RCRA FACILITY ASSESSMENT.

HUGHES MISSILE SYSTEMS COMPANY

CANOGA PARK FACILITY

(RAYTHEON)

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1.0 INTRODUCTION

The 1984 Resource Conservation and Recovery Act (RCRA) amendments provide authority for the U.S. Environmental Protection Agency (USEPA) to require comprehensive corrective action on Solid Waste Management Units (SWMUs) and other areas of concern at facilities applying for a Part B permit and those with RCRA Interim Status or facilities that operated in a manner that required a hazardous waste facility permit even though the facility had not obtained or applied for a hazardous waste permit. The Hughes Missile Systems Company operated the Canoga Park Facility with two permitted interim status units. These units were closed with closure certification pending. Interim Remediation is currently being under taken under the Los Angeles Regional Water Quality Control Board (LARWQCB).

In 1997 the Raytheon Missile Systems Company acquired the Hughes Missile Systems Company which then merged with Raytheon in 1998 to become the Raytheon Systems Company (Raytheon). Raytheon subsequently sold off the Canoga Park site but retains responsibility for site cleanup.

In order to accomplish the objective of corrective action, a RCRA Facility Assessment (RFA) of the Canoga Park Facility was conducted. This assessment consisted of a preliminary review (PR) of documentation of past site investigations and a Visual Site Inspections (VSI). The VSI was conducted on June 13, 2007.

This report is a summary of the PR and the VSI. The PR is based upon information found in files and reports at the Department of Toxic Substances Control (DTSC) including the facility operation plan, closure plan, and documents provided by Hughes/Raytheon. The documents that form the basis for this RFA are referenced and are considered as supplemental documents.

2.0 SITE DESCRIPTION

8453 8501

2.1 Location

The Canoga Park Facility is located at 8433 Fallbrook Avenue in Canoga Park, California. The facility is located in the northwest portion of the San Fernando Valley of Los Angeles County, California. The site is approximately 86 acres in area and ranges in elevation from approximately 900 feet above mean sea level (MSL) in the north-central portion to approximately 840 feet above MSL at its southern boundary. The site is bounded to the east by Fallbrook Avenue, to the south by Roscoe Boulevard, to the north by open space land adjacent to the Chatsworth reservoir, and to the west by single family residential housing (Figure 1 - Aerial photo). Residential neighborhoods are located across Fallbrook Avenue and Roscoe Boulevard.

2.2 Ownership History

In 1959, the 8433 Fallbrook Avenue property was developed as an industrial park by Bunker-Ramo, an electrical component design and testing company. Bunker-Ramo was the sole occupant of the Facility from 1959 until 1966. From 1966 to 1976, Hughes

↑ Not Atomics International 1961 – 1963

Missile Systems Company (Hughes) was a co-occupant with Rocketdyne, a division of Rockwell International, and Bunker-Ramo. Hughes purchased the entire Site in the mid-1970s and became the sole occupant, operating as an aerospace research and development facility. Through a merger with Hughes in 1997, Raytheon assumed management of the environmental investigations and remediation activities at the Facility. The January 17, 1994 Northridge Earthquake (Mw 6.7) damaged several buildings at the property and led to Hughes moving people and activities to Tucson, Arizona. In May 1995, the Facility was purchased from Hughes by Coast Federal Bank (CFB). At this time, land use changed from research, development and "prototyping" to commercial office space. The northern portion of the Site was sold to Regent Properties, Inc. (Regent) in 1997. Regent completed a major development project that included building redevelopment, remodeling and re-grading to raise the elevation of a portion of the Site. Parcels within the southern portion of the Site were subsequently purchased by DeVry Incorporated, Los Angeles Metropolitan Police Department and Trammel Crow. DeVry initiated a development project that included new building construction and re-grading. In September 2001, Regent sold its portion of the Facility to Shamrock Holdings, Inc., who in turn, sold the property to MEPT West Hills Limited Liability Corporation (LLC) in June 2002. MEPT West Hills LLC is the current property owner, although Trammell Crow Company acts as property manager for the Facility. As stipulated in the sales agreement with CFB in 1995, Hughes (now Raytheon) continued to address environmental impacts resultant from its former operations.

