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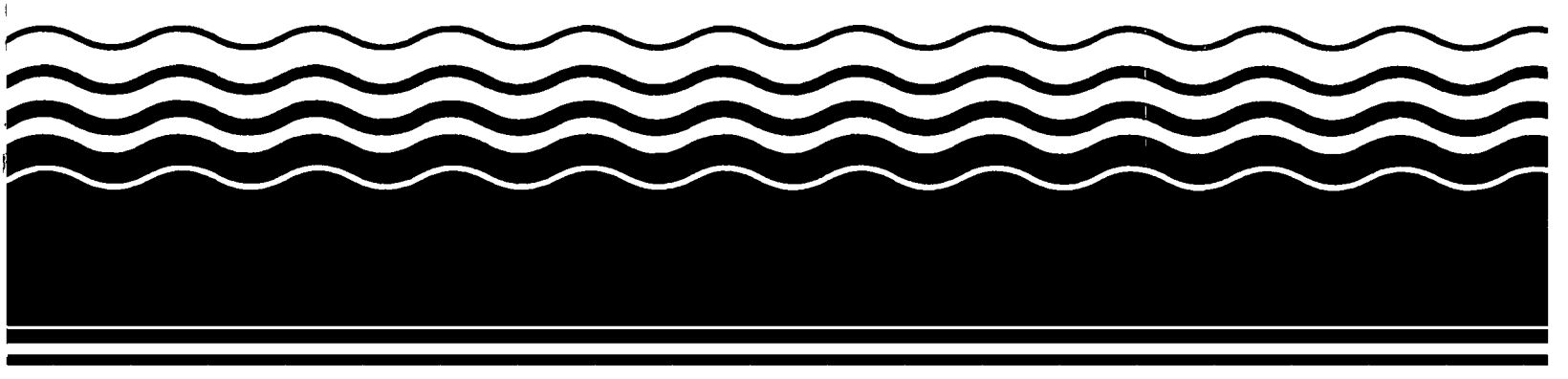
EPA Superfund Record of Decision:

RSR Corp., OU 4 (Groundwater) & OU 5
Dallas, TX
4/3/1997



RECORD OF DECISION

RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 5
BATTERY WRECKING FACILITY
and GROUND WATER PORTION
OF OPERABLE UNIT NO. 4, SMELTER FACILITY
DALLAS, TEXAS

Prepared by:
U. S. Environmental Protection Agency
Region 6
Dallas, Texas

DECLARATION FOR THE RECORD OF DECISION
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 5 - BATTERY WRECKING FACILITY
and
GROUND WATER PORTION OF SMELTER FACILITY (OPERABLE UNIT NO. 4)

Statutory Preference for Treatment as a Principal Element
is Not Met and Five-Year Review is Required

SITE NAME AND LOCATION

RSR Corporation Superfund Site, Operable Unit (OU) No. 5
and Ground Water portion OU No. 4, Dallas, Dallas County, Texas

STATEMENT OF BASIS AND PURPOSE

The United States Environmental Protection Agency (EPA) presents its decision in this Record of Decision (ROD) for source and ground water of Operable Unit (OU) No. 5, the location of the former battery wrecking facility, and for the ground water portion of OU No. 4, of the RSR Corporation Superfund Site (RSR Site). EPA's decision is in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 42 U.S.C. § 9601 et seq., and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. The decision is based on materials and documents EPA relied on or considered that are contained in the Administrative Record for OU No. 5. Copies of the Administrative Record for OU No. 5 are available for public review at three repositories, one of which is located in west Dallas within the RSR site and near OU Nos. 4 and 5. EPA bases this decision on the results of a remedial investigation, feasibility study, and human health risk assessment conducted at OU No 5.

The State of Texas, through the Texas Natural Resource Conservation Commission (TNRCC), concurs with EPA's selected remedy for OU No. 5 and the ground water portion of OU No. 4 of the RSR Site.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances, as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and further defined in Section 302.4 of the NCP, 40 C.F.R. § 302.4, from the RSR Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE REMEDY

Operable Unit No. 5 and the ground water portion of OU No. 4 are part of five operable units of the RSR Site. OU No. 5 includes the former battery wrecking facility where batteries were disassembled and other property currently owned by RSR Corporation. The ground water portion of both OU Nos. 4 and 5 are addressed as part of this ROD for the RSR site. The selected remedy will address contamination of the former battery wrecking facility and the ground water portion of OU No. 4.

The major components of the selected remedy include:

- Decontamination of Buildings, Demolition of the Former Battery Wrecking Building and Off-site Disposal;
- Containment of the Former Surface Impoundment, Former Landfill and Slag Burial Area/Other Soils.
- No Action on the Ground Water Portion of OU No. 4 and OU No. 5.

Arsenic, antimony and lead, the primary contaminants of concern at OU No. 5, are hazardous substances, as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), and further defined in Section 302.4 of the NCP, 40 C.F.R. § 302.4.

STATUTORY DETERMINATIONS

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, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment to the maximum extent practicable for this Operable Unit. However, due to the size of the former landfill portion, slag burial area/other soils, it was determined impracticable to excavate and treat the chemicals of concern effectively. Thus, the remedy for this Operable Unit does not satisfy the statutory preference for treatment as a principal element of the remedy.

The future land use may be limited to industrial use based on current zoning and the reasonably anticipated future zoning. The remedy achieves cleanup levels that allow most, if not all, of OU No. 5 to be available for the reasonably anticipated future land use, which is industrial use.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, allowing for future industrial use, five-year reviews will be necessary at OU No. 5 of the RSR Site to ensure that the remedy continues to provide adequate protection of human health and the environment.

SIGNATURE AND AGENCY ACCEPTANCE OF THE REMEDY

Jerry Clifford
Deputy Regional Administrator
U.S. EPA - Region 6

4/3/97
Date

RECORD OF DECISION
CONCURRENCE DOCUMENTATION

FOR THE

RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 5 - BATTERY WRECKING FACILITY
and
GROUND WATER PORTION OF SMELTER FACILITY (OPERABLE UNIT NO. 4)

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DECISION SUMMARY
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT NO 5.
DALLAS, TEXAS

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DECISION SUMMARY
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT NO. 5 - BATTERY WRECKING FACILITY
and
GROUND WATER PORTION OF SMELTER FACILITY (OPERABLE UNIT NO. 4)

I. SITE NAME, LOCATION, AND DESCRIPTION

The United States Environmental Protection Agency (EPA) is addressing the release or threat of release of hazardous substances at the former battery wrecking facility, Operable Unit (OU) No. 5 and the ground water portion of OU No. 4 of the RSR Corporation Superfund Site (RSR Site) under the authority provided in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601 et seq. (also known as Superfund) and consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. The RSR Site is located in west Dallas, Texas and encompasses an area approximately 13.6 square miles in size. The RSR 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. The population in this area is approximately 17,000.

For approximately 50 years, a secondary lead smelting facility, located at the southeast corner of the intersection of Westmoreland Road and Singleton Blvd., processed used batteries and other lead-bearing materials into pure lead, lead alloys, and other lead products. This smelter property, known as OU No. 4, is approximately 6.5 acres in size and contains several inactive structures. Other industrial property related to the smelter, the former battery wrecking facility, referred to as OU No. 5, is located on the southwest corner of the Westmoreland Road and Singleton Boulevard intersection. The smelter operations ceased in 1984.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

OU No. 4 is the location at the RSR Site where secondary lead smelting operations were conducted 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 (OU No. 5) 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 (OU No. 4) 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.

An extensive review of available historical information concerning the smelter's operation indicates that 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 1984.

During 1984 and 1985, TNRCC (formerly the Texas Water Commission) conducted inspections on the smelter and battery wrecking facilities and identified several violations that involved the treatment, storage or disposal of hazardous wastes. In 1986, TNRCC approved a closure plan to be implemented by Murmur for portions of the battery wrecking facility located at OU No. 5. However, Murmur was unable to obtain certification by TNRCC of final closure, due to a dispute between Murmur and its contractor. In June of 1991 the State of Texas referred the case regarding the closure to the Superfund program for assessment. Immediately following this referral, TNRCC began receiving complaints from residents alleging that slag and battery chips had been disposed of on their properties.

In 1991, 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 near the smelter (OU No. 1) 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, 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 (OU No. 1) was completed in June of 1994.

In 1993, EPA initiated remedial investigations of the smelter and related properties (OU Nos. 4 and 5) and alleged smelter waste disposal areas (OU No. 3). In addition, an investigation of and removal action at OU No. 2, the public housing residential area, was initiated by the Dallas Housing Authority under EPA oversight pursuant to a CERCLA Administrative Order on Consent.

On May 10, 1993, EPA proposed the RSR Site to the National Priorities List (NPL) of Superfund sites (58 Fed. Reg. 27,507).

A field investigation was conducted in the Spring of 1994 on OU Nos. 4 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 OU Nos. 4 and 5. In July 1994, EPA authorized the preparation of an Engineering Evaluation/Cost Analysis (EE/CA) report to support the conduct of a non-time-critical removal action to abate the immediate threat to human health and the environment posed by the presence of these material at OU Nos. 4 and 5. A 30-day public comment period on the proposed removal action as described in the EE/CA report began on September 16, 1994. The proposed removal entailed removal and off-site

treatment and disposal of all drums, residual waste/debris piles and laboratory containers. On December 22, 1994, the Action Memorandum authorizing this removal action was signed. EPA commenced site activities for the non-time-critical removal action on May 30, 1995 and completed these activities by July 14, 1995.

On September 29, 1995, the RSR Corporation Superfund Site was finalized on the NPL (60 Fed. Reg. 50435).

EPA notified several potentially responsible parties (PRPs) and provided them the opportunity to perform or finance the RI/FS for OU No. 4 and 5. The PRPs did not agree to perform or finance these response actions. EPA performed the RI/FS for OU No. 4 and 5 with funding from the Hazardous Substance Superfund (Fund).

III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA has performed public participation activities for OU No. 5 and the ground water portion of OU No. 4 as required in CERCLA Section 113(k), 42 U.S.C. § 9613(k), and Section 117, 42 U.S.C. § 9617. The Remedial Investigation Report, Feasibility Study, Baseline Human Health Risk Assessment Report, Supplemental Ground water Investigation and the Proposed Plan for OU No. 5 and the ground water portion of OU No. 4 of the RSR Site were released to the public on May 10, 1995. On or before May 10, 1995, EPA made available to the public these documents as well as other documents and information EPA relied on or considered in selecting the preferred alternative, Alternative No. 3 - Decontaminate and Dismantle Battery Wrecking Facility and Dispose Off-site; Decontaminate Vehicle Maintenance Building; Evaluate, Cap and close in accordance with RCRA the Former Surface Impoundment and the Former Landfill; Cap Slag Burial Area/Other Soils that exceed remedial goals. These documents were contained in an Administrative Record File for OU No. 5 (or draft Administrative Record) available for review at 3 locations; the West Dallas Public Library located at the RSR Site, the EPA Region 6 library in Dallas, and the TNRCC library in Austin, Texas. The notice of the availability of the Proposed Plan and the Administrative Record File was published in The Dallas Morning News on May 9, 1996. The public comment period commenced on June 17, 1996 and ended on August 16, 1996. EPA conducted a public meeting on July 9, 1996 to receive public comments from the community. EPA's responses to all comments received during the public comment period are included in the Responsiveness Summary, which is included as **Appendix A.** to this Record of Decision (ROD).

This ROD presents EPA's selected remedial alternative for OU No. 5 and the ground water portion of OU No. 4 of the RSR Site in Dallas, Texas. The selected remedy will provide protection of human health and the environment in accordance with CERCLA and consistent with the NCP. This decision is based on the Administrative Record for OU No. 5.

IV. SCOPE AND ROLE OF OPERABLE UNITS

There are five OUs of the RSR site, which are distinct geographical areas that are illustrated in **Figure 1** and described below:

OU No. 1 - Private residential areas potentially impacted by historical operations of the smelter;

OU No. 2 - The Dallas Housing Authority's public housing development located northeast of the smelter facility;

OU No. 3 - Former landfills and smelter waste disposal areas located at three different sites within west Dallas;

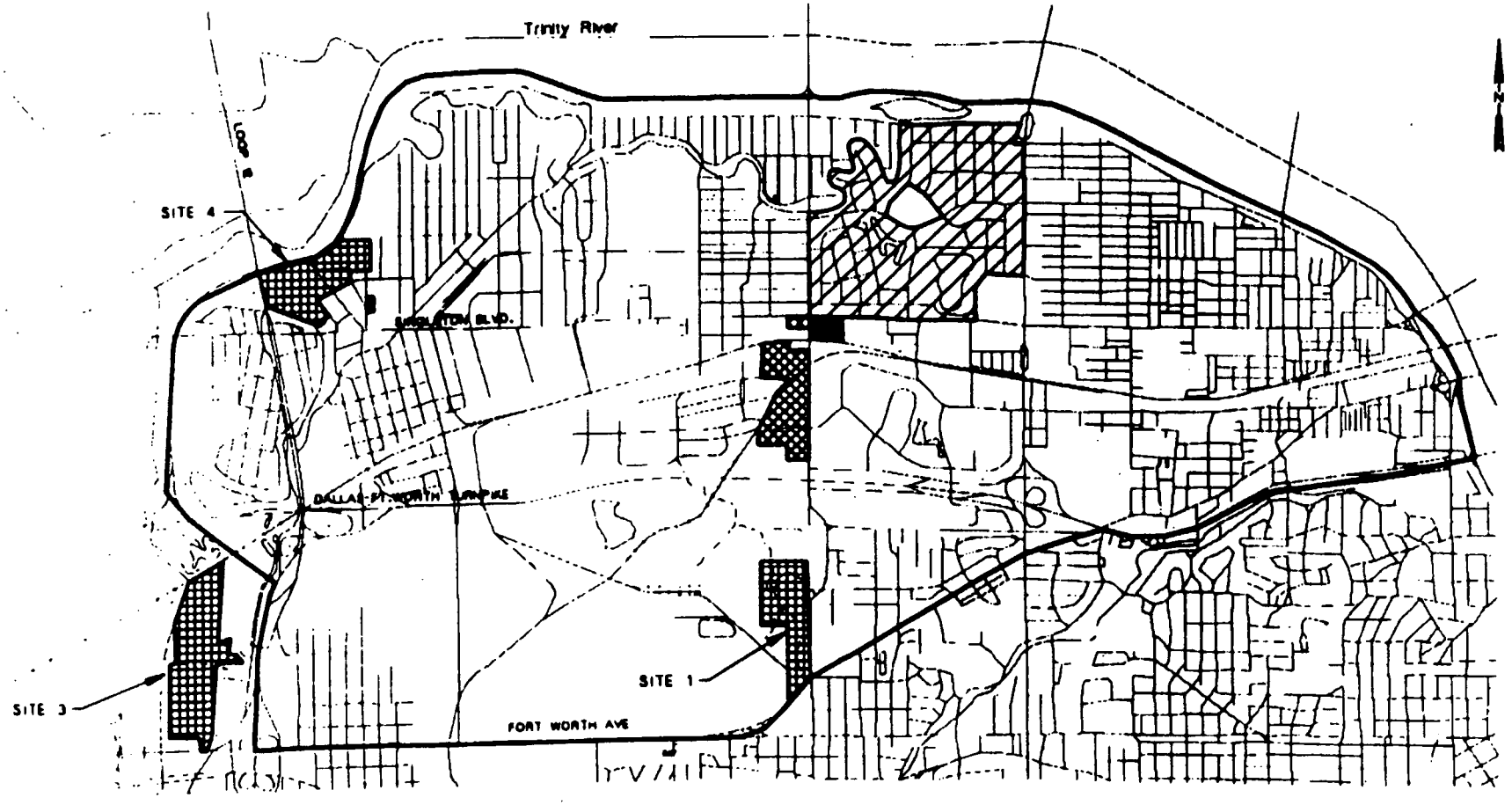
OU No. 4 - The smelter facility;

OU No. 5 - Former battery wrecking facility and other industrial tracts of land associated with the smelter and located across Westmoreland Road from the smelter facility.

This ROD addresses only OU No. 5, the location of the former battery wrecking facility, and the ground water portion of OU No. 4. OU No. 5 consists of the former battery wrecking facility, which includes the battery wrecking building, the vehicle maintenance building, a former surface impoundment, a former landfill and other undeveloped property. OU No. 4 is the location of the former secondary lead smelter facility. Because the nature of some of the former operations and wastes at OU Nos. 4 and 5 are similar, EPA conducted certain studies of the two OUs simultaneously, such as the ground water investigation.

Final Records of Decisions for OU Nos. 1 and 2 were issued on May 9, 1995. A final Record of Decision for OU No. 4 (except for the ground water component) was issued on February 28, 1996. EPA is currently completing a Remedial Investigation at OU No. 3 and a Proposed Plan outlining a recommended Superfund response action for OU No. 3 will be released at a later date.

This ROD for OU No. 5 and the ground water portion of OU No.4, is EPA's final decision to address the contamination associated with all of the on-site buildings, the former surface impoundment, the former landfill, slag burial area/other soils and ground water. Potential ingestion, dermal contact and inhalation of materials present on OU No. 5 contaminated with lead, arsenic, and antimony in excess of remedial goals (described fully in Section VII.) pose unacceptable risks to human health and the environment. The purpose of the selected response action is to prevent current or future exposure to the contaminated materials at OU No. 5 and the ground water portion of OU No. 4.



RESIDENTIAL PROPERTY (OU NO. 1) BOUNDARY

DALLAS HOUSING AUTHORITY (DHA) PROPERTY (OU NO. 2)

SLAG PILES (OU NO. 3), SITES 1, 3, AND 4

MURMUR/RSR SMELTER-TRACT 1 (OU NO. 4)

OTHER MURMER/RSR INDUSTRIAL PROPERTY (OU NO. 5)

RSR/OU4 5/65698D06.DGN/ERAQAPP

FIGURE 1
VICINITY MAP
OPERABLE UNITS (OU) NOS. 1,2,3,4 & 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

V. SITE CHARACTERISTICS

This section presents an overview of the characteristics of OU No. 5, the former battery wrecking facility (also referred to herein as the "site"). For purposes of discussion of the Remedial Investigation findings, OU No. 5 was divided into Subareas 1 through 4. **Figure 2** shows the identification layout of the OU No. 5 Subareas.

This Section contains a summary of the site soils, geology, hydrogeology, ground water, topography, surface water, climate and land use. Followed by a detailed description of the pertinent site features, such as all of the on-site buildings and other significant features. Finally, a discussion of the findings of the field investigation is included in the Nature and Extent of Contamination Section. Note that all of this information can be found in greater detail in the Remedial Investigation Report and supporting Technical Memorandums, which are all part of the Administrative Record for Operable Unit No. 5.

A. Soils

The USDA Soil Conservation Service (SCS), identified the Trinity-Frio soils as the major soil type surrounding and including OU No. 5. Trinity-Frio soils are floodplain soils, poorly drained, clayey, with low permeability (less than 0.06 in/hr) and high water capacity. Because these soils are primarily found in flat, low-lying areas, runoff and the potential for these soils to erode is minimal.

The specific soil complex on OU No. 5 is the Houston Black-Urban Complex, Ferris-Urban Land Complex, and the Trinity-Urban Land Complex. The Houston Black-Urban Complex consists of deep, moderately well drained, nearly level and gently sloping soils and areas of Urban Land. Subareas 1 and 4 would fall under the classification of Urban Land, which is typical of areas characterized by disturbed soil and fill material that have greatly altered the natural soil type. Permeability is very slow and runoff potential associated with the Houston Black soil classification is rated as medium. The majority of Subarea 2 and 3 soils are classified as Ferris-Urban Land Complex. This soil unit consists of deep, well drained, sloping and strongly sloping soils and areas of Urban land. Permeability is very slow, and the runoff is rapid. The erosion hazard for the Ferris-Urban Land Complex soils is severe.

B. Regional Geology

In the vicinity of the OU No. 5 site, the predominant geologic units are of the Upper Cretaceous Age. The formations consist of (in descending order) the Austin Chalk Formation, the Eagle Ford Shale Formation, the Woodbine Formation, and the Grayson Marl and Main Street Limestone Formation. The geologic units making up the Cretaceous system in north-central Texas form a southeastward-thickening wedge extending into the East Texas Embayment. This sedimentary wedge ranges in thickness from zero in the west to nearly 7500 feet in the southeast. Regional dip is

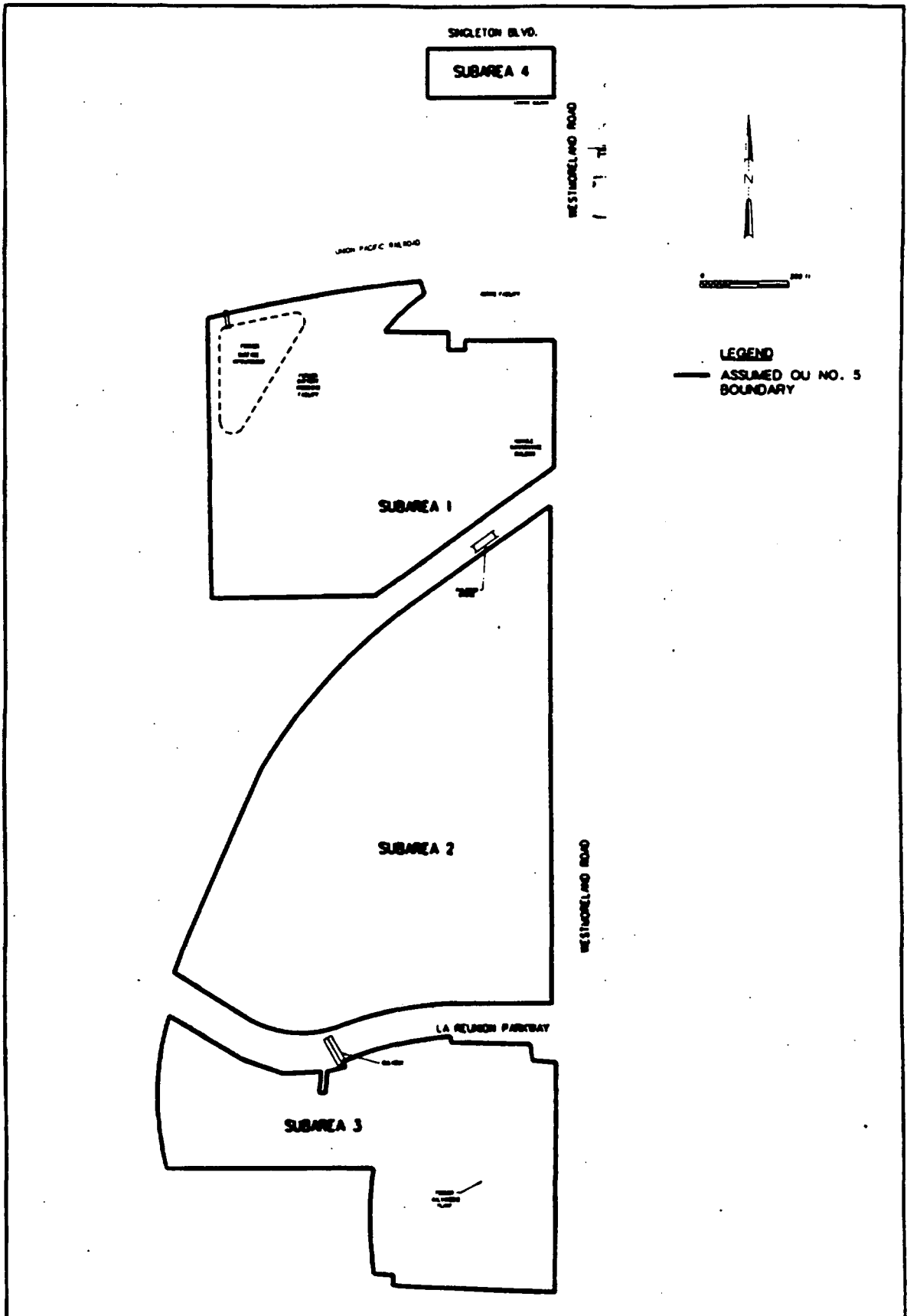


FIGURE 2
SITE MAP
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

RSR/OU4-5/111433R1/11433A04.DGN

to the east and southeast at 15 to 40 feet per mile but increases as much as 300 feet per mile on the flanks of the Preston anticline, located in Grayson County, north of Dallas.

Geologic maps of the surface soils indicate the OU No. 5 site is situated at the bottom of the surface expression of the contact between the top of the Eagle Ford Shale Formation and the overlying Austin Chalk. As documented by logs of deep wells in the area, the full thickness of the Eagle Ford Shale Formation, which overlies the Woodbine Formation, is present beneath the OU No. 5 site.

The Eagle Ford Shale Formation is composed primarily of dark shales with occasional thin stratas of sandstone, limestone, and bentonite. The Eagle Ford Shale Formation has two members, the Arcadia Park being the upper, and the Britton being the lower member. The upper beds of the Arcadia Park member are present in the surface soils at the OU No. 4. The Arcadia Park is described as a basal blue clay twenty (20) feet thick; overlain by one to three feet of thin limestone flags; overlain by an uppermost part of some seventy-five (75) feet of blue shale with calcareous concretions of various size, which is unconformable overlain by the Austin Chalk. The underlying Britton member is typically 250-300 feet thick and consists mostly of blue clay/shale. The Eagle Ford Shale Formation is commonly referred to as an aquitard overlying the Woodbine Formation.

C. Site Geology

Beneath OU No. 5, Quaternary alluvial deposits vary in thickness from a few feet in the southeast corner to over 30 feet in Subarea 1. The RI included drilling of soil and geoprobe borings in the fill and alluvial deposits beneath the site. The soil borings were drilled to a depth of up to 72 feet, to a point where the Eagle Ford shale was generally encountered.

Each boring encountered clays or silty clays, with occasional silt or sand. The top of the Eagle Ford, sometimes seen as a weathered shale, was encountered at elevations ranging from 484 feet mean sea level (MSL) to 402 feet MSL (beneath the former surface impoundment) across the site. It gradually increases in elevation toward the eastern portion of Subarea 2.

D. Hydrogeology

In north-central Texas, the two most important water-bearing stratigraphic units are the Woodbine Group, a minor aquifer, and the Trinity Group, a major aquifer. A major aquifer is defined as one which yields large quantities of water in a comparatively large area of the State, and a minor aquifer is defined as one which yields large quantities of water in small areas, or relatively small quantities of water in large areas of the State. Both aquifers provide municipal, domestic, industrial, and some irrigation supplies to the north-central portion of the State. It should be noted

that water for Dallas residents is provided by the City of Dallas water system, which draws its water from surface reservoirs many miles from OU Nos. 4 and 5.

The Woodbine Aquifer is of Upper Cretaceous age and is composed of sand and sandstone. The nearest outcrop of the Woodbine Formation to OU Nos. 4 and 5 is in far northwestern Dallas County and eastern Tarrant County, a minimum of 10 miles from the OU No. 5 site. Groundwater flow within the Woodbine is generally to the east. In the vicinity of OU Nos. 4 and 5, the depth to the Woodbine from the ground surface is approximately 200 to 250 feet.

The Trinity Group Aquifer is comprised of Lower Cretaceous age formations (the Paluxy, Glen Rose, Twin Mountains, and Antlers) which are older and encountered at greater depths than the Woodbine and other geologic units present within OU Nos. 4 and 5. These geologic units were deposited in fluvial, deltaic, and shallow marine depositional environments, and are typically comprised of sands interbedded with clays, limestone, dolomite, gravel, conglomerates, and evaporates (the latter are present in the upper Glen Rose). Outcrops of Trinity Group formations are found in Parker County, approximately 60 miles west of Dallas County. Within the RSR Site, the depth to the Trinity Aquifer from the ground surface is approximately 1,300 to 1,500 feet to the Paluxy formation and approximately 2,500 feet to the Twin Mountains Formation.

The Quaternary alluvial deposits also contain small amounts of water in this area, although they are not classified as a minor or major aquifer by the State. The shallow groundwater in the vicinity of OU Nos. 4 and 5 is not generally considered a water supply aquifer due to its overall low yield and slightly saline quality. According to a RCRA Facility Assessment completed by the TWC (now TNRCC) for the Smelter Facility in 1988, the alluvial system was not believed to be hydraulically connected to the deeper Woodbine aquifer due to the presence of the 300-foot-thick Eagle Ford shale beneath the site. Groundwater was generally encountered at depths of 5 to 10 feet below ground surface in the RI monitoring wells installed to depths of up to 24 feet (completed at the base of the alluvial materials overlaying the Eagle Ford).

E. Groundwater Quality

In the Dallas area, the general quality of groundwater from the Trinity Aquifer ranges from 500 to 3,000 mg/l total dissolved solids (TDS), which indicates fresh to slightly saline water. Sulfate and chloride concentrations do not exceed secondary drinking water standards of 300 mg/l. Increasingly poor quality (high TDS) water from this aquifer in parts of the Dallas-Ft. Worth area in recent years has been attributed to over-pumpage of the aquifer.

Only the lower part of the Woodbine Aquifer (i.e., the upper sand unit at a depth of 730 to 830 feet) is considered to be suitable for development due to high iron concentrations in the rest of the aquifer. In the Dallas area, groundwater from various units of the Woodbine

Aquifer is in the 1,000 to 3,000 mg/l range for TDS (slightly saline), and sulfate concentrations generally exceed TNRCC's recommended drinking water limit of 300 mg/l (30 TAC § 290.113). Wells completed on or near the outcrop tend to produce groundwater of a higher quality. The primary uses of water derived from the Woodbine are for domestic livestock and public supply. However, due to (1) an increasing dependance on surface water for public supplies, (2) historically large withdrawals of water from the Woodbine, and (3) low permeabilities of the Woodbine's water-bearing zones, this aquifer is no longer used as a primary source of drinking water for Dallas County, and is not used by the City of Dallas.

The primary source of recharge for both the Trinity and Woodbine Aquifers is considered to be precipitation on outcrop surfaces. Recharge from streams flowing across the outcrop, and surface-water seepage from lakes, streams, and ponds are considered secondary sources. No primary recharge areas are located within five miles of OU Nos. 4 and 5. As stated previously, the outcrop surfaces for the Woodbine and Trinity Formations are located a minimum distance of 10 miles to the west of OU Nos. 4 and 5.

The water contained in the Quaternary alluvial deposits is a result of surface infiltration from runoff and likely interacts directly with surface water features in the area rather than the underlying aquifers due to the presence of the Eagle Ford Shale Formation aquitard.

F. EPA Ground water Classification

Based on the *Guidance on Remedial Actions for Contaminated Ground water at Superfund Sites (EPA/540/G-88/003)*, EPA generally classifies ground water as Class I, Class II, or Class III. These classifications are considered guidelines for determining the appropriate amount of remediation for a Superfund site and are paraphrased below.

- **Class I** (special ground water) is:
  (1) highly vulnerable to contamination based on hydrological characteristics; and
  (2) either irreplaceable as a drinking water source or ecologically vital.

- **Class II** (current and potential sources of drinking water and water having other beneficial uses) is categorized as:
  (1) Class IIA, ground water that is currently used; or
  (2) Class IIB, ground water that is potentially available for drinking water, agriculture, or other beneficial use.

- **Class III** (ground water not considered a potential source of drinking water and of limited beneficial use) has the following characteristics:
  - total dissolved solids greater than 10,000 milligrams per liter (mg/l), or
  - is otherwise contaminated by naturally occurring constituents or human activity not associated with a particular

waste disposal activity or another site beyond levels that allow remediation using methods reasonably employed in public water treatment systems.

Class III ground water is:

(1) *Class IIIA*, ground water that is interconnected to surface water or adjacent ground water that potentially could be used for drinking water; or

(2) *Class IIIB*, ground water that has no interconnection to surface water or adjacent aquifers.

G. Topography

The RSR Site is located on the margin between the Blackland Prairie and the Eastern Cross Timbers physiographic provinces. The RSR Site topography is characterized by low, flat to gently undulating surfaces. Most of the RSR Site is located on a floodplain terrace of the Trinity River. The northern and western edges of the RSR Site are bounded by the Trinity River levee. The topography for each of the subareas of OU No. 5 are discussed below:

Subarea 1 - In Subarea 1 the surface drainage is generally from the southeast to the northwest. The former surface impoundment was filled in by previous remediation activities, which created a mound 10 to 15 feet above the surrounding area. The topographic relief across Subarea 1 is approximately 30 feet, not including the surface impoundment mound (See **Figure 3**).

Subarea 2 - Subarea 2 has a high point along the east boundary line (adjacent to Westmoreland Road). The majority of the surface flow in this Subarea drains to the west and north. The topography in this area varies due to former site activities, including former landfilling activities. The difference in elevation across Subarea 2 is approximately 60 feet (See **Figure 4**).

Subarea 3 - Subarea 3 generally slopes from the east to the west, with the higher elevations along Westmoreland Road. The topographic relief across the Subarea is approximately 30 feet (See **Figure 5**).

Subarea 4 - Subarea 4 is generally flat with surface flow towards the northwest and the topographic relief across is 3 feet (See **Figure 6**).

H. Surface Water

The Trinity River and its tributaries, and Fishtrap Lake in the Dallas Housing Authority area (OU No. 2), are the only major surface water bodies in the vicinity of OU No. 5, as shown in **Figure 7**). The West

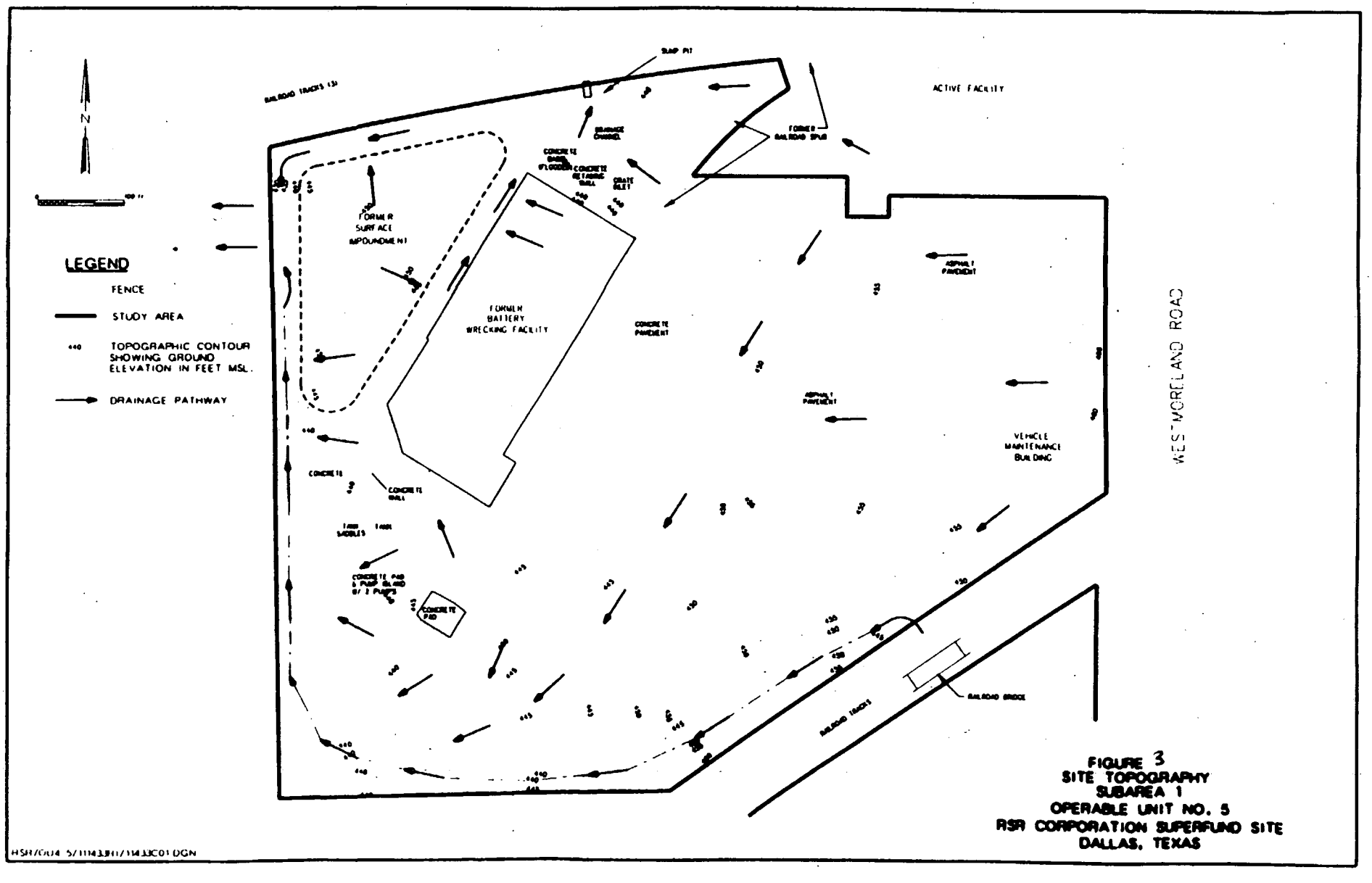


FIGURE 3
SITE TOPOGRAPHY
SUBAREA 1
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

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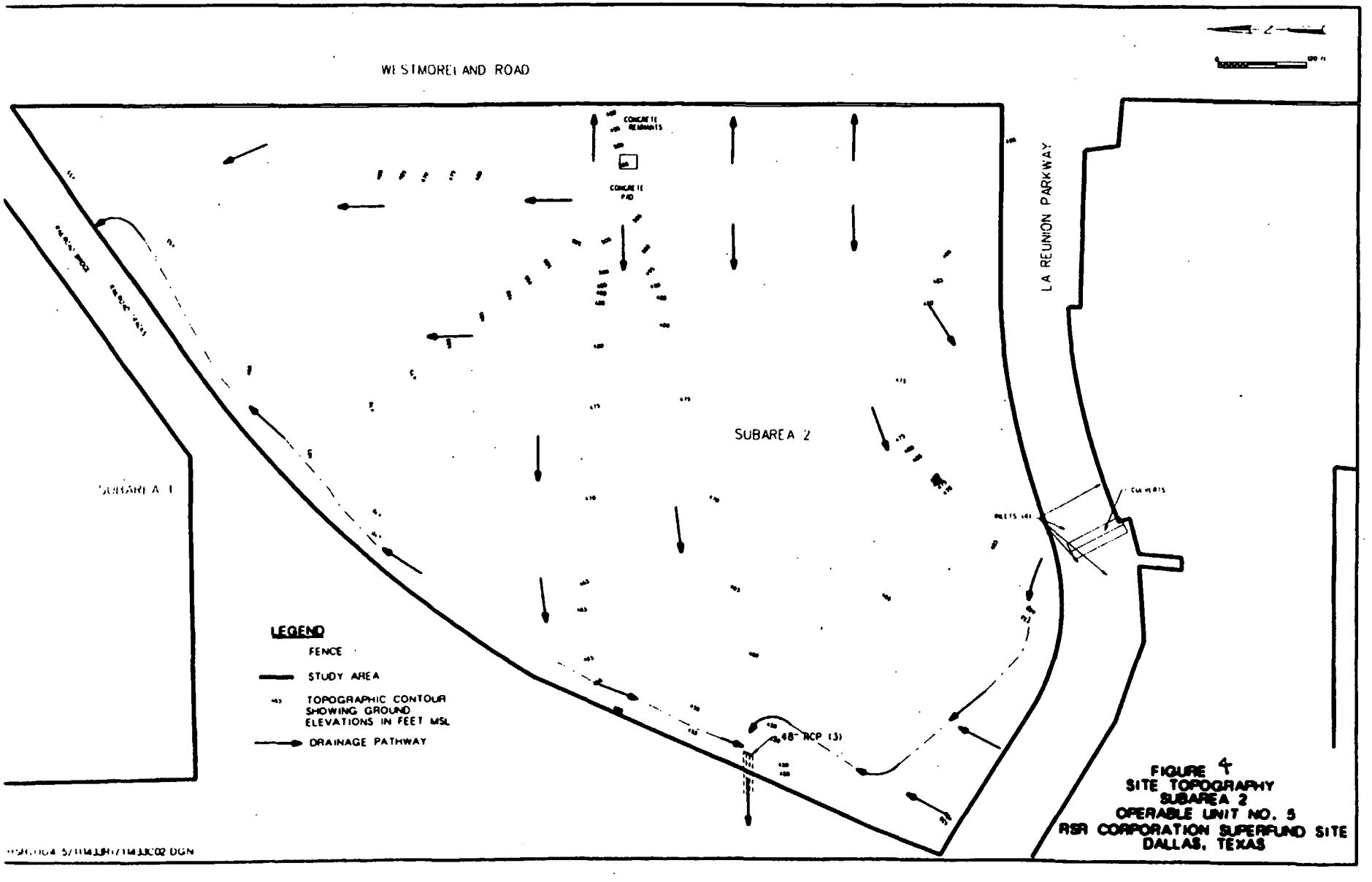


FIGURE 4
SITE TOPOGRAPHY
SUBAREA 2
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

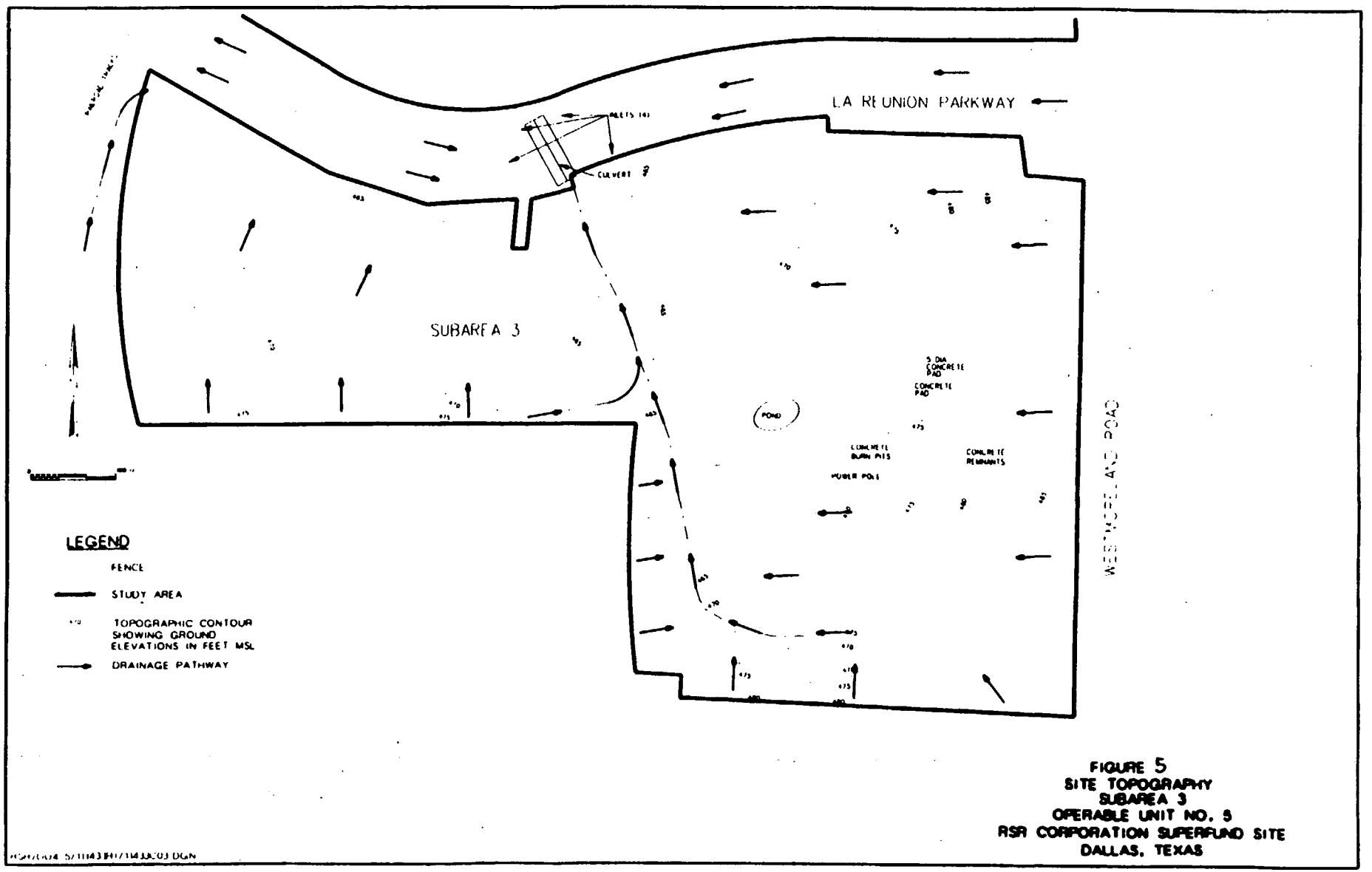


FIGURE 5
SITE TOPOGRAPHY
SUBAREA 3
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

