure that is reasonably expected to occur at a site. RME values used in the risk assessment for OU5 included: a soil/sediment/building dust ingestion rate of 50 mg/day for current and future workers; an inhalation rate of 2.5 m/hour for current and future workers; an exposure frequency of 52 h/year for current workers and 250 days/year for future workers; and an exposure duration of 25 years for current and future workers.

The baseline risk assessment assumed that the reasonably anticipated future land use of OU5 would be commercial/industrial, based on the City of Dallas zoning map at that time. The risks that were identified for OU5, Subarea 1 were human and environmental exposure to arsenic, lead, and antimony associated with the buildings, the former surface impoundment, and the slag burial area and other soils. The risk assessment considered exposure scenarios to be both trespassers and industrial workers; under these scenarios, the exposure pathways considered were ingestion, inhalation, and direct contact.

The greatest excess lifetime cancer risk posed by various exposure pathways and scenarios in the former surface impoundment, buildings, soils (and slag burial area), and sediment in OU5,

Subarea 1 exceeded the acceptable risk range of one in ten thousand to one in a million ( $1 \times 10^{-4}$  to  $1 \times 10^{-6}$ ). Non-cancer risks also existed in OU5, Subarea 1. Arsenic contributed most to the cancer and non-cancer risks at OU5 and antimony contributed greatly to the non-cancer risk. Lead concentrations were also present at an unacceptable level based on the lead exposure evaluation conducted during the risk assessment.

Exhibit 5 shows the cumulative potential cancer (ELCRs) and non-cancer risks (HI) at seven different exposure areas for current and future populations at OU5 of the RSR Corporation Site.

**Exhibit 5.** Cumulative Potential Risks for Current and Future Exposed Populations

Exposure Areas	Cumulative Potential Risks for Exposed Populations							
	Current Commercial/Industrial Worker		Future Commercial/Industrial Worker		Child Trespasser		Adult Trespasser	
	ELCRs*	HI*	ELCRs*	HI*	ELCRs*	HI*	ELCRs*	HI*
Former Surface Impoundment	$2 \times 10^{-5}$	0.1	$9 \times 10^{-5}$	0.9	$2 \times 10^{-5}$	0.4	$1 \times 10^{-5}$	0.2
Former Landfill	$8 \times 10^{-5}$	2	$4 \times 10^{-4}$	9	$1 \times 10^{-4}$	6	$7 \times 10^{-5}$	4
Buildings	$8 \times 10^{-6}$	0.1	$6 \times 10^{-5}$	1	$8 \times 10^{-6}$	0.4	$5 \times 10^{-6}$	0.3
Other Soils (0-2 feet)	$2 \times 10^{-5}$	0.8			$2 \times 10^{-5}$	3	$1 \times 10^{-5}$	2
Other Soils (0-10 feet)			$2 \times 10^{-4}$	10	$4 \times 10^{-5}$	8	$2 \times 10^{-5}$	5
Sediment	$3 \times 10^{-6}$	0.05	$2 \times 10^{-5}$	0.3	$3 \times 10^{-6}$	0.09	$2 \times 10^{-6}$	0.05
Surface Water	$4 \times 10^{-8}$	0.002	$9 \times 10^{-7}$	0.04	$3 \times 10^{-8}$	0.004	$2 \times 10^{-8}$	0.002

\*Based on reasonable maximum exposure (RME).