2.3 Past Waste Management Activities

Small amounts of hazardous wastes were collected in 55 gallon drums and stored in the HWSA, where flammables were physically separated from corrosives. Wastes handled include acids, bases, iron, tin, fluorine, gasoline, diesel, copper, chromium, Freon, oils, cyanides, flammable solvents and chlorinated solvents. The curbed storage area had a reinforced concrete base with a grated sump. Security was controlled by masonry, chain link walls and gated access. The area had a tarpaulin roof. Wastes were accumulated, and full containers were periodically sent to a hazardous waste facility.

Hazardous waste oils and solvents were collected in a four thousand gallon underground storage tank (T3) just northwest of the HSWA. Wastes were accumulated and were periodically sent by tanker to a hazardous waste facility.

2.4 Current Waste Management Activities

Currently the site is used as office space for a multitude of tenants. The waste activities are chiefly the remediation of the soil and groundwater at the identified hot spots in the north west and the central east portions of the site. Since 1995 the groundwater and soil in the northwest plume has been treated by a groundwater recovery and treatment system, (GRTS), a solvent vapor extraction system(SVE) and later enhanced with an air sparge system (AS). The water was treated by air stripping and carbon absorption of the volatile organics. The soil vapor was extracted by vacuum volatilization and carbon absorption. These were shutdown because of asymptotic conditions and replaced with an enhanced in-situ bioremediation process (EISB) starting in October of 2005. The EISB process was also applied to a smaller plume in the northeast of the site in December of 2006.

Current operations involve ground water monitoring on a quarterly basis to monitor the effectiveness of the EISB process.

2.5 Permit History for Hazardous Waste Management Units

Hughes Missile Systems Group operated at the site since 1965 and was issued a Hazardous Waste Facility Permit on June 28, 1985 for the HWSA and T3 RCRA units. Operations ceased in 1994. A Closure and Post Closure Plan was approved in late1995. This plan included a report of the T3 closure. A closure certification report for the HWSA was submitted in November 8, 2002. Both of these closures were incomplete with soil and ground water contamination at depth.

3.0 ENVIRONMENTAL SETTING

3.1 Site Geology

The shallow geologic deposits of the western San Fernando Valley in the vicinity of the project site are comprised of predominantly unconsolidated sands, silts and clays with occasional gravels. These alluvial fill deposits are of Quaternary age and range in thickness from thin veneer at the valley margins to more than 700 feet in the central portion of the San Fernando Valley. In the western portion of valley, the unconsolidated alluvial fill deposits are unconformably underlain by consolidated bedrock of the Modelo and Chatsworth Formations, respectively. The Modelo Formation consists of grayish siltstone, clayey siltstone and shale, with minor interbedded diatomaceous shale. A relatively thin weathered zone exists along the top of the formation where it is in contact with the shallow alluvial deposits. The Chatsworth Formation is comprised primarily of a turbidite sandstone sequence with interbedded shale and minor conglomerates. The bedrock of the Chatsworth Formation, which is the major rock comprising the Simi Hills, forms the distinct outcrops north of Chatsworth Reservoir (McLaren, 1989). A major portion of the Former Raytheon Facility is constructed on consolidated bedrock of the Miocene Modelo Formation. Near surface (to 50 or 100 ft bg), deposits are highly weathered. Beds of the Modelo are seen in road cuts and in drill-hole samples to be dipping at up to 45° from horizontal. Generally, dip direction is toward the south or southwest.

In the northwestern portion of the Facility, to the west and northwest of Building 270 and at other locations on the site periphery, the shallow subsurface is comprised of unconsolidated alluvial valley fill of Quaternary age. This material is present to depths of at least 75 feet. The beds are flat-lying, and consist primarily of mixed silt and fine sand, with lesser amounts of clay. The Modelo Formation is believed to be unconformably present beneath the valley fill. A thin (up to 10-foot) layer of construction fill material is locally present at the surface overlying

3.2 Surface Water Hydrology

Primary surface drainage in the site vicinity is Chatsworth Creek, lying immediately west of the Site. Portions of Chatsworth Creek, north and south of Hidden Lake (formerly Lees Lake) are contained within large underground culverts. Other portions are contained in lined or unlined structured channels. The portion of Chatsworth Creek in

the site vicinity is contained in underground cement-lined tunnels. Water from Chatsworth Creek eventually flows into the Los Angeles River about 2.5 miles down gradient. Hidden Lake is the only active reservoir within a 1-mile radius of the site. Hidden Lake is used as a recreational area by residents of the surrounding housing development. It should be noted that storm drainage, including storm drain discharge, from the site flows to Chatsworth Creek, the majority of which enters south and downstream of Hidden Lake.