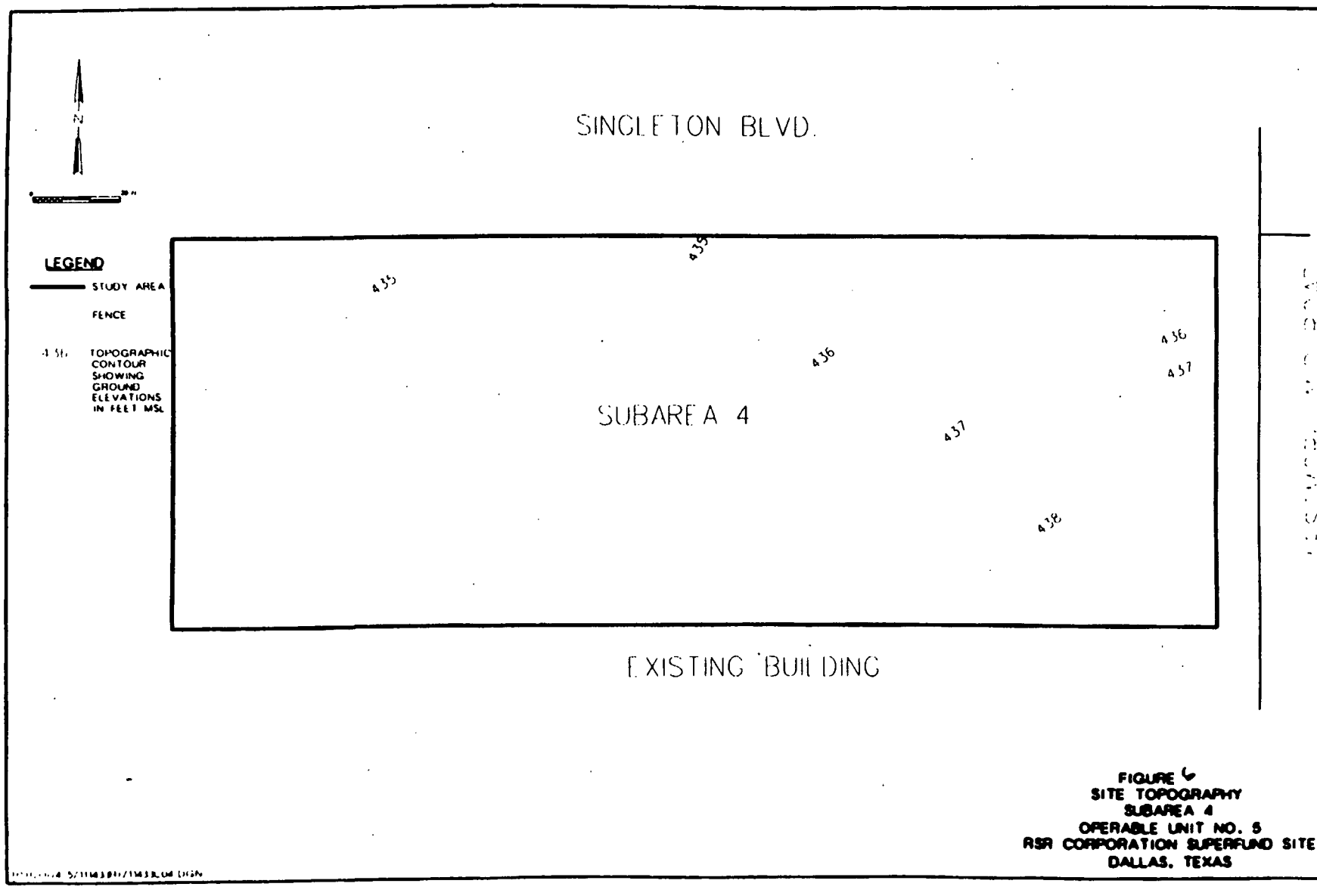


FIGURE 6
SITE TOPOGRAPHY
SUBAREA 4
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

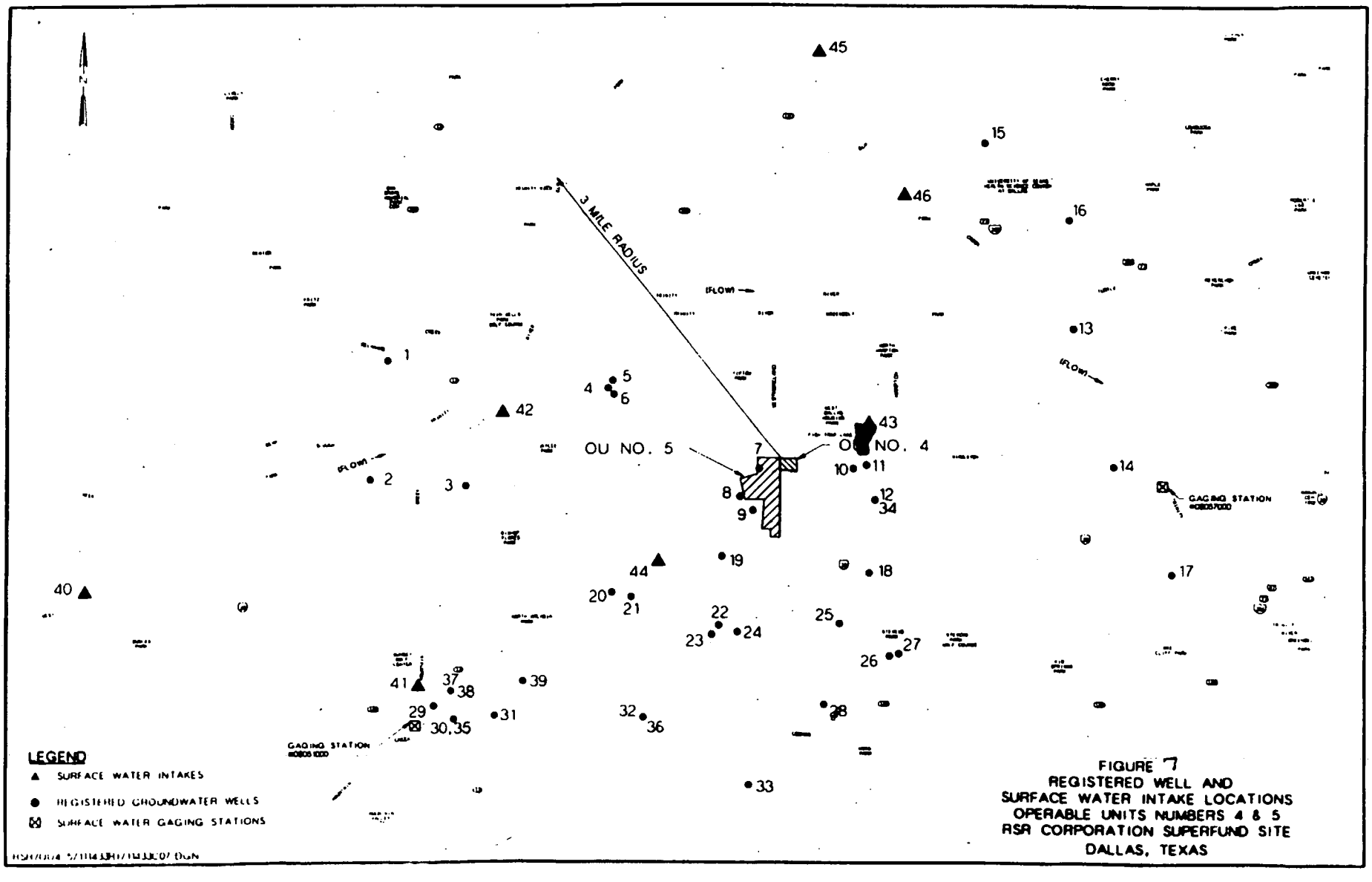


FIGURE 7
REGISTERED WELL AND
SURFACE WATER INTAKE LOCATIONS
OPERABLE UNITS NUMBERS 4 & 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

Fork flows east-northeast from Grand Prairie (500 to 1,000 feet from the western edge of OU No. 1) before joining the Elm Fork to form the main channel. From the confluence of the West and Elm Forks, the Trinity River flows east and then south (approximately 4500 feet north of OU No. 5 at its closest point). A surface drainage channel (approximately 3000 feet northwest of OU No. 5) empties into the Old West Fork channel, which joins the Trinity River at a pumping station between Westmoreland and Hampton Roads.

The Texas Water Code specifies all segments of the Trinity River Basin for recreational use. None of the river segments are specified for domestic water supply.

I. Climate

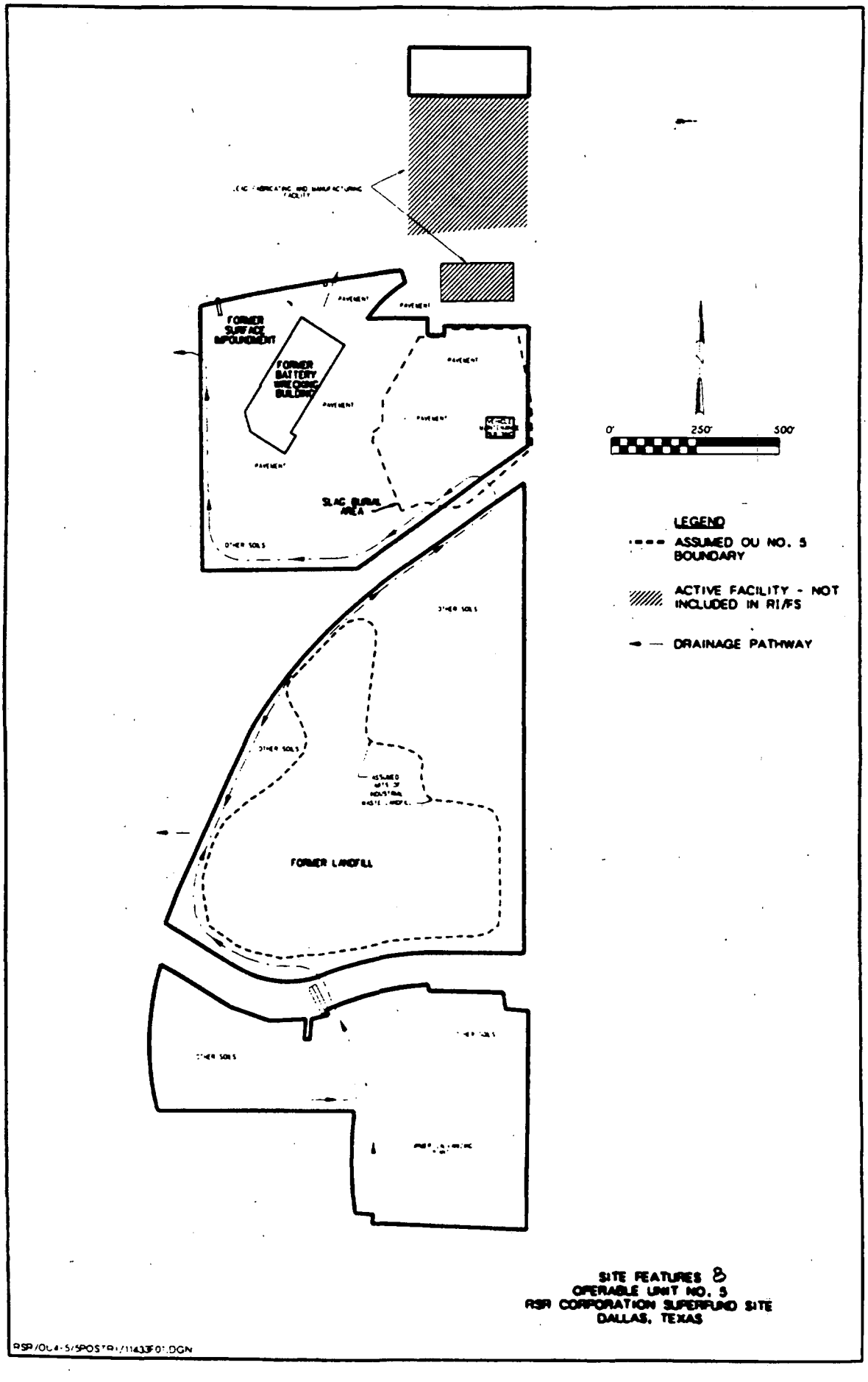
The climate in Dallas County is temperate to hot. During the winter, cold surges of air cause the moderate temperature to drop, thereby producing cool winters with occasional snow. Rainfall throughout the County is relatively consistent throughout the year, with a slight increase usually in the spring. Wind direction is primarily from the south-southeast. In the DFW area, the average annual windspeed for 1992 was 9.9 miles per hour (mph).

J. Land Use and Zoning

The battery wrecking facilities and other industrial property are all located on land designated as OU No. 5. The four Subareas designated in OU No. 5 are all located in a commercial/industrial zoned area by the City of Dallas. Areas surrounding OU No. 5 comprise a mixture of residential, commercial, and industrial facilities. Based on the 1994 City of Dallas zoning map Subareas 1 and 4 of OU No. 5 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. Subareas 2 and 3 are currently zoned as SUP 98 (IR). This property has limited uses under the Industrial Research (IR) zoning code as stipulated in specific use permit (SUP) number 98. IR zoned property is generally designated for industrial research that includes industrial, wholesale distribution and storage and supporting office and retail. The surrounding land, which comprises OU No. 1 of the RSR site, is zoned primarily for single-family residential, multi-family residential, light and heavy industrial uses and, to a lesser extent, commercial and retail. The reasonably anticipated future land use of OU No. 5 is commercial/industrial based on the past and current zoning map for this area.

K. On-Site Buildings and Features

OU No. 5 has two buildings on-site as shown on **Figure 8**. These include the Former Battery Wrecking Facility building and the Vehicle Maintenance Building. The following sections briefly describe the construction and present physical condition of each building based on a



SITE FEATURES 8
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

RSR/OU4-5/SPOSTR1/11433F01.DGN

visual review of the structures by a structural engineer in March and April 1994 during the RI field activities. The structural survey Technical Memorandum, dated January 1995, is contained in the Administrative Record for OU No. 5. Other on-site features, such as the former surface impoundment, the slag burial area on Subarea 1, and the landfill area in Subarea 2, are also discussed.

1. Former Battery Wrecking Facility Building

The former battery wrecking facility building is a pre-engineered metal building clad with uninsulated siding and roofing. The roofing and siding are rusted, dented, or otherwise damaged in several locations. The facility originally consisted of a 100 foot by 220 foot metal building. Based on historical aerial photographs, this building was enlarged in the 1980's to the present size of 150 feet by 360 feet. Several deficiencies were observed in the former battery wrecking facility during the structural inspection, and they include: poorly attached roof panels and light fixtures, deteriorated concrete, weakened and deteriorated column bases and roof beams. Some of the building columns have suffered significant damage and others have rusted completely through at the base and are supported by the roof structure. The appearance of the former battery wrecking facility indicated that the structure is likely to experience structural failures in the near future unless major rehabilitation is performed.

2. Vehicle Maintenance Building

The vehicle maintenance building is a pre-engineered metal building formerly used as a vehicle garage. Historical aerial photographs indicate it was built between late 1979 and early 1981. The exterior of this building indicates no rust, and only minor dents are apparent. The interior appears to be in fair condition with the exception of the restroom/office area. The structure is approximately 13 years old, and may have several years of useful life remaining. Some interior refurbishing would be required if the building is to remain in service.

3. Underground Storage Tanks

Two underground storage tanks (USTs) were identified from TNRCC tank registration forms to be located on OU No. 5. These forms indicate that limited information is available about the two USTs. Based on the information from these forms the two USTs were constructed of steel of unknown capacity and are approximately 19 years in age. One tank is believed to contain gasoline and the other diesel fuel. The approximate location of the USTs is just south of the former battery wrecking building.

4. Former Surface Impoundment

The former surface impoundment is located in Subarea 1 of OU No. 5 in the area west of the former battery wrecking facility building (See **Figure 8**). According to the information obtained by EPA the surface impoundment was used to contain, neutralize and settle wastewater and waste by-products from the lead-acid battery crushing and stripping

operations. Reportedly the surface impoundment was constructed of natural clay soils and incorporated an earthen dike to provide a 2 foot freeboard. During operation a concrete lined spillway discharged into the drainage ditch that parallels the railroad tracks located along the north boundary of Subarea 1. Historical aerial photos indicate that the area was used for liquid storage beginning in the 1940s, and the latest configuration is believed have been constructed in the late 1960s. Earlier characterizations of the sludge in the surface impoundment found high concentrations of lead, up to 63.9 percent, and an average sludge thickness or depth of 80 inches. The volume of sludge in the pond (prior to RCRA closure activities) was estimated at 240,000 cubic feet.

As part of RCRA closure activities conducted by the current owner (Murmur) in 1988, the surface impoundment was backfilled with soil that was excavated from the southeast section of Subarea 1 and stabilized with cement kiln dust. The RCRA closure plan called for a 4 foot thick clay cap over the entire surface impoundment area, where the stabilized soil was placed, including the existing dikes. The top was to be graded for a 5 percent slope and side sloped of 4 horizontal to 1 vertical. During the 1994 EPA field investigation, erosion gullies were observed on the side slopes in several places, but the cap appeared to be intact and stable. Boring logs during the field investigation indicated the cap varies from 4 to 6 feet in thickness, with a vegetative cover.

5. Former Landfill

Based on a review of historical aerial photographs, it appears that landfilling operations occurred in an area located in Subarea 2. However no records, permits or other documents regarding the landfill activities have been located. Based on the data gathered during the 1994 field investigation, the extent of the landfill was estimated as shown in **Figure 8**. The thickness of the landfill material varied from 2 feet to over 14 feet. Test pits during the RI typically encountered two to three feet of a clay soil at or near the surface. Below the clay layer material consisting of ground or shredded automobile parts (glass, rubber hoses, plastic, and assorted metal parts) were found. Additional debris consisting of battery casings, slag, white powder and metal fragments were also found.

6. Slag Burial Area

During a review of previous investigation information generated as part of the 1988 RCRA closure areas, slag burial areas were identified in Subarea 1. Some of the slag burial area is located beneath the existing paved parking area in Subarea 1. **Figure 9** illustrated the estimated extent of the slag fill material.

L. Nature and Extent of Contamination

As part of the RI, all potential sources and areas of contamination were investigated. These areas included all of the surfaces and floors of the buildings and structures, residual waste piles, the surface and

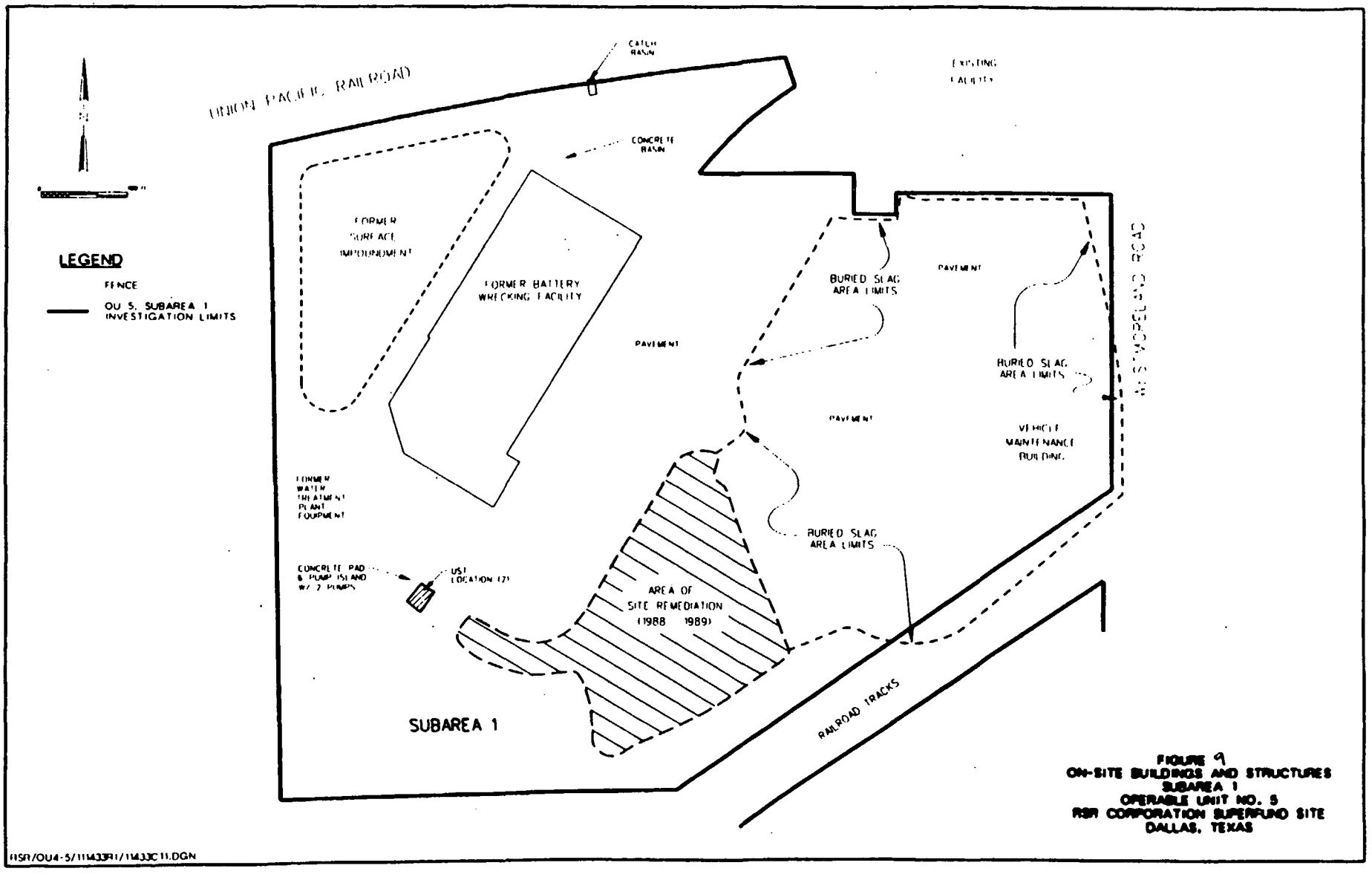


FIGURE 9
ON-SITE BUILDINGS AND STRUCTURES
SUBAREA 1
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

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subsurface soils, the stormwater runoff and sediments and the ground water. Samples were collected and analyzed from each of these areas to evaluate the nature and extent of contamination. Migration to the subsurface soils and the ground water was also investigated through exploratory borings, test pits and the installation of ground water monitoring wells.

A summary of the findings of the RI and the non-time critical removal action is provided in the discussions below, however, as stated previously, all of this information can be found in detail in the Remedial Investigation Report and supporting Technical Memorandums, which are all part of the Administrative Record for OU No. 5. As stated previously, to facilitate discussion of the data, OU No. 5 was divided into four Subareas (Defined in Section V.G.).

1. Buildings and Structures Results

An asbestos survey was completed to assess the potential for the presence of asbestos containing materials in buildings and structures. A total of nine (9) samples were collected and analyzed for the presence of asbestos. None of the nine (9) samples from the OU No. 5 buildings and structures contained asbestos.

Supplemental dust sampling was also conducted in both OU No. 5 buildings in May 1995. Five (5) dust samples from inside the former battery wrecking building and two (2) from inside the vehicle maintenance building were collected using a high-volume dust sampler and analyzed for the Total Analyte List (TAL) metals. Also during the field investigation in the spring of 1994, an X-ray Fluorescence (XRF) instrument was used to estimate concentrations of metals on readings on the building surfaces (e.g. walls and floors).

The dust samples collected as part of the supplemental sampling indicated, lead ranging from 51,200 parts per million (ppm) to 68,400 ppm, arsenic concentrations ranging from 6.3 ppm to 113 ppm, and cadmium ranging from 2.4 ppm to 36 ppm. Antimony concentrations were detected at a range of 7 ppm to 91 ppm. **Figure 10** shows the sampling locations and results for lead, arsenic and cadmium.

The XRF data from the former battery wrecking facility's and concrete floors also indicated contamination from lead, cadmium and arsenic. The maximum concentrations detected in the buildings using XRF were 171,677 ppm, 3,481 ppm and 392 ppm lead, arsenic and cadmium, respectively.

As stated previously in Section V.K.1 the former battery wrecking building is in advanced stages of disrepair and deterioration. This combined with the elevated concentrations of lead, cadmium and arsenic present on and within the former battery wrecking facility surfaces give rise to potential releases or migration of contamination. Precipitation and/or high winds could cause re-suspension of the depositions on the buildings, structures and equipment surfaces as fugitive dust. Human activities have the potential to cause the re-suspension of these depositions into the air or surface water runoff. Subsequent transfer of the contamination by air or stormwater runoff is also likely.

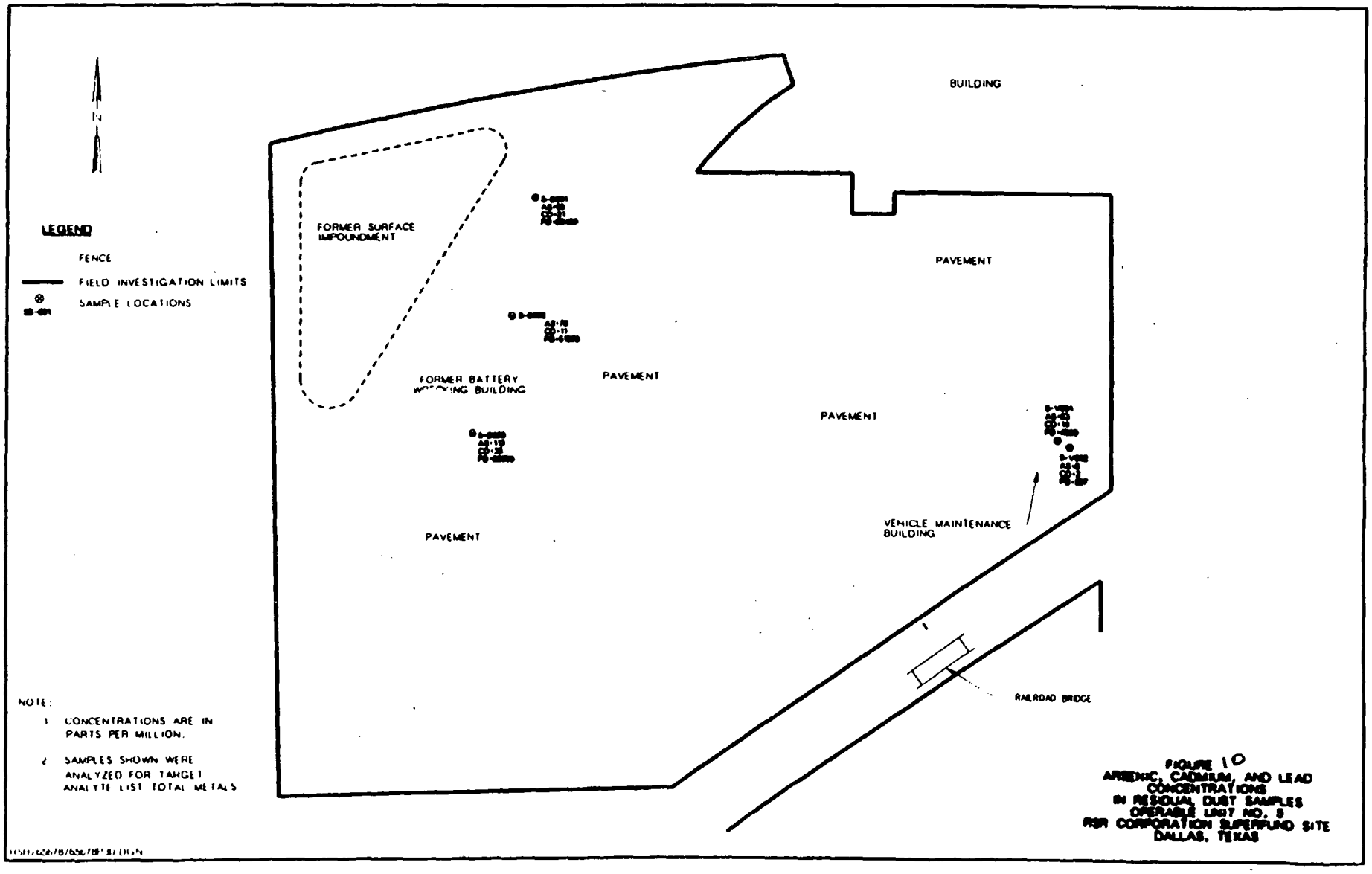


FIGURE 10
ARSENIC, CADMIUM, AND LEAD CONCENTRATIONS IN RESIDUAL DUST SAMPLES OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

2. Surface water and Sediment Results

Surface water samples were also collected from OU No. 5 to determine the nature and extent of surface water contamination. **Figure 11** illustrates the surface drainage flow direction and the elevated concentrations of lead, arsenic and cadmium detected in the eleven (11) samples collected from Subarea 1. The range of concentrations for lead in the surface water samples were non-detect to 173 parts per billion (ppb). The highest lead level was detected along the west boundary, south of the former surface impoundment. Arsenic concentrations ranged from not detected to 5.1 ppb, with highest level also located along the west boundary, south of the former surface impoundment. Cadmium was not detected in any of the eleven (11) surface water sampling locations. The dissolved metal concentrations were analyzed in two of the surface water samples and were significantly lower than those detected in the total metals analysis. The low dissolved metals results show that metals concentrations are probably associated with particulate (total suspended solids).

A total of twenty-five (25) sediment samples were collected from twenty-two locations within OU No. 5. **Figure 11** illustrates the locations and concentrations of lead, arsenic and cadmium detected in the sediment samples. Lead levels varied from 8.0 ppm to 5,380 ppm, with the highest level detected on-site west of the former landfill area. The range of arsenic concentrations detected was from 1.4 ppm to 47.2 ppm. Levels of arsenic increased along the drainage channel crossing Subarea 1, reaching 17.4 ppm where the drainage channel exits the west boundary of OU No. 5. Cadmium was detected at eight (8) samples at concentrations ranging from 0.6 ppm to 45.9 ppm. The maximum concentration of cadmium was detected in a drainage west of the former landfill.

Some semi-volatile organic compounds were detected in the sediment samples collected at OU No. 5. The compounds detected were primarily polynuclear aromatic hydrocarbons (PAHs) and pthalates. Most of the elevated concentrations of PAHs were detected in the area of the former landfill. In addition a variety of pesticides were detected in four sediment samples all collected in Subarea 2, the area of the former landfill. All of the concentrations of pesticides were less than 0.017 ppm, the concentration detected of dieldrin. Since the pesticides were detected in the drainages as sediment, it is likely that periodic surface water flow within the drainages transported sediments form off-site areas or as a result of potential historical pesticide use at the OU No. 5 site. Four different Polychlorinated Biphenyl Compounds (PCBs) were detected in eight (8) sediment sampling locations at OU No. 5. All of the detected concentrations of PCBs were less than 0.5 ppm, with four (4) detections in the area of the former landfill, three (3) detections in the area of the former surface impoundment, and one (1) detection in drainage in the northern portion of Subarea 3.

Sediments likely represent a continuous source for potential off-site migration via re-entrainment in stormwater runoff. Re-suspension of exposed, surface sediment depositions as fugitive dust could also occur due to high winds or human activities.

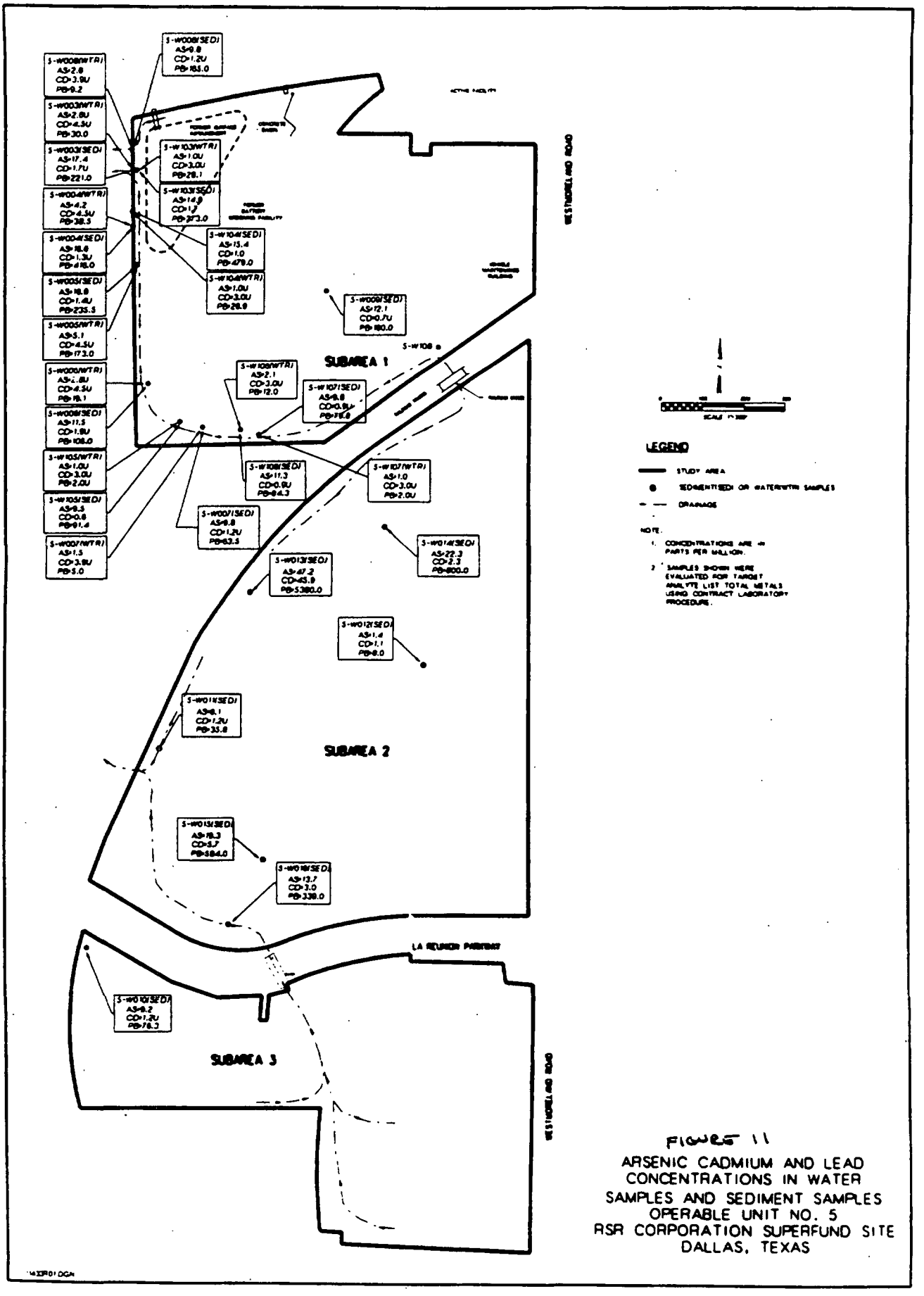


FIGURE 11

ARSENIC CADMIUM AND LEAD CONCENTRATIONS IN WATER SAMPLES AND SEDIMENT SAMPLES
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

3. Surface Soils (0-2 feet) Results

Both surface and subsurface soils were evaluated at various locations across the OU No. 5 site. For purposes of the RI and this document, surface soil includes the horizon from zero to two (2) feet below ground surface (bgs).

In Subarea 1, southeast of the former battery wrecking facility building, XRF measurements were made on a 25 foot by 25 foot grid along the slag burial area. In this area lead was detected at 50 of the 61 XRF locations, with the range of concentrations from 53 ppm to 19,946 ppm. Arsenic was detected using XRF at three (3) of the 61 XRF locations and concentrations ranged from 31 ppm to 46 ppm. Cadmium was detected in five (5) of the 61 locations, with concentrations ranging from 74 ppm to 333 ppm.

Soil samples were also collected in Subarea 1 for TAL metals analysis. The maximum concentrations detected in TAL metals analysis was 65,900 ppm for lead, 2,160 ppm for arsenic and 191 ppm for cadmium. See **Figure 12** for locations and concentrations of lead, arsenic and cadmium surface soil samples.

Samples from battery chip and slag fragments were collected separately from the ground surface at four locations in Subarea 1. Each sample was analyzed for TAL metals and Toxicity Characteristic Leaching Procedure (TCLP) metals. The locations and TAL concentrations of these samples are also shown in **Figure 12**. For the exposed battery chips, the maximum lead, arsenic and cadmium concentrations were 7,280 ppm, 114 ppm, and 2.3 ppm, respectively. The TCLP analysis showed that lead concentrations for two (2) samples exceeded the TCLP criteria of 5,000 ppb of lead (e.g. 8,380 ppb and 89,600 ppb). For the exposed slag samples, the maximum lead concentration detected was 51,600 ppm, the maximum arsenic concentration detected was 2,450 ppm and the maximum cadmium concentration detected was 26.2 ppm. The TCLP analysis of the slag samples also showed that the criteria of 5,000 ppb of lead was exceeded (e.g. 53,600 ppb and 211,000 ppb).

In Subarea 2, the location of the former landfill, lead surface soil concentrations detected ranged from 24.1 ppm to 65,900 ppm. Arsenic concentrations in Subarea 2 ranged from 24.1 ppm to 303 ppm. The range of cadmium concentrations in Subarea 2 ranged from non-detect to 75.1 ppm. In Subarea 3, lead, arsenic and cadmium surface soil concentrations were lower, and the maximum levels detected were 433 ppm, 13.5 ppm and 2.9 ppm, respectively. See **Figure 12**.

In Subarea 3, three (3) soil samples were collected from the 0 - 2 foot horizon. As shown in **Figure 12** the maximum concentrations of lead, arsenic and cadmium detected were 433 ppm, 13.5 ppm and 2.9 ppm, respectively.

These results indicate higher levels of contaminants associated with affected surface soils in Subarea 1, the area of the former battery wrecking facility, and in Subarea 2, the former landfill. The surface soils in these areas likely represent a continuous source for potential

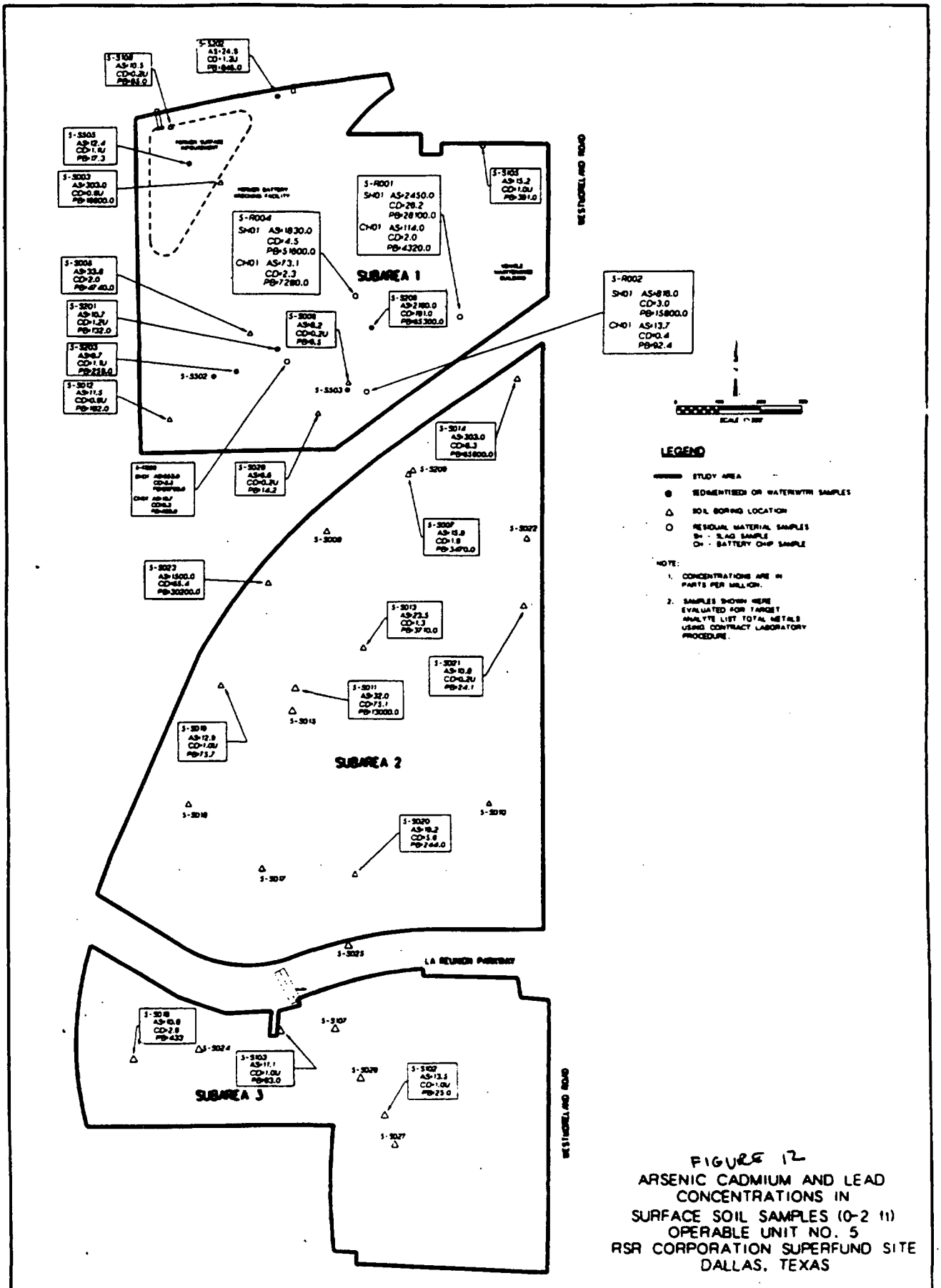


FIGURE 12
ARSENIC CADMIUM AND LEAD CONCENTRATIONS IN SURFACE SOIL SAMPLES (0-2 ft)
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

off-site migration via re-entrainment in stormwater runoff. Re-suspension of soil as fugitive dust could also occur due to high winds or inadvertent human activities.

4. Subsurface Soils (greater than 2 feet bgs) Results

Subsurface soil samples at various depths across OU No. 5 were collected and analyzed to determine the vertical extent of soils contamination from past operations. The locations of soil and geoprobe borings from which subsurface samples were collected are presented in **Figure 13**. Subsurface soils samples were also collected from test pit excavations. Results of the soil borings sampling and test pit investigations are discussed below.

Nine soil borings and nine geoprobe locations were placed in Subarea 1. Subsurface samples were collected from these locations and the concentrations of lead, cadmium and arsenic detected are illustrated in **Figure 13**. The highest concentrations of lead detected were in a boring in the former surface impoundment at 5 - 6 foot depth (24,100 ppm) and in a boring in the slag burial area at the 2 - 3 foot depth (24,000 ppm). Maximum arsenic and cadmium concentrations detected in Subarea 1 were in the area of the former battery wrecking facility at the 2 - 4 foot depth at 312 ppm and 11.4 ppm, respectively. Four test pits were also excavated in Subarea 1, and two test pits were located in the slag burial area. The concentrations of lead, arsenic and cadmium were detected from a test pit in the slag burial area were as high as 96,500 ppm, 2,940 ppm and 34.1 ppm respectively at the 10 foot depth. One test pit was excavated through the asphalt parking lot between the battery wrecking facility building and the vehicle maintenance building (slag burial area) and a 10 foot layer of slag, batteries, battery chips and wood pieces was encountered.

In Subarea 2, the area of the former landfill, 16 borings were placed as shown in **Figure 13**. Subsurface soil samples were collected at various depths at several locations. The highest lead, arsenic and cadmium subsurface concentrations detected in Subarea 2 soil borings were 5,130 ppm, 99.9 ppm, and 94.8 ppm, respectively, in the 2 - 4 foot horizon. A total of 31 test pits were excavated in order to estimate the extent of the former landfill area in Subarea 2. A typical test pit excavation within the landfill area of Subarea 2 consisted of the following layers from the surface down:

- One to two feet of surface soil sometimes mixed with a light, fluffy, fibrous material and pieces of corroded metal;
- Two to three foot clay layer;
- Three to six feet of shredded automobile parts, battery chips, and industrial refuse;
- Two to five feet of natural clay underlain by shale.

