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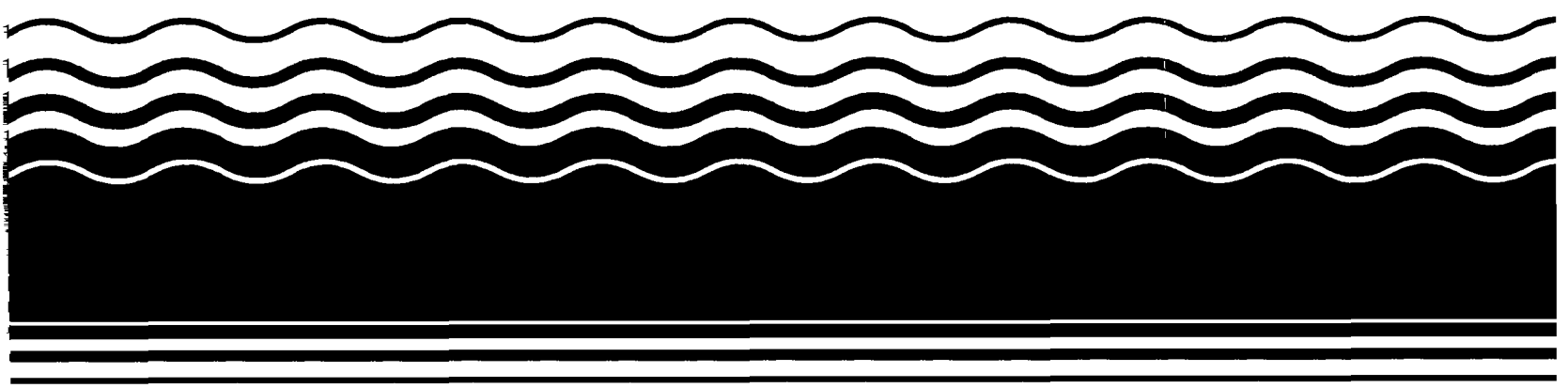
EPA Superfund Record of Decision:

Del Amo Facility Waste Pits OU
Los Angeles, CA
9/5/1997



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

RECORD OF DECISION

for

Del Amo Waste Pits Operable Unit

Del Amo Facility Proposed Superfund Site

Los Angeles, CA

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I. DECLARATION

1.1 Site Name and Location

Proposed Del Amo Superfund Site
Los Angeles, CA

1.2 Statement of Basis and Purpose

This decision document presents the selected remedial action for the Del Amo Waste Pits Operable Unit (Waste Pits OU) of the Proposed Del Amo Superfund Site (Del Amo Site), in Los Angeles, California, chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) and, to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record.

The State of California concurs with the selected remedy.

1.3 Assessment of the Site

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

1.4 Description of the Selected Remedy

The remedy selected in this ROD for the Del Amo Waste Pits Operable Unit is the first of three planned RODs for the Del Amo Site. This ROD addresses the waste, soil and subsurface gas contaminated by hazardous substances within the 4-acre Waste Pits Area of the Del Amo Site (see Figure 1). This ROD selects a final remedy for the Waste Pits Area addressing potential human exposures to waste pit contaminants at or near the ground surface. This ROD also selects an interim groundwater remedy for the Waste Pits Area by selecting measures to prevent continued migration of hazardous substances from the waste pits or surrounding soil to the groundwater. The Waste Pits Area is one of many sources of groundwater contamination at the overall Del Amo Site.

The remedy selected in this ROD addresses the principal threat remaining at the Waste Pits Area by selecting actions that will prevent future releases of hazardous substances from the remaining waste materials present in the waste pits, either upward to the surface, downward into the groundwater, or laterally out from the pits, that would create unacceptable risks to public health or welfare or the environment. The ROD also selects measures intended to prevent additional contamination of groundwater beneath the Waste Pits Area by selecting response actions to clean-up hazardous substance contamination that had been previously released from

the waste pits and is currently present in the vadose zone soils.

The major components of the selected remedy for this action include:

- Placement of a **RCRA-equivalent cap** over the Waste Pits Area as described in this ROD and associated soil gas monitoring;

- Installation of **surface water controls** to prevent ponding of water on the cap and to prevent runoff onto adjacent properties;

- Installation and operation of a **soil vapor extraction system (SVE)** beneath the Waste Pits Area to achieve the interim soil remediation standards established in this ROD;

- Installation of **security fencing** around the treatment units associated with the cap and SVE systems;

- Implementation of **deed restrictions** prohibiting future residential use of the Waste Pit Area and prohibiting any future use of the Waste Pits Area that could threaten the integrity of the RCRA equivalent cap;

- **Long-term operation and maintenance** of all of the above and related components of the remedy selected in this ROD.

1.5 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 (or resource recovery) technologies to the maximum extent practicable. Components of the selected final remedy satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining on-Site above health-based levels, a review will be conducted at least once every five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of public health or welfare or the environment.

1.6 Signature

Keith A. Takata — 9-5-97

Keith A. Takata, Director — DATE
Superfund Division
U.S. Environmental Protection Agency, Region IX

II. DECISION SUMMARY

2.1 Name, Location, Description

The proposed Del Amo Superfund Site (Del Amo Site) is located in the city of Los Angeles, California. (See Location Map - Figure 1). It is located in a section of the city known as the Harbor Gateway, a narrow appendage of the city approximately a half mile wide that extends from the main body of the city south to the coast near Long Beach, CA. The Site sits approximately 6 miles south of the main body of the city and 10 miles north of the Pacific Coast. To date, EPA's investigation of the Site has focused on the 280 acres formerly occupied by a synthetic rubber manufacturing operation and on the associated groundwater contamination. The subject of this ROD is the Waste Pits Area, a 4-acre portion of the Site that sits at the southern boundary of the area formerly occupied by the synthetic rubber manufacturing operation. The Waste Pits Area consists of two parcels: Lot 36 and Lot 37, as identified on the Los Angeles County Assessor's Map Number 7351-034 Northwest.

The proposed Del Amo Site sits adjacent to the junction of Interstate Highways 405 (the San Diego Freeway) and 110 (the Harbor Freeway). The City of Los Angeles appendage, within which sits the Site, and the adjacent unincorporated areas, are sandwiched between the cities of Torrance to the west and Carson to the east. The area that was once occupied by the synthetic rubber manufacturing operation is bounded by 190th St. on the north, Del Amo Blvd. on the south, roughly Normandie Ave. on the west, and Interstate 110 on the east.

The Waste Pits Area encompasses approximately 4 acres and sits adjacent to the southern Site boundary of the area once occupied by synthetic rubber manufacturing operation. The Waste Pits Area is bounded by industrial and commercial development on the north and Del Amo Boulevard with adjacent residences on the south. Electrical power transmission easements run along the Waste Pits Area's northern and southern boundaries, and two major underground petroleum and chemical pipeline corridors run along it's southern boundary. The adjacent area south of the Waste Pits Area is a residential community, within the jurisdiction of unincorporated Los Angeles County.

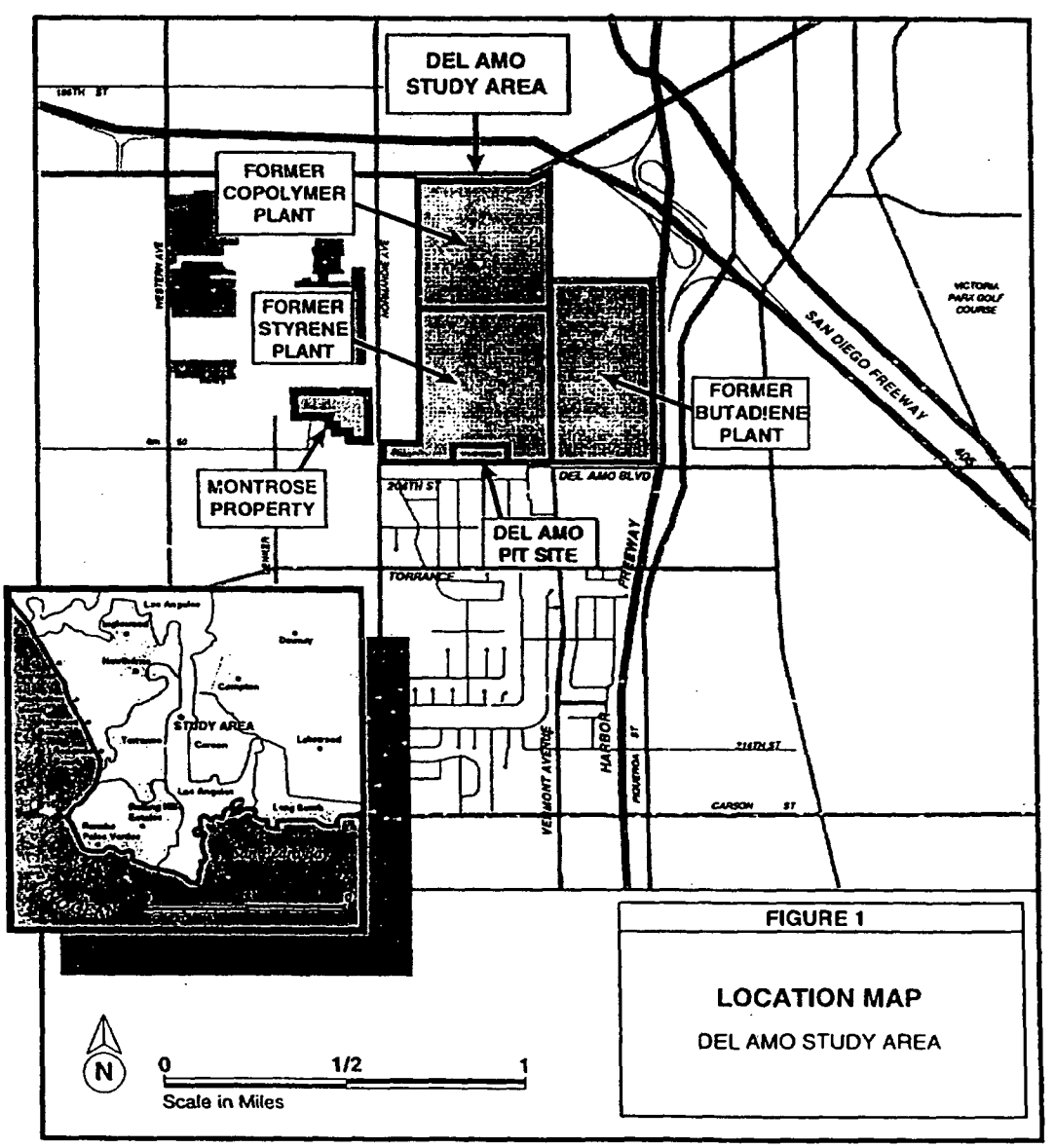
Today, the area formerly occupied by the synthetic rubber manufacturing operation is mostly being used for light industrial and commercial purposes, including food processing, light manufacturing, and warehousing. There are a few vacant parcels that have not been redeveloped, including the Waste Pits Area. The adjacent lands to the north are also used for light industrial and commercial purposes, as are the lands on the west (which include several aircraft manufacturing facilities and active chemical plants). The land adjacent to the Site on the east is a freeway, and the adjacent lands on the south are residential. Del Amo Boulevard separates the Waste Pits Area from residents' backyards. The fronts of these residences are on 204th St.

To the west, the Montrose Chemical Corporation of California manufactured the pesticide DDT from 1947 until 1982 at 20201 Normandie Avenue. The Montrose plant property and areas

impacted by releases from that property, the Montrose Chemical Corporation Superfund Site, were added to the Superfund National Priorities List in 1989.

The land upon which the Del Amo Site sits is a relatively flat alluvial plain. Underlying the Site are alluvial deposits of sands, silts, and clays that extend down hundreds of feet. These deposits contain four distinct and separate aquifers, the third and fourth (deepest) of which are used for municipal drinking water. There are no surface water resources at the Site.

To date, no man-made structures from the original synthetic rubber manufacturing operations have been discovered with the exception of the waste pits and ponds in the Waste Pits Area. The Waste Pits Area contains the most concentrated sources of waste materials generated by the synthetic rubber operations, as well as other related hazardous substance contamination. The Waste Pits Area, a series of six former waste disposal pits and four former evaporation ponds, had been covered or filled with soil at various points in the past.



2.2 Site History and Enforcement Actions

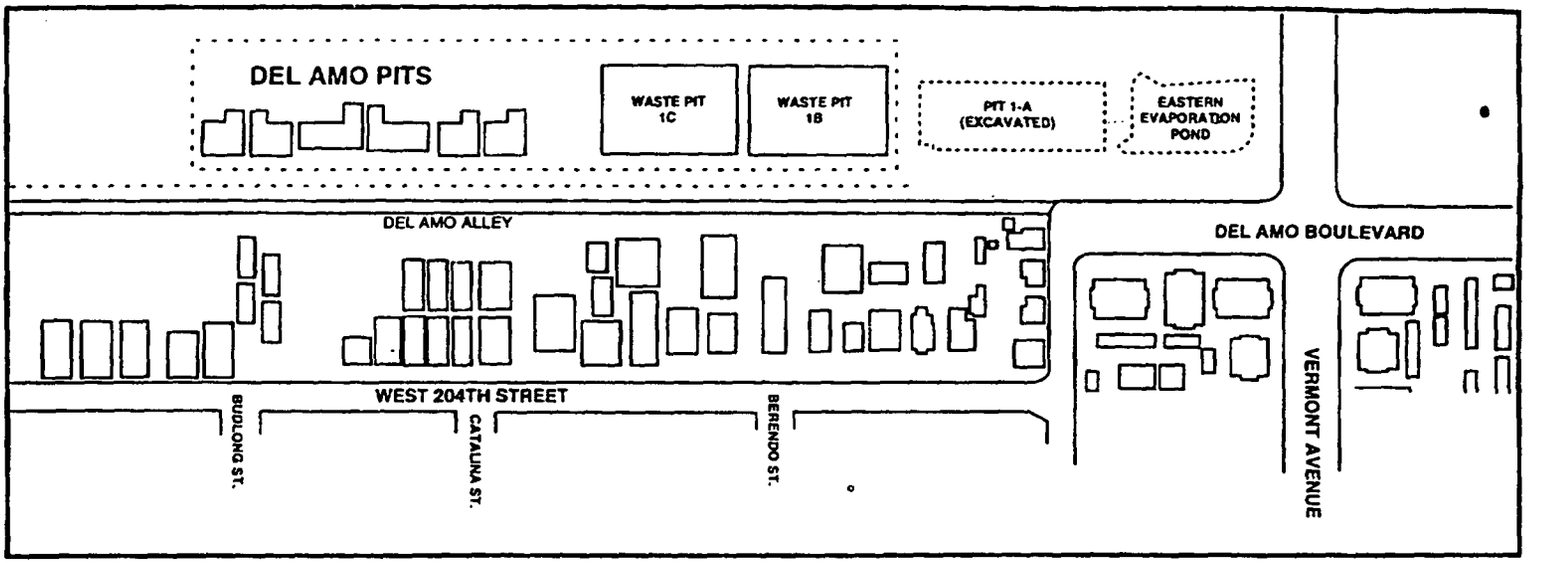
From 1943 until 1972, a synthetic rubber manufacturing operation, consisting of three separate plants, covered 280 acres at the Site. Built to produce synthetic rubber during World War II, the 280-acre operation, from 1942 until 1955, consisted of a styrene plant operated by Dow Chemical Co., a butadiene plant operated by Shell Oil Co., and a synthetic rubber (copolymer) plant operated by U.S. Rubber Co., Goodyear Tire & Rubber Co., and others. During this period, the United States owned all three plants, which were operated by the above-noted companies under agreements with the United States. In 1955, the United States sold all three plants to Shell Oil Company and Shell continued to operate these plants until 1971.

Synthetic rubber was produced by manufacturing styrene and butadiene separately, piping them to the rubber plant, and then chemically synthesizing the two into synthetic rubber. (See Figure 1 - Location Map). Raw materials and finished products were stored primarily in aboveground tanks. Some feedstock chemicals, particularly benzene, were delivered via underground pipeline from off-site sources. The styrene plant consisted of approximately 106 acres. The primary feedstocks for styrene manufacture were propane and crude benzene. Other chemicals used or produced in the process include toluene, ethylbenzene, styrene, caustic, hydrochloric acid, and sulfuric acid. The butadiene plant consisted of approximately 90 acres. Butadiene is a gas at standard temperature and pressure. Butadiene feedstock including a mixture of butane, butylene, and butadiene, were received primarily by pipeline. The copolymer plant occupied approximately 82 acres. Synthetic rubber was produced in a series of reactions by combining styrene and butadiene with lesser amounts of other chemicals including soap solutions and acid solutions.

Within each plant, wastes from the production processes were directed into separator units. Settled sludge from the separator units was disposed of either off-site or in a waste disposal area located on-Site. Waste disposal impoundments were located on two parcels (the Waste Pits Area) covering a total of approximately 4 acres at the southern boundary of the styrene plant, including four evaporation ponds (referred to as pits 1-A through 1-C and the eastern evaporation pond) and six waste pits (referred to as pits 2-A through 2-F). The 1-series evaporation ponds received aqueous waste, and the 2-series pits received semi-viscous to viscous wastes. All of the pits and ponds were unlined. (See Figure 2 - Waste Pits Area). The 2-series pits received an aluminum chloride complex, containing a large amount of hydrocarbons. The 2-series pits also received heavy impurities and tars, including sulfur tars from the styrene purification process. The four 1-series evaporation ponds received a variety of materials, including acid sludge (a by-product of the treatment of benzene and sulfuric acid), kaolin clay (used to dehydrate alcohol and produce ethylene) and lime slurry (a by-product of a zeolite softening system). The evaporation ponds also received the heavy hydrocarbons that had settled at the bottom of the water skimmers in the styrene plant.

Upon closure of the three plants by Shell Oil Company in 1972, the unlined pits and ponds that were still open were covered with soil and surrounded by a double row of chain link

FIGURE 2
WASTE PIT AREA



fence. In 1972, Shell sold the facility and the property to a development company and the three plants were dismantled. Most of the 280-acre area once occupied by the synthetic rubber manufacturing operation has since been redeveloped as an industrial park.

In 1983, the California Department of Toxic Substances Control (DTSC) began investigating waste disposal areas within the Waste Pits Area. In 1984, contamination was discovered in the waste pits area and underlying soils. From 1985 until 1991, Dow Chemical Company, Shell Oil Company and G.P. Holdings conducted RI/FS activities for Lot 36 under a Memorandum of Agreement and subsequently under an Administrative Order with the California Department of Toxic Substance Control (DTSC). In 1991, DTSC issued a Notice of Non-Compliance and terminated the Administrative Order.

In July 1991, EPA proposed the Del Amo Site be added to EPA's National Priorities List (NPL). Shortly after that, DTSC turned over regulatory responsibility for the Site to EPA. In June 1996, EPA re-proposed the Site with updated technical information.

On May 7, 1992, EPA, DTSC, and two potentially responsible parties, the Shell Oil Company and the Dow Chemical Company, entered into a Administrative Order on Consent (U.S. EPA Docket No. 92-13) agreeing to perform an remedial investigation and feasibility study for the Site. In addition, Dow and Shell agreed to perform an accelerated RI/FS for the Waste Pits Area. The purpose of these activities was to determine the nature and extent of

contamination at the Site and to determine feasible remediation options for the Site.

On July 15, 1994, EPA issued a Unilateral Administrative Order to the Shell Oil Company following the discovery of small areas or seeps of exposed waste at Pits 2-B and 2-A. The Order requires Shell to conduct regular inspection and maintenance of the Waste Pit Area and in particular, to detect and cover or remove exposed waste material.

The focused RI/FS for the Waste Pits Area is contained in two documents - the Waste Excavation Feasibility Study (WEFS) and the Focused Feasibility Study (FFS). Information and analysis meeting Superfund requirements for a remedial investigation and baseline risk assessment are contained in the FFSC Chapter 2 and Chapter 3, respectively, and related appendices. On November 30, 1994, EPA issued a Notice of Tentative Disapproval to the PRPs for the Waste Excavation Feasibility Study and the Focused Feasibility Study (FFS) for the Waste Pits Area. These documents were unacceptable due to their "overall poor quality, inaccurate or inappropriate assumptions, and inaccurate and unfounded conclusions." EPA required the PRPs to make significant revisions to the reports. In July 1995, EPA issued a Notice of Disapproval of the Waste Excavation FS on the grounds that it significantly failed to adequately address EPA comments. EPA then prepared a Waste Excavation Feasibility Study, which the PRPs incorporated into a revised FFS. EPA finally approved the revised Focused Feasibility Study Report for the Waste Pits Area in December, 1996.

2.3 Highlights of Community Participation

This ROD (including the Response Summary) presents the selected remedial action for the proposed Del Amo Site Waste Pit Operable Unit. The remedial action is chosen in accordance with CERCLA, as amended by SARA, and to the extent practicable, in accordance with the National Contingency Plan. The decision for the Waste Pit Operable Unit is based on the Administrative Record established for this action.

On December 16, 1996, EPA issued the Proposed Plan for the Del Amo Waste Pit Operable Unit, and sought public comments on the Proposed Plan. On that date, a copy of the Administrative Record for the Proposed Plan, which included the Focused Feasibility Study and the Waste Excavation Feasibility Study, was placed in the local repositories near the Del Amo Site - the Torrance Public Library and the Carson Public Library. EPA established a 60-day period for the public to provide comments on the plan. During the comment period, EPA held a public meeting at the Torrance Cultural Arts Center, in Torrance, CA, to discuss the Proposed Plan with the public and receive public comments. The public comment period ended on February 13, 1997. The Proposed Plan and the subsequent invitation to the public meeting were both mailed to the entire Site mailing list, which includes approximately 1800 residents and other concerned citizens. In addition, the issuance of the Proposed Plan and the location and date of the Proposed Plan Public Meeting were advertised in the local newspaper, the Torrance Daily Breeze. In response to the comments EPA received from the public, EPA prepared a Response Summary, which is part of this ROD.

EPA has conducted frequent public meetings since March 1994, approximately every two to three months, to present and discuss information and issues concerning both the proposed Del Amo Site and the adjacent Montrose Chemical Corporation NPL Superfund Site. Since assuming the lead for the Del Amo Site from the State of California in 1991, EPA has issued 22 Fact Sheets explaining the results of the RI sampling, the neighborhood sampling, the Site history, the Superfund process, and other matters. In addition, EPA held a community workshop to describe potential remedial alternatives in February 1996, upon initial development of draft remedial alternatives in the Focused Feasibility Study for the Waste Pits Area.

EPA made particular efforts to inform and communicate with the community regarding sampling conducted by EPA in residential areas adjacent to the southern boundary of the Waste Pits Area. In October 1993 and February 1994, EPA conducted soil sampling in residential lots adjacent to the Waste Pits Area and other residential lots adjacent to the southern boundary of the property formerly occupied by the Styrene Plant. The results of this sampling found contaminants associated with the Del Amo Site but at levels that did not pose an unacceptable risk to human health. EPA provided these sampling results, by letter, to owners and occupants of the properties sampled by EPA. EPA also discussed these results in a community meeting held on March 22, 1995 at Halldale School Auditorium near the site.

In the summer of 1994, EPA conducted air monitoring at the Waste Pits Area and

indoor/outdoor air monitoring at residential lots adjacent to the Waste Pits Area. These sampling results and the results of other sampling including soil, indoor dust and drinking water sampling, were presented in public meetings, held on May 24, 1995, and subsequent dates, at Residence Inn, Torrance . These results also did not find contaminants associated with the Waste Pits Area or the Del Amo Site at unacceptable levels. These sampling results were provided, via correspondence from EPA, to occupants and owners of the parcels sampled.

2.4 Scope and Role of OU or Response Action

This ROD is for the Waste Pits Area at the proposed Del Amo Site, the first of three planned remedial decisions for the Site. An "operable unit" is a portion of a Site for which EPA selects a remedial action separately from the other operable units or the overall Site. Operable units can be defined by distinct physical areas of a Site, contaminated medium (e.g. groundwater vs. soils), or contaminants (e.g. metals vs. solvents). For the proposed Del Amo Site, EPA has broken RI/FS activities into three components: the Waste Pits Area, groundwater, and the remainder of the proposed Del Amo Site (primarily soil contamination). EPA's management approach to groundwater and other Del Amo Site RI/FS investigations may be changed at EPA's discretion.

Because the Waste Pits Area was the largest and most concentrated known source of hazardous substance contamination at the proposed Del Amo Site, and because of its close proximity to residences, EPA decided it was appropriate to accelerate the schedule for the Waste Pits Operable Unit RI/FS.

This Record of Decision for the Waste Pits Operable Unit is a final remedial decision for the Waste Pits area, addressing the potential for human exposure to hazardous substances on or near the ground surface of the two lots (Lot 36 and Lot 37) that make up the Waste Pits Area. However, this ROD is an interim remedial decision for groundwater by addressing the potential for migration of hazardous substances at the Waste Pits area from the waste material, soil or to groundwater. This ROD is an interim remedial decision for groundwater because the actions selected in this ROD pertain only to the Waste Pits area as a groundwater contaminant source. There are other areas that are sources of groundwater contamination at the Del Amo Site in addition to the Waste Pits Area. Generally, EPA selects interim actions which are anticipated to be consistent with a final remedy. The groundwater operable unit ROD will select final remedial actions, if any, for the Site-wide groundwater contamination. In so doing, the groundwater operable unit ROD may include adjustments to groundwater-related decisions made in this ROD. This ROD does not make any remedial decision concerning the groundwater beneath the Waste Pits Area or any other area of the proposed Del Amo Site.

A decision concerning remedial actions, if any, to address groundwater contamination will likely be the next remedial decision made by EPA for the proposed Del Amo Site. Groundwater contamination at the Site (including known human carcinogens) appears to exhibit the potential to spread and to reach aquifers being used for drinking water unless response activities are taken. Any principal threats associated with the groundwater will be identified in the studies, remedial plans and selections for the groundwater operable unit. The third and final EPA ROD will address the remainder of the proposed Del Amo Site other than the waste pits and groundwater, principally soil contamination. Any principal threats associated with soils in the rest of the Del Amo facility will be identified in the studies, remedial plans and selections for the operable unit covering the remainder of the Del Amo Site.

2.5 Summary of Site Characteristics

The Waste Pits Area consists of four former evaporation ponds and six former disposal pits on two lots (Lots 36 and 37 of the Los Angeles County Assessors Map Number 7351-034 Northwest). See Figure 2. The former evaporation ponds have been designated as "Pits 1A, 1B, 1C," and the "Eastern Evaporation Pond." The former disposal pits have been designated as "Pits 2A, 2B, 2C, 2D, 2E, and 2F." All of the series 2 Pits and Pits 1B and 1C are located on Lot 36, which is owned by a subsidiary of Shell Oil Company, Triton Diagnostics. Currently, Lot 36 of the Waste Pits Area is a vacant lot, surrounded by a double row of chain-link fencing and covered by soil fill and weeds. An earthen mound approximately 15 feet high is present over the western portion of the area. Pursuant to a unilateral administrative order, Shell Oil Company conducts regular inspections of Lot 36 as well as regular fence maintenance and weed mowing. Pit 1-A and the Eastern Evaporation Pond are located on Lot 37 which is owned by Western Waste Industries. Lot 37 is also currently a vacant lot covered by soil fill and vegetation and surrounded by a double row chain-link fence.

The waste material in the pits contains two main types of hazardous substances that are of concern: semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) (see Table 1). Soil beneath and adjacent to the waste material is also contaminated with SVOCs and VOCs. Benzene, a VOC and known human carcinogen, is the most frequently found hazardous substance and is present in the highest concentration of all VOCs found in the waste, the soil, and the groundwater of the Waste Pits Area. The SVOCs found most often and in the highest concentration in both the waste and soil of all Polycyclic aromatic hydrocarbons (PAHs) is naphthalene. Naphthalene is not classified as a human carcinogen, but it can cause a number of adverse health effects in humans resulting from acute or chronic exposure, including cataracts, dermatitis, and anemia. Concentrations of metals detected in the waste pits were below PRGs (preliminary remediation goals) except for arsenic. Arsenic was detected at a concentration of 25 mg/kg, which exceeds arsenic's PRG of 2.4 mg/kg. This is consistent with background levels of arsenic in California soils, which typically have such elevated concentrations. Hydrogen sulfide (H_2S) was also found, with the maximum emission rate being from the 2-series pits, 2-C, 2-D and 2-F, at 11,060 $mg/m^2/min$, upon disturbance.

The waste material in pits 1B and 1C (former evaporation ponds) is covered with 2-4 feet of soil fill, and the waste extends down an average of 9 feet. The waste material in the 2-series pits (former disposal pits 2A - 2F) is covered with 3-15 feet of soil fill, and the waste extends down 21 to 32 feet. The estimated volume of the waste material itself is 15,600 yd^3, and the estimated volume of very heavily contaminated soil adjacent to the waste material is 17,100 yd^3. Beneath several of the pits, contaminated soil extends down to the water table, a depth of approximately 60 feet. The lateral extent of the contaminated soil is roughly confined within the inner fence that surrounds the pits. The estimated volume of these farther reaches of contaminated soil surrounding the pits is 300,000 yd^3.

The groundwater beneath the pits is heavily laden with hazardous substances from both the waste pits as well as other upgradient sources. The predominant contaminants present in

the groundwater beneath and immediately downgradient of the pits are: benzene, ranging from 12,000 ppb to 470,000 ppb and averaging 171,000 ppb in the monitoring wells as of the late 1996 sampling round, ethylbenzene ranging from less than 100 ppb to 15,000 ppb and averaging 4,200 ppb, and phenol, ranging from 29 ppb to 440 ppb and averaging 180 ppb in the same monitoring round. The data shows a sharp rise in groundwater contaminant concentrations in the immediate vicinity of the Waste Pits Area, as compared to the monitoring wells further upgradient. This is indicative of the Waste Pits Area being a source of groundwater contamination. If the Waste Pits were not a source, the groundwater contaminant concentrations from upgradient sources would decline as the water moved downgradient. Thus, the data clearly indicates that contaminants from the waste pits are migrating to and causing significant contamination of the underlying groundwater. The data also shows there is contamination in the soil underlying the waste pits. Contamination has migrated through the waste pits and into the vadose zone.

TABLE 1 - Chemicals of Concern at Waste Pits Area (parts per million, ppm)

Chemical	1-Series Pits	2-Series Pits	Soil Below	Soil Adjacent
Total Semi-volatile Organic Compounds	1,000 ppm - 38,000 ppm	22 ppm - 30,200 ppm	1 ppm - 10,199 ppm	ND* - 1,393 ppm
Total Volatile Organic Compounds	126 ppm - 4,600 ppm	2,300 ppm - 117,000 ppm	ND* - 42,640 ppm	ND* - 10,400 ppm

*Not Detected

Pit 1-A was excavated in the mid-1980's and soil contamination data was collected beneath the excavation floor before the excavation was backfilled with clean soil. The excavation was 6 feet deep at the eastern end, 25 feet deep at the western end, and covered the areal extent of Pit 1-A. Contaminant concentrations in the soil beneath the floor of the excavation ranged from nondetect to 16,000 ppm for naphthalene and from nondetect to 13,000 ppm for phenanthrene. It is believed that, similar to other pits, contamination in the soil beneath Pit 1-A extends to the water table.

Based on the analytical results from soil borings reported in the FFS, EPA has concluded that the Eastern Evaporation Pond does not contain soil contamination at unacceptable levels. Therefore given available information, EPA in this record of decision is determining that no remedial action at the Eastern Evaporation Pond is warranted at this time.

The exposure pathways of concern for the Waste Pits Area are groundwater exposure and surface exposure. The possibility of volatile contaminants migrating to nearby homes and causing exposure to residents was investigated, but EPA found it not to be an exposure

pathway of concern. The groundwater beneath the Waste Pits is heavily laden with contaminants from the pits, as shown by the high contaminant levels found in the groundwater investigations. To investigate potential surface exposures, air emission tests were conducted above the waste and adjacent contaminated soil. Results indicated that all the pits contain waste that is capable of emitting significant levels of VOCs into the air if disturbed (i.e. excavated). The 2-series pits are capable of emitting significant levels of hydrogen sulfide (H_2S) gas if the waste comes into contact with air. Emissions of benzene and H_2S gas into the atmosphere are of greatest concern due to adverse health effects that could result from exposure.

Emissions were measured during a "downhole flux monitoring" investigation, the results of which are summarized in a report entitled "Data Summary Report, Measurement of Emissions Rates and Specifications of Vapor Phase Contaminants from Disturbed Waste," prepared by Dames & Moore, dated April 30,1996. This investigation found VOC emissions including benzene, toluene, ethylbenzene and styrene. Benzene was found at a maximum concentration of 24,000 mg/kg at 35 ft bgs (below ground surface) and ethylbenzene at a maximum concentration of 18,000 mg/kg, also at 35 ft bgs. VOC concentrations were less in 1-B and 1-C then in the 2-Series pits. SVOCs detected in the pits included anthracene, chrysene, fluorene and naphthalene. Hydrocarbon emissions were higher in the 2-Series pits (10^4 -10^5 $\mu g/m^2/min$) than the 1-B and 1-C pits (10^5 -10^6 $\mu g/m^2/min$). Hydrogen sulfide (H_2S) was found, with the maximum emission rate being from the 2-series pits, 2-C, 2-D and 2-F, at 11,060 $mg/m^2/min$. Non-methane hydrocarbons were found at a maximum concentration of 50,000 ppmv (parts per million volume).

Soil gas and air monitoring were also conducted in the vicinity of the pits and fenceline, the results of which are summarized in "Final Report, Ambient Air, Surface Flux, and Soil Gas Characterization" prepared by CH2M Hill, dated January 26, 1996. The ambient air monitoring detected benzene in the range of 0.57 - 3.2 ppbv, which is within background concentration ranges. Soil gas testing found benzene (maximum concentration 35 ppbv), toluene (51 ppbv), 1,2 xylene (43 ppbv), and styrene (3.1 ppbv). These concentrations do not result in indoor concentrations above PRGs in adjacent residential properties. Surface Flux testing revealed a maximum benzene concentration of 180 ppbv, a maximum styrene concentration of 9.3 ppbv, and a maximum hydrogen sulfide concentration of 9 ppbv. This value is within the range of background ambient air concentrations.

The backyard soil samples from residences on 204th street are summarized in a memorandum from Tom Dunkelman, then Project Manager for the EPA, dated December 3, 1993. The results showed that arsenic, total chromium and benzo pyrene were all below PRG's. DDT was the only contaminant that was found in concentrations above the PRGs, which is attributed to the Montrose Site.

Residential indoor and outdoor air monitoring was summarized in the report entitled "Final Report, Residential Indoor Air Characterization Study, West 204th Street Temporary

Relocation Zone" prepared by CH2M Hill, dated March 16, 1996. Benzene was found above its PRG of 7.0 ppbv at two residences. In the first residence, 1051 204th St, the concentration was 11.6 ppbv; upon additional testing, however, benzene was found to be below its PRG. The original value was thought to be from a gas line leak. At the second residence, 1063 204th St., benzene was found at a concentration of 8.7 ppbv. Household cleaning products were removed and additional testing was performed where benzene was found to be below its PRG. The backyard air sampling found the ambient air to be within background concentrations.

2.6 Summary of Site Risks

To determine the potential health risks resulting from contamination at hazardous waste Sites, EPA conducts risk assessments. An EPA risk assessment estimates the *potential* adverse effects on human health from *potential* exposure to Site chemicals using Site data and a theoretical model. To do this, the risk assessment must first assume how the area and its surroundings are to be used, determine who might be affected by the Site, and ascertain the pathway by which they may be affected. The risk assessment must then utilize Site data to determine which chemicals people may be exposed to and at what concentrations, and then select assumptions for the frequency and duration of the exposure. Finally, health information about each chemical is combined with all the other data and assumptions mentioned, to calculate the risk. Conservative assumptions as well as limitations to both our knowledge and the risk calculations must be recognized when drawing conclusions and utilizing these calculations to make remedial decisions.

As stated in Chapter 3 of the FFS, the waste pits baseline risk assessment (risk assessment) assumed that the future use of the Waste Pits Area would remain consistent with current uses, and that the current conditions of the Waste Pits Area would remain in the future. These assumptions include the Waste Pits Area being surrounded by a double row of chain-link fence, soil fill covering the waste, and the area being routinely inspected and maintained. The risk assessment also assumed that the people most affected by any hazardous substance releases from the Waste Pits Area would be residents located at the fence line on the south side of the pits, office workers located at the northern fence line, and a maintenance worker on the waste pits Site itself. Finally, it assumed that the existing controls described above would prevent direct contact with waste and contaminated soil, and therefore, the only pathway by which people could be exposed to the chemicals at or near the ground surface would be from inhaling chemical vapors.

The risk assessment did not quantitatively evaluate potential future exposures that might occur if conditions at the Waste Pits Area were to change (e.g., if the soil fill cover over the waste were allowed to erode,). If those conditions should change, exposures and resultant risks to humans at or in the vicinity of the Waste Pits Area would likely be substantially higher and at unacceptable levels.

The risk assessment also did not quantitatively evaluate risks associated with contaminated groundwater. Because this ROD selects an interim, not final action for groundwater, potential risks associated with groundwater will be assessed separately and presented at the time EPA issues its proposed remedial plan for groundwater at the Del Amo Site. While groundwater risks are not included in the risk assessment that is presented in the FFS, it should be noted that it is unlikely that any persons would be exposed to vapors from the pits and the groundwater contaminated by the pits at the same time. EPA believes that these two types of risk can be considered independently.

The risk assessment evaluated current and future risks in order to provide a basis for cleanup decisions contained in this ROD. The risk assessment did not evaluate past exposures to hazardous substances that may have been released from the Waste Pits Area in the past nor does the risk assessment evaluate the possible health effects that could arise from those exposures, if they existed.

The risk assessment was performed utilizing Site data from soil gas and "flux chamber" sampling of the waste material and adjacent soil at the Waste Pits Area. All contaminants detected in these sampling events were then evaluated by the risk assessment (see Table 2 for the contaminant list). To define the contaminant concentrations to which residents, office workers, and maintenance workers would be exposed under various scenarios, the flux chamber data were used as input to an air dispersion model. The model calculated the hypothetical contaminant concentrations at the fence lines surrounding the pits, where it was assumed the office workers and residents would be located.

The reasonable maximum exposures were calculated using conservative assumptions. These included: (1) assuming that the emissions emanate from both the waste and the surrounding soil; (2) assuming that *all* of the area of waste pits emit at the maximum emission rate ever measured at any point on the pits; (3) assuming that the soil adjacent to the pits emits at the same rate as the pits; and (4) assuming that the exposed populations are working or living directly at the fence line. An air dispersion model was used to assist in making these evaluations. It was assumed that the maintenance workers would be present at the Waste Pits Area. The risk assessment assumed that the neighboring residents live at the fence line 24 hours/day, 350 days/year, for 30 years, and that the office workers are working at the fence line 10 hours/day, 5 days/week, for 25 years. The assessment compared Site maintenance workers' potential exposure to the OSHA Permissible Exposure Limits (PELs) for the workplace because they would be expected to work at the Waste Pits Area only periodically.

EPA uses two different indicators that describe a chemical's potential health effects: the "carcinogenic effects" and the "non-carcinogenic effects." To calculate carcinogenic effects, the risk assessment began with "cancer potency factors" (CPFs). The cancer potency factors for the chemicals of concern for the waste pits are shown in Table 2. Cancer potency factors have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes under-estimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Excess lifetime cancer risks were then determined by multiplying the chemical intake

level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., $1x10^{-6}$ or 1E-6). An excess lifetime cancer risk of $1x10^{-6}$ indicated that, as a plausible upper bound, an individual has an extra one in one million 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.

Non-carcinogenic effects are calculated using factors called "Reference doses" (RfDs). The Reference doses for the chemicals of concern for the waste pits are shown in Table 2. Reference doses have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting non-carcinogenic effects. RfDs, which are expressed in units of mg/kg-day, are estimates of maximum quantities to which someone, including sensitive individuals, can be exposed for a long period of time without appreciable risk of harmful effects. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors help ensure that RfDs will not underestimate the potential for adverse non-carcinogenic effects to occur.

TABLE 2

TOXICITY CRITERIA FOR CHEMICALS OF POTENTIAL CONCERN

Chemicals of Potential Concern	Cancer Classification	Oral Ingestion		Inhalation	
		Slope Factor (kg-d/mg)	Reference Dose (mg/kg-d)	Slope Factor (kg-d/mg)	Reference Dose (mg/kg-d)
Benzene	A	0.029	0.0017	0.029	0.0017
sec-Butylbenzene	nd		0.01		0.01
1,2-Dichlorobenzene	D		0.09		0.057
1,4-Dichlorobenzene	C	0.024	0.23	0.024	0.23
Ethylbenzene	D		0.10		0.29
Hydrogen sulfide	nd		0.003		0.00029
Isopropylbenzene	nd		0.04		0.0026
Isopropyltoluene	nd		0.20		0.11
Methylene chloride	B2	0.0075	0.06	0.0016	0.86
Napthalene	D		0.04		0.04
Phenanthrene	nd		0.04		0.04
n-Propylbenzene	nd		0.04		0.0026
Styrene	nd		0.20		0.29
Tetrachloroethene	nd	0.052	0.01	0.002	0.01
Toluene	D		0.20		0.11
1,2,4-Trimethylbenzene	nd		0.05		0.05
1,3,5-Trimethylbenzene	nd		0.05		0.05
Xylene (mixed)	D		2.00		0.20

Cancer Classification: A = human carcinogen; B1 = probable human carcinogen, limited human data; B2 = probable human carcinogen (sufficient evidence in animals, inadequate or no evidence in humans); C = possible human carcinogen; D = not classifiable as to human carcinogenicity; nd = no data.

Potential concern for non-carcinogenic effects of a single contaminant in a single medium is expressed as the Hazard Quotient ("HQ," the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminant's reference dose). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably by exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. A Hazard Index of 1 or greater indicates the potential for adverse health effects from exposure to the chemicals at the given concentrations and exposure durations.

For surface emission exposures, the risk assessment results show that the maximum cumulative risk to the residents is $2x10^{-6}$ (2 in one million lifetime chance of death by cancer), the maximum cumulative risk to the office worker is $3x10^{-7}$ (3 in ten million lifetime chance of death by cancer), and the maintenance worker's exposure is always below the OSHA Permissible Exposure Limit. When evaluating non-cancer effects, the risk assessment found that the Hazard Index for all the contaminants in all the exposure scenarios is less than 1, indicating that persons would not be exposed to waste pits contaminants above levels of concern.

Based on the assumptions described above, the results of the waste pits risk assessment indicate that contaminants do not currently pose an unacceptable threat to human health for persons living or working at the ground surface at or near the pits, provided that the physical conditions and emissions rates from the pits stay as they are today. (see Table 3). However, while surface risks under current conditions are acceptable, there remains nonetheless a significant possibility that a release of hazardous substances could occur that would result in an unacceptable risk. Specifically, if the waste pits were disturbed, significant emissions of volatile contaminants, particularly hydrogen sulfide, could be released, which could pose a significant and unacceptable risk to the public. There is substantial uncertainty regarding the reliability of the risk assessment assumption that the existing conditions (i.e. fencing) is adequate to prevent human intrusions into the Site and potential human incursions into the waste itself. Any future development activities which include trenching or excavations for structures, pipeline or utilities would result in disturbance of the soil and waste materials resulting in the release of hazardous substance. Such human incursions could result from digging since the 1-series pits are only covered with 2-4 feet of soil. Finally, natural incursions could take place that would expose waste material to the surface, such as acute erosion from large storm events (the 1-series pits are only covered with 2-4 feet of soil). Emissions testing of disturbed waste, conducted in 1974 and 1992, indicate that upon disturbance, the waste material can emit volatile contaminants at concentrations as high as 11,060 $mg/m^2/min$ hydrogen sulfide, 68,000 $mg/m^2/min$ benzene and 1000 $mg/m^2/min$ styrene. Acute exposure to these contaminants can cause irritation, dizziness, suffocation, and even death.

EPA's policy on utilizing baseline risk assessments in making risk management and remediation decisions is set out in OSWER Directive 9355.0-30, dated April 22, 1991. This policy states, in part, that the criterion of a baseline risk from Site conditions sufficient to warrant

remedial action can be met where Maximum Contaminant Levels (MCLs) are exceeded in groundwater at the Site. The groundwater beneath the waste pits Site contains contaminant concentrations in excess of MCLs as a direct result of uncontrolled migration of waste pits contamination into the groundwater. The FFS states, in Chapter 4, that "When material was first deposited in the waste pits . . . it is likely that there was some amount of free liquid (e.g. aqueous phase contamination) which migrated downward through the soil until it reached groundwater." Consistent with EPA policy, this exceedance of MCLs in groundwater beneath the pits supports the need for remedial action. In this ROD, the major remedial actions selected by EPA will result in protection of groundwater. The RCRA-equivalent cap will prevent surface water infiltration into the Waste Pits Area which could otherwise act to carry hazardous substances, present in the waste material or vadose zone, down into the groundwater. The SVE system will act to protect groundwater by removing hazardous substances that are present in the vadose zone at the Waste Pits Area or that may be released into the vadose zone in the future from the waste materials. All groundwater under the pits is classified as a potential future drinking water source by the State of California.