3.3 Groundwater Hydrology

Groundwater gradient direction within the vicinity of the site regionally flows from northwest to southeast, from the Simi Hills to the San Fernando Valley. The depth to groundwater is approximately 25 feet bg near Roscoe Boulevard. The hydraulic gradient of the regional groundwater is approximately 0.0047 feet per foot (ft/ft). The water bearing materials comprising the western portion of the valley are generally fine grained alluvial sediments, which contain naturally-occurring total dissolved solids (TDS) in excess of 1,000 milligrams per liter (mg/L), exceeding the recommended USEPA drinking water guidelines. Due to the relatively low yields and excessive TDS, there are no drinking water wells in the vicinity of the facility. Essentially all drinking water consumed in the western San Fernando Valley is derived from the State Water project and the Los Angeles Aqueduct, which delivers water to southern California from the Sierra Nevada Mountains. Although the Los Angeles Department of Water and Power (LADWP) supplements its water supply with groundwater from the San Fernando Basin, all of the groundwater production well fields are located in the eastern quarter of the basin. The nearest active production well for supply of potable water to the public is more than 15 miles down gradient from the Site. In the vicinity of the site, groundwater occurs between 10 and 65 ft bg, depending on the location on the property. Groundwater gradient direction is generally to the southeast (i.e., from the Simi Hills to the San Fernando Valley), but on the western side of the property, there is a westward component due to the local topography Quarterly groundwater gauging of onsite monitoring wells has been conducted since December 1991 (with previous monthly gauging from August 1990). The groundwater gradient in the northwest portion of the site, which contains the main volatile organic compound (VOC) plume, is consistently westward and ranges from 0.01 to 0.02 ft/ft. In the extreme northwest corner of the site, the gradient becomes less steep and a localized depression is often observed even under static non-pumping conditions. This is likely due to the lithologic change from the Modelo formation to the alluvial unit in this area. The apparent groundwater gradient over the remainder of the Site is towards the southwest, south and south-southeast, with gradients ranging from 0.01 to 0.04 ft/ft. Water depths, groundwater gradients, and apparent groundwater flow directions are generally consistent with minor localized changes due to pumping activities during GRTS operation. Average hydraulic conductivities were calculated to be approximately 9 gallons per day per square foot (gpd/ft^2) for the Modelo Formation ($4.24x10^{-4}$ centimeters per second or cm/sec) and approximately 270 gpd/ft^2 for the alluvial fill ($1.27x10^{-2}$ cm/sec) (GTI, 1993).

4.0 SOLID WASTE MANAGEMENT UNITS And AREAS Of CONCERN

This Assessment has included all Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified by DTSC in 2002 from in a previous draft Corrective Action Consent Agreement; Table 1. The northeast plume at well CM-8 was also considered as an AOC. These units are indicated on the site drawing, Figure 2.

CM 8 AOC

4.1 SWMUs

4.1.1 SWMU-1 (aka Hazardous Waste Storage Area, HWSA)

This unit was used to store carboy and drum quantities of hazardous wastes containing solvents, acids, bases, plating solutions and paint.

This unit was addressed in the *Modified Closure Plan for the Hazardous Waste Storage Area and Tank T3* [1] which was accepted by DTSC and dated August 1995. A document titled *Closure Certification Report for the Hazardous Waste Storage Area*[2] and dated 11/08/2002 documents the action taken. The closure process discovered arsenic, cadmium and hexavalent chromium that exceeded Closure Performance Standards in the underlying soils. After excavation to 14.5 feet below the former HWSA pad there still were high levels of hexavalent chromium. The pit was lined with polyethylene and back filled. Latter the area was regraded with about 8-9 feet of additional soil and paved. Additional borings were made to help define the extent of the chromium plume[3,4]. High levels of hexavalent chromium were detected in a narrow plume below the former HWSA all the way to groundwater. Since August 1999 Raytheon has been monitoring the groundwater at nearby wells for hexavalent chromium.