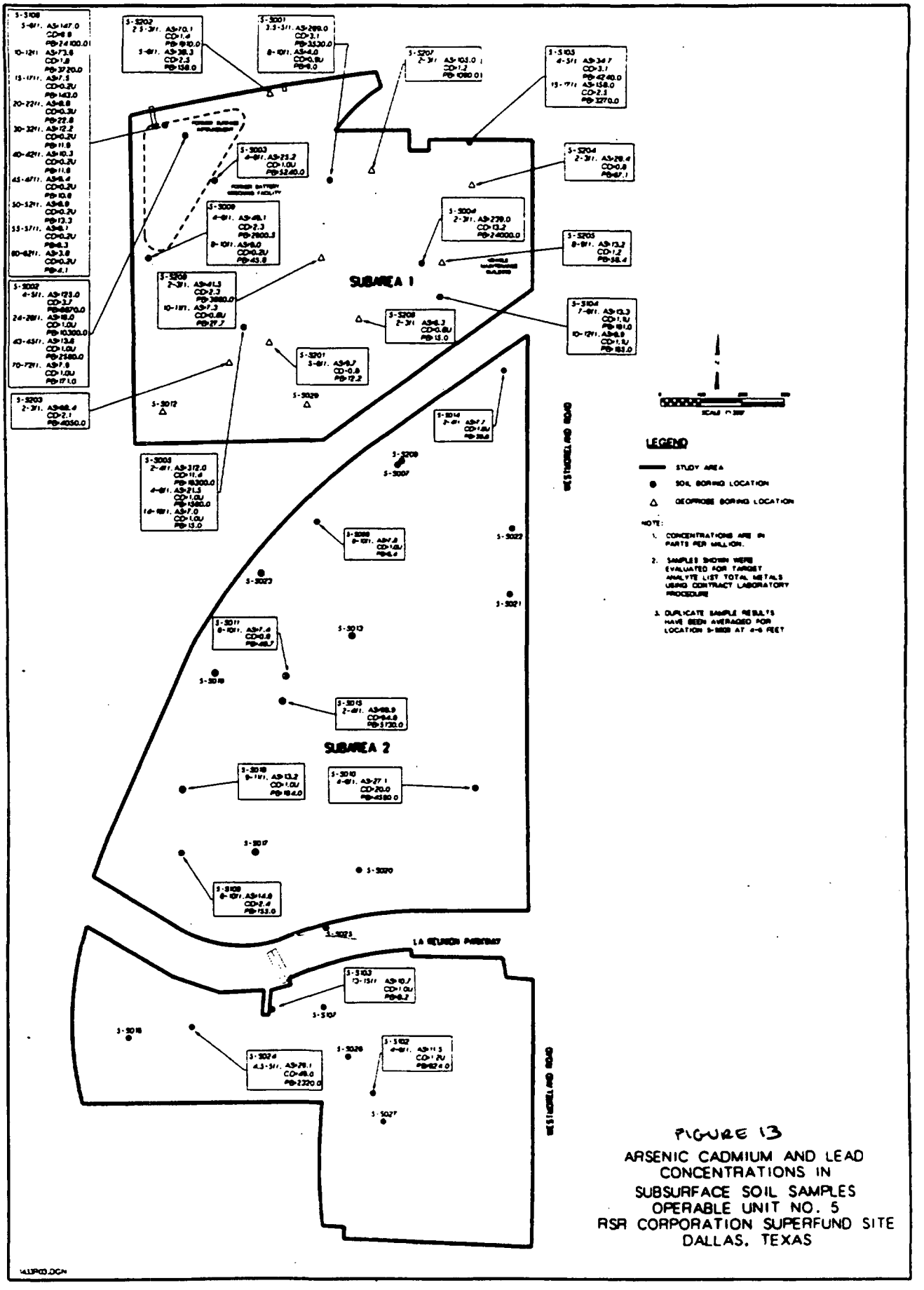


FIGURE 13

ARSENIC CADMIUM AND LEAD CONCENTRATIONS IN SUBSURFACE SOIL SAMPLES OPERABLE UNIT NO. 5 RSR CORPORATION SUPERFUND SITE DALLAS, TEXAS

Samples of subsurface automotive and industrial debris contained elevated Total Petroleum Hydrocarbons (TPH) and concentrations of PCBs ranging from 8 ppm to 11 ppm. Volatile analysis of one test pit sample also indicated low levels of benzene, ethyl benzene, and xylene.

Seven borings were also placed in Subarea 3, the area south of the former landfill. Samples were collected at 3 of the boring locations for TAL metals analysis. Only one boring sample at the 4.5 - 5 feet depth indicated elevated levels of lead, arsenic and cadmium, at concentrations of 2,320 ppm, 29.1 ppm and 49.0 ppm, respectively. See **Figure 13.**

Two test pits were excavated in Subarea 4, the vacant lot north of Subarea 1, and both pits contained buried industrial debris at a depth of 4 to 7 feet.

Subsurface soils potentially represent a source of contamination migration via entrainment or dissolution by infiltrated precipitation and subsequent vertical percolation to the shallow alluvial deposits.

5. Ground water Investigation Results

The two most important water-bearing units in the Dallas area are the Woodbine Group, classified by the State as a minor aquifer, and the deeper Trinity Group, classified by the State as a major aquifer. In the vicinity of OU Nos. 4 and 5, the depth to the Woodbine aquifer from the ground surface is approximately 200 to 250 feet and the depth to the Trinity aquifer is approximately 1,300 to 1,500 feet. Only the lower part (approximately 730 to 830 feet) of the Woodbine aquifer is considered to be suitable for development, however this aquifer is no longer used as a primary source of drinking water for Dallas County, and is not used by the City of Dallas due to (1) an increasing dependence on surface water for public supplies, (2) historically large withdrawals of water from the Woodbine, and (3) lower permeabilities of the Woodbine.

The shallow ground water in the vicinity of OU Nos. 4 and 5 is not classified by TNRCC as a major or minor water supply source due to its overall low yield and slightly saline quality. The shallow ground water system under OU Nos. 4 and 5 may migrate to surface drainage channels in the area and thereafter to the Trinity River. The Trinity River is not used as a drinking 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 Site. The Texas Department of Health and the Dallas City Code requirements limit the installation of private wells in the RSR Corporation Superfund Site area (general vicinity of Westmoreland Road and Singleton Boulevard) in any ground water aquifer.

The RI included an investigation of the current conditions of the ground water conditions beneath OU No. 5 and OU No. 4, as well as the nature and extent of any ground water contamination related to past operation of the secondary lead smelter and associated battery wrecking operations.

The soil borings drilled on OU Nos. 4 and 5 generally encountered fill material and alluvial material consisting of clays, silts, or sands to a depth of 10 to 25 feet bgs, at which depth the weathered Eagle Ford shale was encountered. During the RI, shallow ground water monitoring wells were installed at seven (7) locations across OU No. 4. These monitoring wells were completed to depths of 12.3 to 25.7 feet bgs. There are eight (8) existing ground water monitoring wells located on OU No. 5. All eight (8) wells are shallow, 17.8 to 29.9 feet bgs, and one well has been dry since it was installed in 1981. Also during the RI, seven (7) additional wells were installed on OU No. 5. The depths of the wells on OU No. 5 ranged from 7.5 feet to 65 feet bgs.

Ground water elevations and samples were collected from these monitoring wells at two separate events in May 1994 and in June 1994. A supplemental ground water investigation was also conducted to enhance the characterization of the shallow alluvial aquifer in June 1995. This investigation involved collecting another round of ground water samples from each monitoring well and performing slug tests on each well to estimate in-situ hydraulic conductivity of the water bearing strata.

The ground water elevations during the May 1994 and the June/July 1995 sampling events indicated a northwest-trending gradient. **Figure 14** illustrates the ground water elevations from the June/July 1995 monitoring event. In the ground water monitoring well sampling events Lead was detected in a range of 1.2 ppb to 2,250 ppb, while concentrations of arsenic ranged from Non-Detect (ND) to 77 ppb. While the results from the second round of sampling in June/July 1995 indicated significantly lower lead concentrations, ranging from ND to 646 ppb. Cadmium was not detected in either round of sampling. The lower second round concentrations coincide with a lower level of Total Suspended Solids (TSS) compared to the previous round, suggesting that the majority of the metals contamination is associated with particulate material. **Figure 15** illustrates the results of the lead, arsenic and cadmium detected in the OU Nos. 4 and 5 monitoring wells from the June/July 1995 sampling event.

During the slug tests the monitoring wells demonstrated relatively low yield, with the majority of the wells bailed dry during purging activities. Based on the water level changes documented during the slug tests, the expected yield for the shallow alluvial aquifer appears to be significantly less that 1 gallon per minute at most locations. This yield could not be maintained at any one location for any period of time, since most wells were purged dry in a relatively short time period.

The shallow ground water in the vicinity of OU Nos. 4 and 5 is not considered to be a potential water supply due to its overall low yield and slightly saline quality and the availability of the City of Dallas water supply, as well as potable supply permitting requirements. Based on the character of the shallow ground water, the yield estimates of less than 1 gallon per minute, the domestic use of this system is unlikely. In addition, the expected migration pathway of the shallow ground water is the Trinity River or its tributaries and neither are used as a drinking water supply within 3 miles. Since the shallow ground water beneath OU Nos. 4 and 5 is not considered to be a potential drinking water supply (i.e. a Class III aquifer), further evaluation in

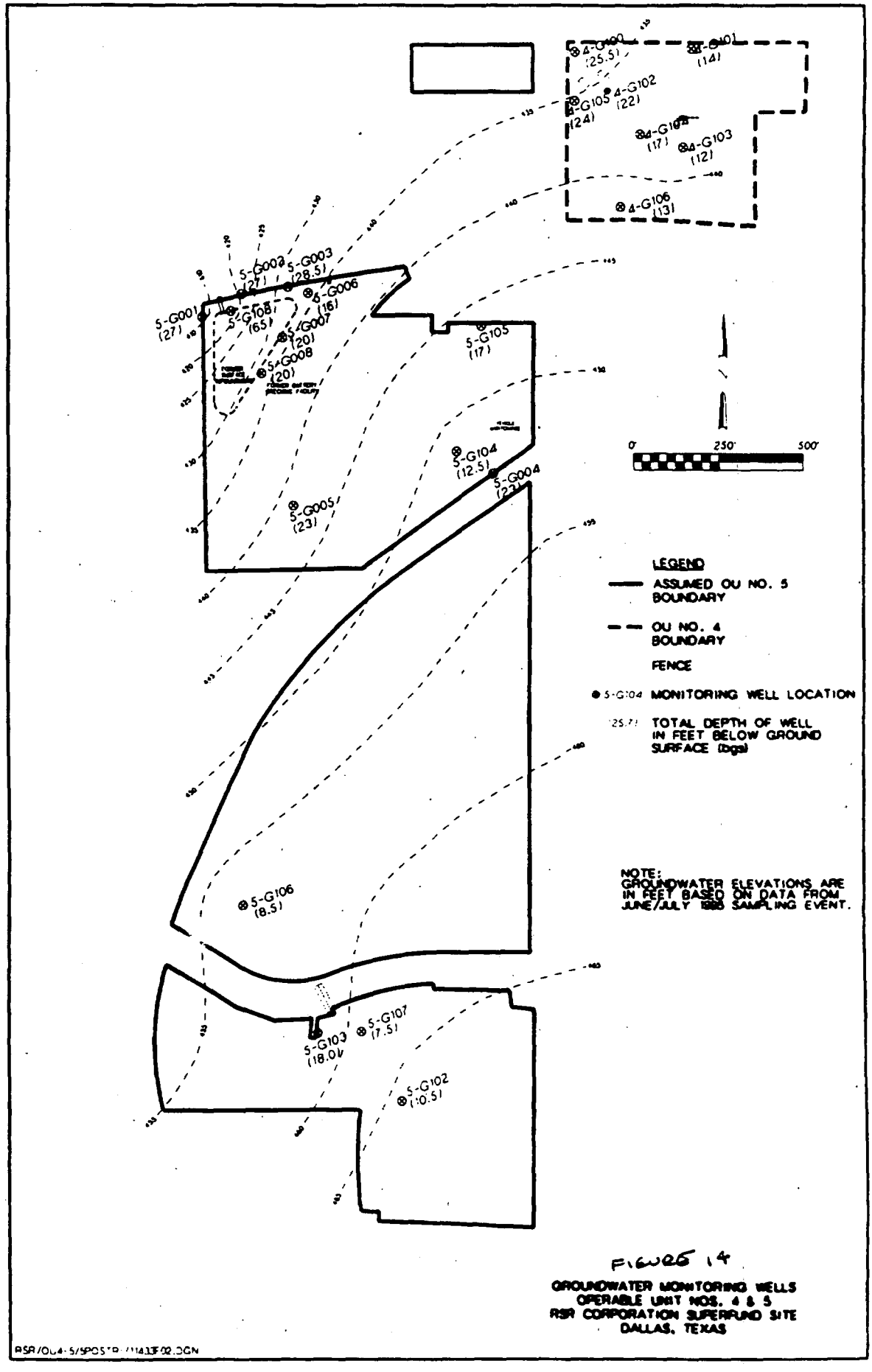


FIGURE 14

GROUNDWATER MONITORING WELLS
OPERABLE UNIT NOS. 4 & 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

RSR/OU4-5/SPOST.P /11413F02.DGN

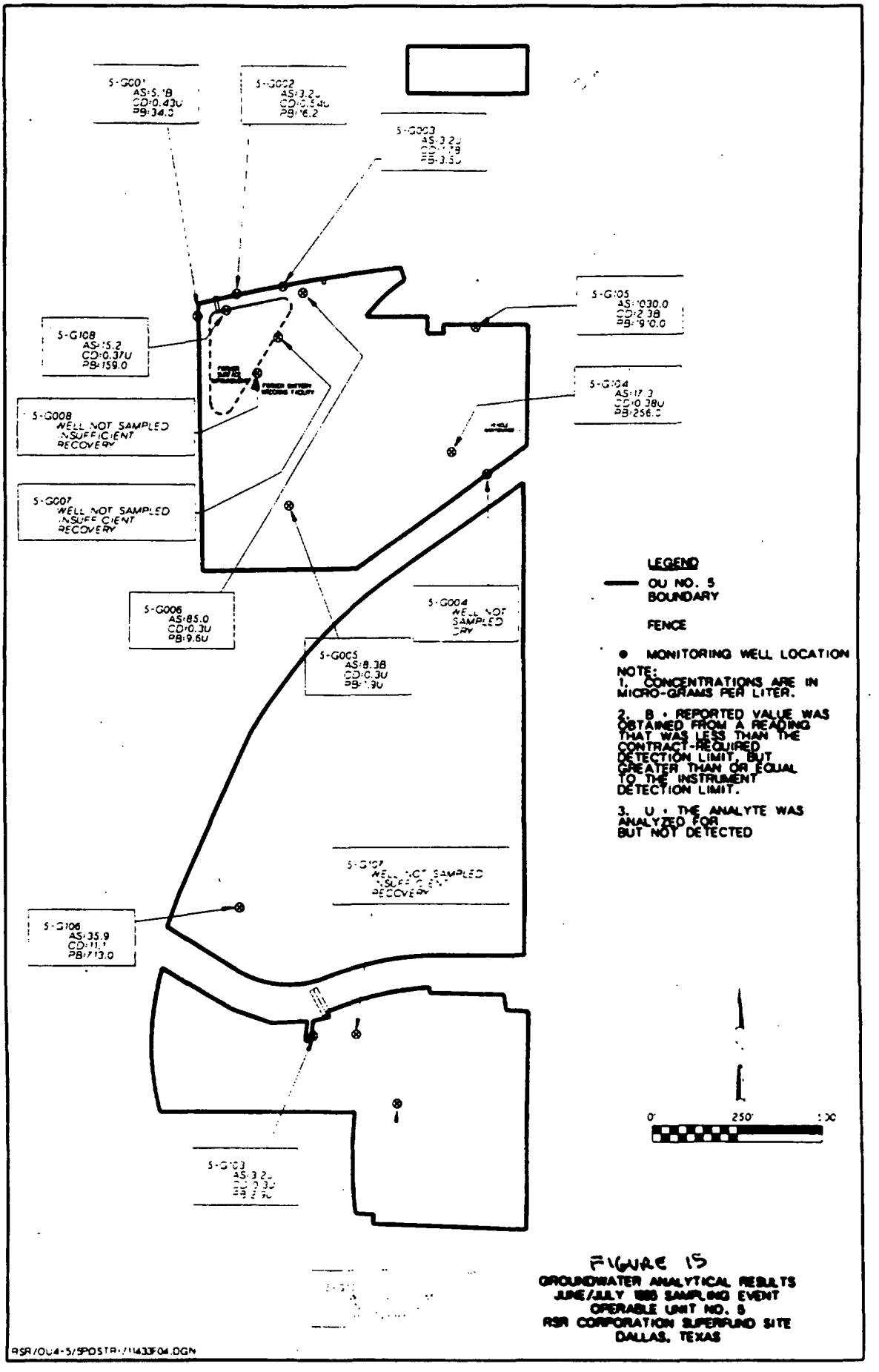


FIGURE 15

GROUNDWATER ANALYTICAL RESULTS
JUNE/JULY 1988 SAMPLING EVENT
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

RSR/OU4-5/SPOSTR1/11433F04.DGN

the Risk Assessment and Feasibility Study was not conducted and no action is recommended for the ground water beneath OU Nos. 4 and 5.

6. Non-time critical removal action

EPA commenced a removal action at OU Nos. 4 and 5 on May 30, 1995 and completed all work by July 14, 1995. Waste materials present at 90 residual/debris piles and drum locations were addressed during the removal. This included more than 600 drums of waste material, and more than 60 containers of waste laboratory chemicals. This resulted in a total of over 740 cubic yards of consolidated waste being manifested to a off-site hazardous waste landfill for stabilization or encapsulation; 1700 gallons of hazardous liquids being manifested to an off-site incineration facility; 20 cubic yards of debris being sent to a class I nonhazardous landfill; more than 15,500 gallons of collected rainwater and drummed monitoring well water being permitted for discharge into the sanitary sewer system; 22 lab packs of chemicals being manifested to an incineration facility; one box of medical waste being sent to a medical incineration facility; and 11 gas cylinders and 8 lead/acid batteries being recycled. All of the materials were removed from OU Nos. 4 and 5 and disposed in accordance with the requirements specified in EPA's Action Memorandum, dated December 22, 1994.

As part of the removal action, testing of the surfaces once a residual waste/debris pile was removed was performed to document the concentrations of any contamination remaining on the concrete surfaces following the removal action. This testing was performed using a field portable Spectrace 9000 x-ray fluorescence (XRF) instrument. The maximum concentrations detected on the OU No. 5 surfaces following the removal using XRF for lead, arsenic and cadmium were 103,177 ppm, 3,328 ppm, and 397 ppm, respectively. These results indicate elevated levels of lead, arsenic and cadmium are still present on the concrete floors of the buildings and structures.

VI. SUMMARY OF SITE RISKS

A. Risk Assessment Description

An evaluation of the potential risks to human health and the environment from OU No. 5 contaminants was conducted as part of the baseline risk assessment. The risk assessment was conducted as part of the RI. The baseline risk assessment is an analysis of the potential adverse human health effects (both current and future) resulting from exposures of humans to hazardous substances present on OU No. 5. By definition, a baseline risk assessment evaluates risks that may exist under the no-action alternative (that is, in the absence of any remedial actions to control or mitigate releases). The baseline risk assessment provides the basis for taking the remedial action and indicates the exposure pathways that need to be addressed by the remedial action.

The Summary of Site Risks section of the ROD summarizes the results of the baseline risk assessment. Calculations and a more detailed analysis may be found in the baseline Human Health Risk Assessment and Ecological Risk Assessment reports for OU No. 5, contained in the Administrative

Record for OU No. 5.

B. Human Health Risks

The baseline risk assessment was divided into two parts: the human health evaluation and the ecological evaluation. The baseline risk assessment for the human health risks was based on Reasonable Maximum Exposure (RME). The human health evaluation considered all contaminated media, such as the buildings and structures dust, sediments, surface water and the soils. The baseline risk assessment assumed that the reasonably anticipated future land use of OU No. 5 would be commercial/industrial, based on the City of Dallas current zoning map. Therefore, the potential risk to the following populations most likely to be exposed at OU No. 5 were evaluated:

- Current and Future On-site trespassers (adults and children)
- Current On-site Facility and Railroad Workers
- Future On-site Commercial/Industrial Workers

The risk assessment conducted at OU No. 5 of the RSR site was done in accordance with EPA guidance, specifically the Risk Assessment Guidance for Superfund: Volume I: Human Health Evaluation Manual (Part A) (Interim Final, EPA/540/1-89/002, December 1989). The major components of the baseline risk assessment are: identification of contaminants of concern, exposure assessment, toxicity assessment, and risk characterization. For purposes of the risk assessment, the risks are evaluated by exposure areas which are related to future land use considerations. The exposure areas for the OU No. 5 HHRA are defined as follows and are shown graphically in **Figure 16**:

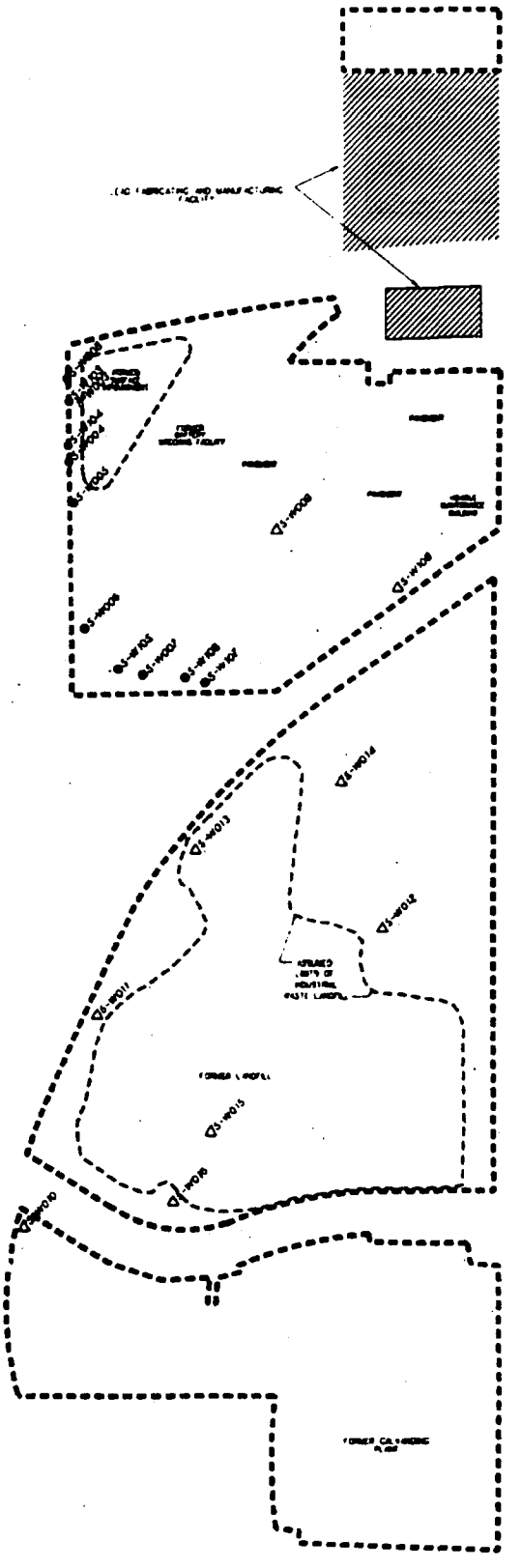
Exposure Area 1 - Former surface impoundment
Exposure Area 2 - Former landfill
Exposure Area 3 - Buildings
Exposure Area 4 - Other soils (0 - 2 feet and 0-10 feet)
Exposure Area 5 - Sediment
Exposure Area 6 - Surface Water

Highlights of the findings for the major components of the risk assessment for the site are summarized below.

C. Identification of Chemicals of Potential Concern

The samples collected as part of the field investigation and analyzed through the Contract Laboratory Program (CLP) were used in the risk assessment to estimate risks to human receptors at OU No. 5. This includes data for soil, sediment, dust, and surface water. Ground water results were not used quantitatively in the risk assessment (see rationale in Section V. (Site Characteristics) L.5.).

Not all data collected as part of the removal or field investigations were used in the HHRA. Data associated with the materials removed during the non-time critical removal action were not used for estimating risks.



LEGEND

- ASSUMED OU NO. 5 BOUNDARY
- ACTIVE FACILITY - NOT INCLUDED IN RI/FS
- SEDIMENT AND SURFACE WATER SAMPLING LOCATION
- SEDIMENT ONLY SAMPLING LOCATION
- ESTIMATED EXTENT OF INDUSTRIAL LANDFILL MATERIAL

EXPOSURE AREA 1 (FORMER SURFACE IMPOUNDMENT)

EXPOSURE AREA 2 (FORMER LANDFILL)

EXPOSURE AREA 3 (BUILDING PLUS STRUCTURES)

EXPOSURE AREA 4 (OTHER SOILS)

EXPOSURE AREAS 5, 6 (SURFACE WATER AND SEDIMENTS)

1" = 250'

FIGURE 16
CONCEPTUAL EXPOSURE AREAS FOR HHRA
OPERABLE UNIT NO. 5
RSR CORPORATION SUPERFUND SITE
DALLAS, TEXAS

RSR/OU4-5/OU5FS/FINAL/F G2-16.DGN

Concentrations of metals detected in surface soil samples were compared to regional background soil concentrations. Metals were evaluated to determine potential chemicals of concern (COPCs) for use in the HHRA. The COPCs identified for each of the exposure areas are listed in **Table 1.**

D. Exposure Assessment

The objective of the exposure assessment is to estimate the type, magnitude, frequency, duration and route of exposure of the contaminants of concern. The contaminant sources, as a result of past operations, are soil, sediment and residual materials in the buildings that contain the COPCs. The COPCs are released through physical/chemical processes that include, leaching, precipitation-induced runoff, wind entrainment or direct contact.

As discussed above, the shallow ground water in the area of OU Nos. 4 and 5 is not being used as a potable water supply, nor is it expected to be used as a water supply, therefore, ingestion of ground water is not considered a complete pathway for purposes of this risk assessment. Drinking water is provided by the City of Dallas through a series of surface water reservoirs. The nearest public supply well is about 3,750 feet east of the intersection of Westmoreland Road and Singleton Boulevard. This City of Dallas well is capped and no longer used as a public water supply. The well is approximately 2,540 feet deep.

The following exposure scenarios and pathways were quantitatively evaluated in the HHRA:

- **Current and Future On-site Trespassers (children and adults) and Railroad Workers** - Incidental ingestion of soil and sediment, dust, inhalation of resuspended particulate, and dermal contact with soil, dust or surface water.

- **Current or Future Commercial/Industrial Worker** - Incidental ingestion of soil and sediment, dust, inhalation of resuspended particulate, and dermal contact with soil and sediment, dust, or surface water.

Exposure scenarios were evaluated using standard EPA default exposure parameters for average (typical) and Reasonable Maximum Exposure (RME) conditions. RME is defined as the "highest exposure that is reasonably expected to occur at a site. The intent of the RME is to estimate a conservative exposure case. Trespasser and commercial exposure scenarios evaluated in the HHRA used standard EPA default exposure parameters for average (typical) and RME scenarios. These parameters are presented in **Table 2.**

At the present time, EPA does not have an approved model for estimating blood-lead levels in adults that are exposed to environmental sources of lead. Consequently, for this HHRA, lead exposure to adults (trespasser and commercial/industrial worker scenarios) was estimated using a screening-level model developed by Bowers et al. (1994). This model uses a biokinetics slope factor derived from the work of Pocock et al. (1983), who measured blood-lead levels in over 7,000 middle-aged men in

Table 1
Chemicals of Potential Concern
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical Name	Exposure Area 1 Surface Impoundment	Exposure Area 2 Former Landfill	Exposure Area 3 Buildings	Exposure Area 4 Other Soils (0 - 2 feet)	Exposure Area 4 Other Soils (0 - 10 feet)	Exposure Area 5 Sediment	Exposure Area 6 Surface Water
Inorganics							
Aluminum			X				X
Antimony	X	X	X	X	X	X	X
Arsenic	X	X	X	X	X	X	X
Barium	X	X	X	X	X		X
Beryllium	X	X	X	X	X	X	
Cadmium		X	X	X	X	X	
Chromium	X	X	X	X	X		X
Cobalt	X	X	X	X	X	X	X
Copper	X	X	X	X	X	X	X
Lead	X	X	X	X	X	X	X
Manganese	X	X	X	X	X	X	X
Mercury		X	X	X	X	X	
Nickel	X	X	X	X	X	X	X
Selenium	X	X	X	X	X	X	
Silver		X	X	X	X		
Thallium	X	X	X	X	X	X	
Vanadium			X				X
Zinc	X	X	X	X	X	X	X
Organics							
Acenaphthene					X	X	
Acenaphthylene						X	
Acetone						X	
Alpha chlordane					X	X	
Anthracene					X	X	
Arochlor 1242						X	
Arochlor 1248						X	
Arochlor 1254						X	
Arochlor 1260						X	
Benzo(a)anthracene					X	X	
Benzo(a)pyrene					X	X	
Benzo(b)fluoranthene					X	X	
Benzo(g,h,i)perylene						X	
Benzo(k)fluoranthene					X	X	
Bis(2-ethylhexyl)phthalate					X		
2-Butanone						X	
Butylbenzylphthalate							

Table 1
Chemicals of Potential Concern
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical Name	Exposure Area 1 Surface Impoundment	Exposure Area 2 Former Landfill	Exposure Area 3 Buildings	Exposure Area 4 Other Soils (0 - 2 feet)	Exposure Area 4 Other Soils (0 - 10 feet)	Exposure Area 5 Sediment	Exposure Area 6 Surface Water
Organics (continued)							
Chrysene					X	X	
4,4' DDD					X	X	
4,4' DDE						X	
4,4' DDT						X	
Di-n-butyl phthalate						X	X
Di-n-octyl-phthalate						X	
Dibenz(a,h)anthracene					X	X	
Dibenzofuran					X		
Dieldrin						X	
Diethylphthalate						X	
Endosulfan I						X	
Endosulfan II					X		
Endosulfan sulfate					X		
Endrin					X		
Endrin aldehyde					X	X	
Endrin ketone						X	
Fluoranthene					X	X	
Fluorene					X	X	
Gamma chlordane						X	
Heptachlor epoxide					X	X	
Indeno(1,2,3-cd)pyrene					X	X	
Methylene chloride					X	X	
2-Methylnaphthalene					X	X	
Naphthalene					X		
N-Nitrosodiphenylamine					X		
Phenanthrene					X	X	
Phenol						X	
Pyrene					X	X	
1,1,1-Trichloroethane					X		
Trichloroethene					X		

Note: The basis for selecting exposure areas for OU No. 5 is presented in Section 4.1.3.5.

Table 2
Exposure Assumptions - Worker[a]
RSR Corporation Superfund Site
Operable Unit No. 5

Exposure Parameter	Current Occupational - Adult		Future Occupational - Adult	
	Typical Exposure	Reasonable Maximum Exposure	Typical Exposure	Reasonable Maximum Exposure
Soil/Sediment/Building Dust Ingestion Rate (mg/day)	50	50	50	50
Inhalation Rate (m^3/hour)	2.5	2.5	2.5	2.5
Skin Surface Area (cm^2)	5000	5000	5000	5000
Soil-to-Skin Adherence Factor (mg/cm^2)	0.2	1	0.2	1
Exposure Time (hours/day)	1[b]	2[b]	8	8
Exposure Frequency (days/year)	52[b]	52[b]	250	250
Exposure Duration (years)	9	25	9	25
Body Weight (kg)	70	70	70	70
Averaging Time - Noncancer (years)	9	25	9	25
Averaging Time - Cancer (years)	70	70	70	70

Source:
[a]EPA, 1992a, unless otherwise noted.
[b]Based on professional judgment or site-specific factors.

24 British towns to estimate blood-lead levels of adults exposed to environmental sources of lead. The study yielded a biokinetics slope factor of 0.375 micrograms/deciliter (mg/dL) blood-lead per mg/day lead uptake. Although there is no EPA guidance on the blood lead level that is considered appropriate for protecting adults, both EPA and the Center for Disease Control (CDC) recommend that there should be no more than a five (5) percent likelihood that a young child should have lead value greater than 10 ug/dL. Since exposed workers could include pregnant women, and because the fetus is exposed to lead levels nearly equal to those of the mother, the health criterion selected for use in this evaluation is that there should no more than a five (5) percent chance that the fetus of a pregnant woman would have a lead level above 10 ug/dL. The health goal is equivalent to specifying that the 95th percentile of the lead distribution in fetuses does not exceed 10 ug/dL.

E. Toxicity Assessment

The toxicity assessment involves identifying the COPCs which may cause adverse health effects in exposed individuals. The toxicity assessment seeks to develop a reasonable appraisal of the associations between the degree of exposure to a chemical and the possibility of adverse health effects. Whether or not a toxic response occurs depends on the chemical and physical properties of the toxic agent, the degree of exposure to the agent, and the susceptibility of an individual to the particular effect. To characterize the toxicity of a particular chemical, the type of effect it can produce and how much is needed to produce that effect must be known.

For purposes of the risk assessment, health effects are divided into two categories; noncancer and cancer effects. Noncancer health effects include a variety of toxicological end points and may include effects on specific organs or systems, such as the kidney, liver, nervous system and lungs. There are two categories of noncancer health effects, acute or subchronic, which are short-term, and chronic, which are long-term. Some chemical exposures that result in, or are suspected in, the development of cancer are referred to as carcinogens. EPA's carcinogen classification scheme, using a weight of evidence approach to determine the likelihood of a chemical's carcinogenic potential in humans, is described below.

Category	Meaning	Basis
A	Known human carcinogen	Sufficient evidence of increased cancer incidence in exposed humans.
B1	Probable human carcinogen	Sufficient evidence of increased cancer incidence in animals, with suggestive evidence from studies of exposed humans.
B2	Probable human +-carcinogen	Sufficient evidence of increased cancer incidence in animals, but lack of data or insufficient data from humans.
C	Possible human carcinogen	Suggestive evidence of carcinogenicity in animals.

D	Cannot be evaluated	No evidence or inadequate evidence of cancer in animals or humans.
E	Noncarcinogen	Evidence of noncarcinogenicity in humans.

Toxicity values are quantitative expressions of the dose-response relationship for a chemical and are expressed as cancer slope factors and noncancer reference doses, both of which are specific to the route of exposure. The chronic reference doses (RfDs), which are expressed in terms of mg/kg-day are presented in **Table 3** for the chemicals of concern for the OU No. 5 site. The dose-response relationship for cancer effects is expressed as a cancer slope factor (SF), which is the upper-bound estimate of the probability of a response per unit intake of a chemical over a lifetime. The SFs for the chemicals of concern at the OU No. site are described in **Table 4** and are expressed as the inverse of mg/kg-day.

F. Human Health Risk Characterization

The risk of cancer from exposure to a chemical is described in terms of the probability that an individual exposed for his or her entire lifetime will develop cancer by age 70. For carcinogens, risks are estimated as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime cancer risk is calculated from the following equation:

Risk = CDI x SF

where:

risk = a unitless probability (e.g., 2 X 10-5) of an individual developing cancer;

CDI = chronic daily intake averaged over 70 years (mg/kg-day); and

SF = slope-factor, expressed as (mg/kg-day)-1

These risks are probabilities that are generally expressed in scientific notation (e.g., 1 x 10-6). An excess lifetime cancer risk of 1 x 10-6 indicates that, as a reasonable maximum estimate, an individual has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., lifetime) with a reference dose derived for a similar exposure period. The ratio of exposure to toxicity is called the hazard quotient. By adding the hazard quotients for all contaminants of concern which affect the same target organ (e.g., liver) within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated.

Table
Toxicity Values–Noncancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Systemic Toxicity (mg/kg/day)				
	Critical Effect	Chronic Reference Dose (RfD)			
		Oral	Source	Inhalation[b]	Source
Inorganics					
Aluminum	--	--	--	--	--
Antimony	Blood glucose, cholesterol	0.0004	IRIS	--	--
Arsenic	Keratosis, hyperpigmentation	0.0003	IRIS	--	--
Barium	Increased blood pressure	0.07	IRIS	0.00014	HEAST
Beryllium	Organ changes, decreased body weight	0.005	IRIS	--	--
Cadmium (food)	Proteinuria	0.001	IRIS	--	--
Cadmium (water)	Proteinuria	0.0005	IRIS	--	--
Chromium III	None observed	1	IRIS	--	--
Chromium VI	Increase in tissue chromium connection	0.005	IRIS	--	--
Cobalt	--	--	--	--	--
Copper	Gastrointestinal irritation	0.037	HEAST	--	--
Lead	--	(c)	--	--	--
Manganese (food)	CNS	0.05	IRIS	0.000014	IRIS
Manganese (water)	CNS	0.05	IRIS	0.000014	IRIS
Mercury	CNS, kidney	0.0003	HEAST	0.000086	HEAST
Nickel (soluble salts)	Decreased body-organ weight	0.02	IRIS	--	--
Selenium	Hair/nail loss, dermatitis	0.005	IRIS	--	--
Silver	Argyria	0.005	IRIS	--	--
Thallium (e)	Increased SGOT (liver), increased serum LDH (blood), alopecia (hair)	0.00008	IRIS	--	--
Vanadium	Renal	0.007	HEAST	--	--
Zinc	Anemia	0.3	IRIS	--	--
Organics					
1,1,1-Trichloroethane	Liver	0.09	HEAST	0.29	HEAST
2-Butanone	CNS, fetotoxic	0.6	IRIS	0.29	IRIS
2-Methylnaphthalene	--	--	--	--	--
4,4'-DDD	--	--	--	--	--
4,4'-DDE	--	--	--	--	--
4,4'-DDT	Liver lesions	0.0005	IRIS	--	--
Acenaphthene	Liver	0.06	IRIS	--	--
Acenaphthylene	--	--	--	--	--
Acetone	Liver, kidney, CNS	0.1	IRIS	--	--
Anthracene	None observed	0.3	IRIS	--	--
Aroclor-1242 (f)	Ocular and immunological effects, distorted nails	0.00002	IRIS	--	--

Table 3
Toxicity Values – Noncancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Critical Effect	Systemic Toxicity (mg/kg/day)			
		Chronic Reference Dose (RfD)			
		Oral	Source	Inhalation[b]	Source
Aroclor-1248 (f)	Ocular and immunological effects, distorted nails	0.00002	IRIS	--	--
Aroclor-1254 (f)	Ocular and immunological effects, distorted nails	0.00002	IRIS	--	--
Aroclor-1260 (f)	Ocular and immunological effects, distorted nails	0.00002	IRIS	--	--
Benzo(a)anthracene	--	--	--	--	--
Benzo(a)pyrene	--		--	--	--
Benzo(b)fluoranthene	--	--	--	--	--
Benzo(g,h,i)perylene	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	Liver	0.02	IRIS	--	--
Butylbenzylphthalate	Liver, kidney	0.2	IRIS	--	--
Carbazole	--	--	--	--	--
alpha-Chlordane	Liver hypertropy	--	--	--	--
gamma-Chlordane	Liver hypertropy	--	--	--	--
Chrysene	--	--	--	--	--
Di-n-butylphthalate	Increased mortality	0.1	IRIS	--	--
Di-n-octylphthalate	Liver, kidney	0.02	HEAST	--	--
Dibenz(a,h)anthracene	--	--	--	--	--
Dibenzofuran	Kidney	0.004	ECAO (g)	--	--
Dieldrin	Liver	0.00005	IRIS	--	--
Diethylphthalate	Decreased weight, growth	0.8	IRIS	--	--
Endosulfan I	Kidney	0.006	IRIS	--	--
Endosulfan II	Kidney	0.006	IRIS	--	--
Endosulfan sulfate	Kidney	--	--	--	--
Endrin	CNS convulsions, liver lesions	0.0003	IRIS	--	--
Endrin aldehyde	CNS convulsions, liver lesions	--	--	--	--
Endrin ketone	CNS convulsions, liver lesions	--	--	--	--
Fluoranthene	Liver, kidney	0.04	IRIS	--	--
Fluorene	Decreased erythrocyte count	0.04	IRIS	--	--
Heptachlor epoxide	Liver	0.000013	IRIS	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--
Methylene Chloride	Liver	0.06	IRIS	0.86	HEAST
N-Nitrosodiphenylamine	--	--	--	--	--
Naphthalene	Ocular and internal lesions	0.04	ECAO (h)	--	--
Phenanthrene	--	--	--	--	--
Phenol	Reduced fetal body weights	0.6	IRIS	--	--
Pyrene	Kidney	0.03	IRIS	--	--
Trichloroethene	Increased relative liver weight	0.006	ECAO (i)	--	--

Table 3
Toxicity Values–Noncancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Systemic Toxicity (mg/kg/day)				
	Critical Effect	Chronic Reference Dose (RfD)			
		Oral	Source	Inhalation[b]	Source

HEAST = Health Effects Assessment Summary Tables (1994i).
IRIS = Integrated Risk Information System (1995d).
-- = Information not available.
CNS = Central Nervous System.
(a) Derived from subchronic inhalation reference concentration (RfC)
(b) Derived from chronic inhalation reference concentration (RfC)
(c) EPA work group considered it inappropriate to develop an RfD for inorganic lead.
(d) Toxicity values correspond to nitrite.
(e) Toxicity values correspond to thallium chloride.
(f) Toxicity values correspond to Aroclor-1254.
(g) Provisional RfD; memo from Kenneth Poirier, ECAO to Bill Dana, Oregon DEQ, 01/24/92.
(h) Provisional RfD; memo from Joan Dollarhide, ECAO to Debbie Siebers, EPA Region V July 22, 1994.
(i) Provisional RfD; memo from Joan Dollarhide, ECAO, April 1992.