Given these uncertainties and potential risks, EPA has determined that actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

An assessment of ecological risks was performed when the State of California was the lead agency for the Site. That assessment concluded that no plant species listed as rare and endangered or sensitive were observed at the Site or in the immediate Site vicinity. EPA is adopting these conclusions and relying on them for the purposes of this ROD.

TABLE 3

MAXIMUM RISKS

Exposed Population	Cumulative Cancer Risk	Cumulative Non-Cancer Hazard Index	Percentage of Workplace PEL * Exposed to
Residents	2x10e-6	0.4 (children)	
Office Workers	3x10e-7	0.04 (adults)	
Maintenance Workers			0.09% (Benzene)

2.7 Description of Alternatives

The alternatives considered by EPA as possible cleanup options for contaminated waste and soil at the Waste Pits Area are described below.

ALTERNATIVE 1: NO ACTION

Under this alternative, no action would be taken at the Waste Pits Area. No remediation or monitoring of contaminated media would occur, and no access or deed restrictions would be implemented. This alternative satisfies the NCP requirement for inclusion of a no-action or no-further action alternative among the options considered. Alternative 1 would neither reduce any site-related surface risk (described in Section 2.6 - "Summary of Site Risks") nor do anything to prevent contamination from the pits from continuing to threaten groundwater. There would be no cost for Alternative 1. This Alternative would not comply with the major Applicable or Relevant and Appropriate Requirements (ARARs) regarding closure of hazardous waste disposal facilities.

ALTERNATIVE 2: INSTITUTIONAL CONTROLS

This alternative includes maintenance of the soil and vegetation cover currently present on the site, installation of surface water controls to prevent ponding of water and runoff onto adjacent properties, placement of deed restrictions prohibiting future residential use or any other use that could impact the integrity of the soil cover, and upgrading and maintaining the existing perimeter fence. This alternative also includes groundwater monitoring to evaluate potential changes in groundwater conditions over time.

Alternative 2 would not reduce any site-related surface risk (described in Section 2.6 - "Summary of Site Risks"). In particular, this alternative would do little to mitigate adverse exposures of the public to waste pit contaminants in the event that the current cap is eroded, disturbed, or displaced. In addition, this alternative would do nothing to prevent pits contamination from continuing to migrate into the groundwater.

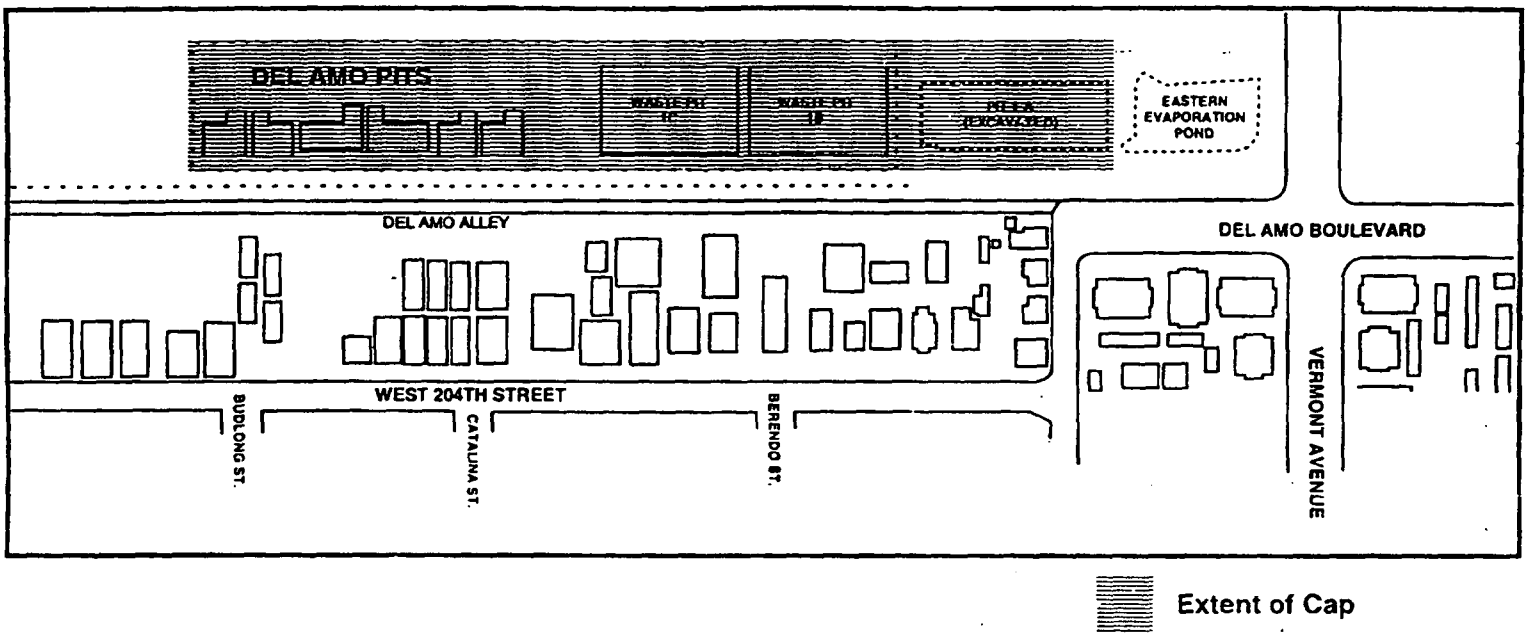
The cost of Alternative 2 would be approximately $790,000 (total present worth), but it would not meet the major relevant and appropriate ARARs regarding closure of hazardous waste disposal facilities. To prevent inappropriate future land use or development, this alternative would require institutional controls that prohibit future residential use of the Waste Pits Area and prohibiting future use which could impact the integrity of the cap.

ALTERNATIVE 3: RCRA-EQUIVALENT CAP

Under this alternative, a RCRA-equivalent cap would be constructed over the waste and contaminated soil. There are approximately 15,600 yd^3 of waste in the pits and approximately 317,100 yd^3 of contaminated soil surrounding the pits that would be covered by the cap. Based

on existing information, the cap would cover slightly less than 4 acres (See Figure 3). The RCRA-equivalent cap would consist of multiple layers, typically including a vegetated cover, a marker bed, a drainage layer, a low permeability layer (including a high density plastic liner), a gas collection layer, and a grading layer.

FIGURE 3
EXTENT OF CAP (APPROXIMATE)



The major ARARs that would be met during implementation of this action include closure requirements for hazardous waste disposal facilities. Monitoring associated with the cap would include soil vapor monitoring at varying depths around the pits area, which would help determine whether any vapors are migrating or spreading laterally out from under the cap. Final design of the cap and monitoring system would be determined during the remedial design phase of the project. Long-term maintenance of and repairs to the cap would also be conducted.

To prevent inappropriate future land use or development, this alternative would also require deed restrictions, prohibiting future residential use of the Waste Pits Area and prohibiting future use which could impact the integrity of the cap.

Alternative 3 would eliminate any surface risk associated with the waste pits area. It would also reduce the amount of contamination migrating from the waste pits and adjacent soil into the groundwater. It would accomplish this by preventing infiltration of water from the ground surface; however, some amount of contamination would continue to migrate into the groundwater via vapor migration and via advection in draining soil water.

The cost of Alternative Three would be approximately $2,833,000 in capital costs, $1,410,000 in operation and maintenance costs, and a total of $4,243,000 (all costs are shown in

terms of present worth).

Alternative 3 would require an estimated 6 to 12 months to design and construct.

ALTERNATIVE 4 RCRA-EQUIVALENT CAP AND SOIL VAPOR EXTRACTION OF CONTAMINATED SOIL

This alternative consists of the those actions discussed in Alternative 3, and adds a soil vapor extraction (SVE) component. Soil vapor extraction would physically remove volatile contaminants from soil by moving them into the soil vapor and then removing the vapor for treatment. Under Alternative 4, the SVE system would be designed to limit the amount of contaminants that move from the waste pits or the soils beneath the pits into the groundwater.

The SVE system would be applied to the soils under and adjacent to the pits, including both coarse and fine-grained soil layers. The SVE system would not be applied to the waste material itself, because it is too dense and would not provide sufficient air permeability to allow for vapor extraction. The extracted air stream would be treated to remove the contamination prior to being vented into the atmosphere. The actual width and depth of the soil vapor extraction zone would vary across the area to some degree, based on a highly detailed review of soil characteristics and contaminant distribution to be made during remedial design and system installation. In general, the SVE coverage would extend vertically from just below each pit to just above the capillary fringe above the groundwater table. The SVE coverage would extend horizontally such that SVE is active wherever soil and soil vapor concentrations exceed interim soil remediation standards. It is estimated that the volume of soil within which the SVE system would be applied is approximately 317,100 yd^3.

Interim soil remediation standards would be established to protect groundwater from significant additional contamination emanating from the waste pits. The focus of the SVE action, cleaning the soil to the interim soil remediation standard, would be to ensure that: (1) contaminants already in the soils under the pits do not continue to significantly contribute to groundwater contamination or counter future groundwater remedial efforts, and (2) contaminants still in the waste in the pits, which may leach out of the pits in the future, cannot pass through the soils and significantly contribute to groundwater contamination or counter future groundwater remedial efforts.

Major ARARs would be met during operation of the SVE system including emission standards for the vapor treatment system.

This alternative also includes appropriate soil and soil gas monitoring to evaluate remediation progress.

The cost of Alternative Four would be approximately $6,290,000 in capital costs, $2,690,000 in operation and maintenance costs, and a total of $8,980,000 (all costs are shown

in terms of present worth).

Alternative 4 would require an estimated 8 to 12 months to design and construct. It is estimated that the SVE system would have to operate for five years before meeting the interim soil performance standards. Upon reaching those goals, the SVE system would need to be operated whenever more contaminants migrating from the pits and adjacent soil surpass the remediation goals set in either this ROD or as revised by the future groundwater ROD.

ALTERNATIVE 5 COMPLETE EXCAVATION OF 1-SERIES AND 2-SERIES PITS BENEATH AN ENCLOSURE, AND SOIL VAPOR EXTRACTION OF CONTAMINATED SOIL

This alternative includes complete excavation and offsite disposal of waste within the 1 series pits and the 2 series pits, and excavation of contaminated soil 5 feet beneath and around the boundary of these pits. The total excavation volume for Alternative 5 is estimated to be about 42,900 cubic yards. Upon removal of the waste, the risk posed by potential surface emissions from the waste would be eliminated.

Expected high concentrations of VOC and hydrogen sulfide air emissions from disturbed waste material would require that the excavation be performed under a temporary enclosure equipped with a ventilation and emission control system. The ventilation system would reduce the concentration of airborne contaminants inside the enclosure, although workers inside the enclosure would still be required to wear protective clothing and self-contained breathing apparatus (SCBA) tanks. Exhaust hoods would be used to capture emissions from the face of the excavation and from the roll-off bins where excavated waste and soil would be stored prior to offsite transport. Contaminated air exhausted from within the enclosure would be treated on-site in a series of air treatment units prior to being released to the atmosphere. Upon excavation, the waste and soil would be transported to an offsite incinerator for treatment.

The major ARARs that would be met during implementation of the excavation phase include emission standards for the air containment and treatment system, disposal restrictions for the excavated waste, and excavation requirements.

The excavated area would be backfilled and a low-permeability cap would be installed after backfilling is complete. The cap would be designed with surface water controls to prevent ponding of water on its surface and to prevent runoff onto adjacent properties. Since contaminated soil beneath the waste would be left in place, a soil vapor extraction system as described in Alternative 4 would be required. To prevent inappropriate future land use or development, the alternative would also require deed restrictions. This alternative also includes groundwater monitoring to evaluate potential changes in groundwater conditions over time associated with the remediation.

Alternative 5 would require an estimated 2 years for excavation and backfilling.

Equipment design, procurement and construction, system start-up and shakedown, dismantling the enclosure and other equipment after excavation is complete would add an additional 2 years to the project, bringing the total project duration to an estimated 4 years.

The cost of Alternative 5 would be approximately $95,820,000 in capital costs, $1,490,000 in operation and maintenance costs, and a total of $97,310,000 (all costs are shown in terms of present worth).

2.8 Summary of Comparative Analysis of Alternatives

This section compares the remedial alternatives described in Section 2.7. The comparative analysis provides the basis for determining which alternative presents the best balance of EPA's nine Superfund evaluation criteria provided in 40 Code of Federal Regulations Section 300.430 (f) (criteria listed below). The first two cleanup evaluation criteria are considered *threshold criteria* that the selected remedial action must meet. The five *primary balancing criteria* are balanced to achieve the best overall solution. The two *modifying criteria*, state and community acceptance, are also considered in the remedy selection.

Threshold Criteria

1. Overall Protection of Human Health and the Environment addresses whether an alternative provides adequate protection from unacceptable risks posed by the site.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether an alternative attains specific federal and state environmental requirements and state facility siting requirements, or provides grounds for a waiver.

Primary Balancing Criteria

3. Long-Term Effectiveness and Permanence refers to the degree to which an alternative provides reliable protection of human health and the environment over time.

4. Reduction of Toxicity, Mobility, and Volume (TMV) through Treatment refers to the degree to which an alternative uses treatment to reduce the health hazards of contaminants, the movement of contaminants, or the quantity of contaminants at the site.

5. Cost evaluates the estimated capital, operation and maintenance, and indirect costs of each alternative in comparison to other equally protective alternatives.

6. Short-Term Effectiveness addresses the degree to which human health and the environment will be adversely impacted during construction and implementation of an alternative.

7. Implementability refers to the technical and administrative feasibility of an alternative. This includes technical difficulties and uncertainties and the availability of materials and services. It also includes coordination of federal, state, and local government efforts.

Modifying Criteria

8. State Acceptance indicates whether the state agrees with, opposes, or has concerns about the preferred alternative.

9. Community Acceptance includes determining which components of the alternatives people in the community support, have reservations about, or oppose.

The strengths and weaknesses of the alternatives were weighed to identify the alternative providing the best balance with respect to the nine evaluation criteria.

Overall Protection of Human Health and the Environment

The NCP requires that all alternatives be assessed to determine whether they can adequately protect human health and the environment, in both the short term and long term, from unacceptable risks. These risks can be mitigated by eliminating, reducing, or controlling exposure to hazardous substances, pollutants, or contaminants. Overall protection of human health and the environment draws on the assessments of other evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs. Reduction of toxicity, mobility, and volume is another important criterion for this overall evaluation.

Alternative 1: No Action. Of all the alternatives, Alternative 1 is the least protective of human health and the environment. Alternative 1 would not comply with ARARs for closure of hazardous waste disposal facilities (e.g. surface capping of areas that leave hazardous waste in place). Under Alternative 1, unchecked erosion of the surface soil cover would occur and eventually expose contamination that in some places is only two feet below the ground surface. Such erosion could allow direct contact with contaminants, allow water runoff and wind to transport contaminants to nearby yards, and allow vapors to escape into the air. This alternative would do nothing to prevent human access to the area and potential human incursion into the uppermost layers of waste. In addition, this alternative does nothing to prevent the downward migration of contaminants to groundwater currently in the waste and soils, and would not prevent contamination of groundwater caused by a rising water table contacting contaminated soil.

Each of the other alternatives incorporates, at a minimum, institutional controls to attempt to prevent human access to the contaminated area and possible human incursion into the uppermost waste layers. Several other alternatives incorporate source control measures to prevent further migration of contamination into the underlying aquifer. Because Alternative 1 has no provisions to prevent either potential human incursions into the contamination, continued contaminant migration into the underlying aquifer, or contamination of groundwater caused by a rising water table contacting contaminated soil, it is not protective of human health and the environment.

Alternative 2: Institutional Controls. Alternative 2 also would not comply with ARARs for closure of hazardous waste disposal facilities. However, unlike Alternative 1, Alternative 2 would include site maintenance of the existing soil cover and site fencing. Such maintenance would repair surface erosional problems before contamination can be exposed. In addition, this alternative provides some degree of prevention against human trespassing and potential human

incursion into the contamination by maintaining the existing perimeter chain-link fence. However, a perimeter chain-link fence is not a reliable long-term deterrent against trespassing, particularly given the proximity to residential properties. Finally, this alternative does nothing to prevent the downward migration to groundwater of contaminants currently existing in the waste and soils, and would not prevent contamination of groundwater caused by a rising water table contacting contaminated soil.

Several other alternatives contain more permanent measures to prevent human incursion into the contamination than does this alternative. Also, several other alternatives incorporate source control measures to prevent further migration of contamination into the underlying aquifer. Alternative 2 does not have lasting, reliable measures to prevent potential human incursion and contact with the contamination, it has no provisions to prevent continued contaminant migration into the underlying aquifer, and it has no provisions to prevent contamination of groundwater caused by a rising water table coming into contact with contaminated soil. Therefore, it is not protective of human health and the environment.

Alternative 3: RCRA-Equivalent Cap. Alternative 3 complies with ARARs for closure of hazardous waste disposal facilities by providing an appropriate surface cap over areas where hazardous waste is left in place. Construction of a RCRA-equivalent cap would result in a permanent cover over the Waste Pit Area that would eliminate the direct contact, ingestion and vapor inhalation exposure pathways that could result from uncontrolled erosion or human incursion into the contamination. The cap also provides a significant physical barrier against human incursions into the waste. In addition, the cap would provide some degree of groundwater protection by preventing a large amount of rainwater from infiltrating through the waste and contaminated soil. However, Alternative 3 would not eliminate the downward migration to groundwater of contaminants currently existing in the waste and soil, and it would not prevent contamination of groundwater caused by a rising water table contacting contaminated soil.

Alternatives 3 and 4 provide the second highest level of access prevention, second only to Alternative 5, which completely removes the waste material. Whereas it could still be theoretically possible that a human could intrude upon the cap and dig through it to expose contamination, the undertaking would be so significant as to render the possibility extremely unlikely. Regarding source control, Alternative 3 does not go as far as either Alternatives 4 or 5. Alternative 3 does nothing to eliminate the other possible mechanism, vapor migration, whereby the contamination could continue to impact the groundwater. Alternative 4 and 5 both accomplish that goal through active remediation. The State Water Resources Control Board considers groundwater beneath the pits a potential future drinking water source. For these reasons, Alternative 3 is not fully protective of human health and the environment.

Alternative 4: RCRA-Equivalent Cap and Soil Vapor Extraction. Alternative 4 complies with ARARs for closure of hazardous waste disposal facilities by providing an appropriate surface cap over areas where hazardous waste is left in place. This cap would achieve the same

objectives as the cap described in Alternative 3. In addition to the degree of groundwater protection provided by the cap, Alternative 4 also would utilize Soil Vapor Extraction to provide an even greater degree of protection for the groundwater by removing migrating volatile chemicals from the soil above the water table. This would protect the groundwater aquifer from the downward migration of contaminants that currently exist in the waste and soil, and it will also prevent significant contamination of groundwater caused by a rising water table coming into contact with contaminated soil.

Alternative 4, as was true for Alternative 3, would provide the second highest level of access prevention, second only to Alternative 5, which completely removes the waste material. The source control provided by Alternative 4 goes farther than Alternative 3 by removing volatile contaminants from the soil above the water table via Soil Vapor Extraction. However, Alternative 4 does not go as far as Alternative 5, which completely removes the contaminant source material. Because the State Water Resources Control Board considers groundwater beneath the pits a potential future source of drinking water, protection of the groundwater becomes an important factor in comparing the alternatives. Consequently, Alternative 4 is considered to be fully protective of human health and the environment.

Alternative 5: Complete Excavation of 1-Series and 2-Series Pits Beneath an Enclosure and Soil Vapor Extraction of Contaminated Soil. Alternative 5 complies with ARARs for closure of hazardous waste disposal facilities by excavating and removing the remaining hazardous waste mass and providing an appropriate cap for areas with soil contamination. By removing the waste mass, this alternative eliminates possible human exposures from direct contact, ingestion and vapor inhalation pathways at the surface. In addition, the waste would no longer be a source of groundwater contamination. The remaining soil contamination would be remediated with a Soil Vapor Extraction system. The SVE system would protect the groundwater from the downward migration of the contaminants remaining in the soil, and it would prevent significant contamination of groundwater caused by a rising water table contacting the contaminated soil. Alternative 5 would provide the greatest and most permanent protection of human health and the environment in the long term because the contaminated waste mass would be completely and permanently removed from the site. This eliminates the need to perpetually maintain containment mechanisms, which are necessary in the alternatives that leave waste in place.

Alternative 5 provides the highest level of prevention of direct human contact because it completely removes the waste mass. This removal also provides the highest level of source control against further contamination to the underlying groundwater. The soil contamination remaining after the removal would be removed with the same SVE system as described in Alternative 4. For these reasons, Alternative 5 is considered to be fully protective of human health and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Alternatives 1 and 2 do not comply with ARARs. Alternatives 1 and 2 do not meet federal and state laws and regulations identified in Attachment A regarding the safe closure and post-closure of hazardous waste facilities. Because Alternatives 1 and 2 do not comply with the threshold criterion of Compliance with ARARs, they are not selected as a remedy for the waste pits.

Alternatives 3, 4 and 5 comply with all ARARs.

Long-Term Effectiveness and Permanence

Long-term effectiveness is evaluated through two criteria: the magnitude of the residual risk remaining after the remedy is implemented, and the adequacy and reliability of engineering and institutional controls.

The magnitude of the residual risks is typically gaged by the risks remaining from untreated waste after the conclusion of remedial activities. The risk of further groundwater contamination posed by the waste material left in place after remediation is completed would be the same for Alternatives 1, 2, and 3, is significantly less for Alternative 4, and is least of all for Alternative 5. Each of the first 3 alternatives (No Action, Institutional Controls, and Cap alternatives) would leave all the waste material in place. These alternatives do not treat or remove any amount of existing contamination, allowing contaminants to continue to migrate into the underlying groundwater aquifer. Alternative 4 (Cap and SVE) would remove a significant amount of VOC contamination from the vadose soils below the pits in order to significantly reduce the continued migration of contaminants from the waste pits and surrounding soil into the groundwater aquifer. Details regarding the exact degree of remediation that the SVE system would accomplish are provided in Section 2.9, The Selected Remedy. By strategically removing contamination in this way, Alternative 4 would, in the long run, prevent additional contamination of groundwater beneath the Waste Pits Area. For this reason, Alternative 4 is superior to Alternatives 1, 2, and 3 with regards to residual risk from contamination left in place. Alternative 5 (Excavation, Incineration, SVE, and Cap) would remove the waste material via excavation and utilize soil vapor extraction to remove the residual contamination remaining in the unexcavated soil. This alternative removes the most contamination and leaves the least residual risk of all the alternatives.

The "adequacy and reliability of controls" criteria pertains to the adequacy and suitability of controls that are used to manage residuals or untreated wastes that would remain at the site. The adequacy of these controls for each alternative varies significantly. The potential risks associated with the remaining waste include both surface exposure risks and risks associated with further contaminant impacts to groundwater. Alternative 1 (No Action) provides no engineering or institutional controls to manage either surface or groundwater risks from remaining contamination. Alternative 2 (Institutional Controls) provides minor institutional controls to prevent surface exposures, consisting of security fencing to prevent human access, and maintenance of the surface soil cover to repair erosional damage. Neither of these first two

alternatives provide any controls against further contaminant impact to the groundwater. Alternative 3 (Cap) provides significant and highly effective engineering controls against surface exposures to remaining contamination by constructing a RCRA-equivalent cap over the remaining waste and contaminated soil. The cap also provides a moderate level of control to lessen the continued contaminant migration to groundwater. The cap provides this control by eliminating the possibility for precipitation that falls directly on the cap to infiltrate through the waste and contaminated soil and transport contaminants to the groundwater. There would still be the possibility, however, for precipitation falling near the cap to spread under the cap as it infiltrates, thus transporting some contaminants to the groundwater. These effects, however, would be less than without the cap. In addition, there remains the possibility that the water table, which has been steadily rising, will continue to do so and thus contact contaminated vadose soils, adding to the contamination already in the water. Alternative 4 (Cap and SVE) provides the same significant and highly effective engineering controls against surface exposures as does Alternative 3. Alternative 4 provides, however, a much more significant level of control against continued contaminant migration to groundwater. The SVE system beneath the waste would capture a significant amount of the contaminants between the waste and the water table, thus minimizing further contaminant migration and minimizing the additional contamination that could be added to the groundwater as the water table rises. Alternative 5 (Excavation, Incineration, SVE, and Cap)after removing the waste material and leaving only residual contamination in the soil, will have minimized the need for engineering or institutional controls for surface exposures. The engineering controls to minimize groundwater impacts from residual soil contamination are the same as Alternative 4, consisting of an SVE system and a cap.

Reduction of Toxicity, Mobility, and Volume (TMV) through Treatment

This evaluation criterion addresses the statutory preference for selecting remedial actions that permanently and significantly reduce toxicity, mobility, or volume through treatment. This criterion is evaluated according to treatment processes used and materials treated; the amount of hazardous materials destroyed or treated; expected reductions in the toxicity, mobility, and volume; irreversibility of the treatment; and the type and quantity of treatment residuals.

Alternative 1 (No Action) and Alternative 2 (Institutional Controls) do not meet the statutory preference for treatment by reducing the toxicity, mobility and volume of waste or contaminated soil through treatment in any way. Alternative 3 (Cap) does not treat any waste. All three of these alternatives leave approximately 15,600 cubic yards of waste and 317,100 cubic yards of contaminated vadose zone soil in place. Alternative 3, however, covers this waste and soil with a RCRA - equivalent cap. The intrinsic toxicity, and volume of waste is unaffected by this alternative. However, Alternative 3 would reduce the mobility of the contaminants by preventing volatile gas emissions and limiting the amount of rainfall that will infiltrate the waste and contaminated soil and transport contaminants to the groundwater. Alternative 3, however, does not satisfy the statutory preference for treatment as defined in Section 121(b)(1) of the Superfund law 42 U.S.C. § 9621(b)(1).

Alternative 4 (Cap and SVE) provides for some reduction of toxicity, mobility, and volume through treatment. This alternative contains an SVE component that will remove volatile contaminants from the soil beneath the pits so that groundwater would not be significantly affected by contaminants from the waste pits in the future. This will reduce the toxicity and volume of the contaminants in the soils under the pits. The volume and toxicity of the waste material in the pits, however, would be unaffected. The mobility of contaminants will be reduced more than in Alternative 3 (Cap only) because the SVE would capture the volatile contaminants before they reach the groundwater and become further mobilized. The vapors will be treated by means of one of several treatment technologies such as thermal oxidation. SVE is an irreversible treatment in that the contaminants, once removed, will stay removed. However, under Alternative 4, the main mass of waste material would remain making it necessary for the SVE system to continue removing any new contamination that enters the underlying vadose soil from the waste pits. SVE would be applied to approximately 317,100 yd^3 of soil. Alternative 4 leaves approximately 15,600 cubic yards of waste in the pits beneath the cap.

Alternative 5 (Excavation, Incineration, SVE and Cap) provides the highest level of reduction in toxicity, mobility, and volume (TMV) by excavation and off-site incineration of waste and soil vapor extraction of contaminated soil beneath the waste. The total excavation volume for Alternative 5 is estimated to be about 42,000 cubic yards. This volume consists of approximately 10,200 cubic yards of surface fill, 15,600 cubic yards of waste material, 5,200 cubic yards of contaminated soil adjacent to the pits, and 11,900 cubic yards of soil below the pits. This action would drastically reduce the toxicity, mobility and volume of contaminants at the site, and when the waste is destroyed at an off-site incinerator, its intrinsic toxicity and volume will be permanently destroyed. There would be approximately 289,800 yd^3 of contaminated soil remaining after the excavation to which SVE would be applied. SVE would permanently remove the volatile contaminants from these soils, thus reducing the toxicity and volume of the contaminants in the soil.

Cost

A summary of the estimated costs for Alternative 3, 4, and 5 is presented below. Cost estimates for Alternatives 1 and 2 are not provided because these alternatives were found to not be protective of human health and the environment. The cost estimates presented include capital costs, operation and maintenance costs, and net present worth. An overview of the cost analysis as well as detailed cost break-down for each alternative, are presented in the Focused Feasibility Report.

As shown in Table 4, the operation and maintenance costs are relatively consistent for the three alternatives, ranging from $1.4 million to $2.69 million. The capital costs, however, vary drastically, ranging from $2.83 million to $95.82 million. The largest jump in capital costs between alternatives, by far, is between Alternative 4 and 5 jumping from $6.29 million to $95.82 million. The cost of the excavation and incineration aspect of Alternative 5 accounts for this drastic capital cost difference. The cost of Alternative 5 is more than ten times the cost of

Alternative 4, which is also protective of human health and the environment.

TABLE 4: Cost Estimates

Alternative	Capital ($)	Operation and Maintenance ($)	Total Present Worth ($)
1: No Action	NA	NA	NA
2: Institutional Controls	NA	NA	NA
3: RCRA-Equivalent Cap	2,833,000	1,410,000	4,243,000
4: RCRA-Equivalent Cap and Soil Vapor Extraction	6,290,000	2,690,000	8,980,000
5: Excavation, Incineration, Soil Vapor Extraction, Cap.	95,820,000	1,490,000	97,310,000

Short-Term Effectiveness

Several factors are addressed in evaluating short-term effectiveness of the remedial alternatives, including potential short-term risk to the community during implementation, threats to workers during remedial actions, and potential adverse environmental impacts from construction and implementation.

Risk to Community During Remedial Action Implementation. Alternatives 1 and 2 (No Action and Institutional Controls) have no adverse short-term effects. Because there are no remedial actions that would be taken for these alternatives, there would be no risk to the community, workers, or environment associated with remedial action implementation. Under Alternatives 3 (Cap) and 4 (Cap and SVE), the potential for short-term exposure to contaminants during implementation would be limited and readily controllable. In Alternative 3, a RCRA-equivalent cap would be constructed, requiring approximately 6 to 12 months of design and construction activities. In Alternative 4, an SVE system would be constructed in addition to the cap, requiring approximately 8 to 12 months combined to design and construct.

The effects on the community during both of these remedial actions, construction of a cap and construction of an SVE system, are related to the actual construction activities. Such effects include impacts from the dust generated during construction, increased vehicular traffic, air quality impacts from motorized equipment, and noise. There is also the potential for releases of volatile contaminants resulting from either accidental or intentional disturbances of the waste. Such disturbances could occur during grading, well drilling or other construction activities.

Whereas the potential for such releases can be mitigated with proper safety measures, they are possibilities nonetheless. Should such releases occur, however, the impacts to the community would be minor.

Alternative 5 (Excavation, Incineration, SVE and Cap) is expected to be more complex and take a longer time to implement than the other alternatives, and its short-term effectiveness is much more uncertain than other alternatives. This alternative would involve excavation of hazardous waste beneath an enclosure, which is an uncommon task and presents potential safety and health risks. The ability to protect the community during the excavation would be dependent on the effectiveness of the enclosure, ventilation and emissions treatment system. A failure of the enclosure or emissions treatment system could expose the community to elevated levels of airborne contaminants. Because the excavation and subsequent backfilling would last an estimated two years, and because the excavation activities would produce high levels of volatile contaminants, the remedy has comparatively much higher short term risks.

Protection of Workers During Remedial Action. There would be a potential for adverse health effects to workers resulting from exposure to hazardous substances during the construction activities of either Alternative 3, 4, or 5. Alternatives 1 and 2 have no construction activities. The construction activities for Alternatives 3 (Cap) and 4(Cap and SVE) are essentially the same. Both alternatives would involve surface grading and cap installation, as well as well drilling and installation of surface treatment units. If the construction activities adhere to the site health and safety plans and all regulatory requirements, the potential for exposure and adverse health effects to workers would be minimized.

Alternative 5 (Excavation, Incineration, SVE and Cap) has a significantly greater potential for adverse impacts to workers during implementation. Workers would be required to operate in an environment where benzene concentrations could range as high as 69 to 207 ppm. This is many times higher than the Occupational Safety and Health Administration (OSHA) standard of 1 ppm for benzene. Hydrogen sulfide concentrations inside the enclosure could be as high as 50 ppm, five times higher than its OSHA standard of 10 ppm and many times higher than its odor threshold of 6 ppb. These exposures would be mitigated by wearing protective clothing and SCBA tanks. However, because the project would last approximately 2 years, there would be a potential for the protective measures to fail. In addition, operating in such an enclosure with such personal protection gear would introduce the additional hazards of heat exhaustion, reduced hearing and visibility, and slip, trip, and fall hazards. These hazards would be significant because of the length of time the work would require. Working at this level of protection for prolonged periods of time is not routine.

Environmental Impacts. The main potential environmental impact associated with remedy implementation would be releases of volatile contaminants into the air. During construction activities for Alternatives 3 and 4, there would be the potential for releases of volatile contaminants resulting from disturbance of the waste. Such releases were described in the "Risk to Community" subsection above. As described in that same section, Alternative 5 has

a greater potential for harmful releases of volatile contaminants into the environment than do Alternatives 3 and 4. This is due to the fact that Alternative 5 involves extreme disturbance of the waste material containing high concentrations of volatile contaminants, in an enclosed space, for a substantial period of time.

Implementability

This evaluation criterion addressed the technical feasibility, the availability of services and materials, and the administrative feasibility of each alternative. The technical feasibility includes the ability to construct and operate the technology, the relative ease of undertaking the remedial action and the ability to monitor its effectiveness. The availability of services and materials addresses the availability of the necessary equipment, technology, services, and other resources to construct the remedial action. The administrative feasibility considers the activities needed to coordinate and obtain approvals from other agencies.

Technical Feasibility. The technical feasibility of Alternatives 3 and 4 is very good. Alternatives 1 and 2 do not involve any construction activities, so they will not be included in this discussion. Caps and SVE systems are common technologies today and have been successfully employed at many sites. Alternative 5 is implementable, however, the enclosed excavation aspects of Alterative 5 present a number of technical constraints that would need to be overcome. These constraints include limited operating room for the excavation equipment, the need for an effective high volume ventilation and air treatment system, the necessary use of at least level B personal protection gear for workers, the need for and use of an effective vapor suppressing foam, and the need for customized waste handling techniques. These constraints can be addressed during design and trial-runs, but nonetheless pose some additional problems that other alternatives do not have.

Availability of Services and Materials. All services and materials needed to construct a RCRA-equivalent cap and SVE system, as required in Alternatives 3 and 4, are readily available. Alternatives 1 and 2 do not include any construction activities, so they will not be discussed here. For the cap and SVE system construction, there are a number of qualified bidders who could offer competitive bids. For Alternative 5, there is good availability of materials and services for the excavation work; the materials and services for the enclosure, ventilation, and air treatment work are generally available as well. Although few contractors in the Southern California area have experience constructing such enclosures and treatment systems, the availability of such services in the United States at large is good. Hazardous waste transporters are readily available in Southern California for transporting the waste material off-site to an incinerator.

Administrative Feasibility. Except for Alternative 1 (No Action) all the alternatives would require some administrative effort, including the implementation of institutional controls and coordination with other agencies regarding permits (or meeting the substantive requirements thereof). For Alternative 2, interagency coordination to implement deed restrictions would be required. Alternatives 3 and 4 would also require coordination with State and local agencies in

order to comply with substantive requirements for grading and air and water discharges. Compliance with the technical requirements of these permits is considered to be relatively simple, and therefore it is expected that complying with the permit requirements will administratively be relatively simple as well. Alternative 5 would involve a greater administrative effort due to the complex enclosure and ventilation system, the hazardous working conditions, the off-site transportation of hazardous waste, and the incineration of the hazardous waste. The proposed ventilation and treatment system has been utilized in the area before (and has met local air permit requirements) but not at the scale that would be needed for this project. However, it is expected that it will be technically feasible to meet the relevant and substantive South Coast Air Quality Management District requirements with the proposed technology. It is expected that off-site incineration of the waste will be administratively feasible as well; however, adequate time will be needed to prepare applications and obtain permits for this disposal method well in advance of the initiation of site work.

State Acceptance

The State of California has concurred with EPA's selected remedy.

Community Acceptance

EPA received 12 sets of written comments from individuals, organizations, and agencies regarding EPA's Proposed Plan, as well as 16 verbal comments during its public meeting. These comments, and EPA's responses to the comments, are presented in the Response Summary in Part IV of this ROD.

Many of the comments received from the public expressed support for EPA's proposed remedy; others did not. Some commentors recommended that EPA select Alternative 5. EPA has determined that the preferred alternative presented in the Proposed Plan, Alternative 4, is the most appropriate remedy, and EPA has provided responses to those commentors that preferred other alternatives in the attached Response Summary.

2.9 The Selected Remedy

After considering CERCLA's statutory requirements, the detailed comparison of the alternatives using the nine criteria, and the public comments, EPA, in consultation with the State of California, has determined that the most appropriate remedy for addressing the contaminated waste and soil at the Del Amo Site Waste Pit Operable Unit is Alternative 4: "RCRA-Equivalent Cap and Soil Vapor Extraction." This alternative will isolate the waste material by installing a RCRA-equivalent cap over the surface of Lots 36 and 37 (as shown in Figure 3) and conducting soil vapor extraction beneath the waste, and adjacent contaminated soil, and above the water table. The remedy also requires deed restrictions, security fencing, and long-term monitoring and maintenance. EPA also believes that Alternative 4 is the most appropriate alternative for addressing, on an interim basis, the waste pits' contribution to contaminated groundwater.

The selected remedy does not constitute a remedial decision for currently contaminated groundwater at the proposed Del Amo Site or a remedial decision for contaminated soil/vadose zone areas of the Del Amo Site beyond the Waste Pits Area.

In considering the nine criteria and selecting Alternative 4, EPA assumed that the properties along 204th Street immediately adjacent to the Waste Pits Area will be permanently removed from residential or related uses as a result of the private non-CERCLA buy-out agreement between community residents and several responsible parties under which residential property adjacent to the Waste Pits Area will be removed from residential use. Because of this assumption, EPA did not evaluate the purchase of any residential properties or permanent relocation of any residents. In the event that properties on 204th Street adjacent to the Waste Pits Area are not removed from residential uses, EPA reserves the right to revaluate the remedy selected in this ROD.

Based on the Comparative Summary (presented in Section 2.8), Alternative 4 was found to be the best remediation alternative for the Waste Pits Area. The criteria that weighed most heavily in this decision were the threshold criteria of Protection of Human Health and the Environment, compliance with ARARs, and the balancing criteria of Short-Term Effectiveness and Cost. Alternative 4 (Cap and SVE) was one of only two alternatives that met the threshold criteria of Protection of Human Health and the Environment, the other alternative being Alternative 5 (Excavation, SVE, and Cap). Alternative 3, RCRA-Equivalent Cap, was found not to be *fully* protective of human health and the environment because it did very little to prevent further migration of the contaminants into the underlying groundwater. The cap utilized in Alternative 3 would provide some protection against rainwater infiltration, which is one mechanism for contaminant transport, but the cap's effectiveness in this regard is limited and there would still remain the vapor diffusion mechanism for contaminant transport.

In comparing the two alternatives that met the threshold criteria of Protection of Human Health and the Environment, Alternatives 4 and 5, the balancing criteria weighed more heavily in favor of Alternative 4. Alternative 5 was superior to Alternative 4 when compared to the criteria

of Reduction of Toxicity, Mobility, and Volume (TMV) through Treatment and Long-Term Effectiveness and Permanence. However, Alternative 4 was superior to Alternative 5 when compared to the criteria of Implementability, Short-Term Effectiveness, and Cost.

Overall, the positive aspects and limited negative aspects of Alternative 4 outweighed the positive aspects and substantial negative aspects of Alternative 5. Specifically, Alternative 4 would provide good Reduction of TMV through Treatment, good Long-Term Effectiveness and Permanence, and relatively minor negative Short-Term Effects. Alternative 5, however, would provide superior Reduction of TMV through Treatment and superior Long-Term Effectiveness and Permanence, but the Short-Term Effects could be substantial and harmful to both the community and the on-site workers, and the Cost would be approximately ten times greater than Alternative 4. For this reason, Alternative 4 was chosen as the selected Remedial Action.

In further support of the decision to select Alternative 4, the State of California and a substantial portion of the community supported this alternative. The Del Amo Action Committee concurred but suggested that additional research in Biodegradation be conducted by the EPA.

Regardless of the type of remedy selected in the groundwater ROD, EPA believes that controlling the continuing source of contamination, as provided by Alternative 4, is prudent and appropriate. If drinking water-based cleanup standards were to be waived by the groundwater ROD, the containment of groundwater beneath the pits would be required for an indefinite period, possibly for centuries. Given this, it is appropriate to take reasonable steps to prevent additional waste pits contaminants from reaching the groundwater. This would lend greater long-term effectiveness and certainty during the very long period for which the groundwater remedy would have to be effective. Moreover, state and federal policies and regulations pertaining to zones of indefinite groundwater containment generally require source control, such as the SVE system would afford the soils under the pits, as part of a containment approach. On the other hand, if the groundwater ROD selects drinking water standards as the cleanup goal for the groundwater beneath the pits, the SVE action would be vital for such goals to be achieved. Therefore, the basis for selecting Alternative 4 over Alternative 3 is present regardless of the conclusions of the final groundwater ROD. Consequently, the SVE component of the selected remedy appears at this time to be consistent with the final remedial actions for the Del Amo Site.

DESCRIPTION AND SPECIFICATION OF THE REMEDY

The remedy selected by this ROD is described below. The remedy as designed and implemented shall meet all requirements and specifications described herein. Further, the remedy as designed and implemented must meet all ARARs as identified in Attachment A.

The selected remedy for clean-up of the Waste Pits Area consists of the following components:

(1) A RCRA-equivalent cap,
(2) Soil vapor monitoring,
(3) Surface water controls,
(5) Soil vapor extraction,
(6) Security fencing,
(7) Deed restrictions, and
(8) Long-term operation and maintenance.

RCRA-Equivalent Cap and Associated Monitoring

The RCRA-equivalent cap (meeting all identified ARARs) shall be constructed over the waste and contaminated soil. Based on existing information, the cap will cover slightly less than 4 acres. The cap shall be applied over all waste pits (1A, 1B, 1C, 2A, 2B, 2C, 2D, 2E, 2F) and related area as depicted in Figure 3. The cap shall include, among other things, a surface water drainage layer, a low-permeability layer, and a gas collection layer.

The objectives of the cap are:

(1) to prevent direct human contact with contaminants;
(2) to prevent generation of uncontrolled runoff and wind blown dust;
(3) to prevent the emission of contaminants into the air;
(4) to prevent rainwater from washing through the waste pits and carrying contaminants into the groundwater; and
(5) to prevent rainwater from washing through the contaminated vadose zone soils below the pits and carrying them into the groundwater.

Consistent with identified ARARS: the physical barrier created by the cap shall prevent direct human contact with the contaminants, the surface water collection and diversion system associated with the cap shall prevent uncontrolled runoff, the impermeable barrier created by the cap shall prevent rainwater from infiltrating the soil and transporting contaminants into the groundwater, and the cap's vapor collection and treatment system shall prevent the emission of unacceptable levels of contaminants into the air.

All of the ARARs identified in Attachment A which pertain to the cap shall be attained. The major ARARs that would be met during implementation of this action, including those specified by Title 22 of the California Code of Regulations, describe closure requirements for hazardous waste disposal facilities. The closure requirements specify that the design of the cap shall be sufficient to prevent damage due to settling and earthquakes. Any treatment units associated with the cap must have security fencing. The cap also must be designed with surface water controls to prevent ponding of water on its surface and to prevent runoff onto adjacent properties. Required monitoring associated with the cap includes soil vapor monitoring. The soil vapor monitoring is to be conducted at varying depths around the pits area in order to help determine whether any vapors are migrating or spreading laterally out from under the cap. These

monitoring points could be located within the Waste Pits Area (lots 36 and 37) or on adjacent properties.

Final design of the cap and monitoring system shall be determined during the remedial design phase of the project. Such design items include (but are not limited to) layers and materials to be used in the cap, surface land-use and landscaping, location and depth of soil gas monitoring points, soil gas treatment system technology, and final areal extent of the cap. These and all other design items shall all meet the parameters for the cap as set forth in this ROD, including ARARs that pertain to the cap.

Security fencing, to meet State ARARs, shall be installed around any treatment units associated with the cap that could potentially present a target for unauthorized access or tampering.

Long-term maintenance and repairs to the cap shall be conducted as part of this remedy for as long as the waste material remains at the Site. The maintenance and repairs shall be carried out on a schedule with a frequency such that the effectiveness of the cap and its compliance with the requirements of this ROD are maintained at all times. If the cap is at any point unable to be repaired without replacement, such as when it has reached the end of its natural life, then the cap shall be replaced so long as the waste remains in the pits.

A long-term operation and maintenance plan for the cap shall be established and approved by EPA before the cap is constructed. This plan shall provide, at a minimum:

1) Specification of all activities necessary to ensure complete maintenance and repairs of the cap over its lifetime and comply with ARARs relating to such maintenance and repair;

2) The schedule and frequency for maintaining the cap and for the execution of all activities identified;

3) Specification of all monitoring, analysis, sampling and other tests necessary to ensure the performance and integrity of the cap and identify cap components requiring repair or replacement;

4) Specification of the schedule and frequency for such monitoring, analysis, sampling, or other tests;

5) Specification of all regulatory agencies and persons within those agencies to which results and confirmation of maintenance and repairs shall be sent, and approvals which shall be necessary.

