SUMMARY REPORT

FOLLOW-ON MUNITIONS AND EXPLOSIVES OF CONCERN (MEC) EVALUATION

AREA C– PROPELLANT BURN PIT AREA

Lockheed Martin Corporation
Former Beaumont Site No. 1
Beaumont, California

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Prepared by:

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March 2010

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LOCKHEED MARTIN

March 16, 2010

Mr. Daniel Zogaib
Southern California Cleanup Operations
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Subject: Submittal of MEC Area C report (*Summary Report Follow-up Munitions and Explosives of Concern (MEC) Evaluation, Area C - Propellant Burn Pit Area, Lockheed Martin Corporation, Former Beaumont Site 1, Beaumont, California*)

Dear Mr. Zogaib:

Please find enclosed one copy and two compact disks of the *Summary Remedial Investigation Report, Lockheed Martin Corporation, Beaumont Site 1, Beaumont, California* for your approval or comment.

If you have any questions regarding this submittal or the status of site activities, please contact me at 408.756.9595 or denise.kato@lmco.com.

Sincerely,

Denise Kato

Denise Kato
Remediation Analyst Senior Staff

Enclosure

Copy with Enc:
- Jim Austreng, DTSC (hard copy)
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- Ian Lo, CDM (electronic copy)
- Tom Villeneuve, Tetra Tech, Inc. (hard copy & electronic copy)

BUR056 Transmittal of BPA MEC Report

This report documents the Follow-On Munitions and Explosives of Concern (MEC) Evaluation in the Operational Area C Burn Pit Area at Beaumont Site 1. It contains a description of the procedures implemented and the areas where the MEC evaluation was conducted. The report also contains a summary of the results of the MEC evaluation and conclusions regarding the potential need for further assessment or mitigation actions. By their signatures, the undersigned certify this report has been reviewed and accurately reflects the work performed in accordance with the work plan and industry standards.

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EXECUTIVE SUMMARY

Lockheed Martin Corporation's (LMC's) former Beaumont Site 1 (the Site) is located in Riverside County south of the City of Beaumont, California, approximately 70 miles east of the City of Los Angeles, California. In 2003, the majority of the Site was sold to the State of California for use in wildlife management. A portion (565 acres) referred to as the conservation easement was retained by LMC. The approximately 17 acre propellant Burn Pit Area (BPA) in Operational Area C (Area C), which is the subject of this Follow-On Munitions and Explosives of Concern (MEC) Evaluation Summary Report (Summary Report), is located within this conservation easement.

The BPA was inspected in 1986 as part of a historical investigation to research the historical industrial activity at the site and to identify appropriate activities/investigations to determine the nature and extent of any environmental impacts noted during the historical investigation (Radian, 1986a). The 1986 inspection revealed the presence of a number of former burn pits reportedly used to dispose of wastes such as off-specification rocket propellant and various other rocket fuel additives. As a follow up to the inspection process, ground penetrating radar was later used, along with historical maps and aerial photography to locate 20 potential historical burn pits (Radian, 1986b). Based upon the outcome of that historical inspection the BPA was the subject of a removal action conducted in 1993. The top two feet of soil was removed (in phases) and any known (identified from GPR or historical maps) or newly discovered pit areas were excavated to remove residual burn pit debris/material. Chemical testing was conducted at the bottom of four of the twenty-one burn pits excavated to confirm that there was no residual contamination (Radian, 1993).

In 2005, record rainfall in the vicinity of the Site caused heavy flows in the ephemeral creeks at the Site. As a result, several creek crossings along the site roadways were damaged. During repair of one creek crossing in Operational Area D (the former Lockheed Propulsion Company [LPC] Ballistics Test Range), two small clusters of 20mm link ammunition were found. Personnel from the Riverside County Sheriff's Office Hazardous Devices Team (HDT) responded to the Site, examined the munitions and performed disposal. The officers dispatched were uncertain whether or not the 20mm rounds were live (contained an explosive charge), so the cartridges were disposed of explosively (detonated) on the Site. As a result of the discovery of these discarded cartridges, LMC initiated an evaluation of other potential residual ordnance-related hazards at the Site, along with removal actions in appropriate areas. The munitions and explosives of concern (MEC) evaluation and removal activities were conducted in three phases: two during 2005 and a third in 2006. The evaluation areas included ranges where test projectiles were fired, areas where explosive testing was conducted, and other areas where ammunition or explosives residue might be present. The areas evaluated or subjected to removal actions did not include the BPA because the area had reportedly been cleaned via excavation and removal of all burn pit debris and closed in 1993. During the removal activities, surface soils containing native plant seeds were removed, stockpiled and later re-spread during the clean up to expedite re-vegetation with native species. According to the BPA Removal Action Report (Radian 1993), these soils were visually inspected for signs of burn pit debris or other obvious contamination prior to being re-spread.

During a recent drilling project in the BPA, several potential MEC-related items were found. The items were reported to the HDT, who responded to the Site to examine and remove the items. The HDT determined that the items were likely spent cartridge actuated devices (CADs). One item also appeared to be an empty, non-ferrous 30mm casing. The items were found on the ground surface near the eastern boundary of the BPA. While this area was reportedly cleaned and closed, it appears that some inert munitions waste may remain. As a precautionary measure, LMC decided it would be prudent to evaluate the BPA to determine if there is potential for MEC to be present, and if any further action would be warranted. Due to unanticipated conditions in the BPA (see following sections), the goal of determining the potential for MEC to be present could not be met. Data were obtained from several areas of the site that will provide a basis for the design of follow-on work to meet the intended goal. This Summary Report documents the methods and procedures used in the evaluation and findings of the evaluation. Conclusions and recommendations regarding follow-on activities are provided in this Summary Report.

The evaluation in the BPA was designed using 5-foot wide transects spaced approximately 20 feet on center to achieve about 25% coverage of the entire area. Hand-held, Vallon VHM-3, all-metals detectors (Vallons) were used to sweep areas within the transect boundaries and locate subsurface metallic anomalies. The Vallons were selected for their capability to effectively detect targets containing both ferrous and non-ferrous metals. This was important since some of the experimental munitions tested at Beaumont Site 1 were composed of non-ferrous materials. In addition, the items which prompted the Area C evaluation were primarily non-ferrous. Anomalies detected during the evaluation were prosecuted to a depth no greater than 2 feet below ground surface (bgs) since reportedly all burn pit material below this depth had been removed and the items recently found were present at the ground surface. Figure ES-1 shows the BPA and planned evaluation transects.

Initially all subsurface anomalies detected were to be excavated, identified and located using a differential global positioning system (DGPS); however, early findings indicated that there was a very large amount of non-MEC metallic debris in the BPA. More than 33,000 small metallic anomalies are estimated to be present in the area consisting primarily of metal flakes (possibly residue from deteriorated barrels), tin foil, wire, bottle caps, and other non-specific scrap.

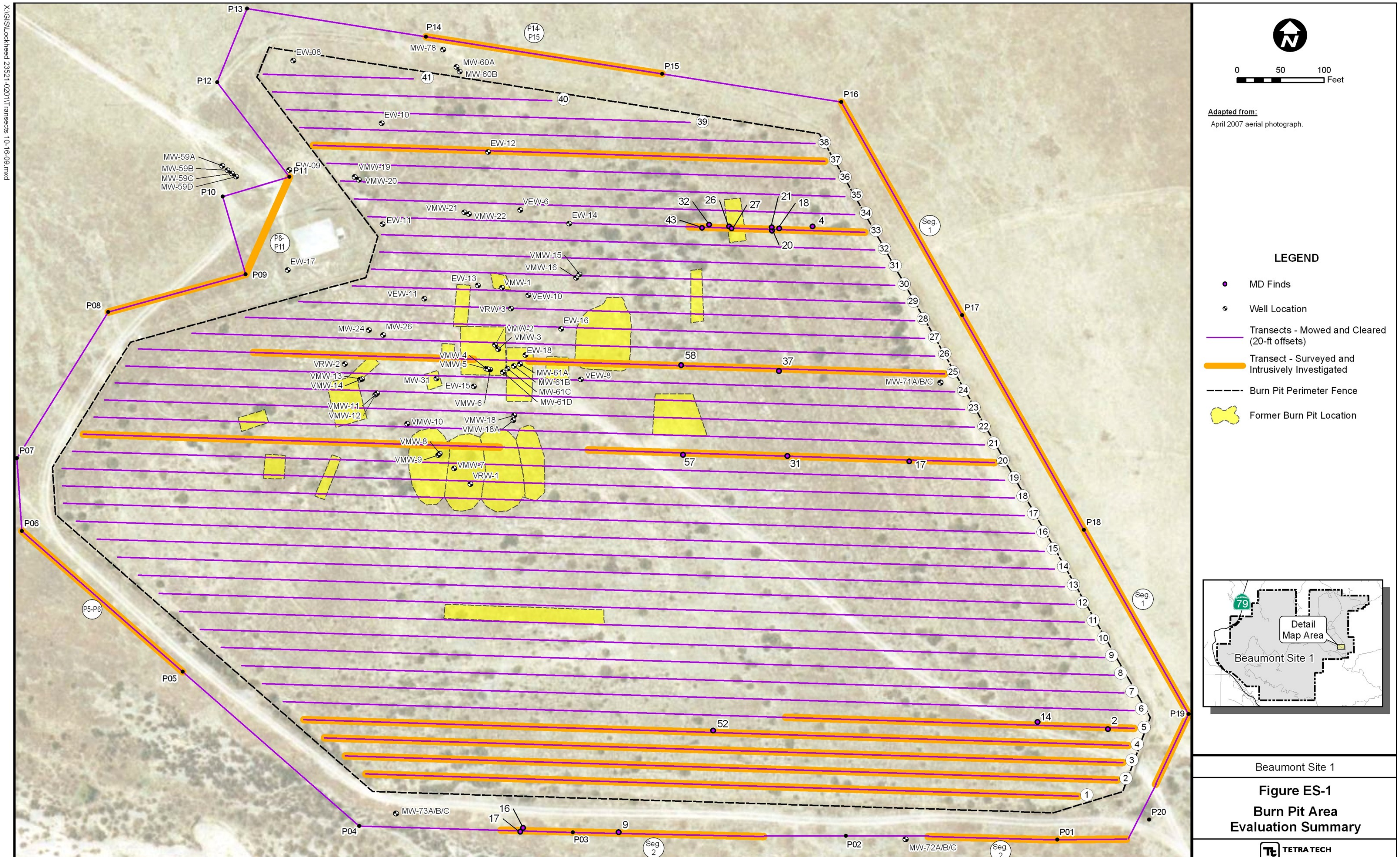

Figure ES-1
Burn Pit Area Evaluation Summary

Some investigated areas contained so much metallic debris that no individual anomalies could be identified for excavation. In addition, there are 48 well heads, numerous buried pipes wrapped with metallic tracer wire and several dozen Stephens' Kangaroo Rat (SKR) burrows in the area, all of which interfered with execution of the MEC evaluation as planned. The field procedures were modified to include excavation of only those anomalies producing a selected bar graph readout displayed on the Vallon LED screen to minimize the effects of the excess debris and focus the evaluation on potential MEC items.. These readouts, called elements, have no numerical units. The element scale is numbered from 1 to 14 and the values displayed are proportional to the strength of the response signal generated in subsurface metal anomalies by the pulses transmitted by the Vallon. The element values can be used to estimate the relative size of near surface anomalies and to generally screen for anomalies above a certain approximate size, provided that the instrument is operated at a consistent sensitivity as it was for this project. The field team was instructed to intrusively investigate only those anomalies producing a readout value greater than the value produced by the smallest item (equivalent to a 20mm projectile buried at 10 inches) in the instrument test strip on site. In empirical tests on the instrument test strip, this was found to be a value of "9". In practice, the actual munitions debris (MD) recovered created readouts between 10 and 12. In addition, GPS coordinates were recorded only for MD recovered. Following the modifications, it became clear that even the amended procedure would require the excavation of several thousand anomalies and would not effectively deal with the areas containing clusters of very small anomalies. The field team was instructed to use the remaining planned evaluation time to collect data from a number of different locations throughout the BPA to provide a representative overview of the area. This data was used to evaluate whether additional work is needed and to identify an effective path forward. The locations of areas evaluated are shown on Figure ES-1.

During the evaluation, approximately 25% (about 4 of 16.75 acres) of the BPA was surface swept and approximately six percent (about 1 acre) of the BPA was intrusively evaluated including a perimeter transect just outside of the area boundary. A total of 1,997 anomalies, approximately six percent of an estimated 33,000 anomalies in the BPA were identified and 911 were intrusively investigated. Nineteen of the items excavated were identified as MD including 3 pieces of projectile fragmentation (frag), 6 small pieces of unidentified frag and 10 empty, non-ferrous 30mm casings. All MD was found at depths ≤ 12 inches bgs, with 16 of the 19 items being ≤ 6 inches bgs. No MEC was found during the evaluation. The results of the MEC Evaluation are shown on Figure ES-1 and summarized in Table ES-1.

There is no apparent definitive indication of the source of the projectile or other unidentified frag, but three reasonable possibilities exist. The first is that waste explosive ordnance was burned in the BPA pits as a method of disposal. Some of the munitions would have detonated, creating both the projectile and unidentifiable fragments. If explosive ordnance was disposed of in the burn pits, some unexploded ordinance may remain. The second possibility is that frag from various experimental activities was collected and burned in the burn pits as a method of decontamination. This type of disposal would make it unlikely that any explosive ordnance is present in the BPA. The third possibility is that testing activities occurred in the area that is now identified as the BPA. This possibility could also result in some unexploded ordinance being present in the area, although there is no indication in any of the records that these kinds of activities were conducted in the BPA. Further, interviews with former employees conducted during previous MEC evaluation projects also did not reveal any evidence of MEC-related testing in the BPA.

The nature and condition of the MD and the depth of the debris, in conjunction with information in the BPA Removal Action Report (Radian 1993) suggests that the most likely explanation is that the MD items found are residuals of historical burning activities of either explosive ordnance or munitions debris and not the result of munitions testing; however, verification that no explosive ordnance remains within the BPA will require the collection of additional data to fully support this conclusion.

Based upon the type, location and depth of MD items that have been found to date, and the physical conditions and constraints present in the BPA, a phased follow-up evaluation described below (or equivalent) is recommended .to confirm the conceptual site model (CSM) developed for the BPA as a disposal area for waste propellant and related materials, and to alleviate concerns regarding potential MEC hazards.

The phased evaluation recommended includes an instrument-aided surface sweep and initial mapping of the entire BPA and a buffer zone in order to gather the information needed to better understand the distribution of metallic debris in the BPA and to develop a tailored investigation pattern/approach for the area. The mapping would be followed by intrusive investigation in selected areas to verify the absence of MEC, seen thus far. Sampling would be biased toward areas with more potential to contain MEC and the size and distribution of subsurface anomalies. All large anomalies, which might represent the larger caliber ordnance tested at Site 1, would be investigated. In addition, 5-10% of the anomalies in the proper size range for 20mm and 30mm munitions would be investigated. If no MEC is found, the area would be recommended for no further field actions and institutional controls (if necessary) would be considered in the Remedial Action Plan currently being prepared for Site 1. If MEC is found, DTSC would be engaged in discussion of the appropriate follow-on actions.

Table ES-1. Summary of Area C MEC Evaluation Results

Transect No.	Length (ft)	Length Dug (ft)	Area Dug (acres)	No. of Targets Identified	No. of Targets Dug	No. of MD Found
1	819.3	819.3	0.094	56	56	0
2	888.2	888.2	0.102	106	52	0
3	918.4	918.4	0.105	212	93	0
4	948.5	948.5	0.109	212	126	1
5	978.7	400.0	0.046	56	46	2
20	1048.1	946.2	0.109	383	140	3
25	927.4	731.9	0.084	261	138	0
33	571.5	201.7	0.023	102	49	8
37	588.4	588.4	0.068	92	40	2
Perimeter Segment 1	898.0	898.0	0.103	181	63	0
Perimeter Segment 2	530.3	530.3	0.061	159	61	3
Perimeter Segment P5-P6	245.6	245.6	0.028	79	24	0
Perimeter Segment P8-P11	286.8	286.8	0.039	34	7	0
Perimeter Segment P14-P15	274.7	274.7	0.032	64	16	0
Totals	*9923.9*	*8678*	*1.003*	*1997*	*911*	*19*

Notes:
MD – Munitions debris.
ft – feet.

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TABLE OF CONTENTS

PAGE

APPENDICES

LIST OF FIGURES

PAGE

LIST OF TABLES

PAGE

ABBREVIATIONS AND ACRONYMS

bgs	below ground surface
BPA	Burn Pit Area
CAD	cartridge actuated device
CSM	conceptual site model
DGPS	Differential Global Positioning System
EMI	electro-magnetic induction
ESQ	environmental safety and quality
frag	fragmentation
GCRC	Grand Central Rocket Company
HDT	Hazardous Devices Team
HE	high explosives
HMX	cyclotetramethylene tetranitramine
ITS	instrument test strip
LAC	Lockheed Aircraft Corporation
LMC	Lockheed Martin Corporation
LPC	Lockheed Propulsion Company
µg/kg	micrograms per kilogram
MD	munitions debris
MEC	munitions and explosives of concern
MSL	mean sea level
QA	quality assurance
QC	quality control
SKR	Stephens' Kangaroo Rat
Tetra Tech	Tetra Tech, Incorporated
Site 1	Former Lockheed Beaumont Site No. 1
UXO	unexploded ordnance

1.0 INTRODUCTION

This report documents the Supplemental Munitions and Explosives of Concern (MEC) Evaluation conducted in Operational Area C at the former Lockheed Martin Corporation (LMC) Beaumont Site No. 1 property (the Site) near Beaumont, California. During the active industrial life of the Site from 1960 until 1974, LMC used the facility for solid propellant mixing, testing, and incineration, as well as ballistics testing. The company utilized explosives in their work; however, most munitions used on site were reportedly practice rounds that did not contain high explosives (HE). Aerojet Corporation and General Dynamics Corporation also conducted munitions-related testing at the Site. Reportedly, Aerojet used only practice ammunition, while General Dynamics is said to have used HE shaped charges, explosives, and 2.75-inch rocket motors in their work. Operational Area C was reportedly used for the disposal of hazardous waste materials, primarily waste rocket propellant, via burning in open pits. For this reason the Area C is also known as the former Burn Pit Area (BPA).

In 1986, Radian Corporation reviewed the operating history of the Site to evaluate the potential for residual hazards associated with historical operations at the site. The report prepared to document this review (the Historical Report) concluded there were some areas of the Site that required evaluation and action for potential by-products (chemicals and compounds) associated with historical munitions testing. One of these areas was the BPA, where Radian recommended geophysical evaluation to determine the extent of the burn pits, sampling of the burned propellant, and possibly follow-on treatment or removal actions (Radian, 1986a). Ground penetrating radar was later used, along with historical maps and aerial photography, to locate the potential burn pits (Radian, 1986b). The Historical Report also recommended evaluation of groundwater beneath the BPA. No recommendations for further action were made regarding potential residual materials from munitions or explosives that may have been used in historical operations.

In 1993, LMC conducted a removal action reportedly excavating and removing all contaminated soils and other materials associated with historical burning in Area C. The removal included separate excavation and stockpiling of the soil from depths of zero to one foot and from depths of one to two feet. Segregation of the top one foot of the soil was intended to preserve native seed in the soils to aid in re-vegetation after the removal action was complete. The removal of the one to two foot soil layer was intended to reveal the top of any previously unidentified burn pits. Reportedly the top two feet of the soil layer was observed continuously during removal for signs of contamination (discoloration or disturbance). The BPA Removal Action Report states that the site was restored to near previous grade following the burn pit excavation, but does not specify if any fill material was imported to the site either from other areas of Beaumont Site 1 or from off-site sources. A complete description of the removal action is presented in the BPA Removal Action Report (Radian, 1993). The BPA Removal Action Report is presented in Appendix A of this report for reference.

In 2003, the majority of the Site was sold to the State of California to be used for wildlife management. A portion of the Site (565 acres) referred to as the conservation easement was retained by LMC to facilitate remediation of contamination associated with historical operations. The BPA is contained within the conservation easement.

In 2005, record rainfall in the vicinity of the Site caused heavy flows in the ephemeral creeks on site. As a result, several creek crossings along the site roadways were damaged. During repair of one of these creek crossing in Operational Area D (the former Lockheed Propulsion Company [LPC] Ballistics Test Range), two small clusters of 20mm link ammunition were found. Personnel from the Riverside County Sheriff's Office Hazardous Devices Team (HDT) responded to the Site, examined the munitions and performed disposal. The officers dispatched were uncertain whether or not the 20mm rounds were live (contained an explosive charge), so the cartridges were disposed of explosively (by detonation) in place (at the location where they were found). As a result of the discovery of these discarded cartridges, LMC (LPC's successor) initiated an evaluation of other potential residual ordnance-related hazards on the Site, along with removal actions in appropriate areas. The MEC evaluation and removal activities were conducted in three phases: two during years 2005/2006 and a third in years 2006/2007. The evaluation areas included ranges where test projectiles were fired, areas where explosive testing was conducted, and other areas where ammunition or explosives residue might be present. Over 8,000 subsurface anomalies were identified during the evaluation activities and more than 5,000 of these anomalies were investigated. A total of 26 MEC items were recovered, along with 245 pieces of munitions debris. All of the MEC items recovered were located either in the former test range in Operational Area A or along Bed Springs Creek in Operational Area D. The areas evaluated or subjected to removal actions did not include the BPA because it reportedly had been cleaned via excavation and removal of all burn pit debris and closed.

During a recent drilling project in the BPA, several suspect items (potential MEC) were found. These items were reported to the HDT, who responded to the Site to examine and remove the items. Team members determined that the items were likely spent cartridge actuated devices (CADs). One item also appeared to be an empty non-ferrous 30mm casing. The items were found on the surface near the eastern boundary of the BPA. While this area was reportedly cleaned and closed it appears that some inert munitions waste may remain. As a precautionary measure, LMC decided it would be prudent to evaluate a representative portion of the BPA to determine if there is potential for MEC to be present, and if any further action would be warranted in this area. This report documents the methods and procedures used in the evaluation, as well as the findings of the evaluation.

1.1 PURPOSE AND SCOPE

The original objective of the MEC evaluation documented in this report was to assess the relative potential for MEC to be present in the BPA based upon a representative survey and sampling of the area. The activities conducted were also intended to provide data for evaluation of potential residual risk to personnel working in and around the former BPA and future recreational users if the conservation easement is sold to the State of California. The hazard evaluation itself was not part of the current evaluation and is not discussed in this report.

The original objective for this evaluation could not be met due to unanticipated conditions in the BPA. Excessive amounts of metal debris, nearly 50 groundwater well heads and dozens of Stephens Kangaroo Rat (SKR) burrows significantly reduced productivity and prevented completion of the intended scope. The original objective was modified to include collection of representative data from all sectors of the BPA to support development of a focused follow-on methodology to deal effectively with the conditions in the BPA.

The tasks performed during the Follow-On MEC Evaluation included:

- Preparation of work plans;
- Site preparation (staking and vegetation mowing);
- Mag & Dig investigation of selected subsurface metallic anomalies; and
- Preparation of this report.

1.2 SUMMARY OF TECHNICAL APPROACH

The project was intended to provide supplemental data for use in evaluation of potential MEC issues in the former BPA in Area C. The pits in the BPA were removed in 1993. This action entailed removal and stockpiling of the upper two feet of soil to preserve native seed stock and expose the tops of any previously unidentified pits, followed by excavation of all burned material and chemical confirmation sampling of the pit bottoms. Although the site was reportedly restored to near pre-removal grade, it is not known whether any fill material was imported to the site or if the site was simply regarded. Based on this information, the technical approach for the current evaluation was designed to focus attention on the upper two feet of the soil, where there is potential for residual items or debris from the historical burn activities to be present. To obtain a representative sampling of the area, a sampling scheme was developed using a series of 5-foot wide, parallel, east-west trending transects spaced approximately 20 feet on center to achieve about 25% coverage of the area. The sampling was not weighted toward the former pit areas since the upper two feet of the soil was removed, stockpiled and re-spread across the site, providing equal potential for residual MEC items (if any) to be present in all areas of the site.

Reportedly, non-hazardous materials including burn zone residue, metal drums, barrel lids, a spent rocket motor casing, glass, scrap metal and old irrigation pipe were shipped to a Class III landfill (BKK) for disposal. Wastes classified as hazardous, including an oily drum, burned rocket propellant and burn rate modifiers, were shipped to the Laidlaw Class I landfill for disposal. No mention of MEC or munitions debris (MD) screening or detection is made in the Removal Action Report (Radian, 1993).

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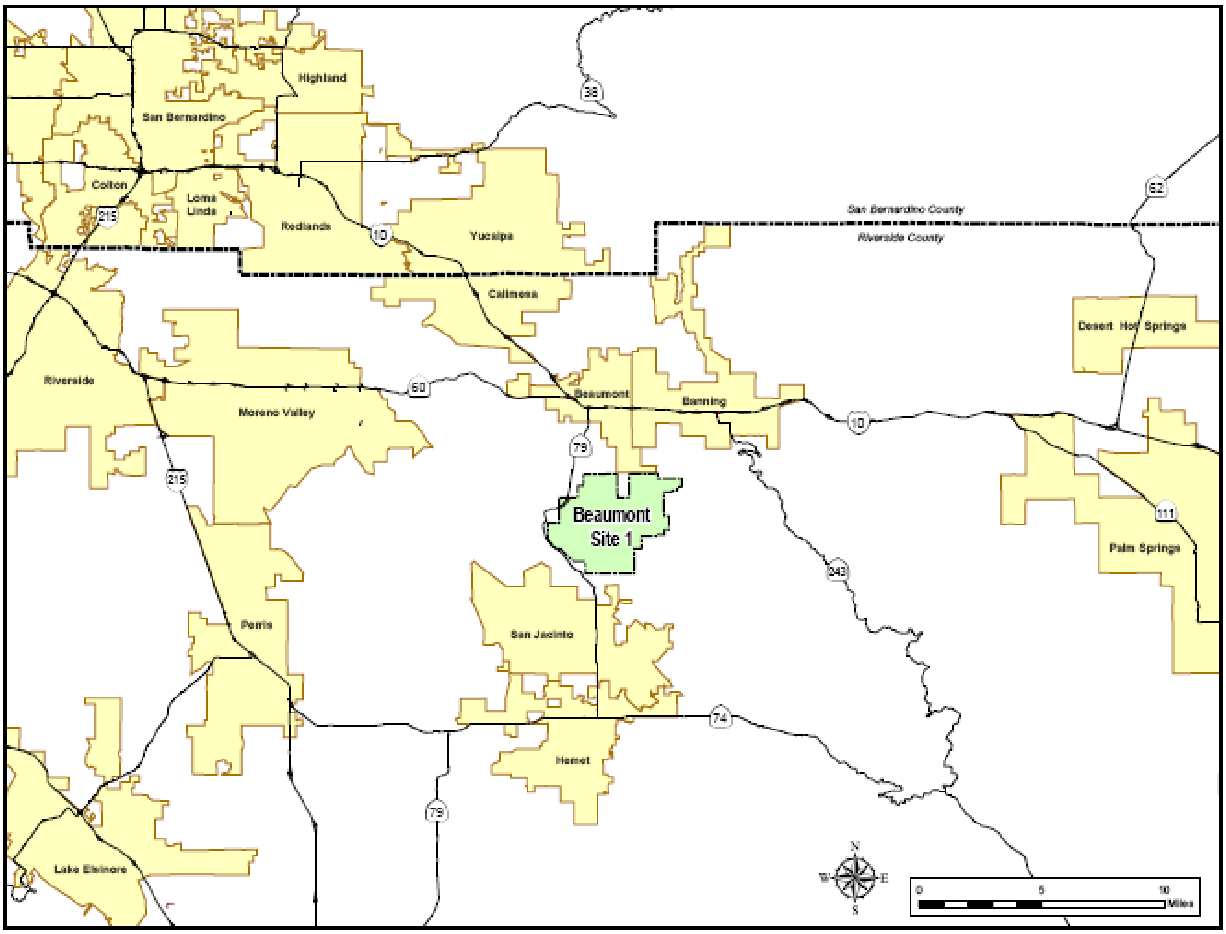
2.0 SITE DESCRIPTION

2.1 SITE LOCATION

The Site is located in Riverside County south of the City of Beaumont, California, approximately 70 miles east of the City of Los Angeles, as shown in Figure 2-1.

Figure 2-1. Former LMC Beaumont Site 1 Vicinity Map



2.2 SITE HISTORY AND OPERATIONS

Historically, the Site was used primarily for ranching. There were ranch houses and other related structures at the Site. A title search performed on this property indicated that LMC purchased the property in 1960. The property was developed and used as a remote test facility for early space and defense programs. During the active life of the LMC facility from 1960 until 1974, LMC (then known as Lockheed Aircraft Corporation) used the facility for solid propellant mixing and testing; waste propellant incineration; rocket motor washout; and ballistics testing. Based on the historical record, nine operational areas were identified for the Site. Figure 2-2 shows the location of these areas.

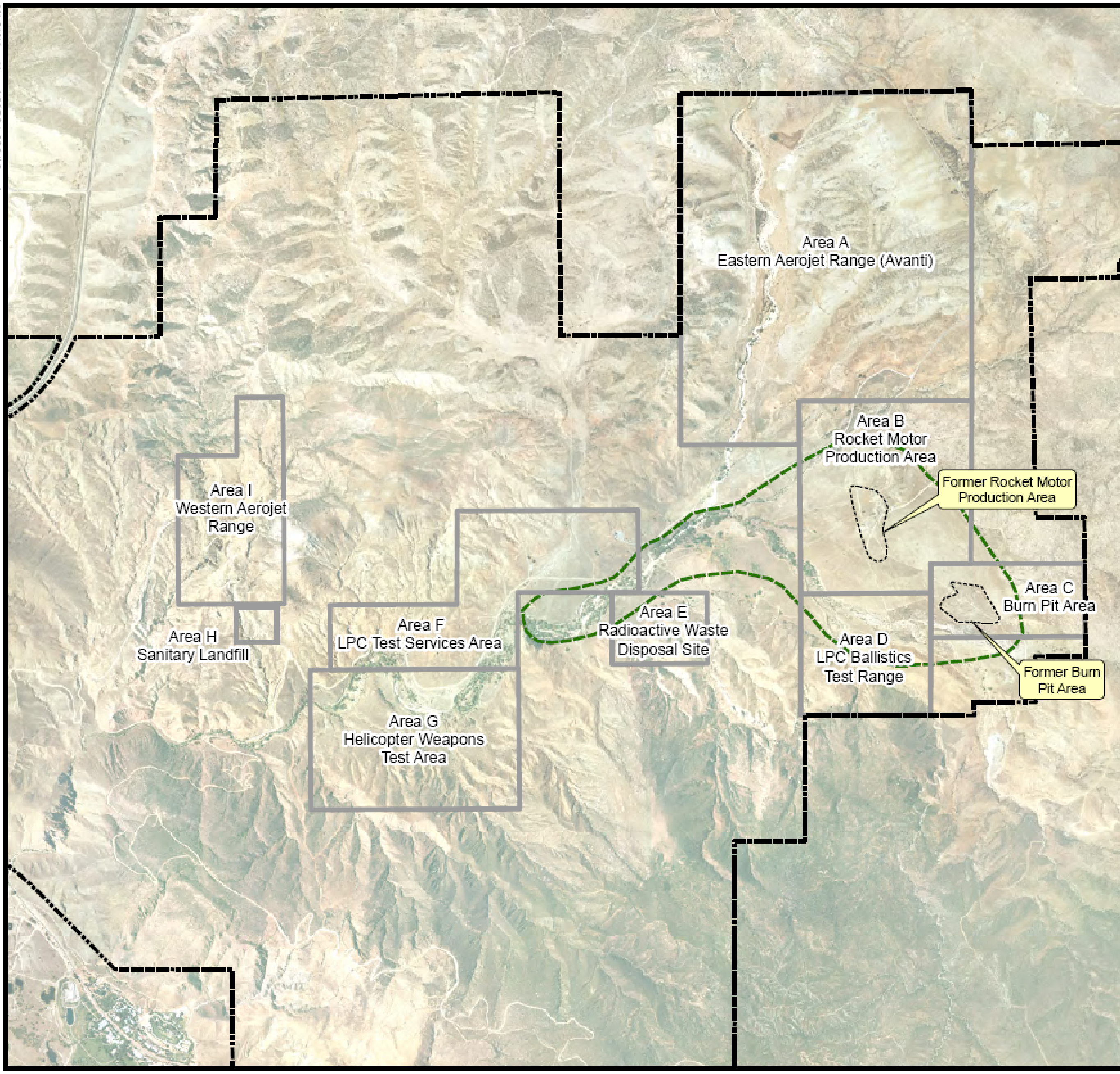
The BPA, which is the subject of this report, is located in Operational Area C (See Figure 2-2). According to available information (Radian 1986), the BPA was historically used to dispose of hazardous waste materials by open burning in pits. Materials burned included off-specification ammonium perchlorate, wet propellant from motor washout, dry propellant cast and cured in small containers for various tests, and out-of-specification propellant, along with various adhesives, resin curatives, burn rate modifiers (such as ferrocene), pyrotechnic and ignition components, packaging material, and solvents. The burn pits were reportedly excavated with a bulldozer and were generally six to eight feet wide, four to six feet deep, and 50 to 100 feet long. Waste materials were placed in the pits, covered with ammonium perchlorate oxidizer or diesel fuel, and ignited using an electric match. After use, the pits were covered over with soil. The only known MEC items reported to have been burned in the pits were a number of small kidney-shaped, aluminum cups containing cyclotetramethylene tetranitramine (HMX), which is a Class A explosive. These cups were brought on site specifically for disposal by a company identified in the Removal Action Report as McCormick Self.

Following the closure of Site 1, Operational Area C (Area C) including the BPA was utilized as grazing land for sheep and agricultural land for cultivation of barley.

2.3 PREVIOUS BPA ASSESSMENT AND CLEANUP

During preparation of the historical report for Site 1 (Radian, 1986), personnel performed several site visits to observe and document conditions at the Site and review historical operations with past employees. During a visit to the BPA, several mounds were noted near the eastern edge of this area, which were reportedly composed of soil generated during burn pit excavation. It was noted that degrading scrap metal, drums, 5-gallon containers, burned propellant, insulation, and paint cans were present on and around these mounds. This area also showed signs of cultivation (around the mounds), which the Radian personnel noted may have resulted in the dispersion of this type of debris across the site.

In 1993, LMC performed a removal action in the BPA reportedly removing and disposing of all residual burn materials. The removal footprint included a buffer area around the identified pits where the upper two feet of soil were removed in order to search for undocumented burn pits. This same scrape and inspect activity was preformed in the spaces between the documented burn pits in the central region of the BPA. While the BPA Removal Action Report (Radian, 1993) discusses the procedures implemented in detail, it does not document where on site the clean surficial cover material that was removed was stockpiled or how it may have been re-distributed about the Site after pit removal. The total volume of soil removed, stockpiled on site and subsequently re-spread over the BPA was 48,600 cubic yards. During the removal action 4,112 tons of non-hazardous material and 18.6 tons of specific waste were removed. The non-hazardous waste was transported to a Class III facility (BKK Landfill in West Covina, CA). Specific wastes were disposed of at a Class I landfill (Laidlaw Environmental Services in Westmorland, CA).



N

0 1,500 3,000 Feet

Adapted from: March 2007 aerial photograph.

LEGEND

Conservation Easement Boundary

Beaumont Site 1 Property Boundary

Historical Operational Area Boundary

Beaumont Site 1

Figure 2-2

Operational Areas and BPA

TETRA TECH

2.4 PHYSICAL AND ENVIRONMENTAL FEATURES

Beaumont Site 1 is located in a broad valley, known as the San Jacinto Nuevo Y Potrero. The San Jacinto Nuevo Y Potrero is an alluvial in-filled valley located along the western foothills of the San Jacinto Mountains. The valley is surrounded by gently rolling hills and rugged mountains. Elevations at Site 1 range from about 1,500 feet above mean sea level (MSL) to approximately 3,700 feet above mean sea level. Potrero Creek bisects the Site in a northeast to southwest direction.

The climate of the Site region is semi-arid. Rainfall averages from 10- 14 inches per year. The temperature generally ranges between the upper 30s and upper 90s (degrees Fahrenheit) depending on season.

Vegetation at the Site consists primarily of native stands of chaparral mixed with dense, low-growing sagebrush. There are small stands of trees including cottonwood, willow, ash and sycamore near the streambeds/arroyos. Indigenous animals include two species of rattlesnake (the Western Diamondback and the Red Rattler), cougars and the endangered SKR. In addition, this site has the potential to support four other species that are either endangered or threatened. These include the Least Bell's vireo, the southwestern willow flycatcher, the California gnatcatcher and the arroyo southwestern toad. It is not known whether these species are present on site or in the BPA; however, information gathered during a site visit by a biological resource firm indicates that the potentially suitable habitat for these species would generally be located along Potrero Creek (Chambers Group, 2003) in Operational Area A to the west of the BPA.

The BPA is located in a broad valley in the southeastern portion of Site 1. The terrain is relatively flat and the area is covered with native vegetation including brush and grass. The soils in the BPA are alluvial/floodplain soils and are typically well drained. There are no surface water features in the BPA; however, Bedsprings Creek is located just south of the BPA. The creek flows generally east to west and is an ephemeral creek. Groundwater is present at about 80- 90 feet bgs in the BPA.

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3.0 MEC EVALUATION

3.1 EVALUATION AREA AND PATTERN

The BPA is documented as an open burn disposal area for hazardous waste materials and there is no evidence that the area had any munitions-related use. However, a small amount of munitions debris has been found in the area over time. The items found have not been located near the former burn pits, but generally near the eastern boundary of the area. During the removal action in the BPA in 1993, the upper two feet of soil was temporarily removed in an effort to conserve native seed stock and to ensure that all burn pits were located for removal. This soil was stockpiled and later re-spread on site. Although ten zones were established for this activity it is not known whether soil from each area was stockpiled in a unique location, or if all of the removed surficial soil was co-mingled in a single stockpile. There was no formal inspection of the “clean soils”; however, it was reported that they were visually examined for discoloration or debris that may be associated with burning.

This information suggests that if any residual MEC is present in the BPA, no one area is more likely than another to contain that MEC. Based on this assumption, the entire BPA was included in the MEC evaluation. A series of parallel transects, running east-west across the area were evenly spaced and distributed to provide approximately 25% coverage (about 4 of 16.75 acres) of the BPA. The 5-foot wide transects were spaced at approximately 20 feet on center. This resulted in the creation of 41 transects ranging in length from about 320 feet to 1,120 feet, and covering a combined area just under four acres. One additional transect was placed outside the existing site boundary (fence) in order to evaluate the potential for kickouts related to potential undocumented MEC burns/disposals (if any). Figure 3-1 shows the investigation pattern designed for the BPA.

The vertical boundaries for the MEC evaluation were established based upon the design of the BPA removal action. Since the upper two feet of soil were retained to cap the area after the removal action and all known burn pit material was removed, the upper soil horizon from zero to two feet is theoretically the only area where MEC may potentially be present unless specific undocumented detonation pads were present in the BPA. Based on this data, the MEC evaluation was limited to the upper two feet of the soil.

3.2 EVALUATION METHODS

Evaluation in the BPA began with site preparation (mowing and staking of transect paths). Although this is not typically considered part of the formal evaluation, in the case of the BPA, this activity included a surface sweep along the survey transects prior to mowing. This sweep was conducted as a safety measure to protect personnel conducting the mowing from MEC hazards; however, since the sweep involved instrument-aided (all-metal detector) visual observation of the ground surface for MEC, it was functionally equivalent to a surface clearance.

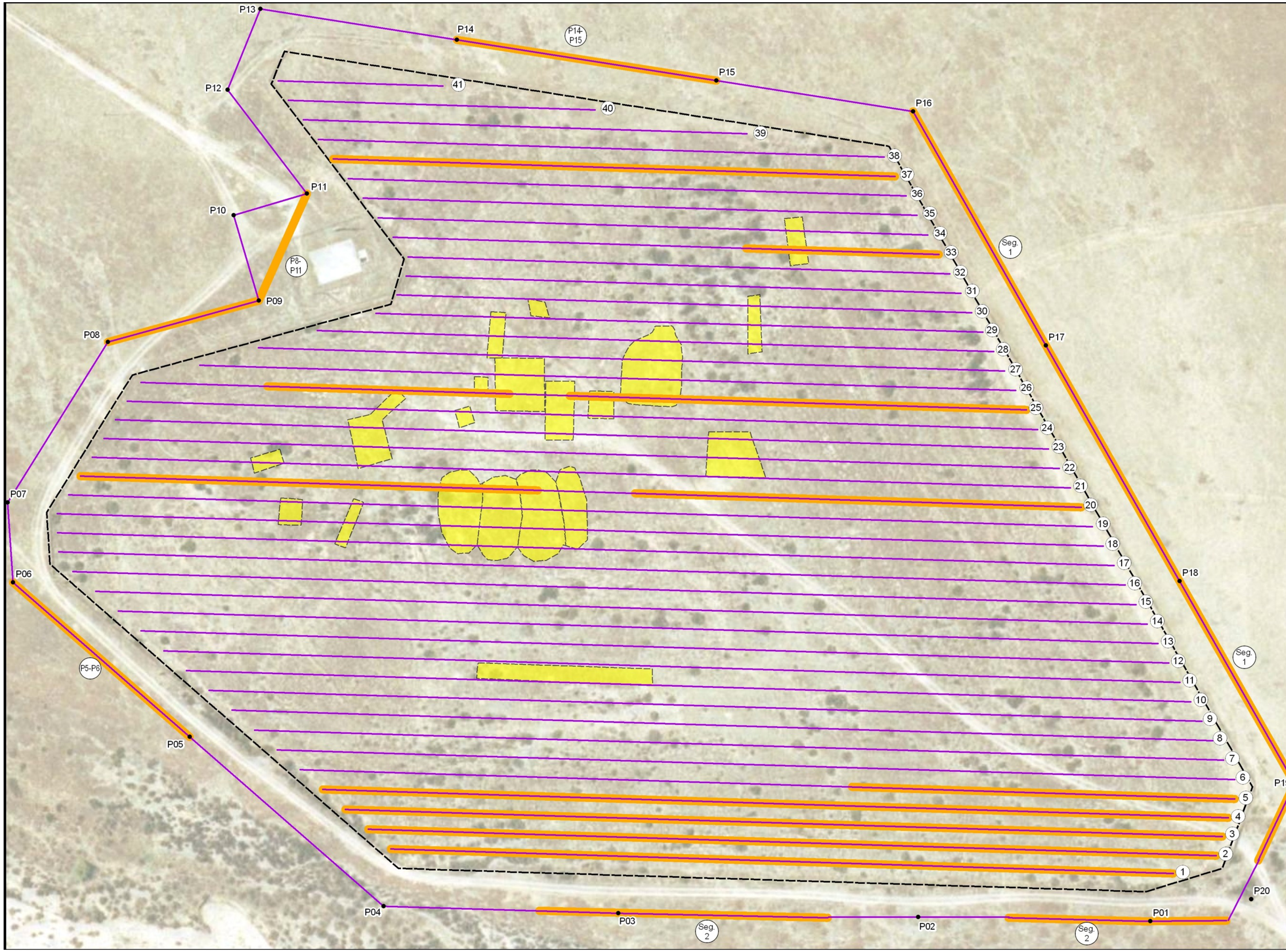
The intrusive portion of the MEC evaluation was conducted exclusively using "Mag and Dig" techniques. This method involves the location of subsurface anomalies with a hand-held metal detector, followed by real-time hand excavation and inspection of those anomalies. The Mag and Dig procedure was conducted using Vallon electromagnetic pulse induction, all-mine/all-metal detectors (Vallons). The Vallon search head continuously emits electromagnetic pulses as the operator sweeps the head close to the ground surface. Between each magnetic pulse is a short pause. During these pauses, the electro-magnetic reaction/response created in subsurface metal objects by the Vallon pulses is detected by the search head. The detector's receiver processes the responses from the objects and converts them to an acoustic signal (i.e., an audible tone) which the operator uses to pinpoint the location of the object. The Vallons used for this project also have LCD readouts which provide a quantitative value for the reaction/response created by buried metallic objects. These values have no numeric units (are relative readings), but they provide general information regarding the probable size of near-surface buried objects. The readouts can be used to check the instrument function by comparing consecutive readings for a known object (instrument test strip) or to differentiate targets for investigation based upon a pre-selected readout value that corresponds to the readout value for an item or stimulant of interest.