## APPENDIX B

### ABBREVIATIONS AND ACRONYMS

<b>AR</b> - Administrative Record	<b>RME</b> - Reasonable Maximum Exposure
<b>BLRA/BRA</b> - Baseline Risk Assessment	<b>ROD</b> - Record of Decision
<b>CC</b> - Construction Completion	<b>RPM</b> - Remedial Project Manager
<b>CERCLA</b> - Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund)	<b>SARA</b> - Superfund Amendments and Reauthorization Act of 1986
<b>CERCLIS</b> - Comprehensive Environmental Response, Compensation, and Liability Information System	<b>SI</b> - Site Inspection
<b>COC</b> - Contaminant of Concern	<b>SRI</b> - Superfund Redevelopment Initiative
<b>ELCR</b> - Excess Lifetime Cancer Risks	<b>TCEQ</b> - Texas Commission on Environmental Quality
<b>ESI</b> - Expanded Site Inspection	<b>TNRCC</b> - Texas Natural Resources Conservation Commission
<b>FCOR</b> - Final Close Out Report	<b>TSDF</b> - Treatment, Storage, and Disposal Facility
<b>GIS</b> - Geographic Information System	<b>U.S. EPA</b> - United States Environmental Protection Agency
<b>HI</b> - Hazard Index	
<b>HRS</b> - Hazard Ranking System	
<b>IM</b> - Industrial Manufacturing	
<b>NOID</b> - Notice of Intent to Delete	
<b>NOD</b> - Notice of Deletion	
<b>NPL</b> - (N)ational (P)riorities (L)ist of Superfund Hazardous Waste Sites	
<b>O&amp;M</b> - Operations and Maintenance	
<b>OSHA</b> - Occupational Safety and Health Administration	
<b>OSRTI</b> - Office of Superfund Remediation and Technological Innovation	
<b>OU</b> - Operable Unit	
<b>OSWER</b> - Office of Solid Waste and Emergency Response	
<b>PA</b> - Preliminary Assessment	
<b>PCOR</b> - Preliminary Close Out Report	
<b>PHA</b> - Public Health Assessment	
<b>PRP</b> - Potentially Responsible Party	
<b>RA</b> - Remedial Action	
<b>RD</b> - Remedial Design	
<b>RfR</b> - Ready for Reuse Determination	
<b>RI/FS</b> - Remedial Investigation/Feasibility Study	

## APPENDIX C

### GLOSSARY

**Baseline Risk Assessment (BLRA):** A qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants. A risk assessment characterizes the current or potential threat to public health and the environment that may be posed by chemicals originating at or migrating from a contaminated site.

**Carcinogenic:** A carcinogenic chemical is one which is believed to be capable of causing cancer.

**Closeout report:** A report submitted by the Remedial Program Manager (RPM) verifying that the conditions of the site comply with the Record of Decision (ROD) findings and design specifications and that activities performed at the site are sufficient to achieve protection of public health and the environment. This is a Remedial Action (RA) or ROD sub-event.

**Construction Completion (CC):** The Construction Completion List is a compilation of sites presently or formerly on the NPL. Sites qualify for the Construction Completion List when: any necessary physical construction is complete; U.S. EPA has determined that the response action should be limited to measures that do not involve construction; or the site qualifies for deletion from the NPL.

**Deed restrictions:** Restrictions placed within a deed that control the use of the property. Restrictions travel with the deed, and cannot generally be removed by new owners.

**Dermal absorption:** Absorption through the skin.

**Discovery:** The process by which a potential hazardous waste site is brought to the attention of the U.S. EPA. The process can occur through the use of several mechanisms such as a phone call or referral by another government agency.

**Ecological risk assessment:** Assessment of the risks posed by the site to ecological receptors.

**Engineering controls:** Engineering controls eliminate or reduce exposure to a chemical or physical hazard through the use or substitution of engineered machinery or equipment. An example of an engineering control is a protective cover over waste left on site.

**Expanded Site Inspection (ESI):** Functions performed to collect additional data, beyond that required for Hazard Ranking System scoring, in order to expedite the Remedial Investigation/Feasibility Study (RI/FS) project planning phase for National Priorities List (NPL) sites. The site inspection focus on pathways and receptors has been expanded to include site and source characterization. The information facilitates the development of RI/FS workplan and sampling and analysis plan.

**Explanation of Significant Differences (ESD):** A significant change to a Record of Decision (ROD) that does not fundamentally alter the remedy. An ESD may be initiated by U.S. EPA.

**Exposure pathways:** Exposure pathways are means by which contaminants can reach populations of people, plants, or animals. Exposure pathways include groundwater, surface water, soil, and air.

**Feasibility Study (FS):** A study of a hazardous waste site intended to (1) evaluate alternative remedial actions from technical, environmental, and cost-effectiveness perspectives; (2) recommend the cost-effective remedial action; and (3) prepare a conceptual design, a cost estimate for budgetary purposes, and a preliminary construction schedule.



Fugitive landfill gas: Gas formed in landfills that could reasonably pass through a stack, chimney, vent or other functionally equivalent opening.