Once the operations and maintenance plan is approved by EPA, the requirements in it shall become part of the approved remedy for the site. The operations and maintenance plan

shall not conflict with or negate any requirements or specifications of this ROD.

Soil Vapor Extraction and Associated Monitoring

The SVE system shall be designed to remove contaminants from the soil via the vapor phase in order to limit the amount of contaminants that migrate from the waste pits and surrounding soil into the groundwater, according to the specifications and requirements provided below.

The objectives of the SVE System are:

(1) to protect groundwater from contaminants that migrate out of the pits;
(2) to protect groundwater from contaminants that migrate out of the vadose soil below the pits; and
(3) to protect groundwater from contaminants in the soil below the pits in the event that the water table rises into the contaminated soil.

This remedy shall include design, installation, operation, and long-term maintenance of a soil vapor extraction (SVE) system to meet the above objectives and all requirements as specified below. The SVE system shall be applied to the unsaturated soils under the waste pits and above the groundwater, in the soil areas as defined below. The SVE system shall clean these soils to an interim soil standard as specified in this ROD. A monitoring system shall be established, for the soils and soil vapor under the pits, to monitor the remediation progress. The SVE system shall establish and maintain a zone of soil under the waste pits (see section entitled "Where SVE Shall Be Applied" for locational details) which does not exceed the interim soil standard.

Incremental Groundwater Contribution. The SVE portion of this remedy shall be designed to limit the *additional* contamination the waste pits and adjacent contaminated soil shall be allowed to contribute to groundwater now and in the future. The groundwater beneath the waste pits currently is highly contaminated from both the waste pits themselves and other upgradient sources. The *incremental groundwater contribution* is defined as the amount by which the soils under the pits would be able to *increase* the groundwater contaminant concentration if the groundwater were clean today. The SVE action, by maintaining a cleaned zone of soil, will place a limit on this incremental contribution.

The contaminant concentrations in groundwater, according to the groundwater sampling and analysis conducted in late 1996, currently range from 12,000 ppb to 470,000 ppb benzene, less than 100 ppb to 15,000 ppb ethylbenzene, and 29 ppb to 440 ppb phenol, among others. The exact wells to be used in calculating the existing groundwater concentrations of these contaminants and any other contaminants amenable to SVE treatment for determining the allowable incremental groundwater contribution, will be determined during design.

SVE Cleanup Standards. Because of potential physical constraints in the subsurface

under the waste pits, this ROD establishes two methods for calculating the interim soil standard to which the soils under the waste pits shall be cleaned and maintained by the SVE system. Only one of these methods shall be used; this ROD establishes the rules for when either method shall be used. This is fully explained in the following discussion.

EPA recognizes that the groundwater under the pits is currently highly contaminated and EPA has determined that it would not be appropriate to set an incremental contribution limit that assumes the groundwater is clean today. Therefore, the SVE cleanup shall focus on ensuring that the incremental groundwater contribution resulting from migrating pits contaminants remains an insignificant fraction of the existing groundwater contamination. Rather than set an interim soil standard that is a fixed value, the standard shall be tied to a fixed percentage of the groundwater contaminant concentration. As the groundwater contaminant concentration varies, the incremental groundwater contribution would vary with it. For example, if the groundwater concentration becomes lower due to natural or human-induced effects, the soil standard that SVE must achieve shall become correspondingly lower, as calculated by the methods outlined below. If, in the groundwater ROD, EPA were to select the requirement that the groundwater under the pits were to be cleaned to drinking water standards, then the interim soil standard would automatically become stringent enough to attain that standard.

The performance standard for the SVE system shall be that the pits will not be able to cause an incremental groundwater contribution in excess of 0.5% of the existing groundwater concentration, at any point in time. When a final groundwater remediation standard is selected by the groundwater ROD, the incremental contribution shall be limited to 0.5% of the groundwater concentration at the time. The groundwater ROD will address any potential changes to this requirement if the groundwater contaminant concentrations ever approach federally mandated remediation levels.

Rationale for Two Methods of Calculating Interim Soil Standards for SVE. There may be areas in the soil beneath the waste pits that have such low air permeabilities due to fine-grained stratigraphic materials that it may be impractical or impossible to implement an effective SVE system in those areas. This does not apply to all materials under the waste pits, most of which will be amenable to SVE treatment. The focused feasibility study (FFS) and EPA's proposed plan for this remedy specified a method for calculating the interim soil standard for SVE; this method was based on the assumption that most all soils subject to SVE would be cleaned to the same soil concentration value such that the incremental groundwater contribution did not exceed 0.5% of the existing groundwater concentration. This calculation method shall be termed "Method A."

In the event that, during remedial design, it is found that SVE cannot be operated in significant portions of the soils beneath the pits, then Method A would not be appropriate. If only a subset of the soils are cleaned to the standard as calculated by Method A, then the incremental concentration would exceed 0.5% of existing groundwater concentrations. Should this situation exist, this ROD specifies that Method B shall be used to calculate the interim soil

standard.

Method A: To Be Used When Most All Soils Can Be Cleaned To The Same Level. An overall attenuation factor of 10 shall be assumed as a ratio between soil and groundwater concentrations. EPA's proposed plan explained that while many physical parameters must be combined to derive the true value of the overall attenuation factor, EPA believes that 10 is a conservative but reasonable value within the range of possible values for this factor. Based on this belief, the following equation shall be used to determine the interim soil standard for SVE under Method A:

$$S = (GW_E * 0.005) * 10 = (GW_E * 0.05)$$

where

S	=	Interim Soil Standard for SVE
GW_E	=	Existing Groundwater Concentration (as defined by this ROD)
0.005	=	0.5% interim soil standard as described above
10	=	overall attenuation factor to be used

As an example, if the existing groundwater concentration is found to be 100,000 parts per billion (ppb), then the SVE system would be required to maintain all soils in the zone subject to SVE at 5000 ppb. This standard shall be applied independently to all chemicals in groundwater and in soils under the waste pits. The SVE system shall be operated such that the soils are maintained at or below this standard indefinitely. If the existing groundwater concentration changes, then the interim soil standard shall be adjusted based on the same calculation.

The "attenuation" refers to the decrease in concentration of contaminants as the contaminant passes through the soil away from a fixed source. Processes such as natural biodegradation and adsorption may occur in the intervening soil, causing concentrations to be less at the water table than directly under the pits. The degree of attenuation from all the processes and causes in the soil under the pits is not known. However, a reasonable range for this total attenuation can be assumed. It is conservative to assume that the real attenuation factor is in the low end of its reasonable possible range. This conservative assumption tends to underestimate the amount of attenuation and, therefore, overestimate the amount of contaminants arriving at groundwater over time. Conversely, assuming the real attenuation factor is in the high end of its reasonable possible range may underestimate the amount of contaminants arriving at the water table. The interim soil standard chosen by EPA was on the conservative end of the range.

Method B: To Be Used When All Soils Cannot Be Cleaned To The Same Level Because of Low Air Permeabilities in Certain Soil Areas. In the event that SVE cannot be applied to all areas of soil under the pits due to low air permeability of certain soils, then the equation in

Method A and the assumed attenuation factor of 10, shall not apply. Rather, the remedial design shall establish a vadose zone transport model, approved by EPA, that shall be configured to evaluate the contributions from all areas of soil under the pits. The model shall estimate the incremental concentration due to both (1) the soils to which SVE can be applied, as well as (2) the soils to which SVE cannot be applied. The interim soil standard for SVE shall be set such that when the soils to which SVE can be applied are cleaned to that value, the overall incremental contribution from the waste pits does not exceed 0.5% of the existing groundwater concentration. The SVE system shall be run such that soils are maintained at levels that will maintain this condition indefinitely. If the existing groundwater concentration changes, then the interim soil standard shall be adjusted based on the same model and calculation.

Where SVE Shall Be Applied. The depth of the SVE application shall be between the capillary fringe above the water table and just below the bottom of each waste pit. The areal extent of the SVE application shall extend all across the pits themselves and laterally beyond the boundaries of the pits in all directions to whatever distance is necessary such that all interim soil standards as specified in this ROD are met. This could extend beyond the boundaries of lots 36 and lot 37. The SVE system shall be applied so as to address soil contamination which has emanated or is emanating from the waste pits, and will not be designed to address contamination if it is emanating solely from other sources.

This ROD recognizes the following limitations to the application and operation of the SVE system. The SVE system shall not be applied to the waste itself. If the SVE system applies too strong a pneumatic influence near the bottom of the waste pits, it may have the undesirable effect of drawing contaminants directly downward out of the waste pits. Similarly, if a significant pneumatic influence from the SVE system is applied too close to the capillary fringe, it may have the undesirable effect of pulling-in volatile contaminants that exist in the capillary fringe as a result of off-gassing and capillary contaminants from the groundwater. The SVE system shall be designed to minimize these undesirable effects. It is *not* however, a requirement of this ROD that the pneumatic influence near the pits' bottom or near the capillary fringe be reduced to zero; this may not be possible. Rather, the influence near these areas shall be lessened as necessary to reduce or eliminate those undesirable effects.

SVE Monitoring. The remediation progress of the SVE system shall be monitored with appropriate soil and soil gas monitoring. This ROD recognizes that contaminants may exist, at any given location, in one or more of several phases, including sorbed to soil, soil vapor, dissolved in soil moisture, and residual phase. If only one phase is measured, the amount of contamination in other phases shall be calculated based on supportable partitioning relationships, and the contamination in all phases shall be included in estimating the impact to groundwater.

Other Requirements. The SVE system shall be designed with the appropriate safety features required to allow safe unattended operation. The soil vapor extraction and treatment system shall be inspected and monitored on a regular basis and repaired as needed. Appropriate security fencing, required by State ARARs, shall be installed around the SVE treatment units.

A long-term operation and maintenance plan shall be written for the SVE system. This plan shall be completed and approved by EPA prior to the operation of the system. The plan shall include, at a minimum, all of the following details:

1) Specification of all activities necessary to meet all ARARs and other requirements put forth by this ROD, and a schedule and frequency by which all such activities shall take place;

2) Specification of all activities necessary to operate and maintain the system in safe working order, and a schedule and plan of execution for all such activities;

3) Specification of all sampling, testing, and monitoring associated with operation and maintenance of the system and the scheduling and frequency for these actions;

4) Specification of all sampling, testing, and monitoring associated with verifying the performance of the SVE system and the scheduling and frequency for those actions.

The SVE system shall meet all ARARs specified in this ROD that pertain to the SVE system and its components. The major ARARs that would be met during implementation of the SVE system include emission standards for the vapor treatment system and monitoring requirements for response actions for hazardous waste facility closure. Such monitoring includes groundwater monitoring to evaluate potential changes in groundwater conditions over time associated with the remediation.

Deed Restrictions

To prevent inappropriate future land use or development, the remedy also requires deed restrictions, prohibiting future residential use of the Waste Pits Area and prohibiting any future use which could impact the integrity of the cap.

Cost and Time for Remedy

The cost of the selected remedy would be approximately $6,290,000 in capital costs, $2,690,000 in operation and maintenance costs, and a total of $8,980,000 (all costs are shown in terms of present worth).

The remedy would require an estimated 8 to 12 months to design and construct. It is estimated that the SVE system would have to operate for five years before meeting the interim soil performance standards. Upon reaching those goals, the SVE system would need to be operated whenever more contaminants migrating from the pits and adjacent soil surpass the remediation goals set in either this ROD or revised by the future groundwater ROD.

5-Year Review

As required by CERCLA Section 121c 42 U.S.C.§ 9621 (c), a review shall be conducted every 5 years as long as waste remains at the site at levels that prevent unrestricted use. This 5-Year Review shall determine whether the implemented remedy remains protective of human health and the environment. If the remedy is no longer protective, then a remedy should be selected that will be protective. As remediation technologies continue to be developed in the future, there may be technological advances (e.g. bioremediation) that can be utilized for safe, efficient elimination of the waste.

2.10 Statutory Determinations

Under its legal authorities, EPA's primary responsibility at Superfund Sites is to undertake remedial actions that achieve adequate protection of human health and the environment, see 42 U.S.C.§9604(a). In addition, section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this site must comply with applicable or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal 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 through capping the contaminated waste and soil and implementing soil vapor extraction in the vadose soil beneath the waste pits. This work will be done in accordance with ARARs identified by this ROD.

Capping the waste pits area will eliminate the threat of exposure to volatile contaminants from the waste pits. There is currently a significant possibility that a release of hazardous substances could occur due to disturbance of the waste. Such a release would result in an unacceptable risk to the public. This potential risk would be eliminated by a surface cap. Such a cap would reduce contaminant migration to the groundwater. Implementing SVE as an interim action will also reduce the continued migration of contaminants from the waste material into the groundwater to a negligible amount.

Compliance with Applicable or Relevant and Appropriate Requirements

The selected remedy of cap and SVE will comply with all applicable or relevant and appropriate chemical-specific, action-specific, and location-specific requirements (ARARS). The ARARs are presented in Attachment A.

Cost-Effectiveness

The selected remedy is cost-effective because it has been determined to provide overall effectiveness proportional to its costs, the net present worth value being $8,980,000. The estimated costs of the selected remedy are within an order of magnitude of (just over two times) the costs associated with on Alternative 3, capping only, and yet the selected remedy assures a much higher degree of certainty that the remedy will be protective of the groundwater due to the action of the SVE system. While the selected remedy effectively reduces the hazards posed by

all of the contaminants at the site, its costs are less than 10% of the cost of alternative 5, excavation, incineration, SVE and cap.

Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final source control operable unit at the Del Amo Waste Pits. Vapor extraction and treatment technologies will be utilized both as part of the cap and the SVE system to extract and treat hazardous substances. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that this selected remedy provides the best balance of tradeoffs in terms of long-term effectiveness and permanence, reduction in toxicity, mobility, or volume achieved through treatment, short-term effectiveness, implementability, cost, and considering both the statutory preference for treatment as principal element and State and community acceptance.

While the selected remedy does not offer as high a degree of long-term effectiveness and permanence as the excavation alternative, it will significantly reduce the inherent hazards posed by the contaminated soils through a cap that eliminates surface exposure and SVE system that significantly reduces the continued migration of contamination to the groundwater.

The selected remedy addresses the principal threats posed by the contaminated waste and soil, achieving significant reduction of their impacts to groundwater. The selected remedy is more effective than the other treatment option in the short-term, as there will be no danger of releases of site-related contaminants during remedy implementation. The implementability of the selected remedy is comparable to the non-treatment alternatives and significantly better than the excavation option. The selected remedy is also the least costly treatment option.

The selection of SVE treatment of the contaminated soil is consistent with program expectations that indicate that highly toxic and mobile contaminants are a priority for treatment and their treatment is often necessary to ensure the long-term effectiveness of a remedy.

Preference for Treatment

The Section 121(b) of CERCLA requires EPA to use some form of active treatment (or a combination of treatment and containment) to address principal threats, wherever this is practical. A principal threat is material that contains hazardous substances, acts as a reservoir for further migration of contamination, and presents a risk if exposure occurred. The waste material contained in the Del Amo pits and the soil beneath the pits are considered a principal threat to human health due to their high benzene content. Benzene is a highly toxic and highly mobile contaminant. The statutory preference for remedies that employ treatment as a principal element is satisfied.

2.11 Documentation of Significant Changes

There were significant changes to the Proposed Plan's preferred alternative made in this ROD. The first change is that an alternative method of calculating the interim soil standard was put forth in the ROD to address the case where significant portions of the soils under the waste pits are found, during remedial design, not to be amenable to SVE due to low air permeability. The alternative method (Method B, as presented above) still preserves the overall performance objective of limiting the incremental groundwater concentration due to soil contamination beneath the pits to 0.5% of the existing groundwater concentration. This change was made, in part, to address comments to the proposed plan by the responsible parties and will ensure protectiveness of the remedy under a wider range of situations.

The second change is that we changed terminology from "short-term performance standard" to "interim soil standard," and we changed "long-term performance standard" to "standards to be selected in the final groundwater ROD."

The third change is that groundwater monitoring will not be a required element of this ROD. In the Proposed Plan, groundwater monitoring was included in the remedy description for the purpose of monitoring potential changes in groundwater conditions over time due to the effects of the remediation. Upon further consideration, EPA has determined that the groundwater contaminant concentrations beneath the pits are currently too high and will remain so in the near future, and therefore it is not possible to discern the effects of the cap and SVE system on the groundwater concentrations. If such effects become discernable in the future, groundwater monitoring will be required to so monitor these effects. Groundwater monitoring in the waste pits area will be performed as part of the final groundwater ROD. Such monitoring will be specified in the groundwater ROD.

The final change is that this ROD does not provide for subsequent investigations to determine whether Pit 1A and adjacent areas should be covered by the RCRA-equivalent cap. The Proposed Plan stated that additional soil samples may be taken during design to determine the appropriateness of extending the selected clean-up plan to Pit 1A. However, the 1984 DHS report stated that contamination existed below the floor of the 1983-84 excavation. Although there was no quality assurance provided for these findings, this data is consistent with later data, taken beneath the other waste pits, that found contamination extending all the way to the water table. Because remaining contaminated soil still exists and such contamination could negatively impact the groundwater, EPA has decided, based on further review of available information, that Pit 1-A and adjacent soil as shown in Figure 3 should be covered with a RCRA-equivalent cap.

Attachment A

APPLICABLE/APPROPRIATE AND RELEVANT REQUIREMENTS

1. Applicable/Appropriate and Relevant Requirements

The following legal requirements are determined by this ROD to be applicable or appropriate and relevant requirements for the selected remedial action pursuant to Section 121(d)(2), 42 U.S.C. § 9621(d)(2). Applicable requirements are identified by (A) and appropriate and relevant requirements are identified by (R).

Only the substantive portions of the requirements identified below are ARARs as opposed to administrative requirements, including permitting requirements, which are not ARARs. See 42 U.S.C. § 9621(d)(2) and (e)(1); U.S. EPA, Compliance with Other Laws Manual-Interim Final at 1-11, 1-12 (EPA 540/G-89/006) (August 1988).

a. Hazardous Waste Management ARARs

(Implementing relevant portions of the California Hazardous Waste Control Act, Cal. Health and Safety Code Section 2500 et seq. and the Resource Conservation and Control Act, 42 U.S.C. § 6901 et seq. under EPA authorization pursuant to 42 U.S.C § 6926)

It is not yet known whether waste meeting the criteria for designation of hazardous waste will be generated by the components of the selected remedial action, the SVE system and the gas collection component of the RCRA-equivalent cap. Consequently, certain of the ARARs identified below are designated as both applicable and appropriate and relevant to these components of the selected remedial action. If for example, the SVE system, collects vapor/water with concentrations of contaminants meeting the hazardous waste toxicity criteria in the California regulations, then these hazardous waste management ARARs would be applicable ARARs for the SVE system because that system is collecting and treating hazardous waste.

If, on the other hand, the SVE system handles vapor/water that does not meet the regulations' criteria for hazardous waste designation, these ARARs would be relevant and appropriate ARARs for the SVE or gas collection system. The determination that such ARARs should be relevant is based on: 1) the fact that the waste which was disposed in the Waste Pit Area would be regulated RCRA hazardous waste if that waste were disposed of today and the treatment of that waste would be considered treatment of regulated hazardous waste, and 2) that contamination present in vapors generated by the SVE or gas collection system derives from waste which, except for the date of disposal, would otherwise have been defined as listed hazardous waste. See FFS Chapter 2 (Site Characterization-concentrations of hazardous substances in remaining waste and soils); 22 CCR § 66261.24 (toxicity criteria for benzene); 22 CCR § 66261.31 (hazardous waste from non-specific sources-F003, F005); and 22 CCR §

66261.33 (discarded, intermediate or off specification commercial chemical products-U019 benzene). See also, 40 C.F.R. § 261.3(c)(2) (derived-from rule) and 40 C.F.R. § 261.3(a)(2) (mixture rule). The determination that these ARARs are appropriate rests on two factors: 1) the proximity of the SVE vapor/water collection and treatment system and cap gas collection treatment system to adjacent residential properties (beyond the area being removed from residential use by the private non-CERCLA buyout on 204th Street immediately adjacent to the Waste Pit Area) and 2) the fact that one of the key contaminants, benzene is a known human carcinogen and is present at high concentrations. See FFS Chapter 2 and Figures 1.3.1-1 + 2.2.1-3.

The SVE system, excluding the thermal/catalytic oxidizer unit, is defined for purposes of applying the ARARs identified below as a miscellaneous unit. The thermal/catalytic oxidizer unit is defined for purposes of applying the ARARs identified below as an incinerator. The application of these definitions is based on the EPA's reading of how these terms are defined in the relevant regulations.

22 CCR Part 261 Criteria for Identifying Hazardous Waste (A)
22 CCR § 66262.11 Hazardous Waste Determination by Generators (A)
22 CCR § 66262.34 Accumulation Time (A)
22 CCR § 66264.14 (a), (b) Hazardous Waste Facility General Security Requirements (A)
22 CCR § 66264.15 General Facility Inspection Requirements (A) for the SVE system including the vapor/water treatment portions of the SVE system
22 CCR § 66264.17 Hazardous Waste Facility General Requirements for Ignitable, Reactive or Incompatible Wastes (A)
22 CCR § 66264.25 Hazardous Waste Facility Seismic and Precipitation Design Standards (A)
22 CCR § 66264.31 Preparedness & Prevention-Design and Operation of Facility (A)
22 CCR § 66264.32 Preparedness & Prevention-Required Equipment (A)
22 CCR § 66264.33 Preparedness & Prevention-Testing & Maintenance (A)
22 CCR § 66264.34 Preparedness & Prevention-Access to Communications or Alarm (A)
22 CCR § 66264.35 Preparedness & Prevention-Required Aisle Space (A)
22 CCR § 66264.37 Preparedness & Prevention-Arrangements with Local Authorities (A)
22 CCR § 66264.51 Contingency Plan-Purpose and Implementation (A)
22 CCR § 66264.52 Contingency Plan-Content (A)
22 CCR § 66264.53(a) Contingency Plan-Copies of Plan (A)
22 CCR § 66264.54 Contingency Plan-Amendment (A)
22 CCR § 66264.55 Contingency Plan-Emergency Coordinator (A)
22 CCR § 66264.56 Contingency Plan-Emergency Procedures (A)
22 CCR § 66264.111 Hazardous Waste Facility Closure Performance Standard (R) for the RCRA-equivalent cap (A) for the SVE system
22 CCR § 66264.114 Hazardous Waste Facility-Closure Disposal and Decontamination of Equipment, Structures and Soils (A) for SVE system
22 CCR § 66264.117 (a), (b)(1)(excluding reference to Article 6) and (d) Hazardous Waste Facility Postclosure Care and Use of Property (R) for the RCRA equivalent cap (A) for

SVE system
22 CCR § 66264.119 (a)(regarding notice to the local zoning authority), and (b)(1) Hazardous Waste Facility Post Closure Notices (R) for RCRA equivalent Cap and (A) for SVE system
22 CCR § 66264.171-66264.178 Use and Management of Containers (A) however, the time period for onsite storage of any hazardous waste is governed by 22 CCR 22262.34 Accumulation Time requirements.
22 CCR § 66264.228 (a)(2)(C), (b)(1), (b)(2), (b)(4), (b)(5), (b)(6), (e)(17), (e)(19), (h), (j), (k), (m), (o), (p), and (q); Hazardous Waste Facility Closure and Post Closure Care for Surface Impoundments (R)
22 CCR § 66264.310 (a), (b)(1), (b)(2), (b)(4), (b)(5), (b)(6), © and (d) Hazardous Waste Facility Closure and Post Closure for Landfills (R)
22 CCR § 66264.341 Hazardous Waste Incinerators Waste Analysis (A/R)
22 CCR § 66264.342 Hazardous Waste Incinerators POHCs (A/R)
22 CCR § 66264.343 Hazardous Waste Incinerators Performance Standards (A/R)
22 CCR § 66264.344(A/R) Hazardous Waste Incinerators Permits (A) (substantive requirement of subsection (a) only)
22 CCR § 66264.345 Hazardous Waste Incinerators Operation Requirements (A/R)
22 CCR § 66264.347 Hazardous Waste Incinerators Monitoring and Inspection Requirements (A/R)
22 CCR § 66264.351 Hazardous Waste Incinerator Closure (A/R)
22 CCR § 66264.1101 Containment Buildings-Design and Operating Standards (A)
22 CCR § 66268.1 Hazardous Waste Land Disposal Restrictions (A)
22 CCR § 66268.3 Hazardous Waste Dilution Prohibition as Substitute for Treatment (A/R)
22 CCR § 66268 Article 4 Hazardous Waste Treatment Standards (A) Article 10 Hazardous Waste - Non RCRA Wastes Land Disposal Restrictions (A)
Article 11 Hazardous Waste-Non RCRA Waste Treatment Standards (A)

b. Air Pollution Prevention Requirements

(Implementing relevant portions of Division 26 of the Cal. Health and Safety Code and the Clean Air Act, 42 U.S.C § §7401 et seq.)

South Coast Air Quality Management District (SCAQMD)
SCAQMD Regulation IV, Prohibitions
Rule 401 Visible Emissions (A)
Rule 402 Nuisance (A)
Rule 403 Fugitive Dust (A)
Rule 473 Disposal of Solid and Liquid Wastes (A)
SCAQMD Regulation X NESHAP For Benzene (substantive standards only)(A)
SCAQMD Regulation XI, Source Specific Standards
Rule 1150.2 Control of Gaseous Emissions from Inactive Landfills (A)
Rule 1166 VOC Emissions from Soil Decontamination (A)
SCAQMD Regulation XIII, New Source Review

Rule 1303 Attainment of State and Federal Ambient Air
Quality Standards (A)
Rule 1401 New Source Review of Carcinogenic Air Contaminants
(substantive standards only) (A)
SCAQMD Regulation XIV Toxics (substantive standards only)

2. Legal Requirement of Independent Legal Applicability to the Selected Remedial Action

The selected remedial action may trigger additional legal requirements. These requirements are not identified as ARARs in this ROD either because such requirements do not meet the definitional prerequisites to be identified as an ARAR for onsite activities or such requirements are triggered by offsite activities. See generally, 42 U.S.C § 9621(d). These requirements could be applicable to portions of the selected remedial of their own legal force, independent of the provisions of Section 121(d)(2) of CERCLA. The requirements identified below are presented for the informational purposes only. Any determination the legal applicability of such requirements ultimately rests with the governmental entity charged with implementing and enforcing compliance with such requirements.

CERCLA Section 121 (d)(3) requirements regarding offsite disposal of Superfund Waste

CERCLA Section 103 notification requirements and comparable provisions of California law

California Porter Cologne Act (implementing both state law and the federal NPDES program) concerning issuance of waste discharge requirements for point source discharges of water from the Waste Pit Area to offsite storm sewer conveyances

Los Angeles County Sanitation District Wastewater Ordinance, as amended, concerning discharges of water from the Waste Pit Area to the LACSD sanitary sewer system offsite

Provisions of Title 22 of the California Code of Regulations relating to offsite shipments of hazardous waste, including but not limited to manifest requirements, transportation requirements and offsite disposal/treatment requirements

Federal and State Occupational Health and Safety Act requirements

3. Guidance and Advisories To Be Considered

Certain non-promulgated advisories or guidance that are otherwise not legally binding may be identified in a ROD as guidance or advisories "to be considered" (TBC) particularly to aid the design and implementation of CERCLA remedial actions. For this Record of Decision, the advisories and guidance set out below are determined to be TBCs for the selected remedy:

Hydrologic Performance of Landfill Performance (HELP) Mode, Vol I and II, EPA/530-SW-84-

009 and EPA/530-SW-84-010

Landfill and Surface Impoundment Evaluation-EPA Technical Resource Document

Evaluating Cover Systems for Solid and Hazardous Waste-EPA Technical Resource Document

SCAQMD Best Available Control Technology (BACT) Guidelines Document

EPA Region IX Preliminary Remediation Goals (PRGs) 1996

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

RECORD OF DECISION

for

Del Amo Waste Pits Operable Unit
Del Amo Facility Proposed Superfund Site

Los Angeles, CA

PART IV - RESPONSE SUMMARY
(ATTACHMENT B)

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Part IV—Response Summary — Attachment B

Response Summary

Response Summary

This response summary presents the U.S. Environmental Protection Agency's (EPA) responses to the public comments on the Del Amo Waste Pits Area Proposed Plan. In December 1996, the EPA published the Proposed Plan for the Waste Pits Area of the Del Amo Superfund site located in Torrance, California. The Proposed Plan announced EPA's proposed remedy for the Waste Pits Area and requested written and oral public comments on this plan. A 60-day public comment period began December 16, 1996, and closed on February 13, 1997. A public meeting was also held on January 29, 1997, for the purpose of answering questions regarding the preferred remedy. Written and oral comments from the attending public were collected at this meeting.

The responses have been divided into the following categories:

I. Responses to written comments.

II. Responses to formal oral comments made during the public meeting held on January 29,1997.

III. Responses to informal oral comments made during the question and answer session of the public meeting held on January 29, 1997.

The response to comments are also organized by subjects under Category I. Copies of the original letters and the transcript of the proceedings of the January 29, 1997, public meeting are included in Attachment A.

I. Responses to Written Comments

I. Responses to Written Comments

Subject : Funding for Research in Bioremediation

1. Letter from Cynthia Babich titled: Comments from the Del Amo Action Committee Presented at the Public Meeting January 29, 1996; no date (Reference No. 1)

   EPA's Response:. Of the many issues raised in this letter, three categories stand out as being directly related to the selected Waste-Pits remedy, which is the focus of this response summary: (1) the desire for a permanent remedy that is highly effective in the long-term so that future generations do not inherit the problem and people are not exposed to the waste pit contaminants; (2) a desire to see more research performed on bioremediation technologies (which utilize microorganisms to degrade contaminants), preferably by the PRPs; and (3) concerns about current emissions from the pits and about the soil vapor extraction system with respect to emissions from beneath the cap. EPA will address the concerns about bioremediation and emissions/SVE in this section. The commenter's concerns about permanence and long-term effectiveness are addressed in the next subject category.

   The commenter expressed a desire to have more research on bioremediation technologies and to enhance the potential for evolving technologies.

   EPA evaluated the potential application of ex-situ bioremediation at the Del Amo Waste Pits and concluded that it was less effective than the alternative selected in this ROD. EPA also considered the potential application of in-situ bioremediation but found that the technology has not evolved to the point where it is implementable for this site. However, EPA will consider this technology again, at the 5-year review period, if the selected remedy is not protective.

   Bioremediation is a promising technology for many types of wastes and contamination encountered in the Superfund program, and we share the commenter's sentiment that research and development of lower-cost, permanent, and effective cleanup technologies, including bioremediation, is beneficial throughout the EPA Superfund program and the private sector. Much research in these areas is already under way. At present, however, bioremediation technology has not evolved to the point at which it would be useful and effective on the specific waste found in the Del Amo Waste Pits. EPA wishes to make clear why bioremediation was screened out as a remedial alternative in this case.

   The Del Amo Pits site poses some special problems with bioremediation. As shown in the focused feasibility study, excavating the material could potentially prove difficult and could potentially create short-term risks. As discussed more thoroughly in the response to the next comment, in order to avoid these problems, it would be necessary to bioremediate the waste in situ (in place) without excavating it. In most cases, in-situ bioremediation technologies involve moving fluids and substances *through* the waste material. These substances, including nutrients, are necessary for the microorganisms to grow and thrive. The waste material in the pits has very little void space, or porosity, making it almost impossible to move fluids through it.

In a site like the Del Amo Waste Pits, where it is almost impossible to move fluids through the material, it is also almost impossible to supply the microorganisms with the substances they need to thrive and consequently break down the contaminants. This limitation renders in-situ bioremediation of the waste infeasible. Therefore, one of the complicating factors at the Del Amo Pits site is the difficulty of getting the things microorganisms need for food, breathing, and growth.

Microorganisms need certain things to grow; they need food and they need to breathe. The foods microorganisms use are called electron donors. The substances microorganisms breathe are called electron acceptors. This is because the chemical reactions that microorganisms perform to obtain energy move electrons from the electron donors (food) to the electron acceptors (breathing substance). Many microorganisms breath oxygen. Other microorganisms breathe what we call alternative electron acceptors such as nitrate, sulfate, iron, or carbon dioxide. The foods microorganisms use include many organic chemicals and may include the chemicals that are in the waste material. In some cases, which we call cometabolism, microorganisms eat one substance as food and accidentally degrade another substance just because the other substance is there. Many waste chemicals fall into this cometabolism category in that the organisms cannot use the waste chemicals as food but will degrade the chemicals if there is food available.

Microorganisms also need other chemicals to grow. Microorganisms have proteins and proteins have nitrogen. Therefore, microorganisms need a nitrogen source to produce the proteins they need to grow. Most microorganisms cannot use the molecular nitrogen that is found in the atmosphere but must have nitrogen in the form of ammonia or nitrate. Therefore, ammonia or nitrate needs to be provided during bioremediation for microorganisms to grow. Microorganisms also need other nutrients such as phosphate, sodium, potassium, magnesium, calcium, and other minerals to have a balanced, healthy diet that allows their growth to be optimized. Another problem in the pits is the high concentrations of contaminants in the waste itself. Numerous studies show that many man-made chemicals are toxic to microorganisms at high concentrations just as they are toxic to people at high concentrations. In most cases where bioremediation is shown to work, the contaminant compounds are present at dilute concentrations in soils or water. The focused feasibility study shows that concentrations of the compounds in the waste material are very high. If organisms could be found or created that can live in and degrade such high concentrations of contaminants as those found in the waste material, and transport technologies could be developed that could transport the organisms with electron acceptors (oxygen, nitrate, ferric iron, sulfate) and nutrients into the waste material and distribute them throughout the waste material, then bioremediation may become a feasible alternative. At this time, however, such organisms and technologies do not appear to exist.

Some biological degradation of waste materials may already be occurring in soils surrounding the wastes or, perhaps, in the waste itself, although at very low rates. The presence of hydrogen sulfide is possible evidence of biological transformations. When sulfate is used as an electron acceptor by microorganisms, hydrogen sulfide is produced. Hydrogen sulfide was never disposed of at the Waste Pits but exists there today. Therefore, hydrogen sulfide might be produced by microorganisms which could be using waste materials as electron donors (food). The construction of a cap will not stop any biological degradation that might be occurring. Additionally, the SVE system

will draw oxygen into the subsurface which can possibly increase the rate of biological degradation in soils surrounding the pits where pollutant concentrations are more dilute than in the waste materials. However, even if such degradation is occurring, it is not occurring at a rate sufficient to rely upon it as a remedial action.

In light of this, EPA believes Alternative 4 provides the best available solution to protect public health and the environment.

Finally, EPA would like to clarify a few points made in the comment letter pertaining to current exposures from the pits and the SVE system.

The ambient air study that evaluated possible emissions from the Waste Pits found that it was not possible to distinguish between the background air quality in the region and chemicals that could have been emitted from the Waste Pits. Additionally, dispersion modeling was conducted which evaluated the concentrations of chemicals at the fence line should emissions from the Waste Pits be occurring. These studies indicated that possible concentrations at the fence line would not create unacceptable health risks in accordance with EPA policy.

The commenter also expressed concern that vapor might build up under the cap. When the tops of the pits are sealed with an impermeable liner, it may become possible for vapors to accumulate beneath the liner. These accumulated vapors, if not controlled, could potentially vent to the atmosphere periodically, like a burping effect, in events where relatively high concentrations of vapors are emitted at one time, resulting in odor nuisance and, possibly, short-term hazards. Rather than allowing any accumulated vapors to vent to the atmosphere, Alternative 4 includes a vapor collection system. This does not mean that vapors are currently being emitted at such concentrations as to cause an unacceptable health risk to persons at the fence line. In fact, the studies conducted indicate the opposite, that any vapors potentially being emitted at this time are at such concentrations that risks at the fenceline are not unacceptable by EPA standards.

Alternative 4 does not include any groundwater extraction. Alternative 4 includes only Soil Vapor Extraction (SVE). SVE removes vapors from the soils above the groundwater. The groundwater remedy will be selected following completion of the groundwater investigation.

Subject : Long-term Effectiveness and Permanence of the Selected Remedy

1. **Letter from Randall E. Hartman dated January 9, 1979 (Reference No. 2)**

EPA's Response: EPA appreciates the concerns listed in the letter regarding long-term effectiveness and permanence of the selected remedy. EPA's consideration of these concerns was incorporated into the evaluation of alternatives and the selection of Alternative 4. EPA strongly shares the commenter's concern that the remedy be permanent and protective of human health in the long term. At the same time, it is important to understand that, in making its selection of a remedial alternative, EPA must consider nine factors, only two of which are permanence and long-term effectiveness. EPA must also consider protectiveness of human health and the environment, compliance with other environmental laws and regulations, short-term effectiveness, implementability, cost, and state and community acceptance. EPA's selection of an alternative is based on a balancing of all of these criteria.

That stated, it is true that the most immediate degree of permanence and long-term effectiveness would be derived from destroying the waste in the pits completely, either by removing it first before treating it or treating it while still in place. Alternative 4 is permanent and effective, but it does require long-term maintenance to make sure it remains effective. In contrast, Alternative 5 provides a relatively immediate permanence that is not subject to the need for future maintenance.

EPA studied both excavation as well as the possibility of treating the waste in place. Unfortunately, the studies conducted to date indicate that there are not technologies available that can destroy the waste safely and effectively without excavating. This is because technologies for treating the waste in place generally require that various substances infiltrate or be circulated through the waste. The waste in the pits is highly viscous and has low permeability; in short, substances cannot practically or effectively be moved through it. Other technologies which might, for instance, heat the waste to make it less viscous, would create problems with volatilizing and releasing chemicals in the waste near to the neighborhood. EPA considered these problems and the potential for complications with implementability and short-term effectiveness and determined that the problems outweigh the benefits of in-place treatment. Therefore, EPA screened out the in-place treatment options.

EPA very seriously considered the excavation option, Alternative 5. Unfortunately, many complications could arise with respect to excavation at the Del Amo Waste Pits. The first of these is the potential hazard involved, both to the workers and to the nearby residents, in trying to remove the waste from the pits over an extended time period. It is true that in principle, excavation could be safely performed under an enclosure, but the proximity of the pits to the residential area raises the specter of uncertainty regarding considerations. The VOC emissions from the waste material during excavation are expected to be most severe and, should vapor control equipment fail during construction, the public could be at substantially greater risk than if the material were left in place. Also, as the commenter points out, wastes being removed from the site have to be taken somewhere else. While it is possible to incinerate the wastes to very low and safe residual levels, this still requires that the waste be transported from the site to another area. While an incinerator could be built near the pits themselves and could be operated safely, EPA rejected this option.

Finally, there is the cost of excavation and incineration, which is more than ten times as much as Alternative 4, capping plus soil vapor extraction (SVE). While it is tempting to demand that the waste be excavated regardless of the cost, the cost differences are dramatic and they must be considered and balanced with all the other criteria. In this case, this cost difference reinforces the issues concerning implementability and potential short-term risks and uncertainties just described.

If EPA did not believe that Alternative 4 would be protective of human health, then EPA would be selecting the excavation alternative. However, the cap and SVE will fully protect persons surrounding the pits from exposure to waste pit contaminants, as well as eliminate the pits as a significant source of groundwater contamination. Moreover, because Alternative 4 calls for the long-term operation and maintenance of the SVE system and cap, this protection will be permanent. Thus, on balance, while the excavation option would have required less long-term maintenance, EPA believes that

the selected alternative will be just as effective at protecting human health at a cost that is one-tenth as much, and is therefore the appropriate remedy in this case.

2. Letter from Lawrence Smith dated January 21, 1997 (Reference No. 3)

EPA's Response: Although Alternative 4 does not treat waste material in the Waste Pits, the SVE system does treat contaminated soils. Because of this treatment of contaminated soils, the alternative will reduce toxicity, mobility, and volume of contaminated media associated with past waste disposal practices. EPA shares the concern that treating the waste material itself would be a more favorable alternative because of the long-term permanence and the greater reduction in toxicity, mobility, and volume. For further discussion of this topic, the commenter is referred to the response to Randall E. Hartman above.

EPA concurs that the SVE system may need to be maintained indefinitely to order to adequately capture VOCs that migrate from the waste material into surrounding soils. Although the Proposed Plan was not specific regarding the operational details of the SVE system, a monitoring system will be installed with the SVE system which will be used to assess when the SVE system needs to be re-started after it has been shut down. It is not being predicted at this time that the SVE system will be shut off after 5 years. Rather, it was intended that the public be aware that the SVE system may not operate continuously forever, but after some time, say 5 years, the SVE system may operate intermittently to capture whatever VOCs migrate at that time from the waste into surrounding soils. The SVE system will operate continuously until the monitoring system indicates that soil and soil vapor concentrations are below the interim soil performance standards. This period of time could be on the order of 5 years, but may be longer or shorter depending on subsurface conditions during operation. When soil concentrations drop below the performance standards and the SVE system is shut down, subsurface monitoring will continue and, should performance standards be exceeded due to migration from the Waste Pits, the SVE system will be restarted.

EPA anticipates that the SVE system will be capable of removing contamination in soils to the part per billion level in the coarser materials. However, the interim soils cleanup standard EPA is selecting in this ROD is tied to the existing groundwater contamination level. This is appropriate because the groundwater contamination levels under the pits are already high. The ROD specifies that the Waste Pits will never be able to increase the existing concentrations by more than 0.5 percent. If, in the course of selecting a groundwater remedy, EPA selects a highly stringent cleanup standard for groundwater, then the cleanup level for the soils under the pits will be reduced to a more stringent level to ensure that standard can be met for groundwater. In the interim, the current soil standard will ensure that the amount that the pits can contribute to groundwater remains insignificant relative to what is already there. At present, this level is in the range of 5 parts per million in soil.

In the preliminary design prepared for the feasibility study, a catalytic oxidation system was used to treat the extracted vapors. However, the final selection of the vapor treatment system to be used will be made during the remedial design process. A catalytic oxidation system uses heat and a catalyst to destroy organic chemicals. The catalyst is typically a reactive metal surface that speeds the destruction of organic chemicals. Using a catalyst lowers the temperature required to destroy the chemicals, reduces the

production of nitrous oxides, and increases the amount of organic chemical destruction that occurs during the process. Such systems are in place throughout Southern California to treat vapors extracted from VOC contaminated soils. Any liquids that are produced by the system will be collected, characterized, and transported to an appropriately permitted offsite commercial treatment or disposal facility. The catalytic oxidation system will meet all South Coast Air Quality Management District (SCAQMD) source review criteria and the effects on air quality will be in accordance with SCAQMD rules and regulations and State RCRA regulations.

The alternative of bioremediation was considered during the initial stages of the feasibility study process. Laboratory studies were conducted with waste material to assess the ability of microorganisms to degrade the material. The laboratory studies indicated that bioremediation would not be a feasible alternative. For the same reasons that SVE is infeasible in the waste material, a positive pressure system would also be infeasible. The waste materials are a tar-like, viscous substance which have little internal void space or porosity. Because of this, vapors cannot move through the waste materials. Hence, it is impossible to extract vapors from or push air through the waste materials.

3. **Comment from Barbara Stockwell dated January 29, 1997 (Reference No. 4)**

EPA's Response: EPA appreciates the concerns in this comment regarding the long-term effectiveness and permanence of the selected remedy. The reader is referred to EPA's response to this issue above in the response to Randall E. Hartman. In short, while Alternative 5 would confer certain benefits with regard to permanence and long-term effectiveness, Alternative 4 is, on balance in consideration of all the remedy selection criteria, the most appropriate remedy in this particular case. With respect to bioremediation, the reader is referred to EPA's response to Ms. Cynthia Babich on this issue, above. Bioremediation was considered during the initial stages of the feasibility study and a laboratory study was commissioned. The laboratory study indicated that bioremediation would not be feasible for these waste materials. In light of these issues, EPA believes that the selected alternative provides the best protection of the public from the waste materials that can be devised with available technologies.

4. **Comment from Robert Frame dated February 4, 1997 (Reference No. 5)**

EPA's Response: In accordance with Section 121(c) of the Superfund law, EPA intends to continue to evaluate the performance of this remedy every 5 years after the remedy is implemented. As technological innovations arise, there may be opportunities to explore utilizing such innovations.

5. **Letter from the Toxics Assessment Group dated February 13, 1997: Summary and Let's Get Something Out of This Situation (Reference No. 6)**

EPA's Response: EPA appreciates the concerns regarding the long-term effectiveness and permanence of the remedy. The reader is referred to EPA's response to Randall E. Hartman on this issue, above. The commenter also expressed concerns about the consideration of cost in EPA's remedial decision-making. EPA is required to consider cost as one among nine criteria in its decisionmaking process. However, as stated in our response to Mr. Hartman, in this case, the dramatically higher cost of Alternative 5 merely serves to reinforce several other factors working against that alternative.