Mag and Dig operations were conducted in accordance with the procedures established in the approved work plan. This entailed setting up 5-foot wide survey lanes in the BPA and then sweeping the area within those lanes using the Vallon to locate subsurface metallic anomalies. Each detected anomaly was marked with a pin flag for reference (i.e., flagged) and then immediately excavated to determine the nature of the anomaly.

After intrusive evaluation and quality control (QC) activities were complete, the excavations were back-filled with the soil previously removed. The items recovered during the investigation of the anomalies were consolidated in piles within the BPA, but were not removed for off-site disposal. The results of the Mag and Dig evaluation are presented in Section 5.1.

3.3 SUMMARY OF FIELD MODIFICATIONS

Initially all detected subsurface anomalies were to be excavated, identified and located using a differential global positioning system (DGPS); however, early findings indicated that there was a very large amount of non-MEC metallic debris in the BPA. Based on these early findings, more than 33,000 metallic anomalies are estimated to be present in the BPA. These items were expected to consist primarily of metal flakes (possibly residue from deteriorated barrels), wire, bottle caps, and other non-specific, non-munitions metal scrap. Some investigated areas contained so many of these small anomalies that no distinct anomalies could be identified for excavation. In addition, there are dozens of well heads, numerous buried pipelines wrapped with metallic tracer wire, and several dozen SKR burrows in the area, all of which can, and did, interfere with execution of the MEC evaluation as planned. In order to minimize the effects of the excess debris and focus the evaluation on potential MEC items, the field procedures were modified to include excavation of only those anomalies producing a selected bar graph



Beaumont Site 1

Figure 3-1
Burn Pit Area Investigation Patterns

TETRA TECH

readout displayed on the Vallon LED screen. These readouts, called elements, have no numerical units. The element scale is numbered from 1 to 14 and the values displayed are proportional to the strength of the response signal generated in subsurface metal anomalies by the pulses transmitted by the Vallon. The element values can be used to estimate the relative size of near surface anomalies and to generally screen for anomalies above a certain approximate size, provided that the instrument is operated at a consistent sensitivity as it was for this project. The field team was instructed to intrusively investigate only those anomalies producing a readout value greater than "9" which was produced by the smallest item in the instrument test strip on site. This item was equivalent to a 20mm projectile buried at 10 inches bgs. In practice, the actual MD recovered generated readouts between 10 and 12. In addition, the field team was instructed to record DGPS coordinates only for MD items recovered.

Following the modifications, it became apparent that even the amended procedure would require the excavation of several thousand anomalies and would not effectively deal with the areas containing clusters of very small anomalies. The field team was instructed at this time to use the remaining evaluation time to collect representative data for the overall BPA by allocating segments of field time to each portion of the area (e.g., north, south, central and perimeter). This data was then evaluated to determine whether additional work is needed in the BPA and to identify an effective path forward. The results of the evaluation are discussed in Section 4 of this report. Conclusions and recommendations regarding follow-on activities are contained in Section 5.

3.4 QUALITY CONTROL

The QC program for this evaluation project consisted of process and product quality control.

3.4.1 Process Quality Control

Process QC is concerned with standardization and reproducibility of processes, as well as improving the efficiency and effectiveness of the processes. This can be considered a preventive approach to QC, as the goal is to make the processes work properly and detect any inefficiencies or problems early and improve processes before the final product is created. The quality of the work was ensured by strict adherence to the standard operating procedures in the work plan, including those regarding function testing for detection equipment, consistent performance, accurate recordkeeping and repetitive measurement of the objective measures of desired quality attributes.

3.4.2 Product Quality Control – Checks and Inspections

Product quality control was applied to Mag and Dig operations at the BPA by performing a percentage-based inspection of the areas subjected to MEC evaluation. Before the investigation excavations were backfilled, the unexploded ordnance (UXO) Environmental Safety and Quality specialist (UXO ESQ) on site re-checked 5-10% of the excavations to ensure that all metallic anomalies above two feet bgs had been removed.

3.4.3 Equipment Function Checks and Calibration

Equipment function testing and calibration were the major elements in the process QC for this project. Effective identification of MEC relies heavily on properly functioning and properly operated detection equipment. All MEC detection equipment was function tested twice daily (morning and evening) utilizing the instrument test strip (ITS) created for this project. The test strip contained a number of surrogate munitions items similar in size to those that might potentially be present in Area C based on the historical munitions use at Site 1. A full description of the ITS is presented in the approved work plan for this evaluation (Tetra Tech, 2008). Instrument responses to the surrogate items buried in the ITS were compared to previous readings to ensure that the readings were consistent and the instruments were functioning properly. The DGPS equipment was function tested by deploying the instrument over a known monument and comparing the readings to the known coordinates.

3.5 SAFETY

The Follow-on MEC Evaluation activities in the BPA were performed in accordance with the Environmental Health and Safety Plan approved for the initial MEC evaluations at Site 1 (Tetra Tech, 2005a). This plan was prepared for a large scale MEC evaluation at Beaumont Site 1 and was amended, as necessary, for this project to accommodate specific conditions.

One safety issue was noted during the field operations. A green-colored, granular material was noted at one excavation site. The UXO ESQ halted operations at that location and instructed the field team to backfill the hole. The material was later examined by scientists who thought the material was bentonite that was used as backfill during previous drilling activities in Area C. A composite soil sample containing this material was collected and tested for site contaminants of concern. Perchlorate was detected in the sample at a concentration of 1,000 μg/kg. The residential regional screening level for perchlorate in soil is 55,000 μg/kg (USEPA, 2009).

4.0 SUMMARY OF FINDINGS

4.1 RESULTS OF MAG, FLAG AND DIG MEC EVALUATION

All areas within the BPA that were evaluated contained large amounts of metallic debris, although the portions of the perimeter transect prosecuted contained less debris than the interior areas. The debris included small metal flakes presumably from disintegrating drums, tin foil, bottle caps, wire and other non-specific, non-munitions metal debris. Some areas identified for investigation contained so much debris that individual anomalies could not be identified for evaluation. On the basis of the data obtained during the evaluation, it is estimated that there may be more than 33,000 small metallic anomalies present in the BPA. In addition, there are 46 monitoring wells and associated piping in the area. The well head casings are steel and some of the piping was found to be wrapped with metallic tracer wire. Both the well heads and the tracer wire interfere with detection of metallic anomalies near these structures. Due to the presence of metallic debris, well heads and wire-wrapped piping, not all areas that were planned for evaluation were completed during this effort. The presence of SKR burrows at some locations also prevented investigation in some of these areas.

Prior to initiation of the intrusive investigation in the BPA, approximately 25% of the area was surface swept to identify/remove potential MEC hazards in preparation for the mowing of the transects. This effort covered just under 4 acres and resulted in the discovery of one MD item on the ground surface in the eastern central portion of the BPA. This item was an empty, non-ferrous, 30mm shell casing. During the intrusive investigation, about six percent of the BPA (about 1 acre) was evaluated, including portions of the perimeter transect located just outside of the BPA boundary fence. A total of 1,997 anomalies were identified. Of those anomalies, 911 were excavated based on the original and modified selection criteria applied during the evaluation (See Section 3.3). Nineteen anomalies were MD including 3 pieces of projectile fragmentation (frag); 6 small pieces of unidentified frag; and, 10 empty, non-ferrous 30mm casings. All MD was found at depths ≤ 12 inches bgs, with 16 of the MD items being fund at depths ≤ 6 inches bgs. No MEC was found during the evaluation.

Eight of the 30mm shell casings were found near the previously identified location of a lone burn pit located in the northeastern corner of the BPA (See Figure 4-1). One shell casing was found in the eastern central portion of the BPA and the final casing was found in the southeastern corner of the area. There were no historical burns pits near the locations where these last two shell casings were found. Two pieces of frag identified as projectile frag were found on two adjacent transects near the southern edge of the BPA, about 300 feet apart. There were no historical burn pits in or near this area. The third piece of projectile frag was found near the eastern central portion of the site on Transect 20. A second piece of unidentified frag was found about 100 feet west along this same transect. Both pieces of frag were located near a former burn pit. Two pieces of unidentified frag were found on Transect 25, approximately 100 feet north of Transect 20. These items were also located near a former burn pit. The final three pieces of unidentified frag were found on the perimeter transect near the southeast corner of the BPA. There are no historical burn pits in or near this area.

Figure 4-1 shows the areas of the BPA that were evaluated, along with the locations of the MD items found. The results of the MEC evaluation are summarized in Tables 4-1 and 4-2. Daily Reports and Quality Control Reports for the MEC evaluation are included in Appendix B and photographs showing items of interest from the evaluation are presented in the photo log in Appendix C.

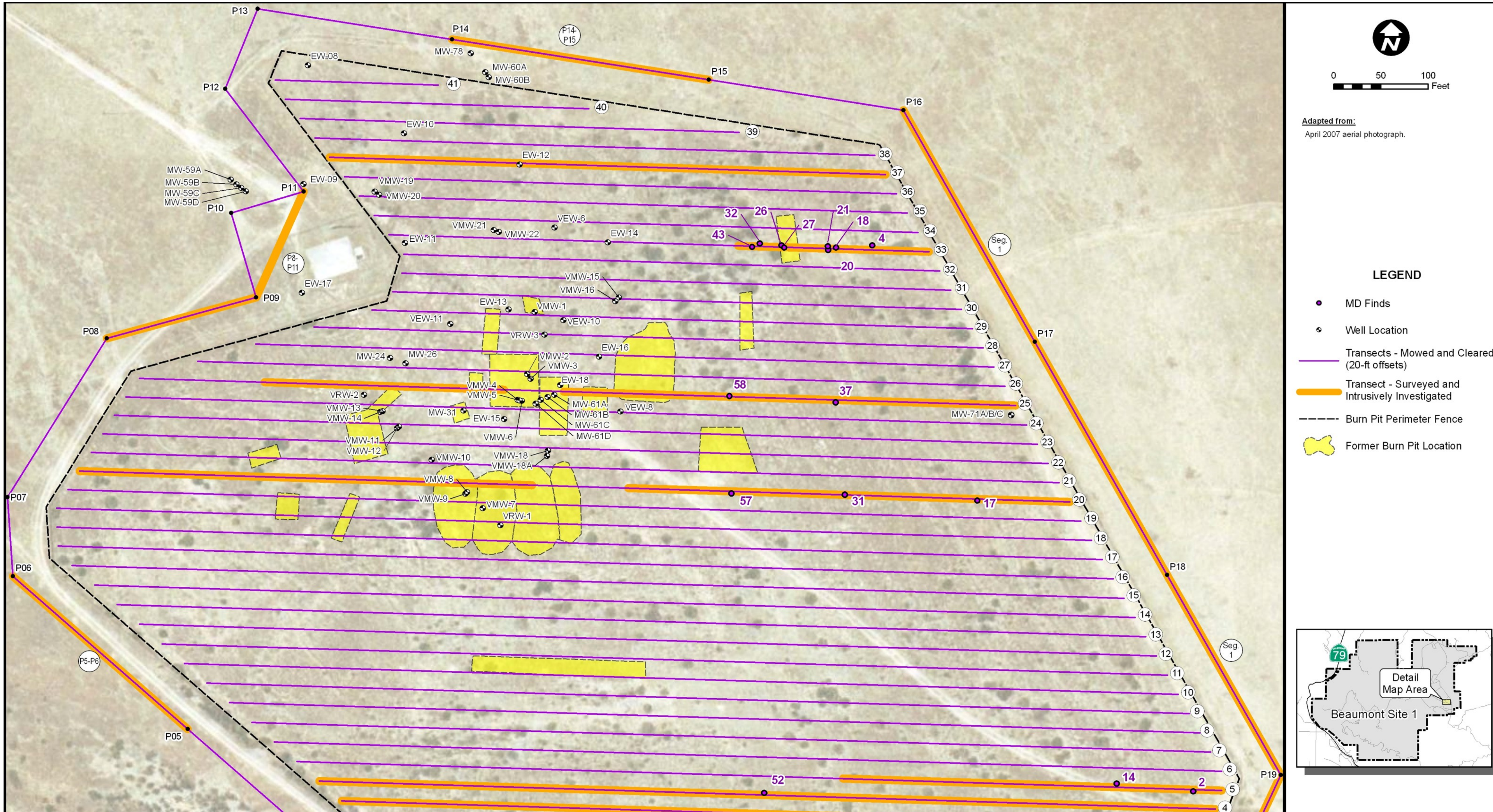


Figure 4-1
Burn Pit Area Evaluation Summary

TETRA TECH

Table 4-1. Summary of Area C MEC Evaluation Results

Transect No.	Length (ft)	Length Dug(ft)	Area Dug (acres)	No. of Targets Identified	No. of Targets Dug	No. of MD Found
1	819.3	819.3	0.094	56	56	0
2	888.2	888.2	0.102	106	52	0
3	918.4	918.4	0.105	212	93	0
4	948.5	948.5	0.109	212	126	1
5	978.7	400.0	0.046	56	46	2
20	1048.1	946.2	0.108	383	140	3
25	927.4	731.9	0.084	261	138	0
33	571.5	201.7	0.023	102	49	8
37	588.4	588.4	0.068	92	40	2
Perimeter Segment 1	898.0	898.0	0.103	181	63	0
Perimeter Segment 2	530.3	530.3	0.061	159	61	3
Perimeter Segment P5-P6	245.6	245.6	0.028	79	24	0
Perimeter Segment P8-P11	286.8	286.8	0.039	34	7	0
Perimeter Segment P14-P15	274.7	274.7	0.032	64	16	0
Totals	*9923.9*	*8678*	*1.002*	*1997*	*911*	*19*

Notes:
MD- Munitions debris.
ft – feet.

Table 4-2. Summary of MD Items Found

Transect No.	Target No.	Northing	Easting	Depth (In)	Description
4	52	2256655.07	6355564.12	8	projectile frag ~ 4" x 1"
5	2	2256649.25	6356017.26	3	projectile frag ~ 2" x 1"
5	14	2256657.49	6355936.11	6	empty 30mm shell casing
33	4	2257226.75	6355677.66	8	empty 30mm shell casing
33	18	2257232.75	6355637.99	6	empty 30mm shell casing
33	20	2257230.38	6355629.48	6	empty 30mm shell casing
33	21	2257234.16	6355629.26	6	empty 30mm shell casing
33	26	2257241.33	6355578.98	4	empty 30mm shell casing
33	27	2257239.10	6355582.01	4	empty 30mm shell casing
33	32	2257242.40	6355554.90	2	empty 30mm shell casing
33	43	2257233.47	6355549.28	2	empty 30mm shell casing
20	17	2256954.53	6355788.49	3	empty 30mm shell casing
20	31	2256955.60	6355649.20	6	projectile fragment
20	57	2256958.03	6355531.84	12	unidentified fragment
25	37	2257060.91	6355638.86	6	unidentified fragment
25	58	2257067.71	6355526.59	4	unidentified fragment
Perimeter Segment 2	9	2256533.38	6355453.97	4	unidentified fragment
Perimeter Segment 2	16	2256540.69	6355343.82	10	unidentified fragment
Perimeter Segment 2	17	2256536.31	6355340.93	6	unidentified fragment

Notes:
In – Inches.
mm – millimeter.

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5.0 CONCLUSIONS AND RECOMMENDATIONS

The nature and condition of the MD and the depth of the items found during this evaluation, in conjunction with information in the BPA Removal Action Report, suggest that the MD items found are residuals of historical burning activities and not the result of planned detonations in a disposal, target, or range area. All items found were located in the upper 12 inches of soil. This layer of native soil was excavated and stockpiled within the BPA during the removal action and then replaced on site to encourage re-growth of native plant species. Based on the description of the procedures supplied during the removal action, it appears that this "top soil" was visibly, but not physically screened for all debris. The focus of the removal action and associated visual inspections was the residual burn debris and materials that might chemically contaminate the underlying soil and groundwater. In this circumstance, miscellaneous metal debris in the soil outside of the burn pit areas would not have been considered a significant contributing factor (i.e., would not have required removal based on the goals of the removal action).

Although the small number of MD items that have been found are not hazardous and appear more likely to be associated with occasional miscellaneous disposal or poor housekeeping, than with planned large-scale detonation of munitions, more data is needed to support this assumption and validate the CSM of the BPA as a disposal area for hazardous waste materials via open burning. There are several possible paths forward to obtaining this necessary data. Complicating the selection of an appropriate, cost-effective path forward is the presence of very large amounts of metallic debris in the area, as well as dozens of monitoring well heads, wire wrapped underground piping and SKR burrows. A second complication is that the historical activities in the BPA (farming and the removal action) would have resulted in a re-distribution of the metallic debris in the shallow soil and would have obscured any potential kickout patterns typically associated with the detonation of munitions. The methods used to remove, stockpile, and re-spread the top soil are likely to have resulted in significant mixing of this soil zone, and the spreading of any localized debris (such as a pile of waste 30mm casings) across the site.

A statistically based random sampling approach would (assuming typical specifications for required confidence levels and percentages of the area to be demonstrated free of MEC) require evaluation (intrusive investigation) of 3 or more acres spread randomly about the BPA. This area would be expected to contain up to 6,000 targets, in addition to well heads and piping. Areas containing clusters of very small anomalies would require special processing to ensure a comprehensive visual evaluation of the soils to eliminate the possibility of MEC items being present. Since the anticipated future use of this area will be generally limited to the surface, this level of effort does not appear to be warranted, especially considering the fact that the transect preparation work already completed resulted in a surface sweep of approximately 25% of the BPA and did not reveal any MEC. Only a single piece of MD was found during the surface sweeps.

Based upon the type, location and depth of MD items that have been found to date, and the physical conditions and constraints present in the BPA, it is recommended that the following actions (or equivalent) be conducted to confirm the CSM developed for this area and alleviate concerns regarding potential MEC hazards during future site use.

5.1 BIASED PHASED SAMPLING RECOMMENDATION

The phased evaluation recommended includes an instrument-aided surface sweep and initial mapping of the entire BPA and a buffer zone in order to gather the information needed to better understand the distribution of metallic debris in the BPA and to develop a tailored investigation pattern/approach for the area. The mapping would be followed by intrusive investigation in selected areas to verify the absence of MEC, seen thus far. Sampling would be biased toward areas with more potential to contain MEC and the size and distribution of subsurface anomalies. All large anomalies which might represent the larger caliber ordnance tested at the Site would be investigated. In addition, 5 percent of the anomalies in the proper size range for 20mm and 30mm munitions would be investigated. If no MEC is found, the area would be recommended for no further field actions and institutional controls (if necessary) would be considered in the MEC Remedial Action Plan for the Site. If MEC is found, DTSC would be engaged in discussion of the appropriate follow-on actions.

Specific tasks would include:

1. Follow-up interviews (if possible) with the two former LMC employees previously interviewed who may have knowledge of which parties may have used the BPA and what types MEC items may have been burned in that area;
2. Surface clearance of the BPA and a limited surrounding buffer zone to identify/remove any potential MEC hazards at the ground surface in preparation for mowing and geophysical mapping. The surface clearance will be conducted by walking transects across the entire site while sweeping the ground surface with all metals detectors.
3. Mowing/vegetation reduction in the BPA and buffer zone to prepare for geophysical mapping;
4. Installation of an instrument test strip containing appropriate munitions simulants (or expansion of the existing instrument test strip)
5. 100% of the BPA and buffer zone will be geophysical mapped to obtain a more complete and clear understanding of the density, distribution and estimated depth of subsurface metallic anomalies and features (well piping, etc.) in the BPA;
6. Excavation of all large subsurface anomalies that may represent any of the larger test munitions known to have been used at the Site (5-inch, 105mm or 155mm projectiles) based upon the instrument readings recorded during geophysical mapping and comparative readings for like stimulant items buried in the instrument test strip established for the follow-on action.
7. Excavation of 5 percent of the subsurface anomalies that may represent the smaller test munitions known to have been used at Beaumont Site 1 (20mm and 30mm projectiles)

based upon the instrument readings recorded during geophysical mapping and comparative readings for like stimulant items buried in the instrument test strip established for the follow-on action. The exact percentage of anomalies investigated would be a function of the total number of anomalies found during mapping.

8. Seeding of one surrogate ordnance item per acre of land evaluated in the BPA and buffer zones to provide quality control for the geophysical mapping program. The items will be representative of 20mm and 30mm projectiles since these munitions were used in other areas of Beaumont Site 1. In addition, the casings found in the BPA in the past have been 30mm. Seeded items assist in determining that the given area was in fact surveyed with the desired level of quality.

The location of the smaller anomalies investigated would be biased toward areas with higher densities of anomalies and areas that have a greater probability to contain MEC (areas where surface items have been found previously, areas near pits, etc.). If areas identified for evaluation contain large amounts of small debris (such as metal flakes), a five-point sampling approach similar to that previously used for the Phalanx Target Berm (TetraTech, 2005b) in Operational Area B will be applied to obtain data regarding these areas..

This phased approach would allow the final intrusive effort (Steps 6 and 7) to be more accurately scoped and specifically focused in areas most likely to contain MEC-related hazards. It would also provide a larger body of data for evaluation of risk and potential remedies, if necessary..

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6.0 REFERENCES

Chambers Group. 2003. Biological Resources Constraints and Permitting Requirements for the Lockheed Beaumont 1 and Beaumont 2 Sites in Riverside County, California. March 24.

Radian. 1986a. *Lockheed Propulsion Company, Beaumont Test Facilities, Historical Report*. September.

Radian. 1986b. *Lockheed Propulsion Company, Beaumont Test Facilities, Preliminary Remedial Investigation*. December.

Radian. 1993. *Disposal Area Removal Action, Lockheed Propulsion Company, Beaumont No. 2 Site*. June.

Tetra Tech. 2005a. *Environmental Health and Safety Plan MEC Construction Support*. April.

Tetra Tech. 2005b. *Final Work Plan, Munitions And Explosives Of Concern (MEC) Evaluation*. September.Tetra Tech. 2008. *Work Plan for Follow-On Munitions and Explosive of Concern (MEC) Evaluation, Area C – Burn Pit Area*. October.

United States Environmental Protection Agency. 2009. Region 9 Regional Screening Levels Table. April.

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REPORT BODY AND APPENDICES A-C ON ATTACHED CD

APPENDIX A BPA REMOVAL ACTION REPORT

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CORPORATION

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BURN PIT AREA REMOVAL ACTION REPORT

LOCKHEED PROPULSION COMPANY

BEAUMONT TEST FACILITY NO. 1

Prepared for:

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Prepared by:

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June 1993

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

This report provides details of the removal action performed from November 1992 through February 1993 at the burn pit area of the former Lockheed Propulsion Company (Lockheed) Beaumont No. 1 facility. The objective of the removal action was to clear the site of any waste remaining from historical activities that would prevent it from being certified for unlimited future land use. Work performed was conducted in accordance with a Consent Order (HSA-88-89-034) with the Department of Health Services, Toxic Substances Control Program (Cal/EPA, Department of Toxic Substances Control [DTSC]) and the regulatory agency-approved *Remedial Action Plan* prepared by Radian Corporation (Radian) in May 1992 (Radian, 1992a).

Site Background

The burn pit area (BPA) is located in a broad valley in the southeastern portion of the Lockheed No. 1 facility which is approximately 70 miles east of Los Angeles, in Beaumont, California. From 1961 to 1974, Lockheed burned waste propellant and other materials used in the production of rocket motors at the BPA in pits averaging 6 feet wide, 4 feet deep, and 50 feet in length (Radian, 1986a). More recently, the BPA has been used for cultivation and grazing. It is now sparsely vegetated grassland that is inhabited by the Stephens' Kangaroo Rat (*dipodomys stephensi*). The Stephens' Kangaroo Rat (SKR) is listed as "threatened" by the California Department of Fish and Game, and "endangered" by the United States Fish and Wildlife Service (Radian, 1991a).

In 1986, Lockheed initiated site investigation activities to determine the nature and extent of waste in the BPA. From early 1986 through 1989, Radian reviewed and compiled historical information; conducted a geophysical investigation; and performed a remedial investigation involving exploratory trenching and sampling. Results of these efforts identified a 16.7-acre area which encompassed approximately 24 suspected burn pit locations, and determined the majority of the burn pit waste, consisting of burn zone residue and miscellaneous debris, to be non-hazardous.

Removal Action

Following site investigation activities, Lockheed began planning a removal action at the BPA. The applicable regulatory agencies were contacted to ensure that the planned removal action would be protective of human health and the surrounding environment, and that all applicable regulations were addressed. The regulatory agencies contacted included: Cal/EPA, DTSC; South Coast Air Quality Management District; California Regional Water Quality Control Board, Santa Ana Region 8 and Los Angeles Region 4; U.S. Fish and Wildlife Service; California Department of Fish and Game; Riverside County; and the City of Beaumont. These agencies also participated in overseeing on-site activities.

In the fall of 1992, after all applicable permits and regulatory concurrences were obtained, the removal action was initiated by Radian, under the direction of Lockheed, using Scrivner Environmental Services as the excavation contractor. Prior to starting excavation activities, the 16.7-acre area affected by the removal action was completely fenced off to protect the SKR and for stormwater pollution control. SKR within the fenced area were trapped and relocated to another part of the Beaumont No. 1 facility so that they would not be harmed by removal action activities.

During the three month removal action, approximately 4,112 tons of non-hazardous material and 18.6 tons of specific waste were removed from 21 burn pits (16 previously identified and 5 newly identified; 4 suspected pits proved not to exist). Non-hazardous material including burn zone residue, metal drums, barrel lids, wood, spent rocket motor casing, scrap metal, glass, and approximately 720 feet of an old irrigation pipe were transported for off-site disposal to BKK Landfill, a Class III facility located in West Covina, California. Specific wastes, including an oily drum, unburned rocket propellant, and burn rate modifier, were transported for off-site disposal to Laidlaw Environmental Services, a Class I Landfill located in Westmorland, California. Although not technically hazardous, specific wastes were disposed at a Class I facility to avoid costly and time consuming sampling and analysis.

To ensure that no additional burn pits or possible contaminated materials remained, approximately 48,600 cubic yards of surface and subsurface soil in the 16.7-acre BPA were examined for signs of discoloration or disturbance (5 of the 21 pits were found during this activity). Also, to confirm that there were no signs of residual contamination after waste removal, samples were collected from the bottom of four burn pits and analyzed for metals and volatile and semivolatile organic compounds using U.S. EPA Methods 6010, 8240, and 8270, respectively. Analytical results from those samples indicated that total metal concentrations were below the applicable Total Threshold Limit Concentrations and less than 10 times the applicable Soluble Threshold Limit Concentrations as defined by Title 22, California Code of Regulations. No volatile or semivolatile organic compounds were detected above the method detection limit, thereby confirming that no contamination remained. A summary of results for the removal action is provided on Table ES-1.

At the completion of excavation and waste disposal activities, the site was restored to its near original condition. All on-site activities were conducted in accordance with the requirements stipulated by the overseeing regulatory agencies.

Table ES-1

Summary of Results
Burn Pit Area Removal Action Activities

Activity	Quantity[a]
Well Modification/Restoration	33 wells
Top Soil and Overburden Removal/ Replacement	48,600 cubic yards[a]
Removal of Irrigation Pipe	720 feet[a]
Disposal of Non-specific Wastes to BKK Landfill (Class III)	4,112 tons[b]
Disposal of Specific Wastes to Laidlaw Environmental Landfill (Class I)	18.6 tons
Total Number of Burn Pits Found	21
Dust Suppression Water Imported from Off Site	1.17 million gallons
Dust Suppression Water from On-site Well (W-1)	100,000 gallons

[a] Quantities are approximate.
[b] Includes irrigation pipe.

1.0 INTRODUCTION

This report documents the removal action performed from November 1992 through February 1993 at the burn pit area (BPA) of the former Lockheed Propulsion Company (Lockheed) Beaumont No. 1 Facility. The objective of the removal action was to remove any waste that would prevent the site from being certified for unlimited future land use. The work performed was conducted in accordance with a Consent Order (HSA-88-89-034) from the Department of Health Services, Toxic Substances Control Program and the regulatory agency approved *Remedial Action Plan* prepared by Radian Corporation (Radian) in May 1992 (Radian, 1992a). Major components of the removal action included:

- Excavation and off-site disposal of non-hazardous material (burn zone residue and debris) to a Class III landfill;
- Excavation and off-site disposal of specific waste (oily drums, unburned rocket propellant, and burn rate modifier) to a Class I landfill; and
- Scraping and inspection of surface and subsurface soil surrounding the immediate burn pit area (BPA) to ensure no waste or possible contaminated materials remained.

Section 1.0 of this report provides general information on the site and characteristics of the waste removed. Section 2.0 provides details of the activities comprising the complete removal action; and Section 3.0 provides a discussion of applicable regulatory requirements and provides details illustrating compliance with each requirement. All figures and tables are included at the end of each respective section in the order which they were referenced.

1.1 Site Description

The Lockheed Beaumont No. 1 facility is located in a semiarid region approximately 70 miles east of Los Angeles, in the foothills of the San Jacinto Mountains, in Beaumont, California (Figure 1-1). The BPA is located in a broad valley in the southeastern portion of the facility (Figure 1-2). The ground surface in the BPA is relatively flat and mostly covered with native vegetation; the soils are alluvial/floodplain and are generally well drained. Surface features prior to the removal action included shallow pits and trenches and mounds of stockpiled soil from historical activities. Depth to groundwater in the BPA at the time of the removal action was approximately 85 feet below land surface (BLS); flow is generally to the northwest. Bedsprings Creek is located south of the BPA and primarily flows from east to west (Radian, 1986a and 1990). Figures 1-3 and 1-4 are photographs of the BPA taken at the start of removal action activities.

1.2 Historical Use

From 1961 to 1974, the Lockheed Propulsion Company used the facility for manufacturing and testing solid rocket motor propellant and for ballistics testing. Burn pits were used to burn waste propellant and other materials used in the production of rocket motors (such as adhesives, solvents, and resin curatives). At least 20 burn pits are known to have been used during operations at the facility. Each burn pit measured approximately 6 to 8 feet wide, 4 to 6 feet deep, and 50 to 100 feet in length. Materials were placed in the pits, ammonium perchlorate oxidizer or diesel fuel was added to facilitate combustion, and the materials were ignited using an electric match. The resulting fire was occasionally hot enough to melt sand, with temperatures of the burning propellant reaching as high as 2,300° Fahrenheit. The propellant material reportedly burned completely; however, insulation and liner material from inside the rocket casings often would not burn. Any unburned materials were saved for subsequent burns

(Radian, 1986a). Residual burned material was left in place 1565tKampdts were eventually backfilled to conform to the surrounding grade.

1.3 Current Land Use

In recent years, the BPA has been used for sheep grazing and barley dry farming. It is now sparsely vegetated grassland that is inhabited by the Stephens' Kangaroo Rat (SKR), which is listed as "threatened" by the California Department of Fish and Game, and "endangered" by the United States Fish and Wildlife Service (Radian, 1991a). Special precautions were taken to protect the SKR from harm during the removal action. Details of the activities performed to protect the SKR are discussed further in Section 3.3 of this report.

1.4 Nature and Extent of Burn Pit Waste

In early 1986, Radian began gathering historical information regarding the BPA from several sources, including: interviews with former Lockheed employees; review of historical aerial and ground photographs; observations made during site visits; and previous investigations (Radian, 1986a). Results of this historical investigation (specifically the aerial photo analysis) were used to determine the approximate locations of 16 individual burn pits. A subsequent geophysical investigation of the BPA, using terrain conductivity and magnetometry techniques, confirmed the lateral limits of the suspected burn pit locations, and also indicated the approximate location of an old abandoned irrigation pipe (Radian, 1986b). Using this information, Radian delineated a 16.7-acre area which encompassed all suspected burn pit locations (the "central" BPA), the irrigation pipe, and a 200-foot wide buffer surrounding the central BPA. The 200-foot buffer was established to ensure that any additional pits not identified during previous investigations would be found during the removal action.

In 1989, Radian conducted a remedial investigation which included exploratory trenching and sampling, to determine the nature and vertical extent of burn pit waste (Radian, 1990). Trenching activities revealed the location of 14 burn pits and the abandoned irrigation pipe. Of the 14 pits found, 6 were in locations identified using aerial photography and 8 were new pits, not present on the photos. Ten additional pits were identified on the aerial photos, but were not in the area where trenching took place, bringing the total number of suspected pits to 24. The burn pits averaged 10 to 20 feet wide with a 1- to 3-foot thick layer of burned material at a depth of 2 to 3 feet BLS. A variety of material was found in the pits, including rusting drums, wood, spent rocket motor liners, and hard, black burn residue. Ferrocene (a propellant burn rate modifier) and unburned rocket propellant were also present in small amounts (Radian, 1990 and 1991b).

The locations of 24 suspected burn pits and the old irrigation pipe as determined by the historical aerial photography, geophysical, and exploratory trenching are shown on Figures 1-5 and 1-6. The volume of waste to be removed as determined by these investigations was estimated to be approximately 4,500 cubic yards. This volume was calculated by estimating the total surface area of the individual burn pits, assuming an average waste thickness of 3 feet, and including an additional 25% for adjacent soils that would be inseparable from the waste (Radian 1990).

1.5 Waste Classification

During the remedial investigation, several samples were collected from the burn pit waste and underlying soil to determine chemical characteristics and assess the potential disposal options. Results of state certified laboratory analyses were interpreted using federal and state waste classification methods. Results of the analyses indicated that the waste and soil beneath the burn pits contained low levels (parts per billion) of volatile and semivolatile organic compounds, aluminum, iron, and lead. Further analysis of samples containing the highest contaminant concentrations indicated that most of the burn pit waste was not hazardous. An estimated 50 cubic yards of waste, including unburned rocket propellant and burn rate modifier, contained volatile and semivolatile organic compounds at concentrations just below toxic levels.

The chemical and physical information gained from the remedial investigation was then used to separate the burn pit waste into two categories: "non-hazardous material" and "specific" wastes. The waste was categorized to facilitate planned excavation and segregation during the removal action.

Non-hazardous material included: burn zone residue which had a blackened glassy appearance; soil underlying the burn zone; and general debris such as metal drums, barrel lids, wood, spent rocket motor casing, scrap metal and glass. Because these materials were non-hazardous they were deemed acceptable for Class III landfill disposal.

Specific wastes were the estimated 50 cubic yards of material that contained volatile and semivolatile organic compounds that were just below toxic concentrations. These included: unburned rocket propellant, a gray-green solid with a sponge-like appearance; and ferrocene, an orange-red powdery material. Although not technically hazardous, the limited amount of specific wastes which were expected to be found were designated for Class I landfill disposal to avoid costly and time consuming sampling and analysis (Radian, 1991b).

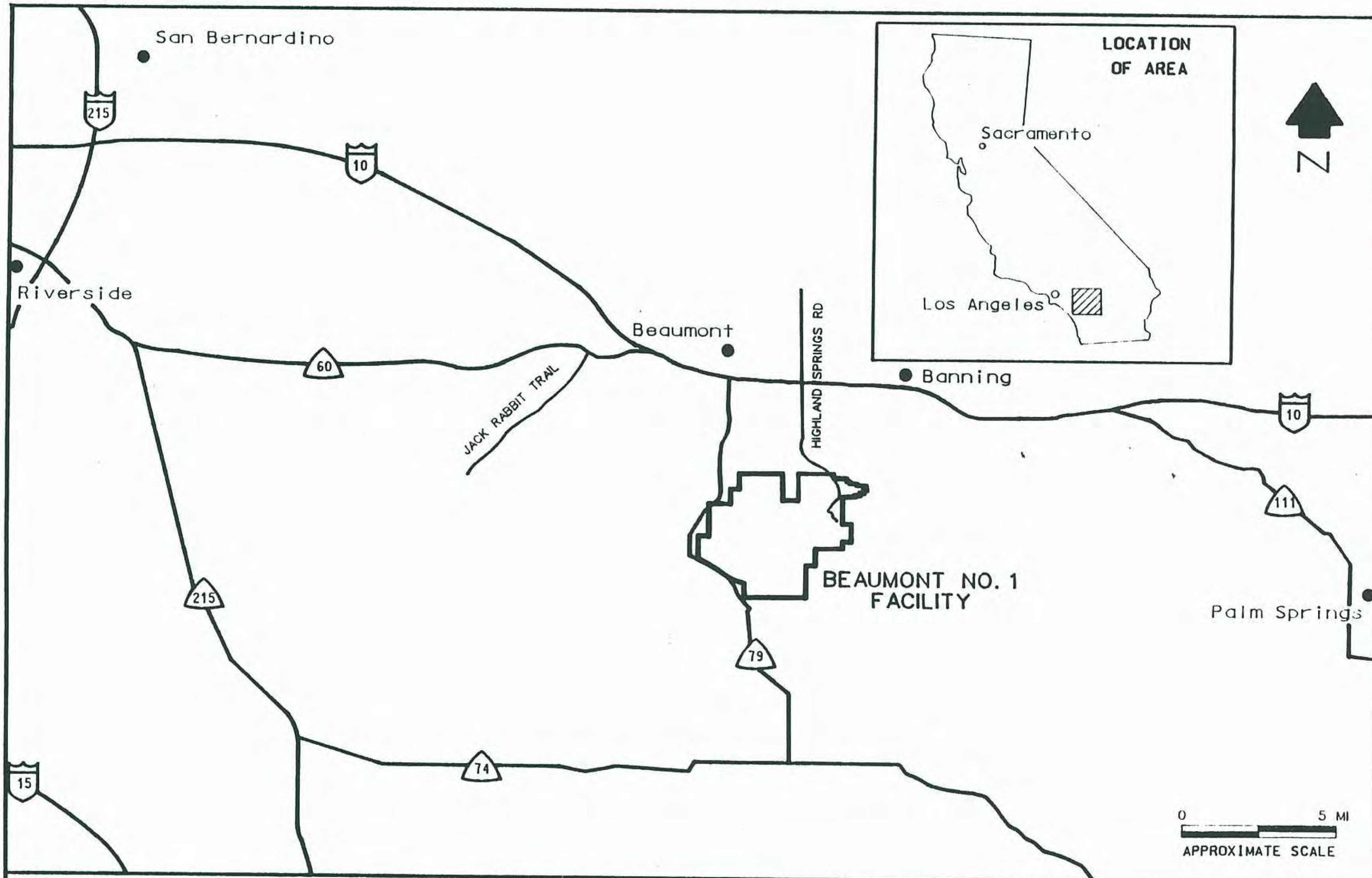

Figure 1-1. Lockheed Beaumont No. 1 Facility

LCB1-4

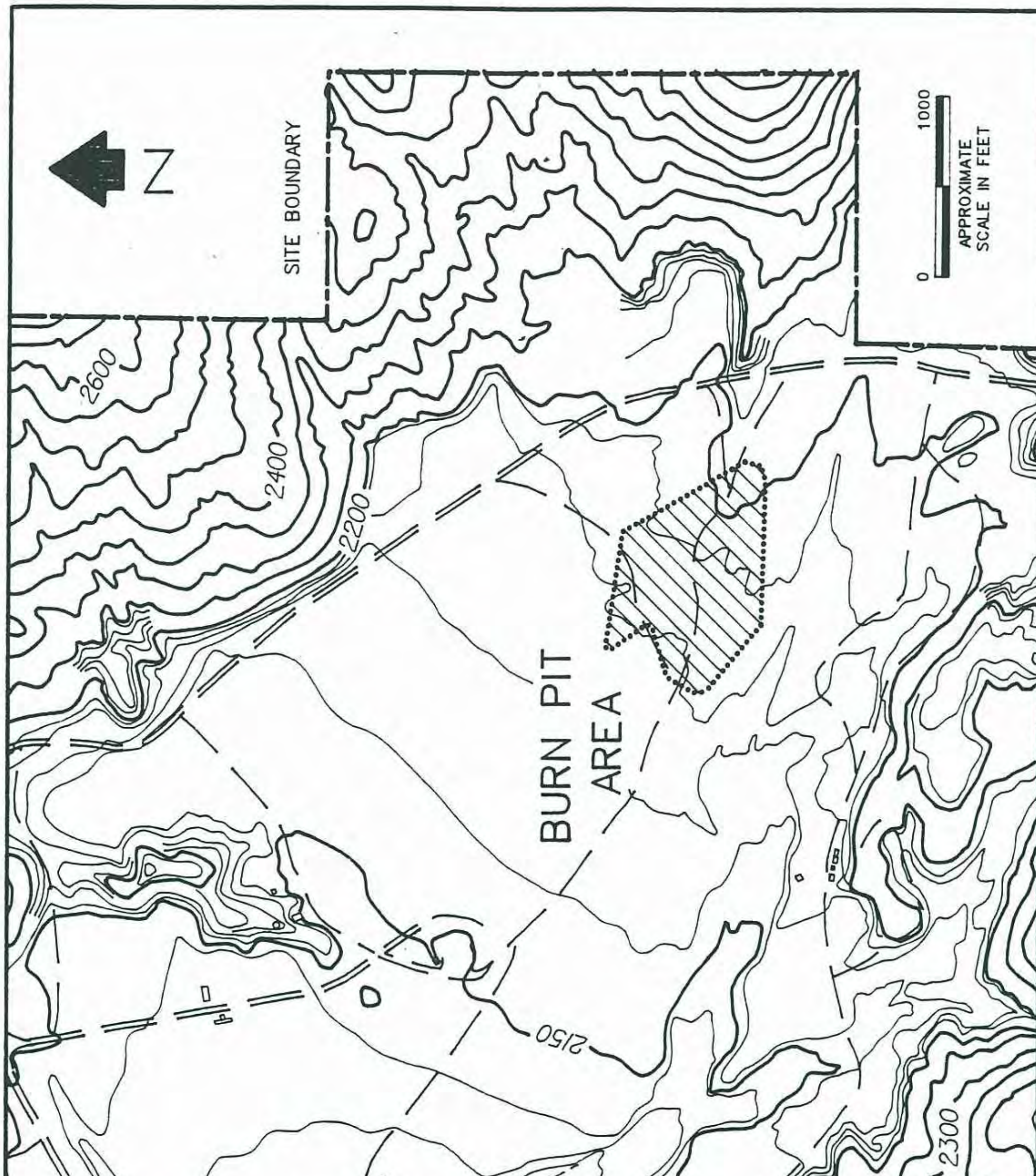

Figure 1-2. Burn Pit Area

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Figure 1-3. Overlooking the Burn Pit Area