lined pit + backfilled

high levels of Hex C

The Closure Certification Report was not accepted by DTSC as of the present. The extent of high levels of hexavalent chromium in subsurface soil and water must be defined and considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

Table 1
SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
RAYTHEON MISSLE SYSTEMS COMPANY
CANOGA PARK, CALIFORNIA

EPA and DTSC DESIGNATION	NAME	RELEASES
SWMU-1 (HWSA)	Hazardous waste storage area	Release to soil and groundwater. COCs include hexavalent chromium
SWMU-2 (T3)	Underground Storage Tank (UST) for Waste	Release to soil and groundwater. Constituents include dichloroethylene (DCE)
SWMU-3	Building 272	Volatile organic compounds (VOCs) identified in vapor survey.
SWMU-4	Building 282 Former Drum Storage Room	Soil tested positive for chlorinated VOC vapors
SWMU-5	Pits #1 and #2 near Building 269	Releases to soil of cadmium and Beryllium. Groundwater contaminated with tetrachloroethylene (PCE).
SWMU-6	Parking area between Buildings 274 & 276	Releases to soil and groundwater. Constituents include Freon-11
SWMU-7	Cooling Unit outside of Building 274	Releases to soil. Constituents include Freon-11
SWMU-8	Former USTs T-1/T2 pump island near Buildings 272 & 282	Releases to soil and groundwater. Constituents include petroleum hydrocarbons
SWMU-9	Site wide sewer line	Releases to soil near soil boring BSL-4. Constituents include arsenic.
AOC-1	Building 262 drains and feeder sewer lines	Suspected release. Building is up gradient of wells CM-8d, CM-9d and CM-18 which have 1,1 DCE for which no source has been determined.
AOC-2	Building 263 drains, sumps and feeder sewer lines	Suspected release. Building is near and up gradient of well CM-8d which have 1,1 DCE.
AOC-3	Building 265 drains and feeder sewer lines	Suspected release. Down gradient SWMU-4 has contaminated soil with Freon-11
AOC-4	Building 269 interior: plating pit, drains, sumps, degreaser exterior clarifier pit and feeder sewer lines	Releases to soil at exterior clarifier pit, SWMU-5

Vapors
Vapors
No Source

acceptable Standards
TPH 100 ppm
VOC 20 ppm
11 DCE 6 ppm

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Table 1
SOLID WASTE MANAGEMENT UNITS AND AREAS OF CONCERN
RAYTHEON MISSLE SYSTEMS COMPANY
CANOGA PARK, CALIFORNIA

Continued ...

EPA and DTSC DESIGNATION	NAME	RELEASES
AOC-5	Building 271 industrial waste clarifier, drains and feeder sewer lines	Suspected release. Building associated with UST T-4. CM-8d nearly down gradient and groundwater contaminated with Freon-11
AOC-6	Building 274 drains and feeder sewer lines	Unknown. Building was used to store/use solvents including 1,1, TCA, Freon-11 and hydraulic fluid. Up gradient of CM-10 which had Freon-11 in groundwater..
AOC-7	Building 276 drains and feeder sewer lines	Unknown. Soil gas data from parking area toward Building 274 shows vapor phaseFreon-11. Building is up gradient of CM-10 which had Freon-11 in groundwater.
AOC-8	Building 281 drains and feeder sewer lines	Unknown. Building is up gradient of CM-8d and cross gradient from CM-9d which had Freon-11 in groundwater. Also next to former diesel USTs
AOC-9	Former USTs T-5 & T-6	Suspected releases. T-5 used for storage of hazardous waste including waste oil and sulfuric acid.
AOC-10	Former USTs T-7, T-8 and T-9	Diesel fuel contaminated soil was excavated in this area
AOC-11	Above ground tank, T-14	Unknown. Tank was located inside Building 269 and stored solvent waste such as acetone, 1,1,1 TCA and isopropyl alcohol.
AOC-12	Site wide storm water system	Releases suspected
AOC-13	Northeast plume	1,1 DCE, Freon

vapor phase

!!