Alternative 4 does require long-term maintenance that Alternative 5 does not require. However, on balance, EPA believes that this added benefit in permanence and long-term effectiveness does not justify increasing the cost of the remedy by 10 times, when it is considered that (1) Alternative 4 provides equivalent protection of human health, (2) Alternative 4 can be designed and implemented using monitoring and controls in a manner such that long-term effectiveness and permanence are assured, and (3) Alternative 5 presents a host of implementability and short-term effectiveness problems (risks and uncertainties while the action is executed), as discussed above in our response to Mr. Hartman. Accordingly, in considering all the remedy selection criteria mandated by law and the site-specific situation at the Waste Pits, EPA believes that Alternative 4 is the most appropriate remedial action for the Waste Pits.

Del Amo is, as the commenter suggests, a prime example of a site in need of a cost-effective remediation technology that can destroy the waste safely. Bioremediation holds much potential for organic wastes such as those at Del Amo. However, bio-remediation has been evaluated at this site and does not appear feasible. A more detailed description of some of the issues involved with bioremediation at Del Amo has been provided in response to Cynthia Babich's letter, above. Implementing Alternative 4 would not prevent bioremediation or other remedial technology from being considered for use at Del Amo should promising technologies become available at a later date.

Subject : Uncertainties and Inadequacies in Baseline Human Health Risk Assessment Process

1. <u>Letter from the Toxics Assessment Group dated February 13, 1997; Comments on the Baseline Health Risk Assessment (Reference No. 6)</u>

<u>EPA's Response</u>: EPA acknowledges that there are some uncertainties in the baseline human health risk assessment process, but it is the only quantitative tool available to assess what, if not all, of the risks may be arising from the presence of a hazardous waste site. EPA is sponsoring significant research into risk assessment to continually improve this tool to take into account more of the factors described by the comment and to more completely assess the effects of hazardous chemicals on human and ecological health. This does not mean the existing tool has little or no value. Risk assessment is grounded in valid scientific principles and makes use of these principles in a logical, consistent fashion to estimate what the likelihood is of a person experiencing an adverse health effect due to exposure to a contaminant.

The commenter is correct to assert and list several of the uncertain factors associated with risk assessment. However, EPA risk assessments address these uncertainties by introducing conservative safety factors on the toxicological data. For example, for noncancer effects, if studies show that no adverse health effects have been observed when persons or animals are exposed below a certain concentration, EPA does not simply use that concentration as the "safe" level. Rather, a safety factor is introduced of at least 100 times, and sometimes as much as 5,000 times. The more uncertain EPA is about the particular toxicological data, the greater the safety factor used.

When estimating the exposure that persons may have, conservative assumptions are again used. In the case of the Waste Pits, samples of volatile emissions were taken from

all over the pits. In some areas, the emissions were greater than in other areas and in many areas there were no measurable emissions at all. However, when EPA calculated the risk, it assumed that the entire area of the pits were emitting volatiles at the highest concentration ever found anywhere on the pits. This is clearly a highly conservative treatment of the data; that is, it would err on the side of higher risk estimates. Then, EPA assumed that residents were living, not in houses across the street from the pits, but right at the fenceline of the pits, and that they stayed at the fenceline, breathing and touching the soil, all day and all night for 30 years. Even with all of these conservative assumptions, the noncancer risks due to the Waste Pits for a person living at the fenceline were calculated to be 2/5, where 1 and above indicate unsafe levels. The cancer risks were on the order of two in 1 million. These values mean that there is a 2 in 1 million chance that an individual exposed to a chemical under conservative exposure assumptions will contract cancer as a result of that exposure. These values are significantly lower than the national average of one in four persons contracting cancer in their lifetime.

Finally, the commenter states that the reality is that people in the neighborhood are sick and, therefore, it does not matter what a risk assessment says. There is no dispute that the persons in this community have experienced health problems. EPA is concerned, as we believe the community should be concerned, with finding what is, and what is not, causing those health problems. The finding by the risk assessment that there are no unacceptable levels of exposures to chemicals from the Waste Pits near the ground surface does not negate or deny the existence of health effects. It merely states that, based on the available data, the Waste Pits as they exist today do not appear to be the cause of unacceptable exposures. Such a finding does not rule out the possibility that unacceptable exposures to Waste Pits contaminants may have existed in the past, nor that some other sources of contamination may exist and that these may be causing the health effects experienced by the community.

Subject : Letter from Shell Oil Company Regarding SVE Design and Cost-Related Issues

1. **Letter from Shell Oil Company dated February 3, 1997. First comment (Reference No. 7)**

   EPA's Response: The design details for the cap in the Proposed Plan, which are cited by the commenter, are provided to illustrate the remedy and are not intended to specify the final design of the cap. Such details will be finalized during the design stage and review process, such that RCRA performance criteria for caps will be met. This process will ensure that the remedy is designed to meet the remedial objectives and ARARs.

2. **Letter from Shell Oil Company dated February 3, 1997. Second comment (Reference No. 7)**

   EPA's Response: There is no description of the SVE system later in the Proposed Plan or in the supplement to the Proposed Plan specifying the top of well screens to be 5 feet below the bottoms of the Waste Pits. Regardless, the ROD does not specify a depth for the well screens. The final design details will be selected during the remedial design and review process. This process will ensure that the remedy is designed to meet the remedial objectives. The ROD requires that the influence of SVE extend from the

bottom of the Waste Pits to the capillary fringe; however, it acknowledges that pulling contaminants directly off the water table or out of the pits is not desirable and specifies that the design account for this and reduce the pneumatic influences near the bottom of the pits and the top of the capillary fringe. At the same time, it explicitly does not require that these influences be reduced to zero; rather, that they be reduced enough to reasonably reduce the pulling effect that may occur. It may not be possible to install SVE such that no such pulling occurs at all. The goal of SVE shall be to reduce soil concentrations to the interim soil standard in as much of the soils under the pits as possible; physical and design constraints will then be taken into account.

3. Letter from Shell Oil Company dated February 3, 1997. Third comment (Reference No. 7)

EPA's Response: The cost estimate for Alternative 4 in the FFS is different from the one provided in the Proposed Plan. EPA requested and received a cost estimate from Dames & Moore, author of the FFS report on behalf of Shell Oil and Dow Chemical, for a SVE system that is preferred by EPA. This cost estimate was provided in a fax memo from Dave Laney, Dames & Moore, to EPA dated 11/6/96 (Reference No. 8), and is evaluated in the Administrative Record. The preferred SVE system is one that can be applied to both coarse- and fine-grained soil layers.

4. Letter from Shell Oil Company dated February 3, 1997. Fourth comment (Reference No. 7)

EPA's Response: A key assumption in EPA's nine criteria evaluation of the alternatives was the absence of people residing on 204th Street immediately adjacent to the waste pit property. Should this assumption fail, EPA would need to evaluate the impact on the continued validity of the analyses supporting the selection of remedial actions for the Waste Pits. The current evaluation of alternatives in the feasibility study, Proposed Plan, and ROD does not include the cost of purchasing property or permanently relocating people.

5. Letter from Shell Oil Company dated February 3, 1997. Fifth comment (Reference No. 7)

EPA's Response: EPA believes that the length of time required for the SVE system to operate to meet interim soil performance standards cannot be predicted with a high degree of accuracy at this time. We agree with the commenter that such time estimates will have to be verified by data collected during the remedial design phase. The length of time the SVE system will have to operate continuously before interim soil standards are attained will be dependent on the SVE performance monitoring results. Such time can be less than or greater than 5 years. However, while this time may vary due to physical limitations, the 5-year period was stated in the Proposed Plan with the intention that the SVE system be designed to achieve interim soil standards in about 5 years, if it is possible to do so. Thus, the system should not be intentionally designed to take longer to achieve interim soil standards for reasons other than physical constraint.

Additionally, monitoring will take place indefinitely. Should performance standards be exceeded after the SVE system is shut down, the SVE system will be re-started and operated until performance standards are once again met.

6. **Letter from Shell Oil Company dated February 3, 1997. Second page of comments, second paragraph (Reference No. 7)**

EPA's Response: This comment pertains to EPA's specification that the SVE system shall be applied to both coarse-grained and fine-grained soils under the Waste Pits. EPA has addressed this comment by making changes in the ROD not originally reflected in the Proposed Plan. First, the ROD acknowledges that there is uncertainty regarding the continuity of coarse-grained units across the site and the ability of SVE to be effective in fine-grained units where air permeability may be low. There is insufficient information today to indicate the exact distribution, not only of "fine-grained" materials, but where those fine materials are so fine that they would compromise the effectiveness of SVE. However, EPA has agreed with the commenter that there is significant soil heterogeneity and there are likely to be some soil areas under the pits that will not be amenable to SVE. At the same time, we recognize that the data necessary to define these areas spatially with some precision will have to be obtained in remedial design.

If the size of the areas not amenable to SVE turns out to be significant, it will pose a problem for the interim soil standards. The interim soil standards were selected in the focused feasibility study using relatively simple calculations (based on an "overall" attenuation factor) and the assumption that all of the soil under the pits will be cleaned to a certain fixed level. If some of the soil is cleaned to that level, but other portions are left at higher concentrations, then the overarching standard of keeping the Waste Pits' incremental groundwater contribution below 0.5 percent of the existing groundwater concentrations would not be met. The areas that were not cleaned would contribute more contamination than the calculation assumed, resulting in a greater incremental impact than the standard would allow. For this reason, EPA must start with the assumption that SVE will be applied to all soils under the pits, and cannot agree to specify in the remedy that SVE be applied only to the coarse-grained materials.

To resolve this issue, one must address the physical constraint of potentially not being able to apply SVE to certain soils of low air permeability, while still meeting the overall goal of limiting the incremental contribution from the pits to 0.5 percent of the existing groundwater contamination. To do so, EPA has modified the ROD to provide for two means of calculating the interim soil standard. In the event that the extent of the soils not amenable to SVE is found to be insignificant, then SVE shall be applied to all soils under the pits, as in the Proposed Plan, and the soil cleanup standard shall be calculated as shown in the Proposed Plan, based on an overall attenuation factor of 10. In the event that the areas not amenable to SVE are significant, a performance-based approach shall be used, holding the 0.5 percent incremental contribution standard as the driving factor. In this case, the use of the "overall" attenuation factor shall be abandoned. A modeling approach shall be established, during remedial design, that will calculate both the contributions from areas to which SVE is applied and the contributions from areas to which SVE cannot applied. The areas to which SVE can be applied will be cleaned to whatever level is necessary such that the total contribution from the pits, as calculated by the model, cannot cause an incremental groundwater contribution in excess of 0.5 percent of the existing groundwater concentration.

Subsequently, as stated in the supplement to the Proposed Plan, the exact width and depth of the SVE treatment zone will vary somewhat from location to location depending on the soil conditions and contaminant concentrations and distribution.

7. Letter from Shell Oil Company dated February 3, 1997. Second page of comments, third paragraph (Reference No. 7)

EPA's Response: Simply stated, the "attenuation factor," as it is used in this calculation, defines what fraction of a given soil concentration will be found in groundwater under that soil. The attenuation factor used in the remedial selection should ultimately reflect conditions at the site that control fate and transport of VOCs through the soil. In EPA's Proposed Plan, a single "overall" attenuation factor was used, representing the combination of many physical parameters that differ spatially at the site. Many of the values of these parameters are uncertain and our knowledge about them is limited. This approach is highly simplifying and introduces a high level of uncertainty in the estimate of the value of the overall attenuation factor. It is indirect in that it attempts to broadly evaluate a reasonable maximum and minimum for the overall factor without directly calculating or considering the parameters of which it is composed. The use of this simple approach is acceptable only if (1) its limitations are acknowledged and incorporated into any decision using the attenuation factor, (2) one does not attempt to refine the value of the attenuation factor with this approach beyond what is technically supportable, and (3) one uses a reasonably conservative value within the range of possible attenuation factors, given the uncertainties involved.

Given this, EPA has determined that a reasonably conservative value for this factor is 10. If one were to try to refine the value of the true attenuation factor (by increasing its accuracy or confidence in its value), as the commenter seems to want to do, one would have to take the more complicated approach of directly deriving the value of the attenuation factor by evaluating the physical parameters of which it is composed, and performing more sophisticated calculations and/or modeling. The commenter suggests "using different overall attenuation factors for different soil types at various distances above the groundwater." This more complex approach could be supportable, but is tantamount to abandoning the concept of "overall attenuation factor" and performing the fully-detailed calculations and/or modeling that would be necessary to evaluate contaminant movement in the vadose zone utilizing all physical parameters as these parameters continuously vary spatially. This effort was not performed by the Focused Feasibility Study.

As stated above, EPA has introduced in the ROD a second method for computing the interim soil standard in the event that SVE cannot address significant areas of soil due to low air permeabilities. In this case, the simple approach of an "overall attenuation factor" is abandoned because it is no longer technically appropriate. Instead, a more sophisticated modeling approach would be required to evaluate the actual value of the physical parameters and the possible movement of contaminants from soils to groundwater. Models such as VLEACH could be used for this purpose.

The commenter references 100 as a more appropriate attenuation factor "since it is often assumed for evaluation of waste at RCRA facilities." While a value of 100 may have been assumed for an attenuation factor at some sites, EPA is not aware of any standard or basis by which this value is intended to be used for all sites. In particular, use of a

RCRA facility attenuation factor may not be appropriate in this instance given the significant releases of hazardous substances that have occurred over time from the Waste Pits. By contrast, RCRA facilities are designed and regulated to prevent releases of hazardous substances - particularly the kind of significant releases that have occurred at the Waste Pits. Using an "overall" attenuation factor is a simplification of many physical parameters that differ greatly between sites and even within each site, and the implication that a single value such as 100 applies to all sites, and thereby should apply to the Waste Pits, is without merit.

8. Letter from Shell Oil Company dated February 3, 1997. Second page of comments, fourth paragraph (Reference No. 7)

EPA's Response: The commenter states that some engineering disciplines consider less than one order of magnitude difference in the value of any parameter as negligible. The implication of this statement is that engineering disciplines have defined the words "small" or "insignificant" absolutely and regardless of context as being "less than an order of magnitude." Such an implication would be untrue. Similarly, less than one order of magnitude of difference in hydraulic conductivity of an aquifer may be negligible when estimating the yield of a water supply well, but this order of magnitude difference is not irrelevant to evaluating whether an increase in groundwater contamination is negligible. "Significance" is relative: there is no "engineering" basis to a claim that "significant" can be defined outside of its context.

The Soil Vapor Extraction system for the Waste Pits is a source control measure. That is, it seeks to remove the Waste Pits as a source of additional contamination to groundwater. On this basis alone, it could be argued that EPA should select a soil cleanup standard such that incremental contribution from the pits would not exceed the value of a drinking water standard. EPA has decided not to impose so stringent a standard because of the very high levels of contamination already in the groundwater. However, the goal of the SVE source control is to make the incremental contribution of the pits truly insignificant in relation to the existing groundwater contamination, so as to not counter any groundwater remediation efforts and ensure that the groundwater contamination does not worsen. We disagree that continuing to allow the pits to contaminate the groundwater by 10 percent of the existing groundwater concentration would be an insignificant contribution. While there is no magic calculation that will allow one to absolutely define 0.5 percent as "insignificant," EPA believes that using this percentage is justified in that it is small while still permitting a standard for soil as much as 5000 times less stringent than what would be permitted if drinking water standards were the basis from which the soil standard was derived, and it mitigates the uncertainties associated with determining the true incremental groundwater contribution caused by any given soil concentration.

9. Fax Letter from The EOP Group dated February 13, 1997 (Reference No. 9)

EPA's Response:

1. Stringency of Clean-up. EPA disagrees that the interim soil standard is overly stringent. In earlier evaluations, EPA was considering requiring an application of SVE that would have cleaned the soils under the pits such that the remaining contamination, if it entered the groundwater, would not raise the groundwater contamination by more

than the value of the MCL (1 ppb benzene). EPA's Proposed Plan recognized that the groundwater beneath the pits was already highly contaminated (up to 500,000 ppb benzene), and it instead set the soil standard, on an interim basis, so as to limit the incremental Waste Pits contribution to groundwater to 0.5 percent of the existing groundwater concentration. EPA's Proposed Plan relaxed the clean-up standard considered earlier because the additional contaminant contribution to the groundwater from the pits would still be a tiny amount compared to the existing groundwater contamination. (If the existing groundwater concentration is reduced in the future, the SVE clean-up standard will be lowered as well, so as to remain 0.5 percent of the new groundwater concentration). For these reasons, EPA believes it's interim soil standard is not overly stringent or "intensive;" in fact, it is already as much as 5000 times less stringent than many of EPA's other source control remedies for which cleaning-up groundwater to the MCL is the goal.

2. Extent of Clean-up. Contrary to the suggestion of the commenter, this remedy does not include a full soil cleanup, rather, it seeks to contain the contamination, preventing it from reaching groundwater in significant quantities. The quantity of contamination that the waste and soil would be allowed to contribute to the already-contaminated groundwater beneath the Waste Pits will be a small amount (0.5 percent of existing groundwater contaminant concentrations). The soil clean-up level, therefore, is based on the "incremental" contamination that waste and contaminated soil could add to the groundwater. The calculation of this allowable contamination increment is based on the potential contaminant contribution from all vadose soil beneath the pits. Had EPA selected a "full soil cleanup," it would have required that the soils be cleaned to far lower levels than those implied by the interim soil standard.

The EOP memo suggests that EPA should not apply the SVE to the fine-grained vadose soils beneath the Waste Pits, as EPA's Proposed Plan calls for, but only to the coarse-grained soils. If we were to do this, the cleanup level would only account for these coarse-grained soil layers that were being cleaned. The rest of the soil layers would continue to release their contamination to the groundwater, and their contamination would not be included in the allowable contamination increment calculation. Thus, there would be more contamination migrating into the groundwater beneath the Waste Pits than what the clean-up goal was aiming for. The goal of keeping the incremental contamination's effect on groundwater to below 0.5 percent of existing groundwater concentrations would be illusory - the soils under the pits would be adding to groundwater contamination at far greater levels. Finally, it is unclear if coarse-grained units are continuous across the size and that if removing VOCs from these units would capture all VOCs migrating from surrounding fine-grained units. Thus, depending on the coarse-grained units to protect groundwater from migration of VOCs from the fine-grained units may be unjustified at this site. Therefore, the cleanup level for the vadose soils beneath the pits should account for all soils under the pits, not just certain soil layers, especially since the waste will remain in place "indefinitely."

EPA understands the commenter's concern that there may be fine-grained soils which have such low air permeability that they cannot be addressed by SVE. To address this concern, EPA has provided in the ROD a second method for calculating the interim soil standard in the event that the extent of soils that are not amenable to SVE due to low air permeability is significant. This approach will ensure that the goal of limiting the

incremental contribution from the pits to 0.5 percent of the incremental groundwater concentration will be met even if some areas under the pits are not subject to SVE after remedial design. See also EPA's other responses to this issue, above.

3. Role of Groundwater Clean-up. In the Waste Pits remedy, EPA has selected source control measures in order to address the contaminated groundwater. EPA recognizes that there is evidence of groundwater plume stability and natural attenuation mechanisms in the two upper groundwater units. However, EPA also recognizes that there is less evidence of such stability and attenuation mechanisms in the third unit, the C-Sand, and below. In addition, present plume stability is not guaranteed to last forever. Moreover, if the groundwater does remain contaminated for a very long time with the waste remaining in place, a reasonable amount of mass removal in the vadose zone will reduce the long-term uncertainty and increase the long-term effectiveness of the groundwater remedy. This is consistent with State and EPA approaches to NAPL releases, even in cases where natural attenuation is applied to groundwater.

Finally, the soils are not the only source of contamination here, but the waste itself (which is itself both voluminous and significant contamination) is being left in place indefinitely. Should contaminants from this waste arrive at groundwater, there is no guarantee that there would be plume stability in either the lateral or vertical directions. For these reasons, EPA believes it is prudent to implement source control measures, as outlined in the Waste Pits remedy, in order to add to the long-term effectiveness and permanence of the selected remedy for the Waste Pits.

Subject : Letter from Dames & Moore Regarding Various Issues, as Noted

1. **Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Use of the Term "cleanup"* (Reference No. 10)**

   EPA's Response: The concern of the commenter as to the interpretation of the word "cleanup" by the public is noted. However, EPA has not explicitly or implicitly defined the term "cleanup" to mean "restoration" in the Proposed Plan or the ROD. "Cleanup" is a more widely used and understood term than "remedial action" and is therefore used appropriately in the Proposed Plan where it occurs. A specification as to the degree of cleanup is not contained within the term itself; moreover, the degree being selected by EPA is specified explicitly.

2. **Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Use of the Term "data"* (Reference No. 10)**

   EPA's Response: Duly noted.

3. **Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Use of the Term "Waste Pit Area"* (Reference No. 10)**

   EPA's Response: Duly noted.

4. **Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Page 4, Item No. 2—Uncertain Long-term Controls* (Reference No. 10)**

EPA's Response: EPA believes the statements made are correct and true and are based on both observations of the pits site and on the experience of EPA in dealing with such sites and remedies. Because the current cover on the pits is temporary and requires regular maintenance, the pits are subject to wind erosion, water erosion, and water infiltration. The pits have also been known to ooze waste onto the surface. Therefore, it is not unreasonable to state that there is a "significant possibility that exposures may occur in the future" or that there is a "significant uncertainty as to whether existing controls would be maintained as long as the waste remains in place." The commenter requests clarification as to whether "possibility" means "probability." EPA used the word "possibility," not "probability." EPA has not quantitatively calculated the probability of these occurrences.

5. Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Page 5, Alternative 3, Last Bullet* (Reference No. 10)

   EPA's Response: Duly noted.

6. Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Page 5, Last Two Bullets in Column 1* (Reference No. 10)

   EPA's Response: Duly noted.

7. Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Page 12, Reduction of Toxicity, Mobility, and Volume (TMV) Through Treatment* (Reference No. 10)

   EPA's Response: Duly noted.

8. Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Supplement, Page 1 Purpose of Soil Vapor Extraction, Para. 3, 3rd Sentence* (Reference No. 10)

   EPA's Response: Duly noted.

9. Comment from Dames & Moore dated January 24, 1997; Non-Technical Editorial & Typographic Corrections: *Supplement, Throughout* (Reference No. 10)

   EPA's Response: Duly noted.

10. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Page 1, Para. 5/Figure 1* (Reference No. 10)

    EPA's Response: Duly noted.

11. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Page 1, Para. 7 (2nd Para. Under Site Characterizations* (Reference No. 10)

    EPA's Response: Duly noted.

12. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Page 2, 1st Partial Para.*(Reference No. 10)

EPA's Response: Although there are significant areas within the fence line not contaminated above levels of concern, there are also significant areas outside the pits that are contaminated substantially above levels of concern. The statement in the Proposed Plan is true and does not imply in any way that all soils within the fence line are contaminated.

13. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Page 2, 2nd Full Para.*(Reference No. 10)

    EPA's Response: Under present conditions, if the waste comes into contact with air, it has been disturbed and, therefore, will emit hydrogen sulfide as well as VOCs.

14. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Table 1* (Reference No. 10)

    EPA's Response: Although the highest concentrations of soil contamination are within 5 feet of waste, significant concentrations of contaminants are found at relatively large distances from waste. For example 1,000 ppm benzene has been detected 60 feet from waste. Making such a clarification as suggested would unnecessarily downplay the extent of contamination beyond the pits.

15. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Page 6, Column 1, 1st Partial Para.* (Reference No. 10)

    EPA's Response: Duly noted.

16. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Page 7, Reasons for EPA's Proposed Remedy, 1st Para.* (Reference No. 10)

    EPA's Response: Duly noted.

17. Comment from Dames & Moore dated January 24, 1997; Technical Corrections to Background Information: *Supplement, Page 2, Box* (Reference No. 10)

    EPA's Response: Duly noted.

18. Comment from Dames & Moore dated January 24, 1997; Administrative and Procedural Clarifications: *Page 1, Para. 5, Sentence 2/Page 7, 3rd Para./Supplement Page 1, Purpose of Soil Vapor Extraction, Para. 1* (Reference No. 10)

    EPA's Response: This remedy is an interim action for groundwater. An interim action is a remedial action, not inconsistent with the anticipated final action, that in an early time frame initiates some part of an overall cleanup action without completing it. It is correct that no actions are evaluated in the FFS for cleanup of the contaminated groundwater itself. This interim action does not provide that type of action for the groundwater. Rather, it serves the function of controlling the Waste Pits and the soils below them as a source of future contamination for groundwater. This will serve as one component of the overall groundwater remedy, which later will include actions for the contaminated groundwater itself.

The commenter questions whether this interim action for waste and soils might be replaced or augmented in the future with respect to groundwater. The answer is yes. The groundwater ROD will select final groundwater cleanup standards. If necessary, the interim soil standards in the Waste Pits ROD would be modified to allow for meeting the groundwater cleanup standards. Contrary to the commenter's understanding, this ROD is not "final with respect to soils." Rather, it is final with respect to surface exposures at the ground surface, and interim with respect to protection of groundwater. Therefore, soil cleanup standards may change as a result of final groundwater actions.

19. **Comment from Dames & Moore dated January 24, 1997; Administrative and Procedural Clarifications: *Page 1, Column 2, 1st Para.* (Reference No. 10)**

EPA's Response: The term "soil contamination" is actually shorthand for the presence of waste pit contaminants in any of four phases: adsorbed to soils, in the vapor phase, in the water phase (e.g., dissolved in soil moisture), and in the residual phase. Contaminants can reside "in the soils" in any of these phases. Based on partitioning relationships, a measurement of the amount of contaminant in any one of these phases implies a certain amount of contaminant in the remaining phases. Any soil standard that is based on one of these phases must take into account the total mass of contaminant present in all the phases and how the mass in each phase might be transported to groundwater. Therefore, it is true that the interim soil standard does not apply to "subsurface gases" alone but to all phases of contaminants present in soils under the Waste Pits.

The purpose of the remedy, however, is to address subsurface gas as well as subsurface soil contamination. These emissions, if they were to occur, would occur in the form of escaping subsurface gases. It is true that subsurface gases will be controlled from above by a vapor collection system built into the cap and from below by the SVE system. The SVE system will be operated to reduce soil concentrations (as present in all phases) to a performance standard. However, it is important to explain that subsurface vapors will be controlled by the SVE system.

20. **Comment from Dames & Moore dated January 24, 1997; Administrative and Procedural Clarifications: *Page 4, Item 1 (Preference for Treatment)/Page 7, Reasons for EPA's Proposed Remedy, 5th Para./Page 12, Reduction of Toxicity, Mobility, and Volume* (Reference No. 10)**

EPA's Response: The Proposed Plan does not state, in contrast to the commenter's claim, that any alternative which does not include treatment as a principal element should be rejected. This is merely one consideration among many in making remedial decisions. The preference for treatment as a principal element is a statutory and regulatory requirement. The statute, in particular, has not changed since 1986 and still contains the language requiring it. This preference has always been just that, a preference. As such, there has never been a time in which containment alone was not "acceptable under certain circumstances," particularly when considered on balance with the other NCP remedy selection criteria. While EPA's published policies on the preference for treatment as a principal element speak for themselves, preference for treatment remains a factor which is to be considered in conjunction with the nine criteria and it was, therefore, considered in this case.

21. Comment from Dames & Moore dated January 24, 1997; Administrative and Procedural Clarifications: *Page 4, Item 4 (Compliance With ARARs)* (Reference No. 10)

    EPA's Response: The term "ARAR" means "Applicable, or Relevant and Appropriate Requirement." ARARs are either applicable, or relevant and appropriate. If an ARAR applies directly to the site or the remedial action, it is applicable. However, EPA can determine that, even though the ARAR does not directly apply, it is nonetheless relevant and appropriate. EPA has identified certain hazardous waste facility closure and post closure requirements, established in state regulations, as relevant and appropriate legal requirements that the selected remedial action must meet. Section 121 (d) of the Superfund law provides that remedial actions conducted on-site must meet substantive environmental protection requirements. However, the law also provides that no state, federal or local permit is required to conduct remedial actions onsite provided that the substantive environmental protection standards have been identified and complied with. See 42 U.S.C. 9621(e).

22. Comment from Dames & Moore dated January 24, 1997; Administrative and Procedural Clarifications: *Page 6, First Full Para. In Column 3* (Reference No. 10)

    EPA's Response: Duly noted.

Subject : Letter from California Department of Toxic Substances Control (DTSC) Regarding the Final Focused Feasibility Study Report, Del Amo Waste Pits Area, Geologic, Engineering, and Toxicologic Issues

1. Letter from California DTSC dated December 11, 1996; Specific Geologic Comments, Comment 1 (Reference No. 11)

    EPA's Response: EPA agrees that some soil gas monitoring points, either within the Waste Pits area or on adjacent properties, are needed on all sides of the Pits. The exact number, location, and design of these points will be determined during the Remedial Design phase of the project.

2. Letter from California DTSC dated December 11, 1996; Specific Geologic Comments, Comment 2 (Reference No. 11)

    EPA's Response: EPA agrees that rising groundwater at the site is a design consideration. It is anticipated that the impact of rising groundwater on the SVE system will be addressed during the Remedial Design phase of the project.

3. Letter from California DTSC dated December 11, 1996; Specific Geologic Comments, Comment 3 (Reference No. 11)

    EPA's Response: EPA believes that after the initial period of continuous operation, asymptotic concentrations will be reached. It will then be possible to turn off the SVE system and to monitor the concentration of soil vapor. If monitoring indicates that soil vapor has increased above levels of concern, the SVE system will be re-activated. The process by which these decisions will be made will be included in an Operations &

Maintenance Plan to be initially developed during the Remedial Design phase of the project.

EPA has identified specific ARARs in the ROD pertaining to this type of monitoring.

4. **Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 1 (Reference No. 11)**

   EPA's Response: EPA agrees that the monitoring information requested by DTSC is needed. However, the SVE performance standard selected in this ROD is incorrectly stated in DTSC's comment. It is true that the purpose of the SVE system is to reduce soil contaminant concentrations below the Waste Pits. However, the standard is for the containment concentrations to be reduced to a level such that the Waste Pits could not incrementally contribute to groundwater more than 0.5 percent of the existing groundwater concentration at any point in the future. Should the "existing groundwater concentration" change, then the standard would change as well to remain at 0.5 percent.

5. **Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 1a (Reference No. 11)**

   EPA's Response: A proposed soil gas monitoring plan for lateral migration of all mobile contaminants from the Waste Pits, to assess whether cleanup objectives have been met, will be developed during the Remedial Design phase of the project. It should be noted that not all contaminants found in the Waste Pits are necessarily considered mobile, based on soil and individual contaminant characteristics.

   EPA has identified specific ARARs pertaining to this monitoring.

6. **Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 1b (Reference No. 11)**

   EPA's Response: The physical parameters to be measured to assure that clean-up objectives have been met will be developed during the Remedial Design phase of the project.

7. **Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 1c (Reference No. 11)**

   EPA's Response: Groundwater monitoring will not be used to measure the SVE system's impacts on the groundwater. The groundwater directly beneath the Pits is so highly contaminated that the SVE system's impacts to the groundwater contaminant concentrations, at least in the near future, will be indiscernible.

8. **Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 2 (Reference No. 11)**

   EPA's Response: As discussed in Section 2.9 of the ROD, "The Selected Remedy," subsection entitled "Where SVE Shall Be Applied," the SVE system shall extend laterally to include areas all across the Pits themselves and laterally beyond the boundaries of the Pits to whatever distance is necessary such that all interim soil standards specified in this ROD are met. This distance could extend beyond the boundaries of lots 36 and 37.

The application of SVE shall address soil contamination that has emanated from the Waste Pits, but not contamination emanating solely from other sources.

9. Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 2b (Reference No.11)

EPA's Response: The purpose of SVE at this site is as a containment technology that is used to establish a contiguous horizontal barrier against the vertical migration of vapor phase contaminants that could further contaminate groundwater. SVE will also reduce future groundwater contamination that could occur if water levels rise into the vadose zone soil that has been targeted by the technology.

The thickness of the SVE capture zone at every point under the Waste Pits has not yet been determined. The ROD specifies that if Method A is to be used to calculate the interim soil standard, then all of the soils between the capillary fringe and just below the Waste Pits will be subject to SVE. However, if significant areas of soils under the Pits will not be amenable to SVE due to lack of air permeability, then Method B will be used and the thickness of the SVE zone will vary according to location under the Pits. However, either way, the incremental contribution from the Pits will be limited to 0.5 percent of the existing groundwater contaminant concentration. Modeling and/or other techniques necessary to develop and operate an effective SVE system will be evaluated and implemented, as appropriate, during the Remedial Design phase of the project.

10. Letter from California DTSC dated December 11, 1996; General Engineering Comments, Comment 3 (Reference No. 11)

EPA's Response: Figure 7.4.1-2 is an idealized conceptual view of a possible SVE well configuration, viewed along a generalized east-west line of section beneath the Waste Pits. Similarly, Figure 7.5.2-2 is a view showing the waste and adjacent soil materials that would be excavated per Alternative 5. Due to the complex distribution of contaminants in the soils below the Waste Pits area, all plan view and cross-sectional graphics presenting the soils contaminant data should be viewed in the context of the conceptual remedies. Figures 2.2.2-3 through 2.2.2-9 of the FFS Report show all available soils data plotted on seven separate cross-sectional views transecting the Waste Pits area. Collectively, these figures provide a good presentation of the variable distribution of soil contamination across the site, as well as the data points that provide the basis for our current understanding of contaminant distribution.

11. Letter from California DTSC dated December 11, 1996; Specific Engineering Comments, Comment 4 (Reference No. 11)

EPA's Response: EPA agrees with this statement and a version of the figure that includes the note suggested by DTSC is attached to this response (Reference No. 12).

12. Letter from California DTSC dated December 11, 1996; Specific Engineering Comments, Comment 5 (Reference No. 11)

EPA's Response: Estimates already include the cost of monitoring probes to the east and west of all Pits and, in some cases, they also include the cost of monitoring probes to the north and south. An analysis of the cost of adding additional monitoring probes

to the north and south of the Pits was performed. If it is assumed that a maximum of 18 of these monitoring probes will be installed to the north and south of the Pits, the cost to construct and sample the probes would be approximately $300,000. For those SVE design scenarios that are at least equal in size to the conceptual SVE design assumed for Alternative 4 (see FFS Tables 8.3-1, 8.3-2, 8.4-1, and 8.4-2), this represents an increase of 1 to 18 percent when compared to the cost estimates that were included in the December 10, 1996, FFS report.

13. **Letter from California DTSC dated December 11, 1996; Specific Engineering Comments, Comment 6 (Reference No. 11)**

    EPA's Response: The purpose of Table 8.5-1 is to simplify and "bracket" the cost of all the various SVE design scenarios and cases that are discussed in Section 8 of the FFS Report. While it would be possible to assemble a table that showed the cost of each and every possible combination of SVE designs that would be necessary to accomplish the different short- and long-term performance standards for different types of soil, EPA believes that these costs would not fall outside the range that is presented in Table 8.5-1 as currently configured ($3 to >$10.9 million). Therefore, the value of this exercise does not appear to be merited at this time.

14. **Letter from California DTSC dated December 11, 1996; Specific Engineering Comments, Comment 7 (Reference No. 11)**

    EPA's Response: EPA has reviewed this request and believes that the purpose of these estimates may be misunderstood by DTSC. To evaluate the effect of the contingency as part of a sensitivity analysis, all elements of the estimates in Tables F-2d and F-2e were kept the same as the estimate in Table F-2a, except for the contingency. The same is true of the estimates in Tables F-3d and F-3e when compared to Table F-3a and Tables F-4d, and F-4e when compared to Table F-4a. If the contingency in all these tables is set at 15 percent, all of the estimates will be the same for the alternatives in question and all of the tables that are mentioned in this comment will be redundant with other tables in Appendix F.

15. **Letter from California DTSC dated December 11, 1996; Specific Engineering Comments, Comment 8 (Reference No. 11)**

    EPA's Response: EPA has reviewed this issue and believes that the problem is that the table says 8 percent when, in fact, 7.5 percent was used in the calculation. The problem occurred due to a rounding error in Excel.

16. **Letter from California DTSC dated December 11, 1996; Alternative 4—RCRA—Equivalent Cap + Soil Vapor Extraction (SVE), Comment 1 (Reference No. 11)**

    EPA's Response: The reason the SVE monitoring costs in DTSC's estimate were so high relative to Dames & Moore's is because DTSC assumed continuous operation of the SVE system for years 4 through 30 and Dames & Moore did not. Since both DTSC and Dames & Moore agree that SVE operation likely will not be continuous during this time, EPA believes that DTSC has overestimated the cost of this work.

17. **Letter from California DTSC dated December 11, 1996; Alternative 4—RCRA—Equivalent Cap + Soil Vapor Extraction (SVE), Comment 2 (Reference No. 11)**

EPA's Response: EPA agrees that the SVE O&M item was double-counted in DTSC's cost estimate that used the RACER cost-estimating system.

II. Responses to Formal Verbal Comments

II. Responses to Formal Verbal Comments Made During the Public Meeting Held January 29, 1997

1. Comment from Public Meeting held January 29, 1997; speaker Cynthia Babich

   EPA's Response: The comments are largely the same as the letter submitted by Ms. Babich. EPA shares Ms. Babich's concerns regarding the long- and short-term effectiveness of the remedy. A detailed response is provided in response to Ms. Babich's letter.

2. Comment from Public Meeting held January 29, 1997; speaker Kim Simpson

   EPA's Response: Based on the established principles of chemistry and physics, experience, and available information, EPA is highly skeptical regarding the claims made by Mr. Simpson, and finds that it is not appropriate to place any confidence in or reliance on those claims. It is questionable as to whether Mr. Simpson has reviewed the available engineering information regarding the waste at the Pits Site. If Mr. Simpson's technology depends, as it appears it does, on the ability of a chemical to percolate into a soil matrix, then it does not appear feasible at the Pits Site because the waste material has no porosity into which a fluid could percolate. If EPA had procured the services of Mr. Simpson in the past and made use of Mr. Simpson's technology as an innovative technology, as Mr. Simpson claimed, it would be listed in the Superfund Innovative Technology Evaluation (SITE) program. A search of the SITE database has shown that Simpson Environmental is not listed. Mr. Simpson's claim to have completely cleaned up several Superfund sites is false as EPA is well aware of the sites and the fact that the cleanup at those sites is not completed nor is Mr. Simpson's technology in use there. Mr. Simpson has not provided any information to EPA that would substantiate his claims nor provided even the basic chemical principles by which his technology could conceivably succeed in addressing the waste in the pits.

   In addition to the physical impediments just described, a basic knowledge of chemical reactivity would suggest that the claims made by Mr. Simpson regarding the ability of his material to catalyze oxidation of the waste materials at the rates specified are not valid. Mr. Simpson claims that all the waste could be oxidized in 6 months. Setting aside the unlikeliness that this technology could accomplish oxidation of the pits material at all, the feat itself, were it to occur, implies unrealistic conditions. Oxidizing the waste would produce heat. The amount of heat produced by oxidizing all the waste in 6 months would be so large that the material in the pits would literally be a burning conflagration. This heat can be estimated by multiplying the amount of heat potential in British Thermal Units (BTUs) in the waste by the total amount of waste. This calculation suggests that Mr. Simpson's technology would generate 36,521,294 BTUs of heat every hour while the waste is being oxidized. This would be equivalent to 10.7 megawatts, the equivalent of 107,000 100-watt light bulbs going at once, or enough power to light a

town of perhaps 5,000 homes. Of course, it would be virtually impossible to cause any oxidation at all with this chemical because, as mentioned, there is no way to get the chemical to infiltrate the waste. If the claims made by Mr. Simpson are true, that by simply sprinkling his chemical on the surface of the waste material he will generate 10.7 megawatts of power and thereby destroy all the waste, this technology would be very valuable to the energy generation industry, much less the environmental cleanup industry. However, this technology is not known or proven and thermodynamic principles of chemical reactivity suggest that Mr. Simpson's claims are highly suspect. The Responsible Parties involved at the site requested that Mr. Simpson provide scientific information regarding how his technology works and on which physical and chemical principles it is based. Adequate information was not provided.

Mr. Simpson claimed in the public meeting that his company would be willing to perform a test of the technology at the Waste Pits at no cost. However, given the lack of any credible basis for believing such a test would be successful or useful, EPA will neither seek nor approve such a test. Moreover, the test could fail in some ways which are more pernicious than simply failing to destroy the waste. Such a test could well worsen the Waste Pits problem, make it more difficult to control, cause waste migration, liberate contaminants, or create new contaminants which presently do not exist in the pits. Not enough is known about the effect of such a test to justify pursuing the matter further. In short, EPA rejects the technology proposed by Mr. Simpson for the Del Amo Waste Pits, and plans no further evaluation of this technology at this time.

3. **Comment from Public Meeting held January 29, 1997; speaker Chuck Paine**

   EPA's Response: Duly noted.

4. **Comment from Public Meeting held January 29, 1997; speaker Robert Evans**

   EPA's Response: EPA appreciates Mr. Evans' concerns regarding the need to provide a long-term remedy to hazards potentially associated with this waste. The studies and evaluations that have been conducted to date have shown Alternative 4 to be the best balance of long-term effectiveness, short-term risks, permanence, implementability, protection of human health, meeting environmental standards, and cost. If there were currently available technologies that could effectively and safely treat the waste in place, it is likely that EPA would have selected them for the remedy. Please see earlier EPA responses to comments on the subject of Permanence and Long-term Effectiveness.

5. **Comment from Public Meeting held January 29, 1997; speaker Ms. Ponce**

   EPA's Response: Duly noted.

III. Responses to Informal Verbal Comments

III. Responses to Informal Verbal Comments Made During Question and Answer Period During the Del Amo Public Meeting Held January 29, 1997

(Page and line numbers refer to Transcript of Proceedings, Reference 13)

1. **Page 21, lines 11-20**

   EPA's Response: EPA appreciates the speaker's concerns about containing the waste indefinitely. EPA refers the reader to its responses above under the subject: Permanence and Long-term Effectiveness. These responses fully address this commenters' comment.

2. **Page 25, lines 8-9**

   EPA's Response: The Proposed Plan states that the groundwater table is 60 feet below the ground surface at the site.

3. **Page 26, lines 1-5**

   EPA's Response: EPA appreciates this concern regarding long-term effectiveness and permanence of the final remedy. EPA refers the reader to its responses above under the subject: Permanence and Long-term Effectiveness. These responses fully address this commenters' comment.

4. **Page 30, lines 24-25, page 31, lines 1-2**

   EPA's Response: EPA shares this concern regarding safety of the remedy. Alternative 4 includes a monitoring program to monitor the system for problems. When a problem occurs, action will be taken to correct the problem and prevent hazards to the community. The hazards that can occur due to a problem with Alternative 4 are significantly less than the hazards that can occur due to a problem with Alternative 5. There is very little likelihood that the community will experience any adverse effects due to problems with Alternative 4.

5. **Page 36, lines 24-25; page 37, line 1**

   EPA's Response: The wells will be designed to contain all vapors. They will be sealed and connected to piping that runs to the vapor extraction and treatment equipment.

6. **Page 40, lines 1-5**

   EPA's Response: A substantial number of caps have been implemented at municipal landfills and Superfund sites, and EPA is not aware of notable cap failures. Please be aware that EPA is highly concerned about the integrity of any remedial alternative implemented. The proposed cap is not a "walk away" solution. The cap will be

continuously monitored for an indefinite time period. When monitoring indicates that the cap requires repair or replacement, the work will be done. Additionally, the design criteria for the cap will be to resist weathering, settlement, and seismic forces. Capping technology is well developed and designing a cap to withstand reasonable seismic and weathering forces is possible.

7. Page 42, lines 13-15

EPA's Response: EPA appreciates these concerns regarding long-term effectiveness and permanence of the final remedy. EPA refers the reader to its responses above under the subject: Permanence and Long-term Effectiveness. These responses fully address this commenters' comment.

8. Page 42, lines 18-22

EPA's Response: The Newport-Inglewood structural zone, which extends from the foot of Santa Monica Mountains near Beverly Hills southeastward to Newport Beach is underlain by a series of folds and faults. The Newport-Inglewood Fault, located about 3 miles northwest of the Waste Pits, is the major structural feature mapped in the vicinity of the Del Amo site.

9. Page 44, lines 1-3

EPA's Response: EPA has developed conceptual designs of the cap that allowed us to evaluate its effectiveness. One of the designs is shown in the Proposed Plan on page 5. Many of the details of cap design can change during the design phase. However, the design criteria for the cap will not change. These design criteria will be a minimum permeability to prevent escape of vapors or infiltration of rainwater, removal of accumulated vapors, removal of accumulated rainwater, and resistance to anticipated loadings including seismic loadings. The details of how these design criteria will be met will be developed during the design stage. However, these details are not necessary to evaluate the effectiveness of a cap at this time because capping is a mature technology and we are certain that the design criteria developed can be met using available materials and technologies. If these design criteria are met, the cap is expected to be effective and meet the remedial objectives at the site.

10. Page 46, lines 16-22; Page 47, lines 12-18

EPA's Response: The reader is referred to EPA's response to the Toxics Assessment Group, above. This response offers a discussion of EPA's treatment of cost as a criterion in remedial selection, and addresses this commenter's comment.