Figure 1-4. Burn Pit Area at the Start of Removal Action Activities

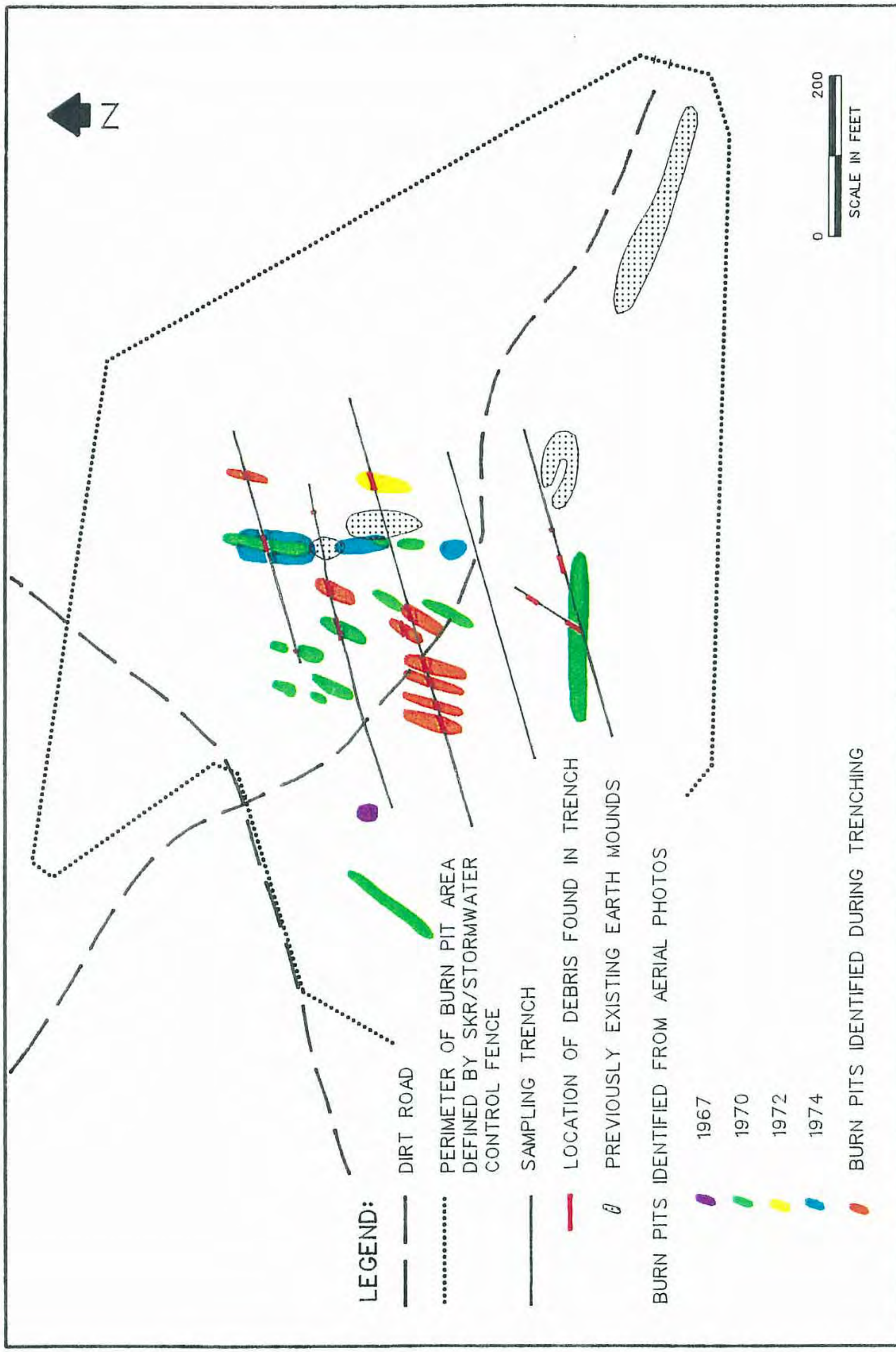

Figure 1-5. Suspected/Confirmed Burn Pit Locations Identified During Site Investigations

LOCK13 BPSFIGC SAC

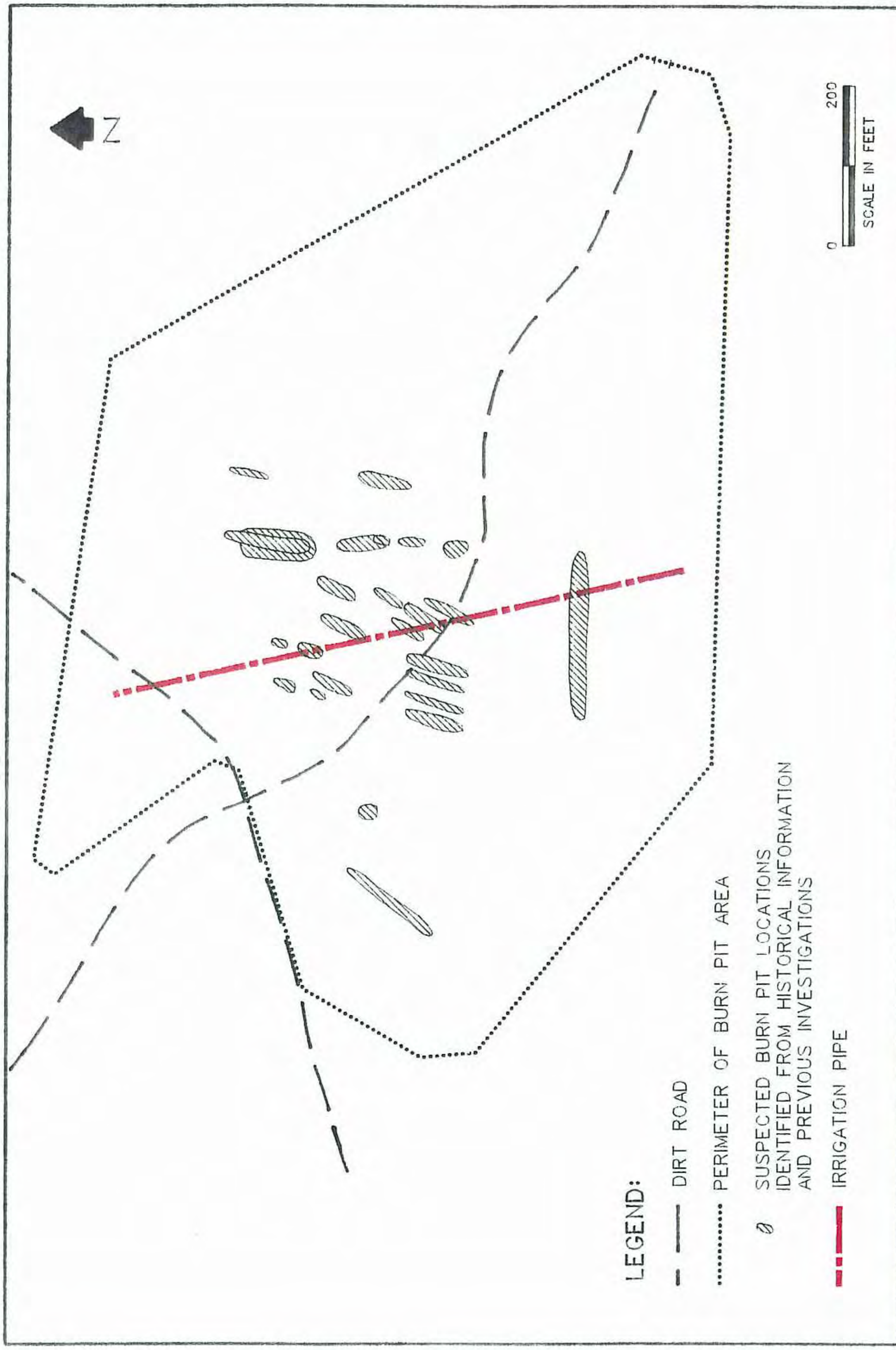

Figure 1-6. Location of Irrigation Pipe Identified During Site Investigations

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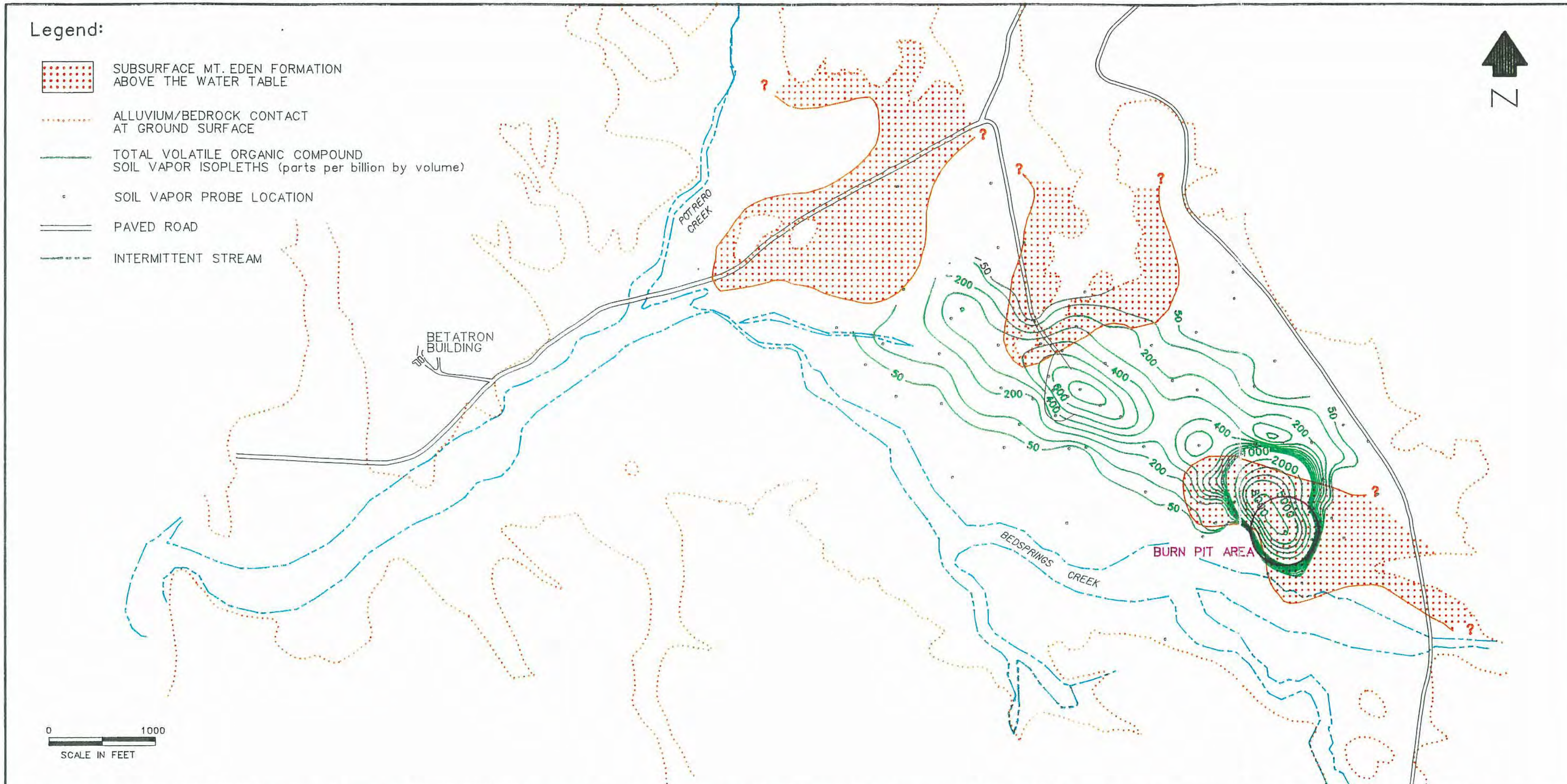

Figure 1-3. Lockheed Beaumont No. 1 Total Chlorinated Volitale Organic Compound Soil Vapor Isopleths (from 1990 Study)

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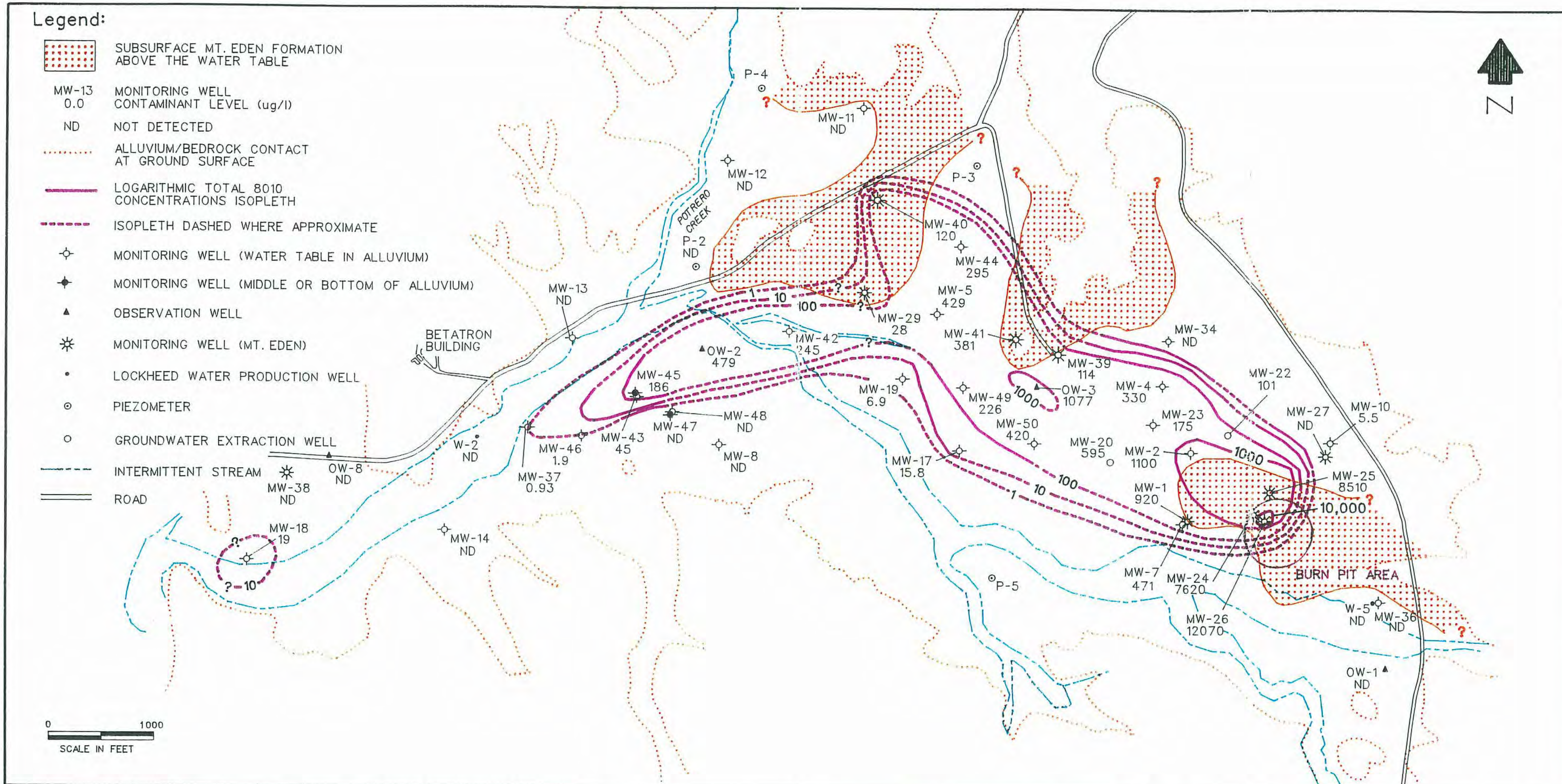

Figure 1-4. Lockheed Beaumont No. 1 Total Chlorinated VOC Concentrations in Shallow Groundwater (Fall 1991)

LOCKHG2 8010A 09/30/92

2.0 REMOVAL ACTION

Following site investigation activities, Lockheed and Radian began planning the removal action necessary to achieve an unrestricted land use certification at the Beaumont No. 1 facility. To ensure that the removal action was protective of human health and the surrounding environment, and that all applicable regulations were addressed, the following regulatory agencies were contacted:

- Cal/EPA, Department of Toxic Substances Control (DTSC) (which acted as the lead agency);
- South Coast Air Quality Management District (SCAQMD);
- California Regional Water Quality Control Board (CRWQCB), Santa Ana Region 8 and Los Angeles Region 4;
- U.S. Fish and Wildlife Service (FWS);
- California Department of Fish and Game (CDFG);
- Riverside County; and
- The City of Beaumont.

The coordinated efforts resulted in the following documents and permits:

- *Excavation Management Plan* (Radian, 1991a);
- *Burn Pit Area Removal Action Plan* (Radian, 1991b);
- *Remedial Action Plan* (Radian, 1992a);
- *Stormwater Pollution Prevention Plan* (Radian, 1992c)
- Rule 1150 Landfill Excavation Permit;
- Waste Discharge Permit;

- FWS Approval Letter; and
- Grading Plan and Permit.

Further discussion of the applicable regulations and steps taken to protect human health and the surrounding environment is provided in Section 3.0.

In the fall of 1992, after áll applicable permits and regulatory concurrences were obtained, the removal action was initiated by Radian at Lockheed's request, using Scrivner Environmental Services (Scrivner) as the excavation contractor. Removal action activities were performed in the burn pit area (BPA) from November 1992 through February 1993. They included:

- Exposing and capping existing wells below grade;
- Removing and replacing topsoil and overburden in the BPA buffer zone;
- Excavating, segregating, and stockpiling burn pit wastes;
- Excavating the old irrigation pipe;
- Collecting confirmation samples from the bottom of the burn pit excavations;
- Disposing of non-hazardous material at BKK, a Class III landfill in West Covina, California;
- Disposing of specific wastes at Laidlaw Environmental Services, a Class I landfill in Westmorland, California;
- Backfilling and compacting soil in burn pit excavations;
- Restoring existing wells to grade; and
- Final grading and restoration of the site.

These activities were performed by Scrivner under the direction of Radian. The dates and duration for each event are illustrated in Figure 2-1.

Prior to the removal action, the 16.7-acre BPA was completely fenced off to protect the Stephens' Kangaroo Rat (SKR) and for stormwater pollution control (as discussed further in Section 3.0). After the fence was erected, more than three hundred Kangaroo rats, approximately two hundred of which were SKR, were trapped and removed from the enclosed area and relocated to another part of the Beaumont No. 1 facility so that they would not be harmed by removal action activities. The fenced area enclosed the 24 suspected burn pit locations (the "central" BPA), the 200-foot buffer surrounding the burn pits (the BPA "buffer zone"), the old irrigation pipe, and a small area in the northwestern portion of the BPA. The central BPA, buffer zone, and area in the northwestern portions of the BPA are shown in Figure 2-2. The area in the northwestern portion of the BPA was identified as having been free from any burn pit activity, but was included within the fenced BPA to aid in future remediation efforts for groundwater and soil vapor beneath the BPA. (Installation of groundwater and soil vapor extraction wells was hampered by the dense SKR habitat, and could not be completed in the northwestern portion of the BPA until the SKR were removed.) The fenced area also included approximately 35 groundwater and vapor wells installed during past investigations and studies. The following paragraphs provide an overview of the removal action activities, and the steps taken to restore the site to its near original condition. All earthmoving activities were conducted in accordance with the requirements of the appropriate regulatory agencies (see Section 3.0).

2.1 Well Preservation

Prior to initiating soil and waste excavation activities, 33 of the 35 existing wells in the BPA were temporarily modified to facilitate earthmoving operations. These modifications included: exposing the well casing to approximately 6.5 feet below land surface (BLS); sealing the well casing to prevent dirt and debris from falling into the well; cutting the well casing approximately 6 feet BLS; capping each modified well with a tight-fitting PVC cap; and backfilling the well excavation to the pre-existing land surface to restore traffic pathways and prevent potential accidents. The 33 wells modified included 18 vapor monitoring wells, 3 vapor recovery wells, 4 groundwater monitoring wells, 4 vapor extractions wells, and 4 groundwater extraction wells. Table 2-1 lists the BPA wells and dates of modification. The location of each well is shown in Figure 2-3. Figures 2-4 and 2-5 are photographs showing soil being removed from around the PVC well casing using a backhoe. Well modification activities were conducted in accordance with Riverside County guidelines as discussed in Section 3.4 of this report. Modified wells were restored to their original condition at the completion of waste removal activities as discussed in Section 2.9.

2.2 Dust Suppression

Dust suppression measures were implemented at all times during the removal action, in accordance with stipulations set forth in the SCAQMD Rule 1150 permit to minimize airborne dust. Suppression measures included spraying water and/or modifying earthwork operations which prevented visible dust conditions during the majority of removal action activities. Approximately 100,000 gallons of water was taken from an on-site well (W-1) and used for dust suppression. However, because of the well's slow recharge rate, another source of water was required to meet dust suppression needs. The majority of the water used for on-site dust suppression was obtained from a hydrant located off site near the intersection of Highland Springs Boulevard and Second Street in Beaumont, California. This hydrant was permitted for Radian and contractor use by the City of Beaumont. Water was imported by truck on an as-needed basis and stored in on-site tanks. Approximately 1.17 million gallons of water were imported from offsite for dust suppression during the entire removal action.

2.3 Topsoil and Overburden Removal and Replacement

To aid in uncovering any additional burn pits that were not identified during previous investigations, topsoil (soil in the upper foot across the site) and overburden (soil underlying the topsoil) were removed over the entire BPA buffer zone. Topsoil, which contained seeds of the native vegetation, was stockpiled separately from the overburden so that the soils could be replaced in proper order to promote natural revegetation of the site.

Two scrapers were used to remove, stockpile, replace, and compact 1 vertical foot of topsoil and 1 vertical foot of overburden (two feet total) from nine separate sections (called "removal areas") until the entire BPA buffer zone had been uncovered and examined for buried waste. Figure 2-6 is a photograph showing a scraper removing topsoil and overburden. The nine removal areas surrounding the central BPA are shown on Figure 2-7. During the removal activity, the surface soils were examined continuously for any signs of buried debris. If wastes were uncovered, the subcontractor was instructed to cease scraping in the area, the area was barricaded with marking tape and wooden stakes and left for later excavation as described in Section 2.4. Three additional burn pits (shown as pits RA1, AA, and Z in Figure 2-7) were discovered during topsoil and overburden removal in the BPA buffer zone. A photograph of the buried rocket motor casing found in Pit RA1 is shown on Figure 2-8.

If, at a depth of 2 vertical feet, no signs of waste or other disturbance were observed, overburden and topsoil were replaced and compacted in the active removal area before scraping was begun in the next removal area. Placement of the topsoil above the overburden allowed for revegetation of the site without reseeding the soil. Removal areas were backfilled as described in Section 2.8. Approximately 48,600 cubic yards of topsoil and overburden were removed and replaced during this activity.

2.4 Burn Pit Excavation

In July 1992, prior to initiating the removal action, Radian personnel staked and surveyed the 24 suspected burn pit locations in the central BPA that had been identified from aerial photographs or during previous investigations. These locations were used to guide removal activities.

During the removal action, the location of individual burn pits was initially confirmed by using an excavator or backhoe to trench through the center of a staked area until debris or burn zone residue was encountered. Non-hazardous material (burn zone residue, underlying soil, and debris) was segregated from the surrounding soil to the greatest extent possible (as shown in Figure 2-9) to minimize the amount of waste disposed of offsite. Specific wastes (unburned propellant, burn rate modifier), when encountered, were placed into drop boxes as shown in Figure 2-10. If no debris was encountered to a depth of approximately 6 feet BLS, excavation was ceased in that staked area. Historical and remedial investigation information indicated that pits were not deeper than 6 feet.

To ensure that no additional burn pits remained in the central BPA, topsoil and overburden were removed from between identified and excavated burn pits to a depth of 2 feet BLS and thoroughly examined for signs of debris or disturbance. Two additional pits (BB and Y) were found during this exercise. Burn pit excavation in the central BPA was conducted concurrently with topsoil and overburden removal in the BPA buffer zone.

Twenty-one individual burn pits were located during excavation activities. As summarized in Table 2-2, 16 pits were found in close proximity to their suspected locations; 2 pits, Y and BB, were discovered within 20 feet of suspected locations; 3 pits, AA, RA1, and Z, were discovered during topsoil and overburden removal in the BPA buffer zone; and 4 suspected burn pits, Q, R, U, and W, were proven not to exist.

Figure 2-11 illustrates how the suspected burn pit locations corresponded to the actual locations.

Approximately 4,112 tons of non-hazardous material and 18.6 tons of specific wastes were excavated from the burn pits. Figures 2-12 through 2-15 are pictures of the non-hazardous material removed from the BPA. Specific wastes included: a drum containing an oily substance; large chunks of unburned rocket propellant; and a blue burn rate modifier (an iron hexacyanoferrate known as "iron blue"). Iron blue was removed from Pit A and constituted the majority of specific waste. Figures 2-16 through 2-18 are photographs of specific wastes removed from the BPA. Wastes were disposed as discussed in Section 2.7.

Prior to removal action activities, the estimated quantity of material to be removed was approximately 6,370 tons. This estimated tonnage was calculated by multiplying the estimated volume of waste (approximately 4,500 cubic yards) by a conversion factor of about 1.4 tons per cubic yard. The quantity of waste actually removed was approximately 4,130 tons, 65% of the estimated quantity, and was notably less than initially estimated because the waste was diligently segregated from the surrounding soil before disposal. This segregation of waste significantly reduced the amount of material removed from the site for disposal.

Results of the removal action activities also show that the burn pit locations correlated well with previous geophysical data as shown on Figure 2-19. Ten percent of waste (mostly rusted drums) was removed from the deepest pit (Pit OP) the location of which corresponds to the area of highest terrain conductivities.

2.5 Irrigation Pipe Excavation

While not considered a waste from previous burn pit activities, approximately 720 feet of the abandoned irrigation pipe were removed from the BPA.

The pipe ran approximately in the north-south direction through the center of the BPA, and was buried approximately 3 feet BLS. Using an excavator and backhoe, sections of the irrigation pipe (see Figure 2-20) were excavated, segregated from the surrounding topsoil and overburden, and stockpiled with other non-hazardous material for disposal (see Section 2.7). As shown in Figure 2-19, the former pipe location also correlated well with results of the geophysical investigation.

2.6 Confirmation Samples

To confirm that no residual contamination was present in the soil below the excavated wastes, soil samples were collected from the bottom of four burn pits. The burn pits sampled (shown on Figure 2-21 as A, H, OP, and X) were selected on the basis of the waste removed from the pit, waste volume, depth of excavation, and/or other field observations (i.e., unusual odors, discolored soil). A total of 10 samples were collected (2 to 3 from each pit) using a core-barrel slide hammer sampler fitted with brass sleeves as shown in Figure 2-22. Samples were analyzed by state-certified laboratories for total metals, and volatile and semivolatile organic compounds using U.S. EPA Methods 6010, 8240, and 8270, respectively.

Analytical results (summarized on Tables 2-3, 2-4, and 2-5) indicated that total metal concentrations were below the applicable Total Threshold Limit Concentrations and less than 10 times the applicable Soluble Threshold Limit Concentrations, as defined by Title 22 of the California Code of Regulations (CCR, 1991). No volatile or semivolatile organic compounds were detected above method detection limits, thereby confirming that no residual contamination exists below the burn pits. The pits were subsequently backfilled as described in Section 2.8. The quality control data assessment, analytical data sheets, and chain-of-custody forms associated with these samples are included in Appendix A of this report.

2.7 Waste Disposal

The non-hazardous material, comprising mainly soil and debris, was loaded from the stockpiles into transport trucks (as shown in Figure 2-23) generally within a day or two of their excavation. A temporary on-site vehicle scale was installed to weigh the trucks to determine the weight of the material to be disposed prior to leaving the site and to ensure that the loaded trucks were within transportation weight limits. Once the trucks were loaded and weighed, the truck beds were covered, and the covers were secured. Non-hazardous material was transported to BKK, a Class III facility located in West Covina, California, about 73 miles from the site.

At the completion of the waste excavation activities, the drop boxes containing specific wastes were manifested as hazardous waste and transported to Laidlaw Environmental Services Landfill, a Class I facility located in Westmorland, California, approximately 120 miles from the site.

2.8 Backfilling

Once wastes were removed from each pit and analytical samples confirmed that no contamination or wastes remained in the BPA, the burn pit excavations were backfilled with overburden soil. Soil was placed in 8-inch, moisture conditioned lifts, and compacted to a density not less that 90% of the maximum dry density as determined in accordance with ASTM D-1556-82 and ASTM D-2922-81. Compaction tests were performed by Converse Consultants (Converse) using the Sand Cone and Nuclear Gauge methods. Figure 2-24 is a photograph of a nuclear densitometer that was used to perform some of the tests. Results complied with project specifications (Radian, 1992b) as stated in Converse's final geotechnical report (provided in Appendix B). All backfilling activities were performed in accordance with the grading permit issued by the Riverside County Department of Building and Safety. Specific grading permit requirements are discussed in Section 3.4 of this report.

2.9 Well Restoration

After the completion of excavation and disposal activities, the modified wells (described in Section 2.1) were restored to original condition. Restoration activities included: locating each well through surveying; excavating overlying soil to expose the modified well cap; removing the caps; retrofitting the wells with a new PVC casing that extended to the original wellhead elevation (no glue was used); and restoring the wellhead. The restoration dates for each well are shown in Table 2-1. Once the wells were fully restored (as shown in Figure 2-25), the excavations around the new well casings were backfilled in the same manner described in Section 2.8.

2.10 Final Site Grading

After the completion of backfilling and well restoration activities, the site was restored to its previous condition and made suitable for revegetation by using pre-construction survey data to establish the final site elevations and grading disturbed areas of the site to conform to the slope of adjacent undisturbed terrain. These activities were performed in accordance with the grading permit issued by the Riverside County Department of Building and Safety. Figures 2-26 and 2-27 are photos of the site taken after the completion of removal action activities. Figure 2-28 is a photo of the site taken in March 1993 showing that some revegetation has occurred.

BURN PIT REMOVAL ACTION ACTIVITIES	DATES PERFORMED
Mobilize Equipment	November 9 - 25
Well Modification	November 9 - 18
Topsoil & Overburden Removal/ Replacement	Nov. 23 - Dec. 29
Burn Pit Excavation	Dec. 1 - Jan. 12
Confirmation Sampling	Dec. 11, 15, Jan. 4
Non-specific Waste Disposal	Dec. 1 - Jan. 12
Specific Waste Collection	Nov. 26 - Jan. 27
Backfill Burn Pits	January 25 - 27
Well Restoration	Jan. 5 - Feb. 3
Site Grading	January 25 - 27
Specific Waste Disposal	February 1 - 5
Wind/VOC Monitoring	Nov. 9 - Jan. 12
Site Survey	March 1

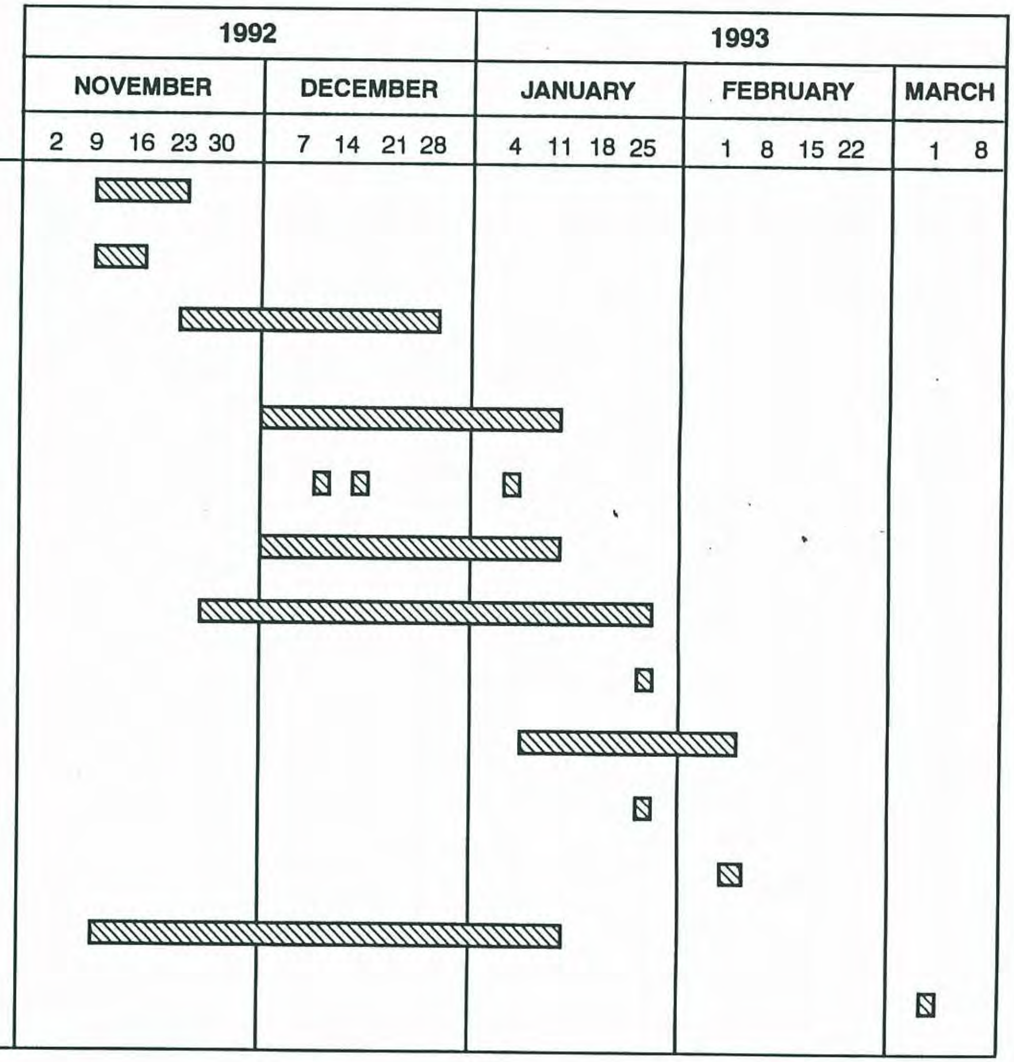

Figure 2-1. Burn Pit Area Removal Action Activities

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Table 2-1

Wells Modified/Restored During Burn Pit Area Removal Action

Well ID Number	Type of Well	Date Inactivated	Date Restored
EW-13	Water Extraction	NOV 10, 1992	FEB 19, 1993
EW-14	Water Extraction	NOV 12, 1992	FEB 19, 1993
EW-15	Water Extraction	NOV 10, 1992	FEB 19, 1993
EW-16	Water Extraction	NOV 10, 1992	FEB 19, 1993
MW-61A	Water Monitoring	NOV 10, 1992	FEB 1, 1993
MW-61B	Water Monitoring	NOV 10, 1992	FEB 1, 1993
MW-61C	Water Monitoring	NOV 10, 1992	FEB 1, 1993
MW-61D	Water Monitoring	NOV 10, 1992	FEB 1, 1993
VEW-6	Vapor Extraction	NOV 11, 1992	FEB 19, 1993
VEW-8	Vapor Extraction	NOV 10, 1992	FEB 19, 1993
VEW-10	Vapor Extraction	NOV 10, 1992	FEB 19, 1993
VEW-11	Vapor Extraction	NOV 11, 1992	FEB 19, 1993
VMW-1	Vapor Monitoring	NOV 10, 1992	FEB 1, 1993
VMW-2	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-3	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-4	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-5	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-6	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-7	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-8	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-9	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-10	Vapor Monitoring	NOV 12, 1992	FEB 1, 1993
VMW-11	Vapor Monitoring	NOV 12, 1992	FEB 1, 1993
VMW-12	Vapor Monitoring	NOV 12, 1992	FEB 1, 1993
VMW-13	Vapor Monitoring	NOV 12, 1992	FEB 1, 1993
VMW-14	Vapor Monitoring	NOV 12, 1992	FEB 1, 1993
VMW-15	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VWM-16	Vapor Monitoring	NOV 11, 1992	FEB 1, 1993
VMW-17	Vapor Monitoring	NOV 10, 1992	FEB 1, 1993
VMW-18	Vapor Monitoring	NOV 10, 1992	FEB 1, 1993
VRW-1	Vapor Recovery	NOV 12, 1992	FEB 1, 1993
VRW-2	Vapor Recovery	NOV 12, 1992	FEB 19, 1993
VRW-3	Vapor Recovery	NOV 11, 1992	FEB 1, 1993

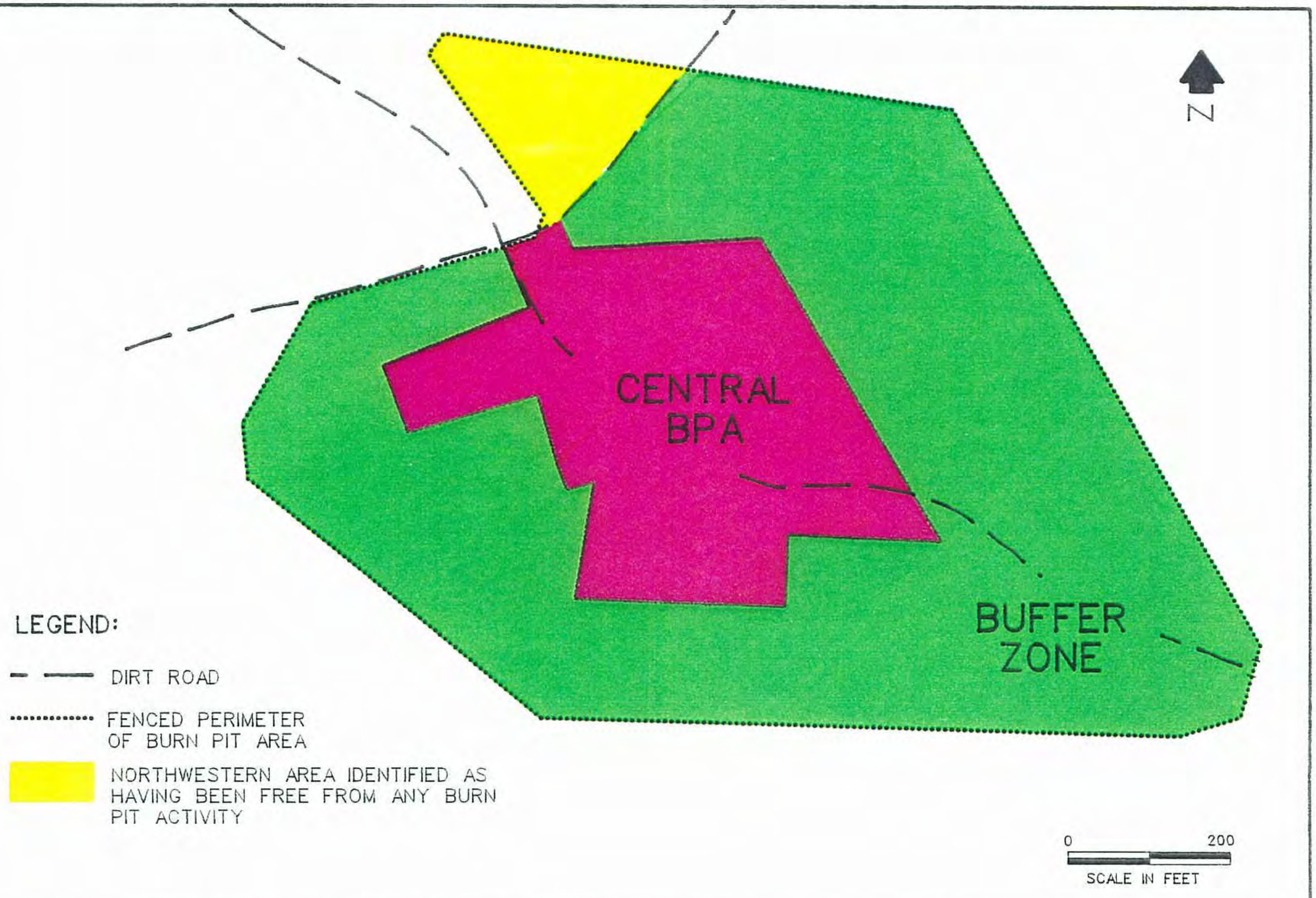

Figure 2-2. Central BPA and Buffer Zone Sections Within the Fenced 16.7-Acre Burn Pit Area

LOCK13 BPBUFF SAC

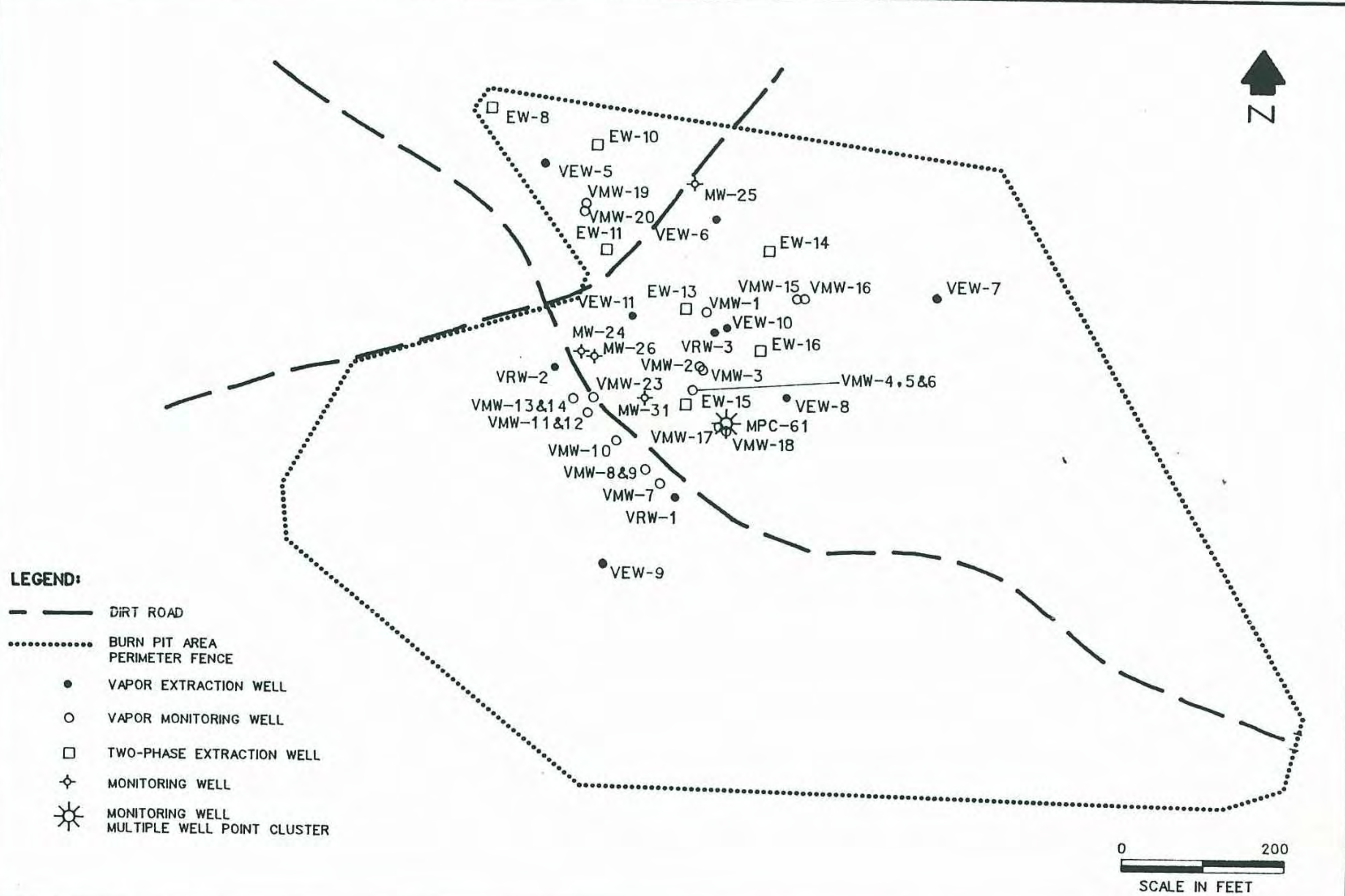

Figure 2-3. Location of Burn Pit Area Wells

LOCK13 BPWELFIG SAC

Figure 2-4. Burn Pit Area Well Modification

Figure 2-5. Soil Removal Around Well During Modification
Notice the white PVC casing and cap.