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4.1.2 SWMU-2 (aka T3)

This tank was used to store bulk quantities of hazardous wastes which consisted of machine cutting fluids, some solvents used for cleaning and maintenance of machinery, and machine lubricating oils. Hazardous constituents present in these wastes were 1,1,l-trichloroethane (TCA), acetone, and oils. Contaminants detected in the soil in vicinity of T3 include TPH, 1,1dichloroethylene (l,l-DCE), 1,1-dichloroethane (l,l-DCA), and TCA.

Tank T3 was permitted under RCRA when it was removed. The tank was removed in June 1988 and associated contaminated soils were removed in September 1991 under a Corrective Action Plan (CAP) approved on March 18, 1991 by the CalEPA Los Angeles Regional Water Quality Control Board (LARWQCB). The document, *Final Report, Remediation of Former T3 Tank Site*[5] (November 1991), discusses the extent of soils removed. The soil was excavated to 40 feet below ground surface in the vicinity of the former T3 by boring three foot holes on a triangular pitch. The excavation left a cookie cutter pattern of soil wedges behind unexcavated. The holes were backfilled with a cement and sand slurry. Later the area was regraded with about 7 feet of additional soil and paved. CAP goals were used to determine the extent of excavation. The LARWQCB approved cleanup action levels for remediation of impacted soils at the T3 site were:

1988

40 ft cement filled

LARWQCB Corrective Action Plan Cleanup Action Levels	
Total petroleum hydrocarbons (TPH)	100 ppm
Total volatile organic compounds (VOCs)	20 ppm
1, l-dichloroethylene (1, 1-DCE)	6 ppm

The groundwater in the area is contaminated with a range chlorinated VOCs and has been undergoing a series of interim remediation under LARWQCB guidance. From 1995 to 2005 ground water has been treated via a Pump and Treat system with the treated water used for on site irrigation needs. The soil has been treated via a Soil Vapor Extraction system (SVE) for the same period. Contaminant levels became asymptotic by 2000 and an Enhanced In-Situ Bioremediation approach (EISB) was instituted in 2005[6]. Final cleanup levels have not been determined under DTSC protocol.

The Closure Certification Report was not accepted by DTSC as of this document. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

Not

4.1.3 SWMU-3 (Building 272)

Building 272 is a small building associated with the former gas pump area. The building has been removed. The area is within the NW treatment area that includes the EISB areas A, B & C. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water

must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.[7]

4.1.4 SWMU-4 (Building 282)

Building 282 is a former drum storage room associated with the former gas pump area. The building has been removed. The area is within the NW treatment area that includes the EISB areas A, B & C. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.[8]

4.1.5 SWMU-5 (Pits #1 and #2 near Building 269)

These pits received photographic wastes and neutralized acids. Releases to soil of Cadmium and Beryllium have been noted. Groundwater is contaminated with tetrachloroethylene (PCE). These pits have been removed. The area is within the NW treatment area that includes the EISB areas A, B & C. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs and metals in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.1.6 SWMU-6 (Parking area between Buildings 274 & 276)

The 1991 Preliminary Assessment authorized under US EPA cites the presence of Freon-11 and elevated radioactivity in this area.[8] It has been contended that elevated radioactivity is due to natural geologic variation.[9] This area is in the SE part of the site. The contamination is suspected to have resulted from maintenance work on cooling units next to the former Building 274. According to a 1998 Fluor Daniel GTI Site Assessment report[10] the cooling unit at Building 274 used Freon 22 and only Buildings 263 used Freon 11. In any event the plume was delineated as centered at the edge of a former parking area. At the time of the report it was concluded that the Freon levels were declining and below drinking water standards. Need to determine if any issues remain.

radioactivity

4.1.7 SWMU-7 (Cooling Unit outside of former Building 274)

The presence of Freon-11 was detected in the soil. This area is in the SE part of the site. The contamination is suspected to have resulted from maintenance work on the cooling units.[11] Need to determine if any issues remain.