Table 4
Toxicity Values - Cancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Carcinogenic Potency (mg/kg/day)$^{-1}$						
	Tumor Site	Weight-of-Evidence[a]	Source	Oral Slope Factor	Source	Inhalation Slope Factor[b]	Source
Inorganics							
Aluminum	--	--	--	--	--	--	
Antimony	--	D	DWHA[c]	--	--	--	
Arsenic	Lung	A	IRIS	1.5	EPA[d]	15	IRIS
Barium	--	D	DWHA[c]	--	--	--	--
Beryllium	Lung, Bone	B2	IRIS	4.3	IRIS	8.4	IRIS
Cadmium	Lung	B1	IRIS	--	--	6.3	IRIS
Chromium III		D	DWHA[c]	--	--	--	--
Chromium VI	Lung	A	IRIS	--	--	42	IRIS
Cobalt	--	--	--	--	--	--	--
Copper	--	D	IRIS	--	--	--	--
Lead	Kidney	B2	IRIS	--	--	--	--
Manganese	--	D	IRIS	--	--	--	--
Mercury	--	D	IRIS	--	--	--	--
Nickel (refinery dust)	Respiratory System	A	IRIS	--	--	0.84	IRIS
Selenium	--	D	IRIS	--	--	--	--
Silver	--	D	IRIS	--	--	--	--
Thallium	--	D	DWHA[c]	--	--	--	--
Vanadium	--	--	--	--	--	--	--
Zinc	--	D	IRIS	--	--	--	--

Table 4
Toxicity Values-Cancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Carcinogenic Potency (mg/kg/day)$^{-1}$						
	Tumor Site	Weight-of-Evidence[a]	Source	Oral Slope Factor	Source	Inhalation Slope Factor[b]	Source
Organics							
1,1,1-Trichloroethane	--	D	IRIS	--	--	--	--
2-Butanone	--	D	IRIS	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--
4,4'-DDD	Lung, Liver	B2	IRIS	0.24	IRIS	--	--
4,4'-DDE	Liver	B2	IRIS	0.34	IRIS	--	--
4,4'-DDT	Lung, Liver	B2	IRIS	0.34	IRIS	0.34	IRIS
Acenaphthene	--	--	--	--	--	--	--
Acenaphthylene	--	D	IRIS	--	--	--	--
Acetone	--	D	IRIS	--	--	--	--
Anthracene	--	D	IRIS	--	--	--	--
Aroclor-1242[f]	Liver	B2	IRIS	7.7	IRIS	--	--
Aroclor-1248[f]	Liver	B2	IRIS	7.7	IRIS	--	--
Aroclor-1254[f]	Liver	B2	IRIS	7.7	IRIS	--	--
Aroclor-1260[f]	Liver	B2	IRIS	7.7	IRIS	--	--
Benzo(a)anthracene	Liver, Lung	B2	IRIS	0.73	EPA[g]	--	--
Benzo(a)pyrene	Gut, respiratory tract	B2	IRIS	7.3	IRIS	--	--
Benzo(b)fluoranthene	Liver, Lung, Thorax	B2	IRIS	0.73	EPA[g]	--	--
Benzo(g,h,i)perylene	--	D	IRIS	--	--	--	--
Benzo(k)fluoranthene	Liver, Lung, Thorax	B2	IRIS	0.073	EPA[g]	--	--
bis(2-Ethylhexyl)phthalate	Liver	B2	IRIS	0.014	IRIS	--	--
Butylbenzylphthalate	Leukemia	C	IRIS	--	--	--	--

Table 4
Toxicity Values - Cancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Carcinogenic Potency (mg/kg/day)$^{-1}$						
	Tumor Site	Weight-of-Evidence[a]	Source	Oral Slope Factor	Source	Inhalation Slope Factor[b]	Source
Carbazole	Liver	B2	HEAST	0.02	HEAST	--	--
alpha-Chlordane	Liver	B2	IRIS	--	--	--	--
gamma-Chlordane	Liver	B2	IRIS	--	--	--	--
Chrysene	Liver	B2	IRIS	0.0073	EPA[s]	--	--
Di-n-butylphthalate	--	D	IRIS	--	--	--	--
Di-n-octylphthalate	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	Mammary gland	B2	IRIS	7.3	EPA[s]	--	--
Dibenzofuran	--	D	IRIS	--	--	--	--
Dieldrin	Liver, Lungs	B2	IRIS	16	IRIS	16	IRIS
Diethylphthalate	--	D	IRIS	--	--	--	--
Endosulfan I	--	--	--	--	--	--	--
Endosulfan II	--	--	--	--	--	--	--
Endosulfan sulfate	--	--	--	--	--	--	--
Endrin	--	D	IRIS	--	--	--	--
Endrin aldehyde	--	D	IRIS	--	--	--	--
Endrin ketone	--	D	IRIS	--	--	--	--
Fluoranthene	--	D	IRIS	--	--	--	--
Fluorene	--	D	IRIS	--	--	--	--
Heptachlor epoxide	Liver	B2	IRIS	9.1	IRIS	9.1	IRIS
Indeno(1,2,3-cd)pyrene	Liver	B2	IRIS	0.73	EPA[s]	--	--
Methylene Chloride	Liver, Lung	B2	IRIS	0.0075	IRIS	0.0016	IRIS
N-Nitrosodiphenylamine	Liver	B2	IRIS	0.0049	IRIS	--	--
Naphthalene	--	D	IRIS	--	--	--	--
Phenanthrene	--	D	IRIS	--	--	--	--

Table 4
Toxicity Values - Cancer Health Effects
RSR Corporation Superfund Site
Operable Unit No. 5

Chemical	Carcinogenic Potency (mg/kg/day)[1]						
	Tumor Site	Weight-of-Evidence[a]	Source	Oral Slope Factor	Source	Inhalation Slope Factor[b]	Source
Phenol	--	D	IRIS	--	--	--	--
Pyrene	--	D	IRIS	--	--	--	--
Trichloroethene	Lung, Liver	B2	HEAST (1991)	0.011	HEAST (1991)	0.006	HEAST (1991)

HEAST = Health Effects Assessment Summary Tables (1994i).
IRIS = Integrated Risk Information System (1995d).
-- = Information not available.

[a]Weight-of-Evidence Groups: A is Human Carcinogen; B is Probable Human Carcinogen (B1-limited evidence of carcinogenicity in humans, B2-sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans); C is Possible human Carcinogen; D is Not Classifiable as to Human Carcinogenicity.

[b]Derived from unit risk factor assuming an inhalation rate of 20 m^3/day and a 70 kg bodyweight.

[c]Drinking Water Health Advisory. USEPA Office of Drinking Water. April 1992.

[d]Arsenic oral slope factor from: Special Report on Ingested Inorganic Arsenic, July 1988, EPA/625/3-87/013.

[e]Drinking Water Health Advisory. USEPA Office of Drinking Water. January 1987.

[f]Toxicity values are for total polychlorinated biphenyls (PCBs).

[g]Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/600/R-93/089. July 1993.

The HQ is calculated as follows:

Non-cancer HQ = E/RfD
where:

E = Daily Intake (either chronic or sub-chronic)

RfD = reference dose; and

E and RfD are expressed in the same units and represent the same exposure period (e.g., chronic, subchronic, or short-term).

A summary of risks across all exposure pathways and exposure scenarios for each exposure area evaluated in the OU No. 5 risk assessment are included in **Tables 5, 6, 7, 8, 9, 10 and 11.** According to the assumptions used in this evaluation, the estimated excess cancer risks exceeded 10 -6 for the following exposure scenarios and exposure areas:

Exposure Area 1; Former Surface Impoundment
- All scenarios

Exposure Area 2; Former Landfill
- All scenarios

Exposure Area 3; Buildings
- All scenarios

Exposure Area 4; Other Soils (0-2 feet)
- *All scenarios*

Exposure Area 5; Sediment
- All scenarios except typical current commercial/Industrial Worker

The estimated hazard indices (HIs) exceeded one for the following exposure scenarios and exposure areas:

Exposure Area 2; Former Landfill
- Current and Future Commercial/Industrial Worker (typical and RME)
- Adult and Child Trespasser (typical and RME)

Exposure Area 3; Buildings
- Future Commercial/Industrial Worker (typical and RME)

Exposure Area 4; (Other Soils (0-2 feet)
- Adult and Child Trespasser (typical and RME)

Exposure Area 4; (Other Soils (0-10 feet)
- Future Commercial/Industrial Worker (typical and RME)
- Adult and Child Trespasser (typical and RME)

Exposure to Lead
Estimated risk from exposure to lead in soil and sediment within OU No. 5 was evaluated for adult trespassers and workers. Children trespassers were not quantitatively evaluated due to the lack of an appropriate

Table 5
Summary of Risks
Exposure Area 1: Former Surface Impoundment
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Current Commercial/Industrial Worker				
Inhalation	1×10^{-7}	6×10^{-7}	0.01	0.02
Ingestion	6×10^{-6}	2×10^{-5}	0.1	0.1
Dermal	NA	NA	NA	NA
Total	**6×10^{-6}**	**2×10^{-5}**	**0.1**	**0.1**
Future Commercial/Industrial Worker				
Inhalation	4×10^{-6}	1×10^{-5}	0.4	0.4
Ingestion	3×10^{-5}	8×10^{-5}	0.5	0.5
Dermal	NA	NA	NA	NA
Total	**3×10^{-5}**	**9×10^{-5}**	**0.9**	**0.9**
Child Trespasser (7 - 16 yrs.)				
Inhalation	7×10^{-8}	1×10^{-7}	0.006	0.01
Ingestion	2×10^{-5}	2×10^{-5}	0.4	0.4
Dermal	NA	NA	NA	NA
Total	**2×10^{-5}**	**2×10^{-5}**	**0.4**	**0.4**
Adult Trespasser				
Inhalation	3×10^{-8}	5×10^{-8}	0.002	0.005
Ingestion	1×10^{-5}	1×10^{-5}	0.2	0.2
Dermal	NA	NA	NA	NA
Total	**1×10^{-5}**	**1×10^{-5}**	**0.2**	**0.2**

NA = Not applicable.

Table 10
Summary of Risks
Exposure Area 2: Former Landfill
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Current Commercial/Industrial Worker				
Inhalation	5×10^{-7}	3×10^{-6}	0.007	0.01
Ingestion	3×10^{-5}	8×10^{-5}	2	2
Dermal	NA	NA	0.003	0.02
Total	**3×10^{-5}**	**8×10^{-5}**	**2**	**2**
Future Commercial/Industrial Worker				
Inhalation	2×10^{-5}	5×10^{-5}	0.3	0.3
Ingestion	1×10^{-4}	4×10^{-4}	9	9
Dermal	NA	NA	0.01	0.07
Total	**1×10^{-4}**	**4×10^{-4}**	**9**	**9**
Child Trespasser (7 - 16 yrs.)				
Inhalation	3×10^{-7}	7×10^{-7}	0.005	0.01
Ingestion	1×10^{-4}	1×10^{-4}	6	6
Dermal	NA	NA	0.005	0.02
Total	**1×10^{-4}**	**1×10^{-4}**	**6**	**6**
Adult Trespasser				
Inhalation	1×10^{-7}	3×10^{-7}	0.002	0.004
Ingestion	7×10^{-5}	7×10^{-5}	4	4
Dermal	NA	NA	0.003	0.02
Total	**7×10^{-5}**	**7×10^{-5}**	**4**	**4**

NA = Not applicable.

Table 7.1
Summary of Risks
Exposure Area 3: Buildings
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Current Commercial/Industrial Worker				
Inhalation	3×10^{-7}	2×10^{-6}	0.01	0.03
Ingestion	2×10^{-6}	6×10^{-6}	0.1	0.1
Dermal	NA	NA	0.001	0.007
Total	**2×10^{-6}**	**8×10^{-6}**	**0.1**	**0.1**
Future Commercial/Industrial Worker				
Inhalation	1×10^{-5}	3×10^{-5}	0.5	0.5
Ingestion	1×10^{-5}	3×10^{-5}	0.6	0.6
Dermal	NA	NA	0.007	0.04
Total	**2×10^{-5}**	**6×10^{-5}**	**1**	**1**
Child Trespasser (7 - 16 yrs.)				
Inhalation	2×10^{-7}	4×10^{-7}	0.009	0.02
Ingestion	8×10^{-6}	8×10^{-6}	0.4	0.4
Dermal	NA	NA	0.002	0.01
Total	**8×10^{-6}**	**8×10^{-6}**	**0.4**	**0.4**
Adult Trespasser				
Inhalation	7×10^{-8}	1×10^{-7}	0.003	0.006
Ingestion	5×10^{-6}	5×10^{-6}	0.3	0.3
Dermal	NA	NA	0.001	0.007
Total	**5×10^{-6}**	**5×10^{-6}**	**0.3**	**0.3**

NA = Not applicable.

Table
Summary of Risks
Exposure Area 4: Other Soils (0-2 feet)
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Current Commercial/Industrial Worker				
Inhalation	1×10^{-7}	6×10^{-7}	0.005	0.01
Ingestion	6×10^{-6}	2×10^{-5}	0.8	0.8
Dermal	NA	NA	0.002	0.01
Total	**6×10^{-6}**	**2×10^{-5}**	**0.8**	**0.8**
Child Trespasser (7 - 16 yrs.)				
Inhalation	7×10^{-8}	1×10^{-7}	0.003	0.006
Ingestion	2×10^{-5}	2×10^{-5}	3	3
Dermal	NA	NA	0.003	0.02
Total	**2×10^{-5}**	**2×10^{-5}**	**3**	**3**
Adult Trespasser				
Inhalation	3×10^{-8}	5×10^{-8}	0.001	0.002
Ingestion	1×10^{-5}	1×10^{-5}	2	2
Dermal	NA	NA	0.002	0.01
Total	**1×10^{-5}**	**1×10^{-5}**	**2**	**2**

NA = Not applicable.

Table
Summary of Risks
Exposure Area 4: Other Soils (0-10 feet)
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Future Commercial/Industrial Worker				
Inhalation	4×10^{-6}	1×10^{-5}	0.2	0.2
Ingestion	3×10^{-5}	9×10^{-5}	10	10
Dermal	4×10^{-6}	6×10^{-5}	0.003	0.02
Total	**4×10^{-5}**	**2×10^{-4}**	**10**	**10**
Child Trespasser (7 - 16 yrs.)				
Inhalation	8×10^{-8}	2×10^{-7}	0.003	0.007
Ingestion	3×10^{-5}	3×10^{-5}	8	8
Dermal	2×10^{-6}	8×10^{-6}	0.001	0.006
Total	**3×10^{-5}**	**4×10^{-5}**	**8**	**8**
Adult Trespasser				
Inhalation	3×10^{-8}	6×10^{-8}	0.001	0.003
Ingestion	2×10^{-5}	2×10^{-5}	5	5
Dermal	1×10^{-6}	5×10^{-6}	0.0007	0.003
Total	**2×10^{-5}**	**2×10^{-5}**	**5**	**5**

Table 7
Summary of Risks
Exposure Area 5: Sediment
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Current Commercial/Industrial Worker				
Inhalation	6×10^{-9}	4×10^{-8}	0.003	0.007
Ingestion	5×10^{-7}	1×10^{-6}	0.02	0.02
Dermal	1×10^{-7}	2×10^{-6}	0.003	0.02
Total	**6×10^{-7}**	**3×10^{-6}**	**0.03**	**0.05**
Future Commercial/Industrial Worker				
Inhalation	2×10^{-7}	7×10^{-7}	0.1	0.1
Ingestion	2×10^{-6}	7×10^{-6}	0.08	0.08
Dermal	6×10^{-7}	9×10^{-6}	0.02	0.08
Total	**3×10^{-6}**	**2×10^{-5}**	**0.2**	**0.3**
Child Trespasser (7 - 16 yrs.)				
Inhalation	5×10^{-9}	9×10^{-9}	0.002	0.004
Ingestion	2×10^{-6}	2×10^{-6}	0.06	0.06
Dermal	2×10^{-7}	1×10^{-6}	0.005	0.03
Total	**2×10^{-6}**	**3×10^{-6}**	**0.07**	**0.09**
Adult Trespasser				
Inhalation	2×10^{-9}	3×10^{-9}	0.0008	0.002
Ingestion	1×10^{-6}	1×10^{-6}	0.03	0.03
Dermal	1×10^{-7}	7×10^{-7}	0.003	0.02
Total	**1×10^{-6}**	**2×10^{-6}**	**0.03**	**0.05**

Table VI
Summary of Risks
Exposure Area 6: Surface Water
RSR Corporation Superfund Site
OU No. 5

Pathway	Typical Lifetime Excess Cancer Risk	RME Lifetime Excess Cancer Risk	Typical Hazard Index	RME Hazard Index
Current Commercial/Industrial Worker				
Inhalation	NA	NA	NA	NA
Ingestion	NA	NA	NA	NA
Dermal	8×10^{-9}	4×10^{-8}	0.001	0.002
Total	**8×10^{-9}**	**4×10^{-8}**	**0.001**	**0.002**
Future Commercial/Industrial Worker				
Inhalation	NA	NA	NA	NA
Ingestion	NA	NA	NA	NA
Dermal	3×10^{-7}	9×10^{-7}	0.04	0.04
Total	**3×10^{-7}**	**9×10^{-7}**	**0.04**	**0.04**
Child Trespasser (7 - 16 yrs.)				
Inhalation	NA	NA	NA	NA
Ingestion	NA	NA	NA	NA
Dermal	1×10^{-8}	3×10^{-8}	0.002	0.004
Total	**1×10^{-8}**	**3×10^{-8}**	**0.002**	**0.004**
Adult Trespasser				
Inhalation	NA	NA	NA	NA
Ingestion	NA	NA	NA	NA
Dermal	9×10^{-9}	2×10^{-8}	0.001	0.002
Total	**9×10^{-9}**	**2×10^{-8}**	**0.001**	**0.002**

NA = Not applicable.

model, however, it would be expected that their risk would be greater than that of the adult trespassers because children are more vulnerable to adverse effects from lead exposure than adults. A target cleanup goal of 2,000 ppm was determined based on the blood-lead model developed by Bowers et al. and corresponds to a blood-lead distribution where approximately 95 percent of the exposed population has blood-lead levels less than 10 ug/dL.

In the OU No. 5 risk assessment, among all receptor groups, incidental inhalation or ingestion of soil and dust contributes the greatest percentage of the overall risk (as high as 100 percent) compared to the other pathways. Most of the cancer risk from these pathways (i.e. ingestion and inhalation) in all of the exposure areas may be attributable to arsenic. Similarly, for noncancer risks, dermal contact of cadmium was a significant contributor to the total HI.

G. Uncertainties Associated with Human Health Risk Calculations

Within the Superfund process, baseline quantitative risk assessments are performed in order to provide risk managers with a numerical representation of the severity of contamination present at a site, as well as to provide an indication of the potential for adverse public health effects. There are many inherent and imposed uncertainties in the risk assessment methodologies. The HHRA is subject to uncertainty from a variety of sources including the following:

- Sampling, analysis and data validation
- Fate and transport estimation
- Exposure estimation
- Toxicological data
- Blood-lead model

While not all encompassing, the following identifies a number of site-specific factors that may lead to an over- or underestimation of risks for OU No. 5:

- Analyses for the metals were not species specific, and, therefore, metals were assumed to be completely boiavailable, which may overestimate risks.

- Contaminant concentrations in soil, sediment, and surface water were assumed to remain constant, which may result an over- or underestimation of future risks.

H. Ecological Risks

An ecological risk assessment (ERA) was also conducted for OU No. 5 to quantitatively determine the actual or potential effects to plants and animals on-site. The ERA was conducted as a part of the RI in order to evaluate if the COPCs from the former battery wrecking facility pose a risk to the environment in the absence of remedial action. A summary is provided in the following paragraphs.

OU No. 5 includes both terrestrial and aquatic habitat areas. The presence of the former battery wrecking facility precludes the usability

of certain OU No. 5 areas by ecological organisms. The terrestrial habitats are disturbed in may areas by historical and/or ongoing human activity. There are fields of opportunistic weed species and stands of shrubs and trees. The aquatic areas are intermittent and are dry several months of every year. The drainages in the south may be fed by stormwater runoff from surrounding facilities.

An investigation was first conducted to determine the occurring ecological receptor populations. The predominant populations were comprised of opportunistic mammals (rats and house mice) and aquatic species (fathead minnows, gambusio affinis and crayfish). A quantitative assessment was conducted for the assessment of exposure and risk to these on-site resident organisms. This approach entailed the evaluation of site exposure conditions by comparison of exposure point concentrations to literature-derived toxicity values (for the terrestrial assessment) or ambient water quality criteria and sediment toxicity benchmarks (for the aquatic assessment). This is a conservative screening approach which serves to identify the predominant COPCs contributing to site ecological risk.

Inorganic COPCs were selected by comparison to regional background data for soils and sediment. There were no appropriate background concentrations for surface water. All detected organic COPCs (in all media) were retained for analysis within the ERA.

A reasonable maximum exposure (RME) point concentration was derived from the results of the abiotic media analysis. Due to the limited data available, the observed maximum concentration of COPCs within surface water and sediment were chosen to represent the RME concentration. The 95% upper confidence limit (95% UCL) was used as the exposure point concentration for surface soil exposure point concentrations.

An evaluation of surface water and sediment exposure and risk to aquatic life was conducted. For determination of aquatic risk, the surface water and sediment RME was compared directly to ambient water quality criteria and sediment toxicity benchmark values.

An evaluation of surface water and surface soil exposure and risk to terrestrial life was conducted by developing screening level wildlife criteria for water (based upon receptor ingestion rates) and by calculating exposure dose for ingested soil and contaminated food sources that have accumulated COPCs through soil. An assessment for small mammals and birds was conducted. Observed surface water COPC concentrations were compared to the derived criteria for risk estimation. The calculated soil and contaminated food dose was compared to literature-derived no-observed- adverse-effect-levels (NOAELs) and lowest-adverse-effect-levels (LOAELs) to determine risk.

The quantitative evaluation of risk was conducted by a hazard quotient method. If the resulting quotient was greater than one (1), the Analyte was considered to contribute to ecological risk. The predominant ecological risk attributable to OU No. 5 is due to the presence of inorganic COPCs within the soil. In particular, the presence of copper and lead are of concern. The COPCs present within the surface water and sediment are likely to be less of a concern since the drainages are intermittent.

I. Risk Assessment Conclusions

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VII. REMEDIAL ACTION GOALS

The results of the field investigation and engineering analyses have identified the following contaminant source areas on OU No. 5 of the RSR site and the associated affected media:

Area of Concern	Media
Former Surface Impoundment	Soil
Former Landfill	Soil
Buildings and Structures	Soil and dust
Other Soils/Slag Burial Area	Soil
Sediment and Surface water Runoff	Sediment and water

Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably controlled and that present a significant risk to human health or the environment should exposure occur. There are no principal threats at OU No. 5 of the RSR site.

Low level threats are those source materials that generally can be reliably managed with little likelihood of migration and present a low risk in the event of exposure. The low level threats at the site are the contaminated material in the former surface impoundment, former landfill, and the other soils/slag burial area. The arsenic, cadmium and lead contamination present in these areas are less mobile and have a reduced migration potential due to the chemical and physical properties of the soil cover. Other low level threat areas include the dust associated with the buildings. Although the concentrations of arsenic and lead are elevated within the buildings, exposure of the contaminated dust may be limited by controlling access to the area.

As discussed in the Section VI. SUMMARY OF SITE RISKS, the arsenic contributed most significantly to the carcinogenic and non-carcinogenic risk at the site and antimony contributed greatly to the noncarcinogenic risk. Furthermore, lead concentrations are present above calculated acceptable levels based on the lead exposure evaluation done in the risk assessment.

The remedial action objectives for OU No. 5 of the RSR site are to minimize exposure to the lead, arsenic, and antimony present in the former surface impoundment, former landfill, buildings and structures, and other soils/slag burial area by direct contact, inhalation and ingestion, and to reduce the potential for migration of these contaminants. In order to meet these remedial objectives, remedial action goals for lead, arsenic, antimony have been established. For the

purposes of this document, the remedial action goals are the same as action levels. These action levels are used as a "trigger" to initiate an action. The remedial action goals are outlined below and again as cleanup goals in the Selected Remedy Section of this document.

Remedial Action Goals or Cleanup levels:

Former Surface Impoundment

Eliminate the potential for incidental ingestion, and/or dermal contact with contaminated surface soils in the former surface impoundment with arsenic in excess of 32.7 ppm, and/or lead in excess of 2,000 ppm by on-site and off-site receptors.

Former Landfill

Eliminate the potential for incidental ingestion, and/or dermal contact with contaminated surface soil in the former landfill with arsenic in excess of 32.7 ppm , and/or lead in excess of 2,000 ppm and/or antimony in excess of 818 ppm by on-site and off-site receptors.

Buildings and Structures

Eliminate the potential for incidental ingestion, and/or dermal contact with contaminated material in the buildings and structures with arsenic in excess of 32.7 ppm , and/or lead in excess of 2,000 ppm by on-site and off-site receptors.

Slag Burial Area/Other Soils

Eliminate the potential for incidental ingestion, and/or dermal contact with contaminated soil in the slag burial area/other soils with arsenic in excess of 32.7 ppm and/or lead in excess of 2,000 ppm by on-site and off-site receptors.

Stormwater Runoff and Sediments

Manage and control off-site migration of contaminated stormwater runoff through federal stormwater requirements and meet federal and State RCRA closure and disposal requirements for sediments.

The 32.7 ppm action level for arsenic is based on the 1X10-5 risk, since the 1X10-6 level corresponds to a level lower than background. The 818 ppm action level for antimony is based on reducing the risk to 1X10-6. The 2,000 ppm action level for lead is based on input of site specific data into the Adult Lead Exposure Model (See **Appendix B**), which is the latest available model for estimating non-residential lead exposure. The Adult Lead Exposure Model uses site specific exposure parameters consistent with the risk assessment.

By addressing the contamination associated with the buildings,

structures, equipment and soils, the associated OU No. 5 site specific risks described in Section VI. will be reduced or eliminated.

As stated previously with regard to the ground water, regardless of any site-related contamination, the shallow ground water in the vicinity of OU Nos. 4 and 5 is not considered as a potential water supply due to its overall low yield and slightly saline quality and the availability of the City of Dallas water supply, as well as potable supply permitting requirements. The expected migration pathway of the shallow ground water is the Trinity River or its tributaries and neither are used as a drinking water supply within 3 miles. It is on this basis that the shallow ground water beneath OU Nos. 4 and 5 are not considered to be a potential drinking water supply (i.e. a Class III aquifer). Therefore, no action is recommended for the shallow ground water beneath OU Nos. 4 and 5.

VIII. DESCRIPTION OF ALTERNATIVES

A Feasibility Study was conducted to develop and evaluate remedial alternatives for OU No. 5 of the RSR site. This report is included in the Administrative Record for OU No. 5. Remedial alternatives were assembled from applicable technologies/process options and were evaluated for effectiveness, implementability, and cost based on best professional judgement. The alternatives selected for detailed analysis were compared to the nine criteria required by the NCP. As required by the NCP, the no action alternative was also evaluated to serve as a point of comparison for the other alternatives.

OU No. 4 Waste Disposal - The alternatives developed as part of the OU No. 5 FS and presented in the Proposed Plan contained the potential for the disposal of nonhazardous debris from the remedial activities on OU No. 4 and the proposed building demolition on OU No. 5 in the former landfill. The Record of Decision for OU No. 4 included an Alternate Component, which called for the disposal of nonhazardous building debris/soil in the former landfill located on OU No. 5, subject to public comment in the OU No. 5 Proposed Plan. Based on public comments received on the disposal of OU Nos. 4 and 5 nonhazardous debris in the former landfill, the remedial alternatives presented below do not include the disposal of nonhazardous debris in the former landfill. Public comments and EPA responses to comments are included in **Appendix A**. Responsiveness Summary.

The remedial action goals or cleanup levels set forth above in Section VII., are the concentration levels below which contaminated media can be left on-site and managed for a future industrial land use. The remedial alternatives described herein address the contamination associated with the former surface impoundment, the former landfill, the buildings and structures, and other soils/slag burial area.

As stated in Section VII. Remedial Action Goals, the shallow ground water in the vicinity of OU Nos. 4 and 5 is not considered as a potential water supply due to its overall low yield and slightly saline quality and the availability of the City of Dallas water supply, as well as potable supply permitting requirements. The expected migration pathway of the shallow ground water is the Trinity River or its

tributaries and neither are used as a drinking water supply within 3 miles. It is on this basis that the shallow ground water beneath OU Nos. 4 and 5 are not considered to be a potential drinking water supply (i.e. a Class III aquifer). Therefore, the shallow ground water beneath OU Nos. 4 and 5 is not considered in any of the alternatives described below, and no action is recommended for the shallow ground water.

1. Remedial Action Alternatives

The remedial action alternatives for OU No. 5 of RSR site are presented below followed by a description of the common elements of each alternative.

Alternative 1a:	No Action
Alternative 1b:	Institutional Controls
Alternative 2:	In-place decontamination of Buildings/Structures; Containment of the Former Surface Impoundment, the Former Landfill and the Slag Burial Area/Other Soils
Alternative 3:	Decontaminate Buildings: Demolish the Former Battery Wrecking Building; Containment of the Former Surface Impoundment, the Former Landfill and the Slag Burial Area/Other Soils
Alternative 4:	Decontaminate Buildings: Demolish the Former Battery Wrecking Building; Containment of the Former Surface Impoundment, the Former Landfill and the Slag Burial Area/Other Soils; Excavate other soils (up to 2 feet bgs) exceeding Remedial Action Goals and Place in Former Landfill

2. Common Elements

All of the alternatives with the exception of Alternative 1a have the following common elements: (1) all general requirements associated with contractor mobilization and demobilization, bonds and insurance, decontamination facilities, a health and safety program, and a community relations program; (2) all general site work such as repair of existing perimeter fence and sampling of surface water; (3) short-term ground water and surface water monitoring; (4) Alternatives 2, 3, and 4 also include a provision for air monitoring during remediation and long-term ground water monitoring of the former landfill; (5) all of the alternatives with the exception of Alternatives 1a and 1b involve decontamination of the buildings, structures using standard cleaning methods, such as steam cleaning or vacuum dusting; and (6) all of the alternatives do not contain a component for on-site disposal of

nonhazardous debris generated from OU No. 4 and 5 remedial activities in the former landfill located on OU No. 5 (see ***OU No. 4 Waste Disposal***).

All costs and implementation times are estimates. The costs have a degree of accuracy of +50% to -30% pursuant to the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA - Interim Final, OSWER Directive 9955.3-01, October 1988.

A brief description of the alternatives evaluated to address the contaminated media on OU No. 5 of the RSR site follows.

Alternative 1a - No Action

Major Components of Alternative 1a:
Evaluation of the No Action alternative is required by the NCP, 40 C.F.R. § 300.430(e)(3)(ii)(6), and is used as a baseline against which other alternatives are evaluated. Under this alternative, no remedial action would be undertaken to treat, contain, or remove contaminated media at OU No. 5. No institutional or operational controls would be implemented to restrict access to OU No. 5 or to restrict exposure to contaminants. Monitoring would not be a component of this alternative. Under the No Action alternative contaminated material would be left in place in an uncontrolled state and potentially endanger human health and the environment.

Treatment Components:
There are no treatment components under Alternative 1a.

Containment Components:
There are no containment components under Alternative 1a.

General Components:
There is no time needed to implement Alternative 1a, since no remedial action is undertaken. And the costs are provided below:

Capital Costs:	$0
Annual Operation & Maintenance:	$0
Present Worth:	$0

Alternative 1b - Institutional Controls

Major Components of Alternative 1b:
This alternative includes taking steps to have deed notices or a land use restriction placed in the deed records of the OU No. 5 properties to warn potential buyers and lenders of the presence of contamination. Such deed notices and land use restrictions may be difficult to obtain and enforce and may meet with substantial opposition from many different sources. In addition, this alternative includes the repair of approximately 9,100 linear feet of fencing, posting warning signs, and providing 24-hour-a-day guard services. Short-term ground water monitoring well and surface water samples would also be collected and analyzed three times annually at three ground water locations and to

surface water locations under this alternative.

Treatment Components:
There are no treatment components for the contaminated media under this Alternative 1b.

Containment Components:
There are also no containment components under Alternative 1b.

General Components:
The estimated time needed to implement Alternative 1b, is less than 1 year. The estimated costs for implementation of this alternative are provided below:

Capital Costs:	$ 227,000
Annual Operation & Maintenance(0-5 years):	$ 162,700
Annual Operation & Maintenance(6-30 years):	$ 155,500
Present Worth:	$ 2,649,000

Alternative 2 - In Place treatment of Buildings/Structures; Containment of the Former Surface Impoundment, Former Landfill, Slag Burial Area/Other Soils

Major Components of Alternative 2:
This alternative includes in-situ (in place) decontamination of the contaminated buildings and structures; containment of the former surface impoundment and the other soils/slag burial area; containment of the former landfill, including a cap design plan; monitoring of ground water and stormwater. This alternative leaves the buildings and structures in place following decontamination.

Prior to performing any work, a structural investigation would be necessary to assess the stability and safety of the buildings and structures in order to withstand the in place decontamination process. For the purpose of estimating costs, it was assumed that shoring and bracing would be necessary prior to decontamination, due to the poor condition of the buildings and structures. Without maintenance and rehabilitation, it is considered that these buildings would be a safety hazard during remediation activities.

The short-term monitoring (first five years) required under this Alternative assumed that two (2) new ground water monitoring wells would be installed and monitored annually and that a third existing well would also be monitored annually. In addition, two (2) surface water locations would also be sampled annually. The long-term component of this alternative (years 6 through 30) assumes that two (2) existing wells would be used for ground water sampling. The former landfill and surface impoundment would be inspected quarterly and the monitoring wells would be sampled annually to meet landfill closure requirements.

Treatment Components:
The water generated as a result of building and structure

decontamination activities (such as steam cleaning) or other dust suppression activities would be collected, sampled and pretreated, if necessary, prior to discharge to the City of Dallas' Publicly Owned Treatment Works (POTW). In addition, any dust collected as part of decontamination activities must be sampled prior to disposal to determine if hazardous. Collected dust that does not pass TCLP requirements must be treated accordingly (i.e. stabilization/solidification) prior to disposal.

Containment Components:

Under Alternative 2 the contaminated soils in the area of the former surface impoundment, the former landfill, and the slag burial area/other soils would be capped. A description of the capping methods, materials, and procedures are discussed below for each of the areas.

Former Surface Impoundment - The estimated areal extent of the former surface impoundment is 45,000 square feet. In 1989 the former surface impoundment was capped with approximately two (2) feet of clay soil. This cap was placed at a slope of 3:1 and based on visual inspection is currently experiencing some erosion and minor sloughing. This alternative included an engineering evaluation of the existing cap and a determination of compliance with RCRA closure standards. For cost estimating purposes under this alternative it was assumed that the cap on the former surface impoundment would require replacement. Under this assumption the existing cap would be stripped of vegetation and reworked and recompacted, followed by the two (2) feet of clay soil over the entire area and then two (2) feet of topsoil and vegetation. The former surface impoundment must be closed in compliance with RCRA closure requirements.

Former Landfill - The estimated areal extent of the former landfill is approximately 503,000 square feet. Currently the landfill area is covered with vegetation and consists of irregular topography. This alternative assumes a complete landfill capping design plan that would address surface preparation prior to the installation of the cap. The former landfill area would be closed in accordance the State of Texas closure and remediation requirements, including but not limited to 30 TAC Section 335. The cover system in a nonhazardous waste landfill is a function of the bottom liner system and the liquid management strategy for the site. Depending on site-specific considerations, designs based on natural soils as well as designs that resemble a multilayer cover may be required. For purposes of estimating costs, this alternative assumed that a multilayer cover would be required. It was also assumed that quarterly inspections of the cover would be required.

Slag Burial Area/Other Soils - The estimated areal extent of the contaminated soil outside of the former surface impoundment and the former landfill areas on OU No. 5 is approximately 1,480,000 square feet. This alternative includes covering the contaminated soils area with two (2) feet of clean backfill and revegetating with native grasses.

General Components:

The estimated time needed to implement Alternative 2, is less than 1

year. The estimated costs for implementation of this alternative are provided below:

Capital Costs:	$ 6,995,000
Annual Operation & Maintenance(0-5 years):	$ 8,600
Annual Operation & Maintenance(6-30 years):	$ 5,300
Present Worth:	$ 7,091,000

Alternative 3 - Decontaminate Buildings/Structures, Demolish Former Battery Wrecking Facility and Dispose Off-site; Containment of Former Surface Impoundment, Former Landfill, Slag Burial Area/Other Soils.

Major Components of Alternative 3

This alternative includes decontamination of the contaminated buildings and structures, in addition to the demolition and disposal of the Former Battery Wrecking Facility; containment of the former surface impoundment and the other soils/slag burial area; containment of the former landfill, including a cap design plan; monitoring of ground water and stormwater.

The Former Battery Wrecking Facility Building would be sampled to classify waste type for disposal, including TCLP. Controlled dismantling and demolition activities would be conducted using standard dust suppression methods and performed using wrecking balls, bulldozers, and similar means. For cost estimating purposes, it was assumed that 20 TCLP samples would be collected and analyzed and that all of the building debris could be disposed in a non-hazardous landfill.

The short and long-term monitoring requirements for Alternative 3 are similar to Alternative 2, with the addition of the annual inspection and repair of the pavement areas (former battery wrecking facility area).

Treatment Components:

The treatment components of this Alternative are identical to those in Alternative 2.

Containment Components:

The containment components of Alternative 3 are also identical to those described for Alternative 2.

General Components:

The estimated time needed to implement Alternative 3, is less than 1 year. The estimated costs for implementation of this alternative are provided below:

Capital Costs:	$ 9,237,015
Annual Operation & Maintenance(0-5 years):	$ 9,400
Annual Operation & Maintenance(6-30 years):	$ 6,000
Present Worth:	$ 9,343,800

Alternate component:

Written comments submitted on the OU No. 5 Proposed Plan requested flexibility in the former landfill cap, in order to allow for redevelopment options in this portion of OU No. 5. In response to these comments an alternate component for Alterative 3 was developed to allow for the potential redevelopment of the former landfill area on OU No. 5. Since the objective of the cap described for the former landfill is to prevent direct contact or migration of the contaminated material within the former landfill, an alternative barrier or cap form would be acceptable. Under this alternate component, the following activity related to the former landfill is permitted:

- Regrade the former landfill area in order to support an asphalt or concrete surface cover to allow for Commercial/Industrial redevelopment;
- Comply with all ARARs, such as federal and State closure and remediation requirements, including but not limited to those in the Texas Administrative Code (T.A.C.), 30 T.A.C. 335, Subchapters A., F. and S.

Included in **Appendix C** is a Technical Memorandum that outlines the asphalt or concrete surface covers that may be utilized and the associated range of cost estimates. Either of these covers would achieve the remedial action objectives, but must be constructed in accordance with all ARARs, including, but not limited to, State closure and remediation requirements found in 30 T.A.C. 335, Subchapters A., F. and S.

Alternative 4 - Decontaminate Buildings/Structures, Demolish Former Battery Wrecking Facility and Dispose Off-site; Containment of Former Surface Impoundment, Former Landfill; Excavate and Dispose Slag Burial Area/Other Soils (up to 2 feet)

Major Components of Alternative 4

This alternative includes decontamination of the contaminated buildings and structures, in addition to the demolition and disposal of the Former Battery Wrecking Facility; containment of the former surface impoundment; containment of the former landfill, including a cap design plan; excavation of slag burial area/other soils (up to 2 feet) exceeding remedial action goals and disposal in the former landfill; monitoring of ground water and stormwater.

The Former Battery Wrecking Facility Building would be sampled to classify waste type for disposal, including TCLP. Controlled dismantling and demolition activities would be conducted using standard dust suppression methods and performed using wrecking balls, bulldozers, and similar means. For cost estimating purposes, it was assumed that 20 TCLP samples would be collected and analyzed and that all of the building debris could be disposed in a non-hazardous landfill.

Under this alternative, soils located in the slag burial area/other soils area that exceed Remedial Action Goals would be excavated up to a maximum depth of two (2) feet. The excavated material would be sampled

to classify for waste disposal. Soils that exceeded TCLP requirements would be treated and disposed of off-site, soils that were classified as non-hazardous would be disposed of in the former landfill. The excavated area would be backfilled and graded.

The short and long-term monitoring requirements for Alternative 4 are identical to those described for Alternative 3.

Treatment Components:
The treatment components of this Alternative are identical to those in Alternative 2.

Containment Components:
Under Alternative 4 the containment components would be the same as Alternative 2.

General Components:
The estimated time needed to implement Alternative 4, is less than 1 year. The estimated costs for implementation of this alternative are provided below:

Capital Costs:	$ 22,489,192
Annual Operation & Maintenance(0-5 years):	$ 8,600
Annual Operation & Maintenance(6-30 years):	$ 5,300
Present Worth:	$ 22,564,906

IX. SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

The EPA uses nine criteria to evaluate alternatives for addressing a Superfund site. These nine criteria are specified in the NCP, 40 C.F.R. § 300.430(e)(9) and (f)(1). The criteria are categorized into three groups: threshold, primary balancing, and modifying. The threshold criteria must be met in order for an alternative to be eligible for selection. The primary balancing criteria are used to weigh major tradeoffs among alternatives. The modifying criteria are taken into account after state and public comments are received on a Proposed Plan.

Nine Criteria
The nine criteria that EPA uses in evaluating the remedial alternatives are as follows:

Threshold Criteria

Overall Protection of Human Health and the Environment addresses the way in which an alternative would reduce, eliminate, or control the risks posed by the site to human health and the environment. The methods used to achieve an adequate level of protection vary but may include treatment and engineering controls. Total elimination of risk is often impossible to achieve. However, a remedy must minimize risks to assure that human health and the environment are protected.

Compliance with "applicable or relevant and appropriate requirements (ARARs)" assures that an alternative will meet all related Federal, State, and local requirements.

Balancing Criteria

Long-term Effectiveness and Permanence addresses the ability of an alternative to reliably provide long-term protection for human health and the environment after the remediation goals have been accomplished.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment assesses how effectively an alternative will address the contamination at a site. Factors considered include the nature of the treatment process; the amount of hazardous materials that will be destroyed by the treatment process; how effectively the process reduces the toxicity, mobility, or volume of waste; and the type and quantity of contamination that will remain after treatment.

Short-term Effectiveness addresses the time it takes for remedy implementation. Remedies often require several years for implementation. A potential remedy is evaluated for the length of time required for implementation and the potential impact on human health and the environment during implementation.

Implementability addresses the ease with which an alternative can be accomplished. Factors such as availability of materials and services are considered.

Cost (including capital costs and projected long-term operation and maintenance costs) is considered and compared to the benefit that will result from implementing the alternative.

Modifying Criteria

State Acceptance allows the state where the site is located to review the proposed plan and offer comments to the EPA. A state may agree with, oppose, or have no comment on the proposed remedy.

Community Acceptance allows for a public comment period for interested persons or organizations to comment on the proposed remedy. EPA considers these comments in making its final remedy selection. EPA addresses the public comments in a Responsiveness Summary, which is included as part of the ROD.

Comparative Analysis

The following discussion provides the comparative analysis for each remedial alternative for OU No. 5 against the nine criteria:

1. ***Overall Protection of Human Health and the Environment***

Alternatives 1a and 1b do not protect human health and the environment and do not achieve the Remedial Action Goals defined for OU No. 5.

Alternative 1b is only marginally more protective than 1a because it potentially reduces access to contamination, but likewise does nothing to reduce the presence of the contamination. These alternatives do not reduce exposure of the public and environment to the contaminated materials at OU No. 5.

Alternative 2 does provide a level of protection of human health and the environment. Some of the Remedial Action Goals are achieved by reducing the exposure to contamination associated with the buildings and structures. However, residual contamination is likely to remain in inaccessible areas in the former battery wrecking building, due to the poor condition of this building. This may result in releases of contamination through stormwater runoff as it further deteriorates and/or collapses. The Remedial Action Goals for the former surface impoundment, the former landfill and the slag burial area/other soils area would also be met under this alternative. Only the Remedial Action Goal for the stormwater runoff may not be met.

Alternative 3 also provides protection, but offers a slightly greater degree of protectiveness than Alternative 2, since contamination in and on the former battery wrecking building are eliminated by demolition, decontamination and off-site disposal of the debris. As an added benefit, physical and safety hazards associated with the building are also eliminated. Remedial Action Goals for the former surface impoundment, the former landfill and the slag burial area/other soils area would also be met under this alternative. The alternate component described for Alternative 3, which allows for a different cap on the former landfill (i.e. concrete or asphalt) would achieve the Remedial Action Goals for the former landfill area and also allow for future commercial/industrial development.

Alternative 4 provides essentially the same degree of protectiveness as Alternative 3. However, under Alternative 4, the surface soils (0-2 feet) that exceed the Remedial Action goals would be excavated and placed in the former landfill providing a more stringent cap than the soil cover described for these areas. Remedial Action Goals for the buildings and structures, the former surface impoundment, and the former landfill would also be achieved.

2. *Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)*

Alternatives 1a and 1b do not meet any of the ARARs that have been identified for OU No. 5, such as: federal and State RCRA closure requirements, specifically, 40 C.F.R. Part 264, Subparts B, C and D, which establish minimum standards defining acceptable management of hazardous wastes, 40 C.F.R. Part 264, Subparts I, J, L and N, which set operating and design and storage, as well as landfill design requirements for hazardous wastes; relevant portions of the State of Texas Industrial Solid Waste and Municipal Hazardous Waste requirements (30 T.A.C. § 335), such as Subchapters A., F. and S., and Risk Reduction Standard No. 3 (30 T.A.C. § 335.562); and 40 C.F.R. Parts 122 and 125, which describe management practices of stormwater runoff requirements and State risk reduction rules.