Figure 2-6. Scraper Removing Topsoil and Overburden

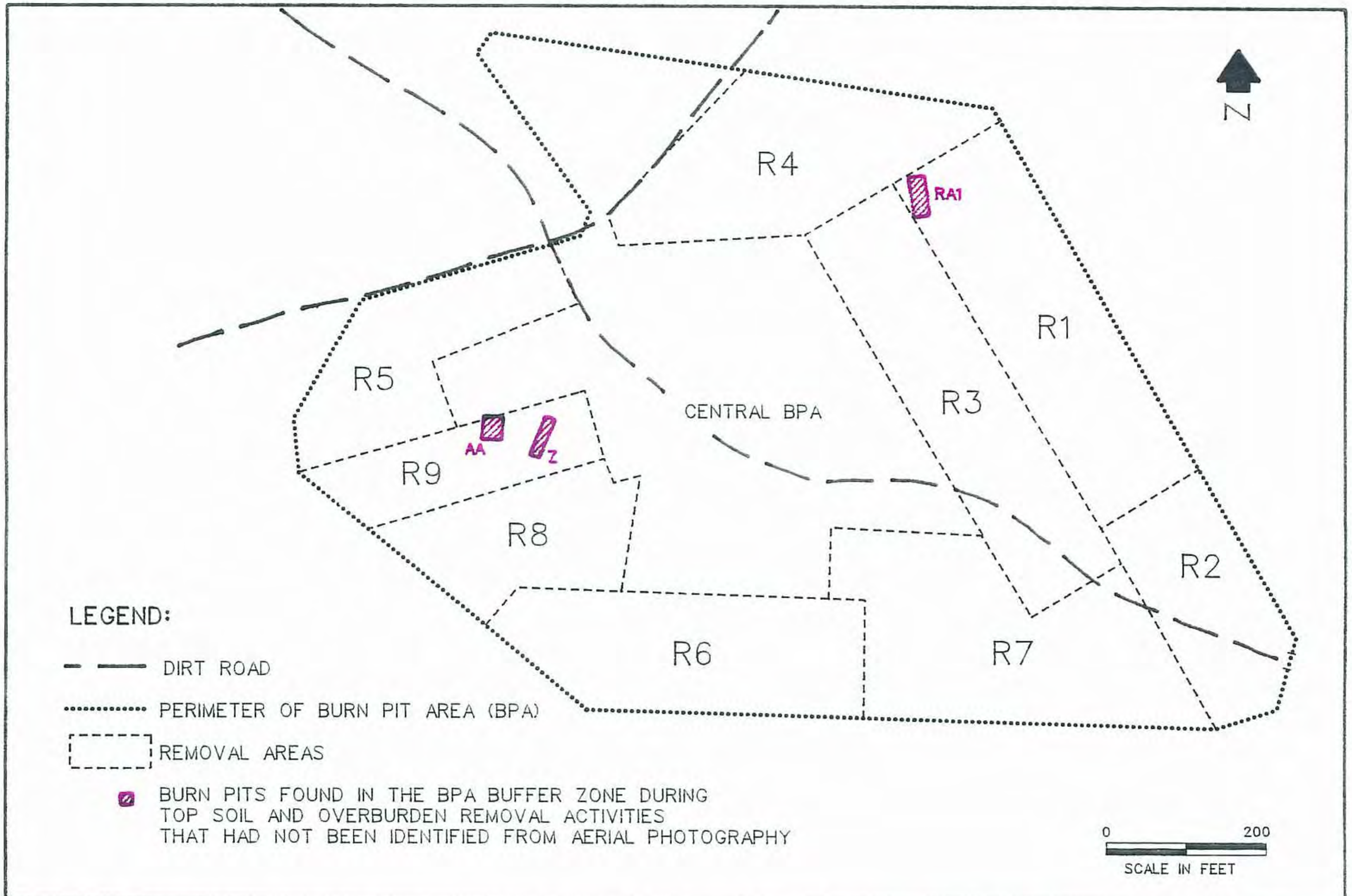

Figure 2-7. Removal Areas and Burn Pits in the BPA Buffer Zone

LOCK13 BPREMOV SAC

Figure 2-8. The Top of Burn Pit RA1 Found During Topsoil/ Overburden Removal (Rocket Casing)

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Figure 2-9. Excavator Segregating and Stockpiling Non-Hazardous Material

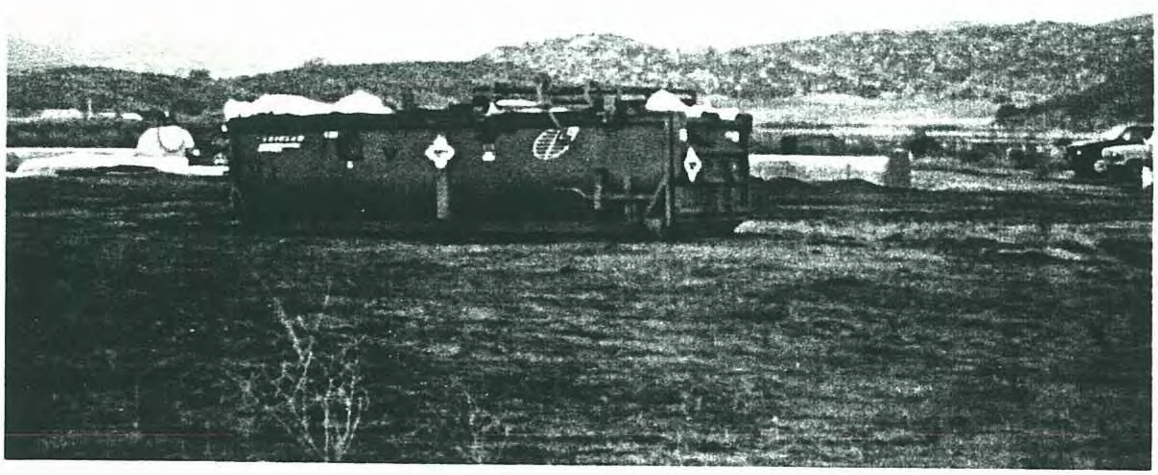

Figure 2-10. Drop Box Used for Specific Waste

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Table 2-2

Burn Pit Quantity Comparison of Expected Vs. Excavated Amounts

	Calculated			Excavated		
Original Pit Name	Area[a] (sq.ft.)	Percentage of Total Area	Estimated Quantity (tons)	Pit Name	Amount[b] Removed (tons)	Percent of Expected Found
A	1,586	6.9	442	A	370	84%
B	396	1.7	110	B	49	45%
C	321	1.4	89	C	186	209%
D	193	0.8	54	D	25	46%
E	161	0.7	45	E	12	27%
F	660	2.9	184	FG	272	87%
G	466	2.0	130	FG	combined	combined
H	3,568	15.6	994	H	491	49%
I	396	1.7	110	I	123	112%
J	864	3.8	241	J	224	93%
S	831	3.6	232	ST	321	73%
T	745	3.3	208	ST	combined	combined
K	777	3.4	217	K	75	35%
L	1,106	4.8	308	LM	149	30%
M	667	2.9	186	LM	combined	combined
N	708	3.1	197	NO	101	19%
O	1,163	5.1	324	NO	combined	combined
P	495	2.2	138	OP	408	296%
Q	423	1.9	118	not found	0	0%
R	1,072	4.7	299	not found	0	0%
U	332	1.5	93	not found	0	0%
V	1,000	4.4	279	V	50	18%
W	543	2.4	151	not found	0	0%
X	4,386	19.2	1,222	X	649	53%
Y (New)	225	1.0	0	Y	50	NA
Z (New)	612	2.7	0	Z	101	NA
AA (New)	720	3.1	0	AA	300	NA
BB (New)	600	2.6	0	BB	126	NA
RA1 (New)	918	4.0	0	RA1	25	NA
Wood[c]	NA	NA	0	Wood[c]	25	NA
Total	22,858[a]		6,370		4,132[d]	65%

[a] Does not include new pits.
[b] Amount removed is approximate.
[c] Miscellaneous wood waste not removed from pits.
[d] Includes 18.6 tons of specific waste and 4,112 tons of non-hazardous material.
Combined = Two "original" pits were combined into one.
NA = Not applicable.

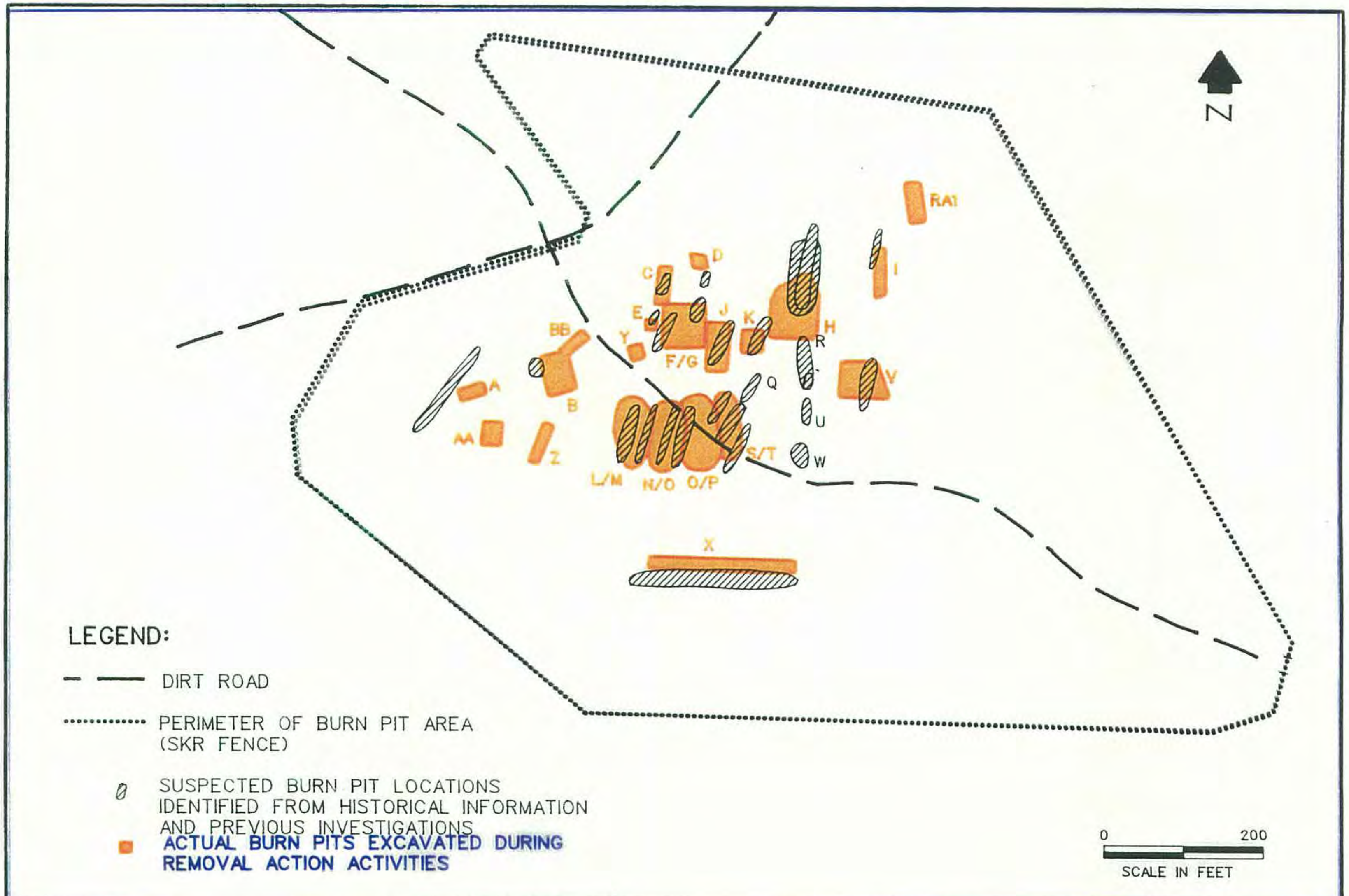

Figure 2-11. Correlation Between Suspected and Actual Burn Pit Locations

LOCK13 BPSUSP SAC

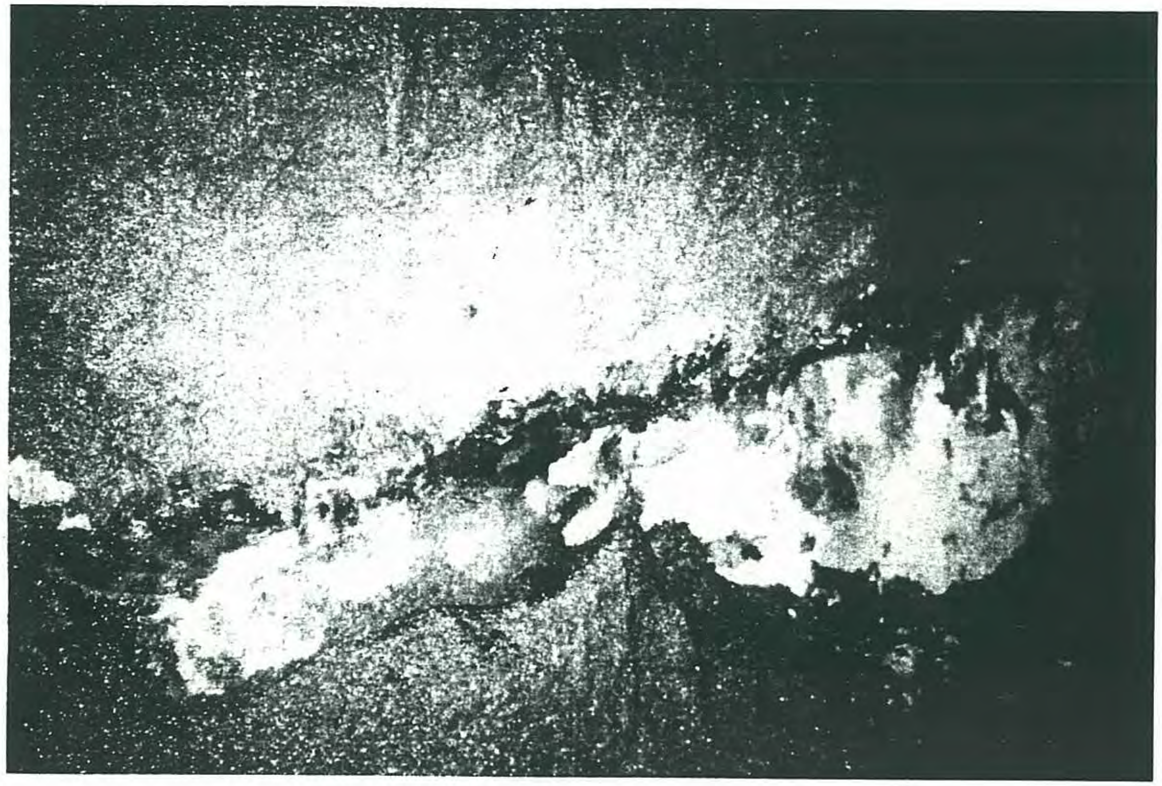

Figure 2-12. Burn Zone Residue

Figure 2-13. Metal Drums and Lids

Figure 2-14. Spent Rocket Motor Casing

Figure 2-15. Scrap Metal and Empty Glass Bottles

Figure 2-16. Specific Waste: Drum Containing Oily Substance

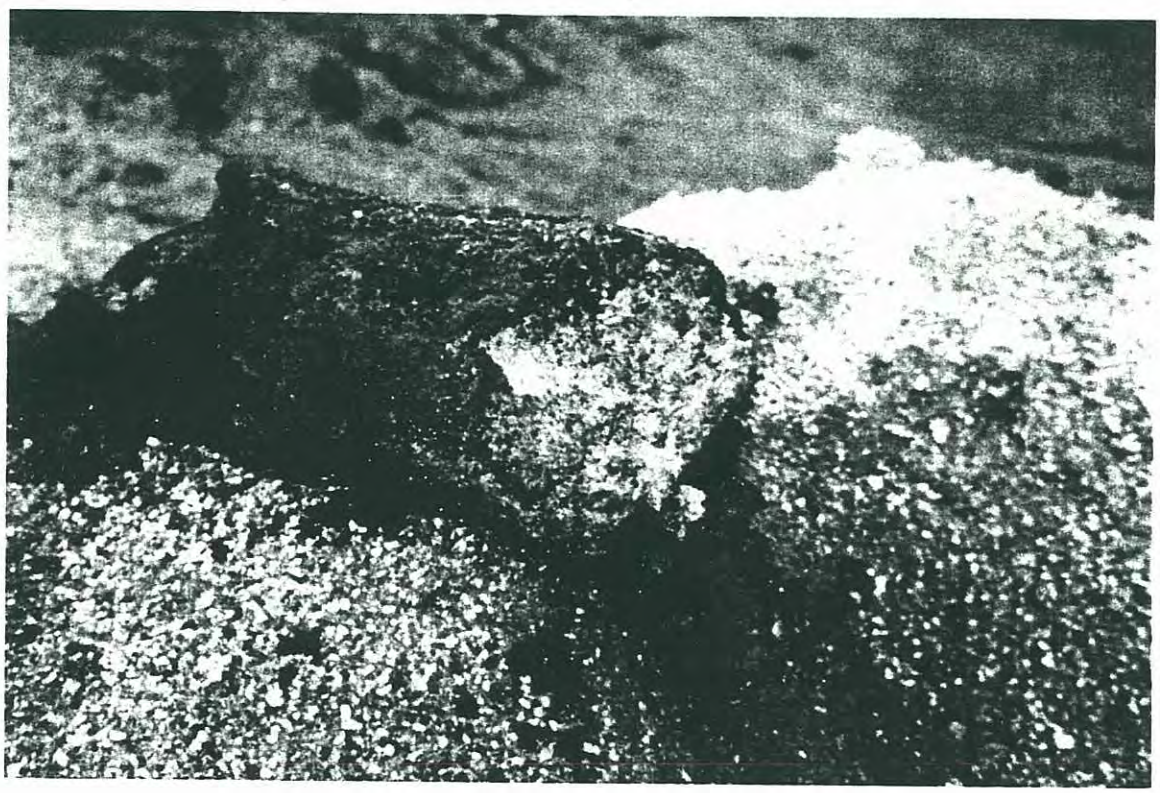

Figure 2-17. Unburned Rocket Propellant

Figure 2-18. "Iron Blue" Burn Rate Modifier

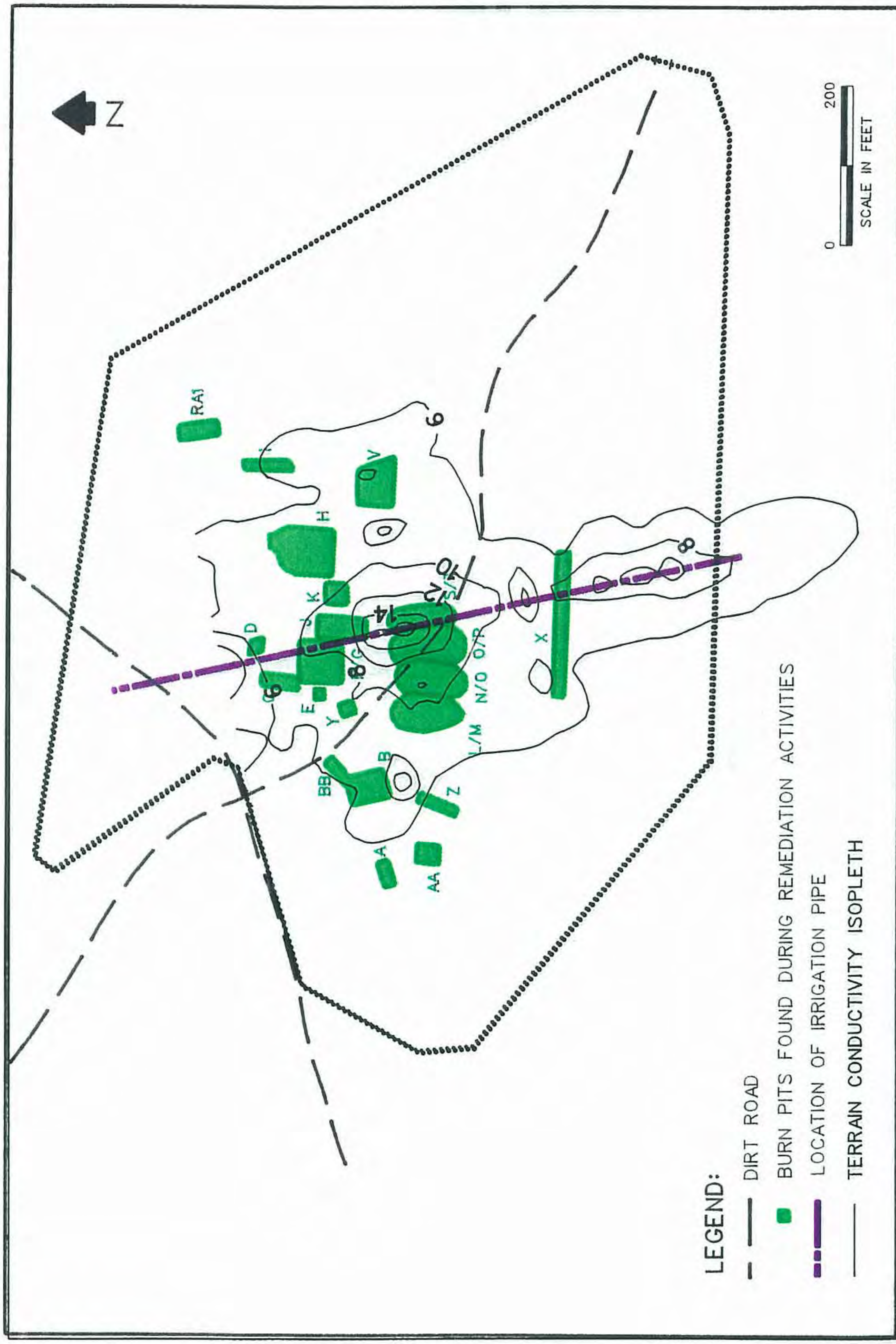

Figure 2-19. Correlation of Burn Pit Locations with Terrain Conductivity Results

LOCK13 BP7FIG SAC

Figure 2-20. Irrigation Pipe (foreground) Removed from BPA

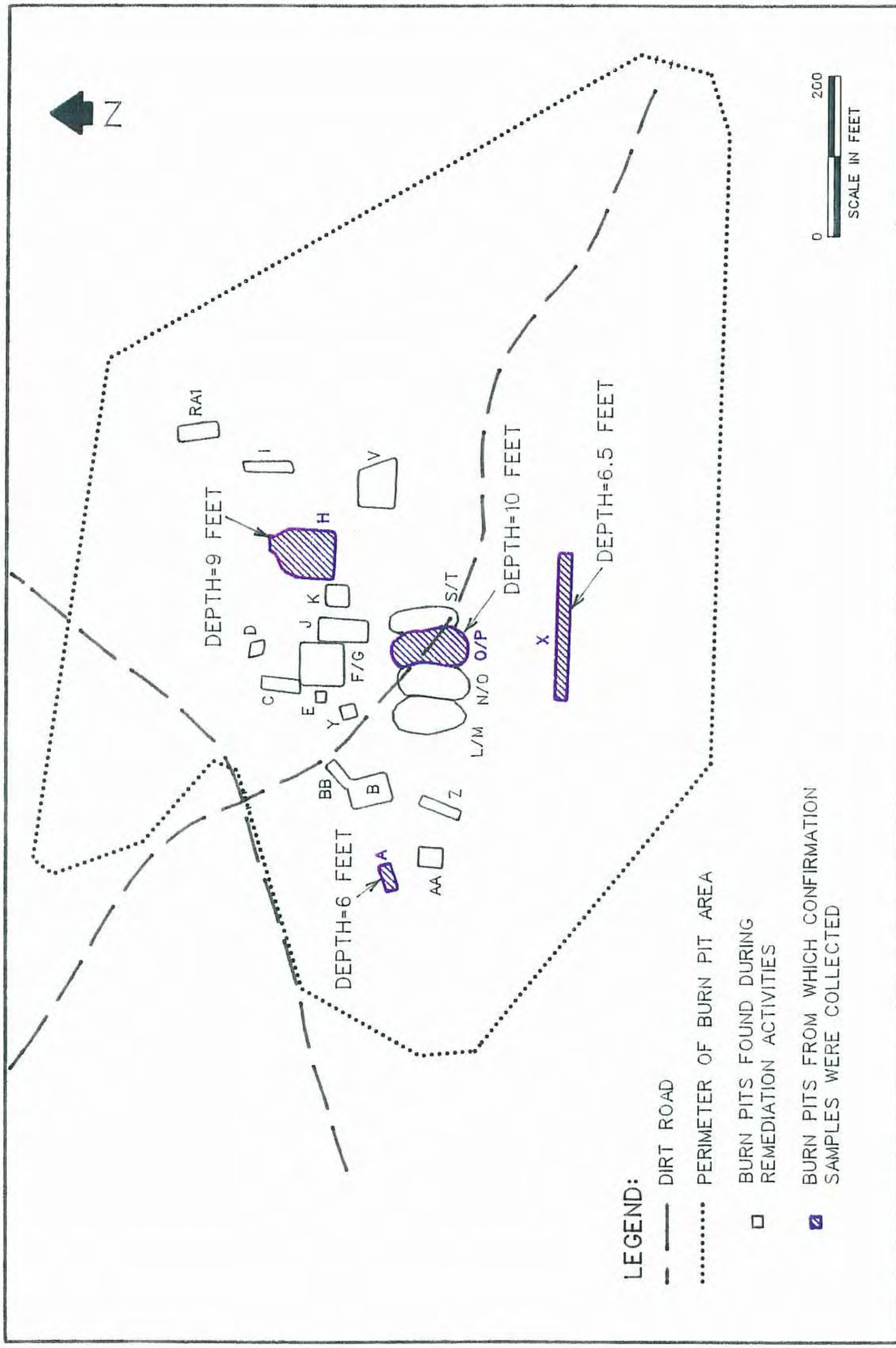

Figure 2-21. Burn Pits from which Confirmation Samples were Collected

Figure 2-22. Burn Pits Being Sampled with Core-Barrel Sampler Fitted with Brass Sleeves

RADIAN CORPORATION

Table 2-3

Burn Pit Confirmation Sample Results for Metals
U.S. EPA Method SW6010

BURN PIT:	A	OP	H	X		
SAMPLE ID:	L6673	OP-5	L6662	X-3	TTLC	10 x STLC
Analyte	Concentration in mg/kg				mg/kg	mg/L
Aluminum	7,200	12,000	13,000	14,000		
Antimony	9.6	ND (7.8)	ND (6.9)	ND (7.8)	500	150
Arsenic	ND (23)	ND (23)	ND (21)	ND (23)	500	50
Barium	65	100	99	130	10,000	1,000
Beryllium	0.28	0.31	0.32	0.36	75	7.5
Boron	ND (46)	ND (47)	ND (41)	ND (47)		
Cadmium	ND (0.38)	ND (0.39)	ND (0.34)	ND (0.39)	100	10
Calcium	1,500	1,500	1,300	1,600		
Chromium	3.0	5.4	6.1	5.7	2,500	5,600
Cobalt	3.1	4.9	4.9	5.4	8,000	800
Copper	2.1	4.4	4.4	3.2	2,500	250
Iron	11,000	16,000	18,000	19,000		
Lead	8.8	4.5	6.9	6.8	1,000	50
Magnesium	3,000	4,300	5,100	5,300		
Manganese	160	240	270	270		
Molybdenum	ND (3.8)	ND (3.9)	ND (3.4)	ND (3.9)	3,500	3,500
Nickel	ND (1.5)	1.6	2.3	3.4	2,000	200
Potassium	4,200	5,500	8,100	7,000		
Selenium	ND (23)	ND (23)	ND (21)	ND (23)	100	10
Silicon	160	460	420	460		
Silver	ND (0.77)	ND (0.78)	ND (0.69)	ND (0.78)	500	50
Sodium	ND (77)	ND (78)	98	ND (78)		
Strontium	11	13	9.2	16		
Thallium	ND (7.7)	ND (7.8)	ND (6.9)	ND (7.8)	700	70
Vanadium	19	25	29	30	2,400	240
Zinc	39	54	60	64	5,000	2,500

ID = Identification number.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.
ND = Compound was not detected. Detection limit is noted in parenthesis.
TTLC = Total Threshold Limit Concentration.
STLC = Soluble Threshold Limit Concentration.
Blank boxes indicate that TTLC and STLC values are not established for that inorganic species.

Table 2-4

Burn Pit Confirmation Sample Results for Volatile Organic Compounds
U.S. EPA Method SW8240

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6674	OP-3	L6661	X-1
Analyte	Concentration in µg/kg			
Acetone	ND (100)	ND (110)	ND (110)	ND (100)
Acrolein	ND (78)	ND (84)	ND (82)	ND (78)
Acrylonitrile	ND (52)	ND (56)	ND (54)	ND (52)
Benzene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Bromodichloromethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Bromomethane	ND (10)	ND (11)	ND (11)	ND (10)
Carbon disulfide	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Carbon tetrachloride	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Chlorobenzene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Chloroethane	ND (10)	ND (11)	ND (11)	ND (10)
2-Chloroethyl vinyl ether	ND (10)	ND (11)	ND (11)	ND (10)
Chloroform	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Chloromethane	ND (10)	ND (11)	ND (11)	ND (10)
Dibromochloromethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Dibromomethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Trans-1,4,-Dichloro-2-butene	ND (10)	ND (11)	ND (11)	ND (10)
Dichlorodifluoromethane	ND (21)	ND (22)	ND (22)	ND (21)
1,1-Dichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,2-Dichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1-Dichloroethene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
trans-1,2-Dichloroethene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,2-Dichloropropane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
cis-1,3-Dichloropropene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
trans-1,3-Dichloropropene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Ethyl benzene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Ethyl methacrylate	ND (16)	ND (17)	ND (16)	ND (16)
2-Hexanone	ND (52)	ND (56)	ND (54)	ND (52)
Iodomethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Methyl ethyl ketone	ND (100)	ND (110)	ND (110)	ND (100)
4-Methyl-2-pentanone(MIBK)	ND (52)	ND (56)	ND (54)	ND (52)

Table 2-4

Continued

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6674	OP-3	L6661	X-1
Analyte	Concentration in µg/kg			
Methylene chloride	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Styrene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1,2,2-Tetrachloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Tetrachloroethene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Toluene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Tribromomethane(Bromoform)	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1,1-Trichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1,2-Trichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Trichloroethene	ND (5.2)	1.2[a] (5.6)	ND (5.4)	ND (5.2)
Trichlorofluoromethane	ND (10)	ND (11)	ND (11)	ND (10)
1,2,3-Trichloropropane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Vinyl acetate	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Vinyl chloride	ND (10)	ND (11)	ND (11)	ND (10)
Xylenes	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)

[a] Compound detected at less than the detection limit of 5.6 µg/kg. This value should be considered an estimate.
ID = Identification number.
µg/kg = Micrograms per kilogram.
ND = Compound not detected. Detection limit is noted in parenthesis.

Table 2-5

Burn Pit Confirmation Sample Results for Semivolatile Organic Compounds U.S. EPA Method SW8270

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in µg/g			
Acenaphthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Acenaphthylene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Acetophenone	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Aminobiphenyl	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Aniline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Anthracene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzidine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(a)anthracene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(a)pyrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(b)fluoranthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(g,h,i)perylene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(k)fluoranthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzoic acid	ND (1.8)	ND (1.9)	ND (1.8)	ND (1.7)
Benzyl alcohol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Bromophenyl phenyl ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Butylbenzylphthalate	ND (0.35)	ND (0.37)	0.0086[a] (0.37)	ND (0.35)
4-Chloro-3-methylphenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
p-chloroaniline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
bis(2-Chloroethoxy)methane	ND (0.35)	0.13[a] (0.37)	ND (0.37)	ND (0.35)
bis(2-Chloroethyl)ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
bis(2-chloroisopropyl)ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1-Chloronaphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Chloronaphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Chlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Chlorophenyl phenyl ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Chrysene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Di-n-octylphthalate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dibenz(a,h)anthracene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dibenz(a,j)acridine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dibenzofuran	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

Table 2-5

(Continued)

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in µg/g			
Dibutylphthalate	ND (0.35)	ND (0.37)	0.011[a] (0.37)	ND (0.35)
1,2-Dichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,3-Dichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,4-Dichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
3,3'-Dichlorobenzidine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4-Dichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,6-Dichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Diethylphthalate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
p-Dimethylaminoazobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
7,12-Dimethylbenz(a)anthrancene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dimethylphenethylamine	ND (4.2)	ND (4.5)	ND (4.4)	ND (4.2)
2,4-Dimethylphenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dimethylphthalate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4,6-Dinitro-2-methylphenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4-Dinitrophenol	ND (0.70)	ND (0.74)	ND (0.74)	ND (0.70)
2,4-Dinitrotoluene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,6-Dinitrotoluene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Diphenylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,2-Diphenylhydrazine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Ethyl methanesulfonate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Bis(2-Ethylhexyl)phthalate	ND (0.35)	ND (0.37)	0.057[a] (0.37)	ND (0.35)
Fluoranthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Fluorene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachlorobutadiene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachlorocyclopentadiene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachloroethane	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Indeno(1,2,3-cd)pyrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Isophorone	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

Table 2-5

(Continued)

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in µg/g			
Methyl methanesulfonate	ND (1.8)	ND (1.9)	ND (1.8)	ND (1.7)
3-Methylcholanthrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Methylnaphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Methylphenol(o-cresol)	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Methylphenol(p-cresol)	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitroso-di-n-butylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitrosodimethylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitosodiphenylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitosodipropylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitrosopiperidine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Naphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1-Naphthylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Naphthylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Nitroaniline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
3-Nitroaniline	ND (0.70)	ND (0.74)	ND (0.74)	ND (0.70)
4-Nitroaniline	ND (0.70)	ND (0.74)	ND (0.74)	ND (0.70)
Nitrobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Nitrophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Nitrophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pentachlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pentachloronitrobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pentachlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Phenacetin	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Phenanthrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Phenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-picoline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pronamide	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pyrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pyridine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

Table 2-5

(Continued)

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in μg/g			
1,2,4,5-Tetrachlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,3,4,6-Tetrachlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,2,4-Trichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4,5-Trichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4,6-Trichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

[a] Compound detected at less than the detection limit. This value should be considered an estimate.
ID = Identification number.
μg/g = Micrograms per gram.
ND = Compound not detected. Detection limit is noted in parenthesis.

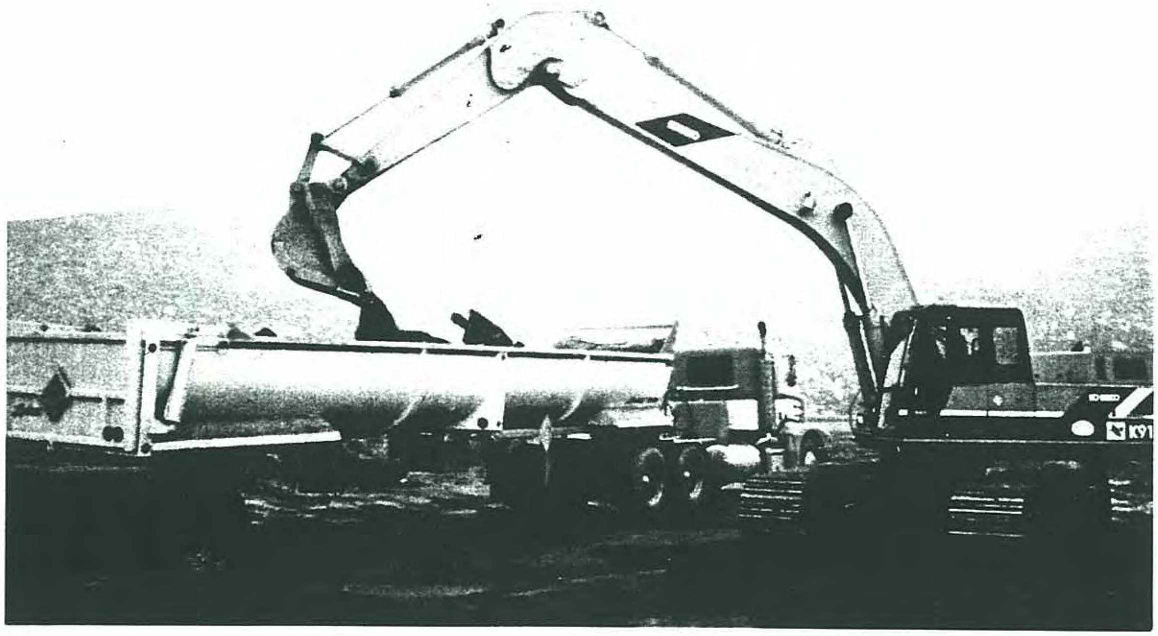

Figure 2-23. Trucks Being Loaded with Non-Hazardous Material

Figure 2-24. Nuclear Densitometer

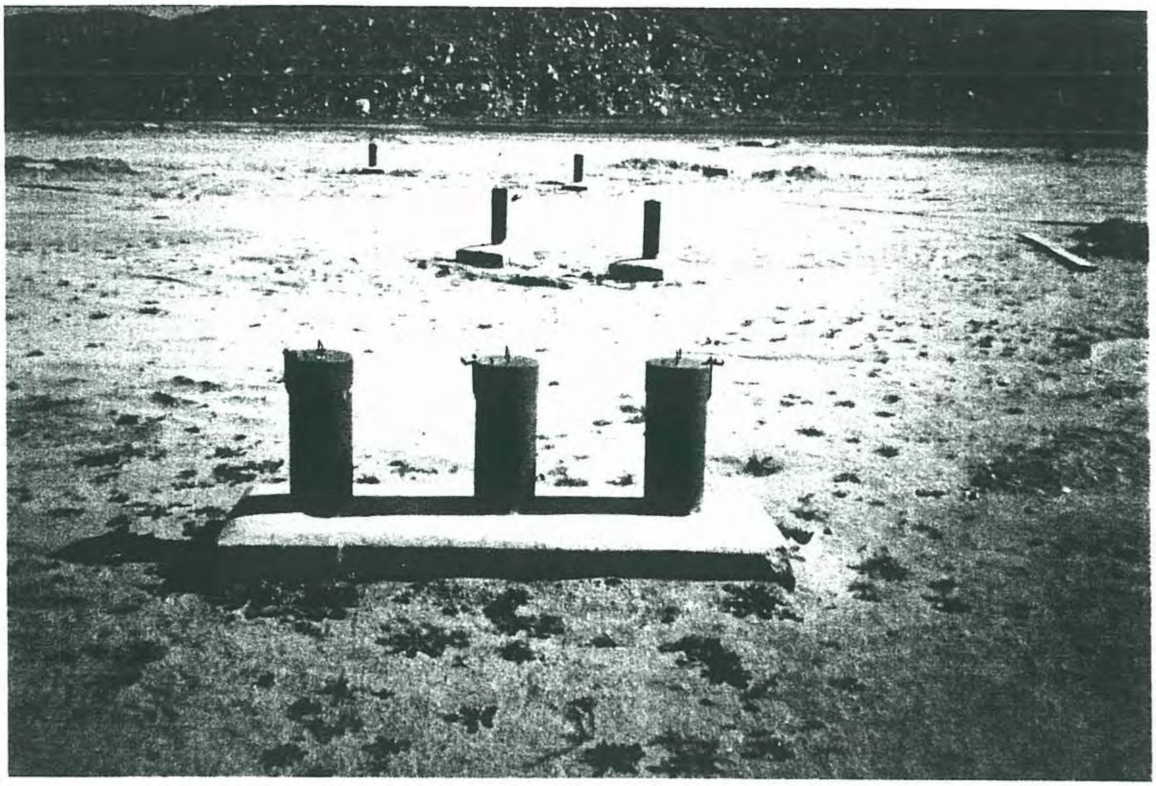

Figure 2-25. Fully Restored Well

Figure 2-26. Overlooking the Burn Pit Area After Removal Action Activities

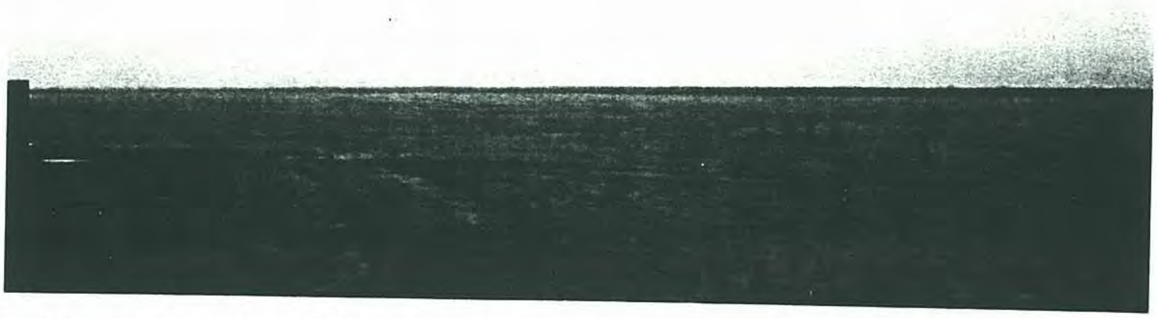

Figure 2-27. Burn Pit Area at the Completion of Removal Action Activities

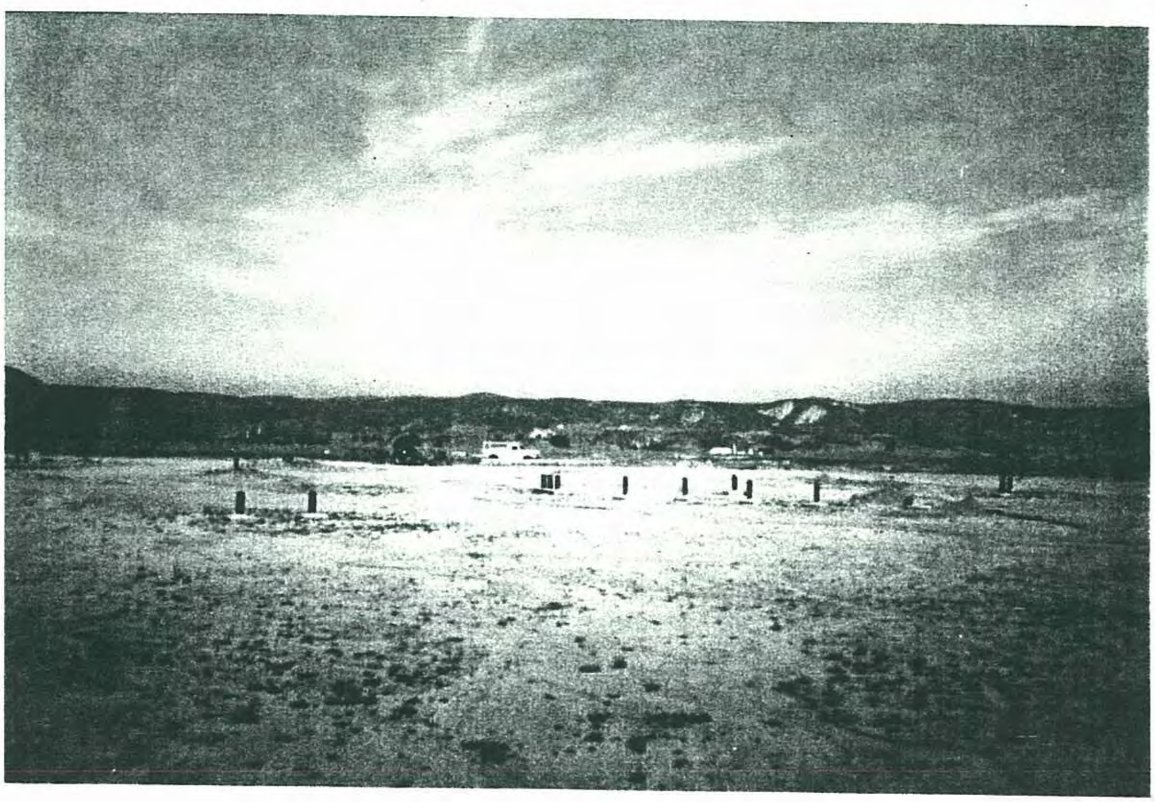

Figure 2-28. Burn Pit Area - March 1993

3.0 COMPLIANCE WITH APPLICABLE REGULATIONS

All applicable regulations were addressed and complied with during the removal action. The regulatory agencies involved in overseeing on-site activities included:

- Cal/EPA Department of Toxic Substances Control (DTSC), which acted as the lead agency;
- South Coast Air Quality Management District (SCAQMD);
- California Regional Water Quality Control Board (CRWQCB), Santa Ana Region 8 and Los Angeles Region 4;
- U.S. Fish and Wildlife Service (FWS);
- California Department of Fish and Game (CDFG);
- Riverside County; and
- The City of Beaumont.