4.1.8 SWMU-8 (Former USTs T1 & T2 for the gasoline pump island)

The release of petroleum hydrocarbons to soil and groundwater occurred. The area is within the NW treatment area that includes the EISB areas A, B & C. The extent of hydrocarbon contamination was assesses in 1991.[12] The plume is within the larger VOC plume in the northwest corner of the site and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water must be considered

in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.1.9 SWMU-9 (Site wide sewer line)

Site wide assessment in 1991 did not show up any metal contamination at detection limits.[13] One sample had a trace (0.009 mg/kg) of toluene. Sample B-SL had 0.3 mg/kg of toluene. No other VOCs were detected. Need to determine if any issues remain.

4.2 AOCs

4.2.1 AOC-1 (Building 262 drains and feeder sewer lines)

This building is up gradient of a release and could be a source of the contamination. It is near the area that includes the EISB areas D, a small plume of VOCs. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.2 AOC-2 (Building 263 drains sumps and feeder sewer lines)

This building is adjacent to an area of release and could be a source of the contamination. It is near the area that includes the EISB areas D, a small plume of VOCs. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels. In 1992 wells near Building 263 tested above EPA Maximum Concentration Limit (MCL) for uranium.[14]

Bldg 263 uranium

4.2.3 AOC-3 (Building 265 drains and feeder sewer lines)

This building is next to an area with Freon contamination and could be a source of the contamination. Final cleanup levels have not been determined under DTSC protocol. The presence of Freon in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.4 AOC-4 (Building 269 drains and feeder sewer lines)

269 Removed 1988

This building was in an area where soil is contaminated with VOCs and the sewer line may have been a source. The building was removed by 1988. It was in the area that includes the EISB areas A, B & C. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.[8,15]

4.2.5 AOC-5 (Building 271 drains and feeder sewer lines)

This small building was associated with a large concrete water basin, T4. This building is adjacent to an area of release and could be a source of the contamination. It is near the area that includes the EISB areas D, a small plume of VOCs. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB

guidance. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.6 AOC-6 (Building 274 drains and feeder sewer lines)

This small building was use for solvent parts cleaning and stored 1,1,1 TCA, Freon, and Hydraulic fluid. The building has been removed. Nearby is an area with Freon contamination and it could be a source of the contamination. Final cleanup levels have not been determined under DTSC protocol. The presence of contamination in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.7 AOC-7 (Building 276 drains and feeder sewer lines)

This building had 2 active chemical use areas, solvent cleaning and photographic processing operations. Freon has been detected at a down gradient well, CM-10. Final cleanup levels have not been determined under DTSC protocol. The presence of contamination in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.8 AOC-8 (Building 281 drains and feeder sewer lines)

This building is adjacent to an area of release and could be a source of the contamination. Generally it handled small quantities of in a maintenance shop setting. Chemicals included dichloromethane, insecticides, mineral oil and ethylene glycol. It is near the area that includes the EISB areas D, a small plume of VOCs. The contamination there is well defined and is currently undergoing interim remediation under LARWQCB guidance. Also it is next to the former diesel USTs. Final cleanup levels have not been determined under DTSC protocol. The presence of VOCs and hydrocarbons in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.9 AOC-9 (T5 and T6)

These USTs were used to store waste oil and sulfuric acid. These were glass lined 500 gallon vessels that were contained in a concrete vault located west of building 263. The tanks were removed in 1984 along with the vaults and soil was excavated.[16] Residual contamination consisting of toluene and xylenes need to be considered in the HRA. The presence of VOCs and hydrocarbons in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

4.2.10 AOC-10 (T7, T8 & T9)

These USTs were used to store diesel fuel. The tanks were removed in1991.[17]. Subsequently the soil was excavated to remove contaminated soil.[18]. A clean-up level of 100 ppm of TPHD was used. Currently most of this area has been covered with a bi-level parking lot. Residual diesel should be considered in a health and environmental risk assessment.

4.2.11 AOC-11 (T14)

This AOC is an above ground tank that was located in building B269. Building 269 was removed by 1998. The area is within the contaminant plume in EISB treatment areas A & B. The plume there has been characterized and has undergone SVE, pump and treat and currently EISB. The presence of VOCs in subsurface soil and water must be considered in a health and environmental risk assessment in order to determine final closure cleanup levels.