11. Page 48, lines 23-25; Page 49, lines 2-4

EPA's Response: A conceptual design of the cap is shown in the Proposed Plan on page 5. The cap is expected to look generally like this although some details may change during the design stage when better materials or methods may be developed. However, to evaluate the effectiveness of the cap, the level of detail shown in the Proposed Plan is generally sufficient. Capping is a well known and frequently used technology and we believe that a cap can be designed and built which will meet the design objectives of preventing escape of vapors and infiltration of rainwater into the waste. The same can be said for the vapor extraction system. The conceptual design has been developed and

details will be worked out during design. However, vapor extraction is also a well known and frequently used technology and we believe that a vapor extraction system can be designed that will meet the objectives at the site of removing soil contamination and preventing contamination of groundwater.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

RECORD OF DECISION

for

Del Amo Waste Pits Operable Unit
Del Amo Facility Proposed Superfund Site

Los Angeles, CA

PART IV - RESPONSE SUMMARY
(ATTACHMENT B)

References 1 - 13

Reference 1

COMMENTS FROM THE DEL AMO ACTION COMMITTEE
PRESENTED AT THE PUBLIC MEETING JANUARY 29, 1996
BY CYNTHIA BABICH

What I will tell you tonight comes two and a half years of researching, watching and participating with the State and Federal Agencies working on our Superfund Site. This is a projection of what needs to be done at the Waste Pits in the short term and in the long term. We must state to these Agencies and Corporations what our needs are, but this must be stated in the form of a demand to be heard clearly. We are committed to following through with the work that has been started by the Del Amo Action Committee. The Del Amo Action Committee knows that this community supports its efforts, but the Agencies, Responsible Parties and our Political Representatives need to know as well. There are representatives here tonight of all those who have a stake in this communities future in one way or another. We have been negotiating over a year with many these stakeholders on 204th Street Buyout Issues. Although we may have hate in our hearts for the destruction many industries have caused, we do not and should not hate the messenger. All warriors know the importance of knowing their enemies. Mr. Chuck Paine is here tonight and has been working hard to come to some agreement on issues raised by this Committee. We certainly do not agree on many things and he only knows if he has been successful at putting himself in our shoes, but I can tell you he has tried very hard to understand. There are many problems across our nation and if we can not even begin to talk to each other about them then we are doomed. The EPA as well has risen to the challenge on many occasions. I am telling you this so you can understand that this committees anger is not at the individual trying to make some sense of this horrible situation, it is with Federal and Corporate Polices that must be changed. This committee tires of cheep talk we are gearing for action.

We have come here to talk about the EPA's Proposals for remediating, which some think means cleaning up, the Del Amo Waste Pits. We will talk about current conditions and future conditions. We already know from previous meetings what has occurred in the past to this community, exposure to toxic chemicals from the Waste Pits and the Montrose Facility, as well. This neighborhood is comprised of hardworking citizens of many nationalities. Most of us are in the mid or low income range. Historically it has been found that lower income communities have much more than their share of toxic problems. There is a trend unfolding across the Country about Communities just like ours. Some feel the reason for this is that lower income communities are so involved in making ends meet that they may not even notice that they have these added dangers in their community. The attitude which has caused this problem and which we as a Nation have been facing, is called Environmental Racism. We are engaged in a struggle for Environmental Justice. Many communities have been standing up, educating themselves and fighting hard for what is theirs, should have been theirs and what will be theirs in the future. We can not change the past, the present we may alter but the future we hope to forge for ourselves.

The future of this community is very important. Many of us at this time, with the knowledge of toxic exposure in the past and present in this community, don't hold out a lot of hope for many adults. Our quality of life has been diminished, extensively in some cases. We now look at the situation with brave hearts and optimistic minds. When we look at our children, we wonder what the quality of life for them will be in the future? This is what we have to make sure remains protected. A little boy on 204th street asked me the other day where I lived and I told him in San Pedro. I was lucky enough to have been under the EPA's temporary relocation, but feel torn between my community which I dearly love and fear of my life from continued exposure. The air is fresher where I live now, but I don't feel connected to this new community. I was going to ask this little boy where he lived, but I was afraid he might tell me or what I might have to tell him, about where he lived. That little boy and many other children in our neighborhood represent our FUTURE. It would be disgraceful to condemn them to the same feelings we have now about those that have blatantly dumped on this community. We are owed something for our suffering. We are owed self respect and we are owed a future, which today remains uncertain.

When we look at the remedies for the Waste Pits, (Containment or Excavation), many of us from the beginning have felt it should be cleaned up. We didn't put it here, we didn't ask for it to be put here and this community was here before the Del Amo Facility. What many of us have come to understand is that it can't be cleaned up. Trying to clean it up with current technology would mean risking our health again and risking the health of the workers, because this stuff is so toxic it can kill people at high levels, like the levels in the Waste Pits.

What happens after the toxins are dug up, if it can be done successfully? We have read options from the EPA and it sounds as if it could be done, at a cost of over 100 Million Dollars. What happens to it then? It gets shipped, trucked, railed to either a burial site, like in Arizona or Nevada, where they dig another hole and bury it. Maybe this time the hole with have a layer of concrete around it or some other protective measure, but it still is not being taken care of. It is not being cleaned up. Or if it is to toxic to bury again it is taken to another community, another Community like ours that has more than its share of toxic problems. If it is going there this community has an incinerator that will burn the contaminated material. This will expose the community to the residual burn off. They will be exposed as well to the many dangers of an accident while all these shipments are coming in. The Del Amo Action Committee stands in solidarity with those communities and although we don't want our toxic problem, we certainly don't want to ship it off to another community and cause them the same grief that we've had to endure.

So then what is the answer? We look at our current situation and we know from the limited studies that have been done to date that we have been exposed in the past. We know that for at least the last two Summers toxic ooze has seeped up out the ground from the waste pits. The dirt cover over the Waste Pits, which has been in place for over a decade, has worn thin, blown away in the wind and washed away by the rains. We are being exposed currently, when you smell rotten eggs in the area that is Hydrogen Sulfide

(H2S), a deadly chemical that can kill you. Why are we smelling it in our neighborhood? H2S is one of the chemicals in the Waste Pits and this neighborhoods closest source. We need to be protected from the ooze's that are occurring, from the vapors we are smelling and from an eroding cap that was never up to par to begin with. We need to make sure this is capped, as soon as possible. Option #4, Containment, which has been proposed by the EPA has a venting system to burn off vapors that will be volitizing off the waste pits. When past air samplings were done we were told, "No chemicals in the air were coming from the Waste Pits", yet they are going to be venting these vapors that will be building up under the plastic liners of the CAP and burn them off near the Eastern boundary of the waste pit area somewhere. This sounds like chemicals do evaporate into our air space from the Waste Pits. Option #4 will also be implementing ground water extraction. The Waste Pits are continually adding Toxins into the groundwater so future contamination to the groundwater would have to be stopped at the source. These pump extraction wells will be located between the Waste Pits and the community. They will be pumping groundwater until the site is cleaned up, which maybe never. What the committee has asked the EPA to help us do is look into the Bioremediation Options for this site. Bioremediation is when organisms are introduced into a contaminated environment and encouraged to feed off of the contamination. The more they feed, the more they reproduce and less and less contamination is left behind. This is the communities only hope for a clean future. This is the legacy we have to leave to this community and to our children.

Will we ever be able to walk away from this, look back and think that we have done anything at all, besides leave the problem for another generation and another generation and another generation? Isn't quality of life determined by a healthy mentality, as well as a healthy body? How can we have a good quality of life when our minds have been poisoned? We live in fear of the Superfund Sites in our neighborhood, we not only have one we have TWO. A healthy mentality is important. It helps shape ones self confidence and encourages us to stand up for ourselves by speaking out and seeking the information needed to become an involved citizen.

Do we want to condemn our children and this community to deal with the knowledge that they have deadly contamination just a CAP away from causing them harm once again. What does this teach our children? Are they not good enough or important enough to live in a healthy clean environment that they don't have to worry about? Or does make them feel that they are not as important as other children not dealing with a toxic neighborhood.

Some Corporations and Agencies have tried to pull the wool over some of us adults as to the extent of contamination but, our children seem to know the difference. They are being alerted about the environment and the dangers that have been caused and posed by the Industrial Revolution. They are trying to find ways to secure their own future. They will turn to us someday and will ask us why we didn't do anything. Those of you working for

the Corporations and Government Entities Responsible for this mess and the Agencies involved in the remediation can bet that your children will turn to you someday and ask the same questions. What will your answer be? We did the best with what resources we had at the time? We fought real hard to make sure that current exposure would be stopped, we stood behind a CAP because we did not want to send our waste to other communities.

Science is not advanced enough at this time to clean up the many messes all over the Country, more research needs to be done. More research into Bioremediation of this particular type of contamination. Some Bioremediation studies have been done in the in 1991. These studies were not very conclusive and 1991 was along time ago, a lot has changed in the scientific world since then. Along with Option #4 we want resources set aside for grants into Bioremediation Technologies. This will provide funding for research on how and which organisms to introduce, so that one day maybe, 50 or 100 years from now, nothing living in this neighborhood or the near vicinity will live with the threat of a Superfund Site. We have all seen how the Government can shut down and Superfund very existence is questionable. What if there was no more EPA. Our site in the future could represent a now defunct and failed system, with nothing to stop the eroding and leaching contaminants into our community once again. Can we turn to our children in the future and tell them that we did the best we could with what we had at the time and we stand behind the decisions made? Or will they turn to us and say we didn't stand up for justice, although we did complain a little, shout a few times but ultimately we let people die. That is what will happen, people have died from these toxins in the past, they are dying today and if nothing is done to see that this contamination is removed, they will die in the future. This is our neighborhood and this is our quality of live we are talking about. The Agencies out here are required by law to listen to us. They know we are the people who will have to live with the decisions that they will ultimately make for this community.

We've been told that clean up will cost <u>one hundred million dollars</u> or more, a cap on the other hand costs approximately <u>ten million</u>. The estimated life span of a CAP is 30 years, maybe longer. Were talking about replacing something every thirty to fifty years. This is not a permanent solution. We need a solid future in this neighborhood. We need to keep fighting for solutions. The money that is not being spent on this clean up is a large amount. There is a big difference between 10 and 100 Million Dollars. One Million Dollars to some of us is more then we can imagine. Although I can tell you that one million would go along way towards solving our problems in the future through bioremediation, as well as other sites with similar contamination. Someday this community could again be as beautiful as before the toxins came. Its residents will once again be feel comfortable with where they live. The Children can say, "we live in a community that once was contaminated with toxic poison, but our community is evolving, learning and educating and helping others understand that things can change. Industries that have made mistakes in the past can start going back to change things that have occurred in the past and can make a difference. It has begun to happen here already with the many stakeholders joining in the Buyout discussions, but we must continue.

If the involved Agencies, Political Representatives and stakeholders will not stand beside this community and push for the Bioremediation Grants that need to be made available, then truly you are not doing a service to this community.
Please help us bring justice to this community, stand tall beside us. Know that you are making changes not only for the future of our community, but for the future of all kinds of communities all around the Country.
IF THE WORLD WAS ONLY A FEW FEET IN DIAMETER, FLOATING ABOVE A FIELD SOMEWHERE, PEOPLE WOULD COME FORM EVERYWHERE TO MARVEL AT IT. PEOPLE WOULD WALK AROUND IT, MARVELING AT ITS BIG POOLS OF WATER, LITTLE POOLS AND THE WATER FLOWING BETWEEN THE POOLS. PEOPLE WOULD MARVEL AT THE BUMPS ON IT, AND THE HOLES IN IT, AND THEY WOULD MARVEL AT THE VERY THIN LAYER OF GAS SURROUNDING IT, AND THE WATER SUSPENDED IN THE GAS. THE PEOPLE WOULD MARVEL AT ALL THE CREATURES WALKING AROUND THE FACE OF THE BALL, AND THE CREATURES IN THE WATER. THE PEOPLE WOULD DECLARE IT PRECIOUS BECAUSE IT WAS THE ONLY ONE, AND THEY WOULD PROTECT IT SO THAT IT WOULD NOT BE HURT. THE BALL WOULD BE THE GREATEST WONDER KNOWN, AND PEOPLE WOULD COME TO BEHOLD IT, TO BE HEALED, TO GAIN KNOWLEDGE, TO KNOW BEAUTY AND TO WONDER HOW IT COULD BE. PEOPLE WOULD LOVE IT, AND DEFEND IT WITH THEIR LIVES, BECAUSE THEY WOULD SOMEHOW KNOW THAT THEIR LIVES, THEIR OWN ROUNDNESS, COULD BE NOTHING WITHOUT IT.

Please use this meeting to once again voice your concern about our toxic environment even if you are angry. Freedom of speech is a powerful tool and we need to use it. We need the help of the PRP's as well. If they do not want to put money aside for research they will put pressure on this proposal and our fight will be harder. Mr. Paine I ask that you continue to try to understand our needs and help us achieve the goals we have spoken of here tonight, so that one day we may all be proud of a job well done.
Please stand with the Del Amo Action Committee so there is no mistake that our community is united in our fight and we will continue until we achieve justice.

Reference 2

1-9-97

Randall E Hartman
20549 S. Vermont #8
Torrance, CA 90502

Dante Rodriguez (SFD 7-1)
U.S. EPA, 75 Hawthorne
San Francisco, CA 94105

Dear Mr. Rodriguez:

I am writing in regards to the Del Amo Waste Pits. I own a condo in the Ponderosa West complex just next to the Pits. What I would really like to see is monetary compensation from the creators of the toxic waste and from the government for allowing this to happen but I doubt that will never happen. I bought my condo about 6 yrs ago and have seen its value drop almost 50%. About half of that loss is because of the market but the other half I put on the fact that any time I sell, I have to show a disclaimer stating that the property is next to 2 (or is it 3 now?) toxic Superfund sites. When I purchased the condo I received no such disclaimer and was in the dark about any such sites.

This is why it is so important to stop producing toxic waste in the first place and to make and enforce tough laws controlling the manufacturing and disposal of toxic materials. As far as what to do about the Del Amo Pits I do not think that Alt. 4 is enough and would rather see excavation and removal of the waste as outlined in Alt. 5. I know it is expensive but it is permanent and nothing would ever have to be done again in the future, no continual maintenance would be required, and no VOC's would be escaping for me to breathe. Another problem with Alt 4 is that our groundwater would still be getting polluted I believe from continual seepage.

Thank you for allowing the public to comment on these proposals and for holding public meetings. Also thank you for all past and future correspondence on this issue.

Yours for a sustainable and healthy future,

Randall E Hartman

Reference 3

1706 Turmont Street
Carson, CA 90746
January 21, 1997

Dante Rodriguez
U.S. Environmental Protection Agency (SFD-7-1)
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. Rodriguez:

The purpose of this letter is to comment on your proposed plan for cleanup of the waste pits area of the proposed Del Amo Superfund site. The proposed plan was published under the title "Del Amo Proposed Superfund Site" Volume 2, Number 9, December 1996.

First, allow me to congratulate you on the fine job you have done so far keeping the public informed as you progress through a very difficult process to cleanup this site. Your documents to date, including this last one presenting your proposed plan, have been very well written. They present some very technical information in an easily understandable format.

I have a concern with the proposed plan. The proposed plan buries the waste material without treatment. It is simply left in place under a cap. The Soil Vapor Extraction (SVE) system proposed would not be applied to the waste itself. The reason given for not selecting Alternative 3 (capping only) was that it "does not meet the statutory preference for treatment". I would contend that Alternative 4 also does not meet the statutory preference for treatment in that the actual waste materials are not treated.

The claim is made that the selected alternative will "prevent contaminants in waste and soil from continuing to significantly contaminate groundwater." I agree that the SVE system will remove contaminants from soil around the waste pits; minimizing movement of contaminants during the interval the SVE system is operating. Once the SVE system is shut down, however, contaminants will once again start moving towards the groundwater from the waste pits, which will still be intact. The cap will reduce the rate of movement, but will not eliminate it. After the five-year period when the SVE system will no longer be operating, this alternative becomes identical to Alternative 3. Alternative 3 was found to be "not fully protective of human health and the environment". A similar finding should be applied to Alternative 4 after five years.

I have some questions concerning the SVE system. What is the efficiency of the SVE system? What levels of contaminants are expected to remain in treated soils? What system of treatment is proposed for the contaminants once the SVE system pulls them to the surface? Incineration? Condensation? If condensation, what will be done with the condensed liquid contaminants? What are the potential impacts of the SVE system on air quality?

An alternative not listed is the use of bioremediation within the waste pits. This site would require active aeration of the wastes in conjunction with the supply of water and nutrients to ensure active degradation of the wastes. This would not require creation of a vacuum within the waste (a consideration for not applying SVE to the wastes), but could be tied into an SVE system to treat air exhausted from the waste pits accelerating the bioremediation treatment process. An SVE system, similar to the one proposed for Alternative 4, would be required to prevent migration of

contaminants through the surrounding soils during the bioremediation process. This approach would be more expensive than Alternative 4, but probably not as costly or hazardous as Alternative 5 (complete excavation of the pits and SVE).

Thank you for the opportunity to comment on this very important issue. If you have any questions, please contact me at (310) 732-3914.

Sincerely,

Lawrence J. Smith, Jr.

Reference 4

EPA

PUBLIC COMMENT FORM

You may submit this form and any additional written comments at today's meeting or you may fold and seal this form and send it to the address on the back.

Public benefit would best be served by keeping contaminants at a minimum Bioremediation and or Remediation by other means is a choice that should be made, regardless of cost as it is a lasting solution.

Please Sign and Date: [signature] 1/29/97

Signature Date

Name Barbara Stockwell

Address 25334 Cypress St City Lomita State Ca Zip 90717

(fold here)

Place
Stamp
Here

U.S. EPA, REGION 9
DANTE RODRIGUEZ (SFD-7-1)
75 HAWTHORNE
SAN FRANCISCO, CA 94105

(Staple or tape to seal)

EPA

PUBLIC COMMENT FORM

You may submit this form and any additional written comments at today's meeting or you may fold and seal this form and send it to the address on the back.

With all things considered, I support the remedy for the Del Amo Pits. However I feel the proposed cap leaves much to be desired. When better technology becomes available it should be applied here. Do not consider this matter closed.

Please Sign and Date: Robert A. Frame (Signature) 2/4/97 (Date)

Name ROBERT A. FRAME

Address 1005 W. 204th ST City TORRANCE State CA Zip 90502

Reference 6

Toxics Assessment Group

RESEARCH·AND·CONSULTING·SERVICES

PO BOX 73620
DAVIS CA 95617-3620

TELEPHONE (916) 753-0277
FAX (916) 753-5318

February 13, 1997

Dante Rodriguez (SFD-7-1)
Del Amo Project Manager
USEPA, Region 9
75 Hawthorne Street
San Francisco CA 94105

Re: Comments on the Final Focussed Feasibility Study Report (FFS) for the Del Amo Waste Pits

Dear Mr. Rodriguez,

On behalf of the Del Amo Action Committee (DAAC), the Toxics Assessment Group has reviewed the FFS. We offer the following comments, which are generally focussed on the effect on the community and are written from the perspective of the DAAC.

A technical critique would be of little value because the protocols in place for a remediation process are such that technical comments will have no impact unless we could demonstrate an inconceivable level of incompetence or premeditated malfeasance. Rather than spending our time on pointless technical nit-picking, we have explained what we do not have as a result of the process and what it is that we want.

SUMMARY

The community prefers Alternative 5, ("Complete excavation of waste and vapor extraction of contaminated soil") which actually makes an effort to clean up the site, over Alternative 4, which is "cap and suck." This preference is expressed with full understanding that short-term impacts of Alternative 5 are significant and are measured in years, and that disruption of the community during cleanup will be substantial. However, other alternatives do not remove the hazardous wastes and offer less long-term assurance of protection of public health and the environment.

The preferred alternative of USEPA, Alternative 4, costs an order of magnitude less to implement, because excavation of the waste materials is not part of the plan. Intuitively, however, since more waste material remains in the ground, the long-term assurance to the community is less.

The sad fact of cleanup efforts at the Del Amo Waste Pits, as at most other significantly contaminated sites, is that full cleanup is not economically (at least in the short-term) or technically realistic. There will some amount of toxic material left at the site no matter what option is selected. The security of the community that no health risks exist due to hazardous wastes is gone forever, regardless of any technical or administrative reassurances that may be forthcoming. Residents in the Del Amo community can never again feel entirely secure that their persons and property are free from toxic hazard.

Unfortunately for the community, what we really know after all the investigation is that our neighborhood will never be cleaned up. The best cleanup alternative for the Del Amo Waste Pits, which is unlikely to be implemented because of cost, still leaves tens of thousands of cubic yards of contaminated soil in place. The other alternatives don't even pretend to remove the worst of the contamination. And none of these alternatives even addresses groundwater contamination or DDT contamination.

Since the choices of the community range from less-than-desirable to downright awful, we feel that we can at least contribute something to make things better by using our site as a demonstration for evolving remediation technology. The Del Amo Action Committee favors using our plight to do some good for other communities which will be faced with similar problems in the future.

The Del Amo Waste Pits site offers a good opportunity to explore remediation technologies, such as, for example, a bioremediation demonstration project. Either Alternative 4 or Alternative 5 will result in a considerable amount of local disruption of the site. Both options will require many borings to install the SVE system. This offers a great opportunity to integrate a technology demonstration project at relatively low marginal cost. Both installation and monitoring can be included in the design of the system.

Most of the chemical species identified are reasonably susceptible to bioremediation; the relatively low concentration of halogenated compounds contributes to the suitability of the site for bioremediation.

COMMENTS ON THE BASELINE HEALTH RISK ASSESSMENT

A baseline health risk assessment is a regulatory construct which allows risk assessors to evaluate potential adverse health risks presented by the contaminated site. This information may ultimately assist the risk managers in determining the appropriate remediation of the contaminated site. The health risk assessment looks at chemical contamination and weighs the risks to the potentially exposed population. However, no matter how complete, a health risk assessment has limitations which must be understood. The following points are made regarding the overall adequacy of the health risk assessment concept in assigning risk in the site remediation process (we do not claim that this list is exhaustive):

1) Health risk assessments often suffer from a lack of information about the health effects of chemicals. The risk assessors do not know the impacts of all the chemical (and associated transformation products) that may be present at the site;
2) Risk assessors are not able to assess the impacts of a complex mixture of chemicals, including possibly significant synergistic effects;
3) Health risk assessments suffer from a lack of information about the fate, transformation, and movement of chemicals through complex environments;
4) Unseen spatial and chemical heterogeneity may severely limit the usefulness of a health risk assessment (i.e., the risk assessors cannot evaluate what they do not know is there);
5) Assumptions regarding exposure must be presented clearly and must be relevant to the potentially exposed population;
6) Frequency of exposure, duration of exposure, routes of exposure and other factors must be applicable to the site and the population at risk;
7) Health risk assessments are no stronger than the data on which they are based;
8) The chemical sampling data are especially important. The risk assessors must rely on well-characterized sampling and analytical data that are complete and representative; and
9) Reasons for rejection of data from health risk assessments must be clearly presented.

In addition, it is important to note that the question that has been most asked by the community is whether or not their health has been compromised by past exposures to toxic wastes. Under the baseline line health risk assessment construct, that question is not answered in a baseline health risk assessment process.

Finally, it is important to identify what a baseline health risk assessment does <u>not evaluate</u> when considering the impacts on human health. The following points help demonstrate what a health risk assessment <u>does not</u> evaluate:

1) Health risk assessments do not address genetic differences that predispose an individual to risk;
2) Health risk assessments do not address variability associated with gender, age, diet, preexisting disease conditions, impacts on embryos and infants, or exposure to mixtures of chemicals;
3) Health risk assessments do not address teratogens, neurotoxicity, reproductive health and fertility, immune suppressants, or immune-compromised people; and
4) Health risk assessments do not address the cumulative or synergistic effects of chemicals on human body.

The value of a Baseline Health Risk Assessment to an affected community is debatable, though preparation of a Health Risk Assessment is required under the

National Contingency Plan. Usually, health effects due to exposure to toxics in the soil are chronic and subtle. It is not like dealing with a plane crash, where the effects are acute and easily observable, and the symptoms are easily related to cause. The protocols in place for assessing health effects in a Baseline Health Risk Assessment virtually guarantee that no significant health effects will be identified. The limitations of a Baseline Health Risk Assessment identified above, put in the context of a culture where one in every three or four people develop cancer over a lifetime, assure that almost any effects to exposure to toxics will disappear into "background noise." This is in fact what usually occurs. How many Baseline Health Risk Assessments have you ever seen that show significant risk for a community?

Of course, cancer is not the only risk, and not the only effect. Baseline Health Risk Assessments do not even measure most other types of demonstrable physical ailments, and make no effort to measure stress or loss of enjoyment due to discovery of toxics. The effects of stress are constant and insidious, and are not considered in a Baseline Health Risk Assessment. We know that our neighborhood has been effectively destroyed as a comfortable place to live, a place to call home. It doesn't matter what a carefully constrained "assessment" says. We know that people have been made sick, or worse, and that our homes are no longer comfortable and safe to live in. The stress of the situation makes everything worse, and compromises the health of those people whom the toxics haven't already affected. All the number crunching in the world can't change reality.

LET'S GET SOMETHING POSITIVE OUT OF THIS SITUATION

The plain fact is that none of the alternatives offered the community represents full cleanup and restoration of the local environment to its pre-contamination state. Even Alternative 5 leaves tens of thousands of cubic yards of contaminated soil in place with a Soil Vapor Extraction system in place to try to minimize future exposure of the residents to toxic soil gas. Alternative 4 offers no removal at all, just a cap and Soil Vapor Extraction. While this alternative is so much cheaper in the short run that it will no doubt be the one chosen, it is certainly not the first choice of the community. Alternative 4 may well wind up costing far more in the long run as well; thoughts of Stringfellow and Casmalia come to mind as examples of state-of-the-art situations at the time that have proved to be disastrous in the long run. Knowledge of such experiences does not lend confidence to the Del Amo community that our situation will be different over the long term.

Whether Alternative 5 or Alternative 4 is chosen, the community seriously wants to see something positive emerge from our unfortunate experience. Therefore, we strongly urge that our site be used for a demonstration project in experimental remediation technology. It appears to us that our situation may be particularly well suited to a bioremediation research project, but we don't necessarily want to limit our request to bioremediation. However, given the species of chemicals identified, the clear problems identified with excavation at the site, and the planned installation and operation of a soil vapor extraction system, it appears to us that a bioremediation

research project is a good fit. A properly designed demonstration project could provide information that would be of value to other impacted communities.

Thank you for the opportunity to comment.

Sincerely,

Cynthia L. Babich

Cynthia Babich
Del Amo Action Committee

Thomas C. Sparks

Thomas C. Sparks
Toxics Assessment Group

Reference 7

Shell Chemical Company
Shell Oil Products Company

P. O. Box 25370
Santa Ana, Ca 92799

3611 S. Harbor, Ste 160
Santa Ana, Ca 92704
714-427-3401
714-427-3469 (Fax)

February 3, 1997

Mr. Dante Rodriguez
Remedial Project Manager
U.S. Environmental Protection Agency
75 Hawthorne Street
San Fransisco, CA 94105

RE: Proposed Plan, December 1996
Del Amo Waste Pit Area

Dear Mr. Rodriguez:

The Respondents have reviewed the Proposed Plan for the Del Amo Waste Pit Area. The purpose of this letter is to transmit our comments on the plan and to provide a framework for remedy design and implementation.

The Respondents believe that the Proposed Plan is comprehensive, informative and balanced. The document reflects significant effort on the part of the agency, and is well written and easy to understand. The Respondents agree with the Proposed Plan and the selected remedy and appreciate the work which has been done to ensure that the Proposed Plan accurately represents the facts as supported by existing data and analyses. The Respondents look forward to working closely with EPA in the future to develop and further refine the design of the selected remedy so that it provides reliable, long-term protection of human health and the environment, is easy to implement and maintain and is cost-effective.

The Respondents believe that: (1) the available data and analyses support EPA's conclusion that a RCRA-equivalent cap plus soil vapor extraction is more desirable than excavation as the remedy for the site, and (2) flexibility must be maintained in the final design of the cap and the design of the SVE system which are included in the selected remedy to ensure that it is effective and practical and that it provides significant benefit (i.e. reduction of existing or potential exposures) without excessive cost.

Attached to this letter are comments from the Respondents regarding both of these issues. Included are comments which address how the Proposed Plan discusses the risk assessment, remedial alternatives, and the selected remedy. There are also comments which address the design of the remedy and the development of performance standards as discussed in the Proposed Plan Supplement. The Respondents believe the issues identified in this second set of comments can best be addressed either in the ROD or during remedial design and we look forward to assisting EPA during further evaluation of these issues in whatever way is most appropriate.

COMMENTS ON PROPOSED PLAN
DEL AMO WASTE PIT AREA
DATED DECEMBER 1996

Selected Remedy

Page 5, Alternative 3 Description - The Proposed Plan lists layers of material which are included in a "typical" RCRA-equivalent cap. A RCRA-equivalent cap is one which is designed and constructed so as to meet RCRA performance standards, regardless of the type of material which is used. RCRA and EPA guidance on RCRA caps lists performance standards but avoids specifications regarding the type of material to be used. The Respondents agree with RCRA and the EPA guidance because it encourages flexibility when designing these types of caps and covers.

Page 6, Column 1, 1st Partial Para. - As clarified later in the Proposed Plan, the SVE system would be applied to soils in a vertical extent from 5 feet below the waste pits to above the groundwater. The reference here to soils "adjacent" to the pits implies application of SVE to shallow soils around the perimeter of the pits. The Respondents believe that the design of the SVE system as described later in the Proposed Plan is adequate without extraction wells in shallow soil around the pits.

Page 6, Third Full Para. In Column 3 - The cost which is listed in the Proposed Plan for Alternative 4 is included in the range of costs which are shown in the FFS Report for this alternative, although neither the Proposed Plan nor the FFS Report provide information about the development of this cost estimate or the items which it includes, as the FFS Report does for all of the other alternatives. EPA should explain why the cost which is listed here differs from the FFS Report so that it may be reproduced by the reader from documents available in the Administrative Record.

Page 7, Reasons for EPA's Proposed Remedy, 2nd Para. - The next to the last sentence in this paragraph implies that EPA could buy residential property or permanently relocate people. The last sentence in this paragraph implies that the remedy which has been selected would be inadequate if buy-out does not occur. The Respondents believe both implications to be incorrect. Therefore, these sentences should be modified to say that if buy-out fails, the EPA may need to re-evaluate the alternatives and/or work with the Respondents to implement Alternative 4 in a way which ensures that the concerns of nearby residents are adequately addressed.

Remedy Design and Supplement ***(may be best addressed in ROD or during remedial design)***

Page 6, Column 2, Para. 4 - This paragraph states that the SVE system would be required to operate for five years to meet short-term performance standards. Since the design is conceptual, this assumption is appropriate for purposes of the Proposed Plan. However, the Respondents believe that before the remedy is built as well as while it is in operation additional work will be necessary to verify this assumption.

Supplement to the Proposed Plan - The Supplement contains several SVE design assumptions which appear to be reasonable for purposes of the Proposed Plan given that the design of the remedy is conceptual. These include the assumption that an SVE system which targets both coarse- and fine-grained soil would provide greater groundwater protection, that this system would be adequate to address uncertainties in site specific data, and that this system would provide the "widest reasonable buffer" between the contamination in the pits and groundwater. The conceptual design of the SVE system included in the Proposed Plan is adequate for screening of alternatives and final selection of a remedy. However, the Respondents believe that those assumptions should be revisited during preparation of the ROD and/or during remedial design to ensure that the SVE system is reasonable, practical, and cost effective (criteria which are listed in the Supplement). Some of the specific assumptions which the Respondents believe should be revisited at that time are discussed below.

The text on page 2 of the Supplement states that there is higher certainty that groundwater will be protected with Scenario 2. This assumes that protection of groundwater in soil below the pits would be improved by the application of SVE to fine-grained soil in addition to coarse-grained soils. However, protection of groundwater may be achieved by application of SVE to coarse-grained soil alone (e.g. establishing a containment layer in the coarse-grained soils).

The text on page 3 of the Supplement, Soil Contribution to Groundwater, paragraph 1, indicates that there is a need to split the difference between the range of attenuation factors, although there is no documentation in either the Proposed Plan or the FFS Report which supports selection of 10 as an appropriate value. It may be more appropriate to select a value of 100 since it is often assumed for evaluation of waste at RCRA facilities. Assuming that an attenuation of 100 is appropriate, and assuming EPA's incremental increase of 0.5 percent is appropriate, Case 3 from Table 1 of the Supplement should be chosen for use in selecting the performance standards used to design the SVE system. Since attenuation is affected by the distance of travel, permeability, carbon content and moisture content of soil, another approach would be for EPA to use different attenuation factors for different soil types at various distances above groundwater.

This same section discusses the definition of a "significant" incremental increase in groundwater concentrations. The Respondents believe that neither the Proposed Plan nor the FFS Report provide rationale which support the assumption that an incremental increase of 0.5 percent would be insignificant while one of 2 percent would be significant and it is noted that in many engineering disciplines, either of these (e.g. less than one order of magnitude) would be considered negligible. EPA may want to consider defining significance in terms of the impact that the increase in concentration has on the effectiveness of the remedy which is ultimately selected for groundwater. For example, a significant incremental increase in groundwater concentration is that increase which measurably reduces the effectiveness of the groundwater remedy selected for implementation at the site.

We believe that further evaluation of these issues is needed to refine the design of the selected remedy so that it provides reliable, long-term protection of human health and the environment, is easy to implement and maintain and is cost effective. The Respondents will assist EPA in whatever way is most appropriate in evaluating these issues further during preparation of the ROD and/or remedial design.

Please contact me if you have questions about any of the comments or require additional information.

Sincerely,

C.B. Paine /DFL

C.B. Paine
Coordinator for Respondents

Attachment

cc: Gloria Conti, DTSC
Larry Bone, Dow
John Gustafson, Shell
John Dudley, Dames & Moore
Dave Laney, Dames & Moore

Reference 8

Proposed Plan 11-6-96
Attachments

Fax sheet

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

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Phoenix, Arizona 85020
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602 861 7431 Fax

cc:

To	Company	Fax Number
Mike Montgomery	EPA	(415)744-1796
Janet Rosati	EPA	(415)744-1917

From: DAVE LANEY
Date: 11/6/96
Subject: Del Amo Proposed Plan
No. of pages: 3 Including cover sheet Task/Job No. 00216-494-137

Chuck Paine asked me to send this to you for use in the Proposed Plan for the Waste Pit Area

Operator _____
Date/Time _____

11/06/96 WED 12:53 [TX/RX NO 6231]

The Proposed Plan should identify the elements of the remedy (i.e. RCRA-equivalent cap + SVE) and should indicate that the design and cost of the remedy will depend on the performance standards which are selected. The Proposed Plan should identify and discuss the performance standards which have been agreed to by EPA and the Respondents and present the range of costs which correspond to the various standards which are currently under consideration. The two options include:

Option 1 for Presentation of Cost

Cost of remedy (assuming this is Alt 4) using minimum SVE system = $4.9 to $10.4 million
Cost of remedy (assuming this is Alt 4) using maximum SVE system = $5.1 to $15.4 million

It should be noted that this information has been added to page 7-39 of the FFS Report at the request of Janet Rosati in response to comments in a letter dated October 18, 1996.

Option 2 for Presentation of Cost

Cost of remedy = $5.6 to $8.98 million

This range assumes that the remedy will be either Alternative 4 or 4A (see attached table).

COST ELEMENT	ALTERNATIVE 4[1]	ALTERNATIVE 4A (EPA PROPOSED REMEDY)[2]
1) RCRA-Equivalent Cap		
a. Capital Costs	$2,670,000	$2,670,000
b. O$M Costs (30 years)	$1,410,000	$1,410,000
Subtotal (1a+1b)	$4,080,000	$4,080,000
2) Soil Vapor Extraction		
a. Capital Costs	$970,000	$3,620,000
b. O&M Costs	$550,000 (3 years)	$1,280,000 (5 years)
Subtotal (2a + 2b)	$1,520,000	$4,900,000
TOTAL	$5,600,000	$8,980,000

add 1360,00

[1] The SVE system which is included in this alternative includes ~~20 extraction~~ wells and 10 monitoring well clusters (30 depth discrete monitoring locations) and targets coarse grained vadose zone soil only.

[2] The SVE system which is included in this alternative includes 140 extraction wells and 18 monitoring well clusters (54 depth discrete monitoring locations) and targets both fine and coarse grained vadose zone soil. It is the same as Scenario 2, Case 2 shown in Table 8.4-1 of the FFS Report.

Total Alternative (1)+(2): Capital = 2,670,000 + 3,620,000 = 6,290,00
O&M = 1,410,000 + 1,280,000 = 2,690,00
TOTAL = 4,080,000 + 4,900,000 = 8,980,00

THE EOP GROUP

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PLEASE DELIVER AS SOON AS POSSIBLE

TO: John Wise, EPA Regional Administrator
tax: 415 744-2499

FROM: Michael O'Bannon

DATE: 2/13/97

NUMBER OF PAGES: (including cover)

MESSAGE:

John,

Per our discussion this morning, here are the documents we need to take action on.

Michael

THE EOP GROUP, INC.

TALKING POINTS CONCERNING SOIL VAPOR EXTRACTION SYSTEM FOR DEL AMO PITS PROPOSED PLAN

Background

- EPA staff have drafted the proposed plan for the Del Amo pits remedy. A promulgated Record of Decision for the pits is an integral part of the comprehensive settlement for the site.

- While the respondents agree with the general type of remedy, a cap, they are concerned with the scope of the soil vapor extraction system (SVE). The SVE system will substantially block contaminated gases migrating from pits or from the underlying soils to the groundwater.

Issue

- The goals of the SVE system, including its scope, size, and cost.

Technical Analysis

- Benzene migrates in the soil gas from the pits to the groundwater. The groundwater underneath the pits already has very high concentrations of benzene, approximately 400,000 parts per billion (ppb). The SVE system will control the amount of additional benzene reaching the contaminated groundwater.

- The Focused Feasibility Study (FFS) explored two control percentages -- 0.5 percent and 2 percent of the benzene concentration in the groundwater. Therefore, if the groundwater remedy reduces the benzene concentration in the groundwater, the pit remedy will also adjust to ensure that gas migration does not significantly contribute the concentration in the groundwater.

- The other design variable is where to place to SVE wells. The ground beneath the pits varies in permeability. The respondents proposed to place the SVE system only in the more permeable, coarse-grained soil layers. However, based on EPA staff comments, the respondents also evaluated a more complex system which also would extract vapors from the lower permeability layers.

- The EPA staff approach would require many more wells to achieve the same interception percentage. Be cause some of the soil layers are much less permeable, wells attempting to achieve the goal in these layers will not have as large of an areal zone of influence.

- Monitoring suggests that the groundwater plume beneath the pits has reached a steady-state between lateral expansion and decay. Therefore, an intensive SVE system is not necessary to halt the lateral migration of the plume.

- EPA staff also suggest that a n intensive SVE system must clean up the soils so that rising groundwater

- In addition, the more aggressive SVE system increases the chance that the SVE system will extract benzene from the capillary fringe between the vadose and saturated zone. In other words, the EPA staff SVE system is likely to extract benzene from the highly-contaminated groundwater.

Policy Analysis

- The goals of the SVE system must be considered in the context of both the groundwater and the pit remedies. While the groundwater remedy has not been selected, it is reasonable to expect that the area immediately below the pits will be contaminated for a long time.

- The respondents proposed the 2 percent control objective for the SVE system. Given the high level of contamination in the groundwater and the lack of lateral migration of the current, uncontrolled plume, the additional stringency of the EPA staff alternative is unnecessary.

- The more expensive SVE system will not reduce human or ecological exposure to groundwater contamination. It will also not reduce potential exposure since the plume is not migrating beyond its current lateral extent.

- The SVE system designed to prevent further migration to groundwater, not to clean it up. EPA will address the groundwater remediation in the near future.

- The EPA staff SVE design is more complex and prone to equipment failure. If the SVE system is out of service more frequently due to repairs, the net flux of benzene to the groundwater could be comparable to the 2 percent system.

- Therefore, the respondents believe spending an additional $3.7 million (present worth) to reduce the input concentration from 1/2000 to 1/8000 is not a cost-effective expenditure.

THE EOP GROUP, INC.

Next Steps

The ROD should contain a less complex and costly SVE system for the pit remedy.

DAMES & MOORE
A DAMES & MOORE GROUP COMPANY

Fax sheet

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To	Company	Fax Number
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Chuck Paine	Shell	(714)427-3469
John [redacted]	Shell Westhollow	(713)544-8727
John Dudley	D&M SBA	

From: Dave Lanoey

Date: 1/24/97

Subject: Non-technical Comments on Proposed Plan

No. of pages: 4 including cover sheet

Task/Job No.: 00216-494-139

Operator _____

NON-TECHNICAL EDITORIAL & TYPOGRAPHIC CORRECTIONS

1 The use of the term "cleanup" throughout the Proposed Plan and Supplement may invoke a different mental image in the public than may be merited given the remedy which is proposed. If this term means restoration, neither a cap nor the SVE system will "cleanup" waste or contaminated soil. Use of "remediation", "remedial action" or "response action" may be more appropriate.

2 Data are generally plural, not singular (see Page 2, 4th Full Para., 3rd and 4th sentences).

3 The term "Waste Pit Area" should be capitalized whenever used. Because it is better defined, it may be beneficial to use this term in place of "waste pit property", the "Del Amo Waste Pits", etc.

4 Page 4, Item No. 2 - Uncertain Long-term Controls - Several rather absolute statements are made in this section. Example No. 1: "There is a significant possibility that exposures will occur in the future." Example No. 2: "There is significant uncertainty about whether existing controls will be maintained as long as waste remains in place." The documentation to support these statements is missing from the Proposed Plan and the FFS Report. Furthermore, use of the term "significant possibility" raises a question as to whether or not this is the same as a "probability". Perhaps these sentences should be reworded to improve their accuracy and/or a reference should be provided to show work that EPA has done at this, or other sites, which support the statements as they are currently worded.

5 Page 5, Alternative 3, Last Bullet - As written, it sounds as though the concern is that rainwater will wash soil into groundwater. Shouldn't the word "contaminants" be inserted into this sentence?

6 Page 5, Last Two Bullets In Column 1 - The objectives of the cap which are included in Alternative 3 are the same as the objectives of the cap included in Alternative 4. However, the way the objectives for Alternative 4 are worded in the fourth and fifth bullets at the bottom of the second column on page 6 are different than the way the objectives for Alternative 3 are worded. Presumably, the reason for this difference is that the objectives in question for Alternative 4 include both a cap and SVE. Wouldn't it be better if the objectives for both alternatives were the same when discussing the cap? Wouldn't it be better if objectives for SVE were listed separately from those of the cap for Alternative 4?

7 Page 12, Reduction of Toxicity, Mobility and Volume(TMV) Through Treatment - It appears that TMV is abbreviated in the title of this section but is used inconsistently or not at all. Regardless of which is the most appropriate, wouldn't it be preferable if consistent use of either the abbreviation or the full name occurs in the Proposed Plan and the ROD?

8 Supplement, Page 1, Purpose of Soil Vapor Extraction, Para. 3, 3rd Sentence - Would it be better to say "waste pits incremental groundwater contribution" rather than "waste pits incremental groundwater concentration"?

9 Supplement, Throughout - It is noted that the terms "technical options", "SVE scenarios", and "cases" are used throughout the Supplement. Wouldn't it be better if these terms were defined or if they refer to the same thing, that only one of the terms be used consistently throughout the Supplement?

TECHNICAL CORRECTIONS TO BACKGROUND INFORMATION

1 **Page 1, Para. 5/Figure 1** - The Proposed Plan and Figure 1 imply that Waste Pit Area excludes Lot 37 (Eastern Evaporation Pond and Pit 1-A) and is 3.7 acres in size. It also appears as though the 2 series pits shown on Figure 1 are out of position and too close to houses. The Respondents have been required to survey the Waste Pit Area and prepared numerous detailed plans, maps and figures of the Waste Pit Area over the last 12 years and would appreciate an opportunity to assist EPA by providing figures of the Waste Pit Area to the agency for use in future publications.

2 **Page 1, Para. 7 (2nd Para. Under Site Characteristics)** - Average depth of waste below land surface in 1-series pits is 9 feet while the depth to the base of the waste in the 2-series pits is 21 to 32 feet.

3 **Page 2, 1st Partial Para.** - While the "lateral extent of the contamination is confined within the inner fence area" it is primarily in a limited area directly below the outline of the former waste pits and ponds. As written, the text implies uniform or extensive contamination out to the fence line which is not the case. There are significant areas within the fenced area which are not contaminated above levels of concern.

4 **Page 2, 2nd Full Para:** - While H_2S emissions do occur when waste is exposed to air, the waste must also be disturbed. It is unlikely that exposure to air would cause H_2S emissions.

5 **Table 1** - When providing information about the concentration of Total VOCs and Total SVOCs in soil beneath and adjacent to the waste pits, it is important to note the proximity of this soil to the waste. For example, most of the highest concentration of soil contamination is within 5 feet of the waste.