The regulatory requirements stipulated by each of the above regulatory agencies are generally outlined below. A description of procedures implemented to comply with each requirement then follows. Applicable permits are included in Appendix C.

3.1 <u>South Coast Air Quality Management District</u>

A Rule 1150 Landfill Excavation Permit, covering procedures to be followed during excavation activities to limit the amount of emissions created, was obtained from SCAQMD prior to the initiation of remedial activities. This permit was originally obtained on July 24, 1991; modification approvals were received on March 30, September 17, and December 18, 1992. Compliance with the permit included:

- Notifying SCAQMD prior to the beginning of excavation activities and after the completion;
- Limiting the amount of non-contaminated material stockpiled at any one time to not more than 15,000 cubic yards;
- Conducting excavation activities between the hours of 6:00 AM and 6:00 PM;
- Limiting the area of the excavation work face which exposed specific wastes to not more than 11,000 square feet;
- Not conducting excavation activities when the SCAQMD forecasts for Area 29 predicted first, second, or third stage episodes, or when the SCAQMD required companies in Area 29 to implement their episode plans (SCAQMD forecasts were checked each day, no episodes were predicted during field activities);
- Monitoring wind speed and direction (as shown in Figure 3-1) to ensure that excavation was not conducted when the average wind speed (over 15 minutes) was greater than 20 mph or when the instantaneous wind speed exceeded 25 mph (wind speed monitoring logs are included in Appendix D);
- Monitoring for volatile organics using an organic vapor analyzer (or an approved substitute, in this case an organic vapor monitor/ photoionization detector) (shown in Figure 3-2), downwind of the excavation work areas, and recording readings every 15 minutes. VOC monitoring and OVM calibration logs are included in Appendix E.
- Implementing dust suppression measures (as shown in Figure 3-3) at all times to minimize airborne dust (measures included watering down all roadways, work areas, and excavated material);
- Minimizing material loss during transport by loading trucks so that no material extended beyond the sides or rear and so material was securely covered;
- Loading specific wastes into on-site, sealable drop boxes labeled "Hazardous Materials" and disposing of the boxes at a Class I facility upon completion of the excavation activities; and
- Recording meteorological data (wind speed and direction) using a portable met-station set up in the BPA.

Earthmoving activities were halted on one occasion during the removal action due to excessive wind speeds. On November 30, 1992, Radian instructed Scrivner to halt all excavation and scraping in the BPA for a 2.5 hour duration until the excessive winds subsided. Instantaneous wind speeds up to 38 miles per hour were measured during that time. Organic vapors were not detected above 50 ppm levels at any time during the removal action. SCAQMD was notified of project completion on May 11, 1993.

3.2 California Regional Water Quality Control Board (RWQCB)

The CRWQCB was involved in overseeing runoff and erosion control and waste discharge. As described below, Santa Ana Region 8 regulated stormwater pollution prevention, and Los Angeles Region 4 regulated the disposal of burn pit material at BKK Landfill.

Stormwater Pollution Prevention

Runoff and erosion control measures were required by the CRWQCB, Santa Ana Region 8. The purpose of these measures was to ensure that unnecessary erosion was not caused by excavation activities and that possible contamination of downstream water bodies did not occur. The Notice of Intent to comply with the terms of the general permit to discharge stormwater associated with the burn pit remedial action was received by the State Water Resources Control Board on October 9, 1992. To comply with the requirements, a Stormwater Pollution Prevention Plan (SWPPP) (Radian, 1992c) was developed and followed during the BPA Removal Action.

Procedures outlined in the plan inluded:

- Controlling erosion and sediment;
- Managing and disposing of wastes;

- Managing stormwater; and
- Managing non-stormwater.

Erosion, sediment, and storm and non-stormwater (water used for dust suppression) were controlled using a galvanized steel fence (shown in Figures 3-4 and 3-5) which encompassed the entire 16.7-acre burn pit area (BPA). This fence was principally installed to protect the Stephens' Kangaroo Rat, an endangered species which inhabits the site (as discussed in Section 3.3). However, it served a secondary purpose by also acting as a barrier to water and sediment. The fence which extended 2 feet above and 2 feet below land surface (BLS), prevented the transport of sediment and storm water beyond the 16.6-acre removal area during on-site activities. During the heavy rains of December 1992 through February 1993, the fence proved to be an effective barrier to keep storm water within the 16.7-acre area. As specified in the SWPPP, the condition of the fence as a barrier to stormwater runoff was monitored daily. Non-hazardous material and specific wastes excavated from the burn pits were covered with plastic while stockpiled or placed in drop boxes prior to off-site disposal.

Waste Discharge

A Waste Discharge Permit, covering procedures to be followed during the transport and disposal of burn pit waste at BKK Landfill, was obtained from CRWQCB Los Angeles Region 8 prior to initiating waste disposal activities. This permit was obtained on November 24, 1992. Compliance with the permit included:

- Implementing a monitoring program and providing a Waste Disposal and Monitoring Report following the completion of disposal operations at the final point of disposal.

The Waste Disposal and Monitoring Report was submitted to the RWQCB on May 20, 1993.

3.3 U.S. Fish and Wildlife Service

The Stephens' Kangaroo Rat (SKR), which is listed as "threatened" by the California Department of Fish and Game, and "endangered" by the United States Fish and Wildlife Service (FWS), is known to inhabit the valley where the BPA is located. Because of the potential for harming the SKR during remedial activities, all SKR had to be removed from the BPA before removal actions could begin. This was done by a FWS-permitted biologist (Dr. Michael O'Farrell) in cooperation with Radian. The 16.7-acre area over which the remediation work would occur was surrounded by a special "SKR- proof" fence, made of sheet metal, which extended 2 feet above ground and 2 feet below ground (as shown in Figures 3-4 and 3-5). The fence was considered "SKR proof" because SKR are said to be unable jump higher than 2 feet and do not burrow deeper than 2 feet BLS. The SKR inside the fenced area were then trapped by Dr. O'Farrell and released outside of the fenced area, leaving the BPA virtually free of SKR. The fence remained erect for the duration of the remedial activities. Access to the area was controlled through two gates which were open only during work hours and remained closed from dusk to dawn to prevent repopulation of the BPA by the nocturnal SKR.

In addition to ensuring the integrity of the fence, all personnel working on site were instructed to comply with the following conditions:

- Confine activities to existing roads and the fenced BPA;
- Do not knowingly destroy or disturb a SKR burrow; and
- If a live SKR was encountered during remedial activities, stop all work and notify Radian's representative, who would contact the proper personnel at the U.S. Fish and Wildlife Service for further guidance.

No SKR were encountered during the removal action.

3.4 Riverside County

Riverside County was involved in overseeing two major parts of the removal action activities including:

- Well Modification and Restoration; and
- Site Grading (inclûdes excavation, and backfilling).

Well Modification and Restoration

Well modification and restoration activities were conducted under the supervision and direction of Riverside County representatives. Detailed well modification and restoration specifications are included in the Contract Documents and Specifications (Radian, 1992b). Following these specifications ensured that the integrity of the wells were not compromised during modification or restoration, and that they could continue to be used for monitoring groundwater and soil vapor contamination beneath the BPA. At the completion of restoration activities, the wells were inspected by a Riverside County representative, who confirmed that the wells were suitable for their intended purpose. Figures 3-6 and 3-7 are schematic diagrams of completely restored monitoring and extraction wells, respectively.

Site Grading

A preliminary grading permit covering procedures to be followed during excavation and grading activities to control erosion, drainage, and settling, was obtained from Riverside County Department of Building and Safety before earthmoving activities were initiated. The preliminary permit was obtained on November 19, 1992. Procedures followed to comply with the permit included:

- Performing excavation, backfilling, and grading operations in accordance with UBC Chapters 26 and 70 and County Ordinance 457;

- Ensuring that the final geotechnical report confirmed compliance with engineering specifications and was certified by a registered engineer (included in Appendix B); and

- Providing County with final site topography and reports documenting site activities. Final site topography is shown on Figure 3-8.

Riverside County was notified of project completion on March 28, 1993. A letter report, *Final Site Topography Plot Plan and Geotechnical Compaction Report* was submitted to the county on May 17, 1993.

Figure 3-1. Monitoring Wind Speed and Direction

Figure 3-2. Monitoring for Volatile Organic Compounds

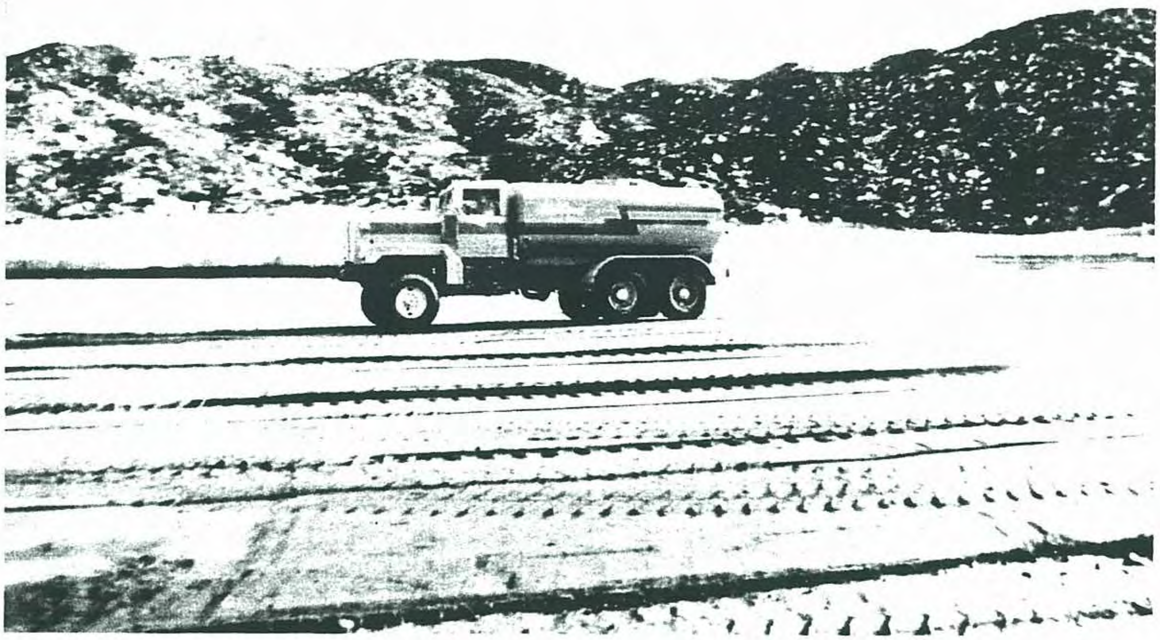

Figure 3-3. Dust Suppression Measures

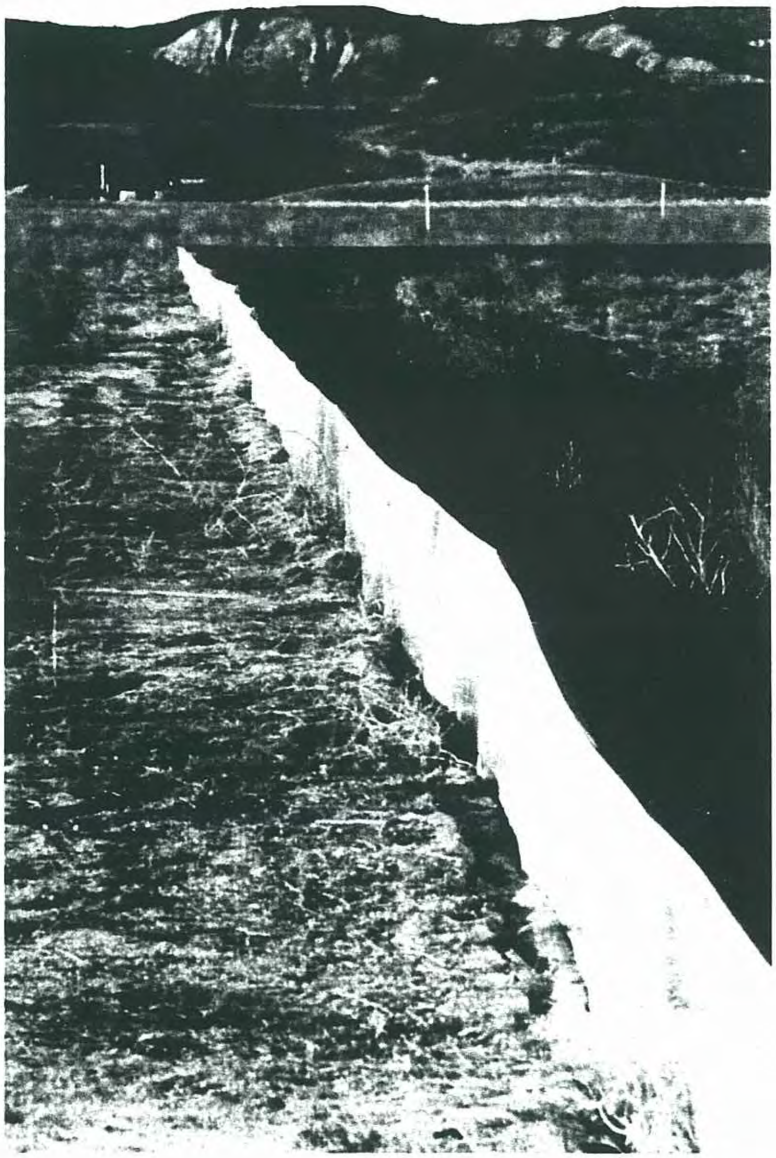

Figure 3-4. "SKR Proof" Fence Surrounding Burn Pit Area

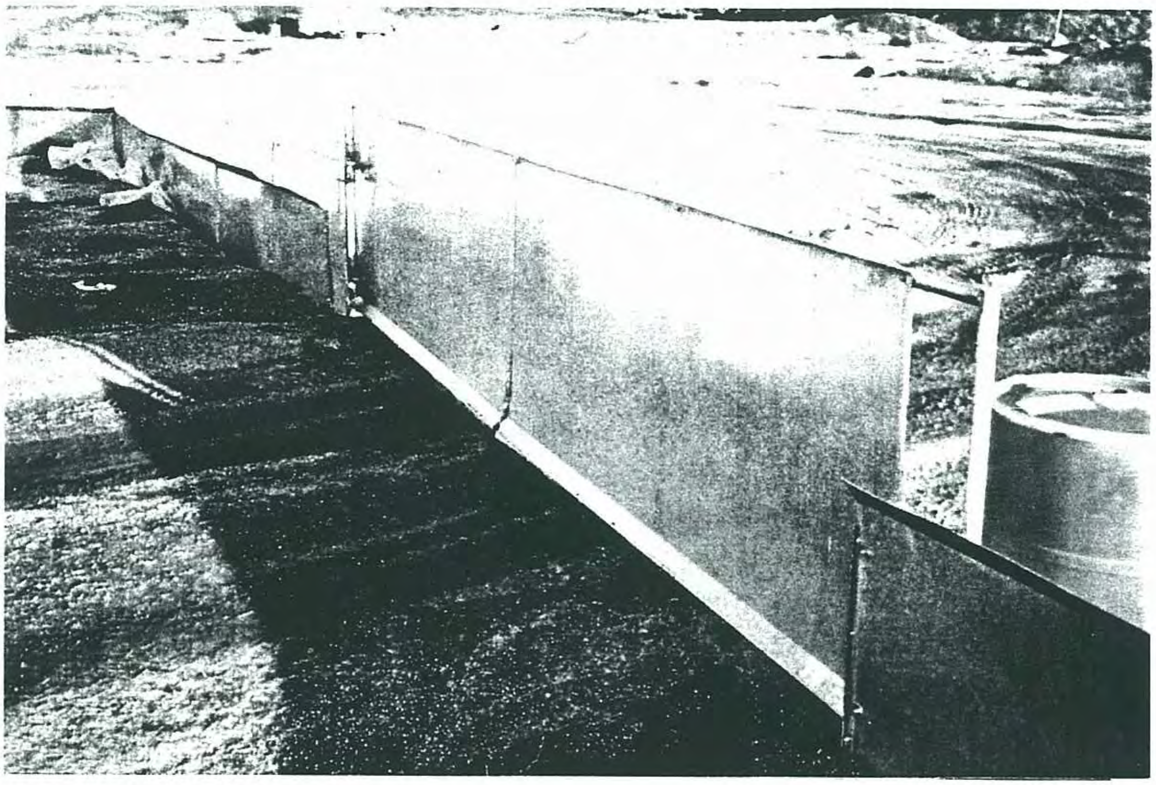

Figure 3-5. One of Two Gates Secured Every Evening

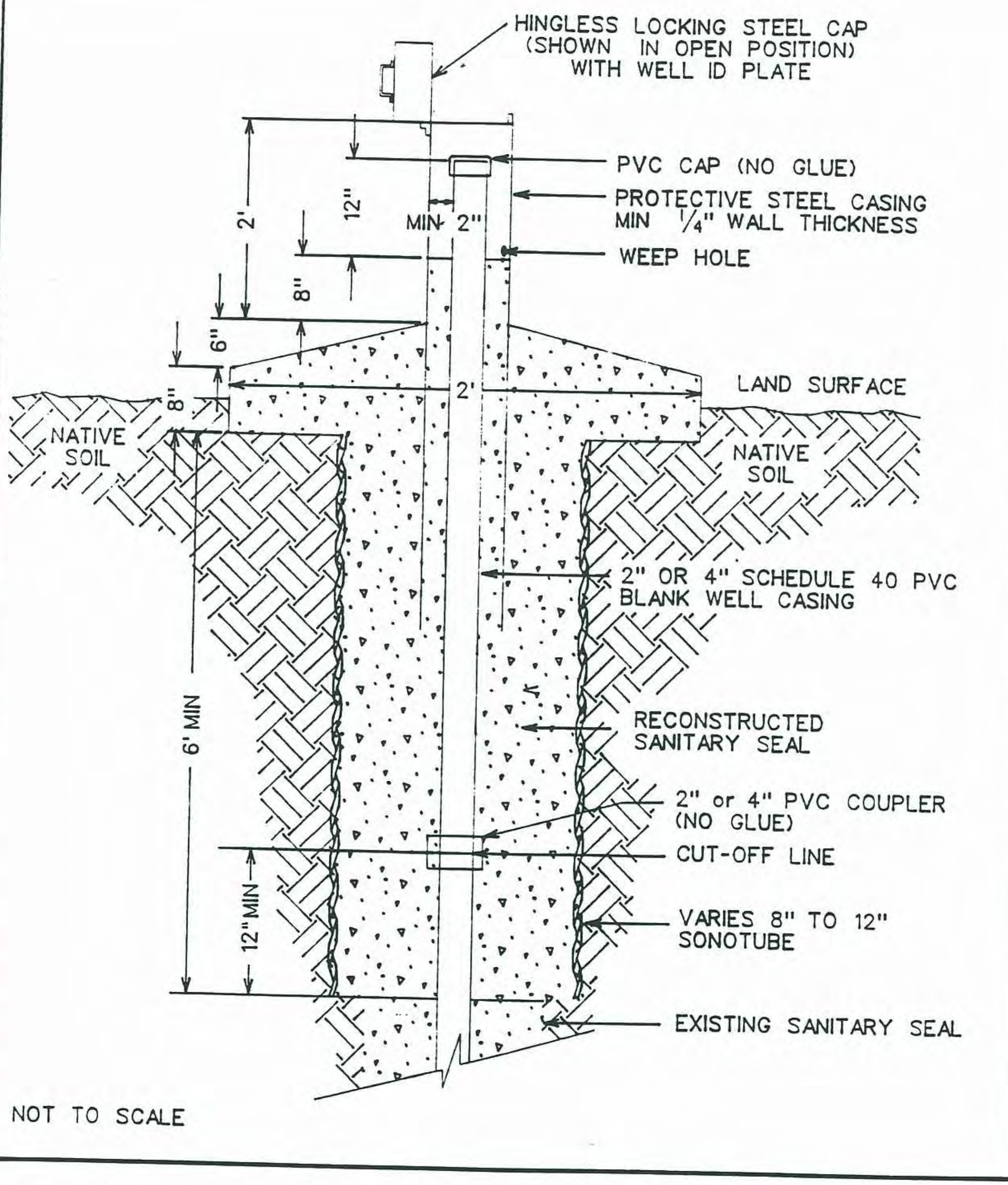

Figure 3-6. Well Completion for Monitoring Well After Burn Pit Removal Action

VRL LOCK9 WELMW 7/22/92

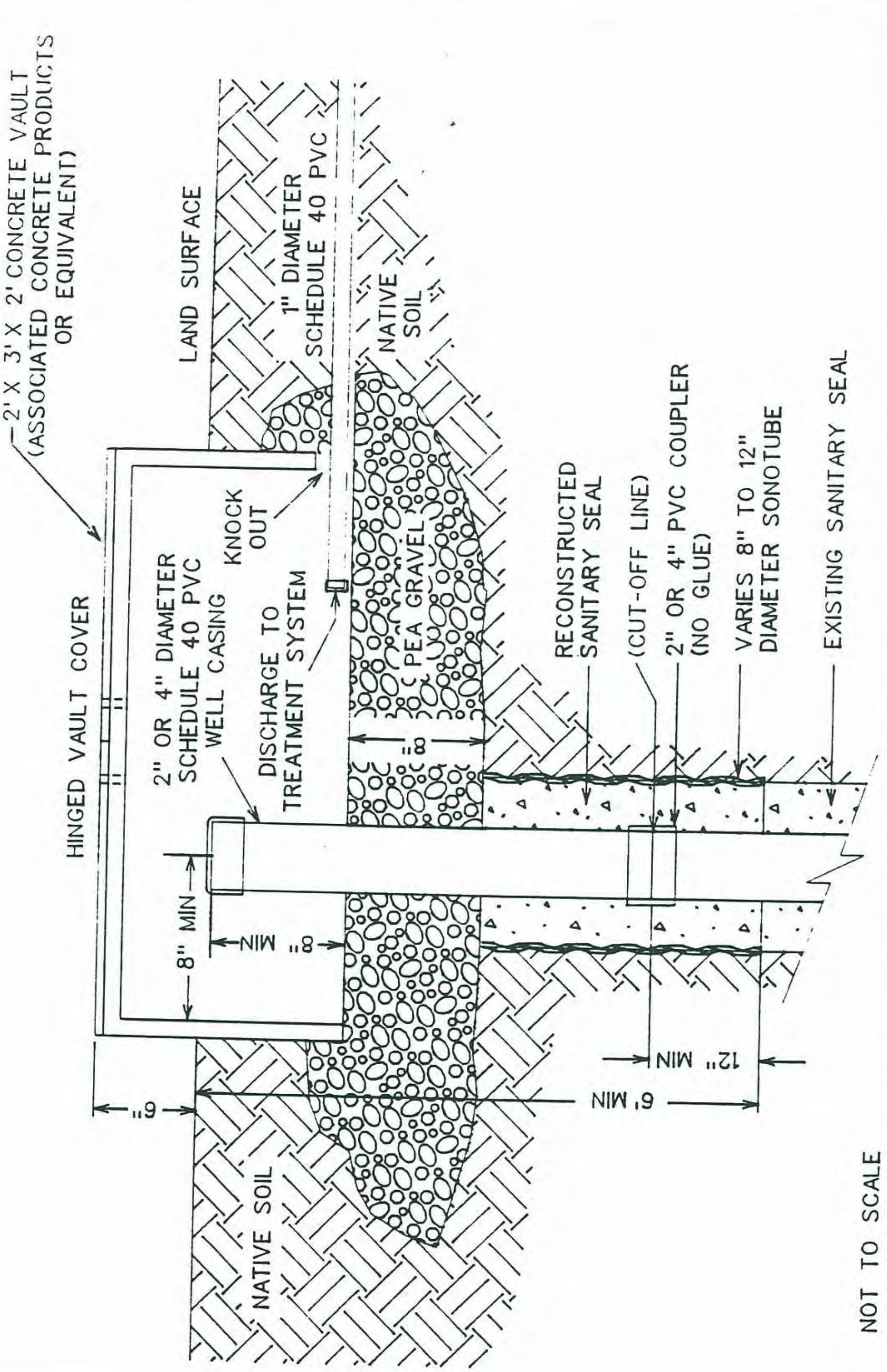

Figure 3-7. Well Completion for Extraction Well After Burn Pit Removal Action

VRL LOCK9 WELRECV 7/22/92

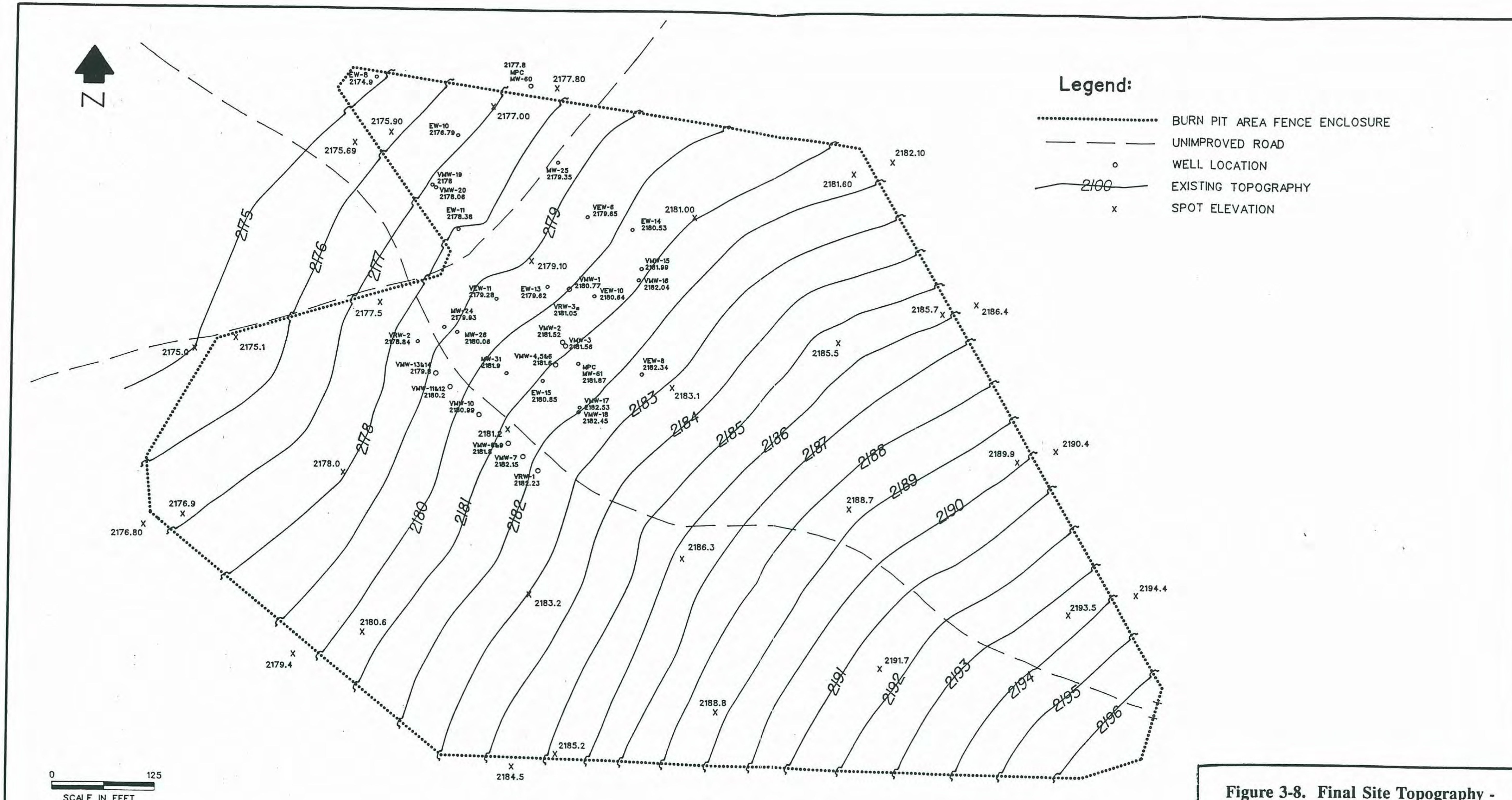

Figure 3-8. Final Site Topography - March 1, 1993

4.0 REFERENCES

California Code of Regulations, Title 22, Section 261.126 Appendix 11, 1991.

Radian Corporation (Radian), 1986a. *Lockheed Propulsion Company, Beaumont Test Facilities, Historical Report*, September 1986.

Radian, 1986b. *Lockheed Propulsion Company, Beaumont Test Facilities, Preliminary Remedial Investigation*, December 1986.

Radian, 1990. *Lockheed Propulsion Company, Beaumont Test Facilities, Source and Hydrogeologic Investigation*, February 1990.

Radian, 1991a. *Lockheed Beaumont No. 1, Burn Pit Area, Excavation and Management Plan, Draft*, March 1991.

Radian, 1991b. *Burn Pit Area Removal Action Plan*, April 1991.

Radian, 1992a. *Lockheed Beaumont No. 1 Site Remedial Action Plan*, May 1992.

Radian, 1992b. *Contract Documents and Specifications. Lockheed Beaumont No. 1 Facility Burn Pit Area Removal Action*, July 1992.

Radian, 1992c. *Stormwater Pollution Prevention Plan.* November 1992.

Radian, 1992d. *Lockheed Beaumont No. 1 Burn Pit Remediation Work Plan*, November 1992.

U.S. Geological Survey, 1953. San Jacinto 7.5 minute topographic map, photorevised 1979.

APPENDIX A

BURN PIT CONFIRMATION SAMPLES:
Quality Control Data Assessment
Analytical Data Sheets
Chain-of-Custody Forms

RADIAN CORPORATION

Quality Control Data Assessment

The following paragraphs present the results of the Quality Control Data Assessment for the soil samples collected from Burn Pits, A, X, H, and O-P during the Burn Pit Area Removal Action. Quality assurance/quality control procedures were followed during sample collection and analysis to document that the data produced are valid and can be used for their intended purpose (to confirm no residual contamination remained from waste removal). These procedures include using standard sample collection procedures in the field, and following established analytical procedures. Internal QC procedures and QC samples were used to assess the validity of the analytical results. The three areas of assessment include potential for laboratory contamination, precision and accuracy. The data were also checked and reviewed for errors in transcription or reporting, and holding times were tracked to ensure sample integrity.

Summary of QA/QC Data Assessment

The results QA/QC data assessment for the four soil samples analyzed by U.S. EPA Methods 8240, 8270, and 6010 indicate the data are valid and the quality, as measured by the analytical accuracy and precision, is within the acceptance criteria for the analytical methods used. No systematic problems were detected.

QC sample analyses are presented in the following order: reagent blanks; surrogate spikes; laboratory control sample/laboratory spike sample duplicates, and matrix/matrix spike duplicates.

Reagent Blanks

Reagent blanks are used to demonstrate that interferences or contamination from the analytical system, including all glassware and reagents used in the analytical procedure, are under control.

For Methods 8240 and 8270, no target analytes were detected above the reporting limits in any of the reagent blanks, indicating the analytical systems were free of contamination. For Method 6010, iron and zinc were detected at low levels in one of the three reagent blanks. Both iron and zinc were detected in the associated sample at much higher concentrations than what was found in the blank. In addition, the blank was analyzed after the sample; the iron and zinc results in the blank are likely to be some type of carryover from the sample. Therefore, the sample results are not considered to be influenced by this minor contamination.

Surrogate Spikes

Surrogate spikes are a group of organic compounds, other than target analytes, that have been selected because of their similarity to the target analytes. Surrogate spikes are added to samples to monitor both the performance of the analytical system and the effectiveness of the method in recovering the organic method analytes.

The laboratory used three surrogates for each Method 8240 analysis and three base/neutral and three acid surrogates for each Method 8270 analysis. The spike recoveries were compared to the laboratory-established acceptance limits and were all acceptable.

Laboratory Control Sample/Laboratory Control Samples Duplicates (LCS/LCSD)

Laboratory Control Samples (LCSs) are method spikes which are performed to evaluate the laboratory's ability to recover target analytes in a clean matrix and help to differentiate between matrix interferences and lack of analytical control when problems arise. LCSs were run in duplicate to provide a measure of analytical precision as well.

Three sets of LCS/LCSDs (i.e., six per method) were analyzed by each method. For Methods 8240 and 6010, all of the LCS/LCSD results were both accurate and precise, indicating the analytical systems were operating in control.

The majority of the Method 8270 LCS recoveries were also both accurate and precise. However, for one of the three LCS/LCSD pairs, the 2-chloronaphthalene spike recoveries were low (55 and 58%), indicating a slight low bias or false negative potential for the for 2-chloronaphthalene in the associated samples; OP-4 and X-2. Additionally, a high bias or false positive potential was indicated by the spike recoveries for several other compounds in this particular LCS/LCSD. However, this potential was not realized: the associated results were "not detected", and therefore are not affected by this random inaccuracy.

Matrix Spikes/Matrix Spike Duplicates (MS/MSDs)

A matrix spike is a solution of method analytes (at known concentrations) that is spiked into a field sample. The results of the analysis of the spiked sample are then reported as a percent recovery of each spiked compound.

Three sets MS/MSDs were performed analyzed by Method 8270. The spiking solution contained 11 different target compounds. All spike recoveries were acceptable. The agreement between the MS and MSD pair for sample L6661 was not as good as would be expected. However, no target analytes were detected in this sample, and therefore, the analytical data are not considered to be adversely affected by this slight lack of precision.

MS/MSDs were not performed for Methods 8240 or 6010.

Holding Times

U.S. EPA Method protocol specifies the maximum amount of time a sample can be stored before analysis (i.e., the sample "holding time"). The maximum allowable holding time for U.S. EPA Method 8240 is 14 days, for U.S. EPA Method 8270 is seven days for extraction, and 40 days for analysis, and for U.S. EPA Method 6010 is six months. All samples have been analyzed within the required holding times.

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Analytical Data Sheets

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Radian Work Order 92-12-121

Analytical Report
12/21/92

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

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Certified by: [signature]

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Analytical Data Summary

Lockheed
Radian Work Order: 92-12-121

Method:SW8240-Volatile Organics (1)
List:8240 Table 1

Sample ID:	L6661		METHOD BLANK		LCS		LCS DUP	
Factor:	1.089716		1		0		0	
Results in:	ug/kg		ug/kg		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acetone	ND	110	ND	100	62		62	
Acrolein	ND	82	ND	75	129		123	
Acrylonitrile	ND	54	ND	50	87		84	
Benzene	ND	5.4	ND	5.0	107		85	
Bromodichloromethane	ND	5.4	ND	5.0	108		101	
Bromomethane	ND	11	ND	10	70		61	
Carbon disulfide	ND	5.4	ND	5.0	135		101	
Carbon tetrachloride	ND	5.4	ND	5.0	119		115	
Chlorobenzene	ND	5.4	ND	5.0	92		92	
Chloroethane	ND	11	ND	10	68		68	
2-Chloroethyl vinyl ether	ND	11	ND	10	208		209	
Chloroform	ND	5.4	ND	5.0	119		115	
Chloromethane	ND	11	ND	10	92		81	
Dibromochloromethane	ND	5.4	ND	5.0	101		101	
Dibromomethane	ND	5.4	ND	5.0	NS		NS	
trans-1,4-Dichloro-2-butene	ND	11	ND	10	NS		NS	
Dichlorodifluoromethane	ND	22	ND	20	70		68	
1,1-Dichloroethane	ND	5.4	ND	5.0	125		124	
1,2-Dichloroethane	ND	5.4	ND	5.0	112		105	
1,1-Dichloroethene	ND	5.4	ND	5.0	98		81	
trans-1,2-Dichloroethene	ND	5.4	ND	5.0	114		108	
1,2-Dichloropropane	ND	5.4	ND	5.0	88		86	
cis-1,3-Dichloropropene	ND	5.4	ND	5.0	95		88	
trans-1,3-Dichloropropene	ND	5.4	ND	5.0	111		111	
Ethyl benzene	ND	5.4	ND	5.0	98		101	
Ethyl methacrylate	ND	16	ND	15	NS		NS	
2-Hexanone	ND	54	ND	50	100		107	
Iodomethane	ND	5.4	ND	5.0	NS		NS	
Methyl ethyl ketone	ND	110	ND	100	107		108	
4-Methyl-2-pentanone(MIBK)	ND	54	ND	50	81		80	

ND Not detected at specified detection limit   NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN

Analytical Data Summary

Page:

Lockheed
Radian Work Order: 92-12-121

Method:SW8240-Volatile Organics (1)
List:8240 Table 1

Sample ID:	L6661	METHOD BLANK	LCS	LCS DUP
Factor:	1.089716	1	0	0
Results in:	ug/kg	ug/kg	%recvry	%recvry
	01A	02A	03A	04A
Matrix:	solid	solid	solid	solid

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Methylene chloride	ND	5.4	2.4 J	5.0	120		104	
Styrene	ND	5.4	ND	5.0	138		137	
1,1,2,2-Tetrachloroethane	ND	5.4	ND	5.0	96		96	
Tetrachloroethene	ND	5.4	ND	5.0	100		100	
Toluene	ND	5.4	ND	5.0	96		89	
Tribromomethane(Bromoform)	ND	5.4	ND	5.0	98		97	
1,1,1-Trichloroethane	ND	5.4	ND	5.0	111		120	
1,1,2-Trichloroethane	ND	5.4	ND	5.0	104		105	
Trichloroethene	ND	5.4	ND	5.0	100		95	
Trichlorofluoromethane	ND	11	ND	10	78		72	
1,2,3-Trichloropropane	ND	5.4	ND	5.0	NS		NS	
Vinyl acetate	ND	5.4	ND	5.0	152		151	
Vinyl chloride	ND	11	ND	10	113		99	
Xylenes	ND	5.4	ND	5.0	103		101	
Surrogate Recovery(%)								
1,4-Bromofluorobenzene	98		101		99		101	
Control Limits: 74 to 121								
1,2-Dichloroethane-d4	104		115		109		107	
Control Limits: 70 to 121								
Toluene-d8	111		90		92		91	
Control Limits: 81 to 117								

ND Not detected at specified detection limit
NS Not spiked
J Detected at less than detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

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Sample History

Lockheed
Radian Work Order: 92-12-121

Sample Identifications and Dates

Sample ID	L6661	METHOD BLANK	LCS	LCS DUP		
Date Sampled	12/15/92					
Date Received	12/16/92	12/16/92	12/16/92	12/16/92		
Matrix	solid	solid	solid	solid		
	01	02	03	04		
SW8240-Volatile Organics						
Prepared						
Analyzed	12/16/92	12/16/92	12/16/92	12/16/92		
Analyst	JHC	JHC	JHC	JHC		
File ID	A34947	A34938	A34936	A34937		
Blank ID	A34938	A34938	A34938	A34938		
Instrument	4503	4503	4503	4503		
Report as	dry weight	dry weight	dry weight	dry weight		

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Appendix A

Comments, Notes and Definitions

J ORGANIC METHODS
Indicates an estimated value for GC/MS data.
EXPLANATION
This flag is used either when estimating a concentration for tentatively identified compounds where a response factor of 1 is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit.

ND ALL METHODS EXCEPT CLP
This flag is used to denote analytes which are not detected at or above the specified detection limit.
EXPLANATION
The value to the right of the < symbol is the method specified detection limit for the analyte.

NS ALL METHODS EXCEPT CLP
This analyte or surrogate was not spiked into the sample for this analysis.