For Alternative 2, even though some residual contamination in the former battery wrecking building may be left in place in an uncontrolled state in inaccessible areas the following ARARs would generally be achieved: federal and State RCRA closure requirements, specifically, 40 C.F.R. Part 264, Subparts B, C and D, which establish minimum standards defining acceptable management of hazardous wastes, 40 C.F.R. Part 264, Subparts I, J, L and N, which set operating and design and storage, as well as landfill design requirements for hazardous wastes; relevant portions of the State of Texas Industrial Solid Waste and Municipal Hazardous Waste requirements in the Texas Administrative Code (T.A.C.) (30 T.A.C. § 335), such as Subchapters A., F. and S., and Risk Reduction Standard No. 3 (30 T.A.C. § 335.562); and 40 C.F.R. Parts 122 and 125, which describe management practices of stormwater runoff requirements. However, potential releases from residual contamination from the former battery wrecking building may prevent compliance with certain ARARs like federal stormwater management requirements. This alternative would also comply with RCRA handling, transportation, treatment and disposal requirements (30 T.A.C. § 335.11, § 335.91, § 335.508). State and federal chemical-specific ARARs for air quality (30 T.A.C. § 118.1, 30 T.A.C. § 111.115, 40 C.F.R., § 50.3 and 51.160) during remedial action would also be met. Furthermore, all off-site disposal would be at facilities in compliance with EPA's Off-site Policy, specifically all hazardous substances, pollutants or contaminants removed off-site pursuant to this action for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance with RCRA, as determined by EPA, pursuant to CERCLA Section 121(d)(3), 42 U.S.C. § 9621 (d)(3), and the following rule: "Amendment to the National Oil and Hazardous Substances Pollution Contingency Plan; Procedures for Planning and Implementing Off-Site Response Action: Final Rule." 58 Fed. Reg. 49200 (September 22, 1993), and codified at 40 C.F.R. § 300.440.

All of the components of Alternatives 3 and 4 will meet all of the ARARs identified for OU No. 5, including: federal and State RCRA closure requirements, specifically, 40 C.F.R. Part 264, Subparts B, C and D, which establish minimum standards defining acceptable management of hazardous wastes, 40 C.F.R. Part 264, Subparts I, J, L and N, which set operating and design and storage, as well as landfill design requirements for hazardous wastes; relevant portions of the State of Texas Industrial Solid Waste and Municipal Hazardous Waste requirements in the Texas Administrative Code (T.A.C.) (30 T.A.C. § 335), such as Subchapters A., F. and S., and Risk Reduction Standard No. 3 (30 T.A.C. § 335.562); and 40 C.F.R. Parts 122 and 125, which describe management practices for stormwater runoff; RCRA handling, transportation, treatment and disposal requirements (30 T.A.C. § 335.11, § 335.91, § 335.508); State and federal chemical-specific ARARs for air quality (30 T.A.C. § 118.1, 30 T.A.C. § 111.115, 40 C.F.R., § 50.3 and 51.160). Furthermore, all disposal off-site would be at facilities in compliance with EPA's Off-site Policy.

3. *Long-term Effectiveness and Permanence*

Since none of the contamination (which remained after the non-time critical removal action) at OU No. 5 will be treated or removed, long-term effectiveness and permanence will not be achieved under

Alternatives 1a and 1b.

Alternative 2 does not completely achieve long-term effectiveness and permanence. Residual amounts of contamination associated with inaccessible areas of the former battery wrecking building may remain. Moderate long-term effectiveness and permanence is achieved for the former surface impoundment, the former landfill, and the slag burial area/other soils, since residual risk is low. The cap will require long-term monitoring and maintenance to be effective.

Alternative 3 has a higher degree of long-term effectiveness and permanence than Alternative 2, since contamination associated with the buildings, structures, and equipment is removed, decontaminated as appropriate, and disposed of off-site. Moderate long-term effectiveness and permanence is achieved for the contaminated soils, since residual risk is low. The cap on the former surface impoundment, former landfill and the slag burial area/other soils would require long-term monitoring and maintenance to be effective. The cover outlined under the Alternate Component of Alternative 3 would also have a moderate level of long-term effectiveness and permanence.

Alternative 4 provides a similar degree of long-term effectiveness and permanence as Alternative 3, since the remedial activities would result in the containment of the sources of contamination at OU No. 5.

4. *Reduction of Toxicity, Mobility or Volume Through Treatment*

Alternatives 1a and 1b provide no reduction in toxicity, mobility or volume of contaminants through treatment.

Alternative 2 provides a reduction in the toxicity, mobility, and volume of some of the contamination associated with the buildings and, structures and equipment through the cleaning and decontamination process. This reduction will be achieved through the collection of the decontamination process water or vacuum dust and subsequent treatment, discharge or disposal. However, some residual contamination may remain in the buildings and structures. The mobility of contaminants in the former surface impoundment, the former landfill, and the slag burial area/other soils is reduced by the cap, but the containment action will not reduce the toxicity or volume.

Alternative 3 provides a slightly greater reduction of toxicity, mobility, and volume than Alternative 2 through the decontamination and subsequent treatment process (of decontamination rinsate) and the demolition process. All of the contamination associated with the former battery wrecking building would be removed once the building is demolished.

Alternative 4 provides a similar level of reduction as Alternative 3.

5. *Short-Term Effectiveness*

Alternatives 1a and 1b have minimal short term effectiveness for the community, since no removal of any contaminated media occurs under this

alternative. Short-term effectiveness is not achieved for trespassers.

Under Alternative 2 short-term risk to the community may increase during implementation. There is also a potential for exposures to workers during the remedial action. Heavy vehicular traffic may cause some nuisance to the community. However, all appropriate regulations and safety measures will be instituted and strictly followed.

Alternatives 3 and 4 also involve an increase of short-term risk to the community during implementation as well as risk to remedial action workers during demolition activities. Heavy vehicular traffic may cause some nuisance to the community. However, dust control and other safety measures will be implemented to protect the community and the workers.

6. *Implementability*

There is no action to implement under Alternatives 1a. Implementation of some aspects of Alternative 1b, such as posting warning signs and fencing are readily implementable. However, land use and deed notification or restrictions may be difficult or impossible to obtain and enforce.

Alternative 2 is implementable. The technical feasibility of cleaning methods such as, steam cleaning or vacuum dusting, landfilling, and soil containment is proven, and equipment, personnel and resources generally are available. The condition of former battery wrecking building may ultimately prevent the removal of contaminants to safe levels.

Alternative 3 is also readily implementable. The technical feasibility of demolition of the former battery wrecking facility is proven and equipment, personnel and other resources generally are available. The physical conditions of the buildings and structures would require the implementation of certain safety measures during demolition. Personnel, equipment and facilities needed for the capping and containment components this alternative (including the Alternate Component) are readily available.

The implementability of Alternative 4 is nearly identical to that of Alternative 3. The technical feasibility of conducting the excavation and placement of the soils into the former landfill is also well understood and readily available.

7. *Cost*

Alternative 1a is the least expensive of all the alternatives evaluated, but does not meet any of the other evaluation criteria. Alternative 1b has a relative low cost, but like Alternative 1b, does not meet any of the other evaluation criteria. Alternative 2 is in the mid range compared to the other alternatives and meets some of the other criteria. The cost of Alternative 3 is high, relative to Alternatives 1a, 1b and 2, but meets most of the other evaluation criteria. Alternative 4 is the most expensive, but meets all of the other criteria.

8. *State Acceptance*

The TNRCC has reviewed copies of the RI, Risk Assessment, FS and this Record of Decision and has provided technical support on all EPA efforts at OU No. 5. The TNRCC on behalf of the State of Texas concurs with EPA's selected remedial action for the Former Battery Wrecking Facility, OU No. 5, of the RSR site (See **Appendix D**).

9. *Community Acceptance*

Comments were received from the community during the public comment period which opened June 18, 1996, and closed August 17, 1996. A public meeting was held on July 9, 1996 to receive verbal comments. All comments received have been addressed, and responses are included in the Responsiveness Summary (**Appendix A**) to this ROD. EPA carefully considered all comments in making the final decision on the selected remedial action for OU No. 5. Based on comments received a modification to the alternatives, as proposed was made. This change to the alternatives is discussed in Section VIII. DESCRIPTION OF ALTERNATIVES, and involves the disposal of nonhazardous material in the former landfill. An Alternate Component was also developed to supplement Alternative 3, to address public comment. These changes are also described in Section XII. DOCUMENTATION OF SIGNIFICANT CHANGES.

X. THE SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis using the nine criteria, and the public comments, EPA has determined that Alternative 3 - **Decontaminate Buildings; Demolish Former Battery Wrecking Building and Dispose Off-site; Containment of the Former Surface Impoundment, the Former Landfill and the Slag Burial Area/Other Soils** is the most appropriate remedy for OU No. 5 of the RSR site.

The major components of this remedy include:

- Decontamination of the former battery wrecking building and the vehicle maintenance building (estimated 60,600 square feet);
- Demolition of the former battery wrecking building using conventional methods and off-site disposal of debris (estimated 55,800 square feet);
- Evaluate existing cap on the former surface impoundment, upgrade or replace as necessary, in order to complete RCRA closure (estimated 45,000 square feet);
- Cap the former landfill in accordance with applicable landfill closure requirements (estimated 503,000 square feet);

- Cap the Slag Burial Area/Other Soils Areas that exceed Remedial Action Goals (estimated 1,480,000 square feet) with two (2) feet of clean backfill and revegetating with native grasses;

- No action is recommended for the shallow ground water. The shallow ground water beneath OU Nos. 4 and 5 is not considered to be a potential drinking water supply (i.e. a Class III aquifer).

All activities will be in compliance with federal and State ARARs, specifically those for RCRA closure and remediation, RCRA handling, transportation, treatment and disposal requirements, asbestos disposal requirements, and State and federal chemical specific ARARs for air quality during remediation. **Appendix E.** includes the ARARs analysis for OU No. 5. In addition, all off-site disposal of material must in compliance with EPA's Off-site Policy at the time of disposal. **Figure 17** illustrates the areas on OU No. 5 to be addressed by Alternative 3.

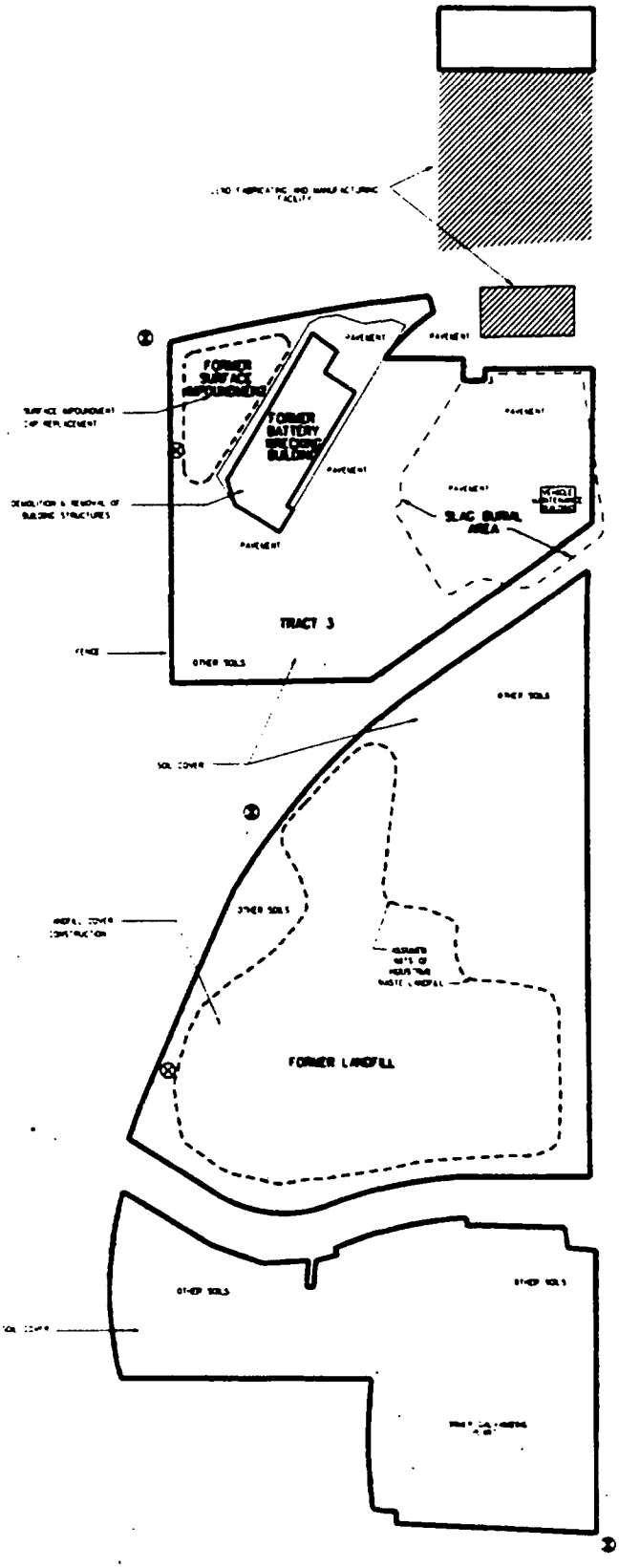
The estimated time for completion of this remedy is less than one year and the estimated costs for this alternative are:

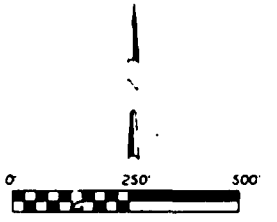
Capital Costs:	$ 9,237,015
Annual Operation & Maintenance(0-5 years):	$ 9,400
Annual Operation & Maintenance(6-30 years):	$ 6,000
Present Worth:	$ 9,343,800

The alternate component of Alternative 3, is also acceptable, contingent upon implementation by the property owners or a prospective purchasers. Under the alternate component, all of the former landfill may be regraded and covered with asphalt or concrete. See Section VIII. DESCRIPTION OF ALTERNATIVES.

Remedial Action Goals

The purpose of this remedial action is to control risks posed by direct contact, ingestion, and inhalation of the contaminated material associated with the buildings, the former surface impoundment, the former landfill, and the slag burial area/other soils. The results of the baseline risk assessment indicate that the greatest excess lifetime cancer risk at the site currently is 4X10-4 from ingestion of contaminated materials in the former landfill (by the future industrial worker). This risk relates primarily to ingestion of arsenic. Lead on-site was also determined to be present at unacceptable levels. A model used to predict adult blood levels estimated blood-lead levels for a current or future worker on-site. This remedy will address arsenic in excess of 32.7 ppm, antimony in excess of 818 ppm, and lead in excess of 2,000 ppm present in or as part the buildings and structures, the former surface impoundment, the former landfill and the slag burial area/other soils. The 2,000 ppm corresponds to the acceptable level, as predicted by the Adult Lead Model (see **Appendix B**), the 32.7 ppm corresponds to an excess cancer risk of the 1X10-5, and the level for antimony corresponds to an excess cancer risk of 1X10-6.





LEGEND

- ASSUMED OU NO. 5 BOUNDARY
- ACTIVE FACILITY - NOT INCLUDED IN RI/FS
- NRS TO DECONTAMINATION AND REMOVAL OF BUILDINGS, STRUCTURES
- LANDFILL COVER
- ⊗ SURFACE WATER AND SEDIMENT SAMPLING LOCATION FOR SHORT TERM MONITORING

FIGURE 17

REMEDIAL ACTION ALTERNATIVE 3 COMPONENTS OPERABLE UNIT NO. 5 RSR CORPORATION SUPERFUND SITE DALLAS, TEXAS

RSR/OU4 5/SPOST.R...1433F03.CGN

XI. STATUTORY AUTHORITY FINDINGS AND CONCLUSIONS OF LAW

Pursuant to CERCLA, studies are conducted at NPL sites to characterize the nature and extent of contamination associated with a particular source of contamination and to determine the most feasible cleanup approaches. At OU No. 5, EPA conducted a remedial investigation, feasibility study, and risk assessment to determine the nature and extent of site contamination.

The statutory determinations that are required for remedy selection are in Section 121 of CERCLA, 42 U.S.C. § 9621. Under CERCLA, EPA must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as their principle element. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy protects human health and the environment by addressing releases or threats of releases of hazardous substances by demolition, decontamination, treatment, as necessary, and disposal of debris and by containment of the former surface impoundment, the former landfill and the slag burial area/other soils.

The selected remedy would minimize the threat of exposure to the lead, arsenic and antimony present on-site through ingestion, inhalation, and direct contact. By decontaminating the buildings, demolishing and disposing of the former battery wrecking facility, and containing the former surface impoundment, the former landfill and the slag burial area/other soils, the cancer risks from exposure will be reduced to less than 1X10-6, which falls within the EPA's acceptable risk range of 10-4 to 10-6. There are no short-term threats associated with the selected remedy that cannot be readily controlled. In addition, no adverse cross-media impacts are expected from the activities.

Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy will comply with ARARs. The complete ARARs analysis, determinations and justification for ARARs for OU No. 5 of the RSR site is presented in **Appendix E**.

In addition, per comment from TNRCC (See **Appendix F**), Title 30. Environmental Quality, Part I., Chapter 335. Industrial Solid Waste and Municipal Hazardous Waste (30 T.A.C. §335) is also an ARAR.

The following CERCLA requirement must also be complied with as part of the selected remedy: All disposal off-site will be at facilities in compliance with EPA's Off-site Policy, specifically .all hazardous substances, pollutants or contaminants removed off-site pursuant to this action for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance with RCRA, as determined by EPA,

pursuant to CERCLA Section 121(d)(3), 42 U.S.C. § 9621 (d)(3), and the following rule: "Amendment to the National Oil and Hazardous Substances Pollution Contingency Plan; Procedures for Planning and Implementing Off-Site Response Action: Final Rule." 58 FR 49200 (September 22, 1993), and codified at 40 C.F.R. § 300.440.

Cost-Effectiveness

EPA believes that this remedy would provide a significant reduction of the risks to human health and the environment at an estimated cost of $9,024,000. Therefore, the selected remedy provides an overall effectiveness proportionate to its costs, such that it represents a reasonable value for the money that will be spent.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA believes the selected remedy represents the maximum extent to which permanent solutions and treatment/resource recovery technologies can be utilized in a cost-effective manner for the types of materials and contaminants at OU No. 5 of the RSR Site. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the selected remedy provides the best balance in considering long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; and cost; as well as considering the statutory preference for treatment as a principal element, and considering State and community acceptance.

Preference for Treatment as a Principal Element

This remedy utilizes permanent solutions and alternative treatment to the maximum extent practicable for this Operable Unit. However, due to the size of the former landfill portion, slag burial area/other soils, it was determined impracticable to excavate and treat the chemicals of concern effectively. Thus, the remedy for this Operable Unit does not satisfy the statutory preference for treatment as a principal element of the remedy.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, allowing for future industrial use, five-year reviews will be necessary at OU No. 5 of the RSR Site to ensure that the remedy continues to provide adequate protection of human health and the environment.

XII. DOCUMENTATION OF SIGNIFICANT CHANGES

EPA issued the Proposed Plan for the RSR Corporation Superfund site, Operable Unit No. 5 for public review and comments on June 18, 1996. In the Proposed Plan, EPA solicited comments on the disposal of nonhazardous material which may be generated from the OU No. 4 remedial action into the former landfill. EPA evaluated verbal comments, reviewed all written comments and information submitted during the public comment period regarding this matter. In addition, EPA received

comments on the cap proposed for the former landfill. EPA addressed the comments regarding the cap in the former landfill in the Alternate Component described for Alternative 3. Based on this review and evaluation, EPA has made that the following changes to the alternatives, as originally identified in the Proposed Plan:

1.) Remove from the alternatives the disposal of nonhazardous debris in the former landfill. The basis for this change are the comments that were received on the Proposed Plan. A complete discussion of the comments and responses regarding this matter is included in the **Appendix A.** Responsiveness Summary.

2.) Incorporate the Alternate Component in the selected remedy. EPA has incorporated the Alternate Component in the selected remedy. This Alternate Component, describes other caps or covers that may be used in the former landfill, in order to allow for commercial/industrial redevelopment of that area.

3.) Revise cost estimates for each alternative. The revised cost estimates that incorporate the above changes for each alternative are included in **Appendix G.**

RESPONSIVENESS SUMMARY
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5 AND
GROUND WATER PORTION OPERABLE UNIT No. 4
DALLAS, DALLAS COUNTY, TEXAS

INTRODUCTION

This Responsiveness Summary for the RSR Corporation Superfund Site (RSR Site), Operable Unit (OU) No. 5 and ground water portion of OU No. 4, documents for the Administrative Record public comments and issues raised during the public comment period on the Proposed Plan for OU No. 5 and the ground water portion of OU No. 4. Pursuant to Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), 42 U.S.C. § 9617, EPA considered all comments received during the public comment period in making the final decision contained in the Record of Decision (ROD) for OU No. 5 and ground water portion of OU No. 4.

OVERVIEW OF PUBLIC COMMENT PERIOD

The United States Environmental Protection Agency (EPA) issued the Proposed Plan for OU No. 5 and the ground water portion of OU No. 4 for public review and comment on June 18, 1996. The initial thirty-day public comment period for the Proposed Plan ended on July 17, 1996. At the request of a citizen, EPA extended the public comment period to August 16, 1996. EPA conducted a public meeting on July 9, 1996, at the West Dallas Multipurpose Center located at 2828 Fish Trap Road, in west Dallas, Texas to provide information and answer questions about the Proposed Plan and to receive public comments. A transcript of the meeting was prepared and is available in the Administrative Record for OU No. 5 located at the information repositories for the RSR Site. This Responsiveness Summary contains EPA's responses to verbal comments received during the public meeting and written comments received during the comment period. EPA received many questions and comments during the comment period that did not relate to the Proposed Plan for OU No. 5, but to other matters at the RSR Site. EPA has organized this Responsiveness Summary to respond to comments on the Proposed Plan for OU No. 5 first, in the section entitled "Comments and Issues Concerning the Proposed Plan for OU No 5." EPA is responding to the comments and questions received during

the comment period that did not relate to the proposed plan for OU No. 5 in the section entitled "Other Comments and Questions."

COMMENTS AND ISSUES CONCERNING THE PROPOSED PLAN FOR OU No. 5

1. City of Dallas Department of Environmental and Health Services, letter dated July 16, 1996.

Comment: The City of Dallas Department of Environmental and Health Services states the EPA's proposed clean-up Alternatives 3 and 4 include capping essentially all of the OU No. 5 site should, in the City's opinion, eliminate problems associated with this site. The City believes that little would be gained for the additional cost involved in soil removal as proposed in Alternative 4 and could increase the exposure to airborne metal emissions during the soil removal. The City recommends that the EPA adopt Alternative 3 without capping "other soils" south of the railroad right-of-way, unless those "other soils" exceed the City of Dallas Council recommended level of 250 ppm for lead.

Response: Consistent with this comment EPA has selected Alternative 3 as the remedy for OU No. 5. However, the Remedial Action Goal established for lead in the OU No. 5 Record of Decision is 2,000 ppm. This goal is based on the site specific risk assessment that was conducted for OU No. 5. Therefore, the "other soils" portion of OU No. 5 will be capped when the concentration of lead exceeds 2,000 ppm or when any of the other Remedial Action Goals established in Record of Decision and supported by the risk assessment are exceeded.

2. RSR Corporation, letter dated August 16, 1996.

Comment: RSR's comments focus on the Proposed Plan for OU No. 5, and specifically evaluate certain elements of EPA's preferred remedial alternative (Alternative 3) that RSR believes are inappropriate in light of site conditions and the requirements of the National Contingency Plan (NCP). RSR's comments also describe an *RSR Alternative Approach*, that RSR says will achieve the same results as EPA's proposal in a way more conducive to future development of the site.

Response: Below is an itemized response to the major components of the RSR Alternative Approach.

Comment: As to Subarea 1, the principal difference from EPA's proposal would be to avoid unnecessary expense in shoring up the former battery plant. That building would be demolished and concurrently decontaminated, not rebuilt before decontamination and demolition. Scrap metal and any other reclaimable material generated from demolition activities will be recycled rather than disposed on-site.

Response: The EPA proposal and selected remedy for the former battery wrecking facility portion of OU No. 5 does not require that buildings be shored, braced or rebuilt prior to decontamination and demolition. Rather, the relevant portion of the selected remedy simply states:

- Decontamination of the former battery wrecking building and the vehicle maintenance building;
- Demolition of the former battery wrecking building using conventional methods and offsite disposal of debris;

The specifics of the construction sequencing and the decontamination and demolition methods to be used at the former battery wrecking facility will be further defined in the Remedial Design. The shoring and bracing that was described in the alternatives was for the purpose of documenting the assumptions for purposes of estimating costs. EPA will consider reclamation of non-hazardous scrap material generated as part of demolition activities during the Remedial Design and Remedial Action.

Comment: The former vehicle maintenance facility would be decontaminated in-situ with commonly employed practices. Existing building sumps would be used to collect any fluids generated from this decontamination. After determination that the fluid meets the discharge standards for the City of Dallas's POTW, the fluids would be discharged to the POTW.

Response: As stated previously the specifics on the decontamination methods will be further defined in the Remedial Design.

Comment: As to Subareas 2 and 3, this alternative remedy would adopt a two-step approach. First, interim measures would be put into place to prevent releases prior to redevelopment of the property. These would include institutional controls, including a deed restriction on the use of the site; use of dust suppressant to control windborne emissions; repairing existing fencing where

necessary; and posting warning signs. In addition, surface water management controls, a sediment collection and disposal system, and storm water controls along the perimeter of the site would be improved or, where not currently present, installed.

Second, EPA would define now the requirements to be imposed on future site development. These would be presumptive in the sense that any future developer would escape them only by demonstrating that an alternative was equally protective. These would be enumerated in the deed restriction described above. Among the elements to be specified in this program would be the requirement that metals contaminated soils outside of the former landfill be covered with buildings or pavement meeting appropriate standards. If redevelopment of the site ultimately is not feasible, designated areas of OU No. 5 would be capped with two feet of soil.

Response: EPA does not agree that a two step approach to the remedy is necessary in order to address redevelopment options for properties associated with OU No. 5. In response to this comment, EPA has incorporated an Alternate Component in Alternative 3 and in *The Selected Remedy* in the Record of Decision for OU No. 5 to address the requirements for redevelopment options that may be implemented by the property owner or prospective purchaser. The Alternate Component of Alternative 3 allows for regrading of the former landfill portion of OU No. 5 in order to support an alternate cap consisting of asphalt or concrete that would be constructed and monitored in accordance with State and federal ARARs, including, but not limited to, State closure and remediation requirements found in 30 T.A.C. 335 Subchapter S, Risk Reduction Standards, and requirements of portions of 30 T.A.C. 335 Subchapter F, Permitting Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities, which include closure and post-closure care requirements for landfills. The scheduling and timing of the Remedial Action are not addressed in the ROD, but can be more appropriately addressed in implementation documents, such as work plans, orders, or consent decrees. Finally, in the event that redevelopment of the former landfill portion of OU No. 5 is not pursued, *The Selected Remedy* requires that the former landfill be capped in accordance with ARARs, including landfill closure requirements.

Comment: As to the former landfill area, the program would include a hybrid closure approach. Consistent with the redevelopment of the site, the landfill would be graded and covered with parking lots and/or buildings. In the event that redevelopment of the site ultimately does not occur, it would be capped with 2 feet of clean, compacted soils and vegetative cover. In the meantime, since the topography of the former landfill slopes by approximately 25 feet from east to west, it could be filled with non-hazardous waste material from OU Nos. 4 and 5 and fenced. Other appropriate institutional controls also would be implemented. No leachate collection or leachate monitoring would be required for this area, however, since the material in the landfill consists of highly insoluble and immobile constituents. The landfill would be inspected on a quarterly basis, unless a parking lot or building is placed over the landfill, depending upon the redevelopment approach. Any deterioration indicating a potential for migration of materials from the landfill would be repaired as expeditiously as possible.

Response: As stated above, in the event that redevelopment does not occur on the former landfill portion of OU No. 5, *The Selected Remedy* requires closure of the former landfill in accordance with State and federal ARARs, which may include a hybrid approach. This includes, but is not limited to, ARARs such as State closure and remediation requirements, as found in 30 T.A.C. Subchapter S., Risk Reduction Standards, and relevant portions of 30 T.A.C. 335 Subchapter F., Permitting Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities, which include closure and post-closure care requirements for landfills. Due to the potential for redevelopment of the former landfill portion, as well as other comments received on the Proposed Plan regarding disposal of the nonhazardous material generated from Remedial Actions at OU Nos. 4 and 5, the Record of Decision for OU No. 5 calls for the off-site disposal of the non-hazardous material rather than disposal in the former landfill.

Comment: The RSR alternative approach and EPA's preferred remedial alternative for OU No. 5 differs principally in three respects: the approach for decontaminating and demolishing the battery wrecker building; the approach for capping the former landfill area; and timing. In all other respects the remedial alternatives are virtually identical. As noted above and discussed more fully below, RSR believes

the Agency's concept of shoring up the wrecker building prior to its decontamination and demolition is unnecessary. Further, the cap EPA would place on the former landfill is unnecessarily complex and expensive and would interfere with the site's future development. Finally, by deferring work on Subareas 2 and 3 until redevelopment occurs, some disturbance of existing, non-threatening conditions can be avoided and costs saved.

Response: An itemized response to the RSR expanded critique of certain elements of EPA's proposed alternative is provided in the following comments and responses.

Comment: EPA has proposed to decontaminate the battery wrecking building. Prior to doing so, however, EPA would conduct a complete structural investigation of the facility to identify structural hazards. EPA then assumes that shoring and bracing will be performed at those specific areas; the shoring and bracing would be designed to withstand high pressure steam cleaning.

In lieu of this approach, it would make more sense to demolish and concurrently decontaminate the building. RSR thus believes it more prudent to proactively demolish the building while concurrently decontaminating it.

Response: As stated previously the relevant portion of the Record of Decision for OU No. 5 does not require that the battery wrecking building be shored, braced or rebuilt prior to decontamination and demolition. The specifics of the construction sequencing and the decontamination and demolition methods to be used at the former battery wrecking facility will be further defined in the Remedial Design. The shoring and bracing that was described in the EPA alternatives was for the purpose of documenting the assumptions for purposes of estimating costs.

Comment: EPA has proposed to cap the former landfill area with a cover system that parallels the RCRA requirements for closure of a hazardous waste landfill. The Agency's apparent reasoning for requiring this extensive cover design is that the RCRA Subtitle C landfill cover requirements are relevant and appropriate for the site.

This is incorrect, for two reasons. First, the landfill has not "actively managed" RCRA hazardous wastes; such wastes were not placed in the landfill after the effective date of RCRA Subtitle C requirements, nor does RSR

propose to place hazardous waste in the landfill as part of the alternate remedial approach. Second the RCRA Subtitle C cover requirements for hazardous waste landfills do not meet the criteria set forth in the NCP that standards to be considered relevant and appropriate.

Response: The Alternate Component described in the Record of Decision for OU No. 5 allows for an alternate cap (i.e. concrete or asphalt) over the former landfill portion in order to support redevelopment options. This flexibility in the final cover design for the former landfill is not inconsistent with the proposed "hybrid closure" described in the RSR comments. Furthermore, the remedial alternatives analysis portion of the Feasibility Study for OU No. 5 describes the landfill capping design assumptions that were made in order to estimate costs, and are as follows:

> This alternative assumes that surface preparation will be performed using conventional earth-moving equipment and methods. In addition, this alternative assumes the placement of the clay layer, flexible membrane liner, drainage layer, and cover will be performed using conventional methods. The cover system in a nonhazardous waste landfill is a function of the bottom liner system and the liquid management strategy for the site. Landfill closure requirements will most likely be established by the State of Texas. Depending on site-specific considerations, designs based on natural soils as well as designs that resemble a multi layer cover may be required. Hence, the assumption of a multi layer cover in this alternative is a conservative one.

The bases for the assumptions used in the alternatives development are the ARARs analysis documented both in the Feasibility Study and the Record of Decision for OU No. 5. The principal ARARs for the former landfill portion of OU include the State closure and remediation regulations, as described in 30 T.A.C. 335 Subchapters F and S. In addition, comments received from the Texas Natural Resources Conservation Commission (TNRCC), recommend the use of 30 T.A.C. 335.174 for the closure and post-closure care of the landfill portion. This section (30 T.A.C. 335.174) incorporates five criteria that could be considered for landfill cover design:

> (1) Provide long-term minimization of migration of liquid through the closed landfill;

(2) Function with minimum maintenance;

(3) Promote drainage and minimize erosion or abrasion of the cover;

(4) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(5) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

Comment: The Presumptive Remedy for a Municipal Solid Waste Landfill (MSWLF) does not require a RCRA Subtitle C landfill cover. Even if the former landfill at OU No. 5 were a MSWLF, the guidance compels the conclusion that these closure standards to which EPA referred are not applicable. They could be considered relevant and appropriate only after the consideration of several factors, including the nature of the waste, the date on which it was disposed in the former landfill, and the hazardous properties of the waste. Furthermore, in this instant context those factors would not support such a finding.

In addition, one of the primary purposes of landfill covers required under the RCRA Subtitle C program is to prevent ground water contamination. But such contamination is not an issue at the RSR site. EPA has stated in the RI and the FS documents for OU No. 5 that leachate will not be generated from the landfill and that ground water underlying the site in the vicinity of OU No. 5 is not considered a potential water supply aquifer. Consequently, the cap design contemplated by EPA is overkill that will achieve a degree protection substantively no greater than the cover design proposed by RSR. In fact, EPA itself admits that its assumption of a multi layer landfill cover is conservative. Moreover, the cap would impede, if not preclude, redevelopment of the site.

Response: The presumptive remedy guidance for Municipal Landfills was considered in the technology evaluation in the Feasibility Study for OU No. 5. Furthermore, the Alternate Component described in the Record of Decision allows for an alternate cap over the former landfill portion to support redevelopment options and which is not inconsistent with the proposed "hybrid closure" described in RSR's comments. As stated previously, the principal ARARs for the former landfill portion of OU No. 5 include the State closure and

remediation regulations, as described in 30 T.A.C. 335 Subchapters F and S. Finally, this comment takes out of context the information cited in the OU No. 5 Feasibility Study with regard to leachate generation. The Feasibility Study Report states the following with regard to leachate generation (emphasis added):

> "Since most of the landfill material consists of highly insoluble and immobile industrial refuse, *it has been assumed that for cost estimating purposes*, no leachate will be generated by the landfill and no monitoring will be required."

Comment: The RSR alternative embodies a hybrid closure that melds appropriate elements of the RCRA Subtitle C closure standard with other appropriate and protective closure standards. Relevant EPA guidance indicated that Agency personnel are to consider hybrid closure options for landfills at which the RCRA Subtitle C landfill standards are not applicable. The NCP clearly supports the use of hybrid closures for the former landfill at OU No. 5. For example, the NCP recognizes that the Superfund program has been using several different types of hybrid closures that give the decision maker additional choices for the long-term management of hazardous substances as well as treated residuals. Furthermore, where future brownfield development is possible, avoiding interfering remedies clearly is favored. Unlike EPA's preferred remedial approach, the alternative would not put into place impediments to the redevelopment of the property. For example, the RCRA cap EPA proposes to place on the former landfill in Subarea 2 would render it virtually impossible to redevelop that portion of the site. Moreover, from an economic perspective, the phased approach described herein makes redevelopment a more likely prospect.

Response: The Alternate Component described in Alternative 3 and in *The Selected Remedy* in the Record of Decision for OU No. 5 allows for an alternate cap over the former landfill portion in order to support redevelopment options. This flexibility in the final cover design for the landfill is not inconsistent with the proposed "hybrid closure" described above. The Alternate Component of Alternative 3 allows for regrading of the former landfill portion of OU No. 5 in order to support an alternate cap consisting of asphalt or concrete that would be constructed and monitored in accordance with the State and federal ARARs, including those for closure and remediation, as described in 30 T.A.C.

335 Subchapters F and S. As stated previously, timing of implementation the Alternate Component is more appropriately addressed in documents other than the Record of Decision.

3. Other Written Public Comments

Comment: Other separate written comments received included:
- a request that something be done to address the contamination soon;
- a preference for Alternative 4, rather than 3, because it provides more assurance and protection;

Response: The cleanup at RSR OU Nos. 4 and 5 will continue to be an EPA Region 6 priority and will be addressed in an expeditious manner. Alternative 3 is preferred over Alternative 4, because it provides a similar level of protection to the public and does meet the other nine criteria established by the National Contingency Plan.

4. Public Meeting, July 9, 1996, West Dallas Multipurpose Center

Comment: And in this book right here I read, we -- put us against animals right in this book. Y'all said it wasn't that contaminated because dogs and other animals have come across there and they haven't died. It's in this book.

Response: In accordance with the National Continency Plan EPA is required to conduct both a human health risk assessment and an ecological assessment on Superfund sites. As its name indicates, the human health risk assessment is conducted to estimate risks a Superfund site presents to human health. The ecological assessment, on the other hand, is conducted to estimate risks to non-human life in the environment -- that is risks to plants and animals -- presented by a Superfund site. This Superfund site represents a risk to human health, and the risk to human health is what is driving EPA at this Site. The brief summary of the ecological assessment for OU No. 5 is included in the Proposed Plan because it is required. It is not intended to compare human to non-human populations.

Comment: One of the things I would like to know is, talking about after the smelter and the area is cleaned up, what kind of guarantee will we have that the contaminated debris or whatever will not be stored here in West Dallas? We don't want it in our community.

Response: One of the issues that the public was invited to comment on was the possible disposal of the nonhazardous waste material generated from the remedial actions on OU Nos. 4 and 5 in the former landfill located on the southern portion of OU No. 5. Due to this comment, as well as other comments received on the OU No. 5 Proposed Plan, the Record of Decision for OU No. 5 calls for the appropriate offsite disposal of nonhazardous material rather than planning for it to be disposed in the former landfill located on the southern portion of OU No. 5. Any hazardous material generated as part of the OU No. 4 or 5 remedial actions must be disposed of offsite in facility permitted and regulated to receive hazardous materials.

Comment: I think you better go back and look at our lawsuit that we have, because that's what I stopped the trucks last time from doing. They pomised us that nothing would be placed here, that everything would go to Illinois.

Response: Due to the comments received on the OU No. 5 Proposed Plan, including this one, the Record of Decision for OU No. 5 calls for the appropriate offsite disposal of nonhazardous material rather than planning for it to be disposed in the former landfill located on the southern portion of OU No. 5. Any hazardous material generated as part of the OU No. 4 or 5 remedial actions must be disposed of offsite in facility permitted and regulated to receive hazardous materials.

Comment: When you place the cap over the top of the landfill, what stops the lead from spreading out?

Response: The cap/cover over the landfill will be designed in accordance with State and Federal closure and remediation requirements in order to minimize migration of contamination from within the landfill. The cap/cover will be designed to meet certain permeability requirements. These permeability requirements will minimize the infilitration of rain water and the subsequent migration of contamination.

Comment: Who owns that property?

Response: Based on information currently available to EPA, Murmur Corporation is the current owner of the property where the former secondary lead smelter is located (OU No. 4) and where the former battery wrecking facility is located

(northern portion of OU No. 5). The southern portion of OU No. 5, where the former landfill is located, is currently owned by RSR.

Comment: I really want to know how far back they're going to clean?

Response: The area estimated to be remediated as part of the OU No. 5 Remedial Action is illustrated in Figure 15, presented in Record of Decision.

Comment: Once y'all cap all this -- What's stopping RSR from coming back in here and claiming their property and building something else? See, my concern is, we've got enough of these industrial areas in here.

Response: The remedy selected for OU No. 5, as well as the remedy selected for OU No. 4, contemplates redevelopment of the property by current or future landowners consistent with city zoning requirements. EPA does not have control over who owns or who might purchase or develop this property once the cleanup is completed.

Comment: When y'all say you're going to clean up so far back there, what about that other area back there where they dumped? RSR owns it.

Response: The Proposed Plan and the Record of Decision for OU No. 5 address the former landfill area, located in the southern portion and currently owned by RSR. The remedy calls for containment of this area.

Comment: Can we get a 30-day extension to the public comment period?

Response: Yes. A 30-day extension was granted to extend the public comment period on the OU No. 5 Proposed Plan until August 16, 1996.

OTHER COMMENTS AND QUESTIONS

1. Public Meeting, July 9, 1996, West Dallas Multipurpose Center

Comment: Is there a $100 million in the Superfund or government that you can get to help west Dallas? How much

money is available? How much money is in the Superfund right now? How much money has been spent on the inspection and cleanup of the yards in the residential area and do you have any receipts?

Response: At any given time since the Superfund law was passed, there typically has been well over one billion dollars in the Superfund. The total amount of money in the Superfund is not available for EPA to spend however. EPA can only spend money that it is authorized to spend in the federal budget. The federal budget for fiscal year 1997 includes a total Superfund appropriation of approximately $1,394,245,000.00. That amount must be used to pay for the operation of the Superfund program across the nation, which requires EPA to make many budgeting decisions. Generally, if there are responsible parties at a Superfund site who can perform clean up activities or who can pay for clean up activities, EPA seeks to have the responsible parties do the work rather than spend money from the Superfund. If EPA's efforts to get responsible parties to perform or pay for the work are unsuccessful, then EPA will use money from the Superfund. Currently EPA is engaged in efforts to have the potentially responsible parties for the RSR Site perform or pay for the cleanup of OU No. 4, which is estimated to cost $11.5 million. EPA also plans to seek PRP funding for the cleanup of OU No. 5, which is estimated to cost $9.3 million. If EPA's efforts are not successful, EPA expects that there will be sufficient funding available from the Superfund appropriation for EPA to do the work itself using Superfund money.

EPA spent approximately 12 million dollars on the removal action that was conducted in the residential area (OU No. 1) of the RSR Site, including the investigation and cleanup activities. Documentation of the money spent on the RSR Superfund Site is located in the Site files at EPA Region 6 offices. EPA's cost documentation can be reviewed or copies can be obtained by submitting a request pursuant to the Freedom of Information Act to the EPA Region 6 Freedom of Information Officer. The documentation is voluminous, and there will be a charge for copying unless the requestor qualifies for an exemption.

Comment: Don't you say that this area has been cleaned up. We go back to the same places that you cleaned up 6 to 8 inches. Well, we're going down a foot; and there's contamination even higher than what you left in there. All you did is just bury it. Now you're coming in and telling

us that you're going to get us out of the Superfund Site, partially.

Response: The cleanup in the residential area was not limited to the upper 6 to 8 inches, in some cases the excavations went down to 2 to 3 feet. The cleanup depth was based on sampling data. EPA welcomes information from the community regarding areas that may still be contaminated. The information provided to EPA can be checked against the sampling and removal data to ensure that contamination does not remain above cleanup goals. Please contact Carlos Sanchez, Remedial Project Manager, at EPA, Region 6, Superfund Division, (6SF-AT), 1445 Ross Avenue, Dallas, Texas 75202, or at (214) 665-8520, to report areas of contamination that have not been addressed.

Comment: The next one that I want to discuss with you is when the smelter facility is removed, people better be moved out of that area. I want my parents removed. I want the people from the housing removed. I do not want children at Thomas A. Edison in the school system when this smokestack is coming down. Earhart, also. All the schools in the area need to be removed. They need to be moved. People in those residences immediately within the 5-mile radius -- if you say it's a 5-mile radius, I'll go along with you -- need to be removed.

Response: At the present time, EPA does not believe that it will be necessary to relocate residents of west Dallas during the demolition of the smelter facility. During the remedial action planned for OU No. 4, the former smelter facility and stack, many safety measures will be implemented and monitoring will be conducted to ensure that the work is conducted in a safe manner and that contamination does not migrate offsite and cause exposure to residents of west Dallas. For example, EPA has required in the OU No. 4 Record of Decision, that the 300 foot stack be removed in a controlled manner, such as by piece by piece dismantling, and that engineering and dust control methods be used to protect the public.

Comment: Will EPA help us get some money, compensation, something out of the $2 billion (Superfund) that you have in there or pass legislation, form legislation, to enable EPA to compensate these folks for what's been going on, not your fault, not our fault, but this industry mess they left here behind?

Response: EPA does not have the legal authority to compensate people for damage to their persons or property caused by or associated with the actions of private parties which may have contributed to the existence of a Superfund site, nor can EPA assist people crafting or promoting legislation for a special appropriation that would provide such compensation.

Comment: I'm suffering from bone deterioration and headaches and things like that. We have been having a problem, not only my family, the families of west Dallas. I think everybody here in west Dallas should be able to have Medicaid -- free Medicaid, free -- any time they get sick, they can go to the doctor. They don't have to pay a bill, because we have been contaminated. We are sick. We might not look it, but we are sick.

Response: EPA does not have the ability to provide medical care for persons affected by a Superfund site, by using Medicaid or other methods. Furthermore, EPA knows of no government program which would provide free medical care solely on the basis that a person has been exposed to contamination from a Superfund site.