6 **Page 6, Column 1, 1st Partial Para.** - While it is true that the use of SVE in waste would be ineffective, the statement "The SVE system would not be applied to the waste material itself, because it is too dense to create a vacuum" provides an inaccurate description of the reason why this is so. Creating a vacuum locally around an extraction well in dense, non-permeable materials such as the waste is easy. The low permeability (ability to transmit flow) of the material limits the flow rate of air that can be generated even at very high applied vacuums. It is this low flow rate which limits the effectiveness of physical separation techniques such as SVE in dense, non-permeable materials such as the waste.

7 **Page 7, Reasons for EPA's Proposed Remedy, 1st Para.** - EPA should check with the Deparment of Toxic Substances Control (DTSC) to see what it would like to be called. In the past, it has preferred "the Department" to DTSC. This paragraph uses both. The same convention should be used throughout the Proposed Plan and the ROD.

8 **Supplement, Page 2, Box** - The use of the word "pure" to describe a NAPL may be confusing to some readers. Some NAPLs are mixtures of several or many chemicals and thus, they are not present in their pure form. By the definition given for NAPL here, there are no NAPLs at the Del Amo site since there are no examples of "pure" benzene. A NAPL is a free liquid that is a separate phase (i.e. liquid gasoline) from the moisture, vapor or solid components of the soil matrix.

ADMINISTRATIVE AND PROCEDURAL CLARIFICATIONS

Page 1, Para. 5., Sentence 2/Page 7, 3rd Para./Supplement Page 1, Purpose of Soil Vapor Extraction, Para. 1 - It appears that the Proposed Plan refers to the remedy as an interim measure for waste, soil and/or groundwater. It was the Respondents' understanding that the selected remedy is a final and not an interim remedy for waste and soil, and because it specifically excludes remedial technologies for remediation of contaminated groundwater, it is not any kind of remedy (interim or otherwise) for this media. To say that the remedy is an interim fix for waste or soil implies that further action may be taken in the future to replace of significantly augment the remedy – something which the Respondents believe will be unnecessary. To say that this is a groundwater remedy implies active remediation of this media – something which is missing by intention from the conceptual design of all alternatives in the FFS Report.

Page 1, Column 2, 1st Para. - The Proposed Plan appears to say that "Subsurface Gas" is a media which must be treated separately from waste and soil. "Subsurface Gas" is part of waste or "soil" and should not be considered as a separate media to be addressed by the remedy. The remedy addresses the contamination through "subsurface gas" (i.e., the use of SVE or concern over potential emissions during excavation) and uses it as an indicator of clean-up effectiveness because it is the most mobile phase of the waste or soil matrix and some of the contaminants of concern are volatile. However, a goal of the selected remedy is not to clean-up subsurface gas but rather to clean-up the soil (not waste since SVE is not applicable) via technologies which effect clean-up via the subsurface vapors.

Page 4, Item 1 (Preference for Treatment)/ Page 7, Reasons for EPA's Proposed Remedy, 5th Para./Page 12, Reduction of Toxicity, Mobility and Volume - The Proposed Plan appears to say that any alternative that does not include treatment as a principal element should be rejected as the remedy. EPA's interpretation of the NCP and CERCLA on this point has changed over the years and several policy memoranda and/or directives from Washington have recently been issued which suggest that containment and treatment and/or containment alone is acceptable, under certain circumstances.

Page 4, Item 4 (Compliance with ARARs) - The Proposed Plan says that EPA has determined that the waste pit remedy must comply with RCRA closure and post-closure requirements. However, since the waste was deposited at the site before the enactment of RCRA and since it will not be excavated as part of the selected remedy it is very unlikely that these requirements are applicable for the remedy. EPA should be careful to acknowledge this important distinction whenever discussing how the remedy will need to comply with RCRA. Perhaps it should be stated that the remedy will comply with the substantive closure and post-closure requirements under RCRA but will not obtain RCRA permits.

Page 6, First Full Para. In Column 3 - Why does this paragraph mention RCRA requirements for groundwater monitoring for Alternative 4 when discussion of the other alternatives merely says "groundwater monitoring"? Wouldn't it be better to be consistent with the writeup for all other alternatives and the FFS Report?

Reference 11

Cal/EPA

Department of
Toxic Substances
Control

245 West Broadway,
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Long Beach, CA
90802-4444

February 7, 1997

Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

Mr. Dante Rodriguez
U.S. Environmental Protection Agency
Region IX
Mail Code SFD-7-1
75 Hawthorne Street
San Francisco, California 94105

Dear Mr. Rodriguez,

PROPOSED PLAN, DEL AMO WASTE PIT AREA

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced document, dated December, 1996, and attended the public meeting, held on January 29, 1997. The following comments pertain to the Final Focused Feasibility Report and the Proposed Plan:

1. DTSC's comment letter of November 12, 1996, on the Final Focused Feasibility Study, dated December 10, 1996, has not been addressed in the Proposed Plan.

2. DTSC's letter on State Applicable or Relevant and Appropriate Requirements (ARARs), dated August 7, 1996, was not completely addressed in the Final Focused Feasibility Study report.

Therefore, at this time DTSC does not concur with the Proposed Plan remedy until these issues are resolved.

If you have any questions or would like to schedule a meeting to resolve these issues, please contact Ms. Gloria Conti at (562) 590-5566. Thank you.

Sincerely,

Haissam Salloum

Haissam Y. Salloum, P.E.
Unit Chief
Site Mitigation Cleanup Operations
Southern California Branch(B)

cc: See next page

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Date: 12/11/96	# of Pages (including cover): 10
To: Dante Rodriguez	From: Gloria Garti
Co./Dept.	Co.
Phone #	Phone #
Fax #	Fax #

Subject:
Del Amo Final FFS Comment letter

Comments:

- ☐ Urgent-Hand Carry!
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Cal/EPA

Department of
Toxic Substances
Control

245 West Broadway,
Suite 425
Long Beach, CA
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Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

December 11, 1996

Janet Rosati
U.S. Environmental Protection Agency
Region IX
Mail Code H-7-1
75 Hawthorne Street
San Francisco, California 94105

Dear Ms. Rosati,

FINAL FOCUSED FEASIBILITY STUDY REPORT, DEL AMO WASTE PIT AREA

The Department of Toxic Substances Control (DTSC) has reviewed the above referenced document, dated September 4, 1996, as well as the responses to our comments to the previous Final Focused Feasibility Study Report (FFFS), dated September 30, 1996. The following are DTSC's Geologic, Engineering, and Toxicological comments.

SPECIFIC GEOLOGIC COMMENTS

1. Page 7-27 states that "at a minimum, this system would include vapor extraction wells located beneath each waste pit and multiple completion monitoring wells at the end of and in between each pit". Monitoring points are also necessary on the north and south sides of the pits at various depths. At a minimum there should be one set of monitoring points no deeper than the pits themselves and another set placed deeper than the pits. The spatial variability of the sediments makes it unreasonable not to monitor the sides of the pits. It can not be assumed that the performance observed between the pits will be the same as that on the sides of the pits. In addition, since there will be no remediation of the pits themselves, monitoring on the sides of the pits is necessary to demonstrate that the conditions used in the risk assessment remain relatively unchanged.

2. The report states that the groundwater in the vicinity of the Del Amo Pits has been rising at a rate of one foot per year. The capillary fringe

above the water table may be somewhere between five to ten feet depending upon the grain size of the deposits. Once the capillary fringe rises into the vapor extraction wells the radius of influence will be greatly reduced because it is not possible to get airflow through a saturated media. The conceptual plan for the SVE system does not include a contingency plan to deal with the rising groundwater. The rising groundwater must be taken into consideration at this point in the process in order to ensure that a viable extraction system is eventually designed and constructed.

3. Table 7.0-4 "Summary of Analyses for Short-Term Effectiveness Del Amo Waste Pit Area" indicates that remedial response objectives will be reached for Alternative 4 in eight months to a year. It is not clear how the system will be monitored after the response objectives are reached. The continued monitoring is important for a variety of reasons. For example, the soil may become re-contaminated by diffusion from the waste pits above the soil; depending upon the design of the SVE system unscreened zones within the soil may re-contaminate the screened zones through diffusion; and cleanup goals for groundwater will change the goals for the contaminated soils. In addition, since the soils may become re-contaminated, the eight month to one year operation time may be an underestimate of the amount of time the SVE system will need to operate. Continued monitoring and potential restart of the SVE system must be clearly addressed if SVE is chosen as the remedial alternative.

GENERAL ENGINEERING COMMENTS

Included in the following sections are clarifications in support of DTSC comments to the responses made by Dames & Moore, regarding the cost analysis DTSC performed on Alternatives 3 and 4 utilizing the RACER cost estimating software. These clarifications were performed by Mr. Jesus Sotelo, for Alternative 3, and Mr. Bal Lee, for Alternative 4, of DTSC's Engineering Services Unit, and the detailed cost estimates can be provided upon request. While there remain discrepancies between DTSC's cost estimates and the FFFS, the cost estimates presented fall into the

acceptable accuracy range of + 50 percent to -30 percent as specified in EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (October 1988).

1. The Report now refers to a performance standard for Soil Vapor Extraction (SVE) that will be tied with the goals for a ground water remedy. The ground water remedy is to be selected after the remedy for the waste pits. For this performance standard, the SVE treatment system's purpose is to reduce soil contaminant concentrations below the waste pits. The concentrations will be reduced to a level such that once the contaminants reach the ground water, the contaminant concentrations are no more than the Maximum Contaminant Level (MCL). Given that a ground water remedy has yet to be selected, we concur with this approach for minimizing further impacts to the ground water. However, we request that the following additional information be provided:

   a) A proposed monitoring plan, including monitoring of lateral migration of all contaminants (including Volatile Organic Compounds (VOCs)) from the waste pits, to assess when clean-up objectives have been met;

   b) Physical parameters to be measured to assure the clean-up objectives have been met; and

   c) Proposed ground water monitoring methods for determining ground water impacts based on the physical parameter measurements.

2. As recommended in DTSC's previous comments, we suggest that the SVE treatment system be extended to incorporate contaminated soil regions beyond the footprint of the waste pits, but terminating above the capillary fringe. This suggestion is based on the following reasons:

   a) one of the 4 principle goals which the cap and SVE system will address is to "protect future ground water users from contaminants which may leach out of the pits in the future," as stated on page 7-26 of the Report. This goal is indicative of the

potential of contaminant migration beyond the pits' perimeters; and

b) reiterating previous comments, Figures 2.2.2-2, 2.2.2-3, 2.2.2-7, 2.2.2-8, and 2.2.2-9 indicate numerous zones of contaminated soil at various depths which extend beyond the pits' perimeters. Infiltrating rain water migrating through these contaminated soil zones will move unabated to the ground water. The capture zone of the SVE treatment system should be thick enough to prevent impacted rain water infiltration from migrating to the ground water. The Final Report should contain modeling based justification to show the proposed thickness of the capture zone will prevent this possibility.

3. DTSC concurs that the graphical representation indicating the areas of proposed treatment beneath the waste pits is not applicable for alternatives 1, 2, and 3. However, a graphical representation would clarify proposed treatment areas for alternatives 4 and 5 beneath the waste pits. We reiterate the need for a graphical representation of the extent of contamination for proposed interim treatment for alternatives 4 and 5. We suggest Figures 7.4.1-2 and 7.5.2-2 be revised to include the contamination levels beneath the waste pits as shown in Figures 2.2.2-7 through 2.2.2-9 of the Report.

SPECIFIC ENGINEERING COMMENTS

4. (Figure 7.4.1-1) - In order to maintain consistency with Section 8, we suggest this figure include the following note: "The number and location of SVE wells may change pending the selected performance standard and/or if SVE is used to target different areas of the vadose zone soils."

5. (Page 8-3 Sections 8.3 and 8.4) - It is suggested that the Costs of SVE Design Scenarios include soil gas monitoring probes, at varying depths around the perimeter of the pits, for containment and prevention of lateral soil gas migration.

6. (Table 8.5-1) - It is suggested that all 5 cases of each scenario, for both short and long-term performance standards, be included in this table.

7. (Appendix F) - We reiterate our previous comment and suggest the same 15% contingency be applied consistently to all discount rate scenario analyses for the cost evaluation. It was evident from the review of the cost tables that tables F-2d, F-2e, F-3d, F-3e, F-4d, and F-4e remain inconsistent with respect to the 15% contingency used in the remainder of the tables. The total capital costs of each alternative is impacted by the chosen contingency percentage.

8. (Appendix F) - Table F-2d states a contingency of 7.5%, yet a contingency of 8% is used in computing the direct cost. We suggest the same contingency be used throughout the cost tables.

RACER COST ESTIMATE CLARIFICATIONS

Alternative 3 - RCRA-Equivalent Cap

The Remedial Action Cost Engineering and Requirements (RACER) system is developed by the U.S. Air Force and is a PC-based environmental cost estimating system that will accurately estimate costs for all phases of remediation: Studies (PA/SI, RI/FS, and RFI/CMS), Remedial Design, Remedial Action (including Operations and Maintenance), and Site Work and Utilities.

In response to the comments provided in Table 1, Comparison of Selected Assumptions, DTSC Versus Dames & Moore Cost Estimates, RCRA-Equivalent Cap Portion of Alternatives 3 & 4, Focused Feasibility Study, Del Amo Waste Pit Area, (Page 2 of 5), under item "Ground Water Sampling During O&M," and under column "DTSC Estimate of Cost of Item," the actual RACER default sampling costs are not $1080 per VOC. Rather, this number is the total number of samples collected and analyzed during the 30 year period, for quarterly sampling at 9 samples each quarter. The actual RACER estimate for the complete monitoring is $853,466 for 30 years. This figure is in line with Dames & Moore's estimate of $900,000 and the column "Additional Cost Because of DTSC Assumptions" incorrectly calculated at $7.5 million should show a negative $46,000 or ($46,000).

RACER includes other cost modifiers that are identified as Project Modifiers. The Project Modifiers are listed and described below.

Schedule Or Escalation Factor

The Schedule module calculates the total duration for Studies, Construction, and Operations & Maintenance (O&M) for each site within the project. The start date, along with the duration, will establish the midpoint for the category. An escalation factor will be calculated for each category with a valid start date and duration. This escalation factor is used to escalate all costs associated with the category for reporting purposes. RACER states that the cost base of the estimates is January 1995 (collected data from vendors and past records of completed RAs). Because of this cost basis the estimate needs escalation to the assumed construction time of June 1996. The 30 years of O&M (until July 2011) were escalated and brought back to the present worth.

Project Management

Project management is the cost paid to government agencies and/or contractors for contract management, supervision, and oversight. This project management task is not associated with the implementation of specific Studies, RD, or RA tasks where project management is applied in the individual models. It does take into account reporting requirements of the specific tasks as prescribed by the project contract.

Project management is similar to the Supervision, Inspection, and Overhead (SIOH) payments made by the Air Force to the Corps of Engineers and the Naval Facilities Engineering Command for Military Construction Program Contracts. Currently, the Air Force uses several different service centers to administer remediation contracts. These include the Air Force Center for Environmental Excellence (AFCEE), the Army Corps of Engineers, and ORNL/HAZWRAP. The project management cost charged by these different agencies varies between different contracts. The default is 10% for all project phases and contract types. The software provides flexibility in the application of this cost and the program user is encouraged to verify and modify this value as appropriate prior to completing an estimate. In this case, costs for Project Management oversight were not included.

Contingencies

Contingencies are added to the project estimate to allow for cost increases that may occur as a result of unforeseen conditions and changes that normally occur on remediation projects. We have followed the methodology of RACER to include the contingency to the total costs since this is a +30% to -50% cost estimate and USEPA has done so on other sites, including Stringfellow. It appears from the response to comments that we are in agreement regarding what percent to apply for contingencies (15%). It appears that our contingencies (in dollar amounts) are to a greater degree a small percentage of the total estimated cost for Capital and O&M.

Alternative 4 RCRA-Equivalent Cap + Soil Vapor Extraction (SVE)

In DTSC's previous comments, we summarized RACER cost estimates for Alternative 3 ($8 million) and Alternative 4 ($10.9 million), which leads to the SVE portion of the estimate for Alternative 4, which is $2.9 million. The Report's SVE portion was $1.2 million ($3.7 and $4.9 million for Alternatives 3 and 4 respectively). According to Table 2 in the Response to DTSC Comments on the Final FFS Report, Del Amo Waste Pit Area, we have overestimated the SVE estimate by $2.6 million, (i.e., only $0.3 million is for SVE, according to the Report). This is self-contradictory. Most items in Table 2 are either inaccurate or very minor cost items which should not be an issue for a +30/-50 % cost estimate. After adjusting all corrected Table costs (see the attached marked-up Table 2), our SVE estimate is $2.3 million. The following are the item-by-item responses to Table 2 items:

1. Field sampling mobile lab ($184,443, or $195,592 in our RACER output dated 6/10/96): This cost corresponds to the item 33.02.96, Field sampling/mobile lab, on page 22 of the Detail Cost Report. This is for part of the 30 year O&M of the SVE unit. In reality, the SVE unit will operate continuously for the first 3 - 5 years, followed by intermittent operation for perpetuity. We made the assumption that the additional 25 - 27 years of continuous operation is equivalent to total operational costs for intermittent operation for perpetuity.

As indicated on the RACER output page, the cost of $195,592 is for monthly SVE air effluent monitoring for 30 years: 1)OVA rental for (2 days/mo)*(12 mo)*(30 years) (due to absence of on-site FID module in RACER), and 2) field technician, (8 hrs/mo)*(12 mo)*(30 years).

2. SVE O&M ($1,123700): Because of the way RACER is set up, this item has been double-counted (two SVE modules were used for shallow and deep contamination areas). This should be reduced by one half, or by $561,852.

3. Lab cost for monitoring during O&M ($14,760): This is for off-site lab analysis of SVE air effluent twice a year for 30 years. See the response #1 above for the rationale of using a 30 year O&M.

4. Contingency: DTSC's believes that its methodology for calculating the contingency is appropriate. See response to Table 1.

5. Escalation ($761,481): Page 1 of Project Cost Report, RACER provides that 1) the cost base of RACER was 1/95 (needs escalation to the assumed construction time of 6/96), and 2) 30 year O&M (until July, 2011) was assumed for the SVE unit. O&M costs were escalated and brought back to the present-worth cost. See DTSC's response to FFFS's Table 1 for details.

TOXICOLOGICAL COMMENTS

The revised Health Risk Assessment (HRA) contained in this FFFS is adequate to assess the risk/hazard from contaminants at the Del Amo Pits. DTSC would ordinarily consider all pathways, however in this case, the air exposure pathway has been found to be the major contributor and the other pathways are incomplete. The movement of contaminants to groundwater has not been included in this HRA, but will be addressed for the whole site when the Remedial Investigation for groundwater is complete. It is expected that any resultant hazard or risk identified from migration to groundwater would be additive with the hazard and risk from the air pathway.

If you have any questions, please contact Ms. Gloria Conti at (310) 590-5566. Thank you.

Sincerely,

Gloria Conti for

Haissam Y. Salloum, P.E.
Unit Chief
Site Mitigation Cleanup Operations
Southern California Branch

cc: Mr. C.B. (Chuck) Paine
Shell Oil Company
Environmental Remediation- West Coast
P.O. Box 25370
Santa Ana, California 92799

Mr. John Dudley
Dames and Moore
5425 Hollister Avenue, Suite 160
Santa Barbara, California 93111

Mr. Dave Laney
Dames and Moore
6 Hutton Centre Drive, Suite 700
Santa Ana, California 92707

Cal/EPA

Department of
Toxic Substances
Control

245 West Broadway,
Suite 425
Long Beach, CA
90802-4444

August 7, 1996

AR0599

Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

Janet Rosati
U.S. EPA, Region IX
Mail Code H-7-1
75 Hawthorne Street
San Francisco, California 94105

Dear Ms. Rosati,

DEL AMO PITS SUPERFUND SITE PROPOSED STATE APPLICABLE AND RELEVANT OR APPROPRIATE REQUIREMENTS (ARARS)

The Department of Toxic Substances Control (DTSC) submitted to the U.S. Environmental Protection Agency (EPA), in January, 1994 and December, 1993, proposed State ARARs from DTSC, the California Regional Water Quality Control Board (RWQCB), South Coast Air Quality Management District (SCAQMD), and the Department of Fish and Game (F&G). These ARARs had been submitted jointly for both the Montrose and Del Amo Pits Superfund sites, since we had been working on these two sites cooperatively. DTSC would like EPA to consider all previously submitted ARARs, as well as the additional ARARs included in this letter.

Copies of DTSC's letters with the attached ARARs are enclosed. The following is an itemization of what those letters included.

A. DTSC letter, dated January 14, 1994, to EPA (Mr. Tom Dunkelman) contains:

   1. RWQCB Memorandum, dated January 11, 1993 (sic.);

   2. SCAQMD letter, dated January 11, 1994.

B. DTSC letter, dated December 2, 1993, to EPA (Ms. Nancy Woo) contains:

   1. DTSC attachment;

   2. RWQCB Memorandum, dated November 29, 1993;

   3. RWQCB Memorandum, dated October 19, 1993;

4. SCAQMD letter, dated October 29, 1993;

5. F&G letter, dated October 15, 1993.

ADDITIONAL ARARS

1. Title 22, CCR Section 66262

2. Title 22, CCR Section 66264

3. Title 22, CCR Section 66264.90 or 66265.90 as applicable.

4. Title 22, CCR Section 66268.100

5. Public Resources Code, Division 13, Section 27000, California Environmental Quality Act (CEQA).

6. Health & Safety Code, Section 41700, Division 6, Part 4, Chapter 3 (California Clean Air Act).

7. DTSC Applied Action Levels are no longer being used, and should therefore be deleted.

If you have any questions, please contact Ms. Gloria Conti at (310) 590-5566. Thank you.

Sincerely,

Haissam Salloum

Haissam Y. Salloum, P.E.
Unit Chief
Site Mitigation Cleanup Operations
Southern California Branch (B)

Enclosures

cc: Mr. John Lyons, Esq.
U.S. EPA, Region IX
Mail Code RC-3-2
75 Hawthorne Street
San Francisco, California 94105

STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

January 14, 1994

Mr. Thomas J. Dunkelman
Remedial Project Manager
U.S. E.P.A. Region IX
75 Hawthorne Street
Mail Stop H-7-1
San Francisco, CA 94105-3901

Dear Mr. Dunkelman,

PROPOSED STATE ARARS FOR THE PROPOSED DEL AMO SUPERFUND SITE

The Department of Toxic Substances Control (Department) has solicited Applicable or Relevant and Appropriate Requirements (ARARs) from local and state agencies. Enclosed is a partial submittal of ARARs from the California Regional Water Quality Control Board and the South Coast Air Quality Management District, in response to our request. An additional submittal will be forthcoming.

If you have any questions please contact Gloria M. Conti at (310) 590-5566.

Sincerely,

for Haissam Y. Salloum, P.E.
Unit Chief
Site Mitigation Operations Branch

enclosures

State of California

Memorandum

To Haissam Salloum
Department of Toxic Substances
Control - Long Beach

Date: January 11, 1993

File :100.315

J. E. Ross, Unit Chief
Site Cleanup Unit

From : CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—LOS ANGELES REGION
101 Centre Plaza Drive, Monterey Park, CA 91754-2156
Telephone: (213) 266-7500

Subject APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR DEL AMO PITS SUPERFUND SITE - TORRANCE - (File 100.315)

This is to provide a response to your December 28, 1993, letter regarding the above project.

a. Regarding the soil issues, at the site, we have the following specific comments:

1. We support a combination of Alternatives 4 , 5 and 6 as an appropriate remediation for the permanent closure of the Del Amo Pits (Surface Impoundments), as described below.

2. Specifically, the sump closure requirements of Chapter 15, Title 23, CCR would apply to the permanent closure of these pits. We believe, based upon existing data, that soils in these pits have a high liquid content including substantial concentrations of Benzene at depths significantly close to first ground water. For this reason, a large potential exists for impact to groundwater through a continuing source of such compounds in aquifer units. To that end, we will require dewatering of these sump contents and a maximum effort to consolidate these wastes in place before any full capping option and VES installation is completed. In addition, we continue to believe that a closure plan that more accurately defines the limits of these contaminants and includes a method (Liquid Extraction) for dewatering will meet our requirements. A method such as pentrometer testing to more quickly and accurately define the free liquid zone along with an appropriate level of dewatering (Liquid Extraction) is considered appropriate. In addition, substantial ground water contamination is known to have ocurred below the pit area.

Therefore, the requirements of the California Water Code beginning with Section 1300 also apply. We view the Benzene as a continuing source of groundwater contamination and will require cleanup and abatement of this source and the ground water in accordance with Section 13304 of the Code.

The above would be followed, or supplemented by vapor extraction as proposed. Substantial technology exists to ensure a successful completion of such a remedy.

3. We believe that the potential even exists for the complete removal (Alternative 5) or recycling of the pit materials and such an alternative should be explored at the conclusion of Alternative 6 described in Item 2 above.

b. Regarding the groundwater issues, we have the following specific comments:

1. State Board Resolutions 68-16, and 88-63 apply to all aquifer units at this site. This includes the Bellflower Aquitard Unit, the Bellflower Sands Unit and all lower better quality aquifers. We will therefore, require cleanup of all these aquifer units, to levels acceptable to this Board, by responsible parties to the contamination. Any deviation would require adoption by this Board and the State Board of a Los Angeles River Basin Plan amendment. Such an amendment for a single site/facility is highly unlikely.

2. The Board will likely establish MCL's as cleanup levels for groundwater(gw) units for Benzene, Hydrocarbon and VOC contamination and metals.

3. We will propose to our Board establishment of an appropriate cleanup level for any compound not presently covered by an MCL.

4. We would consider reinjection of treated groundwater into upper aquifer units to accommodate cleanup under these conditions:

   - Reinjected water would likely require pH between 6 and 9, temperature below 100^{0}F, and Bioassay above 75% fish survival.

   - Reinjection would be limited to the Bellflower Sands unit during the initial startup of the system.

   - GW monitoring of the impact on the Gage Aquifer unit from reinjected water into the upper Bellflower Sands would be required on a quarterly basis during the first year.

   - Establishment of a Regional Ground Water Group, with Regional Board oversight, which will develop a regional approach to cleanup of the upper Bellflower units.

Some of the above could be authorized on signature of the Executive Officer of this Regional Board to initialize cleanup. Formal Waste Discharge Requirements and the formation of the work group under direction of Water Board staff would follow.

If you have any questions, please call me at (213) 266-7550.

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (909) 396-2000

January 11, 1994

Ms. Gloria Conti
Department of Toxic Substances Control
245 W. Broadway, Suite 425
Long Beach, CA 90802

Dear Ms. Conti:

This letter is in response to your letter dated December 27, 1993, for Applicable or Relevant and Appropriate Requirements (ARARs) for the proposed Del Amo Superfund Site.

The following District Rules and Regulations should be incorporated in the ARARs for the site:

Regulation IV - Prohibitions

Rule 401 - Visible Emissions

This rule limits visible emissions from any point source to Ringlemann No. 1 or 20 percent opacity for 3 minutes in any hour period.

Rule 402 - Nuisance

This rule prohibits the discharge of any material (including odorous compounds) that causes injury or annoyance to the public, property or business or endangers human health, comfort, repose or safety.

Rule 403 - Fugitive Dust

This rule limits on site activities so that the concentrations of fugitive dust at the property line shall not be visible. In addition, PM10 levels shall not exceed 50 micrograms per cubic meter as determined by the difference between upwind and downwind samples collected on high volume particulate matter samplers. These requirements do not apply if wind gusts exceed 25 miles per hour. The rule also requires every reasonable precaution to minimize fugitive dust and the prevention and cleanup of any material accidently deposited on paved streets. This rule shall not apply during life-threatening situations or during a declared disaster or state of emergency.

Rule 473 - Disposal of Solid and Liquid Wastes

This rule requires incinerator for combustible refuse to be multiple-chamber type (with secondary combustion) and limits incinerators with design burning rates greater than 110 pounds per hour from releasing particulate matter in excess of 0.10 grains per standard cubic foot of gas calculated to 12 percent of carbon dioxide averaged over 15 minutes.

Regulation X - National Emissions Standards for Hazardous Air Pollutants

This regulation implements the provisions of Part 61, Chapter I, Title 40 of the Code of Federal Regulations (CFR) under the supervision of the SCAQMD Executive Officer. It specifies emissions testing, monitoring, and procedures for handling of hazardous pollutants such as beryllium, benzene, mercury, vinyl chloride and asbestos.

Regulation XI - Source Specific Standards

Rule 1150 - Excavation of Landfill Sites

This Rule states that no person shall initiate excavation of an active or inactive landfill without an Excavation Management Plan approved by the SCAQMD Executive Officer. The plan shall provide information regarding the quantity and characteristics of the material to be excavated and transported, and shall identify mitigation measures including gas collection and disposal, baling, encapsulating, covering the material and chemical neutralizing.

Rule 1150.2 - Control of Gaseous Emissions from Inactive Landfills

This rule limits gaseous emissions from inactive landfills. It requires installation of perimeter probes and a gas collection and flaring system. It also requires ambient air sampling and monitoring the surface of the landfill for organic compounds as methane.

Rule 1166 - Volatile Organic Compound Emissions from Decontamination of Soil

This rule limits the emissions of volatile organic compounds (VOCs) from contaminated soil to less than 50 ppm. For contaminated soil with a VOC emission of 50 ppm or greater, an approved plan, describing removal methods and mitigation measures, must be obtained from the District prior to proceeding with the excavation. Uncontrolled spreading of contaminated coil is not permitted.

Regulation XIII - New Source Review

This rule applies to any new or modified equipment which may cause the issuance of any nonattainment air contaminant, halogenated hydrocarbon or ammonia. It requires all emission increases to be offset and all equipment to be constructed with BACT (Best Available Control Technology). It also requires substantiation with modeling that the equipment will not cause a significant increase in concentrations of specific contaminants

Regulation XIV - Toxics

This regulation specifies limits for cancer risk and excess cancer cases from new stationary sources and modifications to existing stationary sources that emit carcinogenic air contaminants. The rule establishes allowable emission impacts for all such stationary sources requiring new permits pursuant to SCAQMD Rules 201 or 203. Best Available Control Technology for Toxics (T-BACT) will be required for any system where a lifetime (70 years) maximum individual cancer risk of one in one million or greater is estimated to occur. Limits are calculated using risk factors for specific contaminants.

Best Available Control Technology (BACT) Guidelines Document

This document was compiled by SCAQMD. Although a guideline, it set up BACT requirements for various types of equipment and processes. To determine BACT, a cost effectiveness analyses must be made for the Alternate Basic Equipment of Process and the Technologically Feasible options. Modifications or relocations of existing equipment do not need to be analyzed for Alternative Basic Equipment or Process. The option that can be shown to be cost effective would constitute the required BACT.

Very truly yours,

Joe Tramma
A.Q.A.C. Supervisor
Stationary Source Compliance

JMT

STATE OF CALIFORNIA — ENVIRONMENTAL PROTECTION AGENCY PETE WILSON, Governor

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Region 4
245 West Broadway, Suite 350
Long Beach, CA 90802-4444

December 2, 1993

Nancy Woo
Remedial Project Manager
U.S. E.P.A. Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Dear Ms. Woo,

PROPOSED STATE ARARS FOR THE MONTROSE SUPERFUND SITE

The Department of Toxic Substances Control (Department) has solicited Applicable or Relevant and Appropriate Requirements (ARARs) from local and state agencies. Enclosed are the Department's ARARs and copies of transmittals from the various agencies, in response to our request.

If you have any questions please contact Gloria M. Conti at (310) 590-5566.

Sincerely,

Haissam Salloum

Haissam Y. Salloum, P.E.
Unit Chief
Site Mitigation Operations Branch

enclosures

ATTACHMENT
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
STATE ARARS

Using the Draft Detailed Analysis of Remedial Alternatives for Soil (dated 10/28/93) as a baseline for State and Local ARARs, the following corrections shall be incorporated.

Page (P.) 1, I.A., Requirements:
Replace "Section 25100-25395" with "Section 25100-25250";
Replace "Minimum Standards for Management of Hazardous and Extremely Hazardous Wastes" with "Division 4.5, Environmental Health Standards for Management of Hazardous Waste.";

P. 1, I.A., Comments:
Replace "Section 66300" with "Section 66001";
Replace "comply with permitting requirements" with "obtain permits".

P. 1, I.A.1., Requirements:
Replace "Criteria for ..." with "Identification and listing of Hazardous Waste, Title 22, CCR, Division 4.5, Chapter 11, Articles 1-5, P 66261.1-.126.

P. 1, I.A.1., Comments:
The first sentence should read "Tests for identifying hazardous waste and hazardous characteristics of waste are described..."

P. 1, I.A.1, and a, Alternative:
Should read "S1-S7".

P. 5, 3, Comments:
Replace "November 1987" with "December 1990".

P. 5, 3, Comments:
Replace chemical table with the following:

Benzene	.0002 mg/L (human/water) .00007 mg/m^3 (human/air)
Chloroform	.006 mg/L (human/water) .0006 mg/m^3 (human/air)
Ethylbenzene	2.0 mg/L (human/water) .10 mg/m^3 (human/air)
Methyl ethyl ketone	2.0 mg/L (human/water) .30 mg/m^3 (human/air)

Toluene	2.0 mg/L (human/water) .20 mg/m^3 (human/air)
Xylene	2.0 mg/L (human/water) .40 mg/m^3 (human/air) 30,000 mg/kg (human/soil)

P. 6, II.A, Comments:
Replace "67108" with "66264.25"

P. 7, Comments, first paragraph, and Alternative:
Process activities (P. 6) listed as Relevant and Appropriate should concur with excavation activities, and should therefore be noted as Relevant and Appropriate. This first paragraph will have to be re-written to reflect this change.

P. 7, III.A., Requirements:
Replace "Section 25100-25395" with "Section 25100-25250".

P. 7, following III.A:
The following specific Health & Safety Code Sections shall be added:

ARTICLE 5- Standards

1) Section 25150- Standards and regulations; adoption; application, subsections (a) and (b).

Comments: The Department shall develop and apply standards and regulations to the management of hazardous waste.

Applicable to S1-S7.

2) Section 25154- Unlawful management of hazardous waste.

Comments: It is unlawful to manage hazardous waste except as provided in Chapter 6.5 of the Health & Safety Code.

Applicable to S1-S7.

3) Section 25155- Disposal of extremely hazardous waste: removal of harmful properties or as specified by regulations.

Comments: Manage all extremely hazardous waste according to regulations.

Applicable to S2-S7.

4) Section 25155.5- Disposal of certain kinds of hazardous waste; incineration or acceptable treatment requirements.

Comments: Mandatory incineration of hazardous waste to be

disposed of based on BTU value.

Applicable to S4-S7.

5) Section 25155.8- Landfills used for disposal of hazardous wastes containing VOCs; air emissions monitoring and reporting requirements.

Comments: Landfill operator must monitor air emissions and report to the Department.

Relevant and Appropriate to S2-S7.

ARTICLE 6- Transportation

1) Section 25160- Manifest

Comment: Generator must generate a manifest for any hazardous waste to be shipped off site.

Applicable to S2-S7.

ARTICLE 6.5- Hazardous Waste Haulers

1) Section 25167.1 - 25169.3

Comment: The requirements for haulers and their vehicles will apply since off-site hauling would commence on site.

Applicable to S2-S7.

ARTICLE 7.7- Hazardous Waste Management Act of 1986

1) Section 25179.5- Disposal of liquid waste in hazardous waste landfills prohibited.

Comment: No person shall dispose of liquid hazardous waste in a hazardous waste landfill.

Applicable to S2-S7.

2) Section 25179.6- Land disposal of certain hazardous waste prohibited; treatment standards.

Comment: Land disposal restrictions for hazardous waste. Unless granted a variance, extension, exclusion or exemption, or treated in accordance with treatment standard, land disposal is prohibited.

Applicable to S2-S7.

ARTICLE 8- Enforcement

1) Section 25189.5 (a)- Disposal, treatment or storage at, or transportation to, facilities without permits or at unauthorized points; punishment.

Comments: Subsection (a) prohibits the disposal of hazardous waste, or causing it, at any unauthorized point.

Applicable to S2-S7.

2) Section 25189.7- Burning or incineration at unpermitted facility or unauthorized point; punishment.

Comments: Incineration of hazardous waste at an unauthorized point is prohibited.

Applicable to S4-S7.

ARTICLE 9- Permitting of Facilities

1) Section 25202.5- Restrictive easements, covenants, restrictions, or servitudes.

Comments: The Department and the owner of a facility are to enter agreements providing for deed restrictions as noted above, to restrict land use.

Relevant and Appropriate for S1-S7.

2) Section 25203- Unlawful disposition of hazardous waste.

Comments: It is unlawful to dispose of hazardous waste except at a permitted disposal site, facility, or site with a grant of authorization.

Applicable to S1-S7.

ARTICLE 11- Hazardous Waste Disposal Land Use

1) Section 25221- Application for designation as hazardous waste property or border zone property.

Comments: Owner of property with knowledge of hazardous waste disposal on property shall apply to Department for designation.

Applicable to S1-S7.

P. 8, 1., Alternative:
Should read "S1-S7".

P. 8, 2., Comments:
Replace "resulting from...accumulates" with "generated".

P. 8, 2., Alternative:
Insert "S5", and delete "(on-site SGE)".

P. 8, 3, Comments:
Replace "66263.18" with "66263.46".

P. 8, 3, Applicable:
Off-site transport is subject to regulations, but should not be an ARAR.

P. 8, 4, Requirements:
Add "Specifically, 66264.1, .18, .25; Articles 7,9,10,14,15" and mark as Applicable.

P. 8, 4, Requirements:
Add "Article 6" and mark as Relevant and Appropriate.

P. 9, b, Alternative:
Should read "S2-S7".

P.9, b, Relevant and Appropriate:
Change to Applicable.

P. 11, d, Comments:
Delete "state permitted".

P. 11, d, Comments, second paragraph:
Replace "Improvement" with "Impoundment".

P. 11 & 12, d, To Be Considered:
Change to Relevant and Appropriate. Mark all of "d" as Relevant and Appropriate.

P. 12, To Be Considered:
Change to Relevant and Appropriate.

P. 12, Comments, first paragraph:
Delete this paragraph.

P. 12, Comments, Landfills, second paragraph:
Delete this paragraph.

P. 12, e, Comments, a:
Insert "The California Code of Regulations on incinerators are all applicable, except for the permit requirements."

P. 12, e, Comments, a:
Delete "Since permits...ARAR."

P. 12, e, Relevant and Appropriate:
Change to Applicable.

P. 13, Comments:
Delete first, third, and fifth paragraphs.

P. 13, Relevant and Appropriate:
Change both to Applicable.

P. 14, f, Comments:
Delete from "These provisions...are TBCs." and replace with "These provisions apply to hazardous waste facilities of the specific types regulated. The Montrose Site is one of these, and as such the regulations are fully applicable. The regulations are applicable since they address units that are used to treat, store or dispose of hazardous wastes that are not otherwise addressed by the regulations."

P. 14, f, Comments:
Delete from "However,...are TBCs".

P. 14, f, To Be Considered:
Change to Applicable.

P. 14, g, Comments:
Replace "relevant and appropriate" with "applicable".

P. 14, g, Relevant and Appropriate:
Change to Applicable.

P. 15, h, Requirements:
Replace "Article 28" with "Articles 27 & 28" and "66264.1050" with "66264.1030".

P. 15, h, Comments:
Delete from "However, to be...it sets" and replace with "Article 28 is fully applicable. The substantive provisions of Article 28 are applicable. They set" standards for operation...

P. 15, h, Relevant and Appropriate:
Change to Applicable.

P. 15, 5:
This requirement is not necessary, but may be kept as To Be Considered.

P. 16, 7, Alternative:
Replace "S4-S7" with "S2-S7".

P. 18, 8, Alternative and Applicable:
Insert "S2-S7" under Alternative and mark as Applicable.

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To	From
Gloria Conti	J. E. Ross
Co.	Co.
Dept.	Phone # (213) 266-7550
Fax # (310) 540-4922	Fax #

Environmental Protection Agenc

Date: November 29, 1993

Control - Long Beach

File : 100.315

for J. E. Ross, Unit Chief
Site Cleanup Unit

From : CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—LOS ANGELES REGION
101 Centre Plaza Drive, Monterey Park, CA 91754-2156
Telephone: (213) 266-7500

Subject: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR MONTROSE AND DELAMO BOULEVARD, LOS ANGELES/TORRANCE SITE

This will supplement our General ARARs Memo of October 19, 1993.

a. Regarding the soil issues we have the following specific comments:

1. We support the CAP option with modifications.

2. Based on the data presented by Montrose, as discussed at previous joint meetings by Regulators, we conclude that all residual surface sludges have been removed from the pit in the central processing area and the pit is backfilled. Based on these facts, sump closure requirements of Chapter 15, Title 23, CCR would not apply. However, the facts do indicate that high concentrations of the residual DNAPL may exist in a substantial portion of the vadoze zone beneath and surrounding the pit area. For this reason, a large potential exists for impact to groundwater and increasing concentrations of these DNAPL compounds in aquifer units. Therefore, the requirements of the California Water Code beginning with Section 1300 apply. We view the DNAPL as a continuing source of groundwater contamination and will require cleanup and abatement of this source in accordance with Section 13304 of the Code. To that end, we will require removal of the maximum amount of these contaminants in a short time period. Vapor extraction would not likely provide for a timely removal. We continue to believe that a removal plan that more accurately defines the limits of this contamination and includes a method(Liquid Extraction) for dewatering will meet our requirements. A method such as pentrometer testing to more quickly and accurately define the DNAPL zone along with an appropriate level of dewatering(Liquid Extraction) should be considered. This could be followed, or supplemented by, vapor extraction in the same zone.

State of California

Memorandum

To : Haissam Salloum
Department of Toxic Substances
Control - Long Beach

From : J. E. Ross, Unit Chief
Site Cleanup Unit
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—LOS ANGELES REGION
101 Centre Plaza Drive, Monterey Park, CA 91754-2156
Telephone: (213) 266-7500

Subject: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR MONTROSE AND DELAMO BOULEVARD, LOS ANGELES/TORRANCE SITE

This will supplement our General ARARs Memo of October 19, 1993.

a. Regarding the soil issues we have the following specific comments:

1. We support the CAP option with modifications.

2. Based on the data presented by Montrose, as discussed at previous joint meetings by Regulators, we conclude that all residual surface sludges have been removed from the pit in the central processing area and the pit is backfilled. Based on these facts, sump closure requirements of Chapter 15, Title 23, CCR would not apply. However, the facts do indicate that high concentrations of the residual DNAPL may exist in a substantial portion of the vadoze zone beneath and surrounding the pit area. For this reason, a large potential exists for impact to groundwater and increasing concentrations of these DNAPL compounds in aquifer units. Therefore, the requirements of the California Water Code beginning with Section 1300 apply. We view the DNAPL as a continuing source of groundwater contamination and will require cleanup and abatement of this source in accordance with Section 13304 of the Code. To that end, we will require removal of the maximum amount of these contaminants in a short time period. Vapor extraction would not likely provide for a timely removal. We continue to believe that a removal plan that more accurately defines the limits of this contamination and includes a method(Liquid Extraction) for dewatering will meet our requirements. A method such as pentrometer testing to more quickly and accurately define the DNAPL zone along with an appropriate level of dewatering(Liquid Extraction) should be considered. This could be followed, or supplemented by, vapor extraction in the same zone.

3. We do not believe the capping option off-site will be effective in controlling the potential for ground water and surface water contaminations. We believe the same Sections of the Water Code cited above apply and would require removal and disposal of this shallow soil contamination, especially contaminated soil within the Normandie Ditch.

b. Regarding the groundwater issues, we have the following specific comments:

1. State Board Resolutions 68-16, and 88-63 apply to all aquifer units at this site. This includes the Bellflower Aquitard Unit, the Bellflower Sands Unit and all lower better quality aquifers. We will therefore, require cleanup of all these aquifer units to levels acceptable to this Board. Any deviation would require adoption by this Board and the State Board of a Los Angeles River Basin Plan amendment. Such an amendment for a single site/facility is highly unlikely.

2. The Board will likely establish MCL's as cleanup levels in all groundwater(gw) units for DDT, chlorobenze, benzene, BHC, all other chlorinated and aromatic compounds, and any metals.

3. We will propose to our Board establishment of an appropriate cleanup level for PCBSA following submittal and evaluation of the following items or the treated gw containing PCBSA:

   - The EPA research data on this compound collected during development of the ARARs.
   - General Mineral Analysis to include Sulfates, Sulfides along with pH before and after neutralization
   - VOC analysis by EPA 624 and Bioassay analysis

4. We would consider reinjection of treated groundwater containing PCBSA into upper aquifer units under these conditions:

   - Reinjected water would likely require pH between 6 to 9, temperature below 100°F, and Bioassay above 75% survival.
   - Reinjection would be limited to the Bellflower Sands during the initial startup of the system.

- GW monitoring of the impact on the Gage Aquifer unit from reinjected water into the upper Bellflower Sands would be monitored quarterly during the first year.
- No cleanup limit for the compound PCBSA would likely be enforced during this start up period.
- During the startup period, staff will propose to this Board for adoption a cleanup level for PCBSA following evaluation of the above data including the effects of neutralization on PCBSA and vertical migration trends of the reinjected water and economical consideration that are proposed by the discharger.
- Establishment of a Regional Ground Water Group, with Regional Board oversight, which will develope a regional approach to cleanup of the upper Bellflower units.