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Lockheed
Radian Work Order: 92-12-121

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/ digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion);liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million);liquids/water
	mg/kg	milligrams per kilogram (parts per million);soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

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Radian Work Order 92-12-097

Analytical Report
12/23/92

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

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Certified by:

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Lockheed
Radian Work Order: 92-12-097

Analytical Data Summary

Method:ICP analysis by SW6010 (1)
List:ICP by SW6010

Sample ID:	OP-5		X-3		METHOD BLANK		LCS	
Factor:	78.125		77.51938		100		0	
Results in:	mg/kg		mg/kg		mg/kg		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Aluminum	12000	16	14000	16	ND	20	98	
Antimony	ND	7.8	ND	7.8	ND	10	101	
Arsenic	ND	23	ND	23	ND	30	90	
Barium	100	0.78	130	0.78	ND	1.0	84	
Beryllium	0.31 @	0.16	0.36 @	0.16	ND	0.20	89	
Boron	ND	47	ND	47	ND	60	103	
Cadmium	ND	0.39	ND	0.39	ND	0.50	82	
Calcium	1500	78	1600	78	ND	100	94	
Chromium	5.4	0.78	5.7	0.78	ND	1.0	131	
Cobalt	4.9	0.78	5.4	0.78	ND	1.0	86	
Copper	4.4 @	1.6	3.2 @	1.6	ND	2.0	98	
Iron	16000	3.9	19000	3.9	ND	5.0	107	
Lead	4.5 @	3.9	6.8 @	3.9	ND	5.0	86	
Magnesium	4300	78	5300	78	ND	100	96	
Manganese	240	0.78	270	0.78	ND	1.0	85	
Molybdenum	ND	3.9	ND	3.9	ND	5.0	84	
Nickel	1.6 @	1.6	3.4 @	1.6	ND	2.0	103	
Potassium	5500	230	7000	230	ND	300	93	
Selenium	ND	23	ND	23	ND	30	94	
Silicon	460	78	460	78	ND	100	107	
Silver	ND	0.78	ND	0.78	ND	1.0	85	
Sodium	ND	78	ND	78	ND	100	124	
Strontium	13	0.23	16	0.23	ND	0.30	94	
Thallium	ND	7.8	ND	7.8	ND	10	87	
Vanadium	25	1.6	30	1.6	ND	2.0	102	
Zinc	54	1.6	64	1.6	ND	2.0	111	

ND Not detected at specified detection limit

@ Est. result less than 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-097

Method:ICP analysis by SW6010 (1)
List:ICP by SW6010

Sample ID:	LCS DUP
Factor:	0
Results in:	%recvry
	05A
Matrix:	solid

	Result	Det. Limit
Aluminum	101	
Antimony	107	
Arsenic	91	
Barium	87	
Beryllium	91	
Boron	111	
Cadmium	85	
Calcium	96	
Chromium	133	
Cobalt	87	
Copper	94	
Iron	110	
Lead	93	
Magnesium	99	
Manganese	87	
Molybdenum	90	
Nickel	98	
Potassium	95	
Selenium	96	
Silicon	112	
Silver	89	
Sodium	126	
Strontium	94	
Thallium	88	
Vanadium	104	
Zinc	94	

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN

Sample History

Lockheed
Radian Work Order: 92-12-097

Sample Identifications and Dates

Sample ID	OP-5	X-3	METHOD BLANK	LCS	LCS DUP
Date Sampled	12/11/92	12/11/92			
Date Received	12/12/92	12/12/92	12/12/92	12/12/92	12/12/92
Matrix	solid	solid	solid	solid	solid
	01	02	03	04	05
ICP analysis by SW6010					
Prepared	12/21/92	12/21/92	12/21/92	12/21/92	12/21/92
Analyzed	12/21/92	12/21/92	12/21/92	12/21/92	12/21/92
Analyst	DES	DES	DES	DES	DES
File ID	JA611221-35	JA611221-36	JA611221-16	JA611221-17	JA611221-18
Blank ID	JA611221-16	JA611221-16	JA611221-16	JA611221-16	JA611221-16
Instrument	JA61	JA61	JA61	JA61	JA61
Report as	dry weight	dry weight	dry weight	dry weight	dry weight

RADIAN

Appendix A

Comments, Notes and Definitions

ICP

The MS/MSD data in analytical batch JA61_122117-010 can be found in workorder 9212133.

ERA 212 is the solid LCS analyzed for all metals tests except strontium, arsenic, boron, and silicon. Strontium, arsenic, boron, and silicon are reported from the aqueous LCS/LCSD.

RADIAN

Radian Work Order 92-12-095

Analytical Report
12/30/92

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

Contents:

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: JALINDSEY

Certified by: ____________________

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	OP-4		X-2		METHOD BLANK		LCS	
Factor:	0.037160		0.034758		0.033333		0	
Results in:	ug/g		ug/g		ug/g		%recvry.	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	0.37	ND	0.35	ND	0.33	64	
Acenaphthylene	ND	0.37	ND	0.35	ND	0.33	69	
Acetophenone	ND	0.37	ND	0.35	ND	0.33	NS	
4-Aminobiphenyl	ND	0.37	ND	0.35	ND	0.33	NS	
Aniline	ND	0.37	ND	0.35	ND	0.33	70	
Anthracene	ND	0.37	ND	0.35	ND	0.33	92	
Benzidine	ND	0.37	ND	0.35	ND	0.33	10	
Benzo(a)anthracene	ND	0.37	ND	0.35	ND	0.33	94	
Benzo(a)pyrene	ND	0.37	ND	0.35	ND	0.33	81	
Benzo(b)fluoranthene	ND	0.37	ND	0.35	ND	0.33	78	
Benzo(g,h,i)perylene	ND	0.37	ND	0.35	ND	0.33	98	
Benzo(k)fluoranthene	ND	0.37	ND	0.35	ND	0.33	90	
Benzoic acid	ND	1.9	ND	1.7	ND	1.7	86	
Benzyl alcohol	ND	0.37	ND	0.35	ND	0.33	104	
4-Bromophenyl phenyl ether	ND	0.37	ND	0.35	ND	0.33	125	
Butylbenzylphthalate	ND	0.37	ND	0.35	ND	0.33	72	
4-Chloro-3-methylphenol	ND	0.37	ND	0.35	ND	0.33	110	
p-Chloroaniline	ND	0.37	ND	0.35	ND	0.33	100	
bis(2-Chloroethoxy)methane	0.13 J	0.37	ND	0.35	ND	0.33	107	
bis(2-Chloroethyl)ether	ND	0.37	ND	0.35	ND	0.33	106	
bis(2-Chloroisopropyl)ether	ND	0.37	ND	0.35	ND	0.33	149	
1-Chloronaphthalene	ND	0.37	ND	0.35	ND	0.33	NS	
2-Chloronaphthalene	ND	0.37	ND	0.35	ND	0.33	55 Q	
2-Chlorophenol	ND	0.37	ND	0.35	ND	0.33	92	
4-Chlorophenyl phenyl ether	ND	0.37	ND	0.35	ND	0.33	92	
Chrysene	ND	0.37	ND	0.35	ND	0.33	93	
Di-n-octylphthalate	ND	0.37	ND	0.35	ND	0.33	65	
Dibenz(a,h)anthracene	ND	0.37	ND	0.35	ND	0.33	96	
Dibenz(a,j)acridine	ND	0.37	ND	0.35	ND	0.33	NS	
Dibenzofuran	ND	0.37	ND	0.35	ND	0.33	70	

ND Not detected at specified detection limit
NS Not spiked
J Detected at less than detection limit
Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	OP-4		X-2		METHOD BLANK		LCS	
Factor:	0.037160		0.034758		0.033333		0	
Results in:	ug/g		ug/g		ug/g		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Dibutylphthalate	ND	0.37	ND	0.35	ND	0.33	90	
1,2-Dichlorobenzene	ND	0.37	ND	0.35	ND	0.33	94	
1,3-Dichlorobenzene	ND	0.37	ND	0.35	ND	0.33	78	
1,4-Dichlorobenzene	ND	0.37	ND	0.35	ND	0.33	87	
3,3'-Dichlorobenzidine	ND	0.37	ND	0.35	ND	0.33	129	
2,4-Dichlorophenol	ND	0.37	ND	0.35	ND	0.33	85	
2,6-Dichlorophenol	ND	0.37	ND	0.35	ND	0.33	NS	
Diethylphthalate	ND	0.37	ND	0.35	ND	0.33	77	
p-Dimethylaminoazobenzene	ND	0.37	ND	0.35	ND	0.33	NS	
7,12-Dimethylbenz(a)anthracene	ND	0.37	ND	0.35	ND	0.33	NS	
Dimethylphenethylamine	ND	4.5	ND	4.2	ND	4.0	NS	
2,4-Dimethylphenol	ND	0.37	ND	0.35	ND	0.33	58	
Dimethylphthalate	ND	0.37	ND	0.35	ND	0.33	76	
4,6-Dinitro-2-methylphenol	ND	0.37	ND	0.35	ND	0.33	97	
2,4-Dinitrophenol	ND	0.74	ND	0.70	ND	0.67	88	
2,4-Dinitrotoluene	ND	0.37	ND	0.35	ND	0.33	78	
2,6-Dinitrotoluene	ND	0.37	ND	0.35	ND	0.33	84	
Diphenylamine	ND	0.37	ND	0.35	ND	0.33	NS	
1,2-Diphenylhydrazine	ND	0.37	ND	0.35	ND	0.33	NS	
Ethyl methanesulfonate	ND	0.37	ND	0.35	ND	0.33	NS	
bis(2-Ethylhexyl)phthalate	ND	0.37	ND	0.35	ND	0.33	117	
Fluoranthene	ND	0.37	ND	0.35	ND	0.33	96	
Fluorene	ND	0.37	ND	0.35	ND	0.33	61	
Hexachlorobenzene	ND	0.37	ND	0.35	ND	0.33	151	
Hexachlorobutadiene	ND	0.37	ND	0.35	ND	0.33	116	
Hexachlorocyclopentadiene	ND	0.37	ND	0.35	ND	0.33	6	
Hexachloroethane	ND	0.37	ND	0.35	ND	0.33	100	
Indeno(1,2,3-cd)pyrene	ND	0.37	ND	0.35	ND	0.33	104	
Isophorone	ND	0.37	ND	0.35	ND	0.33	96	
Methyl methanesulfonate	ND	1.9	ND	1.7	ND	1.7	NS	

ND Not detected at specified detection limit

NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	OP-4		X-2		METHOD BLANK		LCS	
Factor:	0.037160		0.034758		0.033333		0	
Results in:	ug/g		ug/g		ug/g		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
3-Methylcholanthrene	ND	0.37	ND	0.35	ND	0.33	NS	
2-Methylnaphthalene	ND	0.37	ND	0.35	ND	0.33	105	
2-Methylphenol(o-cresol)	ND	0.37	ND	0.35	ND	0.33	80	
4-Methylphenol(p-cresol)	ND	0.37	ND	0.35	ND	0.33	86	
N-Nitroso-di-n-butylamine	ND	0.37	ND	0.35	ND	0.33	NS	
N-Nitrosodimethylamine	ND	0.37	ND	0.35	ND	0.33	137	
N-Nitrosodiphenylamine	ND	0.37	ND	0.35	ND	0.33	80	
N-Nitrosodipropylamine	ND	0.37	ND	0.35	ND	0.33	114	
N-Nitrosopiperidine	ND	0.37	ND	0.35	ND	0.33	NS	
Naphthalene	ND	0.37	ND	0.35	ND	0.33	88	
1-Naphthylamine	ND	0.37	ND	0.35	ND	0.33	NS	
2-Naphthylamine	ND	0.37	ND	0.35	ND	0.33	NS	
2-Nitroaniline	ND	0.37	ND	0.35	ND	0.33	102	
3-Nitroaniline	ND	0.74	ND	0.70	ND	0.67	77	
4-Nitroaniline	ND	0.74	ND	0.70	ND	0.67	74	
Nitrobenzene	ND	0.37	ND	0.35	ND	0.33	121	
2-Nitrophenol	ND	0.37	ND	0.35	ND	0.33	101 Y	
4-Nitrophenol	ND	0.37	ND	0.35	ND	0.33	64	
Pentachlorobenzene	ND	0.37	ND	0.35	ND	0.33	NS	
Pentachloronitrobenzene	ND	0.37	ND	0.35	ND	0.33	NS	
Pentachlorophenol	ND	0.37	ND	0.35	ND	0.33	100	
Phenacetin	ND	0.37	ND	0.35	ND	0.33	NS	
Phenanthrene	ND	0.37	ND	0.35	ND	0.33	77	
Phenol	ND	0.37	ND	0.35	ND	0.33	92	
2-Picoline	ND	0.37	ND	0.35	ND	0.33	NS	
Pronamide	ND	0.37	ND	0.35	ND	0.33	NS	
Pyrene	ND	0.37	ND	0.35	ND	0.33	80	
Pyridine	ND	0.37	ND	0.35	ND	0.33	NS	
1,2,4,5-Tetrachlorobenzene	ND	0.37	ND	0.35	ND	0.33	NS	
2,3,4,6-Tetrachlorophenol	ND	0.37	ND	0.35	ND	0.33	NS	

ND Not detected at specified detection limit
NS Not spiked
Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	OP-4		X-2		METHOD BLANK		LCS	
Factor:	0.037160		0.034758		0.033333		0	
Results in:	ug/g		ug/g		ug/g		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1,2,4-Trichlorobenzene	ND	0.37	ND	0.35	ND	0.33	96	
2,4,5-Trichlorophenol	ND	0.37	ND	0.35	ND	0.33	81	
2,4,6-Trichlorophenol	ND	0.37	ND	0.35	ND	0.33	64	
Surrogate Recovery(%)								
2-Fluorobiphenyl Control Limits: 30 to 115	91		95		91		59	
2-Fluorophenol Control Limits: 25 to 121	76		77		79		85	
Nitrobenzene-d5 Control Limits: 23 to 120	91		99		94		103	
Phenol-d5 Control Limits: 24 to 113	83		86		86		94	
Terphenyl-d14 Control Limits: 18 to 137	94		101		99		101	
2,4,6-Tribromophenol Control Limits: 19 to 122	114		117		120		105	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	LCS DUP
Factor:	0
Results in:	%recvry
	05A
Matrix:	solid

	Result	Det. Limit			
Acenaphthene	68				
Acenaphthylene	75				
Acetophenone	NS				
4-Aminobiphenyl	NS				
Aniline	75				
Anthracene	98				
Benzidine	44				
Benzo(a)anthracene	97				
Benzo(a)pyrene	86				
Benzo(b)fluoranthene	76				
Benzo(g,h,i)perylene	76				
Benzo(k)fluoranthene	102				
Benzoic acid	108				
Benzyl alcohol	109				
4-Bromophenyl phenyl ether	130 Q				
Butylbenzylphthalate	73				
4-Chloro-3-methylphenol	126				
p-Chloroaniline	110				
bis(2-Chloroethoxy)methane	111				
bis(2-Chloroethyl)ether	106				
bis(2-Chloroisopropyl)ether	151				
1-Chloronaphthalene	NS				
2-Chloronaphthalene	58 Q				
2-Chlorophenol	96				
4-Chlorophenyl phenyl ether	98				
Chrysene	92				
Di-n-octylphthalate	64				
Dibenz(a,h)anthracene	97				
Dibenz(a,j)acridine	NS				
Dibenzofuran	73				

NS Not spiked

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	LCS DUP
Factor:	0
Results in:	%recvry
	05A
Matrix:	solid

	Result	Det. Limit			
Dibutylphthalate	94				
1,2-Dichlorobenzene	93				
1,3-Dichlorobenzene	75				
1,4-Dichlorobenzene	84				
3,3'-Dichlorobenzidine	138				
2,4-Dichlorophenol	86				
2,6-Dichlorophenol	NS				
Diethylphthalate	80				
p-Dimethylaminoazobenzene	NS				
7,12-Dimethylbenz(a)anthracene	NS				
Dimethylphenethylamine	NS				
2,4-Dimethylphenol	86				
Dimethylphthalate	80				
4,6-Dinitro-2-methylphenol	105				
2,4-Dinitrophenol	104				
2,4-Dinitrotoluene	88				
2,6-Dinitrotoluene	84				
Diphenylamine	NS				
1,2-Diphenylhydrazine	NS				
Ethyl methanesulfonate	NS				
bis(2-Ethylhexyl)phthalate	68				
Fluoranthene	103				
Fluorene	64				
Hexachlorobenzene	158 Q				
Hexachlorobutadiene	120 Q				
Hexachlorocyclopentadiene	40				
Hexachloroethane	98				
Indeno(1,2,3-cd)pyrene	100				
Isophorone	99				
Methyl methanesulfonate	NS				

NS Not spiked

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	LCS DUP
Factor:	0
Results in:	%recvry
	05A
Matrix:	solid

	Result	Det. Limit			
3-Methylcholanthrene	NS				
2-Methylnaphthalene	110				
2-Methylphenol(o-cresol)	99				
4-Methylphenol(p-cresol)	97				
N-Nitroso-di-n-butylamine	NS				
N-Nitrosodimethylamine	133				
N-Nitrosodiphenylamine	82				
N-Nitrosodipropylamine	116				
N-Nitrosopiperidine	NS				
Naphthalene	92				
1-Naphthylamine	NS				
2-Naphthylamine	NS				
2-Nitroaniline	112				
3-Nitroaniline	89				
4-Nitroaniline	75				
Nitrobenzene	128				
2-Nitrophenol	115 Y				
4-Nitrophenol	79				
Pentachlorobenzene	NS				
Pentachloronitrobenzene	NS				
Pentachlorophenol	118				
Phenacetin	NS				
Phenanthrene	83				
Phenol	96				
2-Picoline	NS				
Pronamide	NS				
Pyrene	81				
Pyridine	NS				
1,2,4,5-Tetrachlorobenzene	NS				
2,3,4,6-Tetrachlorophenol	NS				

NS Not spiked

Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	LCS DUP
Factor:	0
Results in:	%recvry
	05A
Matrix:	solid

	Result	Det. Limit			
1,2,4-Trichlorobenzene	65				
2,4,5-Trichlorophenol	87				
2,4,6-Trichlorophenol	76				
Surrogate Recovery(%)					
2-Fluorobiphenyl	62				
Control Limits: 30 to 115					
2-Fluorophenol	84				
Control Limits: 25 to 121					
Nitrobenzene-d5	107				
Control Limits: 23 to 120					
Phenol-d5	86				
Control Limits: 24 to 113					
Terphenyl-d14	104				
Control Limits: 18 to 137					
2,4,6-Tribromophenol	113				
Control Limits: 19 to 122					

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-095

Method:SW8270-Semi-Volatiles (1)
List:Matrix Spike List

Sample ID:	OP-4 MS		OP-4 MSD	
Factor:	0		0	
Results in:	%recvry		%recvry	
	06A		07A	
Matrix:	solid		solid	
	Result	Det. Limit	Result	Det. Limit
Acenaphthene	74		74	
4-Chloro-3-methylphenol	94		93	
2-Chlorophenol	77		78	
1,4-Dichlorobenzene	76		77	
2,4-Dinitrotoluene	85		86	
N-Nitrosodipropylamine	86		84	
4-Nitrophenol	75		75	
Pentachlorophenol	96		102	
Phenol	81		82	
Pyrene	72		73	
1,2,4-Trichlorobenzene	98		98	
Surrogate Recovery(%)				
2-Fluorobiphenyl	90		90	
Control Limits: 30 to 115				
2-Fluorophenol	82		89	
Control Limits: 25 to 121				
Nitrobenzene-d5	107		108	
Control Limits: 23 to 120				
Phenol-d5	90		94	
Control Limits: 24 to 113				
Terphenyl-d14	95		95	
Control Limits: 18 to 137				
2,4,6-Tribromophenol	124 Q		122	
Control Limits: 19 to 122				

Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Lockheed
Radian Work Order: 92-12-095

Analytical Data Summary

Method/Analyte	Sample Identifications					
	OP-4		X-2			
	01		02			
Matrix	solid		solid			
Percent moisture, SW846	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Percent moisture	10 %		4.1 %			

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN

Lockheed
Radian Work Order: 92-12-095

Sample Identifications and Dates

Sample ID	OP-4	X-2	METHOD BLANK	LCS	LCS DUP	OP-4 MS
Date Sampled	12/11/92	12/11/92				12/11/92
Date Received	12/12/92	12/12/92	12/12/92	12/12/92	12/12/92	12/12/92
Matrix	solid	solid	solid	solid	solid	solid
	01	02	03	04	05	06
SW8270-Semi-Volatiles						
Prepared	12/17/92	12/17/92	12/17/92	12/17/92	12/17/92	
Analyzed	12/28/92	12/29/92	12/28/92	12/28/92	12/28/92	
Analyst	MCL	MCL	MCL	MCL	MCL	
File ID	B9748	B9751	B9747	B9745	B9746	
Blank ID	B9747	B9747	B9747	B9747	B9747	
Instrument	MSD2	MSD2	MSD2	MSD2	MSD2	
Report as	dry weight	dry weight	dry weight	dry weight	dry weight	
SW8270-Semi-Volatiles						
Prepared						12/17/92
Analyzed						12/28/92
Analyst						MCL
File ID						B9749
Blank ID						B9747
Instrument						MSD2
Report as						dry weight
Percent moisture, SW846						
Prepared	12/17/92	12/17/92				
Analyzed	12/18/92	12/18/92				
Analyst	GAS	GAS				
File ID						
Blank ID						
Instrument						
Report as	received	received				

RADIAN

Sample History

Lockheed
Radian Work Order: 92-12-095

Sample Identifications and Dates

Sample ID	OP-4 MSD
Date Sampled	12/11/92
Date Received	12/12/92
Matrix	solid
	07

SW8270-Semi-Volatiles						
Prepared	12/17/92					
Analyzed	12/28/92					
Analyst	MCL					
File ID	89750					
Blank ID	89747					
Instrument	MSD2					
Report as	dry weight					

Appendix A

Comments, Notes and Definitions

The Q flag indicates that the recovery is outside the control limits for that compound.

The Y flag indicates the RPD for that compound is out of control between the LCS and the LCS DUP.

RADIAN

Notes and Definitions

Lockheed
Radian Work Order: 92-12-095

J ORGANIC METHODS
Indicates an estimated value for GC/MS data.
EXPLANATION
This flag is used either when estimating a concentration for tentatively identified compounds where a response factor of 1 is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit.

ND ALL METHODS EXCEPT CLP
This flag is used to denote analytes which are not detected at or above the specified detection limit.
EXPLANATION
The value to the right of the < symbol is the method specified detection limit for the analyte.

NS ALL METHODS EXCEPT CLP
This analyte or surrogate was not spiked into the sample for this analysis.

Q ALL METHODS EXCEPT CLP
This quality control standard is outside method or laboratory specified control limits.
EXPLANATION
This flag is applied to matrix spike, analytical QC spike, and surrogate recoveries; and to RPD(relative percent difference) values for duplicate analyses and matrix spike/matrix spike duplicate result.

Y ALL METHODS EXCEPT INORGANIC CLP
This is a general purpose flag to be used after the X flag.

Lockheed
Radian Work Order: 92-12-095

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion); liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million); liquids/water
	mg/kg	milligrams per kilogram (parts per million); soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

QCER # 921228-02
12/30/92

QC EXCEPTION REPORT

REPORT COPY
9212(

Initial Information

Originator: CAROL LOVETT
Date Run: 12/28/92
P. Spec #: 827S-D 12/07/92
Work Order: 9212095

Matrix: soil
Data file:
Client: LOCKHEED B

Instrument: msd#2
Status C
Ras # 21204BJAL

1) PROBLEM IDENTIFICATION

QC Tolerance Exceeded:

Surrogate(s) recovery	X
MS/MSD recovery	
MS/MSD RPD	_
LCS/LCSD recovery	X
LCS/LCSD RPD	X
Hold-Time	
Blank concentration	_
Other(describe)	_

Probable Cause:

Matrix Effect	
Instrument problem	_
Bad Standard	_
Spiking Error	_
Loss of Sample(s)	_
Contamination	_
Loss of Volatiles	_
Other(describe)	X

UNKNOWN

Comments:

) IMPACT ASSESSMENT

Samples and analytes involved(attach list if needed):

Precision concern X Accuracy concern X

Other concern(describe) _

Comments:

) RECOMMENDATION

Data is useable _

Data is not useable _

Data is useable with limitations X

Comments:

CORRECTIVE ACTION TAKEN:

CSC notified	X
Sample reextracted	_
sample reanalyzed	_
LCS/LCSD reanalyzed	X
Instrument recalibrated	_

New standard prepared	_
Data flagged	_
Data verified	_
Calculations checked	X
CAR issued	_
Other(describe)	_

Comments: LCS/LCSD for extraction batch both fail. CSC notified. LCS was rerun but still failed. CSC said to report data and she would check with cient. Analytical batch LCS/LCSD ok.

Distribution: (CSC,TD,LM,Originator,Task Leader)

RADIAN

Radian Work Order 92-12-122

Analytical Report
12/31/92

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

Contents:

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: JALINDSEY

Certified by: [signature]

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-122

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6661	METHOD BLANK	LCS	LCS DUP
Factor:	0.036832	0.333333	0	0
Results in:	ug/g	ug/g	%recvry	%recvry
	01A	02A	03A	04A
Matrix:	solid	solid	solid	solid

	L6661 Result	L6661 Det. Limit	METHOD BLANK Result	METHOD BLANK Det. Limit	LCS Result	LCS Det. Limit	LCS DUP Result	LCS DUP Det. Limit
Acenaphthene	ND	0.37	ND	3.3	98		94	
Acenaphthylene	ND	0.37	ND	3.3	109		102	
Acetophenone	ND	0.37	ND	3.3	NS		NS	
4-Aminobiphenyl	ND	0.37	ND	3.3	NS		NS	
Aniline	ND	0.37	ND	3.3	NS		NS	
Anthracene	ND	0.37	ND	3.3	63		63	
Benzidine	ND	0.37	ND	3.3	109		105	
Benzo(a)anthracene	ND	0.37	ND	3.3	75		64	
Benzo(a)pyrene	ND	0.37	ND	3.3	99		98	
Benzo(b)fluoranthene	ND	0.37	ND	3.3	91		89	
Benzo(g,h,i)perylene	ND	0.37	ND	3.3	80		81	
Benzo(k)fluoranthene	ND	0.37	ND	3.3	114		114	
Benzoic acid	ND	0.37	ND	3.3	126		113	
Benzyl alcohol	ND	1.8	ND	17	72		49	
4-Bromophenyl phenyl ether	ND	0.37	ND	3.3	97		95	
Butylbenzylphthalate	ND	0.37	ND	3.3	98		94	
4-Chloro-3-methylphenol	0.0086 J	0.37	ND	3.3	103		102	
p-Chloroaniline	ND	0.37	ND	3.3	111		107	
bis(2-Chloroethoxy)methane	ND	0.37	ND	3.3	75		86	
bis(2-Chloroethyl)ether	ND	0.37	ND	3.3	94		92	
bis(2-Chloroisopropyl)ether	ND	0.37	ND	3.3	90		89	
1-Chloronaphthalene	ND	0.37	ND	3.3	97		94	
2-Chloronaphthalene	ND	0.37	ND	3.3	NS		NS	
2-Chlorophenol	ND	0.37	ND	3.3	79		74	
4-Chlorophenyl phenyl ether	ND	0.37	ND	3.3	101		98	
Chrysene	ND	0.37	ND	3.3	113		105	
Di-n-octylphthalate	ND	0.37	ND	3.3	99		100	
Dibenz(a,h)anthracene	ND	0.37	ND	3.3	114		109	
Dibenz(a,j)acridine	ND	0.37	ND	3.3	98		97	
Dibenzofuran	ND	0.37	ND	3.3	NS		NS	
	ND	0.37	ND	3.3	105		98	

ND Not detected at specified detection limit
NS Not spiked
J Detected at less than detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-122

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6661		METHOD BLANK		LCS		LCS DUP	
Factor:	0.036832		0.333333		0		0	
Results in:	ug/g		ug/g		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Dibutylphthalate	0.011 J	0.37	ND	3.3	111		106	
1,2-Dichlorobenzene	ND	0.37	ND	3.3	101		98	
1,3-Dichlorobenzene	ND	0.37	ND	3.3	94		91	
1,4-Dichlorobenzene	ND	0.37	ND	3.3	95		93	
3,3'-Dichlorobenzidine	ND	0.37	ND	3.3	117		131	
2,4-Dichlorophenol	ND	0.37	ND	3.3	109		106	
2,6-Dichlorophenol	ND	0.37	ND	3.3	NS		NS	
Diethylphthalate	ND	0.37	ND	3.3	108		101	
p-Dimethylaminoazobenzene	ND	0.37	ND	3.3	NS		NS	
7,12-Dimethylbenz(a)anthracene	ND	0.37	ND	3.3	NS		NS	
Dimethylphenethylamine	ND	4.4	ND	40	NS		NS	
2,4-Dimethylphenol	ND	0.37	ND	3.3	85		86	
Dimethylphthalate	ND	0.37	ND	3.3	106		98	
4,6-Dinitro-2-methylphenol	ND	0.37	ND	3.3	119		112	
2,4-Dinitrophenol	ND	0.74	ND	6.7	128		118	
2,4-Dinitrotoluene	ND	0.37	ND	3.3	104		98	
2,6-Dinitrotoluene	ND	0.37	ND	3.3	128		119	
Diphenylamine	ND	0.37	ND	3.3	NS		NS	
1,2-Diphenylhydrazine	ND	0.37	ND	3.3	NS		NS	
Ethyl methanesulfonate	ND	0.37	ND	3.3	NS		NS	
bis(2-Ethylhexyl)phthalate	0.057 J	0.37	ND	3.3	108		105	
Fluoranthene	ND	0.37	ND	3.3	100		96	
Fluorene	ND	0.37	ND	3.3	88		83	
Hexachlorobenzene	ND	0.37	ND	3.3	103		98	
Hexachlorobutadiene	ND	0.37	ND	3.3	95		94	
Hexachlorocyclopentadiene	ND	0.37	ND	3.3	70		77	
Hexachloroethane	ND	0.37	ND	3.3	100		97	
Indeno(1,2,3-cd)pyrene	ND	0.37	ND	3.3	107		106	
Isophorone	ND	0.37	ND	3.3	78		32	
Methyl methanesulfonate	ND	1.8	ND	17	NS		NS	

J Detected at less than detection limit
NS Not spiked
ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-122

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6661		METHOD BLANK		LCS		LCS DUP	
Factor:	0.036832		0.333333		0		0	
Results in:	ug/g		ug/g		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
3-Methylcholanthrene	ND	0.37	ND	3.3	NS		NS	
2-Methylnaphthalene	ND	0.37	ND	3.3	110		108	
2-Methylphenol(o-cresol)	ND	0.37	ND	3.3	98		96	
4-Methylphenol(p-cresol)	ND	0.37	ND	3.3	93		90	
N-Nitroso-di-n-butylamine	ND	0.37	ND	3.3	NS		NS	
N-Nitrosodimethylamine	ND	0.37	ND	3.3	63		100	
N-Nitrosodiphenylamine	ND	0.37	ND	3.3	105		101	
N-Nitrosodipropylamine	ND	0.37	ND	3.3	94		92	
N-Nitrosopiperidine	ND	0.37	ND	3.3	NS		NS	
Naphthalene	ND	0.37	ND	3.3	92		91	
1-Naphthylamine	ND	0.37	ND	3.3	NS		NS	
2-Naphthylamine	ND	0.37	ND	3.3	NS		NS	
2-Nitroaniline	ND	0.37	ND	3.3	111		107	
3-Nitroaniline	ND	0.74	ND	6.7	100		102	
4-Nitroaniline	ND	0.74	ND	6.7	112		110	
Nitrobenzene	ND	0.37	ND	3.3	100		99	
2-Nitrophenol	ND	0.37	ND	3.3	116		109	
4-Nitrophenol	ND	0.37	ND	3.3	97		92	
Pentachlorobenzene	ND	0.37	ND	3.3	NS		NS	
Pentachloronitrobenzene	ND	0.37	ND	3.3	NS		NS	
Pentachlorophenol	ND	0.37	ND	3.3	83		78	
Phenacetin	ND	0.37	ND	3.3	NS		NS	
Phenanthrene	ND	0.37	ND	3.3	92		88	
Phenol	ND	0.37	ND	3.3	92		92	
2-Picoline	ND	0.37	ND	3.3	NS		NS	
Pronamide	ND	0.37	ND	3.3	NS		NS	
Pyrene	ND	0.37	ND	3.3	95		94	
Pyridine	ND	0.37	ND	3.3	NS		NS	
1,2,4,5-Tetrachlorobenzene	ND	0.37	ND	3.3	NS		NS	
2,3,4,6-Tetrachlorophenol	ND	0.37	ND	3.3	NS		NS	

ND Not detected at specified detection limit NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-122

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6661	METHOD BLANK	LCS	LCS DUP
Factor:	0.036832	0.333333	0	0
Results in:	ug/g	ug/g	%recvry	%recvry
	01A	02A	03A	04A
Matrix:	solid	solid	solid	solid

	L6661 Result	L6661 Det. Limit	METHOD BLANK Result	METHOD BLANK Det. Limit	LCS Result	LCS Det. Limit	LCS DUP Result	LCS DUP Det. Limit
1,2,4-Trichlorobenzene	ND	0.37	ND	3.3	100		97	
2,4,5-Trichlorophenol	ND	0.37	ND	3.3	117		110	
2,4,6-Trichlorophenol	ND	0.37	ND	3.3	95		89	
Surrogate Recovery(%)								
2-Fluorobiphenyl Control Limits: 30 to 115	81		86		91		88	
2-Fluorophenol Control Limits: 25 to 121	68		78		86		82	
Nitrobenzene-d5 Control Limits: 23 to 120	89		98		100		101	
Phenol-d5 Control Limits: 24 to 113	82		85		89		88	
Terphenyl-d14 Control Limits: 18 to 137	97		103		101		100	
2,4,6-Tribromophenol Control Limits: 19 to 122	94		81		96		91	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 92-12-122

Method:SW8270-Semi-Volatiles (1)
List:Matrix Spike List

Sample ID:	L6661 MS	L6661 MSD
Factor:	0	0
Results in:	%recvry	%recvry
	05A	06A
Matrix:	solid	solid

	Result	Det. Limit	Result	Det. Limit
Acenaphthene	81		65	
4-Chloro-3-methylphenol	89		67	
2-Chlorophenol	96		63	
1,4-Dichlorobenzene	91		57	
2,4-Dinitrotoluene	91		61	
N-Nitrosodipropylamine	107		60	
4-Nitrophenol	77		55	
Pentachlorophenol	79		54	
Phenol	92		61	
Pyrene	89		68	
1,2,4-Trichlorobenzene	100		65	
Surrogate Recovery(%)				
2-Fluorobiphenyl	82		61	
Control Limits: 30 to 115				
2-Fluorophenol	100		66	
Control Limits: 25 to 121				
Nitrobenzene-d5	101		78	
Control Limits: 23 to 120				
Phenol-d5	102		69	
Control Limits: 24 to 113				
Terphenyl-d14	100		75	
Control Limits: 18 to 137				
2,4,6-Tribromophenol	96		60	
Control Limits: 19 to 122				

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Lockheed
Radian Work Order: 92-12-122

Analytical Data Summary

Method/Analyte	Sample Identifications			
	L6661			
	01			
Matrix	solid			
	Result	Det. Limit	Result	Det. Limit
Percent moisture, SW846				
Percent moisture	9.5 %			

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN CORPORATION

Sample History

Lockheed
Radian Work Order: 92-12-122

Sample Identifications and Dates

Sample ID	L6661	METHOD BLANK	LCS	LCS DUP	L6661 MS	L6661 MSD
Date Sampled	12/15/92				12/15/92	12/15/92
Date Received	12/16/92	12/16/92	12/16/92	12/16/92	12/16/92	12/16/92
Matrix	solid	solid	solid	solid	solid	solid
	01	02	03	04	05	06
SW8270-Semi-Volatiles						
Prepared	12/20/92	12/20/92	12/20/92	12/20/92		
Analyzed	12/29/92	12/29/92	12/29/92	12/29/92		
Analyst	MCL	MCL	MCL	MCL		
File ID	B9768	B9759	B9757	B9758		
Blank ID	B9759	B9759	B9759	B9759		
Instrument	MSD2	MSD2	MSD2	MSD2		
Report as	dry weight	dry weight	dry weight	dry weight		
SW8270-Semi-Volatiles						
Prepared					12/20/92	12/20/92
Analyzed					12/29/92	12/29/92
Analyst					MCL	MCL
File ID					B9769	B9770
Blank ID					B9759	B9759
Instrument					MSD2	MSD2
Report as					dry weight	dry weight
Percent moisture, SW846						
Prepared	12/18/92					
Analyzed	12/21/92					
Analyst	DB					
File ID						
Blank ID						
Instrument						
Report as	received					

RADIAN
CORPORATION

Appendix A

Comments, Notes and Definitions

Lockheed
Radian Work Order: 92-12-122

J ORGANIC METHODS
Indicates an estimated value for GC/MS data.
EXPLANATION
This flag is used either when estimating a concentration for tentatively identified compounds where a response factor of 1 is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit.

ND ALL METHODS EXCEPT CLP
This flag is used to denote analytes which are not detected at or above the specified detection limit.
EXPLANATION
The value to the right of the < symbol is the method specified detection limit for the analyte.

NS ALL METHODS EXCEPT CLP
This analyte or surrogate was not spiked into the sample for this analysis.

RADIAN CORPORATION

Lockheed
Radian Work Order: 92-12-122

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/ digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion); liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million); liquids/water
	mg/kg	milligrams per kilogram (parts per million); soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

RADIAN

Radian Work Order 93-01-022

Analytical Report
01/11/93

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

Contents:

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: JALINDSEY

Certified by: Michael Steinkert

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-022

Method:ICP analysis by SW6010 (1)
List:ICP by SW6010

Sample ID:	L6673		METHOD BLANK		LCS		LCS DUP	
Factor:	76.67300		100		0		0	
Results in:	mg/kg		mg/kg		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Aluminum	7200	15	ND	20	106		108	
Antimony	9.6 @	7.7	ND	10	100		101	
Arsenic	ND	23	ND	30	84		87	
Barium	65	0.77	ND	1.0	88		89	
Beryllium	0.28 @	0.15	ND	0.20	91		92	
Boron	ND	46	ND	60	96		95	
Cadmium	ND	0.38	ND	0.50	84		86	
Calcium	1500	77	ND	100	95		97	
Chromium	3.0 @	0.77	ND	1.0	93		94	
Cobalt	3.1 @	0.77	ND	1.0	87		88	
Copper	2.1 @	1.5	ND	2.0	92		99	
Iron	11000	3.8	8.6 @	5.0	102		102	
Lead	8.8 @	3.8	ND	5.0	90		100	
Magnesium	3000	77	ND	100	97		99	
Manganese	160	0.77	ND	1.0	85		86	
Molybdenum	ND	3.8	ND	5.0	75		82	
Nickel	ND	1.5	ND	2.0	99		98	
Potassium	4200	230	ND	300	95		99	
Selenium	ND	23	ND	30	108		101	
Silicon	160 @	77	ND	100	80		87	
Silver	ND	0.77	ND	1.0	84		86	
Sodium	ND	77	ND	100	135		137	
Strontium	11	0.23	ND	0.30	94		94	
Thallium	ND	7.7	ND	10	98		90	
Vanadium	19	1.5	ND	2.0	101		104	
Zinc	39	1.5	2.5 @	2.0	96		97	

@ Est. result less than 5 times detection limit

ND :Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN

Sample History

Lockheed
Radian Work Order: 93-01-022

Sample Identifications and Dates

Sample ID	L6673	METHOD BLANK	LCS	LCS DUP
Date Sampled	01/04/93			
Date Received	01/06/93	01/06/93	01/06/93	01/06/93
Matrix	solid	solid	solid	solid
	01	02	03	04
ICP analysis by SW6010				
Prepared	01/07/93	01/07/93	01/07/93	01/07/93
Analyzed	01/08/93	01/08/93	01/08/93	01/08/93
Analyst	DES	DES	DES	DES
File ID	JA610108-82	JA610108-77	JA610108-80	JA610108-81
Blank ID	JA610108-77	JA610108-77	JA610108-77	JA610108-77
Instrument	JA61	JA61	JA61	JA61
Report as	dry weight	dry weight	dry weight	dry weight

RADIAN

Appendix A

Comments, Notes and Definitions

ERA 212 is the solid LCS analyzed for all metals tests, except antimony, arsenic, and chromium. Antimony and arsenic are near their method detection limits and chromium is historically above its acceptance limits. Antimony, arsenic, and chromium are reported from the liquid LCS/LCSD.

RADIAN

Notes and Definitions

Lockheed
Radian Work Order: 93-01-022

a ALL METHODS EXCEPT CLP

The results which are less than five times the method specified detection limit.

EXPLANATION

Uncertainty of the analysis will increase as the method detection limit is approached. These results should be considered approximate.

ND ALL METHODS EXCEPT CLP

This flag is used to denote analytes which are not detected at or above the specified detection limit.

EXPLANATION

The value to the right of the < symbol is the method specified detection limit for the analyte.

Lockheed
Radian Work Order: 93-01-022

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/ digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion); liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million); liquids/water
	mg/kg	milligrams per kilogram (parts per million); soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

QCER # 930108-04
01/11/93

QC EXCEPTION REPORT

Initial Information

Originator: WILLIAMS JENNIFER
Date Run: 01/08/93
P. Spec #: JAXS-D 07/02/92
Work Order: 9301022

Matrix: SOLID
Data file: JA6192010815000
Client: LOCKHEED_B

Instrument: JA61
Status C
Ras # 21204BJAL

(1) PROBLEM IDENTIFICATION

QC Tolerance Exceeded:
- Surrogate(s) recovery _
- MS/MSD recovery _
- MS/MSD RPD _
- LCS/LCSD recovery _
- LCS/LCSD RPD _
- Hold-Time _
- Blank concentration X
- Other(describe) _

Probable Cause:
- Matrix Effect _
- Instrument problem _
- Bad Standard _
- Spiking Error _
- Loss of Sample(s) _
- Contamination X
- Loss of Volatiles _
- Other(describe) _

Comments: Iron Blank Concentration - 8.6 mg/kg
Zinc Blank Concentration - 2.5 mg/kg

The sample concentrations of iron and zinc are greater than ten times the blank concentration.