Comment: They (EPA) make all these reports and tell you they want you to come in. Now, if y'all are saying that y'all want the people's input, I would like for all these people right here today do they want that lead smelter up there moved down. See, they done already given an answer of what they're going to do. I don't think none of these people did ever tell you that they want that moved down and let that contaminate these people. So y'all are doing what you want to do, and then we've got to along with it.

Response: EPA has solicited community input and comments on its remedial plans to address the former smelter facility, including the 300 foot stack (OU No. 4 of the RSR Site). In addition to conducting numerous informal community open houses on the progress of the investigation and removal activities, a formal public comment period was held from May 10, 1995 through July 12, 1995 on the Proposed Plan for the former smelter facility. A public meeting was also held on the proposal to dismantle the smelter on May 23, 1995 at the West Dallas Multipurpose Center to receive verbal and written public comments regarding the proposal. EPA carefully considered all public comments it received during the comment period, in addition to other criteria it is required to consider by the National Contingency Plan in

selecting the final remedy for the smelter facility, OU No. 4 of the RSR Site, in a Record of Decision dated February 28, 1996.

Comment: EPA said they is a policing body. I have never seen a police take money out of they pocket to correct anything. They force other people to do it. RSR is supposed to be cleaning up their own mess.

Response: EPA has provided notice to several parties that it believes share responsibility for the Site regarding undertaking the cleanup activities at the former smelter facility. EPA is continuing to negotiate with a number of parties about their conducting and/or financing the remedial activities on the former smelter facility.

Comment: I've been coming to these meetings for years, ever since y'all started having these meetings. I've got a two part question. And y'all used to say, wasn't nothing -- wasn't much damage up there. The water wasn't contaminated, this that and the other. But now that we found out on our own how contaminated it is, now it's coming out that it is contaminated. And y'all knew all along how contaminated this premises is up here with us living out here and then have the gall to want to tear down the stack and we living out there.

Response: EPA has attempted to provide accurate information to the public regarding the RSR Superfund Site. As stated previously EPA has held numerous community open house meetings to discuss the progress and status of the investigations and the removals. During those meetings EPA made available all relevant final documents summarizing the findings of the investigations. Copies of all the reports summarizing the EPA investigations on each of the OUs are also kept in the information repositories, one which is located in the Dallas Public Library - West Branch, 2332 Singleton Blvd., West Dallas, Texas.

Comment: We are not getting supported for what we is -- I want to -- this school, they said that they were digging up lead -- lead up from around there. I was paying taxes and things, and we can do that kind of work. Now, it would be nice if we could have someone out here, you know, to give them a job.

Response: Awarding of the cleanup contract for the smelter facility (OU No. 4) or the battery wrecking facility (OU No.

5) will depend on who conducts the remedial action. If the responsible parties conduct the cleanup, they can choose any contractor, as long as the contractor is qualified and capable of doing the work in accordance with EPA approved work plans. If EPA conducts the cleanup, the contract will be advertised and awarded to a contractor capable of conducting the cleanup. As with other work conducted in west Dallas, EPA will encourage its contractors or responsible parties to hire local workers and minority subcontractors.

Comment: What are you going to do? Because these people are suffering from all of this lead poisoning. And all you're doing is talking about your big time reports and how you're going to tear the stack down and spend 24 more million dollars. And these people are to continue to suffer from lead poisoning. They want some support. They want some compensation. They want some medical attention. They want some help. And it seems like all you committees are getting all of the money.

Response: The Superfund statute gives EPA the authority and funding to address environmental contamination. The law does not authorize EPA to provide compensation to individuals for personal injury or health problems. EPA intends to use its Superfund authority to the greatest extent possible to address environmental contamination related to the RSR Superfund Site.

Comment: What are you going to do about compensating the people that lived out here at that time that do have these health problems? Do you know what I am saying? It's more than just Medicaid. I can't go out and buy my daughter or my son a decent pair of shoes because I can't make it on what I'm living on. But if I had my health -- don't call me lazy, because my job records speak for me. My education speaks for me. What would you do to help me now?

Response: As stated previously, the Superfund statute does not authorize EPA to provide compensation to individuals for personal injury or health problems. However, EPA intends to continue to address contamination at the smelter facility and the battery wrecking facility as a top Region 6 priority.

Comment: I drove my car around in different areas of the community, you know, across Westmoreland, across Hampton, the shopping center, and in the Spanish area, because I

wanted to have a big turnout because I feel like this. We as the people of West Dallas -- I'm looking around at this room, and I don't see all of west Dallas here. And I wonder why. If you pay your county taxes and your city taxes, no matter what's going on in our area, everybody should know about the meetings, about the lawsuits. We want to know about the lawsuits and some people don't know. I'm a taxpayer.

Response: EPA appreciates the efforts of the community in helping to spread the word about the public meetings on the RSR Superfund Site. EPA attempted to get wide spread public notice of this meeting by publishing notice in the Dallas Morning News, as well as mailing out approximately 1100 Fact Sheets and postcard meeting reminders to everyone on the RSR Site mailing list. EPA is not a party to and has no information on any of the lawsuits regarding the RSR site.

Comment: We want the lead smelter to stay standing because it's not hurting us now. We want to be given that money that you got to spend on the smeller and give it to us. We want that money because we need it.

Response: EPA does not have the authority to compensate individuals for past exposure. EPA does not have the option of giving money to the community in lieu of cleaning up the Superfund site.

Comment: Lead poisoning can be diagnosed by the presence of lead in the urine. They have never did a urine test on us. They do blood tests. Why are we not getting tested by the urine?

Response: Blood lead levels provide the most accurate measure of a person's exposure to lead, since lead attaches to blood proteins. Lead has a low solubility in water and urine is mostly comprised of water. Therefore, urine does not provide an accurate measure of a person's exposure to lead.

Comment: We have a factory right here that's building shingles for the roofs. How do we know we're not being contaminated from that now?

Response: In addition to the Superfund statute, EPA has under it's jurisdiction several other statutes or laws to protect the air, soil, and water. Requests for information

about an operating company in your community may be directed to the Freedom of Information Officer, EPA Region 6, 1445 Ross Avenue, Dallas, Texas 75202.

Comment: Can I ask you a question? This paper here -- this paper here that everybody's supposed to send in with you input, if everybody's voting no to tearing down the lead smelter, do that mean that we're going to win, or do that mean that you're just getting us to mail this in and throwing them in the trash? I want to know that, because I have over 200 people right now that's voting no. We want to know how many people said tear it down. That's what we want to know.

Response: The decision concerning how the smelter would be cleaned up was made in February 1996, and that decision is not the subject of this comment period. A public comment period on the proposal to decontaminate, dismantle and dispose of the former smelter facility (OU No. 4) was held from May 10, 1995 through July 12, 1995. A public meeting was also held on the proposal to dismantle the smelter on May 23, 1995 at the West Dallas Multipurpose Center to receive verbal and written public comments regarding the proposal. A copy of that public meeting transcript is also contained in the OU No. 4 Administrative Record. EPA carefully considered all public comments during the comment period, as it is required to do. EPA also considered other evaluation criteria required by the National Contingency Plan in selecting the final remedy for the smelter facility in a Record of Decision dated February 28, 1996. The other criteria evaluated, in addition to community acceptance, are as follows: Overall Protection of Human Health and the Environment; Compliance with Applicable or Relevant and Appropriate Requirements (ARARs); Long-Term Effectiveness and Permanence; Reduction of Toxicity, Mobility or Volume Through Treatment; Short-Term Effectiveness; Implementability; Cost and State Acceptance.

Comment: If EPA does not have the authority to compensate, can EPA recommend that we be compensated?

Response: EPA does not have the legal authority to give or to recommend compensation.

Comment: Do the City of Dallas or the EPA have the responsibility to notify citizens when they're living in lead contaminated areas, especially when they have a plant that's emitting over a certain amount of years? Is there a

time span that you have to notify us? In other words, if this thing starts happening, 30 days after it starts do you supposed to notify us and say, well, you have lead, we've known it for about 30 days? Do you have that responsibility?

Response: If EPA has identified a site where there has been a release or threat of release of a hazardous substance that is creating a threat to human health and the environment, it is EPA's responsibility to contain and address the threat, as well as conduct community relations activities. Community relations activities may include, but not be limited to, conducting open house meetings, mailing out Fact Sheets and conducting public meetings.

Comment: If he is saying the stack is not contaminated, why is it y'all are going to tear it down?

Response: EPA has not stated that the stack is not contaminated. All of the sampling data collected from the stack does indicate that the inside refractory brick and dust is contaminated with lead, cadmium and arsenic. All of the results of the investigation of the stack and the smelter facility (OU No. 4) are contained in the information repositories, including the one located at the Dallas Public Library - West Dallas Branch, 2332 Singleton Blvd., Dallas, Texas 75212.

Comment: My question is once you are exposed to lead, minor or major, you're sick right?

Response: The amount of a person's exposure determines the degree of health effects. Low level exposure to lead can have no consequences or negligible effects.

Comment: What government entities can ya'll bring together and sit down and talk with us? It's only EPA. EPA is not the only government entity that can talk with you all Y'all are the only one that comes out here. Where is the City? Where is the State? Y'all can never give us answers.

Response: EPA has kept the City of Dallas and the Texas Natural Resources Conservation Commission (TNRCC) informed of the activities at the RSR Site, including the public meetings, such as this one, and community open houses. EPA has provided information, such as Fact Sheets, and conducted briefings with interested Dallas City Council members and Commissions. TNRCC has participated in the RSR Superfund

project through review and commenting on the technical reports, as well as attending the open houses and public meetings, including this one.

Comment: So you see, we're not concerned about that stack and we're not concerned about that damn smelter because it's done its damage, hear? What we're concerned is, what can you do for us to help us get some help? If you can't give us no money, I've been begging you to give us some medical help. We've got people in here falling apart.

Response: As stated previously, it is beyond the scope and mission of EPA to provide medical services. However, there are other local, State and Federal agencies that are dedicated to health and medical services. Some of these agencies and contacts are listed in the Citizen's Guide to Lead Issues, also referred to as the "Yellow Book."

Comment: How in the world did it come up y'all talking about $10 million to tear down the smelter. The last meeting we had, the figures were -- round right $50 million.

Response: The cost estimate for the remediation of the former secondary lead smelter (OU No. 4) as documented in the OU No. 4 Record of Decision is $11.4 million. The $50 million cost estimate that you may have heard referred to at previous meetings, may represent the total cost estimate to remediate the entire RSR site (i.e. all five OUs).

Comment: How is it you all are so concerned about a cement raggedy tin building that lead has been blowing out of for 50 years? And we've got wooden frame homes right across the street -- that lead can't penetrate them bricks up there.

Response: Protection of human health and the environment is EPA's main goal in addressing smelter related contamination at the RSR Site. EPA has been concerned about the residential areas located near the smelter. EPA's first focus was to address smelter related contamination in the residential areas (i.e. RSR OU Nos. 1 and 2). Thousands of samples were collected by EPA in the residential areas. In addition, extensive research and sampling was performed to determine the safe level of lead for the residential areas, and 420 residential properties were cleaned up to the safe level.

Comment: If any of the EPA employees lived in west Dallas when that contaminated -- when that smokestack -- even if

you tear it down by piece by piece, when it comes down contamination is sill going to go in the air. I don't care how air control monitor, it's still going to go there. There's going to still be some contamination. Would you and your kids and your family live here during that contamination?

Response: Regardless of who resides in the community, it is EPA's mission to protect the *public* during the remedial action planned for OU No. 4, the former smelter facility. Many safety measures will be implemented and monitoring will be conducted during all cleanup and demolition activities to ensure that the work is conducted in a safe manner and that contamination does not migrate offsite and cause exposure to the public.

Comment: So, the only thing that we're asking you, if it's not -- if it take a week to tear it down, move us out a week.

Response: As mentioned previously, at this time EPA does not see a need for temporary relocation during demolition activities at the former smelter facility. Engineering and control measures will be used to ensure that contamination posing a health threat does not leave OU No. 4, the smelter site, during demolition and cleanup activities.

Comment: I'd like for you to go back and make a memo. You should make an amendment back and say that this community should have been and should be a Superfund Site and people really need to be relocated out of this community.

Response: The west Dallas residential areas contaminated with smelter related contamination were included as part of the National Priorities Listing of the RSR Corporation Superfund site. Since those residential locations contaminated above health based levels have been cleaned up, permanent relocation is not necessary. Furthermore, at this time EPA does not see a need for temporary relocation during demolition activities at the former smelter facility, since engineering and control measures will be used to ensure that contamination posing a health threat does not leave OU No. 4, the smelter site, during cleanup activities.

Comment: What we want to do is, we want to get the roster where everybody signed in today; and we also want minutes. And we also want to make sure that you give us a plan of why this area -- or how this area becomes a Superfund site for people to be relocated.

Response: The roster of who attended this meeting and the minutes for this meeting can be found in the RSR Superfund Site files located at EPA Region 6 offices, 1445 Ross Avenue, Dallas, Texas 75202-2733, (214) 665-6427. The need for relocation is determined on a case by case basis for Superfund Sites.

Sites are listed on the National Priorities List based on contamination present at the site. The need for relocation is based on the remedy selected for the site. For the RSR residential locations (OU No. 1), it was determined that relocation was not necessary to conduct the cleanup. Since the cleanup in the residential areas has been completed, permanent relocation is not warranted at this time. EPA also does not see a need for temporary relocation during demolition activities at the former smelter facility at this time.

Comment: We want to know when that smelter's coming down, September or October. We want to the date before it comes up -- before that date comes up.

Response: EPA will ensure that a community open house meeting is held to provide information on the schedule and plans for the remediation of the former smelter facility, prior to demolition activities.

Comment: They dumped all up and down the back street battery casings and stuff so the people could go in and out. I come down here to be examined. The tell me, You don't have enough lead. How much lead do you have to have to have enough lead?

Response: The concentration of lead that will produce an adverse health affect varies whether you are an adult or a child. For children, the Center for Disease Control recommends a level below 10 micrograms per deciliter of lead in blood. Adults can withstand much higher levels of lead, and the occupation number is 40 micrograms per deciliter of blood.

Comment: Whenever y'all decide on tearing the smelter down up there, what steps will be taken to prevent any more pollution?

Response: EPA will require the contractor to develop demolition and dust control plans, as well as air monitoring and health and safety plans. The purpose of the plans is to have the contractor define how all of the steps of the demolition activities will be conducted, including what engineering controls will be implemented to minimize dust and potential migration of contamination, prior to work being initiated. Examples of dust control measures that may be utilized during the remedial action of the smelter facility, include wetting down the surfaces with water prior to demolition, and collecting and treating the water, as necessary. Another dust control mechanism that may be used is vacuum dusting the surfaces to remove contaminated dust.

Comment: At the first meeting that I attended with EPA, it was last year; and there was a guy from the juvenile center up here on the hill. He came to express a concern about the juvenile center being built on a mound of lead slag. And it was seeping into the juvenile and affecting the kids and everything. I haven't seen him at another meeting, you know; but that might be something the EPA needs to check into.

Response: EPA has not received information regarding the construction of the juvenile center on a mound of lead slag.

Comment: I understood the lady to say it was impossible for the lead to get out. But what about when the trucks go in? What's getting on the tires when they come out? The dust is on the tires.

Response: It is expected that dust will be generated during remediation activities. However, as stated earlier, EPA will require of the construction contractor, prior to conducting the remedial action, prepare a number of plans, such as demolition and dust control plans. The purpose of the plans is to have the contractor define how all of the steps of the remediation activities will be conducted, including what engineering controls will be implemented to minimize fugitive dust and potential migration of contamination. For example, these plans would typically require that trucks, prior to leaving the site, would be washed down and decontaminated.

Comment: Who has the power to get all of these government entities at the table at one time? Year after year it's only the EPA. There's too many questions that arise that the EPA cannot answer. Who has the authority to bring to bring the City to the table, the State, HUD, ATSDR, everybody?

Response: There is probably no one individual or organization who can require all of the City, State, and Federal agencies that could play a role in West Dallas to come together. Coordination and cooperation of the different levels and agencies of government is the key. Even though EPA does not have the authority to require all of the City, State, and Federal agencies to come together, EPA does try to involve other agencies in this project. Several years ago EPA worked with other agencies to prepare the "yellow book" for the West Dallas community. EPA met with 11 different agencies and jointly prepared the "yellow book" which gives responsibilities and contacts for each agency with regard to lead issues. EPA also communicates regularly with the City and with the Texas Natural Resource Conservation Commission concerning meetings and other activities in West Dallas.

Comment: Who are the other responsible parties besides RSR?

Response: Several hundred Potentially Responsible Parties (PRPs) have been identified for the site. EPA has formally notified eleven parties which it believes have the more significant degrees of responsibility for the site that it considers them potentially responsible for the site. The PRPs that received notice of liability for OU No. 4 of the RSR site can be found in the EPA letter dated June 5, 1996, located in the RSR site files.

Comment: Is there contamination in west Dallas?

Response: There is contamination present on OU Nos. 4 and 5 of the RSR Site, located in west Dallas, to be addressed by the final remedies selected for each OU.

2. Other Written Comments

Comment: Approximately 21 separate letters where received which listed the individual family members and medical issues and all stated that "My Family votes No" with regard to dismantling the lead smelter. Most of these letters also

requested compensation for being exposed and contaminated from the lead smelter.

Response: The final remedy for the former smelter facility, including the stack is documented in the Record of Decision for OU No. 4 of the RSR Corporation Superfund Site, dated February 28, 1996. A formal public comment period was held on the proposal to dismantle the former secondary lead smelter (OU No. 4) from May 10, 1995 through July 12, 1995. EPA carefully considered all public comments it received during the comment period, in addition to other criteria it is required to consider by the National Contingency Plan, in selecting the remedy for the former smelter facility. EPA has no plans to reopen that decision.

The Superfund statute does not allow EPA to provide compensation to individuals for personal injury or health problems.

Comment: Other separate written comments received included:

- a request to put the demolition of the smelter on hold, and first consider the health of the community;
- several additional medical concerns and requests for compensation in lieu of cleaning up the former smelter facility.

Response: EPA does not have the authority to compensate individuals for past exposure, nor does it have the option to give money to the community.

ADULT LEAD CLEANUP MODEL
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5
APPENDIX B

DRAFT

Draft Region 6 Superfund Guidance

Adult Lead Cleanup Level

Basic Equations:

$$Cs = \frac{(PbB_{GM}target - PbBo)}{BKSF \times (IRs \times EFs \times AFs + Ksd \times IRd \times EFd \times AFd)}$$

$$PbB_{GM}target = PbB_{95th}maternal/GSDi^{1.645}$$

$$PbB_{95th}maternal = PbB_{95th}fetal/R$$

Input Parameters to the Model:

1. 95th Percentile PbB in fetus (PbB_{95th}fetal)

   The EPA and CDC recommend that no more than 5% likelihood that a child would exceed 10 µg/dL. For an industrial/commercial setting, the exposed population could include pregnant women. The recommended PbB_{95th}fetal is 10 µg/dL.

2. Mean ratio of fetal to maternal PbB (R)

   The relationship between fetal and maternal blood lead is estimated to be 0.9 (Goyer 1990). The recommended "R value" is 0.9.

3. Individual geometric standard deviation (GSDi)

   A "typical" GSDi is 1.8.

4. Baseline blood lead value (PbBo)

   The demographic composition of the site should be considered. The geometric mean PbB values reported for women aged 20 - 49 years for African Americans was 2.2 µg/dL, for Hispanics was 2.0 µg/dL, and for whites was 1.7 µg/dL.

5. Biokinetic slope factor (BKSF)

   The recommended BKSF is 0.4 µg/dL per µg/day.

6. Soil ingestion rate (IRs)

   The recommended IRs is 0.025 g/day. This assumes that one-half the "default" soil/dust ingestion rate of 0.05 g/day is from soil.

7. Dust ingestion rate (IRd)

The recommended IRd is 0.025 g/day. This assumes that one-half the "default" soil/dust ingestion rate of 0.05 g/day is from dust.

8. Ratio of concentration in dust to that in soil (Ksd)

The Ksd can range from 0.2 to 1.0 with a "typical" value of 0.7.

9. Soil exposure frequency (EFs)

The "default" exposure frequency for an industrial setting is 250 days/year. This exposure frequency is based upon 5 work days per week for 50 weeks/year. The recommended EFs is 250 days/year.

10. Dust exposure frequency (EFd)

The "default" exposure frequency for an industrial setting is 250 days/year. This exposure frequency is based upon 5 work days per week for 50 weeks/year. The recommended EFd is 250 days/year.

11. Absolute absorption fraction of lead in soil (AFs)

The absorption fractions for adults range from 0.06 to 0.2. The recommended AFs for most sites is 0.1. The source of lead contamination should be considered in selecting the AFs value.

12. Absolute absorption fraction of lead in dust (AFd)

The absorption fractions for adults range from 0.06 to 0.2. The recommended AFs for most sites is 0.1. The source of lead contamination should be considered in selecting the AFs value.

DRAFT

Model Parameter	Plausible Range	"Typical" Value
95th Percentile PbB in fetus (μg/dL)	5 - 15	10
R (Mean ratio of fetal to materal PbB)	0.8 - 1.0	0.9
Individual geometric standard deviation (GSDi)	1.6 - 2.0	1.8
Baseline blood lead value (PbBo) (μg/dL)	1.6 - 2.2	1.9
Biokinetic slope factor (BKSF) (μg/dL per μg/day)	0.3 - 0.5	0.4
Soil ingestion rate (IRs) (mg/day)	10 - 25	25
Dust ingestion rate (IRd) (mg/day)	10 - 25	25
Ratio of concentration in dust to that in soil (Ksd)	0.2 - 1.0	0.7
Soil ingestion frequency (EFs) (days/year)	100 - 350	250
Dust ingestion frequency (EFd) (days/year)	100 - 350	250
Absolute absortion fraction of lead in soil (AFs)	0.06 - 0.2	0.1
Absolute absortion fraction of lead in dust (AFd)	0.06 - 0.2	0.1
Resulting soil concentration (mg/kg)		2,000

Results - Screening Level for Lead Program v1.00

95th Percentile PbB in fetus (PbB95 fetal) (ug/dL)	: 10
Mean ratio of fetal to maternal PbB (R)	: 0.9
Individual geometric standard deviation (GSDi)	: 1.8
Baseline blood lead value (PbB0) (ug/dL)	: 1.9
Biokinetic slope factor (BKSF) (ug/dL per ug/day)	: 0.4
Soil ingestion rate (IRs) (g/day)	: 0.025
Dust ingestion rate (IRd) (g/day)	: 0.025
Ratio of concentration in dust to that in soil (Ksd)	: 0.7
Soil Exposure frequency (EFs) (days/yr)	: 250
Dust Exposure frequency (EFd) (days/yr)	: 250
Absolute absorption fraction of lead in soil (AFs)	: 0.1
Absolute absorption fraction of lead in dust (AFd)	: 0.1

Screening Level for Lead (PRG) (ug/g): 1997

DRAFT

Screening Level for Lead Program v1.00

1.0 Starting the Program

To start the "Screening Level for Lead Program" (PRG), enter **PRG** at the DOS prompt of the subdirectory containing the executable file (PRG.EXE).

2.0 Data Entry

Figure 1 illustrates an example Data Entry Screen for PRG.

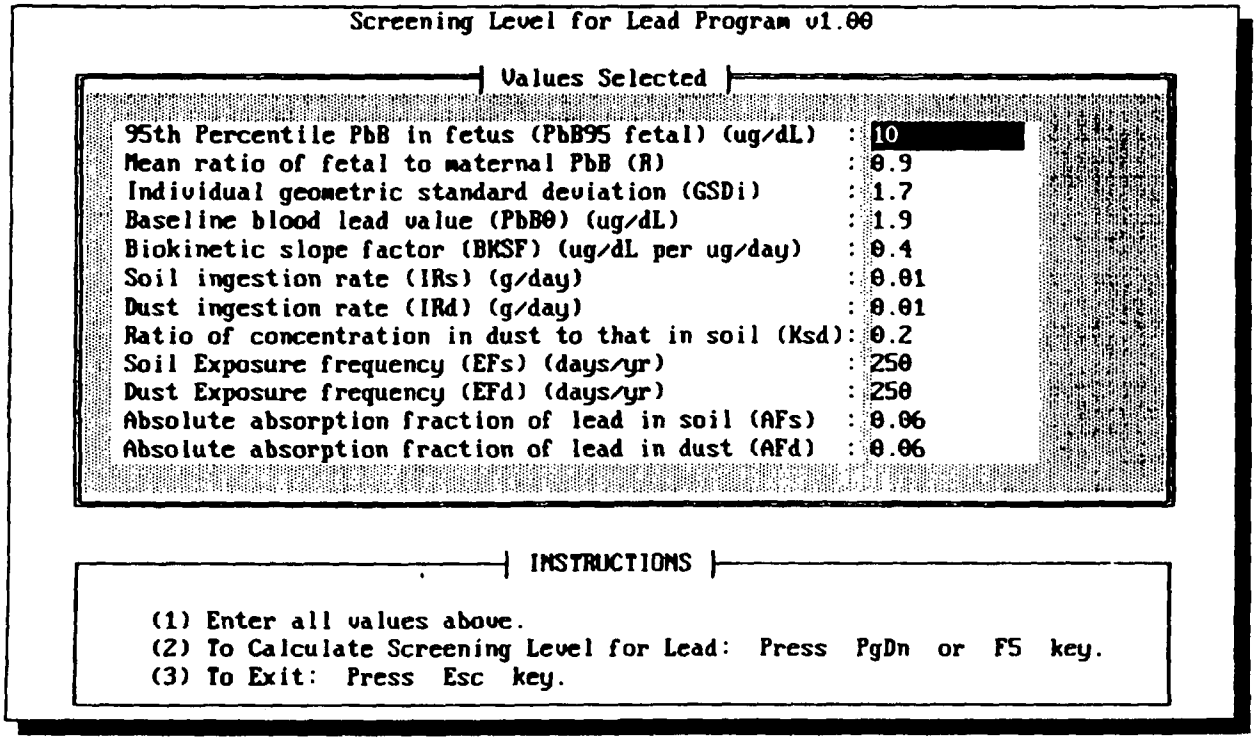


Figure 1. Example Data Entry Screen

When started initially, all data entry fields are zero. Some fields (such as GSD_i, BKSF, and R) can not be left as zero because division by zero is prohibited. Also, this program does not allow entry of negative numbers in any field. After all values are entered, press either the PgDn key or the F5 key to calculate the Screening Level for Lead (in ug/g).

3.0 Results

Figure 2 illustrates an example Results Screen.

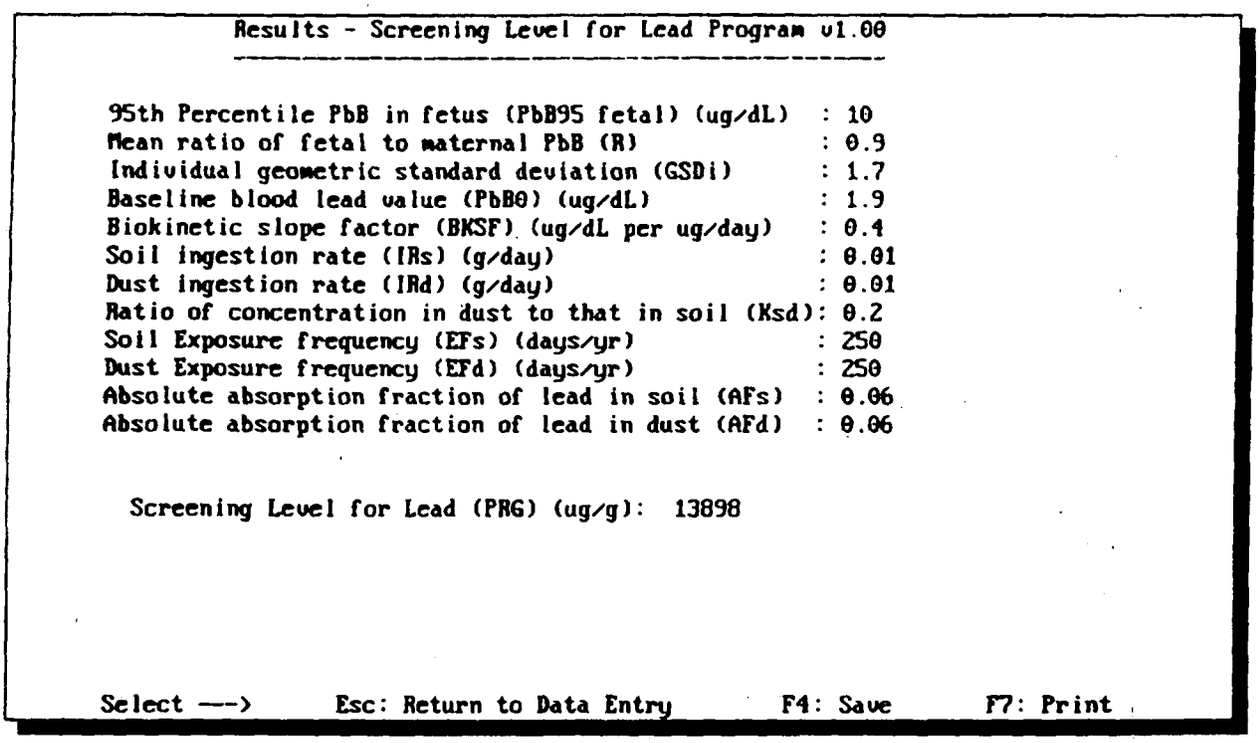


Figure 2. Example Results Screen

The Results Screen can be printed or saved to a file. All data entry values are retained when returning to the Data Entry Screen.

4.0 Equation Used for Calculation

The following equation is used to calculate The Screening Level for Lead:

$$\text{Screening Level for Lead (PRG) (ug/g)} =$$

$$\frac{(PbB_{95}\ \text{fetal} / (R \bullet (GSD_i)^{1.645})) - PbB0}{BKSF \bullet ((IR_s \bullet AF_s \bullet EF_s / 365) + (K_{sd} \bullet IR_d \bullet AF_d \bullet EF_d / 365))}$$

Results - Screening Level for Lead Program v1.00

95th Percentile PbB in fetus (PbB95 fetal) (ug/dL)	10
Mean ratio of fetal to maternal PbB (R)	0.9
Individual geometric standard deviation (GSDi)	1.9
Baseline blood lead value (PbB0) (ug/dL)	2
Biokinetic slope factor (BKSF) (ug/dL per ug/day)	0.4
Soil ingestion rate (IRs) (g/day)	0.05
Dust ingestion rate (IRd) (g/day)	0
Ratio of concentration in dust to that in soil (Ksd)	0
Soil Exposure frequency (EFs) (days/yr)	250
Dust Exposure frequency (EFd) (days/yr)	0
Absolute absorption fraction of lead in soil (AFs)	0.1
Absolute absorption fraction of lead in dust (AFd)	0

Screening Level for Lead (PRG) (ug/g): 1362

TECHNICAL MEMO
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5
APPENDIX C

RSR OU NO. 5, Cost Estimate for Revised Alternatives

TO: Ann Schober/EPA Region 6

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FROM: CH2M HILL

DATE: October 30, 1996

As requested in the telephone conversation with you on September 16 and October 29, 1996, CH2M HILL has prepared this Technical Memorandum (TM) summarizing revised alternatives for the RSR Corporation OU No. 5 Feasibility Study. The purpose of this TM is to evaluate alternatives that would provide an asphalt or concrete surface over the former landfill in OU No. 5. We have prepared cost estimates so comparisons can be made for placing an asphalt pavement or a reinforced concrete pavement to the cost of placing a RCRA cover over the former landfill. Alternative 3 of the RSR OU No. 5 Feasibility Study dated February 22, 1996 was used for the comparison. Cost estimates for Alternative 3 and 4 from RSR OU No. 5 Feasibility Study have also been revised to assume offsite disposal of OU No. 5 debris material rather than onsite disposal within the landfill.

Four variations of Alternative 3 were evaluated and are designated as Alternatives 3A through 3D. A brief description of the alternative variations is provided in Table 1. Only the elements pertaining to the former landfill cap were varied, all other components of the alternatives are the same as presented in the February 22, 1996 FS Report with the exception that OU No. 5 debris matreial is disposed at an offsite landfill. The net present worth for each of the alternatives is also provided in Table 1. Figure 1 depicts the final subgrade that was used in generating the cost estimate for all alternatives. The total fill material required based on the subgrade shown in Figure 1 is approximately 35,200 cubic yards.

The following assumptions were made in deriving these cost estimates:

- Heavy truck traffic (HS20) will be prevalent at the site requiring a heavy pavement section for Alternatives 3A and 3B. Traffic in Alternatives 3C and 3D will be predominantly passenger cars.
- All Alternatives assume that no debris material from OU No. 4 and OU No. 5 is placed within the OU No. 5 landfill. Instead the debris material from OU No. 5 is disposed in an offsite landfill.

- All alternatives have assumed that slopes of up to 5% are acceptable in the parking areas. In several areas, grades up to 15% are present to minimize excavation and still allow placement of asphalt. These areas are not suitable for parking because of the steeper slopes (See Figure 1).
- No utilities such as electrical, water, or sewer hookup are included.
- Performance of the pavement will be similar to ones for highways and will not require unusual maintenance. For the alternatives using asphalt, 2 inches of overlay are required every 10 years. The amount of potential settlement in the former landfill is unknown. We have assumed that the potential for settlement is low and will not damage the pavement. The asphalt surface is more flexible than the concrete pavement and can be repaired easily if extensive settlement occurs. The reinforced concrete can withstand localized settlement better than asphalt but repairing damaged areas of extensive settlement is more costly.
- The existing drainage system is adequate to handle the additional surface water runoff from the paved areas.
- One half foot of top soil is removed and disposed offsite so consolidation issues are minimized.

Attachment 1 provides the specific cost estimates for each of the alternatives presented including the capital costs, annual operations and maintenance, and present worth. Revised costs for Alternatives 3 and 4 assuming offsite disposal of the OU No. 5 debris are also included.

Table 1

Summary of Alternatives for RSR OU No. 5

Alternative	Description of Alternative pertaining to Former Landfill at OU No. 5	Cost (Present Worth)
Alternative 3	Alternative presented in FS Report dated February 22, 1996. Alternative consists of capping former OU No. landfill with clay cap.	$ 9,024,250
Alternative 3 (revised)	Alternative presented in FS Report dated February 22, 1996 but revised assuming offsite disposal of OU No. 5 debris rather than onsite disposal at the OU No. 5 landfill.	$9,343,800
Alternative 3A	Former OU No. 5 landfill is covered with asphalt capable of handling heavy truck traffic. Assumes offsite disposal of OU No. 5 debris material. The asphalt pavement includes a 10-inch base course and 8 inches of asphalt.	$10,783,920
Alternative 3B	Former OU No. 5 landfill is covered with concrete capable of handling heavy truck traffic. Assumes offsite disposal of OU No. 5 debris material. The pavement is 10-inch reinforced concrete.	$11,167,580
Alternative 3C	Former OU No. 5 landfill is covered with asphalt capable of handling passenger cars only. Assumes offsite disposal of OU No. 5 debris material. The asphalt pavement includes 6-inch base course and 3 inches of pavement.	$9,197,190
Alternative 3D	Former OU No. 5 landfill is covered with concrete capable of handling passenger cars only. Assumes offsite disposal of OU No. 5 debris material. The pavement is 6-inch reinforced concrete.	$ 10,362,430
Alternative 4 (Revised)	Alternative presented in FS Report dated February 22, 1996 but revised assuming offsite disposal of OU No. 5 debris rather than onsite disposal at the OU No. 5 landfill.	$ 22,564,906

ALTERNATIVE 3 (revised): All Components of Alternative No. 2 and Includes Demolition & Removal of Battery Wrecking Facility. Disposal of Building Materials.

CAPITAL COSTS:

GENERAL REQUIREMENTS:	10%		$6 030 667	$603,067	
General Sitework:					
Institutional Controls					
Fix Existing Perimeter Fence	9,100	LF	$15 00	$136,500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3 000	$6,000	
Survey Well Location	1	LS	$2 000	$2,000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100 00	$3,200	
Structural Modifications (50% of Building, Heavy Duty)	27,900	SF	$8 80	$245,562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55,800	SF	$0 60	$33,480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times, Level C	4,800	SF	$0 60	$2,880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1 140 00	$114,000	
Pumping	1	LS	$10,000 00	$10,000	
Sampling	100	EA	$70 00	$7,000	
Analysis	100	EA	$200 00	$20,000	
Demolish Battery Wrecking Facility & Transport Debris to Offsite Landfill					
Samples for Battery Wrecking Facility	20	EA	$70 00	$1,400	
TCLP Analysis	20	EA	$300 00	$6,000	
Demo Battery Wrecking Facility	55,800	SF	$18 00	$1,004,400	Based on AccuVal 1(800)852-9252
Transport & Disposal of Debris at Waste Facility & Tipping	2,067	CY	$119 00	$245,973	
Gate Fee for Truck at Waste Facility	103	Truck Load	$14 00	$1,447	
Cap Metals Contaminated Soils :					
Cap Area with 2' Thick Clean Material	113,763	CY	$15 00	$1,706,450	Includes purchase of soil spreading & grading
Revegetate	35	ACRE	$1 500 00	$52,886	95 MEANS 029-304-0010
Cap Landfill:					
Surface Preparation	12	ACRE	$1 250 00	$15,000	95 MEANS 021-104-0150
Flexible Membrane Liner	503,000	SF	$0 55	$276,650	
2' Thick Clay	37,259	CY	$15 00	$558,889	
Drainage Layer, 1' gravel	18,630	CY	$15 00	$279,444	
Filter layer, 0 5 ft sand	9,315	CY	$15 00	$139,722	
Protective Cover, 1' soil	18,630	CY	$15 00	$279,444	
0 5' Thick Top Soil	9,315	CY	$15 00	$139,722	Includes purchase of soil spreading & grading
Revegetate	12	ACRE	$1 500 00	$18,000	95 MEANS 029-304-0010
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20 000 00	$20,000	
Recap Area with 2' Thick Clay	3,333	CY	$15 00	$50,000	Includes purchase of soil spreading & grading
2' Thick Top Soil	3,333	CY	$15 00	$50,000	
Revegetate	1	ACRE	$1 500 00	$1,550	
SUBTOTAL				$6 030,667	
CONTINGENCY	30%		$6 030 667	$1 809 200	
SUBTOTAL - CONSTRUCTION COST				$7 839,867	
PERMITTING & LEGAL	5%		$7 761 941	$388 097	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$7 761 941	$543 336	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$8,771 299	
ENGINEERING & DESIGN COST	6%		$7 761 941	$465,716	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 3				**$9,237,016**	

ANNUAL O & M COSTS:

Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200	
Pavement Inspection and repair	1	ANNUAL	$600 00	$600	
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1 600 00	$4 800	
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1 200	
SUBTOTAL				$7 800	
CONTINGENCY	20%		$7 800	$1 560	
TOTAL - Annual O & M Costs - Alternative 3 (5 YEARS)				**$9,360**	

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Long Term Monitoring (2 wells annually)	2	EA	$1 600 00	$3 200
Pavement Inspection and repair	1	ANNUAL	$600 00	$600
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200
SUBTOTAL				$5 000
CONTINGENCY	20%		$5,000	$1 000
TOTAL - Annual O & M Costs - Alternative 3 (25 YEARS)				**$6,000**

NET PRESENT VALUE:	
YEAR 0	$9 237 016
YEAR 1	$9.360
YEAR 2	$9.360
YEAR 3	$9.360
YEAR 4	$9.360
YEAR 5	$9.360
YEAR 6	$6.000
YEAR 7	$6.000
YEAR 8	$6.000
YEAR 9	$6.000
YEAR 10	$6.000
YEAR 11	$6.000
YEAR 12	$6.000
YEAR 13	$6.000
YEAR 14	$6 000
YEAR 15	$6.000
YEAR 16	$6.000
YEAR 17	$6.000
YEAR 18	$6.000
YEAR 19	$6.000
YEAR 20	$6.000
YEAR 21	$6.000
YEAR 22	$6.000
YEAR 23	$6.000
YEAR 24	$6.000
YEAR 25	$6.000
YEAR 26	$6.000
YEAR 27	$6.000
YEAR 28	$6.000
YEAR 29	$6.000
YEAR 30	$6.000
NET PRESENT VALUE (i=6%) - Alternative 3	**$9,343,798**

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
ALTERNATIVE 3A: Same a Alternative 3 but replace RCRA cap with 8" Asphalt pavement,esuumes offsite disposal of OU debris material.					
CAPITAL COSTS:					
GENERAL REQUIREMENTS:	10%		$6 177 330	$617 733	
General Sitework:					
Institutional Controls:					
Fix Existing Perimeter Fence	9,100	LF	$15 00	$136,500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3 000	$6,000	
Survey Well Location	1	LS	$2 000	$2,000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100 00	$3 200	
Structural Modifications (50% of Building, Heavy Duty)	27,900	SF	$8 80	$245 562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55 800	SF	$0 60	$33 480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times, Level C	4 800	SF	$0 60	$2 880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1 140 00	$114 000	
Pumping	1	LS	$10 000 00	$10,000	
Sampling	100	EA	$70 00	$7 000	
Analysis	100	EA	$200 00	$20 000	
Demolish Battery Wrecking Facility & Transport Debris to Offsite Landfill					
Samples for Battery Wrecking Facility	20	EA	$70 00	$1 400	
TCLP Analysis	20	EA	$300 00	$6 000	
Demo Battery Wrecking Facility	55 800	SF	$18 00	$1 004 400	Based on AccuVal 1(800)852-9252
Transport and Disposal of Debris at Waste Facility & Tipping	2,067	CY	$119 00	$245 933	
Gate Fee for Truck at Waste Facility	103	Truck Loads	$14 00	$1 447	
Cap Metals Contaminated Soils					
Cap Area with 2' Thick Clean Material	113 763	CY	$15 00	$1 706,450	Includes purchase of soil spreading & grading
Revegetate	35	ACRE	$1 500 00	$52 886	95 MEANS 029-304-0010
Cap Landfill:					
Top Soil Removal & Disposal (0 5')	9,841	CY	$15 00	$147 620	
Excavation	4 548	CY	$5 00	$22,738	
Fill Material	35,189	CY	$15 00	$527 834	Includes purchase of soil spreading & grading
Surface Preparation/ Final Grading	12 2	ACRE	$1 250 00	$15 250	95 MEANS 021-104-0150
Base Course (10")	16 402	CY	$15 00	$246 033	
Asphalt Pavement(8")	25 981	TON	$30 00	$779 434	
Surface Drainage System	1	LS	$100 000 00	$100 000	
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20 000 00	$20 000	
Recap Area with 2' Thick Clay	3 333	CY	$15 00	$50 000	Includes purchase of soil spreading & grading
2' Thick Top Soil	3 333	CY	$15 00	$50 000	
Revegetate	1	ACRE	$1 500 00	$1 550	
SUBTOTAL				$6 177 330	
CONTINGENCY	30%		$6 177 330	$1 853 199	
SUBTOTAL - CONSTRUCTION COST				$8 030 529	
PERMITTING & LEGAL	5%		$7 469 015	$373 451	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$7 469 015	$522 831	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$8 926 811	
ENGINEERING & DESIGN COST	5%		$7 469 015	$448 141	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 3				**$9,374,951**	
ANNUAL O & M COSTS					
Inspection of the Surface Impoundment Cap	4	QUARTERLY	$300 00	$1 200	

Pavement Inspection and Repair	8	LMILE/YEAR	$1 500 00	$12 581
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1 600 00	$4 800
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1 200
SUBTOTAL				$19 781
CONTINGENCY	20%		$19 781	$3 956
TOTAL - Annual O & M Costs - Alternative 3 (5 YEARS)				**$23,738**
Long Term Monitoring (2 wells annually)	2	EA	$1 600 00	$3 200
Pavement Inspection and repair	8	LMILE/YEAR	$1 500 00	$12.581
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200
SUBTOTAL				$16.981
CONTINGENCY	20%		$16.981	$3.396
TOTAL - Annual O & M Costs - Alternative 3 (25 YEARS)				**$20,378**