Hazard Index (HI): The sum of hazard quotients for substances that affect the same target organ or organ system. Because different pollutants may cause similar adverse health effects, it is often appropriate to combine hazard quotients associated with different substances. As with the hazard quotient, aggregate exposures below a HI of 1.0 will likely not result in adverse non-cancer health effects over a lifetime of exposure.

Hazard Ranking System (HRS) Scoring: The HRS is a screening mechanism used to place sites on the NPL. In order for a site to be listed, it must have: 1) contaminants listed on U.S. EPA's Target Compound List of sufficient concentration to warrant concern; 2) a sensitive receptor population that would be negatively affected by the contaminants; and 3) pathways of exposure that would introduce the contaminant into the sensitive receptor population. Theoretically, a site meeting these conditions would score 28.5 or higher on the HRS, the threshold for placement on the NPL. The report detailing the findings of the scoring is referred to as the *HRS Scoring Package*.

Institutional controls: Institutional controls (ICs) are non-engineered instruments, such as administrative and/or legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land or resource use.

National Priorities List (NPL): Sites are listed on the National Priorities List (NPL) upon completion of Hazard Ranking System (HRS) screening, public solicitation of comments about the proposed site, and consideration of all comments. The NPL primarily serves as an information and management tool. The identification of a site for the NPL is intended primarily to guide U.S. EPA in: determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with a site; identifying what CERCLA-financed remedial actions may be appropriate; notifying the public of sites U.S. EPA believes warrant further investigation; and serving notice to potentially responsible parties that U.S. EPA may initiate CERCLA-financed remedial action.

Notice of Deletion (NOD): Notification of a site's deletion from the NPL, published in the *Federal Register*.

Notice of Intent to Delete (NOID): Notification of U.S. EPA's intention to delete a site from the NPL, published in both the *Federal Register* and a newspaper of record.

NPL site deletions: With state concurrence, the U.S. EPA determines when no further response is required at a site to protect human health or the environment. U.S. EPA approves a close out report verifying that response actions have been taken or that no action is required. U.S. EPA then publishes a deletion notice in the *Federal Register*.

NPL site listing process: The NPL is a list of the most serious sites identified for possible long-term remediation. A proposed NPL site is listed when U.S. EPA issues a final rule in the *Federal Register*, which enables U.S. EPA to use federal monies to pay for long-term remedial actions. U.S. EPA issues a proposed rule in the *Federal Register* to solicit comments on proposed NPL sites. U.S. EPA responds to comments and adds sites to the NPL that continue to meet requirements for listing.

Operation and Maintenance (O&M): O&M activities are conducted after remedial actions are complete in order to ensure that remedies are operational and effective.

Potentially Responsible Parties (PRPs): The Superfund law (CERCLA) allows U.S. EPA to respond to releases or threatened releases of hazardous substances into the environment. Under CERCLA, potentially responsible parties (PRPs) are expected to conduct or pay for the cleanup. The Superfund enforcement program identifies the PRPs at the site; negotiates with PRPs to do the cleanup; and recovers from PRPs the costs spent by U.S. EPA at Superfund cleanups.

Preliminary Assessment (PA): Preliminary assessments are investigations of site conditions to ascertain the source, nature, extent, and magnitude of the contamination.

Preliminary Close Out Report (PCOR): A precursor to the close out report, it is a report submitted by the Remedial Program Manager (RPM) verifying that the conditions of the site comply with the Record of Decision (ROD) findings and design specifications and that activities performed at the site are sufficient to achieve protection of public health and the environment.

Remedial Action (RA): The implementation of a permanent resolution to address a release or potential release of a hazardous substance from a site.

Remedial Design (RD): The process of fully detailing and specifying the selected remedy identified in the Record of Decision.

Remedial Investigation (RI): An investigation intended to gather the data necessary to: (1) determine the nature and extent of problems at the site; (2) establish cleanup criteria for the site; (3) identify preliminary alternative remedial actions; and (4) support the technical and cost analyses of the alternatives.

Record of Decision (ROD): The ROD documents the cleanup alternatives that will be used at NPL sites, and the supporting analyses.

Restrictive covenants: Restrictive covenants are deed restrictions that apply to a specific real estate parcel.

Site Inspection (SI): The process of collecting site data and samples to characterize the severity of the hazard for the hazard ranking score and/or enforcement support.