(2) IMPACT ASSESSMENT

Samples and analytes involved(attach list if needed):
Precision concern _ Accuracy concern _
Other concern(describe) X CONTAMINATION
Comments:

(3) RECOMMENDATION

Data is useable X Data is useable with limitations _
Data is not useable _
Comments:

(4) CORRECTIVE ACTION TAKEN:

- CSC notified X
- Sample reextracted _
- sample reanalyzed _
- LCS/LCSD reanalyzed _
- Instrument recalibrated _

- New standard prepared _
- Data flagged _
- Data verified X
- Calculations checked _
- CAR issued _
- Other(describe) _

Comments:

Distribution: (CSC,TD,LM,Originator,Task Leader)

RADIAN

Radian Work Order 93-01-024

Analytical Report
01/15/93

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

Contents:

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: JALINDSEY

Certified by: [signature]

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-024

Method:SW8240-Volatile Organics (1)
List:8240 Table 1

Sample ID:	L6674		METHOD BLANK		LCS		LCS DUP	
Factor:	1.040019		1		0		0	
Results in:	ug/kg		ug/kg		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acetone	ND	100	ND	100	145		123	
Acrolein	ND	78	ND	75	166		106	
Acrylonitrile	ND	52	ND	50	179		128	
Benzene	ND	5.2	ND	5.0	93		102	
Bromodichloromethane	ND	5.2	ND	5.0	118		105	
Bromomethane	ND	10	ND	10	42		40	
Carbon disulfide	ND	5.2	ND	5.0	83		100	
Carbon tetrachloride	ND	5.2	ND	5.0	122		103	
Chlorobenzene	ND	5.2	ND	5.0	98		89	
Chloroethane	ND	10	ND	10	53		54	
2-Chloroethyl vinyl ether	ND	10	ND	10	206		209	
Chloroform	ND	5.2	ND	5.0	122		106	
Chloromethane	ND	10	ND	10	78		72	
Dibromochloromethane	ND	5.2	ND	5.0	104		98	
Dibromomethane	ND	5.2	ND	5.0	NS		NS	
trans-1,4-Dichloro-2-butene	ND	10	ND	10	NS		NS	
Dichlorodifluoromethane	ND	21	ND	20	86		53	
1,1-Dichloroethane	ND	5.2	ND	5.0	118		102	
1,2-Dichloroethane	ND	5.2	ND	5.0	122		103	
1,1-Dichloroethene	ND	5.2	ND	5.0	107		85	
trans-1,2-Dichloroethene	ND	5.2	ND	5.0	121		102	
1,2-Dichloropropane	ND	5.2	ND	5.0	102		95	
cis-1,3-Dichloropropene	ND	5.2	ND	5.0	90		91	
trans-1,3-Dichloropropene	ND	5.2	ND	5.0	116		104	
Ethyl benzene	ND	5.2	ND	5.0	104		97	
Ethyl methacrylate	ND	16	ND	15	NS		NS	
2-Hexanone	ND	52	ND	50	126		116	
Iodomethane	ND	5.2	ND	5.0	NS		NS	
Methyl ethyl ketone	ND	100	ND	100	156		120	
4-Methyl-2-pentanone(MIBK)	ND	52	ND	50	82		81	

ND Not detected at specified detection limit

NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-024

Method:SW8240-Volatile Organics (1)
List:8240 Table 1

Sample ID:	L6674		METHOD BLANK		LCS		LCS DUP	
Factor:	1.040019		1		0		0	
Results in:	ug/kg		ug/kg		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Methylene chloride	ND	5.2	ND	5.0	137		101	
Styrene	ND	5.2	ND	5.0	140		135	
1,1,2,2-Tetrachloroethane	ND	5.2	ND	5.0	103		96	
Tetrachloroethene	ND	5.2	ND	5.0	101		99	
Toluene	ND	5.2	ND	5.0	88		94	
Tribromomethane(Bromoform)	ND	5.2	ND	5.0	108		102	
1,1,1-Trichloroethane	ND	5.2	ND	5.0	124		106	
1,1,2-Trichloroethane	ND	5.2	ND	5.0	110		105	
Trichloroethene	ND	5.2	ND	5.0	106		97	
Trichlorofluoromethane	ND	10	ND	10	85		74	
1,2,3-Trichloropropane	ND	5.2	ND	5.0	NS		NS	
Vinyl acetate	ND	5.2	ND	5.0	125		88	
Vinyl chloride	ND	10	ND	10	98		83	
Xylenes	ND	5.2	ND	5.0	103		96	
Surrogate Recovery(%)								
1,4-Bromofluorobenzene	101		105		103		105	
Control Limits: 74 to 121								
1,2-Dichloroethane-d4	101		108		108		98	
Control Limits: 70 to 121								
Toluene-d8	100		91		86		98	
Control Limits: 81 to 117								

ND Not detected at specified detection limit

NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.

RADIAN

Sample History

Lockheed
Radian Work Order: 93-01-024

Sample Identifications and Dates

Sample ID	L6674	METHOD BLANK	LCS	LCS DUP
Date Sampled	01/04/93			
Date Received	01/06/93	01/06/93	01/06/93	01/06/93
Matrix	solid	solid	solid	solid
	01	02	03	04

SW8240-Volatile Organics						
Prepared						
Analyzed	01/06/93	01/06/93	01/06/93	01/06/93		
Analyst	JHC	JHC	JHC	JHC		
File ID	A35045	A35035	A35036	A35037		
Blank ID	A35035	A35035	A35035	A35035		
Instrument	4503	4503	4503	4503		
Report as	dry weight	dry weight	dry weight	dry weight		

Appendix A

Comments, Notes and Definitions

Lockheed
Radian Work Order: 93-01-024

ND ALL METHODS EXCEPT CLP
This flag is used to denote analytes which are not detected at or above the specified detection limit.
EXPLANATION
The value to the right of the < symbol is the method specified detection limit for the analyte.

NS ALL METHODS EXCEPT CLP
This analyte or surrogate was not spiked into the sample for this analysis.

RADIAN

Notes and Definitions

Lockheed
Radian Work Order: 93-01-024

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/ digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion);liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million);liquids/water
	mg/kg	milligrams per kilogram (parts per million);soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

RADIAN CORPORATION

Chain-of-Custody Forms

CHAIN-OF-CUSTODY RECORD

USE A BALLPOINT PEN AND PRESS FIRMLY
THE INSTRUCTIONS FOR FILLING OUT THIS FORM ARE ON THE BACK

RADIAN CORPORATION
7 CORPORATE PARK, SUITE 240 IRVINE, CA 92714
(714) 261-8611, FAX (714) 261-6505

TASK OR SUB TASK NAME (one per form): Burn Pit Removal Action
CONTRACT NAME: Lockheed Burn Pit
CHARGE NUMBER: 290-062-09-05
RADIAN CONTACT: Vicki Fey

LABORATORY NAME & ADDRESS: Radian Corporation c/o Federal Express 2106 Denton Dr. Austin TX 78758
CONTACT: Jane Lindsay PHONE: 512 244 0855
SHIPPING AIRBILL:

SAMPLE NUMBER	COLLECTION DATE	COLLECTION TIME	SAMPLER'S INITIALS	NUMBER OF UNITS	UNIT QUANTITY	PRESERVATIVE	MATRIX CODE	TYPE CODE	TYPE OF ANALYSIS	QC
OP-3	12/11/92	8:30AM	VAF	1	1	4°C	So	Ge	EPA Method 8240	
OP-4	↓	↓	↓	1	1	↓	↓	↓	" " 8270	
OP-5	↓	↓	↓	1	1	↓	↓	↓	" " 6010	
X-1	↓	↓	↓	1	1	↓	↓	↓	" " 8240	
X-2	↓	↓	↓	1	1	↓	↓	↓	" " 8270	
X-3	↓	↓	↓	1	1	↓	↓	↓	" " 6010	

RELEASED BY	DATE	TIME
	/ /	:

COMMENTS:

RECEIVED BY	DATE	TIME	RELINQUISHED BY	DATE	TIME
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:

DISPOSAL CONFIRMED BY	DATE	TIME	CHAIN-OF-CUSTODY RETURNED BY	DATE	TIME
	/ /	:		/ /	:

WHITE - DATA MANAGEMENT / GOLDENROD- SAMPLE CONTROL / PINK - CUSTODY RECORD / YELLOW - LABORATORY / BLUE - LABORATORY RECEIPT

DO NOT WRITE IN THIS AREA

THE INFORMATION IN THIS SECTION WILL NOT BE AVAILABLE TO THE LABORATORY

LOCATION	DEPTH	QC CODE
Pit OP 10' BLS	10'	
	↓	
	↓	
Pit X 6.5' BLS	6.5	
	↓	
	↓	

SAMPLING COMMENTS:

RADIAN CORPORATION 2250 E. Imperial Hwy. Ste. 140 El Segundo, CA 90245 (213) 640-0045

USE A BALLPOINT PEN (PRESS FIRMLY) SEE BACK OF FORM FOR INSTRUCTIONS

03198

TASK OR SUBTASK (one per form): Lockheed Beaumont Soil Remediation

CONTRACT NAME: Lockheed Beaumont

CHARGE NUMBER: 290-062-0

LABORATORY NAME & ADDRESS: RADIAN SAMPLE CONTROL Summit Park office 14046 Summit Dr. Bldg B Austin, Tx.

1 SAMPLE NUMBER	2 COLLECTION DATE	TIME	3	4	5	6	7	8	9	10	CODES		12 TYPE OF ANALYSIS	13
L6661	12/15/92	1515	\	TT/CLG	1	—	—	—	—	SO	GR	8240 6010	
L6662	12/15/92	1515	\	TT/CLG	1	—	—	—	—	SO	GR	8270	

DO NOT WRITE IN THIS AREA

FOR AIR OR VAPOR SAMPLES ONLY

THE INFORMATION IN THIS SECTION WILL NOT BE AVAILABLE TO THE LABORATORY

19 LOCATION	20 DEPTH	21 HEIGHT	22 LOC CODE
"H" Pit 9'	Ø	\	\
"H" Pit 9'	Ø	\	\

15 RELEASED BY:	DATE	TIME
[signature]	12/15/92	15:30

COMMENTS:

16 RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:

17 DISPOSAL CONFIRMED BY:	DATE	TIME	18 CHAIN-OF-CUSTODY RETURNED BY:	DATE	TIME
	/ /	:		/ /	:

SAMPLING COMMENTS:

White - Data Management / Goldenrod - Sample Control / Pink - Custody Record / Yellow - Laboratory / Blue - Laboratory Receipt

RADIAN CORPORATION 2250 E. Imperial Hwy, Ste. 140, El Segundo, CA 90245, (213) 640-0045

USE A BALLPOINT PEN (PRESS FIRMLY) SEE BACK OF FORM FOR INSTRUCTIONS

03100

TASK OR SUBTASK (one per form): LOCKHEED BEAUMONT SOIL REMEDIATION

CONTRACT NAME: LOCKHEED

CHARGE NUMBER: 290-062-09-05

LABORATORY NAME & ADDRESS: RADIAN SUMMIT PARK ATTN. JANE LINDSEY

1 SAMPLE NUMBER	2 COLLECTION DATE	TIME	3 ELAPSED TIME	4 SAMPLERS INITIALS	5 NO. OF UNITS	6 INITIAL PRESSURE	7 FINAL PRESSURE OR VOLUME	8	9 CONTAINER NUMBER	10 MATRIX	11 TYPE	12 TYPE OF ANALYSIS	13
L6673	1/4/93	17:00	–	T.T.	1	–	–	–	–	SO	GR	8270/6010	*
L6674	1/4/93	17:00	+	T.T.	1	–	–	–	–	SD	GR	8240	
	/ /	:											
	/ /	:											
	/ /	:											
	/ /	:											
	/ /	:											
	/ /	:											

15 RELEASED BY:	DATE	TIME
[signature]	1/5/93	15:00

COMMENTS: * 6010 Quick Turn Around (QTA)

16 RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:
	/ /	:		/ /	:

17 DISPOSAL CONFIRMED BY:	DATE	TIME	18 CHAIN-OF-CUSTODY RETURNED BY:	DATE	TIME
	/ /	:		/ /	:

DO NOT WRITE IN THIS AREA

FOR AIR VAPOR SAMPLES ONLY

THE INFORMATION IN THIS SECTION WILL NOT BE AVAILABLE TO THE LABORATORY

19 LOCATION	20 DEPTH	21 HEIGHT	22
Pit "A"	6'		
Pit "A"	6'		

SAMPLING COMMENTS:

White - Data Management / Goldenrod - Sample Control / Pink - Custody Record / Yellow - Laboratory / Blue - Laboratory Receipt

RADIAN

Radian Work Order 93-01-023

Analytical Report
01/21/93

Lockheed

Radian
Sacramento
CA

Marie Yates

Customer Work Identification Burn Pit Remediation
Purchase Order Number 290-062-09-05

Contents:

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: JALINDSEY

Certified by: Conrad [illegible]

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-023

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6673		METHOD BLANK		LCS		LCS DUP	
Factor:	0.035014		0.033333		0		0	
Results in:	ug/g		ug/g		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	0.35	ND	0.33	88		93	
Acenaphthylene	ND	0.35	ND	0.33	96		104	
Acetophenone	ND	0.35	ND	0.33	NS		NS	
4-Aminobiphenyl	ND	0.35	ND	0.33	NS		NS	
Aniline	ND	0.35	ND	0.33	60		66	
Anthracene	ND	0.35	ND	0.33	91		100	
Benzidine	ND	0.35	ND	0.33	0		0	
Benzo(a)anthracene	ND	0.35	ND	0.33	95		104	
Benzo(a)pyrene	ND	0.35	ND	0.33	79		92	
Benzo(b)fluoranthene	ND	0.35	ND	0.33	93		100	
Benzo(g,h,i)perylene	ND	0.35	0.019 J	0.33	83		96	
Benzo(k)fluoranthene	ND	0.35	ND	0.33	77		96	
Benzoic acid	ND	1.8	ND	1.7	80		81	
Benzyl alcohol	ND	0.35	ND	0.33	102		111	
4-Bromophenyl phenyl ether	ND	0.35	ND	0.33	92		101	
Butylbenzylphthalate	ND	0.35	ND	0.33	90		106	
4-Chloro-3-methylphenol	ND	0.35	ND	0.33	95		101	
p-Chloroaniline	ND	0.35	ND	0.33	92		95	
bis(2-Chloroethoxy)methane	ND	0.35	ND	0.33	94		101	
bis(2-Chloroethyl)ether	ND	0.35	ND	0.33	92		98	
bis(2-Chloroisopropyl)ether	ND	0.35	ND	0.33	66		77	
1-Chloronaphthalene	ND	0.35	ND	0.33	NS		NS	
2-Chloronaphthalene	ND	0.35	ND	0.33	85		93	
2-Chlorophenol	ND	0.35	ND	0.33	92		101	
4-Chlorophenyl phenyl ether	ND	0.35	ND	0.33	108		114	
Chrysene	ND	0.35	ND	0.33	90		104	
Di-n-octylphthalate	ND	0.35	ND	0.33	93		108	
Dibenz(a,h)anthracene	ND	0.35	ND	0.33	81		101	
Dibenz(a,j)acridine	ND	0.35	ND	0.33	NS		NS	
Dibenzofuran	ND	0.35	ND	0.33	96		104	

ND Not detected at specified detection limit
NS Not spiked

J Detected at less than detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-023

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6673		METHOD BLANK		LCS		LCS DUP	
Factor:	0.035014		0.033333		0		0	
Results in:	ug/g		ug/g		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Dibutylphthalate	ND	0.35	ND	0.33	91		103	
1,2-Dichlorobenzene	ND	0.35	ND	0.33	101		104	
1,3-Dichlorobenzene	ND	0.35	ND	0.33	90		95	
1,4-Dichlorobenzene	ND	0.35	ND	0.33	85		101	
3,3'-Dichlorobenzidine	ND	0.35	ND	0.33	106		127	
2,4-Dichlorophenol	ND	0.35	ND	0.33	93		98	
2,6-Dichlorophenol	ND	0.35	ND	0.33	NS		NS	
Diethylphthalate	ND	0.35	ND	0.33	105		114	
p-Dimethylaminoazobenzene	ND	0.35	ND	0.33	NS		NS	
7,12-Dimethylbenz(a)anthracene	ND	0.35	ND	0.33	NS		NS	
Dimethylphenethylamine	ND	4.2	ND	4.0	NS		NS	
2,4-Dimethylphenol	ND	0.35	ND	0.33	63		72	
Dimethylphthalate	ND	0.35	ND	0.33	99		104	
4,6-Dinitro-2-methylphenol	ND	0.35	ND	0.33	95		108	
2,4-Dinitrophenol	ND	0.70	ND	0.67	129		142	
2,4-Dinitrotoluene	ND	0.35	ND	0.33	96		105	
2,6-Dinitrotoluene	ND	0.35	ND	0.33	108		114	
Diphenylamine	ND	0.35	ND	0.33	NS		NS	
1,2-Diphenylhydrazine	ND	0.35	ND	0.33	NS		NS	
Ethyl methanesulfonate	ND	0.35	ND	0.33	NS		NS	
bis(2-Ethylhexyl)phthalate	ND	0.35	ND	0.33	85		99	
Fluoranthene	ND	0.35	ND	0.33	88		100	
Fluorene	ND	0.35	ND	0.33	78		87	
Hexachlorobenzene	ND	0.35	ND	0.33	97		115	
Hexachlorobutadiene	ND	0.35	ND	0.33	92		101	
Hexachlorocyclopentadiene	ND	0.35	ND	0.33	18		19	
Hexachloroethane	ND	0.35	ND	0.33	100		111	
Indeno(1,2,3-cd)pyrene	ND	0.35	ND	0.33	85		102	
Isophorone	ND	0.35	ND	0.33	73		77	
Methyl methanesulfonate	ND	1.8	ND	1.7	NS		NS	

ND Not detected at specified detection limit NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-023

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6673		METHOD BLANK		LCS		LCS DUP	
Factor:	0.035014		0.033333		0		0	
Results in:	ug/g		ug/g		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
3-Methylcholanthrene	ND	0.35	ND	0.33	NS		NS	
2-Methylnaphthalene	ND	0.35	ND	0.33	103		111	
2-Methylphenol(o-cresol)	ND	0.35	ND	0.33	85		90	
4-Methylphenol(p-cresol)	ND	0.35	ND	0.33	86		87	
N-Nitroso-di-n-butylamine	ND	0.35	ND	0.33	NS		NS	
N-Nitrosodimethylamine	ND	0.35	ND	0.33	84		94	
N-Nitrosodiphenylamine	ND	0.35	ND	0.33	83		93	
N-Nitrosodipropylamine	ND	0.35	ND	0.33	101		101	
N-Nitrosopiperidine	ND	0.35	ND	0.33	NS		NS	
Naphthalene	ND	0.35	ND	0.33	89		98	
1-Naphthylamine	ND	0.35	ND	0.33	NS		NS	
2-Naphthylamine	ND	0.35	ND	0.33	NS		NS	
2-Nitroaniline	ND	0.35	ND	0.33	100		109	
3-Nitroaniline	ND	0.70	ND	0.67	98		103	
4-Nitroaniline	ND	0.70	ND	0.67	100		106	
Nitrobenzene	ND	0.35	ND	0.33	95		101	
2-Nitrophenol	ND	0.35	ND	0.33	96		102	
4-Nitrophenol	ND	0.35	ND	0.33	97		107	
Pentachlorobenzene	ND	0.35	ND	0.33	NS		NS	
Pentachloronitrobenzene	ND	0.35	ND	0.33	NS		NS	
Pentachlorophenol	ND	0.35	ND	0.33	82		86	
Phenacetin	ND	0.35	ND	0.33	NS		NS	
Phenanthrene	ND	0.35	ND	0.33	79		89	
Phenol	ND	0.35	ND	0.33	90		100	
2-Picoline	ND	0.35	ND	0.33	NS		NS	
Pronamide	ND	0.35	ND	0.33	NS		NS	
Pyrene	ND	0.35	ND	0.33	88		102	
Pyridine	ND	0.35	ND	0.33	NS		NS	
1,2,4,5-Tetrachlorobenzene	ND	0.35	ND	0.33	NS		NS	
2,3,4,6-Tetrachlorophenol	ND	0.35	ND	0.33	NS		NS	

ND Not detected at specified detection limit   NS Not spiked

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-023

Method:SW8270-Semi-Volatiles (1)
List:Table 1 Analytes

Sample ID:	L6673		METHOD BLANK		LCS		LCS DUP	
Factor:	0.035014		0.033333		0		0	
Results in:	ug/g		ug/g		%recvry		%recvry	
	01A		02A		03A		04A	
Matrix:	solid		solid		solid		solid	
	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
1,2,4-Trichlorobenzene	ND	0.35	ND	0.33	90		102	
2,4,5-Trichlorophenol	ND	0.35	ND	0.33	94		105	
2,4,6-Trichlorophenol	ND	0.35	ND	0.33	78		88	
Surrogate Recovery(%)								
2-Fluorobiphenyl Control Limits: 30 to 115	95		99		97		105	
2-Fluorophenol Control Limits: 25 to 121	79		79		81		85	
Nitrobenzene-d5 Control Limits: 23 to 120	90		98		91		96	
Phenol-d5 Control Limits: 24 to 113	91		96		88		96	
Terphenyl-d14 Control Limits: 18 to 137	95		109		98		109	
2,4,6-Tribromophenol Control Limits: 19 to 122	93		96		101		103	

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Analytical Data Summary

Lockheed
Radian Work Order: 93-01-023

Method:SW8270-Semi-Volatiles (1)
List:Matrix Spike List

Sample ID:	L6673 MS		L6673 MSD	
Factor:	0		0	
Results in:	%recvry		%recvry	
	05A		06A	
Matrix:	solid		solid	
	Result	Det. Limit	Result	Det. Limit
Acenaphthene	84		81	
4-Chloro-3-methylphenol	82		82	
2-Chlorophenol	88		86	
1,4-Dichlorobenzene	86		80	
2,4-Dinitrotoluene	89		84	
N-Nitrosodipropylamine	85		79	
4-Nitrophenol	86		78	
Pentachlorophenol	70		69	
Phenol	87		84	
Pyrene	90		84	
1,2,4-Trichlorobenzene	90		88	
Surrogate Recovery(%)				
2-Fluorobiphenyl	100		98	
Control Limits: 30 to 115				
2-Fluorophenol	91		83	
Control Limits: 25 to 121				
Nitrobenzene-d5	92		88	
Control Limits: 23 to 120				
Phenol-d5	98		92	
Control Limits: 24 to 113				
Terphenyl-d14	103		98	
Control Limits: 18 to 137				
2,4,6-Tribromophenol	102		97	
Control Limits: 19 to 122				

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

RADIAN

Lockheed
Radian Work Order: 93-01-023

Analytical Data Summary

Method/Analyte	Sample Identifications			
	L6673			
	01			
Matrix	SOLID			
	Result	Det. Limit	Result	Det. Limit
Percent moisture, SW846				
Percent moisture	4.8 %			

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

RADIAN

Sample History

Lockheed
Radian Work Order: 93-01-023

Sample Identifications and Dates

Sample ID	L6673	METHOD BLANK	LCS	LCS DUP	L6673 MS	L6673 MSD
Date Sampled	01/04/93				01/04/93	01/04/93
Date Received	01/06/93	01/06/93	01/06/93	01/06/93	01/06/93	01/06/93
Matrix	SOLID	solid	solid	solid	solid	solid
	01	02	03	04	05	06
SW8270-Semi-Volatiles						
Prepared	01/11/93	01/11/93	01/11/93	01/11/93		
Analyzed	01/13/93	01/13/93	01/13/93	01/13/93		
Analyst	MCK	MCK	MCK	MCK		
File ID	C8822	C8821	C8819	C8820		
Blank ID	C8821	C8821	C8821	C8821		
Instrument	MSD1	MSD1	MSD1	MSD1		
Report as	dry weight	dry weight	dry weight	dry weight		
SW8270-Semi-Volatiles						
Prepared					01/11/93	01/11/93
Analyzed					01/13/93	01/13/93
Analyst					MCK	MCK
File ID					C8823	C8824
Blank ID					C8821	C8821
Instrument					MSD1	MSD1
Report as					dry weight	dry weight
Percent moisture, SW846						
Prepared	01/10/93					
Analyzed	01/11/93					
Analyst	GAS					
File ID						
Blank ID						
Instrument						
Report as	received					

RADIAN

Appendix A

Comments, Notes and Definitions

RADIAN

Lockheed
Radian Work Order: 93-01-023

J ORGANIC METHODS

Indicates an estimated value for GC/MS data.

EXPLANATION

This flag is used either when estimating a concentration for tentatively identified compounds where a response factor of 1 is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit.

ND ALL METHODS EXCEPT CLP

This flag is used to denote analytes which are not detected at or above the specified detection limit.

EXPLANATION

The value to the right of the < symbol is the method specified detection limit for the analyte.

NS ALL METHODS EXCEPT CLP

This analyte or surrogate was not spiked into the sample for this analysis.

Lockheed
Radian Work Order: 93-01-023

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion);liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million);liquids/water
	mg/kg	milligrams per kilogram (parts per million);soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

RADIAN CORPORATION

APPENDIX B

CONVERSE CONSULTANTS
FINAL GEOTECHNICAL REPORT

Converse Consultants
Inland Empire

Revised Results of Field Density Test

Lockheed Burn Pit Removal Action
Beaumont, California

Converse Consultants
Inland Empire

Consulting Engineers
and Geologists

10391 Corporate Drive
Redlands, CA 92374

Telephone 714 / 796-0544
FAX 714 796-7675

REVISED RESULTS OF FIELD DENSITY TEST

Lockheed Burn Pit Removal Action
Beaumont, California

PREPARED FOR:

Radian Corporation
7 Corporate Park, Suite 240
Irvine, CA 92714

CCIE Project No. 92-81-542-01

February 12, 1993

Converse Consultants
Inland Empire

Consulting Engineers
and Geologists

10391 Corporate Drive
Redlands, CA 92374

Telephone 714 / 796-0544
FAX 714 796-7675

February 12, 1993

Mr. Will Manker
Radian Corporation
7 Corporate Park, Suite 240
Irvine, CA 92714

Subject: **REVISED RESULTS OF FIELD DENSITY TESTS**
Lockheed Burn Pit Removal Action
Beaumont, California
CCIE Project No. 92-81-542-01

Dear Mr. Manker:

We have prepared this revised report presenting results of field density tests that were performed on the subject site. A total of 19 in-place density tests were performed utilizing the Sand Cone (ASTM Standard D1556-82) and Nuclear Gauge (ASTM Standard D-2922-81) methods. Testing services were provided on an on-call basis as directed by your field representative.

Test results indicate that soils have been compacted to meet minimum project specifications of 90 percent compaction of the maximum dry density. In accordance with (ASTM Standard D1557-81) Moisture-Density Relations of Soils and Soil-Aggregate Mixtures.

We appreciate this opportunity to be of continued service. Should you have any questions, or if we may be of further assistance, do no hesitate to contact the undersigned or Mr. Eric T. Knapp at (909) 796-0544.

Respectfully submitted,

CONVERSE CONSULTANTS INLAND EMPIRE

Steven C. Helfrich 12/97

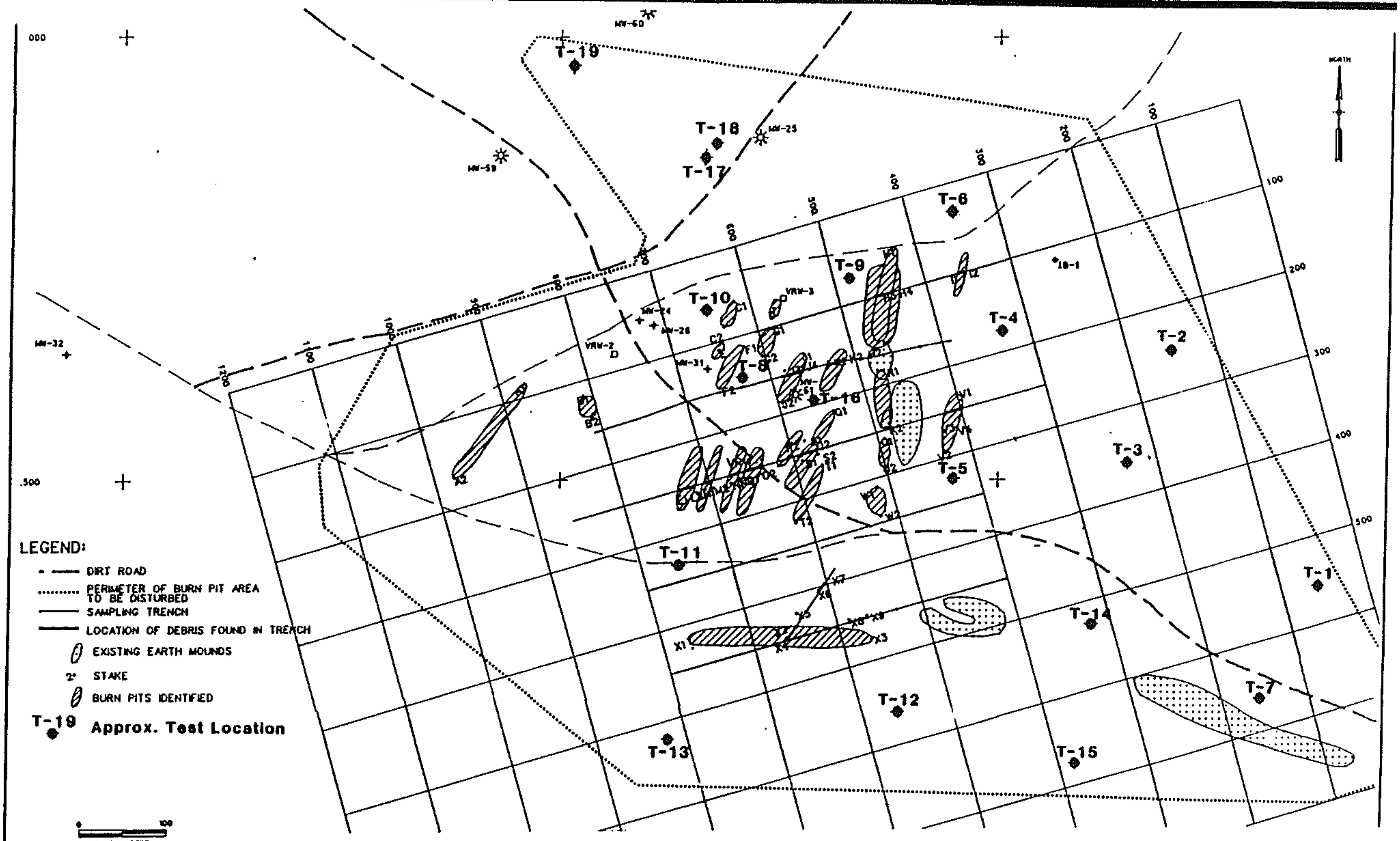
Steven C. Helfrich, GE 389
Principal Engineer

Encl: Table I - Summary of Field Density Tests
Table II - Summary of Laboratory Moisture Density Relationship Tests
Figure 1 - Test Location Map

ETK/SCH/lbn

TABLE I FIELD DENSITY TESTS								
TEST NO.	TEST DATE	TEST LOCATION	APPROX TEST ELEV. (ft)	APPROX FILL DEPTH	DRY DENS.	% MOIST.	SOIL TYPE	% COMP.
01	12/4/92	Southeast	SG	2'	116.4	7.9	1	98
02		Northeast	SG	2'	118.6	7.9	1	99+
03		Southeast	SG	2'	116.1	11.6	1	98
04		Northeast	SG	2'	114.8	13.9	1	97
05		Middle	SG	2'	114.4	13.8	1	97
06		Northeast corner	SG	2'	115.3	10.5	1	98
07	1/20/93	Southeast corner	NA	SG	125.5	12.3	2	99+
08		Well 15	NA	6.0	118.9	12.3	2	99
09		Well 16	NA	6.0	118.2	13.6	2	99
10		Northwest middle	NA	SG	120.0	12.3	2	99+
11		Middle	NA	SG	116.5	13.6	2	97
12		South	NA	SG	125.0	15.6	2	99+
13		Southwest	NA	SG	123.5	14.9	2	99+
14		Southeast	NA	SG	115.5	16.3	2	97
15		Southeast	NA	SG	128.5	11.7	2	99+
16		Well MW 61A	NA	4.0	117.3	13.6	2	99
17	2/4/93	West end EW10	N/A		121.6	7.6	2	99+
18		West end EW10	N/A		128.6	12.8	2	99+
19		West end EW8	N/A		122.5	13.2	2	99+

TABLE II MOISTURE-DENSITY RELATIONSHIP TEST SUMMARY			
SOIL TYPE	SOIL DESCRIPTION	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (percent)
1	Silty Sand (SM); medium to coarse grained, with mica	118.0	12.0
2	Silty Sand (SM); with mica	119.0	12.0



TEST LOCATION MAP

LOCKHEED BURN PIT
Beaumont, California
for: Radian Corporation

Project No.
92-81-542-01

Figure No.

Converse Consultants Inland Empire

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APPENDIX C

Rule 1150 Landfill Excavation Permit
Waste Discharge Permit
FWS Approval Letter
Grading Permit

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CORPORATION

Rule 1150 Landfill Excavation Permit

South Coast
AIR QUALITY MANAGEMENT DISTRICT
9150 FLAIR DRIVE, EL MONTE, CA 91731 (818) 572-6200

July 24, 1991

Lockheed Propulsion Company
4500 Park Granada Boulevard
Calabasas, CA 91302

Attention: Fred Reed, Corporate Fixed Assets
Environmental Safety Director

Gentlemen:

RULE 1150 LANDFILL EXCAVATION PLAN

Reference is made to your application (A/N 250373) for a Rule 1150 Excavation Permit for the removal of contaminated and non-contaminated soils at the Lockheed Beaumont No. 1 facility located at Highland Springs Road in Beaumont, CA.

Please be advised that this excavation permit is granted under Rule 1150 of the Rules and Regulations of the South Coast Air Quality Management District and is subject to the following conditions:

1. THIS EXCAVATION SHALL BE CONDUCTED IN COMPLIANCE WITH ALL PLANS AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THE EXCAVATION SHALL BE COMPLETED BY NOVEMBER 30, 1991 OR WITHIN 42 CALENDAR DAYS AFTER THE EXCAVATION COMMENCES, WHICHEVER COMES FIRST, UNLESS AN EXTENSION IS OTHERWISE APPROVED IN WRITING BY THE SCAQMD. ANY EXTENSION REQUEST SHALL BE SUBMITTED IN WRITING TO THE SCAQMD AND SHALL INCLUDE THE REASONS THE EXTENSION IS REQUIRED, THE LENGTH OF THE EXTENSION, AND THE STATUS OF THE EXCAVATION TO DATE.

3. THE SCAQMD SHALL BE NOTIFIED IN WRITING AT LEAST TWO (2) DAYS PRIOR TO THE EXCAVATION COMMENCES AND WITHIN FIVE (5) DAYS AFTER IT IS COMPLETED.

4. THIS EXCAVATION PERMIT IS VALID ONLY FOR THE REMOVAL OF APPROXIMATELY 13000 CUBIC YARDS OF NON-CONTAMINATED OVERBURDEN AND 4500 CUBIC YARDS OF CONTAMINATED SOIL AND REFUSE.

5. THE AMOUNT OF NON-CONTAMINATED OVERBURDEN THAT IS STOCKPILED ON-SITE SHALL NOT EXCEED 4500 CUBIC YARDS AT ANY ONE TIME.

6. THE EXCAVATION WORK FACE WHICH EXPOSES REFUSE OR OTHER EMISSION GENERATING MATERIALS TO THE ATMOSPHERE SHALL NOT EXCEED 11000 SQUARE FEET.

7. EXCAVATION SHALL NOT BE CONDUCTED BETWEEN THE HOURS OF 6:00 PM AND 7:00 AM OR ON SATURDAYS, SUNDAYS AND LEGAL HOLIDAYS.

8. EXCAVATION SHALL NOT BE CONDUCTED ON DAYS WHEN THE SCAQMD FORECASTS FIRST, SECOND OR THIRD STAGE EPISODES FOR AREA NUMBER 29, OR WHEN THE SCAQMD REQUIRES COMPANIES IN AREA NUMBER 29 TO IMPLEMENT THEIR FIRST, SECOND OR THIRD STAGE EPISODE PLANS. EPISODE FORECASTS FOR THE FOLLOWING DAY CAN BE OBTAINED BY CALLING (800) 445-3826 OR (800) 242-4666.

9. EXCAVATION SHALL NOT BE CONDUCTED WHEN THE WIND SPEED IS GREATER THAN 15 M.P.H. (AVERAGED OVER 15 MINUTES) OR THE WIND SPEED INSTANTANEOUSLY EXCEEDS 25 M.P.H.

10. DURING EXCAVATION, ALL WORKING AREAS, EXCAVATED MATERIAL AND UNPAVED ROADWAYS SHALL BE WATERED DOWN UNTIL THE SURFACE IS MOIST AND THEN MAINTAINED IN A MOIST CONDITION TO MINIMIZE DUST AND EMISSIONS.

11. WHEN LOADING IS COMPLETED AND DURING TRANSPORT, NO MATERIAL SHALL EXTEND ABOVE THE SIDES OR REAR OF THE TRUCK OR TRAILER WHICH WILL HAUL THE EXCAVATED MATERIAL.

12. EXCAVATED REFUSE AND CONTAMINATED SOIL SHALL NOT BE STOCKPILED ON-SITE. ALL EXCAVATED REFUSE SHALL BE DEPOSITED DIRECTLY INTO THE TRUCKS OR TRAILERS WHICH WILL HAUL IT. THE TRUCK BEDS OR TRAILERS SHALL BE COMPLETELY COVERED WITH AN IMPERMEABLE COVER, WITH SUCH COVERS TIED DOWN. ALL SEAMS SHALL BE SEALED TO PREVENT ANY MATERIALS FROM ESCAPING DURING TRANSPORT.

13. THE EXTERIOR OF TRUCKS OR CARS (INCLUDING THE TIRES) SHALL BE CLEANED OFF PRIOR TO LEAVING THE EXCAVATION SITE.

14. ALL EXCAVATED REFUSE SHALL BE COVERED WITH EITHER A MINIMUM OF 6 INCHES OF CLEAN SOIL, APPROVED FOAM OR APPROVED FOAM AND HEAVY-DUTY PLASTIC SHEETING WHENEVER THE EXCAVATION IS NOT ACTIVELY IN PROGRESS, AND AT THE END OF EACH WORKING DAY. FOAM BY ITSELF SHALL NOT BE USED AS A NIGHT COVER IF IT IS RAINING OR RAIN IS PREDICTED BY THE NATIONAL WEATHER SERVICE PRIOR TO THE NEXT SCHEDULED DAY OF EXCAVATION.

15. DURING EXCAVATION, IF A CONSIDERABLE NUMBER OF COMPLAINTS ARE RECEIVED, ALL WORK SHALL CEASE AND THE APPROVED MITIGATION MEASURES SHALL BE IMPLEMENTED IMMEDIATELY. OTHER MITIGATION MEASURES WHICH ARE DEEMED APPROPRIATE BY SCAQMD PERSONNEL TO ABATE A NUISANCE CONDITION SHALL BE IMPLEMENTED UPON REQUEST.

16. ALL EXCAVATED MATERIAL SHALL BE HANDLED, STORED, AND TRANSPORTED IN SUCH A MANNER AS TO PREVENT ANY EMISSIONS OF HAZARDOUS MATERIALS.

17. ALL HAZARDOUS MATERIALS SHALL BE TRANSPORTED IN CONTAINERS CLEARLY MARKED AS TO THE TYPES OF MATERIAL CONTAINED AND WHAT PROCEDURES SHOULD BE FOLLOWED IN CASE OF ACCIDENTAL SPILLS.

18. EXCAVATED LIQUID HAZARDOUS MATERIALS WITH THE POTENTIAL TO CAUSE AIR EMISSIONS SHALL BE ENCAPSULATED OR ENCLOSED IN CONTAINERS WITH SEALED LIDS BEFORE LOADING INTO THE TRANSPORT VEHICLES.

19. ALL MATERIALS THAT ARE LISTED AS HAZARDOUS BY A FEDERAL OR STATE AGENCY SHALL BE CONSIDERED "HAZARDOUS MATERIALS" FOR THE PURPOSE OF THIS PERMIT.

20. DURING EXCAVATION, CONTINUOUS MONITORING AND RECORDING OF THE WIND SPEED AND DIRECTION SHALL BE CONDUCTED AT A SITE APPROVED BY THE SCAQMD.

21. DURING EXCAVATION, MONITORING FOR ORGANICS AS METHANE USING AN ORGANIC VAPOR ANALYZER (OVA) OR OTHER MONITOR APPROVED BY THE SCAQMD SHALL BE CONDUCTED CONTINUOUSLY WITHIN TWENTY FEET AND DIRECTLY DOWNWIND OF THE EXCAVATION WORKING FACE. THE MAXIMUM SUSTAINED READINGS SHALL BE RECORDED EVERY 15 MINUTES.

22. IF THE OVA OR OTHER APPROVED ORGANIC MONITOR SHOWS A SUSTAINED (GREATER THAN 15 SECONDS) READING OF 200 PPMV OR GREATER AT THE WORKING FACE, THE AREA GENERATING THE EMISSIONS SHALL IMMEDIATELY BE COMPLETELY COVERED WITH A MINIMUM OF 6 INCHES OF CLEAN DIRT OR AN APPROVED FOAM AND THE FOLLOWING ACTIONS IMPLEMENTED:

    A. EXCAVATION OF THE AFFECTED AREA SHALL NOT RECOMMENCE UNTIL THE ORGANIC READINGS ARE BELOW 200 PPMV.

    B. EXCAVATION OF THE AFFECTED AREA SHALL BE CONDUCTED IN SUCH A MANNER AS TO LIMIT THE WORKING FACE TO LESS THAN 1000 SQUARE FEET OR OTHER SMALLER AREA DEEMED APPROPRIATE BY SCAQMD PERSONNEL TO REDUCE NUISANCE POTENTIAL.

23. IF A DISTINCT ODOR (LEVEL III OR GREATER) RESULTING FROM THE EXCAVATION IS DETECTED AT OR BEYOND THE PROPERTY LINE, THE EXCAVATION SHALL CEASE AND THE APPROVED MITIGATION MEASURES IMPLEMENTED IMMEDIATELY. ODOR LEVELS WILL BE DETERMINED BY SCAQMD PERSONNEL OR ON-SITE SAFETY COORDINATOR IN THE ABSENCE OF SCAQMD PERSONNEL.

24. ALL MONITORS SHALL BE CALIBRATED DAILY USING A METHOD APPROVED BY THE DISTRICT.

25. ALL RECORDS OF EXCAVATION WORKING HOURS, ANALYTICAL RESULTS, DAILY AMOUNTS OF MATERIALS EXCAVATED AND HAULED OFFSITE, AND OTHER RECORDS REQUIRED BY THIS PERMIT SHALL BE KEPT ON FILE FOR AT LEAST TWO YEARS AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

26. MITIGATION MEASURES, OTHER THAN THOSE INDICATED IN THESE CONDITIONS, WHICH ARE DEEMED APPROPRIATE BY SCAQMD PERSONNEL AS NECESSARY TO PROTECT THE COMFORT, REPOSE, HEALTH OR SAFETY OF THE PUBLIC, SHALL BE IMPLEMENTED UPON REQUEST.

27. THIS PERMIT OR A COPY OF THIS PERMIT SHALL BE PRESENT AT THE EXCAVATION SITE.

Other governmental agencies may require approval before any excavation begins. It shall be the responsibility of the applicant to obtain that approval. The South Coast Air Quality Management District shall not be responsible or liable for any losses because of measures required or taken pursuant to the requirements of this approved Excavation Management Plan.

If you have any questions regarding this letter, please call Mr. Arthur Carbonell at (818) 572-6437.

Sincerely,

Mohsen Nazemi, P.E.
Senior Engineering Manager

AC

cc: Vicki Frye, Radian Corporation
Haisom Salloum, DHS Region 4
Ed Pupka, Enforcement

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive. Diamond Bar. CA 91765-4182 (714) 396-2000

March 30, 1992

Lockheed Propulsion Company
4500 Park Granada Boulevard
Calabasas, CA 91302

Attention: Fred Reed, Corporate Fixed Assets
Environmental Safety Director

Gentlemen:

RULE 1150 LANDFILL EXCAVATION PERMIT
(This permit supercedes the permit issued on July 24, 1991)

Reference is made to your application (A/N 250373) for a Rule 1150 Excavation Permit for the removal of contaminated and overburden soils at the Lockheed Beaumont No. 1 facility located at Highland Springs Road in Beaumont, CA. This permit has been revised based on letters from Radian Corporation dated February 10, 1992, and March 2, 1992.