Asphalt Overlay (every 10 years) 2"	25 981	TON	$35 00	$909 339
SUBTOTAL				$909 339
CONTINGENCY	20%		$909 339	$181 868
TOTAL - O & M Costs - Alternative 3 (every 10 YEARS)				**$1,091,207**
NET PRESENT VALUE:				
YEAR 0				$9 374 951
YEAR 1				$23 738
YEAR 2				$23 738
YEAR 3				$23 738
YEAR 4				$23 738
YEAR 5				$23.738
YEAR 6				$20.378
YEAR 7				$20.378
YEAR 8				$20 378
YEAR 9				$20 378
YEAR 10				$1.111 585
YEAR 11				$20.378
YEAR 12				$20.378
YEAR 13				$20.378
YEAR 14				$20.378
YEAR 15				$20.378
YEAR 16				$20.378
YEAR 17				$20.378
YEAR 18				$20 378
YEAR 19				$20 378
YEAR 20				$1 111.585
YEAR 21				$20 378
YEAR 22				$20 378
YEAR 23				$20 378
YEAR 24				$20 378
YEAR 25				$20 378
YEAR 26				$20 378
YEAR 27				$20 378
YEAR 28				$20 378
YEAR 29				$20 378
YEAR 30				$20 378
NET PRESENT VALUE (i=6%) - Alternative 3				**$10,783,922**

CH2M HILL

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
ALTERNATIVE 3B: Same as Alternative 3A except with 10" reinforced concrete.					
CAPITAL COSTS:					
GENERAL REQUIREMENTS:	10%		$7 203 015	$720 302	
General Sitework:					
Institutional Controls					
Fix Existing Perimeter Fence	9 100	LF	$15 00	$136 500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3 000	$6.000	
Survey Well Location	1	LS	$2 000	$2 000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100 00	$3 200	
Structural Modifications (50% of Building, Heavy Duty)	27 900	SF	$8 80	$245 562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55 800	SF	$0 60	$33.480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times, Level C	4 800	SF	$0 60	$2.880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1.140 00	$114.000	
Pumping	1	LS	$10 000 00	$10 000	
Sampling	100	EA	$70 00	$7 000	
Analysis	100	EA	$200 00	$20.000	
Demolish Battery Wrecking Facility & Transport Debris to Offsite Landfill					
Samples for Battery Wrecking Facility	20	EA	$70 00	$1.400	
TCLP Analysis	20	EA	$300 00	$6.000	
Demo Battery Wrecking Facility	55 800	SF	$18 00	$1 004.400	Based on AccuVal 1(800)852-9252
Transport and Disposal of Debris at Waste Facility & Tipping	2 067	CY	$119 00	$245 933	
Gate Fee for Truck at Waste Facility	103	Truck Load	$14 00	$1 447	
Cap Metals Contaminated Soils :					
Cap Area with 2' Thick Clean Material	113 763	CY	$15 00	$1 706 450	Includes purchase of soil spreading & grading
Revegetate	35	ACRE	$1 500 00	$52 886	95 MEANS 029-304-0010
Cap Landfill with Concrete Pavement:					
Top Soil Removal & Disposal (0 5')	9 841	CY	$15 00	$147.620	
Excavation	4 548	CY	$5 00	$22 738	
Fill Material	35 189	CY	$15 00	$527 834	Includes purchase of soil spreading & grading
Surface Preparation/ Final Grading	12 2	ACRE	$1 250 00	$15 250	95 MEANS 021-104-0150
Reinforced Concrete Pavement (10")	59 048	SY	$33 00	$1 948.584	
Surface Drainage System	1	LS	$100 000 00	$100 000	
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20 000 00	$20 000	
Recap Area with 2' Thick Clay	3 333	CY	$15 00	$50 000	Includes purchase of soil spreading & grading
2' Thick Top Soil	3 333	CY	$15 00	$50 000	
Revegetate	1	ACRE	$1 500 00	$1.550	
SUBTOTAL				$7 203 015	
CONTINGENCY	30%		$7 203 015	$2 160 905	
SUBTOTAL - CONSTRUCTION COST				$9 363 920	
PERMITTING & LEGAL	5%		$9 286 007	$464 300	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$9 286 007	$650 020	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$10 478 241	
ENGINEERING & DESIGN COST	6%		$9 286 007	$557 160	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 3				**$11,035,401**	
ANNUAL O & M COSTS:					
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200	

Pavement inspection and repair	1	ANNUAL	$600 00	$600
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1,600 00	$4 800
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1 200
SUBTOTAL				$7 800
CONTINGENCY	20%		$7 800	$1 560
TOTAL - Annual O & M Costs - Alternative 3 (5 YEARS)				**$9,360**
Long Term Monitoring (2 wells annually)	2	EA	$1 600 00	$3 200
Pavement inspection and repair	8	LMILE/YEAR	$300 00	$2 516
Inspection of the surface impoundment cap	4	QUARTERLY	$300 00	$1 200
SUBTOTAL				$6,916
CONTINGENCY	20%		$6,916	$1,383
TOTAL - Annual O & M Costs - Alternative 3 (25 YEARS)				**$8,300**

NET PRESENT VALUE:	
YEAR 0	$11,035,401
YEAR 1	$9,360
YEAR 2	$9,360
YEAR 3	$9,360
YEAR 4	$9,360
YEAR 5	$9,360
YEAR 6	$8,300
YEAR 7	$8,300
YEAR 8	$8,300
YEAR 9	$8,300
YEAR 10	$8,300
YEAR 11	$8,300
YEAR 12	$8,300
YEAR 13	$8,300
YEAR 14	$8,300
YEAR 15	$8,300
YEAR 16	$8,300
YEAR 17	$8,300
YEAR 18	$8,300
YEAR 19	$8,300
YEAR 20	$8,300
YEAR 21	$8,300
YEAR 22	$8,300
YEAR 23	$8,300
YEAR 24	$8,300
YEAR 25	$8,300
YEAR 26	$8,300
YEAR 27	$8,300
YEAR 28	$8,300
YEAR 29	$8,300
YEAR 30	$8,300
NET PRESENT VALUE (i=5%) - Alternative 3	**$11,187,576**

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
ALTERNATIVE 3C. Same as Alternative 3A except asphalt pavement is 3" thick.					
CAPITAL COSTS:					
GENERAL REQUIREMENTS:	10%		$5,526,709	$552,671	
General Sitework:					
Institutional Controls					
Fix Existing Perimeter Fence	9,100	LF	$15.00	$136,500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3,000	$6,000	
Survey Well Location	1	LS	$2,000	$2,000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100.00	$3,200	
Structural Modifications (50% of Building, Heavy Duty)	27,900	SF	$8.80	$245,562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55,800	SF	$0.60	$33,480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times, Level C	4,800	SF	$0.60	$2,880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1,140.00	$114,000	
Pumping	1	LS	$10,000.00	$10,000	
Sampling	100	EA	$70.00	$7,000	
Analysis	100	EA	$200.00	$20,000	
Demolish Battery Wrecking Facility & Transport Debris to Offsite Landfill					
Samples for Battery Wrecking Facility	20	EA	$70.00	$1,400	
TCLP Analysis	20	EA	$300.00	$6,000	
Demo Battery Wrecking Facility	55,800	SF	$18.00	$1,004,400	Based on AccuVal 1(800)852-9252
Transport and Disposal of Debris at Waste Facility & Tipping	2,067	CY	$119.00	$245,933	
Gate Fee for Truck at Waste Facility	103	Truck Load	$14.00	$1,447	
Cap Metals Contaminated Soils :					
Cap Area with 2' Thick Clean Material	113,763	CY	$15.00	$1,706,450	Includes purchase of soil, spreading & grading
Revegetate	35	ACRE	$1,500.00	$52,886	95 MEANS 029-304-0010
Cap Landfill:					
Top Soil Removal & Disposal (0-5')	9,841	CY	$15.00	$147,620	
Excavation	4,548	CY	$5.00	$22,738	
Fill Material	35,189	CY	$15.00	$527,835	Includes purchase of soil, spreading & grading
Surface Preparation/ Final Grading	12.2	ACRE	$1,250.00	$15,250	95 MEANS 021-104-0150
Base Course (6")	9,841	CY	$15.00	$147,620	
Asphalt Pavement(3")	9,743	TON	$30.00	$292,288	
Surface Drainage System	1	LS	$100,000.00	$100,000	
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20,000.00	$20,000	
Recap Area with 2' Thick Clay	3,333	CY	$15.00	$50,000	Includes purchase of soil, spreading & grading
2' Thick Top Soil	3,333	CY	$15.00	$50,000	
Revegetate	1	ACRE	$1,500.00	$1,550	
SUBTOTAL				$5,526,709	
CONTINGENCY	30%		$5,526,709	$1,658,013	
SUBTOTAL - CONSTRUCTION COST				$7,184,722	
PERMITTING & LEGAL	5%		$7,106,809	$355,340	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$7,106,809	$497,477	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$8,037,539	
ENGINEERING & DESIGN COST	5%		$7,106,809	$426,409	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 3				**$8,483,948**	
ANNUAL O & M COSTS					
Inspection of the surface impoundment cap	4	QUARTERLY	$300.00	$1,200	

Pavement Inspection and repair	8	LMILE/YEAR	$1 500 00	$12 581
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1 600 00	$4 800
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1 200
SUBTOTAL				$19 781
CONTINGENCY	20%		$19 781	$3 956
TOTAL - Annual O & M Costs - Alternative 3 (5 YEARS)				**$23,738**
Long Term Monitoring (2 wells annually)	2	EA	$1 600 00	$3 200
Pavement Inspection and repair	8	LMILE/YEAR	$1 500 00	$12 581
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200
SUBTOTAL				$16 981
CONTINGENCY	20%		$16 981	$3 396
TOTAL - Annual O & M Costs - Alternative 3 (25 YEARS)				**$20,378**

Asphalt Overlay (every 10 years) 2'	9,743	TON	$35.00	$341,002
SUBTOTAL				$341,002
CONTINGENCY	20%		$341,002	$68,200
TOTAL - O & M Costs - Alternative 3 (every 10 YEARS)				**$409,203**
NET PRESENT VALUE:				
YEAR 0				$8,463,948
YEAR 1				$23,738
YEAR 2				$23,738
YEAR 3				$23,738
YEAR 4				$23,738
YEAR 5				$23,738
YEAR 6				$20,378
YEAR 7				$20,378
YEAR 8				$20,378
YEAR 9				$20,378
YEAR 10				$429,580
YEAR 11				$20,378
YEAR 12				$20,378
YEAR 13				$20,378
YEAR 14				$20,378
YEAR 15				$20,378
YEAR 16				$20,378
YEAR 17				$20,378
YEAR 18				$20,378
YEAR 19				$20,378
YEAR 20				$429,580
YEAR 21				$20,378
YEAR 22				$20,378
YEAR 23				$20,378
YEAR 24				$20,378
YEAR 25				$20,378
YEAR 26				$20,378
YEAR 27				$20,378
YEAR 28				$20,378
YEAR 29				$20,378
YEAR 30.				$20,378
NET PRESENT VALUE (i=6%) - Alternative 3				**$9,197,186**

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5

(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
ALTERNATIVE 3D: *Same as Alternative 3B except pavement is 6" reinforced concrete.*					
CAPITAL COSTS:					
GENERAL REQUIREMENTS:	10%		$6 678 145	$667 815	
General Sitework:					
Institutional Controls					
Fix Existing Perimeter Fence	9,100	LF	$15 00	$136 500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3,000	$6,000	
Survey Well Location	1	LS	$2,000	$2,000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100 00	$3,200	
Structural Modifications (50% of Building, Heavy Duty)	27,900	SF	$8 80	$245,562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55,800	SF	$0 60	$33,480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times Level C	4 800	SF	$0 60	$2,880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1,140 00	$114,000	
Pumping	1	LS	$10 000 00	$10,000	
Sampling	100	EA	$70 00	$7,000	
Analysis	100	EA	$200 00	$20,000	
Demolish Battery Wrecking Facility & Transport Debris to Offsite Landfill					
Samples for Battery Wrecking Facility	20	EA	$70 00	$1,400	
TCLP Analysis	20	EA	$300 00	$6,000	
Demo Battery Wrecking Facility	55,800	SF	$18 00	$1 004,400	Based on AccuVal 1(800)852-9252
Transport and Disposal of Debris at Waste Facility & Tipping	12,067	CY	$119 00	$245,933	
Gate Fee for Truck at Waste Facility	103	Truck Load	$14 00	$1 447	
Cap Metals Contaminated Soils :					
Cap Area with 2' Thick Clean Material	113 763	CY	$15 00	$1 706,450	Includes purchase of soil, spreading & grading
Revegetate	35	ACRE	$1 500 00	$52 886	95 MEANS 029-304-0010
Cap Landfill with Concrete Pavement:					
Top Soil Removal & Disposal (0 5')	9,841	CY	$15 00	$147 620	
Excavation	4 548	CY	$5 00	$22,738	
Fill Material	35 189	CY	$15 00	$527,835	Includes purchase of soil, spreading & grading
Surface Preparation/ Final Grading	12 2	ACRE	$1 250 00	$15,250	95 MEANS 021-104-0150
Reinforced Concrete Pavement (6")	59 048	SY	$25 00	$1 476,200	
Surface Drainage System	1	LS	$100 000 00	$100,000	
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20 000 00	$20 000	
Recap Area with 2' Thick Clay	3 333	CY	$15 00	$50 000	Includes purchase of soil, spreading & grading
2' Thick Top Soil	3 333	CY	$15 00	$50 000	
Revegetate	1	ACRE	$1 500 00	$1 550	
SUBTOTAL				$6 678 145	
CONTINGENCY	30%		$6 678 145	$2 003 444	
SUBTOTAL - CONSTRUCTION COST				$8 681 589	
PERMITTING & LEGAL	5%		$8 603 676	$430 184	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$8 603 676	$602 257	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$9 714 030	
ENGINEERING & DESIGN COST	6%		$8 603 676	$516 221	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 3				**$10,230,251**	
ANNUAL O & M COSTS:					
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200	
Pavement Inspection and repair	1	ANNUAL	$600 00	$600	
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1 600 00	$4 800	

Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1 200
SUBTOTAL				$7 800
CONTINGENCY	20%		$7 800	$1 560
TOTAL - Annual O & M Costs - Alternative 3 (5 YEARS)				**$9,360**
Long Term Monitoring (2 wells annually)	2	EA	$1 600 00	$3,200
Pavement Inspection and repair	8	LMILE/YEAR	$300 00	$2,516
Inspection of the surface impoundment cap	4	QUARTERLY	$300 00	$1 200
SUBTOTAL				$6 916
CONTINGENCY	20%		$6 916	$1 383
TOTAL - Annual O & M Costs - Alternative 3 (25 YEARS)				**$8,300**

NET PRESENT VALUE:	
YEAR 0	$10 230 251
YEAR 1	$9 360
YEAR 2	$9 360
YEAR 3	$9 360
YEAR 4	$9 360
YEAR 5	$9,360
YEAR 6	$8 300
YEAR 7	$8 300
YEAR 8	$8 300
YEAR 9	$8 300
YEAR 10	$8,300
YEAR 11	$8,300
YEAR 12	$8 300
YEAR 13	$8 300
YEAR 14	$8 300
YEAR 15	$8 300
YEAR 16	$8 300
YEAR 17	$8 300
YEAR 18	$8,300
YEAR 19	$8 300
YEAR 20	$8 300
YEAR 21	$8,300
YEAR 22	$8,300
YEAR 23	$8 300
YEAR 24	$8 300
YEAR 25	$8,300
YEAR 26	$8,300
YEAR 27	$8 300
YEAR 28	$8,300
YEAR 29	$8,300
YEAR 30	$8 300
NET PRESENT VALUE (i=5%) - Alternative 3	**$10,362,426**

ALTERNATIVE 4 (revised): All Components of Alternative 3 Plus Excavation and Disposal of Other Metals-Contaminated Soil Exceeding Target Cleanup Goals.

CAPITAL COSTS:

GENERAL REQUIREMENTS:	10%		$14 951 768	$1 495 177	
General Sitework:					
Institutional Controls					
Fix Existing Perimeter Fence	9 100	LF	$15 00	$136 500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3 000	$6 000	
Survey Well Location	1	LS	$2 000	$2 000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100 00	$3.200	
Structural Modifications (50% of Building, Heavy Duty)	27 900	SF	$8 80	$245.562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55 800	SF	$0 60	$33.480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times, Level C	4.800	SF	$0 60	$2 880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1 140 00	$114 000	
Pumping	1	LS	$10 000 00	$10 000	
Sampling	100	EA	$70 00	$7 000	
Analysis	100	EA	$200 00	$20.000	
Demolish Battery Wrecking Facility & Transport Debris to Offsite Landfill					
Samples for Battery Wrecking Facility	40	EA	$70 00	$2.800	
TCLP Analysis	40	EA	$200 00	$8,000	
Demo Battery Wrecking Facility	55 800	SF	$18 00	$1.004.400	Based on AccuVal 1(800)852-9252
Transport and Disposal of Debris at Waste Facility & Tipping	2.067	CY	$119 00	$245.973	
Gate Fee for Truck at Easte Facility					
Demolish Concrete Pavement	11 122	SY	$15 00	$166.833	Based on 95 MEANS 020-554-1900
Transport and Disposal of Debris at Waste Facility & Tipping	1 854	CY	$119 00	$220.591	
Gate Fee for Truck at Waste Facility	93	Truck Load	$14 00	$1.298	
					$1 648 597
Excavate 2' Soil Within OU-5 Exceeding Target Cleanup Goals					
Excavate Near SI and Buildings (65% of 666500 sq-ft)	32 091	CY	$5 00	$160.454	
Excavate Near Landfill Area (15% of 990600 sq-ft)	11 007	CY	$5 00	$55.033	
Excavate Southern Area (10% of the 531100 sq-ft)	3 934	CY	$5 00	$19.670	
Transport & Disposal of Debris at Waste Facility & Tipping	37 625	CY	$119 00	$4 477.397	
Gate Fee for Truck at Waste Facility	1 881	Truck Loads	$119 00	$223.870	
Cap the Area with 2' Clean Soil	47 031	CY	$15 00	$705 472	
Transport & Disposal of Debris Exceeding Cleanup Goals (20%)	9 406	CY	$200 00	$1 881 259	
Confirmatory Sampling	15	EA	$70 00	$1 050	
Confirmatory TCLP Analysis	15	EA	$200 00	$3 000	
Cap Metals Contaminated Soils					
Cap Area with 2' Thick Clean Material	113 763	CY	$15 00	$1 706.450	Includes purchase of soil, spreading, & grading
Revegetate	35	ACRE	$1 500 00	$52 886	95 MEANS 029-304-0010
Cap Landfill:					
Surface Preparation	12	ACRE	$1 250 00	$15 000	95 MEANS 021-104-0150
Flexible Membrane Liner	503 000	SF	$0 55	$276 650	
2' Thick Clay	37 259	CY	$15 00	$558 889	
Drainage Layer 1' gravel	18 630	CY	$15 00	$279 444	
Filter layer 0 5 ft sand	9 315	CY	$15 00	$139 722	
Protective Cover 1' soil	18 630	CY	$15 00	$279 444	
0 5' Thick Top Soil	9 315	CY	$15 00	$139.722	Includes purchase of soil, spreading, & grading
Revegetate	12	ACRE	$1 500 00	$18 000	95 MEANS 029-304-0010
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20 000 00	$20 000	
Recap Area with 2' Thick Clay	3 333	CY	$15 00	$50 000	Includes purchase of soil, spreading, & grading
2' Thick Top Soil	3 333	CY	$15 00	$50 000	
Revegetate	1	ACRE	$1 500 00	$1 550	
Cap Area where Pavement was Removed Around Battery Wrecking Facility					
Cap Area with 2' Thick Clean Material	7 407	CY	$15 00	$111 111	Unit price includes cost of grading top soil

SUBTOTAL				$14 951 768	
CONTINGENCY	30%		$14 951 768	$4 485 531	
SUBTOTAL - CONSTRUCTION COST				$19.437 299	
PERMITTING & LEGAL	5%		$16 843.851	$842.193	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$16 843.851	$1.179.070	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$21 458.561	
ENGINEERING & DESIGN COST	6%		$16 843.851	$1 010 631	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 4				**$22,469,192**	
ANNUAL O & M COSTS:					
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1,200	
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1,600 00	$4,800	
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1,200	
SUBTOTAL				$7,200	
CONTINGENCY	20%		$7 200	$1,440	
TOTAL - Annual O & M Costs - Alternative 4 (5 years)				**$8,640**	
Long Term Monitoring (2 wells annually)	2	EA	$1,600 00	$3,200	
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1,200	
SUBTOTAL				$4 400	
CONTINGENCY	20%		$4,400	$880	
TOTAL - Annual O & M Costs - Alternative 4 (25 years)				**$5,280**	

NET PRESENT VALUE:	
YEAR 0	$22,469,192
YEAR 1	$8,640
YEAR 2	$8,640
YEAR 3	$8,640
YEAR 4	$8,640
YEAR 5	$8,640
YEAR 6	$5,280
YEAR 7	$5,280
YEAR 8	$5,280
YEAR 9	$5,280
YEAR 10	$5,280
YEAR 11	$5,280
YEAR 12	$5,280
YEAR 13	$5,280
YEAR 14	$5,280
YEAR 15	$5,280
YEAR 16	$5,280
YEAR 17	$5,280
YEAR 18	$5,280
YEAR 19	$5,280
YEAR 20	$5,280
YEAR 21	$5,280
YEAR 22	$5,280
YEAR 23	$5,280
YEAR 24	$5,280
YEAR 25	$5,280
YEAR 26	$5,280
YEAR 27	$5,280
YEAR 28	$5,280
YEAR 29	$5,280
YEAR 30	$5,280
NET PRESENT VALUE (i=6%) - Alternative 4	**$22,564,906**

TNRCC LETTER
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5
APPENDIX D

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

December 5, 1996

Mr. Myron Knudson, Director
Superfund Division, 6SF
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

RE: RSR/West Dallas Lead Superfund Site Operable Unit 5 (Battery Wrecking Facility and Ground Water Portion of OU 4 and 5) Record of Decision

Dear Mr. Knudson:

My staff has reviewed the proposed Record of Decision (ROD) for Operable Unit 5 (Battery Wrecking Facility and Ground Water Portion of OU 4 and 5) for the RSR/West Dallas Lead Superfund Site. The selected remedial action is decontamination, dismantling and offsite disposal of buildings, containment of the former surface impoundment, former landfill and slag burial area/other soils, and no action on the groundwater portions of OU 4 and OU 5.

The no action alternative for ground water is based on EPA's documentation that the shallow ground water is not a likely drinking water source because of the water's low yield and slightly saline quality. The Texas Department of Health requirements for public water supplies and the City of Dallas water code requirements limit the installation of private wells in the area.

The State recommends that any final settlement by EPA with Responsible Parties include a requirement to establish deed notices or deed restrictions which appropriately limit the use of the property according to the level of remedial action conducted at the site.

Therefore, on behalf of the Texas Natural Resource Conservation Commission, I concur that the selected Remedial Alternative for OU 5 is appropriate.

Sincerely,

Dan Pearson
Executive Director

DP/JEP/ls

ARARs EVALUATION
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5
APPENDIX E

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
1. Contaminant-Specific ARARs					
Federal					
Risk-based preliminary remediation goals (PRGs) [Risk Assessment Guidance for Superfund (RAGS), Part B]	X			TBC	Risk-based PRGs calculated using RAGS Part B are TBC for OU No. 4 and OU No. 5. PRGs are TBCs for OU No. 4 and OU No. 5.
National Contingency Plan 40 C.F.R. Part 300.430(d) Baseline Human Health Risk Assessment	X	X	X	Yes	Applicable to OU No. 4 and OU No. 5. Evaluates baseline human health risk due to current and potential future site exposures, and establishes contaminant levels in environmental media at the OUs for protection of public health.
Office of Solid Waste and Emergency Response (OSWER) Directive 9355.4-12 July 14, 1994	X			TBC	The directive establishes soil cleanup levels for lead abatement for residential areas. These levels are TBCs for OU No. 4 and OU No. 5.
EPA – Strategy for Reducing Lead Exposures, October 3, 1990	X	X	X	TBC	TBC for OU No. 4 and OU No. 5. The strategy was developed to reduce lead exposures to the greatest extent possible. Goals of the strategy are to: (1) significantly reduce blood lead incidences above 10 μg/dL in children and (2) reduce the amount of lead introduced into the environment.
2. Action-Specific ARARs					
Federal					
40 CFR 268 Universal Treatment Standards (UTS)			X	Yes	40 CFR Part 268 establishes restrictions on land disposal unless treatment standards are met. Relevant and appropriate to both OU No. 4 and OU No. 5, if the wastes are removed from the sites for subsequent disposal. Metals wastes in soil that are hazardous by toxicity characteristic are exempt from this rule. The UTS establish a concentration limit for 300 regulated constituents in soil regardless of waste type.
40 C.F.R. Part 264 Subparts B, C, D and G	X	X	X	Yes	Subparts B, C, and D establish minimum standards which define the acceptable management of hazardous waste for owners and operators of facilities that treat, store, or dispose of hazardous waste. Subpart G establishes standards for closure and post-closure care for site design and operation. These requirements are relevant and appropriate for wastes identified as RCRA hazardous wastes.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
Federal (Continued)					
Subparts I and J	X	X	X	Yes	Subpart I sets operating and performance standards for container storage of hazardous waste. Subpart J outlines similar standards, but applies to tanks rather than containers. These requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if containers are used for onsite storage of liquids, soil, or other wastes as part of the remedial action.
Subparts L and N	X	X	X	Yes	Subpart L sets design and operating requirements for the storage or treatment of wastes in piles. If the waste piles are closed with wastes left in place, Subpart L requirements are applicable and must be met. Subpart N establishes construction, design, performance, closure, and operation requirements pertaining to Subtitle C landfills. Subpart L and/or N are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if onsite treatment, storage, or disposal in piles or Subtitle C landfills is included as part of the remedial action.
Subpart S	X	X	X	Yes	The promulgated portion of Subpart S addresses the corrective action management unit (CAMU) and temporary unit (TU) aspects of RCRA corrective action. A CAMU is a contiguous area within a facility in which remedial wastes generated during corrective action are managed. A CAMU may include uncontaminated areas where necessary to achieve overall remedial goals. Wastes may be moved from one CAMU to another within the facility without triggering land disposal restrictions (LDRs). Wastes can also be removed from the CAMU, treated in a unit, and returned to the CAMU without triggering LDRs. A TU can be used to manage wastes for up to 1 year. TUs are not subject to the full permitting requirements of a fully regulated RCRA unit and waste piles are not eligible for TUs. Subpart S requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if the remedial action requires wastes to be managed in an onsite CAMU or TU.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
Federal (Continued)					
Subpart X (Miscellaneous Units)	X	X	X	Yes	Relates to "miscellaneous" units that treat, store, or dispose hazardous wastes. Provides general performance standards for location, design, construction, operation, monitoring, and closure/post-closure. This requirement is relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if the remedial action includes onsite treatment, storage, or disposal of waste in a miscellaneous unit.
40 C.F.R. § 761.60 (PCB Disposal)	X			Yes	Serves as ARAR for disposal of affected materials containing concentrations of PCBs, if affected materials are identified at OU No. 4 or OU No. 5. This requirement is relevant and appropriate.
40 C.F.R. § 761.65(c)(7) (PCB Storage)		X		No	Serves as an ARAR only to extent that it authorizes storage of liquid PCBs in containers meeting 29 C.F.R. § 1910.106 (OSHA Standards for Flammable and Combustible Liquids); requires preparation and implementation of Spill Prevention Control and Countermeasures plan. Not an ARAR since liquid PCBs were not identified at either OU No. 4 or OU No. 5.
OSHA Worker Protection 40 C.F.R. § 300.38	X	X	X	Yes	Applicable to OU No. 4 and OU No. 5 regarding protection of workers at site. (29 C.F.R. 1910.120)

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
Federal (Continued)					
Surface Mining Control and Reclamation Act of 1977 25 GSC §§ 1201 et. seg.; 30 C.F.R. Parts 816.11, .95, .97, .100, and .102	X		X	Yes	The requirements include provisions for: • .11 – Posting signs and markers for reclamation, including top soil markers and perimeter markers. • .95 – Stabilization of all exposed surface areas to effectively control erosion and air pollution attendant to erosion. • .97 – Use of best technology currently available to minimize disturbances and adverse impacts on fish, wildlife, and related environmental values and achieve enhancement of such if possible. • .100 – Contemporaneous reclamation including, but not limited to backfilling, regrading, topsoil replacements and revegetation. • .102 – Achieve a post action slope not exceeding angle of repose or such lesser slope as is necessary to achieve a minimum long-term static safety factor of 1.3 and to prevent slides. These requirements are relevant and appropriate to OU No. 4 and OU No. 5.
State					
General Prohibitions 30 TAC § 330.5			X	No for OU No. 4/Yes for OU No. 5	The regulation prohibits disposal of lead acid storage batteries at municipal solid waste landfills. This requirement is not an ARAR for OU No. 4 but is relevant and appropriate for battery casings identified on OU No. 5.
Disposal of Special Wastes 30 TAC § 330.136		X		Yes	Specifies that regulated asbestos-containing material (RACM) may be accepted at a Type 1 or Type 1-AE municipal solid waste landfill (MSWLF) provided that the MSWLF facility has been authorized to accept RACM and complies with the provisions of § 330.136. This requirement is applicable for OU No. 4 and OU No. 5.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
Use of Land Over Closed Municipal Landfills Subchapter T 30 TAC §§ 330.951-330.963	X			Yes	These requirements establish standards for development and construction over closed landfills. The rules apply to owners and lessees of property overlying closed landfills, registered professional engineers, local government officials with the authority to disapprove an application for development, developers of property greater than 1 acre, and developers of an enclosed structure greater than 1 acre. Some requirements do not apply to persons constructing or owning single-family homes or duplexes or other enclosed structures. Section 330.953 requires a soil test be performed on land greater than 1 acre to determine if the tract overlies a closed landfill. Section 330.954 establishes permit and registration requirements, procedures and processing. Section 330.955 lists prohibitions for the development of land over a closed municipal solid waste landfill. A developer cannot damage the final cover or the liner without written consent of the executive director unless the damage occurs constructed below the natural grade of the land or the final cover. Sections 330.956 through 330.963 establish procedural requirements relative to permitting, reporting, recordkeeping, and public notifications. The requirements of these provisions are relevant and appropriate for the OU No. 5 if remedial actions undertaken at the landfill require construction of building directly on top of a closed landfill, with the exception of the permitting requirements which would not be ARARs for actions implemented under CERCLA.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Closure and Remediation 30 TAC Subchapter A § 335.8	X	X	X	Yes	These provisions apply to closure and remediation of facilities associated with contamination resulting from unauthorized discharges, either as part of closure or at any time before or after closure. The regulations also apply to remediation of areas that are not otherwise designated as a facility but that contain unauthorized discharges of industrial waste or municipal hazardous waste. These requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5.
Subpart S, Risk Reduction Standards 30 TAC § 335.551	X			Yes	Establishes procedures to demonstrate compliance with the risk reduction standards for different types of contaminated media such as air, surface water, groundwater, and soil, and for cross-media contamination pathways such as soil-to-groundwater and soil-to-air. Requirements apply to closure and remediation undertaken according to 30 TAC § 335.8. Numeric cleanup values are based on which of the three risk reduction rules are appropriate. These requirements are relevant and appropriate for surface soil on OU No. 4 and OU No. 5.
Subpart S, Risk Reduction Standard No. 3 30 TAC § 335.562	X			Yes	Risk Reduction Standard No. 3 specifies that persons shall propose media cleanup levels in accordance with the conditions stated. These requirements are relevant and appropriate for OU No. 4 and OU No. 5 to perform closure or remediation activities. Cleanup levels will be based on the CERCLA risk assessments developed for OU No. 4 and OU No. 5.
Shipping and Reporting Procedures Applicable to Generators of Hazardous Waste or Class 1 Waste and Primary Exporters of Hazardous Waste 30 TAC Subchapter A § 335.10	X	X	X	Yes	Establishes requirements for manifesting shipments of hazardous waste to off-site facilities. This requirement is relevant and appropriate to both OU No. 4 and OU No. 5 if hazardous or Class 1 wastes are shipped off-site to a disposal/treatment facility.
Shipping Requirements for Transporters of Hazardous Waste or Class 1 Waste 30 TAC Subchapter A § 335.11	X	X	X	Yes	Requirements specific to transporters of hazardous or class 1 wastes regarding manifesting waste shipments. These requirements are relevant and appropriate to any transporter who transports hazardous or class 1 wastes offsite from OU No. 4 or OU No. 5.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Shipping Requirements Applicable to Owners or Operators of Storage, Processing, or Disposal Facilities 30 TAC Subchapter A § 335.12	X	X	X	No	Requires owners or operators of storage, processing or disposal facilities to comply with manifest requirements upon receipt of waste shipment. This requirement is not an ARAR for OU NO. 4 or OU No. 5 because waste shipments will not be received at the RSR Site.
Special Definitions for Recyclable Materials and Nonhazardous Recyclable Materials 30 TAC Subchapter § 335.17		X		Yes	Specifies definition of recyclable materials including "scrap metal." This requirement is applicable to OU No. 4 and OU No. 5 if materials (building components, etc.) are to be recycled.
Requirements for Recyclable Materials and Nonhazardous Recyclable Materials 30 TAC Subchapter A § 335.24 (c) and (h)		X		Yes	Specifies that scrap metal is not subject to regulation under Subchapter B-I and O Chapter 335. Under § 335.24(h), the rule specifies that scrap metal, as defined in Section (c) remains subject to the requirements of § 335.4 (relating to General Prohibitions) and § 335.6 (relating to Notification Requirements). Such waste may also be subject to the requirements of § 335.10 through § 335.15 of Title 30. These requirements are relevant and appropriate to OU No. 4 and OU No. 5 if materials are recycled.
Adoption of Appendices by Reference 30 TAC Subchapter A § 335.29	X	X	X	Yes	Adopts appendices contained in 40 C.F.R. Part 261 by reference; this includes Appendix I-III, VII-X. I - Representative Sampling Methods II - Method 1311 Toxicity Characteristic Leaching Procedure III - Chemical Analysis Test Methods VII - Basis for Listing Hazardous Waste VIII - Hazardous Constituents IX - Wastes Excluded under § 260.20 and § 260.22 X - Method of Analysis for Chlorinated Dibenzo-p-dioxins and Dibenzofurans. These requirements are relevant and appropriate for OU No. 4 and OU No. 5 to determine which, if any, media are RCRA hazardous wastes. These requirements are not applicable since much of the contaminated media was disposed of prior to 1980.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Hazardous Waste Management General Provisions 30 TAC Subchapter B § 335.41	X		X	Yes	This subchapter implements a state hazardous waste program which controls from point of generation to ultimate disposal those wastes listed in 40 C.F.R. Part 261. These standards are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5.
Standards Applicable to Generators of Hazardous Wastes 30 TAC Subchapter C § 335.61, §§ 335.65-335.70	X		X	Yes	This subchapter establishes standards for generators of hazardous waste. These standards include: packaging, labeling, marking, placarding, accumulation time, and record-keeping. Requirements for packaging, labeling, marking, and placarding are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5.
Standards Applicable to Transporters of Hazardous Waste 30 TAC Subchapter D § 335.91	X		X	Yes	This subchapter establishes standards for transporters transporting hazardous waste to offsite storage, processing, or disposal facilities. This subchapter does not apply to onsite transportation of hazardous waste by generators or by owners or operators of storage, processing, or disposal facilities. Requirements of this subchapter are relevant and appropriate for RCRA hazardous wastes on OU No. 4 or OU No. 5 that are sent offsite for disposal.
Applicability of Groundwater Monitoring and Response 30 TAC Subchapter F § 335.156	X		X	Yes	This section outlines the rules pertaining to groundwater monitoring and response, which apply to owners and operators of facilities that process, store, or dispose of hazardous waste. The owner or operator must satisfy the requirements of § 335.156 (a)(2) for all wastes (or constituents thereof) contained in any such waste management unit at the facility, regardless of the time at which waste was placed in the units. These requirements are relevant and appropriate for RCRA hazardous wastes left in place or disposed on OU No. 4 and OU No. 5.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Required programs 30 TAC Subchapter F § 335.157	X		X	Yes	Requires owners and operators subject to 30 TAC § 335.156 to conduct a monitoring and response program as follows: (1) Whenever hazardous constituents from a regulated unit are detected at the compliance point, the owner or operator must institute a compliance monitoring program. (2) Whenever the groundwater protection standard is exceeded, the owner or operator must institute a corrective action program. (3) Whenever hazardous constituents from a regulated unit exceed concentration limits under § 335.160 in groundwater between the compliance point and the downgradient facility boundary, the owner or operator must institute a corrective action program, and (4) In all other cases, the owner or operator must institute a detection monitoring program. These requirements are relevant and appropriate for RCRA hazardous wastes left onsite at OU No. 4 and OU No. 5.
Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities 30 TAC Subchapter E § 335.111	X		X	Yes	This subchapter establishes minimum requirements that define the acceptable management of hazardous waste prior to the issuance or denial of a hazardous waste permit and until certification of final closure or, if the facility is subject to post-closure requirements, until post-closure responsibilities are fulfilled. These requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if wastes are left onsite.
Interim Standards for Owners and Operators of Hazardous Waste Storage, Processing, or Disposal Facilities-Standards 30 TAC Subchapter E § 335.112	X		X	Yes	Adopts 40 C.F.R. Part 265, except as noted, by reference. This includes Subparts B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, W, AA, and BB. These requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if wastes are left onsite.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Containment for Waste Piles 30 TAC Subchapter E § 335.120			X	Yes	Establishes requirements for hazardous leachate or run-off from a pile: 1) the pile must be placed on an impermeable base, must include a run-on control system and a run-off management system and 2) the pile must be managed such that it must be protected from precipitation and run-on and no liquids or wastes containing free liquids may be placed in the pile. These requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if waste piles are created during remediation.
Permitting Standards for Owners and Operators of Hazardous Waste Storage Processing or Disposal Facilities 30 TAC Subchapter F § 335.151	X		X	Yes	Subchapter F includes the minimum standards of operation for all aspects of the management and control of municipal hazardous waste and industrial solid waste, including rules relating to the siting of hazardous waste facilities. These standards are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5.
Standards 30 TAC Subchapter F § 335.152	X		X	Yes	Adopts by reference the regulations contained in 40 C.F.R. Part 264, except as noted in this section. These standards are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5.
Corrective Action for Solid Waste Management Units 30 TAC Subchapter F § 335.167(b) and (c)	X		X	Yes	Outlines requirements for corrective action at solid waste management units. No solid waste management units have been identified at OU No. 4 or OU No. 5. These standards are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 that undergo a corrective action.
Design and Operating Requirements (Waste Piles) 30 TAC Subchapter F § 335.170	X		X	Yes	Establishes requirements for waste piles including: 1) a liner designed, constructed, and installed to prevent any migration of wastes out of the pile and 2) a leachate collection and removal system immediately above the liner that is designed, constructed, maintained, and operated to collect and remove leachate from the pile. These requirements are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5 if waste piles are created during remediation.
Location Standards for Hazardous Waste Storage, Processing, or Disposal 30 TAC Subchapter G § 335.201 (a)(3)	X		X	Yes	This subchapter establishes minimum standards for the location of facilities used for the storage, processing, and disposal of hazardous waste. The requirements are relevant and appropriate for any facility built onsite to store, process, or dispose of RCRA hazardous wastes.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Prohibition on Open Dumps 30 TAC Subchapter I § 335.302	X		X	No	Prohibits open dumping of industrial solid waste. Not an ARAR for OU No. 4 or OU No.5, as all wastes will be handled according to ARARs.
Hazardous Waste Generation, Facility, and Disposal Fees System 30 TAC Subchapter J § 335.321	X		X	No	Establishes an industrial solid waste and hazardous waste fee program which is an administrative requirement. Administrative requirements are not ARARs.
Hazardous Substance Facilities Assessment and Remediation 30 TAC Subchapter K § 335.341 (b)(4)	X		X	Yes	Outlines the scope and requirements associated with the State Superfund program, including: ranking of facilities (§ 335.343), delisting and modifications (§ 335.344), removal actions and preliminary site investigations (§ 335.346), general requirements for a remedial investigation/feasibility study (§ 335.348), and general requirements for a remedial action (§ 335.349). The requirements set forth in the rule are relevant and appropriate. However, because the RSR Site is proposed for listing on EPA's National Priorities List and is an EPA-lead Superfund site, the requirements are being met through the CERCLA RI/FS process.
Specific Air Emission Requirements for Hazardous or Solid Waste Management Facilities 30 TAC Subchapter L § 335.367	X		X	Yes	Requires hazardous or solid waste management facilities to use the best available control technology to control emission of air contaminants, considering technical practicability and economic factors. Requires the owner/operator to demonstrate that the facility or unit will not cause or contribute to air pollution. These requirements are relevant and appropriate to RCRA facilities constructed onsite at OU No. 4 and OU No. 5.
Pre-Application Review and Permit Procedures 30 TAC Subchapter M § 335.391-335.393	X		X	No	These requirements are administrative requirements. Administrative requirements are not ARARs.
Warning Signs for Contaminated Areas 30 TAC Subchapter P § 335.441	X	X	X	Yes	Provides standards and procedures for the placement of warning signs on property contaminated with hazardous substances when such contamination presents a danger to public health and safety. The requirements in Subchapter P are relevant and appropriate for RCRA hazardous wastes on OU No. 4 and OU No. 5.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media*			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
Pollution Prevention Source Reduction and Waste Minimization 30 TAC Subchapter Q § 335.473	X	X	X	No	Applies to all large quantity generators, all generators other than large quantity and conditionally exempt generators, and all persons subject to reporting requirements under SARA 313 Title III. The RSR Site is not a large-quantity generator. Therefore, these requirements are not ARARs for OU No. 4 or OU No. 5.
Waste Classification and Waste Coding Required 30 TAC Subchapter R § 335.503	X	X	X	Yes	These requirements specify the classification scheme and coding for all industrial solid and municipal hazardous waste generated, stored, processed, transported, or disposed of in the site. These requirements are relevant and appropriate for all waste at OU No. 4 and OU No. 5.
Hazardous Waste Determination 30 TAC Subchapter R § 335.504	X	X	X	Yes	Requires waste generator to determine if the waste is hazardous either as a listed or characteristic waste according to 40 C.F.R. Part 261, Subpart D or 40 C.F.R. Part 261 Subpart C. These requirements are relevant and appropriate for identifying RCRA hazardous waste at OU No. 4 and OU No. 5.
Class 1 Waste Determination 30 TAC Subchapter R § 335.505	X	X	X	Yes	Specifies the chemical/physical properties associated with a Class 1 non-hazardous industrial solid waste. This requirement is relevant and appropriate for OU No. 4 and OU No. 5 relative to waste determination procedures.
Class 2 Waste Determination 30 TAC Subchapter R § 335.506	X	X	X	Yes	Requires determination of a Class 2 waste classification for industrial solid waste that is neither a hazardous waste, a Class 1 waste, nor a Class 3 waste. This requirement is relevant and appropriate for both OU No. 4 and OU No. 5.
Class 3 Waste Determination 30 TAC Subchapter R § 335.507	X	X	X	Yes	Specifies that industrial solid waste is a Class 3 waste if it is inert, essentially insoluble, neither a Class 1 nor hazardous waste, and poses no threat to human health and/or the environment. This requirement is relevant and appropriate for OU No. 4 and OU No. 5.
Classification of Specific Industrial Solid Wastes 30 TAC Subchapter R § 335.508(1)		X		Yes	Requires that industrial solid waste containing asbestos material identified as Regulated Asbestos Containing Material (RACM), as defined in 40 C.F.R. Part 61, shall be classified as Class 1 Waste. Applicable to both OU No. 4 and OU No. 5 due to the presence of asbestos containing material.

Table A-1

ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
TNRCC Demolition Debris Waste February 23, 1994		X		TBC	In an interoffice memorandum, the TNRCC defines "demolition debris" and establishes sampling recommendations based on 30 TAC § 335.509. The TNRCC recommends that, prior to beginning demolition or dismantling operations, generators of demolition debris waste take appropriate steps to: 1. Identify the individual components/phases of the waste which have a significant potential to be hazardous wastes (and, in the case of industrial generators, Class 1 wastes); 2. Segregate, to the extent practical, those components/phases from the remainder of the waste. 3. Perform any necessary sampling and analytical testing on those components/phases to determine whether they are characteristically hazardous as defined in 40 C.F.R. §§ 261.21 through 24 (and in the case of generators of industrial waste, Class 1 as defined in 30 TAC § 335.505). 4. Manage those components/phases, as well as the remainder of the wastes, according to standards appropriate to their classification. If during the process of segregating hazardous or Class 1 components/phases from the remainder of the waste, it is determined that the action may pose a significant threat to human health and the environment, generators should use appropriate discretion when deciding whether segregation is in the best interest of protecting human health and the environment. As nonpromulgated guidelines, these requirements are TBCs for OU No. 4 and OU No. 5 if demolition is selected as part of the remedy.