Some of the above could be authorized on signature of the Executive Officer of this Regional Board to initialize cleanup. Formal Waste Discharge Requirements and the formation of the work group under direction of Water Board staff would follow.

If you have any questions, please call me at (213) 266-7550.

State of California — Environmental Protection Agency

Memorandum

To : Haissam Salloum
Department of Toxic Substances
Control - Long Beach

Date: October 19, 1993

File : 100.0315

for Jim Ross

J.E. Ross, Unit Chief
Site Cleanup Unit

From : CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—LOS ANGELES REGION
101 Centre Plaza Drive, Monterey Park, CA 91754-2156
Telephone: (213) 266-7500

Subject : APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs) FOR THE MONTROSE AND DEL AMO BOULEVARD, LOS ANGELES/TORRANCE SITES

As requested, we are providing the following Los Angeles Regional Water Quality Control Board ARARs for the above referenced facilities:

1. Porter-Cologne Water Quality Control Act. This Act requires the adoption of Water Quality Control Plans by this Regional Board. These plans include:

   a. Los Angeles River Basin (4B) Plan, which incorporates:

      1. State Water Resources Control Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California"; and

      2. State Water Resources Control Board Resolution No. 88-63, "Sources of Drinking Water" Policy;

   b. Inland Surface Waters Plan;

2. Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65);

3. Title 23 of the California Code of Regulations, which include Chapter 15, "Discharges of Waste to Land";

4. State Water Resources Control Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304".

Please contact me at (213) 266-7550, or Keith Elliott at (213) 266-7614 if you have any questions.

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (909) 396-2000

October 29, 1993

Ms. Gloria Conti
Department of Toxic Substances Control
245 W. Broadway, Suite 425
Long Beach, CA 90802

Dear Ms. Conti:

This letter is in response to your request, during our meeting on October 25, 1997, for Applicable or Relevant and Appropriate Requirements (ARARs) for the Del Amo Pit Site and the Montrose Plant Site.

The following District Rules and Regulations should be incorporated in the ARARs for both sites:

Regulation IV - Prohibitions

Rule 401 - Visible Emissions

This rule limits visible emissions from any point source to Ringlemann No. 1 or 20 percent opacity for 3 minutes in any hour period.

Rule 402 - Nuisance

This rule prohibits the discharge of any material (including odorous compounds) that causes injury or annoyance to the public, property or business or endangers human health, comfort, repose or safety.

Rule 403 - Fugitive Dust

This rule limits on site activities so that the concentrations of fugitive dust at the property line shall not be visible. In addition, PM10 levels shall not exceed 50 micrograms per cubic meter as determined by the difference between upwind and downwind samples collected on high volume particulate matter samplers. These requirements do not apply if wind gusts exceed 25 miles per hour. The rule also requires every reasonable precaution to minimize fugitive dust and the prevention and cleanup of any material accidently deposited on paved streets. This rule shall not apply during life-threatening situations or during a declared disaster or state of emergency.

Rule 473 - Disposal of Solid and Liquid Wastes

This rule requires incinerator for combustible refuse to be multiple-chamber type (with secondary combustion) and limits incinerators with design burning rates greater than 110 pounds per hour from releasing particulate matter in excess of 0.10 grains per standard cubic foot of gas calculated to 12 percent of carbon dioxide averaged over 15 minutes.

Regulation X - National Emissions Standards for Hazardous Air Pollutants

This regulation implements the provisions of Part 61, Chapter I, Title 40 of the Code of Federal Regulations (CFR) under the supervision of the SCAQMD Executive Officer. It specifies emissions testing, monitoring, and procedures for handling of hazardous pollutants such as beryllium, benzene, mercury, vinyl chloride and asbestos.

Regulation XI - Source Specific Standards

Rule 1150 - Excavation of Landfill Sites

This Rule states that no person shall initiate excavation of an active or inactive landfill without an Excavation Management Plan approved by the SCAQMD Executive Officer. The plan shall provide information regarding the quantity and characteristics of the material to be excavated and transported, and shall identify mitigation measures including gas collection and disposal, baling, encapsulating, covering the material and chemical neutralizing.

Rule 1150.2 - Control of Gaseous Emissions from Inactive Landfills

This rule limits gaseous emissions from inactive landfills. It requires installation of perimeter probes and a gas collection and flaring system. It also requires ambient air sampling and monitoring the surface of the landfill for organic compounds as methane.

Rule 1166 - Volatile Organic Compound Emissions from Decontamination of Soil

This rule limits the emissions of volatile organic compounds (VOCs) from contaminated soil to less than 50 ppm. For contaminated soil with a VOC emission of 50 ppm or greater, an approved plan, describing removal methods and mitigation measures, must be obtained from the District prior to proceeding with the excavation. Uncontrolled spreading of contaminated coil is not permitted.

Regulation XIII - New Source Review

This rule applies to any new or modified equipment which may cause the issuance of any nonattainment air contaminant, halogenated hydrocarbon or ammonia. It requires all emission increases to be offset and all equipment to be constructed with BACT (Best Available Control Technology). It also requires substantiation with modeling that the equipment will not cause a significant increase in concentrations of specific contaminants

Regulation XIV - Toxics

This regulation specifies limits for cancer risk and excess cancer cases from new stationary sources and modifications to existing stationary sources that emit carcinogenic air contaminants. The rule establishes allowable emission impacts for all such stationary sources requiring new permits pursuant to SCAQMD Rules 201 or 203. Best Available Control Technology for Toxics (T-BACT) will be required for any system where a lifetime (70 years) maximum individual cancer risk of one in one million or greater is estimated to occur. Limits are calculated using risk factors for specific contaminants.

Best Available Control Technology (BACT) Guidelines Document

This document was compiled by SCAQMD. Although a guideline, it set up BACT requirements for various types of equipment and processes. To determine BACT, a cost effectiveness analyses must be made for the Alternate Basic Equipment of Process and the Technologically Feasible options. Modifications or relocations of existing equipment do not need to be analyzed for Alternative Basic Equipment or Process. The option that can be shown to be cost effective would constitute the required BACT.

Very truly yours,

Joe Tramma
A.Q.A.C. Supervisor
Stationary Source Compliance

JMT

DEPARTMENT OF FISH AND GAME

CERCLA/NRDA Unit
Marine Pollution Laboratory
20 Lower Ragsdale Drive, Suite 100
Monterey, CA 93940

October 15, 1993

Ms. Gloria Conti
Site Mitigation Branch
Department of Toxic Substances Control
245 West Broadway, Suite 425
Long Beach, CA 90802

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR MONTROSE SUPERFUND SITE

Dear Ms. Conti:

In connection with your request for fish and wildlife resource laws and regulations, and pursuant to Section 104 (b) (2) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Department of Fish and Game hereby provides, for your implementation, Applicable or Relevant and Appropriate Requirements (ARAR's) for the protection of State fish and wildlife resources at the subject site.

Additionally, this letter will serve to advise you of the Department of Fish and Game's interest in coordinating any natural resource damage assessment investigations as a State natural resource (co) trustee, which may be necessary should the release(s) of any hazardous materials at the subject landfill site cause injuries to state natural resources, pursuant to CERCLA § 104 and 122.

The following State laws and statutes may apply to the RI/FS actions at the subject site for the protection of fish and wildlife resources and their habitats:

- Designation of the Department of Fish and Game as trustee for State fish and wildlife resources: Fish and Game Code § 711.7;
- Taking for Scientific Purposes (§ 1001; 1002).
- Requirements for releasing substances deleterious to fish and wildlife: Fish and Game Code § 5650 (a) (b), (f); 5651; and 12016;
- Illegal take of birds and mammals: Fish and Game Code § 3005;
- Relevant policies for the general protection and conservation

of fish and wildlife resources: Fish and Game Code § 1600 et seq.; 1700; 1750; 1801; and 2014; Water Code § 1243;

- Requirements for endangered or rare species: Fish and Game Code § 1900 et seq.; 2050 et seq. to 2068; 2070; 2080; 2090 et seq. to 2096;

Other Laws and Treaties:

- Federal Endangered Species Act of 1973;
- California Endangered Species Act (Fish and Game Code § 2050 et seq.).

I have enclosed copies of these laws and regulations for your information. If any portion of these State laws is not considered in the Ecological Risk Assessment phase(s) of the RI/FS process, I will expect a written justification, stating the rationale, legal basis, and substantive reasons for their exclusion from ARAR consideration in the RI/FS. Please let me know if I can be of further assistance. My telephone number is (408) 649-7178 and FAX 649-2894.

Sincerely,

Michael Martin

Michael Martin, Ph.D.
Acting Staff Toxicologist
CERCLA/NRDA Project

Encl. F&G Code; Title 14 CCR

Reference 12

Attachment 4

Shell Chemical Company
Shell Oil Products Company

P. O. Box 25370
Santa Ana, Ca 92799

3611 S. Harbor, Ste 160
Santa Ana, Ca 92704
714-427-3401
714-427-3469 (Fax)

May 2, 1997

Mr. Dante Rodriguez
U.S. Environmental Protection Agency
Mail Drop SFD-7-1
75 Hawthorne Street
San Francisco, California 94105

LETTER FROM HAISSAM SALLOUM (DTSC) TO JANET ROSATI (EPA)
DATED DECEMBER 11, 1996

Dear Mr. Rodriguez:

Attached, please find Figure 7.4.1-1 which should have been included in our submittal dated April 25, 1997.

Please contact me if you have questions or require additional information.

Sincerely,

C.B. Paine /GMH

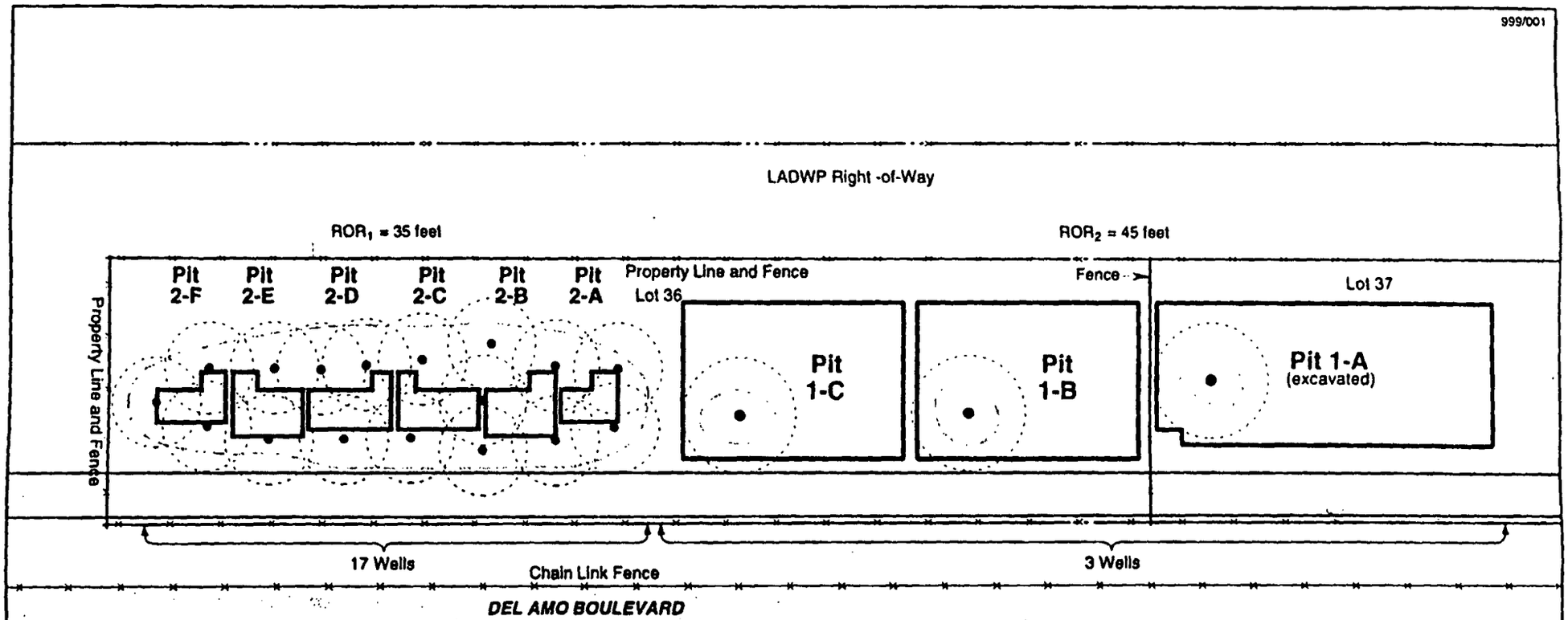
C.B. Paine
Coordinator for Respondents

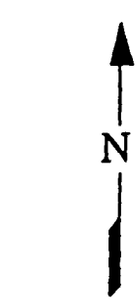
Attachment

cc: Gloria Conti, DTSC
Larry Bone, Dow
John Gustafson, Shell
John Dudley, Dames & Moore
Dave Laney, Dames & Moore

F:\SHARED\FFS\DELAMO.RSP

999/001





LEGEND:

Underground Petroleum Pipeline Corridor

50 mg/kg Benzene Concentration

Vapor Extraction Well and Radius of Remediation (ROR)

Note: The number and location of SVE wells may change pending the selected performance standard and/or if SVE is used to target different areas of the vadose zone soils.

Source: Pit Boundaries Based on DWR 1947 Aerial Photograph

FIGURE 7.4.1-1

CONCEPTUAL WELL LAYOUT SOIL VAPOR EXTRACTION SYSTEM

Del Amo Waste Pit Area

DAMES & MOORE

Reference 13

PUBLIC MEETING

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF:)
)
DEL AMO PROPOSED)
SUPERFUND SITE)
)

TRANSCRIPT OF PROCEEDINGS

TORRANCE, CALIFORNIA

Wednesday, January 29, 1997

COPY

Fox Reporting, Inc.
Fox Transcriptions
Second Floor
801 South Flower Street
Los Angeles, CA 90017-4622
(213) 688-9464

APPEARANCES:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:
75 Hawthorne Street
San Francisco, CA 94105

Community Involvement Coordinator	DAVID COOPER (415) 744-2182
Del Amo Project Manager	DANTE RODRIGUEZ (415) 744-2239
Montrose Project Manager	JEFF DHONT (415) 744-2399

SPEAKERS:

DEL AMO ACTION COMMITTEE	Cynthia Babich, Director
SIMPSON ENVIRONMENTAL RESEARCH	Ken Simpson
	Ms. Ponce
	Mr. Robert Evans

PUBLIC MEETING

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

IN THE MATTER OF:)
)
DEL AMO PROPOSED)
SUPERFUND SITE)
)

TRANSCRIPT OF PROCEEDINGS, TAKEN AT TORRANCE CULTURAL ARTS CENTER, 3330 CIVIC CENTER DRIVE, TORRANCE, CALIFORNIA, ON WEDNESDAY, JANUARY 29, 1997, REPORTED BY LEE ST. JAMES, ERM.

TORRANCE, CALIFORNIA, WEDNESDAY, JANUARY 29, 1997; P.M.

MR. COOPER: I want to welcome you tonight to this public meeting to collect comments on the proposed plan for the clean-up of the Del Amo Waste Pits.

My name is David Cooper. I'm a community involvement coordinator for the U.S. Environmental Protection Agency.

As I said, the purpose of this meeting is to collect public comments, and the meeting is divided up into basically two parts.

We'll have a short presentation of what EPA's proposed plan is all about, and then we'll have a break where we can re-set up the room for, put a microphone out front, and then people who are interested in making public comments can come forward and do so.

But before we get started, I just have a few items to pass on.

In the back -- just outside the doors is the table where we have a sign-in roster, and we would appreciate your signing in so that we can keep track of who comes to these meetings and it also helps us update our mailing list.

In addition, at the far end of that table there is another sign-in roster, and that one is for a special work group that has been proposed to look at the final use of the

land after the waste pits are cleaned up. We call that end-use work group, and anyone who's interested in being a part of that, please sign there and we'll be contacting you when that group is formed.

Translation in Spanish is being provided tonight by Maria Victoria Perez. Anyone who would prefer to hear this meeting in Spanish is welcome to come up to the front, where translation is being provided.

On that back table that I referenced are a number of documents that you will find useful. Some of them are, the proposed plan that was mailed out to everyone on our mailing list; that's about 1,900 people.

And in addition, there's a second fact sheet that speaks specifically to one part of the proposed plan which is soil vap- -- soil vapor extraction. So those two fact sheets may be something that you folks want to pick up.

There are some materials there from the Del Amo Action Committee, on the table as well, some red flyers and couple of other --

MS. BABICH: Newsletter.

MR. COOPER: And a newsletter. Thanks.

There's also a copy of the agenda out there, and a copy of some of the slides you'll be seeing later.

There are two other documents that you won't normally see in a regular community meeting. One of them is

a speaker request form.

If you have an interest in making a public comment this evening, I would ask that you get a copy of this form and fill it out while our speaker is making his presentation, and give them to me; and then during the second half of this meeting, I'll call your name and you can come up and make your public comment.

If you would prefer to write down the public comment and simply mail it to us, there is this form. And on the back it's already addressed to EPA. You just need to fold it in half and put a stamp on it, and we can receive your input that way, your feedback that way.

You'll notice, to your right that there is a video recorder that's running. That's for the internal use of the EPA; that's for training purposes. That's how we keep track of how our meetings go, and how we learn.

If anyone is uncomfortable with us filming them as they're speaking, or during some part of the meeting, we're happy to turn it off. It's not a formal part of this meeting at all; it's just for internal EPA use.

At this time, is there anyone who does have a concern about us running our video machine?

Thanks.

Finally, I wanted to point out that in the -- in the lobby area there are a number of posters, and those

posters show some of the things that we're going to be talking about this evening. They show examples of the different alternatives that we have -- we were looking at as we decided which part of the plan -- or what to propose as a method for cleaning up this site.

Some of the posters show another site in Fullerton, California, called the McCall Site, where they are doing a certain kind of clean-up activity; and those might be of some interest to you, too.

Also, the rest rooms, for anyone who needs rest rooms, are out the door and directly on the opposite side; there's a men, a women's. There's a drinking fountain. There is a telephone just outside the front door, and there are additional facilities through the gate -- through this courtyard through the gate and off in another building. There's also some refreshments there. There's some pop machines in one of the buildings, again, through the gate.

So, with that in mind, I'd like to quickly move through our very short agenda.

Can everyone hear me if I step away from the mike?

No?

MR. SPEAKER: No. We can barely hear you with it.

MR. COOPER: You can barely hear me with it. Okay.

Can everyone hear me now?

Okay. I'll just speak up.

We have a very short agenda this evening. Principally we're here to provide a review of the alternatives that EPA looked at, provide a question-and-answer period where you can ask us some clarifying questions about what did we mean about what we explain.

And then we'd like to stop the meeting, set things up a little differently, move a microphone out front, and then start receiving your public comments. The majority of this period is the formal time when we receive your comments on our proposal for taking care of the -- of the Del Amo Pits; so we want to make sure that most of the time is spent doing that, and not making a presentation.

With that, I'd like to just quickly introduce the people from the Environmental Protection Agency who are here this morning.

Dante Rodriguez and Jeff Dhont are the two project managers for the Del Amo site. And the gentleman who is just about to sit down, so catch him before he drops, is Michael Montgomery, who is -- who is section chief that includes the Del Amo site, among others.

Also with us tonight is Bill Nelson for -- and he is with the Agency for Toxic Substances and Disease Registry. And he is available after the meeting -- thank you for standing up, Bill -- he's available after the meeting to talk

to you about any of the health-related issues that his agency works with.

With that quick introduction I'd like to turn the meeting over to Dante Rodriguez, who will review the elements of the proposed plan.

MR. RODRIGUEZ: Good evening.

My name is Dante Rodriguez. For those of you who were at the December public meeting, you'll remember me as the new project manager. I've been working on the Del Amo Pits project for a little over three months now.

What I want to talk to you tonight about is four things.

One is, I want to describe to you what is the Superfund process, the process that the U.S. Government has for cleaning up the worst toxic waste sites. Second, I wanted to talk to you about the way we screen clean-up technologies for the site; and then, third, what the clean-up alternatives that we are considering are. And then finally, which alternative EPA prefers and why.

The Del Amo Pit Superfund Site is located in the area that's currently commercial businesses, north of 204th Street. 204th Street is approximately here; the area just north of that is currently a number of businesses and we call that the Del Amo Facility. Within this area, there is a small portion down here, just on the other side of Del Amo

Boulevard alley, that we call "the pits."

Now, earlier on, this area was used for synthetic rubber manufacturing. The area was owned by the United States Government and operated by a number of different companies, including Shell Oil and Dow Chemical.

This is a picture of the facility north of 204th Street, which is here. Vermont Street is here. This whole area used to be this big refinery processing area. The pits are located right in this area here.

This is a close-up of the pits area. Throughout the 1950s there were a number of open pits in this area where waste sludge was dumped. There were also three evaporation ponds that hazardous waste was put into.

Currently this area has been found to be contaminated with a number of hazardous substances, including benzene, which is a known human carcinogen, a substance that causes cancer.

Today the waste pits area is covered and is just a grassy area within an enclosed fenced area. Beneath the soil lie the sludge pits and the remains from the evaporation ponds. The sludge has leaked some of its chemicals down further into the ground until it hits the water, the groundwater that's underground about 70 feet deep.

What we're going to be talking about today is how to address the contaminated soil, and not the groundwater.

The groundwater will be the subject of a future clean-up process and decision.

In 1980 the United States Government passed a law that allowed us to go and clean up the nation's worst hazardous waste sites. In this law it spelled out a process that EPA was to use in investigating, selecting clean-ups and conducting clean-ups at sites.

This process starts when a site is discovered, and inspected and assessed to determine if it's hazardous or not. Following that, a very detailed investigation is made, investigating the environmental conditions and the contamination in this site, and then determining what feasible ways there are to address the site, to come up with a remedy to having a remedial clean-up.

Once this information is gathered, the EPA can then propose a plan for clean-up which must examine a number of different clean-up alternatives and compare them to each other. This information is then made public for people like you, communities of anybody who's interested, to review this information and tell us what they think.

Once all that information is taken into account, EPA makes the official clean-up decision, called a Record of Decision, and then we can design and build the remedy.

Right now we are in the phase of collecting public comments.

There's five alternatives that we ended up with; but when we started this investigation in and study, there were at least 24 different technologies that we assessed, to try to find the most workable ones. And these technologies were screened out, and there was a number of them, including a technology that was -- folks had asked about in December called bioremediation. That was one of the technologies that was investigated initially and screened through.

In the end there were five alternatives that it all boiled down to. I'm going to just describe those to you.

The first alternative is to do nothing and leave it like it is. We're required in the law to always consider this alternative. If nothing was done, the site would remain as it looks right now. There's currently a fence around it, soil and grass, but that's it.

The second alternative is called institutional control, access control. Basically, it would mean just trying to keep the people away from it. This would include putting up a new fence, and drilling wells that we can monitor -- continue monitoring the groundwater with.

During construction of this type of a remedy, you would probably see drill rigs similar to this doing work. Monitoring wells aren't visible from the surface after they're installed. They usually just have a cover on them, like a manhole cover or smaller, and they extend down into

the water.

The third alternative goes a step further. We call this the cap alternative. During construction of a cap -- and a cap -- we call these caps RCRA caps, R-C-R-A. It stands for the Resource Conservation Recovery Act. It's a federal law that currently regulates the production and disposal of hazardous waste, and this law defines what ways these caps are to be constructed and how they're to behave. They typically consist of a number of layers that seal off the waste beneath and seal water from the surface from getting down into the waste.

During construction of such a cap, you will typically see a number of earth-moving equipment and large bulldozers, and one of the components that they would be installing is a liner, which is constructed out of a high density plastic designed to last a long time. Underneath this cap liner, typically, is a number of other layers of clay soil that's compacted so that it also helps seal contaminants below and seal water off from above.

Once a cap like this is constructed, there's a number of uses that can be done on the surface, including landscaping, parks and that kind of thing.

But I want to point out that there's a number of layers in these caps, soil, the high density liner, clay, and a number of collection layers that will collect water that

rains down on the surface and directs the water off in a drainage. And it would also collect any vapors that come up off of the waste. It can collect those vapors in pipes, and then direct all those to a treatment system for those vapors that will clean the contamination out of that air before it's released.

The fourth remedy alternative goes a step further than that. We call this the soil vapor extraction and cap alternative.

In addition to the cap, we will be drilling some special wells. When they're installed these wells serve a special purpose. What they do are -- is basically, act as vacuum wells. These wells are proposed to be drilled in at an angle so that they go underneath the waste and suck the contamination from beneath the waste and above the groundwater.

These vapor wells basically create an airflow under the ground, that moves air through the soil and picks up contamination that can be transported through that air; and a number of the most serious contaminants that we deal with, including benzene, are chemicals like that that can be picked up in these vapor extraction wells.

Once these vapors are sucked out, they are all piped together into a treatment system that will remove the contamination from that airflow and then release the clean

air out.

The fifth clean-up alternative goes a step further than that, and it is the complete excavation and incineration alternative.

What this alternative does is digs cut all the sludge waste. This would have to be taking place within an enclosed tent that won't let any air in or out. The reason for this is that, when the sludge comes into contact with the air, it emits a lot of very hazardous vapors, very poisonous gases.

For that reason, the workers within the enclosure who are digging the material out would need to be wearing these special suits with their own air supply, similar to astronauts' moon suits.

There's going to be a continual flow of air being pumped in and then pumped out of this, and the air will have to undergo a high degree of treatment to clean the contamination out of it before it's then released clean, up into the air.

This project would take approximately five years of the digging process.

Once the stuff is dug out, it would be trucked or shipped to a hazardous waste incinerator, for which are none in California and it would likely go to another state.

After such an alternative is completed, the soil

vapor extraction wells would continue to suck out any remaining vapors in the soil beneath the former pits.

Of these five alternatives, the alternative that the EPA prefers was determined by comparing these alternatives to each other according to very standard criteria that's given to us in the law.

There were seven of these criteria. One is protection of human health and the environment. Another is short-term effectiveness; how safe is it while it's being built and processed. Third is the reduction of toxic mass through treatment. Fourth is compliance with regulations and laws that exist about those hazardous substances. Fifth is implementability: can we do it; is it possible to do this process. Six is cost. And seven is long-term effectiveness: will this last.

The remedy that EPA prefers is number four, the one that has a cap and soil vapor extraction.

The first act -- the first remedy doesn't do anything and does not protect human health and the environment. Neither does number two, the institutional control, access control; this does nothing to keep the contamination from moving down into the groundwater or moving up and emitting into the air.

The third alternative, the cap, does prevent contamination, the vapors from coming up into the air;

however, it does not stop them from going down into the groundwater.

Institutional controls with the cap and soil vapor extraction will do that protection of groundwater because it'll be sucking out the vapors beneath the pits before it can get down into the groundwater, at least significantly reducing the movement into the groundwater.

The fifth alternative is protective in the long run because the waste will be removed, excavated and eliminated. However, in the short term while it's being dug out, it's very dangerous because of the amount of time that it would take, and the fact that it has to be done within an enclosure for all that time. Trying not to emit any vapors, having any of that escape, could be a very difficult thing and, actually, has never successfully been done on this large of a scale. In addition, this fifth one is also ten times more costly than the next protective remedy.

So I've told you how we screened through these technologies and came up with our proposed five remedies, and which protective remedy we are preferring and why.

Now we want to hear from you and what you think. And I'm going to turn it back over to Dave.

MR. COOPER: Thanks, Dante.

What I'd like to do is -- if someone could get the lights back there; thank you very much.

I'd like to take a short break. We want to remove some of this material, set up a microphone so the folks can come up to make their public comments. So if people want to stand up and stretch --

MR. DHONT: Going to do questions first?

MR. COOPER: Oh, excuse me. That's right. I'm sorry.

Were there any questions, clarifications about specific things that Dante has talked about?

Sir?

MR. SPEAKER: Yes. Is the -- these alternatives include addressing the soil in the homes on 204th Street that have been fenced off?

MR. RODRIGUEZ: No, this is only the pits -- the waste that's in the pits and the soil that's around the pits themselves.

MR. SPEAKER: Is there presently any plan to -- or any process -- well, tell me what -- where that process is to address the homes themselves that were fenced off.

MR. RODRIGUEZ: The homes that were fenced off on 204th Street was part of a emergency removal action, which happened independently from the clean-up of the pits area. That was put on hold while discussions took place with the community regarding buy-out.

MR. COOPER: Sir, in the back.

MR. SPEAKER: Yes. Should we go with number five, how

deep will you dig to remove?

MR. RODRIGUEZ: The -- the sludge pits, I believe, go about as deep as 30 feet deep.

MR. SPEAKER: And the contamination that is spreading past that?

MR. RODRIGUEZ: And the contamination that's spread further down than that will be gotten with vapor extraction wells.

MR. SPEAKER: Has -- has the contamination spread laterally at all? I've seen some -- some test wells where the ... is -- used to be directly behind or in between the houses and the pits. Has any lateral detections?

MR. DHONT: It has spread laterally, but not beyond the pit bounds.

MR. RODRIGUEZ: Somewhat. I believe, from -- from the last report that I have looked at it, it had gone from the sludge pits themselves laterally somewhat, about as far as the fence line. So those areas would be sucked with the vapor extraction, if they -- depending on how much was there. If we've found enough -- that it was still a concern, then, yes.

MR. SPEAKER: ... at what depth?

MR. RODRIGUEZ: Down -- all the way down to 70 feet, to groundwater.

MR. SPEAKER: That's -- that's where the lateral

detection is?

MR. RODRIGUEZ: The -- the detection would stop when -- once you get to groundwater.

MR. SPEAKER: Right. Because I remember seeing an EPA chart showing a benzene plume that goes all the way over to Orange Boulevard.

MR. RODRIGUEZ: Yeah. Once the benzene hits the groundwater, it moves within the groundwater; and that would be a subject of the groundwater clean-up remedy, which is different than just the soil. So it --

MR. SPEAKER: Benzene ..., correct?

MR. RODRIGUEZ: Correct.

MR. SPEAKER: So it is possible that the benzene, depending on whether the soil conditions are -- are right are not; if the soil conditions are dry, the benzene can literally volatilize and come up over the course of that 70 feet?

MR. DHONT: Actually, the -- the --

MR. COOPER: Jeff, why don't you use the mike.

MR. RODRIGUEZ: Yeah. He's the groundwater specialist here.

MR. DHONT: Yeah. Actually, it can volatilize off of the groundwater, but it does not volatilize to a very great degree. It stays within three feet, five feet of the groundwater table; so the groundwater is far, far below the

surface and the -- there is really no threat to people on the surface from benzene in groundwater.

In addition, there was soil gas sampling done along the -- between the houses and the pits at shallower depths, to ascertain whether lateral migration of vapors was making it at a -- at a lesser depth, closer to the -- you know, the -- the homes.

MR. SPEAKER: ... deeper than 20 feet, because it ...

MR. DHONT: Well, it would -- that would be roughly in the -- in that realm would be where you would be concerned about vapors moving into homes. In the soil gas -- that sampling indicated there was not vapors moving into homes out of the pits.

MR. COOPER: Sir, in the back.

MR. SPEAKER: Yeah. What conditions, in terms of the movement of toxics, toxins or hazardous material -- what conditions will continue to exist after the proposed remedy?

In other words, I understand that the cap and the soil and extraction will do something, but what will continue to happen? In other words, will anything spread or will it all eventually be remediated?

MR. RODRIGUEZ: The plan tries to contain it all and stop it from spreading in any direction.

MS. SPEAKER: How long will that containment last?

MR. RODRIGUEZ: As long as it needs to; as long as the

waste is still there and it's still a threat.

MS. SPEAKER: So a cap has no life -- has a life of infinity?

MR. RODRIGUEZ: Indefinite, right.

MS. SPEAKER: I thought they were only good for like 50 years.

MR. RODRIGUEZ: Well, if something needs to be replaced, an individual part can be replaced and continued on.

MS. SPEAKER: How many contaminants will those vapor extraction things accommodate? I mean, how much of the hazardous material vaporizes and how much of it stays in the soil?

MR. RODRIGUEZ: The question was, how much of the contamination vaporizes and can be gotten with the -- with the vapor extraction wells.

The answer is, there is a whole class of the contaminants, called the volatile organic contaminants; and by -- by a percentage -- I'm not positive exactly what percentage they make up, but what they do make up is the bulk of what moves. So basically, all of the things that are very mobile and will be moving up or down, will be gotten.

MS. SPEAKER: And whatever doesn't move, remains.

MR. RODRIGUEZ: Remains, right.

MS. SPEAKER: Yeah.

MR. COOPER: Sir?

MR. SPEAKER: You mentioned on your alternative number four would take approximately five years -- or no, no, the extraction -- I'm sorry, the complete extraction comes to five years for clean-up.

What time length are we looking at for alternative number four, for -- for a complete clean-up?

MR. RODRIGUEZ: The vapor extraction wells would remain.

MR. SPEAKER: Right. Now, the toxins in the soil, I mean, what time lengths we looking at to -- to clean up the toxins in the soil, as well as --

ANOTHER MR. SPEAKER: ... where does the toxic waste go, the toxic waste go? ...

MR. SPEAKER: It sounds like somebody's been drinking the toxic waste.

Excuse me, sir.

Approximately how long are we looking at?

MR. RODRIGUEZ: Well, as long as the sludge is there, it will continue to emit vapors down and up. And it will continue to do that, and, thus, the soil vapor extraction will continue to sit there and then collect them as they come down.

MR. SPEAKER: Are -- are we looking at 20 years, 25 years, 30 years, until the vapors subside? I mean, how long will --

MR. RODRIGUEZ: Indefinitely.

MR. SPEAKER: Oh, okay. So there -- there is no real clean-up here; it's just a kind of --

MR. RODRIGUEZ: It's a contain- --

MR. SPEAKER: -- kind of like --

MR. RODRIGUEZ: It's a contain- --

MR. SPEAKER: -- trying to put a Band-aid over a sore kind of thing.

MR. RODRIGUEZ: A containment.

MR. SPEAKER: Okay. Okay. Thank you.

MR. COOPER: Sir, in the back.

MR. SPEAKER: I'd like to go with that number five. You know, I been in the neighborhood all my life, and it seems like we're just getting pushed around. Nothing ever gets done.

Dig it out, get rid of it.

MR. COOPER: Sir, that also might be something you'd want to repeat when we get to the public comment period, the second half of this meeting.

MR. SPEAKER: Whether it take five years or two years, whatever, ...

MS. BABICH: Dante -- or, I'm sorry, Dhont, Jeff Dhont, what is it that keeps the benzene on the groundwaters from volatilizing more than a few feet?

MR. DHONT: Well, it's -- it's somewhat of a complex technical situation. But the -- the benzene, once it gets

into the groundwater, is dissolved; and it's dissolved in the groundwater and it's moving with the groundwater.

And, yes, the ground -- the dissolved concentrations are very high, but it -- you know, the bulk of the benzene will be staying in the water. Some of it will volatilize, but then it goes up into the soil column a short distance above the water. And there isn't -- there really isn't anything to -- to drive it back up; so it will go a certain distance.

And you do see that. If you -- if you sample down, you know, all the way to the water table, you will see high contamination at the top, and then it will tend to sort of peter out, and then you'll see higher contamination again right down at the water table, which is sort of what we call the halo effect.

If the -- if the concentrations in the groundwater are high enough, and you -- and you will see that, but it -- it's -- there is -- there's just no -- it's not enough benzene to drive it all the way up to the surface.

MS. BABICH: Well, as you're probably --

MR. DHONT: The soil stops it, in essence.

MS. BABICH: -- very well aware of in clay soils, a lot of times in our neighborhood, we have large cracks; and what would happen if one of these cracks reached down there pretty far? Wouldn't that be just the perfect pathway for this soil

gas to escape from?

MR. DHONT: Again, you'd have to have -- you'd still need a lot of, a lot of benzene coming off the groundwater to drive it that -- that far. But it is also very highly unlikely that you have any -- while you do have some cracks -- wide cracks, you have clay cracks that extend anywhere near that far down.

MS. BABICH: 60 feet?

MR. DHONT: 55, 60 feet, 70 feet, yeah.

MR. COOPER: There was a gentlemen -- there was a gentleman in the front who raised his hand earlier and I didn't -- I didn't catch him, and then he went into the back.

Sir, could you -- did you have your hand up?

Well, there was a gentleman in the back. Sir?

MR. SPEAKER: Yes. Is volatilized benzene lighter than air or heavier than air?

MR. RODRIGUEZ: Jeff?

MR. DHONT: It's heavier.

MR. SPEAKER: It is.

MR. DHONT: Yeah.

MR. SPEAKER: Okay. And another question about the --

MR. DHONT: It's lighter than water. If you have pure benzene, it will float on water.

MR. SPEAKER: So it's floating on ... water ...?

MR. DHONT: There -- there are locations on the side

where you can -- if you have pure benzene right at the source, and the pits is not one of them, you can get benzene floating on the water.

But the groundwater contamination that I have been discussing is dissolved; so I'm drawing a distinction between -- let's -- if, for instance, have salad oil and water, they don't mix really; you just have two separate layers, but a certain amount of it does dissolve in the water. Okay.

Now, what we're seeing at the pits and out -- going out from the pits in the groundwater is the dissolved part, in this case.

MR. SPEAKER: ... You're -- you're speaking as if the level of the groundwater never changes. But it does, in fact, change regularly.

MR. DHONT: Yeah. The groundwater table, in fact, over a long period of time, has been rising. But it -- it's risen on the order of -- I'd -- I'd have to look it up but, you know, five feet or ten feet or something like that, and that's over the last couple decades.

It also does fluctuate on a seasonal basis, but that -- those are very small fluctuations. So you have to, you know, imagine again the distance from me to the rest rooms, and then imagine, you know, water moving, fluctuations between me and the front row. Okay?

So that is going on but there's still a very great distance between that groundwater and the surface of the ground.

MR. SPEAKER: ... depth of the groundwater, say, over the last ... years?

MR. DHONT: I'd have to look it up. I imagine -- it's probably in the neighborhood of 55 feet.

MR. SPEAKER: I would like to have the fact, if you could find that?

MR. DHONT: Sure.

MR. COOPER: Sir, you had a question.

MR. SPEAKER: Yeah. You said there was an excavation done on a smaller scale, considering the number five option.

What are the circumstances and -- what is the probability of a leak of some kind during the five years it would take if option five was chosen?

MR. RODRIGUEZ: The other site that I'm familiar with where there was a small scaler excavation was at the McCall site in Fullerton, California, and they did it as a trial excavation, to see if it was practical and see what problems they would run into when they were doing that.

They concluded from that report that it was -- it was very problematic maintaining that sealed atmosphere for any extended period of time. And I don't know what the actual probability of having that breached would be.

MR. SPEAKER: It's kind of a difficult question, I guess, but it would seem important if you could -- if you could do option number five and prevent the escape of any of the toxins -- toxic substances, then that would be -- if not for the cost, that would be the way to go.

MR. COOPER: There was a woman -- yes, ma'am, please.

MS. SPEAKER: What's the justification for the ... standard for the soil vapor extraction falling, the groundwater concentration? Once a given level has been established, why should the standard drop? I mean, cleaning -- if you're at the beginning, saying that acceptance of the ... is X, why would you raise that level at the time?

MR. DHONT: I don't understand it.

MR. RODRIGUEZ: Why would -- the question was why would you change a clean-up standard --

MS. SPEAKER: Performance standard.

MR. RODRIGUEZ: -- once you set it?

MS. SPEAKER: Right.

MR. DHONT: Oh.

MS. SPEAKER: If a given percentage is set, why would that change? What's the justification for that?

MR. DHONT: You're referring -- have you been -- did you read the supplemental --

MS. SPEAKER: Yes.

MR. DHONT: Okay. You're referring to a changing standard --

MS. SPEAKER: Correct.

MR. DHONT: Okay. I can explain that.

Really, what we're doing with this soil vapor extraction system -- there's many different sources in this whole area that are contributing to groundwater. The pits are just one of them, okay?

So this is a remedy that, you know, in addition to protecting things going up into the air, we're trying to eliminate one of those sources to the groundwater.

Now, one of the issues that comes up is that the groundwater currently is contaminated -- very, very heavily contaminated. So there is, say, at least 400,000 or 500,000 parts per billion dissolved benzene directly under the pits or up to those levels. Okay? Again, I'm talking about the groundwater, okay?

Now, so one of the issues that comes up is, we need to look at how clean we can ever get that groundwater. Okay? And if the answer -- for the groundwater, it may -- it may literally be impracticable; it may be impossible for us to do anything with the immediate groundwater other than contain it.

Now, we think in -- and this is sort of a -- for another meeting, but we think there are things we can do with

the bulk of the far outside groundwater, but immediately under the pits, there may not be something we can do with that.

So the question is, how much do we need to clean up that soil to protect the groundwater that's already extremely contaminated. And the -- what we came up is, we used some calculations to help us estimate, given a certain level in the soil, how much would -- could that increase the groundwater concentration.

And what we wanted to make sure was that that -- whatever was left in the soil after soil vapor extraction, could not impact the current groundwater contamination by more than a very small amount, relative to what that concentration was. Okay?

I know that's kind of complicated but --

MR. SPEAKER: In other words, this should have started 30 years ago?

MR. DHONT: Yeah. Well, EPA wasn't here 30 years ago.

MS. SPEAKER: ... justification --

MR. DHONT: Yeah.

MS. SPEAKER: -- for -- what the rationale is for to be able to accomplish something, why would you accomplish less than that?

MR. DHONT: Well, the -- really what it boils down to is, if you're going to -- for instance, if I have 450,000 in

the groundwater, and I -- and I'm saying, "Okay, we're going to limit that to no more than an additional 50," which compared to 400,000 is -- is nothing, if it would take -- if the --

MS. SPEAKER: A lot more than zero.

MR. DHONT: Oh, sure, it is. But zero and 50 are essentially the same when you're looking at 400,000.

So -- but if we manage to get 400,000 down to some lower number, then -- then the soil would have to be respectively even more clean to keep it commensurate. So, yes, it's not zero; that's true.

MR. COOPER: Sir, ...

MS. SPEAKER: Which --

MR. COOPER: I'm sorry, ma'am. ...

MS. SPEAKER: Which aquifer is it you're speaking of? And are there any perched aquifers on this property?

MR. DHONT: Per se there's not a perched aquifer, no.

There are several aquifers under the site. The first groundwater in this area is what we call the Upper Bellflower; and underneath that we call it -- is what we call the B sand. The water table occurs, in some cases in one -- in the B sand, some cases in the -- in the Upper Bellflower.

MS. SPEAKER: And what are the purposes of those aquifers for ...?

MR. DHONT: They -- they are listed by the state as

potential drinking water supplies, as are most aquifers in the area, but they are currently not used for any purpose, and no one is drinking any of the water from the site.

MR. COOPER: Sir, in the back.

MR. SPEAKER: Yeah. Well, my question is, if -- if we go with alternative number four, if the EPA decides to go with that, can the EPA guarantee that this is going to be absolutely safe for the neighborhood, for the surrounding neighborhood, or can there be any malfunctions in the system? Can there bed leaks in the system? Can that be detected if there are any?

MR. RODRIGUEZ: The question was about guarantees that a alternative four, cap and soil vapor extraction system, would work to protect the community. And as best as technically possible, yes, EPA is guaranteeing that this is going to be safe for people.

Now, are there going to be problems? Is something going to break down? That always happens; but as long as, you know, EPA is there to take care of it and come back, or -- or to stay or some of these tasks with maintaining this system in a safe, operable way, then, yes, there will always be somebody to come back and fix anything that happens to go wrong.

MR. SPEAKER: It seems to me that with alternative number four, we're still taking chances, that -- that we're

going to have ... It seems to me that that is still beyond a certainty.

MR. COOPER: I understand.

There was a gentleman up front and then the one in the corner.

MR. SPEAKER: Yeah. I have a two-part question.

When this lady back here was mentioning the water, this gentleman kept referring to as vapor extraction to clean up the soil, which brings me back to my first question: Is it's cleaning up the soil, how long will it take to completely clean up that soil?

He kept mentioning, "Well, the vapor extraction will clean the soil." So how many years are we looking at, for a cleaner soil, at least below state and federal standards for safety?

And the second part of the question is, I see that your -- the capping is approximately $9 million. Now, if this is forever, does this include maintenance? If not, how often does maintenance occur, and what kind of price are we looking at, over and above the original 9 million for capping?

MR. DHONT: The quick answer to the second part of the question is it does contain -- it is based on a present-worth analysis, so it does look at operation and maintenance over the lifetime of the cap. And, of course, there's a -- you

know, a depreciation, you know, in that amount as time goes on, due to the time value of money. So that is factored into the cost.

In terms of soil vapor extraction and protecting groundwater, realize that what EPA --

MR. SPEAKER: Well, no, no, not the groundwater. She was talking about groundwater, and you kept saying as the soil vapor extraction will clean the soil, it will eliminate contamination of the groundwater.

What I'm asking is, the term "clean up the soil," what do you mean by that? If this is a forever process, and we're looking at a contaminated parcel --

MR. DHONT: Right.

MR. SPEAKER: -- how can you possibly clean this up?