269 Removed 1998

4.2.12 AOC-12 Site Wide Storm Sewer System.

The Storm sewer system has not been investigated. Key points where runoff could carry contaminants and where leaks are more likely to occur may need to be tested for contamination.

4.2.13 AOC-13 Northeast Plume between B263, B264 & B281

This plume has had definition and is currently undergoing interim measures by EISB in area D.

4.3 SUMMARY OF CONSOLIDATED SWMUS AND AOCS.

The various SWMUs and AOCs can be regrouped in to several zones for Risk assessment and treatment purposes (figure 3). The following zones are defined.

4.3.1 Zone 1 The contiguous Northwest Plume consisting of:

- SWMU-1 former HSWA
- SWMU-2 former T3
- SWMU-3 former B272 gas station bldg
- SWMU-4 former B282 drum stg bldg
- SWMU-5 former P1 & P2 at B269
- SWMU-8 former T1 &T2 gasoline tanks
- AOC-4 former B-269
- AOC-11 former AST in B269

This zone has a known contamination of VOCs, CVOCs, chromium^{+6} and potential cadmium and beryllium at SWMU-5.

4.3.2 Zone 2 Sewer system network consisting of

- SWMU-9 Sewer System
- AOC-1 B262 sewer drains and feeders
- AOC-2 B263 sewer drains and feeders
- AOC-3 B265 sewer drains and feeders
- AOC-5 B271 sewer drains and feeders
- AOC-6 B274 sewer drains and feeders
- AOC-7 B276 sewer drains and feeders
- AOC-8 B281 sewer drains and feeders

4.3.3 Zone 3 South plume area (Freon 11 contamination)

- SWMU-6 B274,276 parking lot
- SWMU-7 former B-274; Chiller building

4.3.4 Other areas that remain individual AOCs. These are:

- AOC-9 former T5,T6; oil, sulfuric acid tanks
- AOC-10 former T-7,8,9; diesel tanks
- AOC-12 Storm sewer system
- AOC-13 Northeast plume

5.0 EXPOSURE PATHWAYS

5.1 Surface Water

Nearest stream is in adjacent neighborhood to the west where a small stream, Chatsworth Creek, enters and exits a small lake, Hidden Lake (aka Lees Lake), via culverts and continues south via lined and unlined structured channels. The property is graded to drain to the SE through storm drains which empty into this stream.

5.2 Groundwater

Groundwater flows to the West at the NW corner of the property but generally to the SSE on the rest of the property into the San Fernando Valley. With measured TDS of over 1000 ppm the water is not likely to be used for drinking water. There may be interaction between the groundwater and Hidden Lake to the west.

Hidden Lake

5.3 Air

The area is paved, built upon or vegetated with irrigated beds. There is potential for soil gas intrusion into buildings. Buildings are being used commercially as office space.

gas intrusion

5.4 Surface Soil

There is essentially no exposed soil due to paving and buildings. Soil exposure could occur when it is disturbed during construction activities.

soil exposure

6.0 VISUAL SITE INSPECTIONS

The site was visited on Wednesday June 13, 2007. The site is a well landscaped business office site. The vast majority of the area is covered with office buildings, roadways, parking lots and walkways. The remaining area consists of a central park area and narrow vegetated corridors that border and subdivide the property. The primary treatment area is in the north western corner of the site. A new parking structure was nearly completed in the north east corner of the site.

Visual Evidence of SWMUs, AOCs and treatment systems are minimal. The GRTS and SVE equipment are idle behind a small fenced area. Well heads are flush to ground level and covered. Observations are photo documented (See figures 4 to 11).

Treatment is idle

7.0 RECOMMENDATIONS FOR FURTHER ACTION

- Continue Groundwater Remediation

- Determine data gaps to developing a site wide heath risk assessment using the current DTSC-modified model. A site conceptual model needs to be developed to address all exposure routes.

- Collect samples needed to fill in the data gaps.

- Complete a soil vapor survey using old and new data as appropriate to model vapor intrusion. This work is to be in accordance with the Department's publications: GUIDANCE FOR THE EVALUATION AND MITIGATION OF SUBSURFACE VAPOR INTRUSION TO INDOOR AIR and ADVISORY – ACTIVE SOIL GAS INVESTIGATIONS. As these documents are under going revision it is important that this investigation be done with close coordination with the project manager.