Table A-1
ARARs Evaluation for Soils, Buildings and Structures, and Residual Material
RSR Corporation Superfund Site
Dallas, Texas

Requirement	Potentially Pertinent Media[a]			ARAR?	Justification
	Soils	Buildings and Structures	Residual Material		
2. **Action-Specific ARARs** (Continued)					
State (Continued)					
TNRCC Historically Contaminated Sites: Industrial Versus Municipal Solid Waste July 12, 1994	X	X	X	TBC	In an interoffice memorandum, TNRCC established requirements that, before the final deposition of a waste is carried out, the site owner or operator must accomplish at least the following: 1. Waste type determination (municipal or industrial) and 2. Hazardous waste determination in accordance with 30 TAC § 335.62 Wastes from a presently inactive facility (generator) where previous industrial activities occurred or industrial waste was generated, would be classified as industrial waste. As nonpromulgated guidelines, these requirements are TBCs for OU No. 4 and OU No. 5.
3. **Location-Specific ARARs**					
Federal					
Coastal Zone Management Act 16 U.S.C. § 1451 et seq. 40 C.F.R. § 6.302(d)	X	X	X	No	Requires assessment of the impacts of activities on a coastal zone and the conduct of activities in connection with a coastal zone in accordance with a state approved Coastal Zone Management Plan. Activities at OU No. 4 or OU No. 5 will not impact a coastal zone; therefore this requirement is not an ARAR.
40 C.F.R. § 264.18 (Location Standards)	X	X	X	No	Relates to hazardous waste treatment, storage, or disposal facilities subject to permitting. Requires that new units where treatment, storage, or disposal of hazardous waste will be conducted be located greater than 200 feet from a fault with displacement in Holocene time and that facilities located in 100-year floodplains be designed, constructed, and operated to prevent washout of hazardous waste from active portions of the facility. Since the site is not in a 100-year floodplain, this regulation is not an ARAR. The site is not within 200 feet of a fault, thus the provisions pertaining to faults are not ARARs.

[a]Potentially Pertinent Media - In some cases, the evaluation of analytical results from these media is needed to determine whether a potential ARAR is applicable or relevant and appropriate (see Appendix D for these evaluations). For example, many of the RCRA requirements are relevant and appropriate for RCRA hazardous waste. A potentially pertinent medium may or may not be a RCRA characteristic hazardous waste, depending on its TCLP results.

Table A-2a
Numeric Contaminant-Specific ARARs/TBCs for Soils, Buildings and Structures, and Residual Material OU No. 4
RSR Corporation Superfund Site
Dallas, Texas

Chemical	(1) TBC Industrial (mg/kg)
Inorganics	
Aluminum	
Antimony	818
Arsenic	32.7*
Barium	142,476
Beryllium	
Cadmium	2,044
Chromium	1,577
Cobalt	
Copper	75,628
Lead	
Manganese	258,711
Mercury	613
Nickel	40,880
Selenium	10,220
Silver	10,220
Thallium	164
Vanadium	14,308
Zinc	613,200

Notes:
(1) Preliminary Remediation Goals (PRG). Calculated based on Human Health Evaluation Manual, Part B: Development of Risk-Based Preliminary Remediation Goals. OSWER Directive 9285.7-01B.
TBC = To be considered.
*The acceptable risk level for arsenic is set at $1x10^{-5}$ since a risk level of $1x10^{-6}$ results in a PRG that is at or below background levels of arsenic.

Table A-2b
Numeric Contaminant - Specific ARARs/TBCs
for
Soils, Buildings, and Structures
Former Landfill, and Surface Impoundment
OU No. 5 RSR Corporation Superfund Site

Chemical	PRG[a]
Arsenic	32.7[b]
Antimony	818
Benzo(a)pyrene	0.784
Benzo(b)fluoranthene	0.784
Dibenzo(a,b)anthracene	0.784
Lead	2000
Aroclor - 1248	0.74
Aroclor - 1260	0.74

[a]Preliminary Remediation Goals - calculated based on Human Health Evaluation Manual, Part B: Development of Risk-Based Preliminary Remediation Goals. OSWER Directive 9285.7-01B.
[b]The acceptable risk level for Arsenic is set at 1×10^{-5} since a risk level of 1×10^{-6} results in a PRG that is at or below background levels of Arsenic.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
1. Contaminant-Specific ARARS		
Federal		
Safe Drinking Water Act 40 U.S.C. 399 Primary Drinking Water Standards (MCL) 40 C.F.R. Part 141	No	There is no direct contact between the source of contaminants and surface water at the site. Surface waters around site are not designated for public and private water supply. MCLs are not ARARs for surface water at OU No. 4 or OU No. 5.
Secondary Drinking Water Standards 40 C.F.R. Part 143	No	Secondary standards are aesthetic rather than health based and therefore are not ARARs as surface water is unlikely to be utilized as a source of drinking water.
Maximum Contaminant Level Goals (MCLG) 40 C.F.R. § 141.50	No	Not presently considered an ARAR as MCLGs are set at levels that do not take into account cost or feasibility and MCL's are fully protective of human health. See 52 Fed. Reg. 32499. Further, surface waters are not utilized as a source of drinking water.
Federal Clean Water Act Water Quality Criteria 40 C.F.R. Part 131 U.S. EPA Quality Criteria for Water, 1976, 1980, and 1986	No	These criteria (ambient water quality criteria) apply to water classified as a fisheries resource. The intermittent streams on OU No. 5 are not classified as such and there are no streams on OU No. 4. Therefore, not an ARAR or TBC for OU No. 4 or OU No. 5.
Toxic Pollutant Effluent Standards 40 C.F.R. Part 129	No	Standards are applicable to point source discharges to navigable waters from specified facilities that discharge aldrin/dieldrin, DDT, endrin, toxaphene, benzidine, PCB's. No point source discharges to navigable waters are associated with OU No. 4 or OU No. 5.
Hazardous Substances 40 C.F.R. § 116.3 and 116.4	No	Establishes reporting requirements for certain discharges of reportable quantities of hazardous substances. Creates no substantive clean up requirement. Not an ARAR.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
1. Contaminant-Specific ARARS (Continued)		
State		
Pollution Prohibition Texas Water Code § 26.121	No/Yes*	Prohibits the discharge of wastes into or adjacent to any natural or artificial bodies of surface water, inland or coastal, which in itself or in conjunction with any other discharge or activity, causes or will cause pollution of the surface water. Not an ARAR for OU No. 4 since discharges to surface water do not occur. May be relevant and appropriate for OU No. 5 due to discharges to onsite drainages.
Texas Surface Water Quality Standards Aesthetics 30 TAC § 307.4(b)(1)	No/Yes*	General prohibition of concentrations in surface water of taste and odor producing substances which impart unpalatable flavor to food fish including shellfish, or otherwise interfere with the reasonable use of the water in the state. Not an ARAR for OU No. 4 as no discharges to surface water occur; relevant and appropriate for OU No. 5 due to discharges to onsite drainages.
General Toxicity 30 TAC § 307.4(d)	No/Yes*	Surface waters must not be toxic to man or to terrestrial or aquatic life. Not an ARAR for OU No. 4 as no discharges to surface water occur; relevant and appropriate for OU No. 5 due to discharges to onsite drainages.
Antidegradation 30 TAC § 307.5	No/Yes*	Requires maintenance and protection of existing uses (baseline November 28, 1975) when discharging wastewater. Not an ARAR for OU No. 4 as no discharges to surface water occur; relevant and appropriate for OU No. 5 due to discharges to onsite drainages.
Acute Toxicity 30 TAC § 307.6(b)(1)	No	Surface water must not be acutely toxic to aquatic life (except in small zones of initial dilution at discharge points). This criteria applies to water classified as a fisheries resource. The intermittent streams on OU No. 5 are not classified as such and there are no streams on OU No. 4. Therefore, not an ARAR for OU No. 4 or OU No. 5.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
1. **Contaminant-Specific ARARS** (Continued)		
State (Continued)		
Chronic Toxicity 30 TAC § 307.6(b)(2)	No	Surface water with designated or existing aquatic life uses shall not be chronically toxic to aquatic life (except in mixing zones and below critical low-flow conditions). No surface water bodies impacted by OU No. 4 or OU No. 5 have a designated or aquatic life use; therefore the requirement is not an ARAR.
Human Toxicity 30 TAC § 307.6(b)(3)	No	Surface water must be maintained to preclude adverse toxic effects on human health resulting from contact recreation, consumption of aquatic organisms, or consumption of drinking water after reasonable treatment. This regulation is not an ARAR to the extent that it pertains to drinking water, as surface water in the area is not a potential source of drinking water.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
1. **Contaminant-Specific ARARS** (Continued)		
State (Continued)		
Numerical Criteria for Toxics 30 TAC § 307.6(c)	Yes	Numerical criteria are established for certain toxic materials. These criteria are TBC for OU No. 4 and relevant and appropriate for OU No. 5. Notes: (1) These numerical criteria are based on ambient water quality criteria documents published by EPA. For some chemicals, EPA criteria have been recalculated (in accordance with procedures in the EPA guidance document entitled "Guideline for Deriving Site-Specific Water Quality Criteria") to eliminate the effects of toxicity data for aquatic organisms which are not known to occur in Texas. 31 TAC § 307.6(c)(2). (2) Numerical Acute Criteria apply to all surface water (except in small zones of initial dilution at discharge points). Numerical chronic criteria apply to surface water with designated or existing aquatic life uses (except inside mixing zones and below critical low-flow conditions. (3) Numerical Acute Criteria are applied as 24-hour averages. Numerical Chronic criteria are applied as seven-day averages.
LC50 Toxicity Criteria 30 TAC § 307.6(c)(8)	No/Yes*	Concentrations of toxic materials for which no numerical criteria have been specified must not exceed values which are chronically toxic to representative, sensitive aquatic organisms, as determined from appropriate chronic toxicity data or calculated as 0.1 of the median lethal concentration (LC50) for nonpersistent toxics (i.e., readily degrades, half-life less than 96 hours), 0.05 of LC50 for nonbioaccumulative, persistent toxics, and 0.01 of the completion of remediation. Not an ARAR for OU No. 4 since no surface water sources are present or directly impacted; relevant and appropriate for OU No. 5 due to discharges to onsite drainages.
1. **Contaminant-Specific ARARS** (Continued)		
State (Continued)		

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
Site-Specific Uses and Criteria 30 TAC § 307.7(b)(5)	No/Yes*	Basic uses such as navigation, agricultural water supply, and industrial water must be maintained and protected for all surface water in which these uses can be achieved. Not an ARAR for OU No. 4 since no surface water sources are present or directly impacted; relevant and appropriate for OU No. 5 due to discharges to onsite drainages.
Oyster Waters 30 TAC § 307.7(b)(3)(B)(iii)	No	Oyster waters should be maintained so that concentrations of toxic materials do not cause edible species of clams, oysters, and mussels to exceed accepted guidelines for the protection of public health, including the U.S. Food and Drug Administration action levels for molluscan shellfish. These criteria are not ARARs since no discharges to oyster water occurs.
Standards of Chemical Quality 30 TAC § 290.103(1),(3)	No	Specifies the maximum contaminant levels for inorganic and organic compounds that apply to community and non-transient, non-community water systems. These values are not ARARs for OU No. 4 and OU No. 5.
Secondary Constituent Levels 30 TAC § 290.113	No	These secondary constituent level limits, based on aesthetic and organoleptic considerations, are applicable to all public water systems. These levels are TBC for OU No. 4 and OU No. 5.
Surface Water Media Specific Concentration, Risk Reduction Standard No. 2 30 TAC § 335.558	No/Yes*	To be applied after evaluation of 30 TAC § 307 and primary drinking water MCLs. Relevant and appropriate for OU No. 5 due to discharges to onsite drainages; not an ARAR for OU No. 4 since no discharges to surface water occur.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Action-Specific ARARs**		
Federal		
Federal Clean Water Act National Pollutant Discharge Elimination System, Section 402	No	A permit is not required for onsite CERCLA response actions. Provision establishes no substantive cleanup requirement.
Stormwater Regulations 40 C.F.R. Parts 122, 125	Yes	NPDES permits are addressed relative to stormwater discharges associated with industrial activity. These regulations require the development and implementation of a stormwater pollution prevention plan or a stormwater best management plan. Monitoring and reporting requirements for a variety of facilities are outlined. Runoff from construction activities is an ARAR depending on the nature of the remedial action selected. Relevant and appropriate if stormwater discharge occurs as a result of the remedial action.
Pretreatment Standards 40 C.F.R. § 403.5	Yes	Prohibits discharge to a POTW of pollutants that "pass-through" (exit the POTW in quantities or concentrations that violate the POTW's NPDES permit) or cause "interference" (inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal, thereby causing a violation of the POTW's NPDES permit). Also prohibits introduction into a POTW of: (1) pollutants which create a fire or explosion hazard, (2) pollutants which will cause corrosive structural damage, (3) solid or viscous pollutants that will obstruct flow, (4) pollutants discharged at a flow rate and/or concentration that will cause interference, and (5) heat that will inhibit biological activity (never over 104°C). No point source discharges have been documented. However, if a remedial action results in a point source discharge to a POTW, then the requirements will be applicable to OU No. 4 or OU No. 5.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Action-Specific ARARs** (Continued)		
State		
Consolidated Permits Standard Permit Conditions 30 TAC § 305.125	No	Specifies conditions applicable to all permits. A permit is not required for onsite CERCLA response actions. The provisions establish no substantive cleanup requirements.
Consolidated Permits Subchapter O, Additional Conditions and Procedures for Wastewater Discharge Permits and Sewage Sludge Permits	No	Adopts by reference 40 CFR Part 122, Subpart C, Permit Conditions and Part 124, Subpart D, Specific Procedures Applicable to NPDES Permits. A permit is not required for onsite CERCLA response actions. The provisions establish no substantive cleanup requirement.
Texas Water Quality Act, TCA, Water Code, Title 2 – State Water Commission	Yes	Places reporting requirements on remedial activities which may cause an accidental spill and discharge into the state waters. Whenever an accidental discharge or spill occurs at or from any activity or facility which causes or may cause pollution, the individual operating, in charge of, or responsible for the activity or facility shall notify the TNRCC as soon as possible and not later than 24 hours after the occurrence. Activities which are inherently or potentially capable of causing or resulting in the spillage or accidental discharge of waste or other substances and which pose serious or significant threats of pollution are subject to reasonable rules establishing safety and preventative measures which the commission may adopt or issue. The safety and preventative measures which may be required shall be commensurate with the potential harm which could result from the escape of the waste or other substances. Applicable to OU No. 4 and OU No. 5 during remediation.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Action-Specific ARARs** (Continued)		
State (Continued)		
General Provisions 30 TAC § 335.4	Yes	Regulates the collection, handling, storage, disposal, and processing of hazardous or deleterious materials in the vicinity of, or adjacent to, state waters. Remedial actions must be designed with adequate measures and controls to ensure that no person may cause, suffer, allow, or permit the collection, handling, storage, processing, or disposal of industrial solid waste or municipal hazardous waste in such a manner to cause: • The discharge or imminent threat of discharge of industrial solid waste or municipal hazardous waste into or adjacent to the waters in the state without obtaining specific authorization for such a discharge from the TNRCC. • The creation and maintenance of a nuisance; or • The endangerment of the public health and welfare. Relevant and appropriate to actions taken at OU No. 4 or OU No. 5.
3. **Location-Specific ARARS**		
Federal		
Fish and Wildlife Coordination Act 16 U.S.C. § 661 et seq. 16 U.S.C. § 742 a 16 U.S.C. § 2901	No/Yes*	Requires consultation when a modification of a stream or other water body is proposed or authorized and requires adequate provision for protection of fish and wildlife resources. Not an ARAR for OU No. 4 as no surface water bodies are impacted. Relevant and appropriate for OU No. 5 due to onsite drainages.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
3. **Location-Specific ARARS** (Continued)		
Federal (Continued)		
Marine Protection, Research and Sanctuaries Act 33 U.S.C. § 1401 (Title I) 40 C.F.R. Part 220 16 U.S.C. § 1431 et seq. (Title III) 15 C.F.R. Parts 922-941	No	Title I requires permit for dumping of wastes in U.S. ocean waters which have been transported from U.S. or from outside U.S. Activities at site will not include dumping of wastes into the ocean; therefore, title I is not an ARAR. Title III requires conservation and management of areas designated as National Marine Sanctuaries. Since there is no National Marine Sanctuary in or near the site, Title III is not an ARAR.
Clean Water Act § 404 33 U.S.C. § 1344 40 C.F.R. Parts 230, 231	No	Requires permit for the discharge of dredge or fill material into waters of the United States including wetlands (see 33 C.F.R. § 328.3). Not an ARAR since no discharge of dredge or fill material into waters of the U.S. is anticipated.
Rivers and Harbors Act of 1899 33 U.S.C. § 403 33 C.F.R. Parts 320-322	No	Prohibits the creation of any unauthorized obstruction or work in navigable waters that affects such navigable waters without a permit. Even if navigable waters were present at the site, a nationwide permit is available for CERCLA site activities [see 33 C.F.R. § 330.5(a)(20)]. Since there are no navigable waters at the RSR Site, this requirement is not an ARAR.
Protection of Wetlands Executive Order No. 11990 40 C.F.R. § 6.302(a) and Appendix A	No	Requires federal agencies to avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands if a practical alternative exists. Wetlands have not been identified at the RSR site; this provision is not an ARAR.

Table A-3
ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
3. **Location-Specific ARARS** (Continued)		
Federal (Continued)		
Floodplain Management Executive Order No. 11988 40 C.F.R. § 6.302(b)	No	Requires federal agencies to evaluate the potential effects of actions taken in a floodplain and to avoid or minimize impacts associated with direct and indirect development of a floodplain. Since the site is not within a 100-year floodplain, this Order is not an ARAR.
Wild and Scenic Rivers Act 16 U.S.C. § 1271 et seq. 40 C.F.R. § 6.302(e)	No	Prohibits adverse effects on a scenic river. Since the site does not affect a scenic river, this Act is not an ARAR.
Coastal Zone Management Act 16 U.S.C. § 1451 et seq. 40 C.F.R. § 6.302(d)	No	Requires assessment of the impacts of activities on a coastal zone and the conducting of activities in connection with a coastal zone in accordance with a state approved Coastal Zone Management Plan. The Act is not applicable or relevant and appropriate as OU No. 4 and OU No. 5 have no impact on coastal areas.

Table A-4
Numeric Contaminant-Specific ARARs for Surface Water
RSR Corporation Superfund Site
Dallas, Texas

Chemical	(1) NA/R&A (mg/L)	(2) NA/R&A (mg/L)	(3) NA/TBC (mg/L)
Inorganics			
Aluminum			
Antimony			0.014
Arsenic	0.05[a]		0.000018
Barium	1.[a]		
Beryllium			
Cadmium	0.01[a]		
Chromium	0.05[a]		
Cobalt			
Copper			
Lead	0.005[a]	0.025	
Manganese			
Mercury	0.0000122[b]	0.0000122	0.000144
Nickel			0.61
Selenium	0.01[a]		
Silver	0.05[a]		
Thallium			0.0017
Vanadium			
Zinc			
Di-n-butyl phthalate			2.7
Di-n-octyl phthalate			

Notes:

NA/R&A = Not an ARAR or TBC for OU No. 4; Relevant and appropriate to OU No. 5.
TBC = To be considered.
(1) = Criteria in Water for Specific Toxic Materials – Human Health Protection. Category A – Water and Fish. 30 TAC Section 307-6 Toxic Materials.
(2) = Criteria in Water for Specific Toxic Materials – Human Health Protection. Category B – Fresh Water Fish Only. 30 TAC Section 307-6 Toxic Materials.
(3) = Ambient Water Quality Criteria for the protection of human health. 57 FR 60847. December 22, 1992.

[a]Indicates that the criteria for a specific parameter are for the dissolved portion in water. All other criteria are for total recoverable concentrations.
[b]Calculations are based on USFDA Action Levels for fish tissue concentrations.

Please Note: There are no contaminant-specific ARARs for OU No. 4 surface water.

Table A-5
ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
1. **Contaminant-Specific**		
Federal		
National (Primary and Secondary) Ambient Air Quality Standards (NAAQS) 40 C.F.R. Part 50	Yes	The NAAQS specify the maximum concentration of a federally regulated air pollutant (i.e., SO_2, particulate matter (PM_{10}), NO_2, CO, ozone, and lead) in an area resulting from all sources of that pollutant. No new construction or modification of a facility, structure or installation may emit an amount of any criteria pollutant that will interfere with the attainment or maintenance of a NAAQS (see 40 C.F.R. § 51.160). For the federal NAAQS standards, all measurements of air quality are corrected to a reference temperature of 25°C and to a reference pressure of 760 mm Hg (1,013.2 millibars). 40 C.F.R. § 50.3.
National Emission Standards for Hazardous Air Pollutants (NESHAPs) 40 C.F.R. Part 61 Subpart A	No	These provisions regulate the emissions of specified "hazardous air pollutants" [listed in 40 C.F.R. § 61.01(a)] that are emitted from particular sources or processes [listed in 40 C.F.R. Part 61].
Fugitive Emissions Source Standards 40 C.F.R. Part 61 Subpart V	No	Regulates specified equipment which are potential sources of fugitive emissions because they contain or contact fluid which is at least 10% by weight a volatile hazardous air pollutant ("VHAP" – including benzene and vinyl chloride). This requirement is not an ARAR as no fluid containing at least 10% by weight of a VHAP is present at the site.
Mercury Standards 40 C.F.R. Part 61 Subpart E	No	These provisions apply to stationary sources that process mercury ore, and incinerate or dry wastewater treatment plant sludge. The requirement is not an ARAR as no processing of mercury ore and/or no incineration of wastewater treatment plant sludge will occur at the site.

Table A-5
ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
1. **Contaminant-Specific** (Continued)		
State		
Asbestos Notification Fees 30 TAC § 101.28	No	The owner/operator of a demolition or renovation activity shall remit to the TACB a fee that is based on the amount of asbestos subject to the NESHAPS. Based on the amount of asbestos identified may not be an ARAR.
Particulates – Net Ground Level 30 TAC § 111.155	Yes	Establishes the net ground level concentration (downwind at the property boundary minus upwind measurements) of particulate emissions from any source that must not be exceeded.
SO_2 Ground Level Concentration 30 TAC § 112.7	No	SO_2 emissions from any source must not exceed a net ground level concentration (downwind at property boundary minus upwind). Not in ARAR since no SO_2 emissions are expected during or after remediation.
Hydrogen Sulfide 30 TAC § 112.31 & § 112.32	No	Sets net ground level concentration limits for hydrogen sulfide. Not an ARAR since no hydrogen sulfide emissions are expected during or after remediation.
Sulfuric Acid 30 TAC § 112.41	No	Sets net ground level concentration limits for sulfuric acid. Not an ARAR since no sulfuric acid emissions are expected during or after remediation.
Inorganic Fluoride 30 TAC § 113.3(a)(2) and (a)(3)	No	Sets atmospheric and net ground level concentration limits for inorganic fluoride (as HF). Not an ARAR since no HF emissions are expected during or after remediation.
Beryllium 30 TAC § 113.3(b)	Yes	Sets atmospheric and net ground level concentration limits for beryllium. Beryllium emissions may be generated during or after remediation.
Lead Emissions from smelting facilities	No	Rules relate to lead emissions from stationary sources in Dallas County. Sets standards for the control of lead emissions in Dallas County. Not an ARAR because the smelter is no longer in operation.

Table A-5
ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Action-Specific**		
Federal		
Prevention of Significant Deterioration of Air Quality 42 U.S.C. § 7475 40 C.F.R. § 52.21	No	These provisions impose various requirements (e.g. use of best available control technology) on any new major stationary source of a federally regulated air pollutant in an area which has been designated attainment or unclassifiable for that pollutant. A "major stationary source" is a source listed in 40 C.F.R. § 52.21 which emits, or has the potential to emit, 100 tons per year of a federally regulated air pollutant or any non-listed source that emits, or has the potential to emit, 250 tons per year of a federally regulated air pollutant. Activities at OU No. 4 or OU No. 5 are not expected to constitute a major stationary source of any federally regulated air pollutant. The requirement is not an ARAR.
Nonattainment Areas – LAER 42 U.S.C. § 172(b)(6) and § 173	No	A state's permit program under the federal Clean Air Act must require permits for the construction and operation of new major stationary sources in NAAQS nonattainment areas. Such a permit may be issued only if the proposed source complies with "lowest achievable emission rate" requirements. Not an ARAR since activities at OU No. 4 or OU No. 5 do not constitute new major stationary sources.
New Source Performance Standard for Incinerators 40 C.F.R. Part 60 Subpart E	No	Sets a limit for particulate emissions of 0.18g/dscm (0.08 gr/dscf) corrected to 12% CO_2. Not an ARAR since the rule applies to furnaces burning municipal waste.
Hazardous Waste Incinerators 40 C.F.R. Part 264, Subpart O	No	Not an ARAR since a hazardous waste incinerator is not being considered as a remedial alternative for OU No. 4 or OU No. 5.

Table A-5
ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Action-Specific** (Continued)		
State		
Control of Air Pollution by Permits for New Construction or Modification 30 TAC § 116	Yes	New non-exempt facilities which may emit air pollutants must obtain a construction permit or special permit. To obtain such a permit, the owner or operator of the proposed facility must provide for measuring emissions of significant air contaminants, and must demonstrate, among other things, that the facility will utilize the "best available control technology, with consideration given to the technical practicability and economic reasonableness of reducing or eliminating the emissions from the facility." Applies during building decontamination or demolition activities. May be relevant and appropriate.
Requirements for Specified Sources 30 TAC § 111.111	Yes	Visible emissions shall not be permitted to exceed an opacity of 30% for any six-minute period from any building, enclosed facility, or other structure. Applies during demolition or decontamination of buildings, or any other activity that may generate visible emissions. Relevant and appropriate for construction/demolition activities at OU No. 4 or OU No. 5.
Storage of Lead Containing Materials 30 TAC § 113.82(a) and (b)	Yes	No unenclosed storage of material containing more than 1% lead by weight. All particulate matter containing more than 1% lead by weight collected by air pollution control equipment shall be stored in closed containers or in a structure under significant negative pressure to prevent emissions to the atmosphere. Applies if lead content exceeds 1% by weight. Applicable to both OU No. 4 and OU No. 5.
Transport of Materials 30 TAC § 113.84(1) and (2)	Yes	All transport vehicles carrying materials containing more than 1% lead by weight must have covered cargo compartments at all times on plant property except during loading and unloading, when being washed, or inside a building. Each time a vehicle leaves a structure, all material containing more than 1% lead by weight shall be removed from the wheels; if water is used, this requirement is suspended during freezing weather. Applies if lead content exceeds 1% by weight. Applicable to both OU No. 4 and OU No. 5.

Table A-5
ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Action-Specific** (Continued)		
State (Continued)		
Control of Fugitive Dust 30 TAC § 113.91(a), (b), (c)	Yes	All plant roads shall be paved; parking areas and storage areas for materials containing more than 1% lead by weight shall be paved. Open unpaved areas must be vegetated or covered with rock or crushed aggregate at least three inches deep. Applies if lead content exceeds 1% by weight. Applicable to OU No. 4 and OU No. 5.
Additional Measures to Reduce Lead Emissions 30 TAC § 113.92(1)	Yes	If they occur outside buildings, spills of dust containing more than 1% lead by weight shall be dampened and cleaned up immediately. Applies if lead content exceeds 1% by weight. Applicable to both OU No. 4 and OU No. 5.
Control Requirements for Surfaces with Coatings Containing Lead 30 TAC § 111.135	Yes	Applies specifically to abrasive blasting of water storage tanks with coatings containing ≥ 1% lead. Specifies emission control requirements. Applies if abrasive blasting is used to decontaminate structures. Relevant and appropriate for OU No. 4 and OU No. 5.
Construction and Demolition 30 TAC § 111.145	Yes	Applies to properties greater than one acre in size. No person may cause, suffer, allow, or permit a structure, road, street, alley, or parking area to be constructed, altered, repaired or demolished without taking the following precautions: (1) Use of water or suitable oil or chemicals for control of dust during structure demolition (2) Use of adequate methods such as wet sandblasting and enclosure of work areas during sandblasting of structures or other similar operations. Applies to activities associated with building demolition; applicable to OU No. 4 and OU No. 5 if demolition activities occur.

Table A-5
ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR?	Justification
2. **Location-Specific**		
State		
General Application; Proximity of New Construction to Schools 30 TAC § 116.111	No	Requires the TACB to consider, in issuing a permit for construction of a facility, any adverse short-term or long-term side effects than an air contaminant or nuisance odor from the facility may have on the individuals attending an elementary, junior high, or senior high school within 3,000 feet of the facility. May be TBC since a school is located within 3,000 feet of OU No. 4 facility.

Table A-6
Numeric Contaminant-Specific ARARs for Air
RSR Corporation Superfund Site
Dallas, Texas

	State[1]				Federal[2]			
	Level 1[a]		Level 2[b]		Primary		Secondary	
	($\mu g/m^3$)	(ppm)	($\mu g/m^3$)	(ppm)	($\mu g/m^3$)	(ppm)	($\mu g/m^3$)	(ppm)
PM_{10}								
Annual arithmetic mean					50		50	
24-hour maximum	420		500					
24-hour average					150[c]		150[c]	
3-hour net average concentration	200[3]							
1-hour net average concentration	400[3]							
Lead								
3-month					1.5		1.5	
Beryllium								
30-day average					0.01		0.01	
24-hour average	0.01		0.01					

Notes:

[1]Control of Air Pollution Episodes. 30 TAC Section 118.1.
[2]National Ambient Air Quality Standards.
[3]Ground level Concentrations. 30 TAC Section 111.155.

[a]The concentration of any air contaminants is equal to or greater than the levels specified for Level 1 and in case of all air contaminants except ozone, meteorological conditions conducive to high air contamination are predicted to continue for at least 12 hours.
[b]Level 2 exists if the executive director determines that an emergency reduction of emissions must be initiated to prevent the presence in the atmosphere of any of the air contaminants in the concentrations specified. These levels could cause significant harm to human health.
[c]May not be exceeded more than once per year, all other NAAQS may never be exceeded.

Table A-7
Miscellaneous Location Standards
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR??	Justification
1. **Location-Specific**		
Federal		
National Historic Preservation Act 16 U.S.C. § 470 40 C.F.R. § 6.301(b) 36 C.F.R. Part 800	No	Requires federal agencies to take into account the effect of any federally-assisted undertaking or licensing on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historical Places. There is no such district, site, building, structure, or object in or near the RSR site; therefore, the Act is not an ARAR.
Archeological and Historic Preservation Act 16 U.S.C. § 469 40 C.F.R. § 6.301(c)	Yes	Establishes procedures to provide for preservation of scientific, historical, and archeological data which might be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity or program. If scientific, historical, or archaeological artifacts are discovered at the site, work in the area of the site affected by such discovery will be halted pending the completion of any data recovery and preservation activities required pursuant to the Act and its implementing regulations.
Historic Sites, Buildings, and Antiquities Act 15 U.S.C. § 461 et seq. 40 C.F.R. § 6.301(a)	No	Requires federal agencies to consider the existence and location of landmarks on the National Registry of Natural Landmarks to avoid undesirable impacts on such landmarks. There is no such landmark that will be affected by the proposed remedy; therefore, the Act is not an ARAR.
Endangered Species Act 16 U.S.C. § 1531 et seq. 50 C.F.R. Part 402	No	Requires that proposed action minimize impacts on endangered species within critical habitats upon which endangered species depend, including consultation with Department of Interior. No plant or animal endangered species of "critical habitat" will be impacted by the proposed remedy at the site; therefore, the Act is not an ARAR.
Wilderness Act 16 U.S.C. § 1131 et seq. 50 C.F.R. Part 35	No	Requires the administration of federally owned wilderness areas to leave them unimpacted. There is no federally owned wilderness area that will be impacted by the proposed remedy; therefore, the Act is not an ARAR.

Table A-7
Miscellaneous Location Standards
RSR Corporation Superfund Site
Dallas, Texas

Requirement	ARAR??	Justification
1. **Location-Specific** (Continued)		
Federal (Continued)		
National Wildlife Refuge System 16 U.S.C. §§ 668dd, 668ee 50 C.F.R. Part 27	No	Restricts activities within a National Wildlife Refuge. The proposed remedy will not affect a National Wildlife Refuge; therefore, these provisions are not ARARs.
State		
Antiquities Code of Texas TEX. NAT. RES. COD. ANN., CH. 191	No	Prohibits the taking, altering, damaging, destroying, or excavating of a state archeological landmark without a contract or permit. Unless a state archeological landmark is present at the site, the Code is not an ARAR.

TNRCC LETTER
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5
APPENDIX F

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

November 20, 1996

Ann Schober
United States Environmental Protection Agency
Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202-2733

Re: Comments: Draft Record of Decision for OU 4

Dear Ann:

Thomas Benz and I have several minor comments on the Operable Unit 5 (OU 5) Record of Decision. Several of these comments are reiterations of OU 4 comments which I think are also applicable for OU 5.

Comment 1: The TNRCC Risk Reduction Rules require deed notice recordation for Standard 3 cleanups. The TNRCC recommends that EPA pursue deed notices and/or deed restrictions as part of any settlement with the Responsible Parties.

The TNRCC is concerned that if contamination is left in place below 2 feet after the Remedial Action, uncontrolled commercial/industrial development, (which would undoubtedly involve excavation), may result in unrecognized exposure to contamination. The TNRCC suggests that this problem might be addressed through deed notices or restrictions.

Comment 2: TNRCC recommends limited additional sampling in excavated areas to document the level of contaminants remaining, after the Remedial Action. Otherwise there will be no way of knowing the concentrations of contaminants being left onsite below 2 feet.

Comment 3: As we discussed in our telephone conversation, TNRCC suggests that the alternate component of Alternative 3, (concerning a cap that would allow potential redevelopment of the former landfill area), only be implemented by PRPs if they agree to conduct the remediation. TNRCC is adverse to implementing a more expensive alternative if the component is completed using EPA and TNRCC funds.

Comment 4: TNRCC recommends that EPA explore the use of property liens in the event that PRPs are unwilling to conduct the remedial activities.

Comment 5: The TNRCC recommends the use of 30 TAC 335 as ARAR for containment of former surface impoundment, former landfill and slag burial area located in OU 5. The above reference State of Texas regulation closure and post closure care requirements for surface impoundments, waste piles, and landfills.

Thomas and I will present our recommendations for TNRCC's position on the OU 5 Draft ROD immediately. We expect a letter to be signed by the TNRCC Executive Director, which states the TNRCC position, to be in your hands before Thanksgiving.

If you have any questions or need further discussion you know our phone numbers.

Sincerely,

Jeffrey E. Patterson, Project Manager
Superfund Investigation Section
Pollution Cleanup Division

Thomas R. Benz, P.E.
Superfund Engineering Section
Pollution Cleanup Division

JEP/TRB/ls

REVISED COST ESTIMATES
RSR CORPORATION SUPERFUND SITE
OPERABLE UNIT No. 5
APPENDIX G

CH2M HILL
RSR Corporation Superfund Site
PROJECT NO: TXE65680.FS.R4
PREPARED BY E.R.MEYER

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% - -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
ALTERNATIVE 1b: Institutional Controls: Short-Term Monitoring					
CAPITAL COSTS:					
GENERAL REQUIREMENTS:	10%		$160,522	$16,052	
General Sitework:					
Institutional Controls:					
Fix Existing Perimeter Fence	9,100	LF	$15.00	$136,500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3,000	$6,000	
Survey Well Location	1	LS	$2,000	$2,000	
SUBTOTAL				$160,552	
CONTINGENCY	20%		$160,552	$32,110	
SUBTOTAL - CONSTRUCTION COST				$192,663	
PERMITTING & LEGAL	5%		$192,662.66	$9,633	
SERVICES DURING CONSTRUCTION	7%		$192,662.66	$13,486	
SUBTOTAL - IMPLEMENTATION COST				$215,782	
ENGINEERING & DESIGN COST	6%		$192,662.66	$11,560	
TOTAL - Capital Cost - Alternative 1b				**$227,342**	
ANNUAL O & M COSTS: (First Five Years)					
Guard Service (24 Hours/Day, 7 Days/Week)	12	MONTH	$10,800.00	$129,600	
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1,600.00	$4,800	
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600.00	$1,200	
SUBTOTAL				$135,600	
CONTINGENCY	20%		$135,600	$27,120	
TOTAL - Annual O & M Costs(5 Years) - Alternative 1b				**$162,720**	
ANNUAL O & M COSTS: (Next 25 Years)					
Guard Service (24 Hours/Day, 7 Days/Week)	12	MONTHS	$10,800.00	$129,600	
SUBTOTAL				$129,600	
CONTINGENCY	20%		$129,600	$25,920	
TOTAL - Annual O & M Costs(25 Years) - Alternative 1b				**$155,520**	

CH2M HILL
RSR Corporation Superfund Site
PROJECT NO: TXE65680.FS.R4
PREPARED BY E.R.MEYER

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
NET PRESENT VALUE.					
YEAR 0				$227,342	
YEAR 1				$162,720	
YEAR 2				$162,720	
YEAR 3				$162,720	
YEAR 4				$162,720	
YEAR 5				$162,720	
YEAR 6				$155,520	
YEAR 7				$155,520	
YEAR 8				$155,520	
YEAR 9				$155,520	
YEAR 10				$155,520	
YEAR 11				$155,520	
YEAR 12				$155,520	
YEAR 13				$155,520	
YEAR 14				$155,520	
YEAR 15				$155,520	
YEAR 16				$155,520	
YEAR 17				$155,520	
YEAR 18				$155,520	
YEAR 19				$155,520	
YEAR 20				$155,520	
YEAR 21				$155,520	
YEAR 22				$155,520	
YEAR 23				$155,520	
YEAR 24				$155,520	
YEAR 25				$155,520	
YEAR 26				$155,520	
YEAR 27				$155,520	
YEAR 28				$155,520	
YEAR 29				$155,520	
YEAR 30				$155,520	
NET PRESENT VALUE (i=5%) - Alternative 1b				**$2,649,238**	

CH2M HILL
RSR Corporation Superfund Site
PROJECT NO: TXE65680.FS.R4
PREPARED BY E.R.MEYER

RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
ALTERNATIVE 2: In-Situ Treatment of Buildings & Structures, Containment of Metals Contaminated Soils, Landfill, & Surface Impoundment, Short and Long-Term Monitoring.					
CAPITAL COSTS:					
GENERAL REQUIREMENTS:	10%		$4 560,503	$456,050	
General Sitework:					
Institutional Controls					
Fix Existing Perimeter Fence	9 100	LF	$15 00	$136 500	Assumes 100% of existing fence needs repair
Groundwater Well Installation	2	EA	$3 000	$6 000	
Survey Well Location	1	LS	$2 000	$2,000	
Steam Clean Battery Wrecking Facility (55,800 SF):					
Structural Inspection	32	HRS	$100 00	$3,200	
Structural Modifications (50% of Building, Heavy Duty)	27,900	SF	$8 80	$245,562	Based on AccuVal 1(800)852-9252
Steam Clean Building 2 Times, Level C	55,800	SF	$0 60	$33,480	ECHOS 33-17-0812 Pg 374
Steam Clean Vehicle Maintenance Building (4,800 SF):					
Steam Clean Building 2 Times Level C	4,800	SF	$0 60	$2,880	ECHOS 33-17-0812 Pg 374
Pump Water to Frac Tank, Test & Discharge :					
Frac Tanks	100	EA	$1 140 00	$114,000	
Pumping	1	LS	$10 000 00	$10,000	
Sampling	100	EA	$70 00	$7,000	
Analysis	100	EA	$200 00	$20,000	
Cover Metals Contaminated Soils :					
Cap Area with 2' Thick Clean Material	109 630	CY	$15 00	$1,644 444	Includes purchase of soil spreading & grading
Revegetate	34	ACRE	$1 500 00	$50 964	95 MEANS 029-304-0010
Cap Landfill:					
Surface Preparation	12	ACRE	$1 250 00	$15 000	95 MEANS 021-104-0150
Flexible Membrane Liner	503 000	SF	$0 55	$276 650	
2' Thick Clay	37 259	CY	$15 00	$558,889	
Drainage Layer, 1' gravel	18 630	CY	$15 00	$279 444	
Filter layer 0 5 ft sand	9 315	CY	$15 00	$139 722	
Protective Cover 1' soil	18 630	CY	$15 00	$279 444	
0 5' Thick Top Soil	9 315	CY	$15 00	$139,722	Includes purchase of soil spreading & grading
Revegetate	12	ACRE	$1 500 00	$18,000	95 MEANS 029-304-0010
Recap Surface Impoundment:					
Evaluate Existing Cap	1	LS	$20 000 00	$20 000	
Recap Area with 2' Thick Clay	3 333	CY	$15 00	$50 000	Includes purchase of soil spreading & grading
2' Thick Top Soil	3 333	CY	$15 00	$50 000	
Revegetate	1	ACRE	$1 500 00	$1 550	
SUBTOTAL				$4 560 503	
CONTINGENCY	30%		$4 560 503	$1 368 151	
SUBTOTAL - CONSTRUCTION COST				$5 928 654	
PERMITTING & LEGAL	5%		$5 928 654	$296 433	Based on cost of all on-site activities
SERVICES DURING CONSTRUCTION	7%		$5 928 654	$415 006	Based on cost of all on-site activities
SUBTOTAL - IMPLEMENTATION COST				$6 640 093	
ENGINEERING & DESIGN COST	6%		$5 928 654	$355 719	Based on cost of all on-site activities
TOTAL - Capital Cost - Alternative 2				**$6,995,812**	
ANNUAL O & M COSTS, (First 5 Years)					
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200	
Short Term Groundwater Monitoring (assumed for five years)	3	EA	$1 500 00	$4 800	
Short-Term Surface water Monitoring (assumed for five years)	2	EA	$600 00	$1 200	
SUBTOTAL				$7 200	
CONTINGENCY	20%		$7 200	$1 440	

CH2M HILL
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RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
TOTAL - Annual O & M Costs - Alternative - 2 (5 Years)				**$8,640**	
Long-Term Monitoring (Next 25 Years)					
Groundwater monitoring (2 wells annually)	2	EA	$1 600 00	$3 200	
Inspection of the cap (both landfill and surface impoundment)	4	QUARTERLY	$300 00	$1 200	
SUBTOTAL				$4 400	
CONTINGENCY	20%		$4 400	$880	
TOTAL - Annual O & M Costs - Alternative 2 (25 Years)				**$5,280**	

CH2M HILL
RSR Corporation Superfund Site
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RSR CORPORATION SUPERFUND SITE - REMEDIATION OF OU 5
(Accuracy Range +50% / -30%)

DESCRIPTION	QUANTITY	UNIT	$/UNIT	TOTAL COST	REFERENCE
NET PRESENT VALUE:					
YEAR 0				$6 995 812	
YEAR 1				$8 640	
YEAR 2				$8,640	
YEAR 3				$8,640	
YEAR 4				$8 640	
YEAR 5				$8 640	
YEAR 6				$5 280	
YEAR 7				$5 280	
YEAR 8				$5,280	
YEAR 9				$5 280	
YEAR 10				$5 280	
YEAR 11				$5 280	
YEAR 12				$5 280	
YEAR 13				$5 280	
YEAR 14				$5,280	
YEAR 15				$5,280	
YEAR 16				$5,280	
YEAR 17				$5 280	
YEAR 18				$5,280	
YEAR 19				$5,280	
YEAR 20				$5 280	
YEAR 21				$5,280	
YEAR 22				$5 280	
YEAR 23				$5 280	
YEAR 24				$5 280	
YEAR 25				$5 280	
YEAR 26				$5 280	
YEAR 27				$5 280	
YEAR 28				$5 280	
YEAR 29				$5,280	
YEAR 30				$5,280	
NET PRESENT VALUE (i=5%) - Alternative 2				**$7,091,525**	