MR. DHONT: Okay. You have to -- you have to imagine -- when we say "clean up," we don't mean to zero. What we're saying is that -- according to the proposed plan, if you read it, you'll see there are specific standards we are setting. We're saying that you have -- they have to get -- through the soil vapor extraction they have to get that zone down to those levels.

The thing is is, in principal, anyway, there will be more contamination coming out of the pits the whole time; so this SV system will be continually fighting to keep what's coming out balanced with what's being extracted.

MR. SPEAKER: It's an endless circle; as --

MR. DHONT: It is --

MR. SPEAKER: -- contamination is extracted, more contamination --

MR. DHONT: More is coming down, but -- but the system --

MR. SPEAKER: -- ... the ground, so it's a continuous circle will never --

MR. DHONT: That's right. It is a containment --

MR. SPEAKER: ... right?

MR. DHONT: -- it is a containment approach, that's correct. You are -- so we -- by cleaning the soil, we mean we're reducing the soil concentrations to a point. And they will clean up to that point, to the point where the threat to groundwater is essentially insignificant.

MR. SPEAKER: ... groundwater --

MR. DHONT: But they still have to keep running -- you know, your question seems to indicate, "Well, how long before we turn it off?" Well, we don't turn it off --

MR. SPEAKER: Well, no, not turn it off.

MR. DHONT: Yeah.

MR. SPEAKER: I was wondering about the term "clean up." And I read in here ... that there's a proposed plan to build a park on top of this waste dump.

Now, since we're in California and we're very

susceptible to earthquakes, what's the chance of us having some sort of an earthquake that will break this cap, and allowing the -- what is it, sulfur hydrogen gas? Hydrogen sulfide gas to be released in -- into the air.

Now, we're -- now there's a park on top of it, so the kids are in the park playing, we have an earthquake, boom, here comes all this contaminated mess.

MR. RODRIGUEZ: Yeah. So the question was the probability of an earthquake damaging the cap and allowing things to come up.

MR. SPEAKER: Right. Safety to -- to the citizens --

MR. RODRIGUEZ: Right.

MR. SPEAKER: -- if that occurs, I mean, how long would it take to remediate the situation, to get an emergency crew out there and to cap it off?

MR. RODRIGUEZ: Now, it's -- the probability of an earthquake happening in any particular place is just that; a probability.

We haven't done any analysis for the probability of earthquake in this particular area, so I couldn't say what the probability of an earthquake is, although I -- what we could say is what we expect the performance of our cap, as we design it, to be in case of a certain amount of earthquake.

MR. SPEAKER: Right, right.

MR. DHONT: Yeah. And what -- what can be done is, when

we're designing it, design for, you know, earth movement or whatever kind of shaking occurs during the earthquake, up to the maximum credible earthquake, similar to the way that they design a freeway. They look at, what is the -- how much possible shaking could there be and how do we think our system's going to respond to that.

And that can be taken into account when we design. But as far as, if something does happen that then releases them, you know, what is the time for emergency response, was the other part of your question?

MR. SPEAKER: Right.

MR. RODRIGUEZ: And both the EPA, the state and sometimes the County have emergency-response people that are able to respond immediately to those types of accidents.

MR. SPEAKER: In other words, the long and short of it is, is capping is good for business?

MR. SPEAKER: Well, has there ever been a failure with the cap, that EPA has capped on these different land sites? Have you ever experienced any kind of a failure?

MR. RODRIGUEZ: That I don't know. I'm not familiar with examples across the country.

MR. SPEAKER: How long have you been capping?

A VOICE: How much time --

A VOICE: ... a long time?

MR. RODRIGUEZ: Yeah. The capping technologies that

were laid out in the -- in the law that I was telling you about, the law was passed around 1980. So --

MR. SPEAKER: When was the first cap built?

MR. RODRIGUEZ: Don't know.

MR. SPEAKER: How long -- what kind of a performance record do you have here?

MR. RODRIGUEZ: Yeah, I don't -- I'm not --

MR. SPEAKER: ... --

MR. DHONT: The cap -- cap has been -- since RCRA was passed --

MR. SPEAKER: ... for example, the cap may not hold up very well in an earthquake.

MR. DHONT: -- since RCRA was passed in 1976 there's been a number of caps across the country. We're not aware of caps failing.

In this particular instance, you know, number one, there can be monitoring. Number two, even if there were failures of one form or another, you understand what we -- what's on the site right now, which is just dirt, you know, there's been monitoring which indicates extremely low, if any, emissions from that facility. So if -- from the pit.

So if there were some -- you know, the cap can handle ... --

MR. SPEAKER: You're doing the wells ... you're doing the wells that will allow the -- the contaminants, the

vapors, to release if there was damage to the cap.

MR. DHONT: I mean, the design of the cap is designed such that --

MR. COOPER: Excuse me. Jeff, why don't you use the mike because I have a feeling this is starting to get lower and lower and the people aren't ...

MR. DHONT: The caps are designed so -- if there's wells through the cap, they're designed for -- with those sorts of things in mind. So if there is a problem with gas movement in a well or something like that, those sorts of things are accounted for in design.

And there are times when you do have to drill holes through a cap; but -- for wells or what have you, but those -- number one, you try to minimize them; number two, you design for that -- those sorts of problems.

MR. COOPER: Michael, I think you've had your hand up for about a half an hour.

MR. SPEAKER: Yes, I have a two-part question.

The first part is, you said you've got benzene that's still going to be leaking down from the pits; then you've got the halo above the groundwater level.

Will the soil vapor extraction system tend to pull the halo up; in other words, it might, in fact, cause more of the benzene out of the water into the halo, then up the ...

Will that soil vapor extraction system affect the

halo at all? Would that feed into it and have to be processed and cleaned up ...?

MR. DHONT: The attempt in the design of the soil vapor extraction system would be to minimize that. Obviously, if you're operating system, you're trying to clean soil. If you're sucking more stuff off the water, you're just sort of defeating your purpose. So to the extent that that can be avoided, we will do that.

The -- although there may be some halo that, you know -- at the upper fringes of it that do get drawn in, but if that's the case, that halo would be immediately sucked into the system.

MR. SPEAKER: Okay. And my second -- the second question is this. In your decision-making process you started at "do nothing"; no, that doesn't work. You went down to two, you went down to three, you went down to some four.

At some point you looked at five, and there were conditions that argued for five and there were conditions that argued against five, and where you -- your best decision was four.

What I'd like to hear a little bit is, what were -- what was that discussion like on the border line between five and ten. What was driving you toward five and what drove you back toward four?

MR. RODRIGUEZ: The main things between four and five was safety during the process of excavating in five, and the cost, it being ten times more expensive than four. Those were the two main things.

MR. COOPER: Just as a -- as a point of interest here, we have this room from 7:00 until 9:00.

It's a little bit past 8 o'clock, and I know that there are a number of questions that people still have to answer -- or to ask, to get answers; but I'd like to keep in mind that the primary purpose of this meeting was to hear your concerns about the proposed plan formally, so that we could report them as part of the Record of Decision that eventually gets made.

So as long as you're comfortable continuing on in this vein, that's fine with us; we're happy to answer your questions. But we want to make sure that everyone who wants to make a formal comment -- and some of the things that have been said here to me seem like formal comments about what we've proposed -- we want to make sure that there is time for those folks to do that before the end of the meeting. So I just want to -- I want to toss that out.

I -- this hand's been up for quite a while I think.

MS. SPEAKER: My question goes back to the earthquakes. I'd like to know if there is a cap that's anywhere between 10 and 20 years old along the California coast where our fault

lines follow?

MR. RODRIGUEZ: What was it that ...

MS. SPEAKER: Yeah. Do you have aged cap?

MR. RODRIGUEZ: I'd have to -- I'd have to research that for you.

MS. SPEAKER: I don't believe so. I couldn't find one.

And I know even at my own home in this area, I have a four-foot slab in the front of my house and the last earthquake cracked it, okay? So right there tells me, we weren't even close -- the earthquake was in Northridge. If there is an earthquake in this area, how do you see, ... the cap. ***...?

MR. RODRIGUEZ: Well, to address the question of the cracking that she experienced in her concrete floor, as opposed to the effects of a similar earthquake on a cap, the answer I would give to that is that the cap is made with a lot of earthen materials, instead of solid asphalts or concrete.

With concrete, if it's shifted enough it'll just crack and -- and break and show that crack.

If you have clay and gravel and that kind of material in your cap, if that, you know, shifts any, it'll move but then it'll be resettling into itself. Clay can be like clay like Play-Doh, and that kind of thing.

The part of your cap that's not the earthen

material that's the plastic liner, you know, since it's plastic, it has some give and stretch that concrete wouldn't. So it has a better chance of moving and withstanding earth movements that a concrete slab wouldn't.

MS. SPEAKER: What type of --

MR. DHONT: Let me just add one thing to that, too, is that -- is that, really, operation and maintenance of a cap, once a cap is constructed, there -- the operation and maintenance period on that cap is active. And it is assumed that if there are any breaks in the cap or any compromise to that cap, that it would be repaired.

So the cap is not just placed and then -- and then left. As with all the EPA remedies, there is an operation and maintenance period.

MR. COOPER: There's a gentleman in the back who had his hand up quite a while, and, sir, I'm sorry I missed you. Sir, in the back. You had your hand up and I missed you earlier.

MR. SPEAKER: How deep is this contamination?

MR. RODRIGUEZ: Is the what?

MR. SPEAKER: How deep is the contamination? What are we talking about in depth? 500 feet?

MR. RODRIGUEZ: No, no, no. It's -- it goes as deep as about 30 feet in the sludge form, and then in the groundwater, the stuff that leaks down into the groundwater,

it gets deeper than that down in the water.

And how deep is the --

MR. COOPER: Jeff?

MR. DHONT: How deep is what?

MR. RODRIGUEZ: -- deep is contamination in the groundwater.

MR. SPEAKER: If you're talking about the ... three days ... remove all that ... all the expenses involved ...

MR. SPEAKER: (Inaudible.)

MR. COOPER: That sounds like something you definitely want to say during the public comment part of this, sir. I mean --

MR. SPEAKER: What's the big discussion? Why not dig out that cancer and get rid of it and it's over with. No more cap. ...

MR. COOPER: Sir, the gentleman standing in the -- in the doorway, you've had your hand up for a long time.

MR. SPEAKER: Yes. I had a couple of things I wanted to comment about, what this fellow was asking.

Has anybody even bothered to look into fault lines or anything like that in our area, or was earthquake totally ignored?

MR. RODRIGUEZ: Yeah. For that I'd have to look back to the -- to the reports that I've read; but I seem to remember the initial study of the environmental area said that there

was no fault line running through the pits area. But I'd have to double check on that to give you a better answer.

MR. SPEAKER: What ...?

MR. DHONT: For sure.

MR. SPEAKER: ... if we have a major earthquake ... it rocks and rolls ... something else.

This RCRA cap, when are we going to see the final detail of how it's constructed? Because I've been asking for this information for -- ever since you guys started, and I haven't seen anything yet.

MR. RODRIGUEZ: So the question is the details about the design of the RCRA cap.

My projection about our process is that once I finished taking all public comments and we make the official decision, we're going to seek to get the design going through the companies that were -- had dumped the stuff there. And I think a -- an optimistic negotiation time to get an agreement with them to do the work would be perhaps six months after that. So my projection is that the design would be starting, maybe as early as this fall.

MR. SPEAKER: You want us to go along with something that you haven't even designed yet?

MR. RODRIGUEZ: We haven't designed it yet, right.

MR. SPEAKER: Right. You're asking us to say --

MR. SPEAKER: ...

MR. SPEAKER: -- okay. That doesn't make any sense whatsoever. I mean, let's put the horse in front in front of the cart.

MR. COOPER: Ma'am, way in the back.

MS. SPEAKER: You've answered a number of questions ...

MR. SPEAKER: ... to earthquakes, and --

MS. SPEAKER: (Inaudible.)

MR. SPEAKER: No, but was it even considered. That was the question.

MS. SPEAKER: (Inaudible.)

MR. DHONT: It's recognized that it is an earthquake area. There -- there are no faults running right under the site. It was recognized that there are earthquakes in this area.

The point is, the cap can be designed to withstand earthquakes, and if -- again, if there were any breach of the -- of the cap, then those -- that maintenance would be performed.

And, no, we have not designed it yet. In the Superfund process, we select a remedy. The actual full-blown design occurs after the remedy is selected.

But these RCRA caps have been designed and -- and they're -- they're a variety of different designs, but we're -- we're telling you what the cap would be --

MR. SPEAKER: ... on page 5 the basic structure.

MR. DHONT: That is the basic structure, yes.

MR. SPEAKER: ... But the basic structure of the cap drawing on page 5, ...?

MR. COOPER: Ma'am.

MR. MONTGOMERY: I actually -- I have some examples of the types of materials that would be used in these cap systems, and people interested in looking at them after the ...

MR. COOPER: Okay. That was Mike Montgomery. He'll be available afterwards to show some of the material that's used.

Ma'am, you had your hand up.

MS. SPEAKER: Yes. I grew up here in this area, I did go ... and my family still lives there. And we are told the homes are ... in the -- south of 204. But I'm just wondering, when they get to that, how dangerous that is for ...

MR. DHONT: Are you referring to areas --

MS. SPEAKER: (Inaudible.)

MR. DHONT: Yeah. There's two investigations we're planning to do, and I can tell you this briefly. And in interest of time I'd -- I'd like, if you -- we -- I can talk to you more about it afterwards, but we want to make sure people have an opportunity for comment.

There are two investigations that we are currently

planning for. We'd like to begin them this year, if possible, pending funding constraints and what have you. But the first is along the Kenwood Avenue, where there was a former drainage pathway from the Montrose site; and the second is the general neighborhood where about -- the issue of aerial dispersion of DDT from Montrose.

Currently we do not have any indication that either of those is an immediate health threat; but we are checking it out. We are checking it out.

MR. COOPER: Sir, with the -- with the fact sheet in your hand.

MR. SPEAKER: I have a problem with putting money ... It seems to me that -- that between number four and number five a big issue is the cost involved in it. ... the cost between four and five.

And I can see how ... have people working ... but looking at a long-term, 20, 30, 50-year situation, what do you guys consider less hazardous to workers who are going to be working at this site, or long-term in the neighborhood? ... the cost issue ... I don't think ... that should be an issue. I mean, the health and safety, that should be the main ...

MR. RODRIGUEZ: Yes. The question was the long-term effectiveness of four versus five. And five because it removes the waste, after that whole removal and the

incineration process is done, five, because the waste wouldn't be there anymore, would be more safe in the long run because it's not there anymore.

MR. COOPER: Ma'am.

MR. SPEAKER: ... If you have another decision-maker, what's he going to propose ... Sacramento ... But why would you even consider four?

MR. RODRIGUEZ: Because we do have to consider cost, and we do have to consider the short-term safety during the construction.

MR. DHONT: And it is safe.

MR. SPEAKER: Don't you also consider the cost of medical bills of people that are living there while all these toxics are going on? I mean, you add up all the major medical bills of the people in the neighborhood, versus your hundred billion dollars to clean it up, it's still going to balance out. But you've got a whole lot of us people with cancer and et cetera, et cetera.

MR. RODRIGUEZ: So the question was, is medical bills factored into it during the comparison of the cost of the alternatives? And the answer is no, we don't do that.

MR. SPEAKER: Yeah, I know. You ought to.

MR. COOPER: Ma'am.

MS. SPEAKER: Was there ever an alternative six which involved removing the contaminated soil? And if not, why

not? Just strictly ... if that was considered at all, what were the costs if that was done?

MR. RODRIGUEZ: The question was removal of soil.

When I was talking about the screening of the initial technologies, about 24 of them, one of them was the excavation of soil, and then various other things happening to it. And off the top of my head I don't remember what that cost was of the excavation of the soil.

But I do remember that the volume of soil is very much greater than the volume of the sludge.

MR. DHONT: And it's much deeper.

MR. SPEAKER: As far as your criteria, is part of the criteria, isn't it also, community acceptance?

MR. RODRIGUEZ: Right.

I talked about the first seven criteria that we used to come up with the alternatives to date; and the eighth and ninth criteria are what we're doing right now, is community input, community thoughts and comments on the remedies. That's the eighth.

And the ninth is the State of California acceptance of the remedy and which they prefer. So that's what we're doing now is having the meetings, seeking --

MR. SPEAKER: Well, in order to get my acceptance, I'm going to need to see some kind of -- of plan or design, which isn't going to get started until after we accept?

MR. RODRIGUEZ: Right.

MR. SPEAKER: Somehow that doesn't sit well with me. I don't know about my neighbors. Most of them are pretty smart, though.

MR. RODRIGUEZ: Okay.

MR. COOPER: If there were no other clarifying questions, specifically about what was presented as these are what the five alternatives were and this is our proposal, in the interest of time, perhaps we could take a short break, allow us to set up and then take your formal comments, including many that you've already made, if you wouldn't mind making them again to make sure that we get them very clearly.

And before I -- before I ask you to leave, I'd like you to again consider going out and signing in, if you haven't signed in already. And remind you about the end-use work group that EPA is coordinating at the request of the Del Amo Action Committee; that sign-in roster is to the far end of the table.

If you wish to speak and make a formal oral comment this evening, there are cards out front; please sign them and just hand them to me. And if you prefer to make your comment in writing, there are comment forms out there that are already addressed to EPA which you can simply fill out at your leisure.

The formal comment period began on December 16th

and ends on February 13th. That was a 60-day comment period. So if -- if you'll just give us a few minutes.

MS. BABICH: Before you guys break, I know a lot of you are tired and you want to go home.

But I do have some comments that I've been waiting to make and hopefully you'll get some of the knowledge and some of the stuff that the Committee had to go through over the last couple of years to try and get to this point. And I think that if you leave before you hear them, you might miss out on some important information.

So I'll make it as brief as possible, but I hope that you'll stick around.

MR. COOPER: Again, the rest rooms are out the door and directly across the lobby.

(Recess.)

MR. COOPER: Let's all take our seats. We'll be starting the second part of tonight's meeting.

When I opened the meeting this evening, I said that this is a -- a special kind of meeting. It's a time when we go to the public and ask for their comments about our proposed plan in a more formal fashion, and this part of the meeting is that more formal part.

I said that this is a special kind of meeting.

It's a time when we go to the public and ask for their comments about our proposed plan in a more formal fashion, and this part of the meeting is that more formal part.

To my right is Lee St. James. And you'll notice that she has a machine over there and it's -- it's going to record the public comments and those will be transcribed into a document that we have as a record of this meeting.

The comments that you give us this evening formally by speaking or in writing with the document that is back on the tables, those -- those comments are put together in what we call a responsiveness summary where we summarize all of the comments and issues that were raised by the public regarding the way we plan to take care of the waste at the Del Amo Pits.

In order for this to work most effectively, we at EPA will be listening through this part except where we need to clarify what -- what you've said. If there's something that's said that we don't quite understand, we may ask "What did you mean by this?" or "What did you mean by that?"

But essentially this is your time to talk, this is our time to listen. And so what I'll do is I'll ask one person at a time to come up to the microphone and share with us their comments, their issues, their concerns about what we've proposed to do today.

I would ask as a ground rule that we respect

whoever is at the mike and that the person come up, tell us very clearly their name so that for the record we can keep track of who said what and then just -- just tell us what you think.

With that in mind, the first speaker is Cynthia Babich.

MS. BABICH: First of all, I really appreciate everybody coming here tonight. I know that these meetings aren't the best opportunity for most of you who have worked all through the day.

I'll try and make it as brief as possible, but this is a very complicated situation that we're dealing with here in the community, and I have taken the time to chose my words very carefully. Normally, I don't read but I will read my comments because I do want to make sure that they're understood clearly and that there's no question on what we're saying here.

I'm Cynthia Babich, and I'm the director of the Del Amo Action Committee, which is the community group that's gotten involved here in this community due to health concerns mainly. And through that involvement we're learned quite a bit, and some of that I want to share with you tonight.

What I will tell you tonight comes two-and-a-half years after researching, watching and participating with State and Federal agencies working on our Superfund Site.

This is a projection of what needs to be done at the waste pits in the short term and in the long term. We must state to these agencies and corporations what our needs are, but this must be stated in the form of demand to be heard clearly.

We are committed to following through with the work that has been started by the Del Amo Action Committee. The Del Amo Action Committee knows that this community supports its efforts, but agencies, responsible parties and our political representatives need to know this as well.

There are representatives here tonight of all of those who have a stake in this community's future in one way or another. We have been negotiating over a year now with many of these stakeholders on the 204 Street buyout issues.

Although we may hate in our hearts for the destruction many industries have caused, we do not and should not hate the messenger. All warriors know the importance of knowing their enemies.

Mr. Chuck Paine and Mr. Larry Bone is here tonight, and I'd like you to please raise your hand. These are some of the people responding to the problems here, and they have been working very hard to come to some kind of agreement on issues raised by this committee.

We certainly do not agree on many things, and they only know if they have been successful at putting themselves

into our shoes, but I can tell you that they have tried very hard to understand.

There are many problems across our nation, and if we cannot even begin to talk to each other about how to solve them, then we are truly doomed.

The EPA as well has risen to the challenge on many occasions and they have falled [sic] on some others. I am telling you this so you can understand that this committee's anger is not at the individual trying to make some sense of this horrible situation; it is with the federal and corporate policies that must be changed. This committee is tired of cheap talk and we are gearing for action.

We have come here tonight to talk about the EPA's proposals for remediating. Some think that means cleaning up the Del Amo Waste Pits. It's not what remediation is to me.

We will talk about current conditions and future conditions. We already know from previous meetings what has occurred in the past to this community: exposure to toxic chemicals from the waste pits and the Montrose facility as well.

Most of us are in the mid- to low-income range. Historically, it has been found that lower income communities have much more than their share of toxic problems.

There is a trend unfolding across the country about communities just like ours. Some feel the reason for this is

that lower income communities are so involved in making ends meet that they may not even notice that they have these added dangers in their community.

The attitude which has caused this problem and which we as a nation have been facing is called environmental racism. We are engaged in a struggle for environmental justice.

Many communities have been standing up, educating themselves and fighting hard for what is theirs, should have been theirs and will be theirs in the future. We cannot change the past, the present we may alter, but the future we hope to forge for ourselves.

The future of this community is very important. Many of us at this time with the knowledge of toxic exposure in the past and present in this community don't hold out a lot of hope for most adults. Our quality of life has been diminished, extensively in some cases.

We now look at the situation with brave hearts and optimistic minds. When we look at our children, we wonder what the quality of life will be for them in the future. This is what we have to make sure remains protected.

A little boy 204 Street asked me the other day where I lived, and I told him in San Pedro. I was lucky enough to have been under the EPA's temporary relocation, but feel torn between my community, which I dearly love, and fear

of my life from continued exposure. The air is fresher where I live at now, but I do not feel connected to this new community.

I was going to ask this little boy where he lived, but I was afraid he might tell me, or afraid of what I might have to tell him about where he lives.

That little boy and many other children in our neighborhood represent our future. It would be disgraceful to condemn them to the same feelings we now have about those who have blatantly dumped on this community. We are owed something for our suffering, we are owed self respect and we are owed a future, which today remains uncertain.

When we look at the remedies for the waste pits, containment or excavation, many of us from the beginning have felt it should be cleaned up. We didn't put it here, we didn't ask for it to be put in this community, and this community was here before the Del Amo facility.

What many of us have come to understand is that it can't be cleaned up. Trying to clean it up with current technology would be mean risking our health again and risking the health of the working because this stuff is so toxic, it can kill people at high levels immediately, like the levels that are currently in the waste pits.

What happens after toxins are dug up, if it can be done successfully? We have read options from the EPA and it

sounds as if it could be done at a cost of over $100 million. What happens then?

It gets shipped, trucked or railed to another community just like ours or to a burial site like in Nevada or Arizona where they'll dig another hole and bury it. Maybe this time they'll have some concrete liner or some other kind of protective measure. But it's still not being taken care of, it's not being cleaned up.

Or if it's too toxic to bury again, this other community that's like ours will more than likely have an incinerator. In this incinerator, they will burn the contaminated material. This will expose the community to the residual burnoff. They will be exposed as well to the many dangers of an accident while all these shipments are coming in.

The Del Amo Action Committee stands in solidarity with those communities, and although we don't want our toxic problem, we certainly don't want to ship it off to another community and cause them the same grief that we've had to endure.

So then what is the answer? We look to our current situation and we know from the limited studies that have been done to date that what we have been exposed to in the past is very bad.

We know that for at least two summers, toxic ooze

has seeped up from the ground from the waste pits. The dirt cover over the waste pits, which has been placed -- been in place for over a decade, has worn thin, blown away in the wind, and been washed away by rains.

We are being exposed currently. When you smell rotten eggs in the area, that's hydrogen sulfide, H2S, a deadly chemical that can kill you.

Why are we smelling it in our neighborhood? H2S is one of the chemicals in the waste pits and this neighborhood's closest source. We need to be protected from the oozes that are occurring, from the vapors we are smelling and from the eroding cap that was never up to par to begin with. We need to make sure this is capped as soon as possible.

Option four, containment, which has been proposed by the EPA has a venting system to burn off vapors that will be volitizing [sic] off the waste pits. When past air samplings were done, we were told no chemicals in the air were coming from the waste pits, yet they are going to be venting these vapors that will be building up under the plastic liners of the cap and burn them off near the eastern boundary of the waste pit area somewhere.

That sounds like chemicals do evaporate into our air space from the waste pits.

Option No. 4 will also be implementing groundwater

extraction. The waste pits are continually adding toxins into the groundwater so future contamination to the groundwater would have to be stopped at the source. These pump extraction wells will be located between the waste pits and the communities. They will be pumping groundwater until the site is cleaned, which may be never.

What the committee has asked the EPA to help us do is look into bioremediation options for this site. Bioremediation is when organisms are introduced into a contaminated environment and encouraged to feed off the contamination. The more they feed, the more they reproduce and the less contamination is left behind.

This is the committee's only hope for a clean future. This is the legacy we have to leave to this community and our children.

Will we ever be able to walk away from this, look back and think we have done anything at all besides leave the problem for another generation and another generation and another generation?

We live in fear of Superfund Sites in our neighborhood. We not only have one, we have two. How can we have a good quality of life when our minds have been poisoned?

A healthy mentality is very important. It helps shape one's self-confidence and encourages us to stand up for

ourselves by speaking out and seeking the information needed to become an involved citizen.

We do not want to condemn our children and this community to deal with the knowledge that they have deadly contamination just a cap away from causing them harm once again.

What does this teach our children? Are they not good enough or important enough to live in a healthy, clean environment that they don't have to worry about? Or does it make them feel that they are not as important as other children not dealing with this toxic neighborhood?

Some corporations and agencies have tried to pull the wool over some of us adults as to the extent of the contamination, but our children seem to know the difference. They are being alerted about the environment and its dangers and the dangers that have been caused and posed by the industrial revolution.

They are trying to find ways to secure their own future. They will turn to us some day and ask us why we didn't do anything. Those of you working for the corporations and government entities responsible for this mess and the agencies involved in the remediation can bet your children will turn to you some day and ask the same questions.

What will be the answer? "We did the best with

what resources we had at the time"? "We fought real hard to make sure that current exposure would be stopped"? "We stood behind a cap because we did not want to send our waste to other communities"?

Science is not advanced enough at this time to clean up the many messes all over the country. More research needs to be done, more research into bioremediation of this particular type of contamination.

Some bioremediation studies have been done in 1991. These studies were not very conclusive, and in 1991 it was a long time ago and a lot has changed in the scientific world since then.

Along with Option No. 4, we want resources set aside for grants into bioremediation technologies. This will provide funding for research on how and which organisms to introduce so that one day maybe 50 or 100 years from now nothing living in this neighborhood or in the near vicinity will live with the threat of a Superfund Site.

We have all seen how the government can shut down and Superfund's existence is questionable. What if there was no EPA? Our site in the future could represent a now defunct and failed system with nothing to stop the eroding and leaching contaminants into our community once again.

Can we turn to our children in the future and tell them that we did the best we could with what we had at the

time and we stand behind the decisions we made? Or will they turn to us and say we didn't stand up for justice.

Although we did complain a little, shout a few times, but ultimately we let people die. This is what will happen. People have died from these toxins in the past, they are dying today, and if nothing is done to see that this contamination is removed, they will die in the future.

This is our neighborhood and this is our quality of life we are talking about. The agencies out here are required by law to listen to us. They know we are the people who have to live with the decisions that they will ultimately make for this community.

We have been told that the cleanup will cost $100 million or more. A cap on the other hand approximately costs $10 million. The estimated life span of a cap is 30 years, maybe longer. We're talking about replacing something every 30 or 50 years. This is not a permanent solution.

We need a solid future in this neighborhood. We need to keep fighting for solutions. The money that is not being spent on this clean up is a large amount. There is a big difference between 10- and $100 million dollars to some of us is more than we can imagine, although I can tell you that $1 million would go a long ways towards solving the problems in the future through bioremediation, as well as

other sites with similar contamination.

Some day this community could again be as beautiful as before the toxins came. Its residents will once again feel comfortable with where they live. The children can say, "We live in a community that once was contaminated with toxic poison, but our community is evolving, learning and educating and helping others understand that things can change."

Industries that have made mistakes in the past can start going back to change the things that have occurred and they can make a difference as well. It has begun to happen here already with the many stakeholders joining in the buyout discussions. But we must continue.

If the involved agencies, political representatives and stakeholders will not stand beside this community and push for bioremediation grants that need to be made available, then truly you are not doing a service to this community.

Please help us bring justice to this community. Stand tall beside us. Know that you are making changes not only for the future of this community, but for the future of all kinds of communities around the country.

If the world was only a few feet in diameter floating above a field somewhere, people would come from everywhere to marvel at it. People would walk around it, marveling at its big pools of water, little pools and the

water flowing between the pools.

People would marvel at the bumps on it and the holes in it and they would marvel at the very thin layer of gas surrounding it and the water suspended in that gas. The people would marvel at all the creatures walking around the face of the ball and the creates in the water.

The people would declare it precious because it was the only one and they would protect it so that it would not be hurt. The ball would be the greatest wonder known and people would come to behold it, to be healed, to gain knowledge, to know beauty and to wonder how it could be.

People would love it and defend it with their lives because they would know somehow that their lives, their own roundness would be nothing without it.

Please use this meeting to once again voice your concerns about our toxic environment, even if you are angry. Freedom of speech is a powerful tool and we need to use it. We need to -- the help of the PRPs as well. If they do not want to put money aside for research, they will pressure this proposal and our fight will be harder.

Mr. Paine and Mr. Bone, I ask you to continue to try to understand our needs and help us achieve the goals we have spoken of here tonight so that one day we may all be proud of a job well done.

Please stand beside the Del Amo Action Committee

and let these stakeholders know that there is no mistake that our community is united and we will fight to continue to achieve justice in this community. Thank you very much.

MR. COOPER: Thank you. Kim Simpson, please.

MR. SIMPSON: Hello. Can everybody hear me back there?

My name is Kim Simpson, and, excuse me, I represent Simpson Environmental Research, a research and development company that has been researching the advance of environmental studies for the last 27 years.

This is the first opportunity I've had to address the EPA on this Del Amo site. And for the EPA and for the community also, I would like to propose my solution to the Del Amo site.

Simpson Environmental Research has cleaned up toxic waste dumps all through California. We have worked for the Federal Environmental Research -- or Federal EPA, I'm sorry, and the California EPA. We have cleaned up the Azusa waste site, Irwindale waste site and the San Gabriel Superfund site; we have cleaned all those up.

We can remediate that property; not cover it up but remediate it, actually take the carcinogens out of the soil to below state and federal standards for not only industrial use, but all the way down to residential use.

We can do this without breaking the topsoil of the surface and releasing the hydrogen sulfide gases, which is

one of the most -- one -- your biggest concern for excavation, is it not, the release of the hydrogen sulfide gases.

Now, if they were to be released on excavation, they can obviously be released through a fault in the cap site. Their price to put a cap over the site is approximately $9 million.

I propose that our company can come in and remediate that site for under $4 million with an up-front fee of less than $500,000 and we are prepared to give the EPA and the city a free show-and-tell under controlled situations, take us to the site, show us the small parcel of land you would like remediated and we will do it absolutely free to show you that this not a con or a trick-and-pony show.

This is a brand new technology. You were talking on microbiology or micro remediation, bioremediation which is the use of microbes. That is very successful as far as a natural remediation is concerned.

The problem with microbes is that it takes an extremely long time for them to work and they only work in a very short window. It cannot be too hot or too cold, too wet or too dry. And the soil has to be completely oxygenated at all times, so it is still a fairly expensive process.

This process that I propose is the process of molecular remediation. We do not take care of the symptoms.

We take care of the actual problems, which in this case are your hydrocarbon and carbon hydrogen lines.

We remediate completely volatile organic compounds, semi-volatile organic -- organic compounds. We remediate benzene, which I've heard so many times tonight. We actually mediate it down to nondetectable levels. We also remediate lead, arsenic and a multitude of other metals and contaminants.

Our record is available for anybody who would wish to contact to see what we have done. We have an extensive list of sites we have remediated, and in the last three months the Federal EPA contacted our company to bid on the remediation of New York Harbor.

They have tested our remediation, they believe in it, and they are currently using it. So I ask the public, please, before any decision is made, please at least consider to remediate the land before you put the Band-aid over it. Thank you very much.

MR. SPEAKER: How long?

MR. SIMPSON: I'm sorry. Excavation you said would take five years, the capping is indefinite. We will completely remediate that site within six months, six months. That is a guarantee.

Our up-front cost, as I promised, is less than $500,000. And we will design a contract that states that no

other money is to be paid to us until the EPA receives their test levels back and we come in below the -- excuse me -- I've got extremely dry mouth up here, I'm sorry -- below the levels that you deem necessary. Thank you.

MS. BABICH: I have some questions.

MR. SIMPSON: Yes, ma'am.

MS. BABICH: Sorry. I'll be real quick.

MR. SIMPSON: Yes, ma'am.

MS. BABICH: How did you come upon this meeting tonight?

MR. SIMPSON: Through America On Line. AOL. It's taken me quite a long time to decipher how the EPA puts information on the AOL, but through approximately four months of research and working in AOL, America On Line, we have found where we can finally get in here and put our proposals in before any decisions are made.

MS. BABICH: I'd like to know if the EPA has any comments on -- this quite sounds, you know, like some pretty good razzle-dazzle here. I'm ready to buy.

So what do you guys think?

MS. SPEAKER: I like it.

MS. BABICH: How come this is just coming up now, and is this something that can be put in perspective here for the community.

MR. MONTGOMERY: I mean, this is actually a comment period. I mean, I think I'd like to talk with you

afterwards. I -- you didn't -- you didn't make it clear as to whether or not your particular technology would require excavation.

MR. SIMPSON: Absolutely not. Our technology does not require disturbing the landfill at all. We work in a -- a medium of percolation. We put our product in a water truck, we saturate the land, let it percolate down, and for the levels of deep contamination, we use the wells that have already been dug.

MR. DHONT: Are you aware that we're not dealing with soils here but a monolithic and viscus and non- -- relatively non-porous set of waste that would not accept percolation.

MR. SIMPSON: We're dealing with contamination of the soil.

MR. DHONT: We're not dealing with soil here, sir.

MR. SIMPSON: We will clean up the contaminated waste and the sludge. We have done it. I have a list here of places we have done it for. Again, the San Gabriel Superfund Site in '93.

MR. DHONT: Sir, all superfund sites are different. This is a site with --

MR. SIMPSON: I've researched, I've found out --

MR. DHONT: -- with waste --

MR. SIMPSON: -- what the contaminants are, sir. I would not be here if I thought I was wasting my time.

MR. DHONT: If we had a monolithic -- if we had soil in this instance, we might be proposing a very different remedy. We do not have soil.

MR. SIMPSON: I would not be here if I did not think we could remediate this situation. Again, I reiterate, we do not expect to be paid other than the up-front money until the control levels have been met.

And once again I reiterate we are willing to give a free show to the EPA, controlled. You show us the land you want remediated. We won't do the whole site. We'll give you up to eight, nine cubic yards.

You control the situation; you control the test site; we'll do it for you for absolutely nothing. And if I thought I was wasting my time, I would not be offering this for free.

Thank you very much, gentlemen. Thank you for your patience and time.

MR. COOPER: Again, in the interest of time for everyone who has waited to -- to be able to speak, the next person on the list is Chuck Paine. You're welcome to just use the -- the microphone there if you'd like. Or you can come up here.

MS. BABICH: He has to come up here, too. He doesn't want his back turned to people. He doesn't trust us that much.

MR. PAINE: I'll try to be brief.

My name is Chuck Paine. I work for Shell Chemicals Health Safety and Environmental organization. I'm also the project coordinator for the Del Amo site respondents.

The proposed plan that the EPA has issued and we've been discussing today is comprehensive, it's informative, and I believe balanced. The amount of -- the -- it's the result of a significant amount of effort on the part of the agency to try to move forward a solution at the Del Amo site.

The Del Amo respondents stand ready to work with the EPA to further define, develop and implement a cost effective remedy that is protective of human health and the environment as easily may -- implement it and maintain.

We also stand ready to continue to work with the community in -- in working towards a future land use that is truly of benefit to the community.

When we look at the -- the alternatives that have been presented, Alternative 4 is desirable over excavation. When you look at the cap and the SVE, the cap will cut off emissions, cut off dust, and effectively cut off any kind of contact with the waste, solve vapor extraction, will be protective of groundwater.

I do give support and thanks to the EPA for the effort that they have done here, and look forward to working with everybody in the future. Thanks.

MR. COOPER: Robert Evans, whichever mike you would like

to use.

MR. EVANS: Nobody else is using it.

MR. COOPER: Okay.

MR. EVANS: I don't really need a mike.

Yes. I do not agree with covering up, but I also don't agree with excavating, because I know if they excavate, it will put everyone that lives in my neighborhood at risk.

And what was just offered somehow seems too good to be true. I would definitely like to be there when you do this just for my own peace of mind.

I would like for the EPA to investigate your method, Mr. Simpson, of how to do this remediation without disturbing the soil and digging it up and neutralizing it. I do not believe at all that it should be left alone.

I would like to know if you can address the groundwater problem, and that would be definitely something to pursue, I think.

I would like to thank Cindy for your hard-hitting action because without it, well, we'd all be rotting in toxic waste.

So that's all I got to say. Thank you everybody.

MR. COOPER: I have the strong feeling that there are others who would like to come forward and make public comments. That was the list that I had, so if anyone else -- I think, Dunian [ph], you had some comments you wanted to

make, and you'll probably want to use my mike. Okay. Fine.

MS. PONCE: I would like to thank Cynthia, the PRPs, and the EPA and the whole community for sticking together for this whole three years that we've been working on this toxic problem.

I would also like to remind the agencies that the problem doesn't end at half of 204 Street; that we are working hard towards negotiation of buyout of half of -- of half of the neighborhood of 204th Street. But that is not the end.

And we do hope the rest of the community to be out because there are other toxic problems, and we're only addressing a small portion of the problems on the neighborhood. And there is a lot -- a lot of more people that is going to be left behind suffering and being contaminated, and we'd like to see them out as well.

So I just wanted to remind everybody not to forget that, that there is another half of the neighborhood that needs to be worked on and we're not going to forget them.

MR. COOPER: Was there someone else?

I'd like to again remind folks that the -- the period for public comment runs through the 13th of February, and so thoughts that might occur to you later, questions that you may have later, you're certainly welcome to contact either Dante Rodriguez or Jeff Dhont or myself, David Cooper.

We'd be happy to work with you to answer any questions that you have or you can just -- you can mail your comments in.

Just as a final note, for those people who did not sign it, we would appreciate knowing who attended so we can keep track of that. And you're certainly welcome to any of the material.

And, again, the end use work group that the Del Amo Action Committee has asked EPA to coordinate, that's the sign-in roster at the far end of the table.

MS. BABICH: With the red writing on it.

MR. COOPER: With the red writing on it.

MR. DHONT: David, we'll be available for questions.

MR. COOPER: And all of the EPA folks will be available for questions after this meeting.

I also want to remind you that Bill Nelson of ATSDR will be available to discuss any of the health issues and concerns that you folks have, and he'll be sitting at the table just outside the doors.

Mike, did you have a comment? You look midway through a thought.

Ma'am?

MS. SPEAKER: I have a comment. Mike just said no, he didn't. But I think it would be a good idea since he does have samples of what cap material does look like, so the

people that do not know what it looks like ... they should know that he does have a couple of samples of all the types.

MR. COOPER: The re- -- the reminder is that Mike Montgomery, who's holding up the yellow envelope, has actual samples of some of the material that could be used in a construction of a multi-layer cap for the Del Amo Waste Pits, so you may want to talk to him about that.

MS. BABICH: Can you explain the process for an extension on the comment period in case some people feel like they need to do more research.

MR. COOPER: You provide to -- the question was an extension to the comment period, if more time is needed to review the documents that are available, particularly -- and I should mention this.

There are two libraries that contain the full administrative record for -- which was the basis of the proposal that you heard tonight. That's the Torrance Library that's in this complex area, as well as the -- the Carson Library. So if you have additional questions beyond what is answered in the -- in the fact sheet, you're certainly welcome to go there and -- and review the material in general.

Anyway, the -- the process would be to simply submit a letter to EPA making a request and explaining why. That letter should be addressed to Dante Rodriguez, and for

those folks who want Dante's address, if you will pick up one of the comment forms that look like this, Dante's address is on the back as part of the -- the reply. So that -- that's what you need to do.

If there are no other comments at this time, I'd like to say thank you, all of you. There's -- there's almost 80 people I think that I counted here tonight. Thank you all for coming and staying through the -- through this entire process. We appreciate your comments.

Many of you are very, very well thought out and very good comments and questions about our proposal. We certainly have a lot to think about and we hope to talk to you again about this. Thank you.

MS. BABICH: Thanks for coming.

(Proceedings concluded.)

C E R T I F I C A T I O N

I, MARIE FOX, do hereby certify that the foregoing 26 pages comprise a true and correct transcription of the taped proceedings had in the matter of EPA Del Amo Proposed Superfund Site, at the EPA Public Meeting held Wednesday, January 29, 1997.

I hereby certify that I have caused said proceedings to be transcribed and that the foregoing is a full, true and correct transcript of said proceedings; that I am neither counsel for nor related to any party to said hearing, nor in anywise interested in the outcome thereof.

Dated this 10th day of March, 1997.

Marie Fox

Transcriber

Cal/EPA

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Toxic Substances
Control

245 West Broadway.
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Pete Wilson
Governor

James M. Strock
Secretary for
Environmental
Protection

September 5, 1997

Mr. John Kemmerer, Branch Chief
Site Cleanup Branch
U.S. Environmental Protection Agency
Region IX
Mail Code SFD-7
75 Hawthorne Street
San Francisco, California 94105

Dear Mr. Kemmerer,

RECORD OF DECISION, DEL AMO SITE, WASTE PIT AREA

The Department of Toxic Substances Control (DTSC) has reviewed the Record of Decision (ROD) and Response Summary for the Del Amo Waste Pit Operable Unit. Our review reveals that DTSC's comments of December 11, 1996, to the Feasibility Study Report, and the State Applicable or Relevant and Appropriate Requirements (ARARs) have been adequately addressed. However, due to the unique nature of splitting the Del Amo site into several operable units some state ARARs have been deferred until subsequent RODs for those operable units are completed.

DTSC concurs with U.S. Environmental Protection Agency's selected remedy Number 4, a Resource Conservation Recovery Act (RCRA) equivalent cap and a Soil Vapor Extraction System. The RCRA cap consists of multiple layers, including a vegetative cover, a marker bed, a drainage layer, a low-permeability layer, a gas collection layer, and a grading layer. The Soil Vapor Extraction System will be applied to the soil under the pits, with soil gas monitoring probes surrounding the pits.

If you have any questions regarding this letter please contact Mr. Haissam Salloum, at (562) 590-4916.

Sincerely,

Nennet V. Alvarez

Nennet V. Alvarez, Branch Chief
Site Mitigation Cleanup Operations
Southern California Branch B

cc: next page

the waste pits and is currently present in the vadose zone soils.

The major components of the selected remedy for this action include:

- Placement of a **RCRA-equivalent cap** over the Waste Pits Area as described in this ROD and associated soil gas monitoring;

- Installation of **surface water controls** to prevent ponding of water on the cap and to prevent runoff onto adjacent properties;

- Installation and operation of a **soil vapor extraction system (SVE)** beneath the Waste Pits Area to achieve the interim soil remediation standards established in this ROD;

- Installation of **security fencing** around the treatment units associated with the cap and SVE systems;

- Implementation of **deed restrictions** prohibiting future residential use of the Waste Pit Area and prohibiting any future use of the Waste Pits Area that could threaten the integrity of the RCRA equivalent cap;

- **Long-term operation and maintenance** of all of the above and related components of the remedy selected in this ROD.

1.5 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 (or resource recovery) technologies to the maximum extent practicable. Components of the selected final remedy satisfy the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element.

Because this remedy will result in hazardous substances remaining on-Site above health-based levels, a review will be conducted at least once every five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of public health or welfare or the environment.

1.6 Signature

_____ _____

Keith A. Takata, Director DATE
Superfund Division
U.S. Environmental Protection Agency, Region IX