- Prepare site wide HRA for all modes of exposure to define remediation goals acceptable to DTSC.

- Modify remediation effort as required to meet the DTSC remediation goals or existing CAP goals whichever is the more stringent.

What about radioisotopes? Investigation

pictures

[1] *Modified Closure Plan for the Hazardous Waste Storage Area and Tank T3* , August 1995

[2] *Closure Certification Report for the Hazardous Waste Storage Area,* 11/08/2002

[3] *Results of Additional Subsurface Characterization, Former Hazardous Waste Storage Area*; Former Company Facility, 8433 Fallbrook Avenue, Canoga Park, California. September 22, 2000

[4] *Additional Subsurface Characterization, Former Hazardous Waste Storage Area,* Former Raytheon Systems Company Facility, 8433 Fallbrook Avenue, Canoga Park, California; EPA ID No. CAD 041162124, October 10, 2000

[5] *Final ReportRemediation of Former T-3 Tank Site*, November 1991

[6] *COVERAGE UNDER GENERAL WASTE DISCHARGE PERMIT ORDER NO. R4-2005-0030 AND MONITORING AND REPORTING PROGRAM NO. CI-8947* - (SLIC NO. 0693, SITE ID NO. 2043TOO), September 20, 2005

[7] SUMMARY REPORT OF SUPPLEMENTAL SAMPLING AND ANALYSIS PERFORMED AT THE LOCATIONS OF FORMER BUILDINGS 269, 272 AND 282, September 23, 1998

[8] *ENVIRONMENTAL PRIORITIES INITIATIVE PRELIMINARY ASSESSMENT*, Ecology and Environment, Inc., July 29, 1991

[9] *RADIOISOTOPE REVIEW AND COMPARISON FOR THE HUGHES MISSILE SYSTEMS GROUP FACILITY*, CANOGA PARK, CALIFORNIA, McLaren/Hart Environmental Engineering Corporation, July 30, 1991

[10] *Additional Site Assessment Report, Vicinity of CM-10 and Buildings 265,274, and 276, Former Raytheon Missile Systems Company Facility*, 8433 Fallbrook, Canoga Park, California, FLUOR DANIEL GTI, September 2, 1998

[11] *Additional Site Assessment Report, Vicinity of CM-10 and Buildings 265,274, and 276, Former Raytheon Missile Systems Company Facility*, 8433 Fallbrook, Canoga Park, California, FLUOR DANIEL GTI, September 2, 1998

[12] *GASOLINE CONTAMINATION SITE ASSESSMENT for HUGHES MISSILE SYSTEMS GROUP*, 8433 Fallbrook Avenue, Canoga Park, California, AMERICAN ENVIRONMENTAL MANAGEMENT CORPORATION, October 28,1991

[13] *REPORT ON FACILITY-WIDE SITE ASSESSMENT, HUGHES MISSILE SYSTEMS COMPANY*, CANOGA PARK, CALIFORNIA, Groundwater Technology, Inc., January 4, 1994

[14] *RESULTS OF RADIOLOGICAL SAMPLING OF MONITORING WELLS*, July 1, 1992, Hughes Missile Systems Group, Canoga Park Facility, Groundwater Resources Consultants, Inc.

[15] *ADDITIONAL SITE ASSESSMENT REPORT, SAMPLING AND ANALYSIS FOR FORMER BUILDING 269 LOCATION*, FORMER RAYTHEON SYSTEMS COMPANY, CANOGA PARK, CALIFORNIA , IT Project No. 779027, April 1999

[16] *Closure Report, Removal of Underground Tanks*, Hughes Aircraft Company, Canoga Park, California, Project No. 846562, January 29, 1985

Final Closure Report, Removal of Underground Tank, Hughes Aircraft Company, Canoga Park, California, Project No. 846562, March 12, 1985

[17] *DIESEL UNDERGROUND STORAGE TANK CLOSURE REPORT*, HUGHES MISSILE SYSTEMS GROUP, Canoga Park, October 28, 1991

[18] *DIESEL TANK SUBSURFACE INVESTIGATION and SITE REMEDIATION*, HUGHES MISSILE SYSTEMS GROUP, Canoga Park, California, August 14, 1992