Please be advised that this excavation permit is granted under Rule 1150 of the Rules and Regulations of the South Coast Air Quality Management District and is subject to the following conditions:

1. THIS EXCAVATION SHALL BE CONDUCTED IN COMPLIANCE WITH ALL PLANS AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THE EXCAVATION SHALL BE COMPLETED WITHIN 90 CALENDAR DAYS AFTER THE EXCAVATION COMMENCES UNLESS AN EXTENSION IS OTHERWISE APPROVED IN WRITING BY THE SCAQMD. ANY EXTENSION REQUEST SHALL BE SUBMITTED IN WRITING TO THE SCAQMD AND SHALL INCLUDE THE REASONS THE EXTENSION IS REQUIRED, THE LENGTH OF THE EXTENSION, AND THE STATUS OF THE EXCAVATION TO DATE.

3. THE SCAQMD SHALL BE NOTIFIED IN WRITING AT LEAST TWO (2) DAYS PRIOR TO THE EXCAVATION COMMENCES AND WITHIN FIVE (5) DAYS AFTER IT IS COMPLETED.

4. THIS EXCAVATION PERMIT IS VALID ONLY FOR THE REMOVAL OF APPROXIMATELY 30000 CUBIC YARDS OF NON-CONTAMINATED OVERBURDEN AND 4500 CUBIC YARDS OF CONTAMINATED SOIL AND REFUSE.

5. THE AMOUNT OF NON-CONTAMINATED OVERBURDEN THAT IS STOCKPILED ON-SITE SHALL NOT EXCEED 6500 CUBIC YARDS AT ANY ONE TIME.

6. THE EXCAVATION WORK FACE WHICH EXPOSES BURN ZONE MATERIALS OR SPECIFIC WASTES TO THE ATMOSPHERE SHALL NOT EXCEED 11000 SQUARE FEET.

7. EXCAVATION SHALL NOT BE CONDUCTED BETWEEN THE HOURS OF 6:00 PM AND 6:00 AM OR ON SUNDAYS AND LEGAL HOLIDAYS.

8. EXCAVATION SHALL NOT BE CONDUCTED ON DAYS WHEN THE SCAQMD FORECASTS FIRST, SECOND OR THIRD STAGE EPISODES FOR AREA NUMBER 29, OR WHEN THE SCAQMD REQUIRES COMPANIES IN AREA NUMBER 29 TO IMPLEMENT THEIR FIRST, SECOND OR THIRD STAGE EPISODE PLANS. EPISODE FORECASTS FOR THE FOLLOWING DAY CAN BE OBTAINED BY CALLING (800) 445-3826 OR (800) 242-4666.

9. EXCAVATION SHALL NOT BE CONDUCTED WHEN THE WIND SPEED IS GREATER THAN 20 M.P.H. (AVERAGED OVER 15 MINUTES) OR THE WIND SPEED INSTANTANEOUSLY EXCEEDS 25 M.P.H.

10. DURING EXCAVATION, ALL WORKING AREAS, EXCAVATED MATERIAL AND UNPAVED ROADWAYS SHALL BE WATERED DOWN UNTIL THE SURFACE IS MOIST AND THEN MAINTAINED IN A MOIST CONDITION TO MINIMIZE DUST AND EMISSIONS.

11. WHEN LOADING IS COMPLETED AND DURING TRANSPORT, NO MATERIAL SHALL EXTEND ABOVE THE SIDES OR REAR OF THE TRUCK OR TRAILER WHICH WILL HAUL THE EXCAVATED MATERIAL.

12. EXCAVATED REFUSE, BURN ZONE MATERIAL, AND CONTAMINATED SOIL SHALL NOT BE STOCKPILED ON-SITE. ALL EXCAVATED REFUSE SHALL BE DEPOSITED DIRECTLY INTO THE TRUCKS OR TRAILERS WHICH WILL HAUL IT. THE TRUCK BEDS OR TRAILERS SHALL BE COMPLETELY COVERED WITH A TARP AND TIED DOWN TO PREVENT PAYLOAD LOSSES DURING TRANSPORT.

13. SPECIFIC WASTES SHALL BE PLACED IN A COVERED DROP BOX AND BE CONSIDERED "HAZARDOUS MATERIALS" FOR THE PURPOSE OF THIS PERMIT. THIS DROP BOX SHALL BE DISPOSED OF AT THE COMPLETION OF THIS PROJECT.

14. THE EXTERIOR OF ALL EQUIPMENT WHICH CONTACTS THE SPECIFIC WASTES (INCLUDING THE DROP BOX) SHALL BE CLEANED PRIOR TO LEAVING THE EXCAVATION SITE.

15. THE CLEANING OF THE EXTERIOR OF TRUCKS AND CARS PRIOR TO LEAVING THE EXCAVATION SITE SHALL NOT BE REQUIRED PROVIDED THE FOLLOWING CONDITIONS ARE MET:

    A. NO TRUCKS OR CARS SHALL DRIVE OVER BURN ZONE RESIDUE OR SPECIFIC WASTES.

    B. ALL VEHICULAR TRAFFIC SHALL REMAIN UPWIND OF EXPOSED SPECIFIC WASTES.

    IF THESE CRITERIA ARE NOT MET, THEN THE EXTERIOR OF TRUCKS OR CARS (INCLUDING THE TIRES) SHALL BE CLEANED OFF PRIOR TO LEAVING THE EXCAVATION SITE.

16. ALL EXCAVATED BURN ZONE MATERIALS AND SPECIFIC WASTES SHALL BE COVERED WITH EITHER A MINIMUM OF 6 INCHES OF CLEAN SOIL, APPROVED FOAM OR APPROVED FOAM AND HEAVY-DUTY PLASTIC SHEETING WHENEVER THE EXCAVATION IS NOT ACTIVELY IN PROGRESS, AND AT THE END OF EACH WORKING DAY. FOAM BY ITSELF SHALL NOT BE USED AS A NIGHT COVER IF IT IS RAINING OR RAIN IS PREDICTED BY THE NATIONAL WEATHER SERVICE PRIOR TO THE NEXT SCHEDULED DAY OF EXCAVATION.

17. DURING EXCAVATION, IF A CONSIDERABLE NUMBER OF COMPLAINTS ARE RECEIVED, ALL WORK SHALL CEASE AND THE APPROVED MITIGATION MEASURES SHALL BE IMPLEMENTED IMMEDIATELY. OTHER MITIGATION MEASURES WHICH ARE DEEMED APPROPRIATE BY SCAQMD PERSONNEL TO ABATE A NUISANCE CONDITION SHALL BE IMPLEMENTED UPON REQUEST.

18. ALL EXCAVATED MATERIAL SHALL BE HANDLED, STORED, AND TRANSPORTED IN SUCH A MANNER AS TO PREVENT ANY EMISSIONS OF HAZARDOUS MATERIALS.

19. ALL HAZARDOUS MATERIALS SHALL BE TRANSPORTED IN CONTAINERS CLEARLY MARKED AS TO THE TYPES OF MATERIAL CONTAINED AND WHAT PROCEDURES SHOULD BE FOLLOWED IN CASE OF ACCIDENTAL SPILLS.

20. EXCAVATED LIQUID HAZARDOUS MATERIALS WITH THE POTENTIAL TO CAUSE AIR EMISSIONS SHALL BE ENCAPSULATED OR ENCLOSED IN CONTAINERS WITH SEALED LIDS BEFORE LOADING INTO THE TRANSPORT VEHICLES.

21. ALL MATERIALS THAT ARE LISTED AS HAZARDOUS BY A FEDERAL OR STATE AGENCY SHALL BE CONSIDERED "HAZARDOUS MATERIALS" FOR THE PURPOSE OF THIS PERMIT.

22. DURING EXCAVATION, CONTINUOUS MONITORING AND RECORDING OF THE WIND SPEED AND DIRECTION SHALL BE CONDUCTED AT A SITE APPROVED BY THE SCAQMD.

23. DURING EXCAVATION, MONITORING FOR ORGANICS AS METHANE USING AN ORGANIC VAPOR ANALYZER (OVA) OR OTHER MONITOR APPROVED BY THE SCAQMD SHALL BE CONDUCTED CONTINUOUSLY WITHIN TWENTY FEET AND DIRECTLY DOWNWIND OF THE EXCAVATION WORKING FACE. THE MAXIMUM SUSTAINED READINGS SHALL BE RECORDED EVERY 15 MINUTES.

24. IF THE OVA OR OTHER APPROVED ORGANIC MONITOR SHOWS A SUSTAINED (GREATER THAN 15 SECONDS) READING OF 200 PPMV OR GREATER AT THE WORKING FACE, THE AREA GENERATING THE EMISSIONS SHALL IMMEDIATELY BE COMPLETELY COVERED WITH A MINIMUM OF 6 INCHES OF CLEAN DIRT OR AN APPROVED FOAM AND THE FOLLOWING ACTIONS IMPLEMENTED:

    A. EXCAVATION OF THE AFFECTED AREA SHALL NOT RECOMMENCE UNTIL THE ORGANIC READINGS ARE BELOW 200 PPMV.

    B. EXCAVATION OF THE AFFECTED AREA SHALL BE CONDUCTED IN SUCH A MANNER AS TO LIMIT THE WORKING FACE TO LESS THAN 1000 SQUARE FEET OR OTHER SMALLER AREA DEEMED APPROPRIATE BY SCAQMD PERSONNEL TO REDUCE NUISANCE POTENTIAL.

25. IF A DISTINCT ODOR (LEVEL III OR GREATER) RESULTING FROM THE EXCAVATION IS DETECTED AT OR BEYOND THE PROPERTY LINE, THE EXCAVATION SHALL CEASE AND THE APPROVED MITIGATION MEASURES IMPLEMENTED IMMEDIATELY. ODOR LEVELS WILL BE DETERMINED BY SCAQMD PERSONNEL OR ON-SITE SAFETY COORDINATOR IN THE ABSENCE OF SCAQMD PERSONNEL.

26. ALL MONITORS SHALL BE CALIBRATED DAILY USING A METHOD APPROVED BY THE DISTRICT.

27. ALL RECORDS OF EXCAVATION WORKING HOURS, ANALYTICAL RESULTS, DAILY AMOUNTS OF MATERIALS EXCAVATED AND HAULED OFFSITE, AND OTHER RECORDS REQUIRED BY THIS PERMIT SHALL BE KEPT ON FILE FOR AT LEAST TWO YEARS AND MADE AVAILABLE TO THE DISTRICT UPON REQUEST.

28. MITIGATION MEASURES, OTHER THAN THOSE INDICATED IN THESE CONDITIONS, WHICH ARE DEEMED APPROPRIATE BY SCAQMD PERSONNEL AS NECESSARY TO PROTECT THE COMFORT, REPOSE, HEALTH OR SAFETY OF THE PUBLIC, SHALL BE IMPLEMENTED UPON REQUEST.

29. THIS PERMIT OR A COPY OF THIS PERMIT SHALL BE PRESENT AT THE EXCAVATION SITE.

Other governmental agencies may require approval before any excavation begins. It shall be the responsibility of the applicant to obtain that approval. The South Coast Air Quality Management District shall not be responsible or liable for any losses because of measures required or taken pursuant to the requirements of this approved Excavation Management Plan.

If you have any questions regarding this letter, please call Mr. Arthur Carbonell at (714) 396-2616.

Sincerely,

Mohsen Nazemi, P.E.
Senior Engineering Manager

AC

cc: Vicki Fry, Radian Corporation
Haisom Salloum, DHS Region 4
Ed Pupka, Compliance

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (714) 396-2000

September 17, 1992

Lockheed Propulsion Company
4500 Park Granada Boulevard
Calabasas, CA 91302

RECEIVED
SEP 22 1992
OPERATIONS, 03-30

Attention: Fred Reed, Corporate Fixed Assets Environmental Safety Director

Dear Mr. Reed:

Reference is made to your letter dated September 1, 1992, requesting modifications to the existing permit conditions of your March 30, 1992, Rule 1150 Landfill Excavation Permit (A/N 250373).

Please be advised that your request to allow for additional soil to be excavated has been approved. The following condition in your permit has been revised as follows:

CONDITION 5: **THE AMOUNT OF NON-CONTAMINATED OVERBURDEN THAT IS STOCKPILED ON-SITE SHALL NOT EXCEED 15,000 CUBIC YARDS AT ANY ONE TIME.**

All of the other conditions in the March 30, 1992 Rule 1150 Landfill Excavation Permit shall remain in effect. If you have any questions regarding this letter, please call Mr. Arthur Carbonell at (714) 396-2616.

Very truly yours,

J Tramma

Joe Tramma
A.Q.A.C. Supervisor

cc: Will Manker
Pat Hotra

AC

TOTAL P.02

South Coast
AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (714) 396-2000

December 18, 1992

Lockheed Propulsion Company
4500 Park Granada Boulevard
Calabasas, CA 91302

RECEIVED
JAN 04 1993
OPERATIONS, 03-30

Attention: Vicki Fry, P.E.
Radian Corporation

Dear Ms. Fry:

Reference is made to your Rule 1150 Excavation Permit (dated March 30, 1992) and your letter dated December 2, 1992. Please be advised that your request to stockpile excavated material instead of loading directly into trucks has been approved. The modification to your previous permit shall consist of the removal of Permit Condition 12 and the addition of the following:

12. ALL EXCAVATED MATERIAL SHALL BE COVERED WITH EITHER A MINIMUM OF 6 INCHES OF CLEAN SOIL, APPROVED FOAM, OR APPROVED FOAM AND HEAVY-DUTY PLASTIC SHEETING WHENEVER THE EXCAVATION IS NOT ACTIVELY IN PROGRESS, AND AT THE END OF EACH WORKING DAY. FOAM BY ITSELF SHALL NOT BE USED AS A NIGHT COVER IF IT IS RAINING OR RAIN IS PREDICTED BY THE NATIONAL WEATHER SERVICE PRIOR TO THE NEXT SCHEDULED DAY OF EXCAVATION.

All of the other conditions in the March 30, 1992 Rule 1150 Landfill Excavation Permit shall remain in effect. If you have any questions regarding this letter, please call Mr. Arthur Carbonell at (909) 396-2616.

Very truly yours,

J. Tramma

Joe Tramma
A.Q.A.C. Supervisor

cc: Pat Hotra, Compliance

AC

RADIAN
CORPORATION

7 Corporate Park, Suite 240
Irvine, CA 92714
(714)261-8611

290-062-09-05
6 November 1992

Mr. Arthur Carbonell
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4182

Subject: Permit A/N 250373 Notification and Approval

Dear Mr. Carbonell:

As required by Permit A/N 250373 Condition 3., we are providing written notification prior to our initiation of excavation activities at the Lockheed Facility in Beaumont, California. We anticipate the excavation will start no sooner than 11 November and continue through December and part of January.

In compliance with Condition 22., we seek your approval for the location from which to continuously monitor and record wind speed and direction. We propose to locate our wind instrument just outside the area to be excavated as indicated in the attached figures.

Finally, we propose to use a Thermo Environmental 580 PID Organic Vapor Meter (OVM) to monitor for organic vapor to comply with Conditions 21. and 22. of our Permit (as opposed to an OVA).

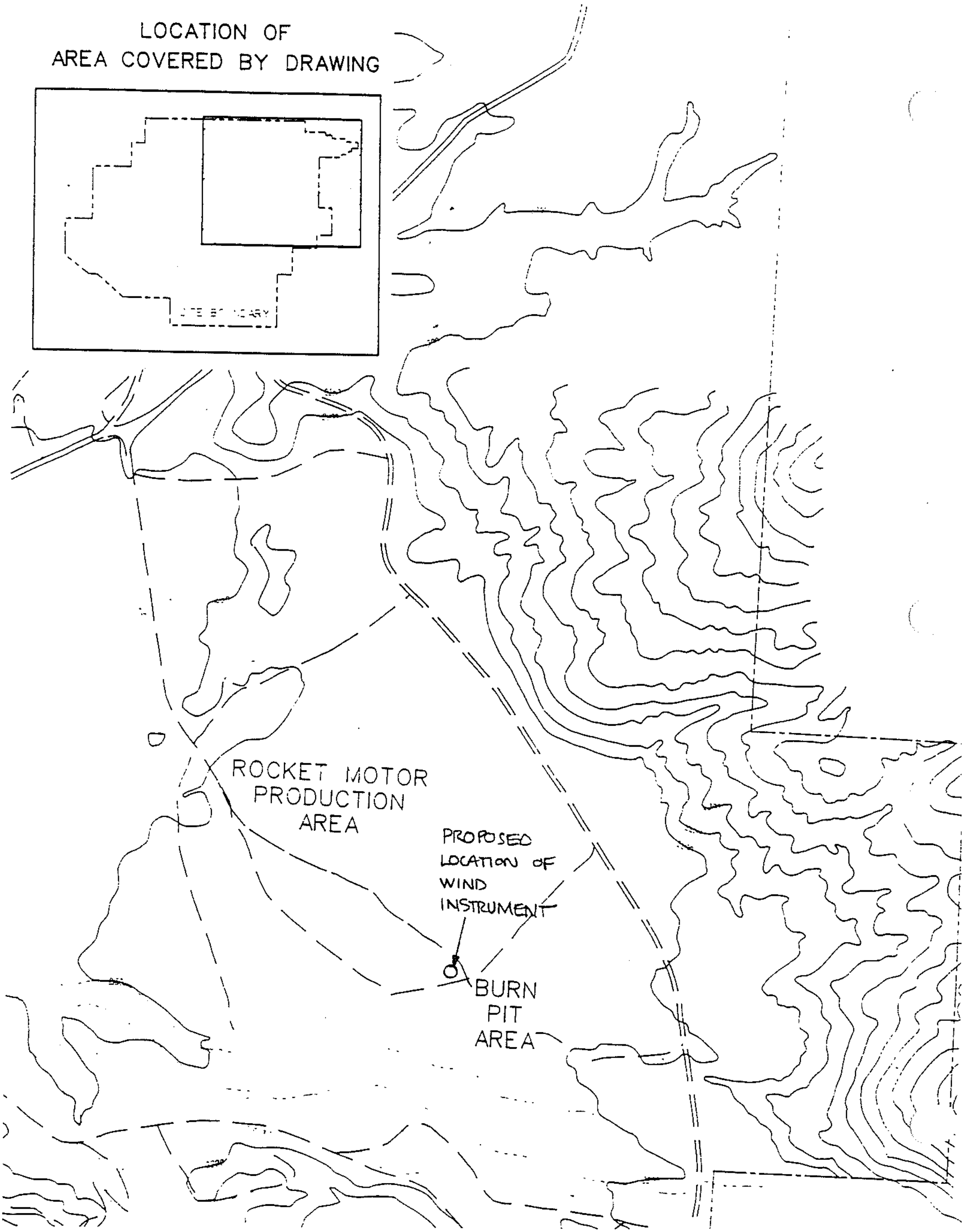
If you have any questions regarding this letter, please contact me at (714) 261-8611 or (714) 845-7532. Please advise us of your decision regarding the location of the wind instrument.

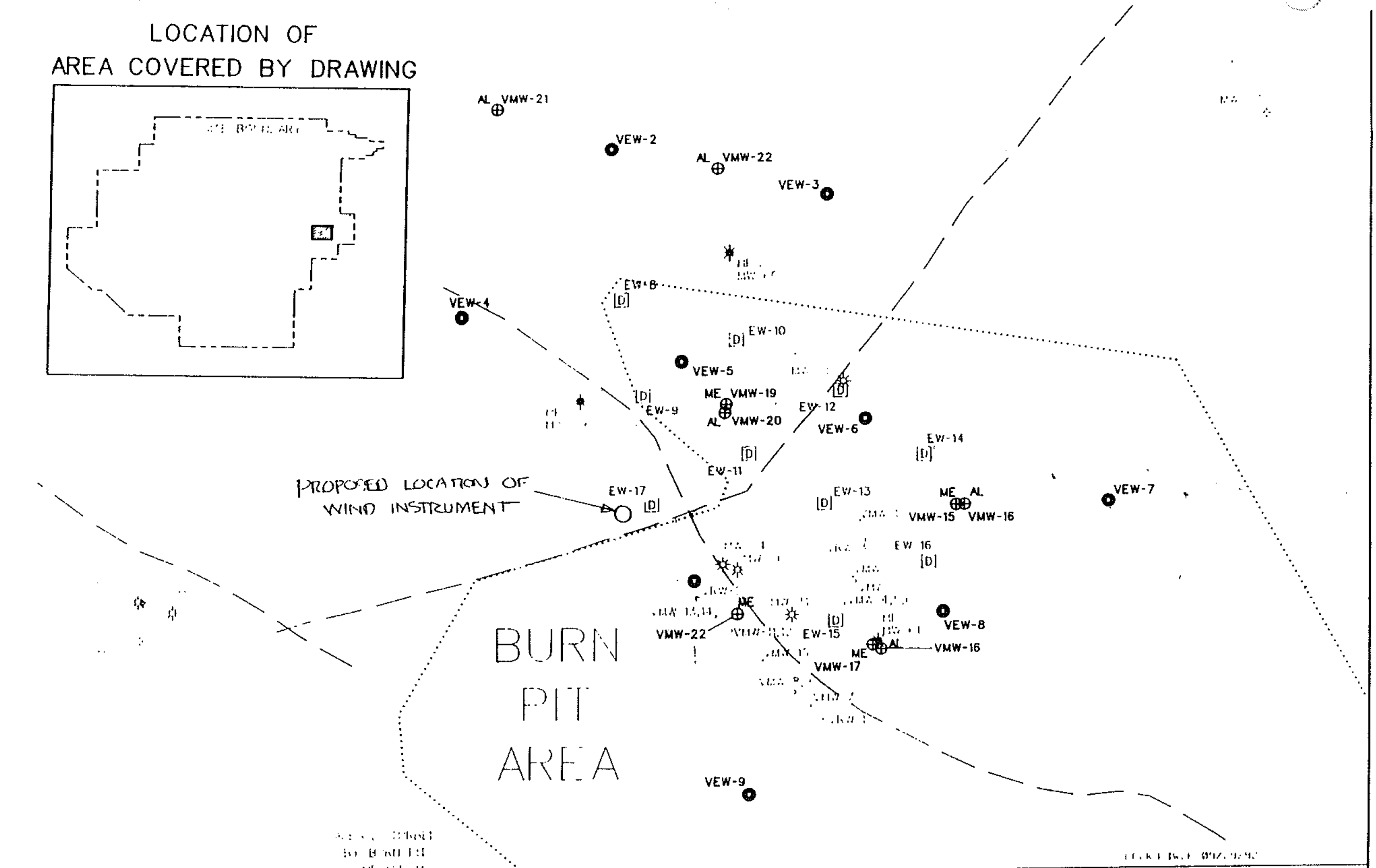
Sincerely,

Will Manker

Will Manker
Staff Engineer

WJM:gg
Attachments
c: C. Koerner
Project File
Gene Matsushita, Lockheed Propulsion Company


LOCATION OF
AREA COVERED BY DRAWING
ROCKET MOTOR
PRODUCTION
AREA
PROPOSED
LOCATION OF
WIND
INSTRUMENT
BURN
PIT
AREA



CONFIDENTIAL ALL RIGHTS RESERVED-PROPERTY OF

RADIAN
CORPORATION

A company of The Hartford Steam Boiler Inspection and Insurance Company
SACRAMENTO, CA

SCALE	
DRAWN BY	DATE
CHECKED BY	DATE
APPROVED BY	DATE

DRAWING TITLE

LOCKHEED BEAUMONT

CONTRACT NO.	SHEET NO.	REV.
	C 1	

PHOTOIONIZATION DETECTOR

New and Improved 580B OVM/Logger

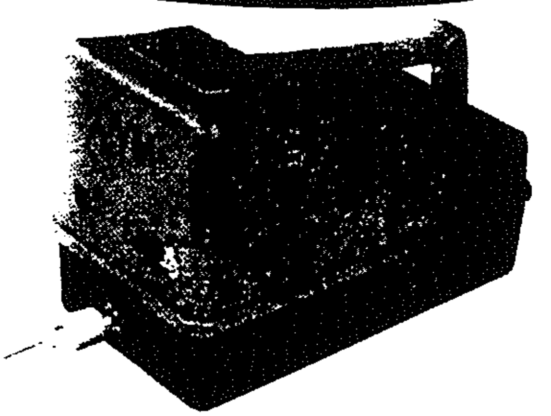
DISCUSSION

A portable environmental tool, the Model 580B Orgánic Vapor Meter (OVM) will detect and quantitate most organic vapors, using a highly sensitive photoionization detetctor. Microprocessor-based, this instrument has many features that were not available in older models, such as, maximum signal hold, signal linearization, overange lockout, IBM-PC programmable, and data reduction. The instrument also has the capability of logging 500 data points plus recording location, date and time of each point. It has an operating range of 0-2000 ppm with a minimum detectable of 0.1 ppm. Completely portable, the Model 580B operates from internal batteries for eight (8) hours in the field. No support gases are required. Calibration/span response factors and sensitivity of interchangeable lamps are adjusted through the microprocessor.

IMPROVEMENTS

- Elimination of access door and redesign of On/Off mechanism
- Relocation of charger "port"
- External placement of RS-232 communications port;
- Backlighting to provide illumination of LCD display under poor lighting conditions;
- Capacity to run and charge the unit simultaneously;
- Redesigned instrument housing for improved product seal.

NEW & IMPROVED



SPECIFICATIONS

Measurement:

Technique:	Photoionization Detection of most organic vapors and some inorganic gases are possible - see OSHA Chart.
Ranges:	Digital Readout (LCD) - Auto Ranging 0-200 ppm (resolution to 0.1 ppm) 200-2000 ppm (resolution to 1.0 ppm)
Minimum Detectable:	0.1 ppm benzene in air matrix.
Sensitivity:	0.1 ppm benzene on 0-200 ppm scale.
System Time Constant:	2.0 sec. at 500 ml/min. sample flow
Sample Conditioning:	Changable ten micron filter on inlet.

Power Requirements:

Battery:	Internally rechargable (external charger provided with unit).
Service Life:	8 hours per internal battery charge, operates from charger indefinitely.
Charger Requirements:	115/220 VAC, 60/50 Hz, 4 watts maximum.

Controls, Panel:

Readout:	Two line alphanumeric display with bargraph.
Keypad:	Seven Touch Pads - PWR, MODE, RESET, LIGHT, +, -, SPKR.

Other Features:

Audible Alarm:	80 db audible alarm mounted on front panel.
Earphone:	For operation in noisy enviornment.

Physical:

Case Size:	6.5" x 5.5" x 9.0" (HWD).
Weight:	6.5 lbs.
Communication :	RS-232 port.

RADIAN CORPORATION

Waste Discharge Permit

STATE OF CALIFORNIA

PETE WILSON, Governor

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—
LOS ANGELES REGION
101 CENTRE PLAZA DRIVE
MONTEREY PARK, CA 91754-2156
(213) 266-7500

November 24, 1992

Ron Helgerson
Project Manager
Lockheed Engineering & Sciences Company
2550 N. Hollywood Way, Suite 305
Burbank, CA 91505

WASTE DISCHARGE REQUIREMENTS FOR DISCHARGE OF HYDROCARBONS CONTAMINATED SOIL - LOCKHEED CORPORATION AT 17255 S. HIGHLAND SPRINGS ROAD, BEAUMONT - File No. 88-57-344(92)

On November 18, 1992, you filed with this Board a report of waste discharge to discharge up to 3,500 cubic yards of hydrocarbons contaminated soil at BKK Landfill.

The Executive Officer has reviewed the information provided and has determined that the proposed discharge of this material meets the conditions specified in Order No. 91-93, "General Waste Discharge Requirements for Discharge of Non-Hazardous Contaminated Soils and Other Wastes in Los Angeles River and Santa Clara River Basins", adopted by this Board on July 22, 1991.

Enclosed are Waste Discharge Requirements, comprising:

1. General Waste Discharge Requirements
2. Monitoring and Reporting Program

Please note that the Monitoring and Reporting Program requires that a report be submitted to this Board within 10 days of the completion of disposal operations. The report shall reference the above file number.

If you have any questions, please contact Juan Gonzalez at (213) 266-7555.

for JOHN L. LEWIS, Unit Chief
Technical Support Unit

Enclosures
cc: Santa Ana RWQCB (Saremi)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

MONITORING AND REPORTING PROGRAM
for
DISCHARGE OF NON-HAZARDOUS CONTAMINATED SOILS
AND OTHER WASTES

LOCKHEED BEAUMONT - 36501 JACK RABBIT TRAIL, BEAUMONT

I. Reporting

A. The discharger shall implement this monitoring and reporting program on the date of issuance of the Waste Discharge Requirements.

B. The monitoring report shall be submitted within ten (10) days following the completion of disposal operations at the final point of disposal.

C. All analytical samples obtained for this program shall be grab samples.

D. In the event that hazardous or other unacceptable wastes are detected during disposal, the type, source, and final disposition of these wastes shall be reported.

II. Waste Disposal Reporting

A. A report containing the following information shall be filled with this Regional Board after completion of all waste disposal:

1. A tabular list of the estimated average quantities (in cubic yards) and types of materials deposited.

2. Where the material was deposited (landfill name).

3. A certification that all wastes deposited were in compliance with the Regional Board's requirements and that no wastes have been deposited outside of the boundaries of the site as specified in the Regional Board's requirements.

4. In those cases where approval is given for the partial disposal of contaminated soils or other wastes, the ultimate disposal point of the remaining contaminated soils or other wastes must be reported, including the quantity of material disposed of at the different location.

B. Monitoring reports shall be signed by:

1. In the case of corporations, by a principal executive officer at least of the level of vice-president or his duly authorized representative, if such representative is responsible for the overall operation of discharge;

2. In the case of a partnership, by a general partner;

3. In the case of a sole proprietorship, by the proprietor;

4. In the case of a municipal, state or other public facility, by either a principal executive officer, ranking elected official, or other duly authorized employee.

C. The report shall contain the following completed declaration:

"I declare under penalty of perjury that the foregoing is true and correct.

Executed on the ____ day of __________ at __________________

______________________________(Signature)

______________________________(Title)"

D. The discharger shall mail a copy of the monitoring report to the following:

California Regional Water Quality Control Board
Los Angeles Region
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Attn: Technical Support Unit

Ordered by: Richard Alatorre for
ROBERT P. GHIRELLI, D.Env.
Executive Officer

Date: MAR 17 1993

Lockheed
Environmental Systems & Technologies Company

Burbank Program Office
2550 N. Hollywood Way, Suite 305, Burbank, CA 91505

May 20, 1993 RNH:0593/237

Mr. John Lewis
California Regional Water
Quality Control Board
Los Angeles Region 8
101 Centre Plaza Drive
Monterey Park, CA 91754-2156

Subject: Disposal Monitoring Report for Non-Hazardous Contaminated Waste
Lockheed Beaumont No. 1 Facility Burn Pit Area
RWQCB File No. 88-57-344(92)

Dear Mr. Lewis:

This letter report summarizes the removal operations of non-hazardous materials from the Burn Pit Area (BPA) at the Lockheed Beaumont No. 1 Facility. It fulfills the Monitoring and Reporting Program portion of the "General Waste Discharge Requirements of Non-Hazardous Contaminated Soils and other Wastes in Los Angeles River and Santa Clara River Basins" (RWQCB-LA, 1991). The State of California, Department of Toxic Substances Control, Region 4 (Haissam Salloum, [310] 590-4916) was the lead agency for review of this removal.

The excavation and stockpiling of non-hazardous material from the BPA was conducted from December 1, 1992 through February 2, 1993. Approximately 4,112 tons (3,163 cubic yards) of non-hazardous material and 19 tons (14 cubic yards) of specific waste were removed from the BPA. Non-hazardous material, consisting of empty drums, glass bottles, wood, spent rocket motor liners, burn residue, and other miscellaneous materials in a soil matrix were disposed at BKK Landfill in West Covina, California. Transportation and final disposal of these materials was completed on February 2, 1993.

The 19 tons of specific waste, consisting of an oily drum, unburned rocket propellant and a burn rate modifier, were disposed at Laidlaw Environmental Services, a Class I landfill located in Westmoreland, California. This waste, although not technically hazardous, was disposed at the Class I landfill to avoid costly and time consuming sampling and analysis. Transportation and final disposal of specific wastes was completed on February 1, 1993.

No hazardous waste was detected during the removal operations. Attachment A presents a tabular list of total quantities (in tons and cubic yards) for each load removed, date of transportation and disposal, and associated data form number.

Analytical results from samples collected from the bottom of the burn pits where materials were removed are summarized in Attachment B. Results from samples analyzed by EPA Methods 8240 and 8270 for volatile and semivolatile organic compounds indicated that all compounds were below the applicable limits of detection. Results for samples analyzed by EPA Method 6010 for metals indicated that total metal concentrations were below the applicable Total Threshold Limit Concentrations and less than 10 times the applicable Soluble Threshold Limit Concentrations as defined by Title 22 of the California Code of Regulations.

Should you have any questions, or require additional information regarding this matter, please contact Carol Yuge at (818) 847-0197 or Gene Matsushita at (818) 847-0166.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on the 25 day of May at Burbank, CA.

Sincerely,

R. Helgerson

Ron Helgerson
Project Manager
Environmental Technical Services

Attachments

cc: Haissam Salloum, Cal/EPA DTSC
Kamron Saremi, Santa Ana RWQCB
Juan Gonzales, Los Angeles RWQCB
Chris Koerner, Radian Corporation
Randy Fowler, Scrivner Environmental Services
Carol Yuge, Lockheed

RADIAN CORPORATION

ATTACHMENT A

Table A-1
Summary of Waste Disposal Effort
Burn Pit Area Lockheed Beaumont No. 1 Facility

Disposal Facility: BKK Landfill		
Date of Disposal	Tonnage	Cubic Yards[a]
12-1-92	321.12	247.02
12-7-92	399.33	307.16
12-8-92	442.55	340.42
12-9-92	496.65	382.05
12-10-92	496.75	382.09
12-11-92	499.16	383.98
12-14-92	505.07	388.52
12-28-92	199.60	153.52
12-29-92	250.98	193.07
12-30-92	10.12	7.79
1-11-93	202.08	155.44
1-12-93	248.87	191.45
1-13-93	25.47	19.59
2-2-93	14.95	11.50
TOTAL	4,112.07	3,163.13
Disposal Facility: Laidlaw Environmental Services Landfill		
2-1-93	18.6	14.31

[a] Cubic yards calculated using 1.3 tons/cubic yard.

RADIAN CORPORATION

ATTACHMENT A

Table A-2
Non-Hazardous Material Disposed at BKK Landfill, West Covina, California

Date	Truck	Tonnage	Cubic Yards	Form*
12-1-92	L49	25.53	19.64	36701
12-1-92	L48	24.84	19.11	36702
12-1-92	L45	26.46	20.35	36703
12-1-92	L40	24.83	19.10	36704
12-1-92	L36	25.36	19.51	36705
12-1-92	L34	24.91	19.16	36706
12-1-92	L47	25.26	19.43	36707
12-1-92	L41	24.30	18.69	36708
12-1-92	L46	24.95	19.19	36709
12-1-92	L37	25.36	19.51	36710
12-1-92	L49	22.78	17.52	36713
12-1-92	L48	22.02	16.94	36714
12-1-92	L45	24.52	18.86	36715
12-7-92	L40	25.65	19.73	36711
12-7-92	L34	24.63	18.95	36712
12-7-92	L48	25.14	19.34	36716
12-7-92	L47	25.00	19.23	36717
12-7-92	L37	25.90	19.92	36718
12-7-92	L49	25.17	19.36	36719
12-7-92	L41	25.12	19.32	36720
12-7-92	L36	25.42	19.55	36721
12-7-92	L42	23.90	18.38	36722
12-7-92	L38	24.90	19.15	36723
12-7-92	L40	24.34	18.72	36724
12-7-92	L49	25.22	19.40	36725

RADIAN CORPORATION

Table A-2

(Continued)

Date	Truck	Tonnage	Cubic Yards	Form*
12-7-92	L34	25.07	19.28	36726
12-7-92	L48	23.81	18.32	36727
12-7-92	L47	25.39	19.53	36728
12-7-92	L37	24.67	18.98	36729
12-8-92	L41	24.39	18.76	36730
12-8-92	L42	22.21	17.08	36731
12-8-92	L40	24.47	18.82	36733
12-8-92	L34	24.30	18.69	36734
12-8-92	L37	25.69	19.76	36735
12-8-92	L47	24.15	18.58	36736
12-8-92	L49	25.30	19.46	36737
12-8-92	L48	24.28	18.68	36738
12-8-92	L42	24.59	18.92	36739
12-8-92	L41	23.77	18.28	36740
12-8-92	L36	23.81	18.32	36742
12-8-92	L38	23.43	18.02	36743
12-8-92	L47	24.81	19.08	36744
12-8-92	L37	26.79	20.61	36745
12-8-92	L40	24.97	19.21	36746
12-8-92	L34	25.19	19.38	36747
12-8-92	L49	25.57	19.67	36748
12-8-92	L48	24.83	19.10	36749
12-9-92	L42	23.57	18.13	36750
12-9-92	L49	25.61	19.70	36751
12-9-92	L49	24.46	18.82	36752
12-9-92	L41	25.00	19.23	36753

RADIAN CORPORATION

Table A-2

(Continued)

Date	Truck	Tonnage	Cubic Yards	Form*
12-9-92	L36	24.67	18.98	36754
12-9-92	L40	24.90	19.15	36755
12-9-92	L34	24.61	18.93	36756
12-9-92	L47	25.04	19.26	36757
12-9-92	L37	25.74	19.80	36758
12-9-92	L38	24.80	19.08	36759
12-9-92	L42	23.92	18.40	36760
12-9-92	L49	25.36	19.51	36761
12-9-92	L48	24.76	19.05	36762
12-9-92	L41	24.26	18.66	36763
12-9-92	L36	24.92	19.17	36764
12-9-92	L40	24.47	18.82	36765
12-9-92	L34	25.24	19.42	36766
12-9-92	L47	25.54	19.65	36767
12-9-92	L37	25.61	19.70	36768
12-9-92	L38	24.17	18.59	36769
12-10-92	L41	24.81	19.08	35931
12-10-92	L48	24.23	18.64	35932
12-10-92	L49	25.06	19.28	35933
12-10-92	L36	25.22	19.40	35934
12-10-92	L42	23.57	18.13	35935
12-10-92	L40	24.13	18.56	35936
12-10-92	L40	25.38	19.52	35937
12-10-92	L47	25.25	19.42	35938
12-10-92	L37	25.64	19.72	35939
12-10-92	L38	24.81	19.08	35940

Table A-2

(Continued)

Date	Truck	Tonnage	Cubic Yards	Form*
12-10-92	L48	24.52	18.86	35941
12-10-92	L49	25.52	19.63	35942
12-10-92	L36	25.14	19.34	35943
12-10-92	L42	24.37	18.75	35944
12-10-92	L41	24.43	18.79	35945
12-10-92	L47	25.55	19.65	35946
12-10-92	L37	26.19	20.15	35947
12-10-92	L40	23.95	18.42	35948
12-10-92	L34	24.81	19.08	35949
12-10-92	L38	24.17	18.59	35950
12-11-92	L47	24.92	19.17	35954
12-11-92	L37	25.92	19.94	35955
12-11-92	L34	25.41	19.55	35956
12-11-92	L38	25.05	19.27	35957
12-11-92	L34	25.35	19.50	35958
12-11-92	L38	25.06	19.28	35959
12-11-92	L48	23.62	18.17	36001
12-11-92	L36	24.96	19.20	36002
12-11-92	L49	25.57	19.67	36003
12-11-92	L42	24.39	18.76	36004
12-11-92	L37	26.02	20.02	36005
12-11-92	L47	25.57	19.67	36006
12-11-92	L41	24.71	19.01	36007
12-11-92	L40	25.19	19.38	36009
12-11-92	L48	24.92	19.17	36022
12-11-92	L41	24.75	19.04	36023

Table A-2

(Continued)

Date	Truck	Tonnage	Cubic Yards	Form*
12-11-92	L40	24.25	18.65	36024
12-11-92	L36	24.42	18.78	36025
12-11-92	L49	25.03	19.25	36026
12-11-92	L42	24.05	18.50	36027
12-14-92	L40	26.53	20.41	35960
12-14-92	L45	25.98	19.98	35961
12-14-92	L37	27.20	20.92	35962
12-14-92	L47	25.93	19.95	35963
12-14-92	L46	25.16	19.35	35964
12-14-92	L41	25.01	19.24	35965
12-14-92	L36	24.66	18.97	35966
12-14-92	L35	26.59	20.45	35967
12-14-92	L48	24.68	18.98	35969
12-14-92	L49	24.80	19.08	35970
12-14-92	L40	24.50	18.85	35971
12-14-92	L37	25.59	19.68	35972
12-14-92	L45	25.63	19.72	35973
12-14-92	L47	24.79	19.07	35974
12-14-92	L48	24.43	18.79	35975
12-14-92	L46	24.60	18.92	35976
12-14-92	L41	24.15	18.58	35977
12-14-92	L35	24.45	18.81	35978
12-14-92	L36	24.40	18.77	35979
12-14-92	L49	25.36	19.51	35980
12-28-92	Dalton	24.81	19.08	36821
12-28-92	Bethel	24.42	18.78	36822

Table A-2

(Continued)

Date	Truck	Tonnage	Cubic Yards	Form*
12-28-92	Dalton	24.30	18.69	36823
12-28-92	Corvel	24.99	19.22	36824
12-28-92	Atkins	24.94	19.18	36825
12-28-92	Bethel	25.05	19.27	36826
12-28-92	Dalton	25.83	19.87	36827
12-28-92	Corvel	25.26	19.43	36828
12-29-92	L46	25.30	19.46	35981
12-29-92	L47	25.88	19.91	35982
12-29-92	L47	24.99	19.22	35983
12-29-92	L34	26.00	20.00	35984
12-29-92	L46	24.91	19.16	35985
12-29-92	L34	24.89	19.15	35986
12-29-92	L47	23.54	18.11	35987
12-29-92	L37	25.92	19.94	35988
12-29-92	B-5	23.97	18.44	36829
12-29-92	B-5	25.58	19.68	36830
12-30-92	B-5	6.07	4.67	36831
12-30-92	B-5	4.05	3.12	36832
1-11-93	84	24.52	18.86	36833
1-11-93	10	24.96	19.20	36834
1-11-93	85	24.92	19.17	36835
1-11-93	80	25.75	19.81	36837
1-11-93	86	25.39	19.53	36838
1-11-93	921	25.17	19.36	36839
1-11-93	104	25.82	19.86	36840
1-11-93	30	25.55	19.65	36841

Table A-2

(Continued)

Date	Truck	Tonnage	Cubic Yards	Form*
1-12-93	84	24.72	19.02	36842
1-12-93	86	25.39	19.53	36843
1-12-93	30	24.64	18.95	36844
1-12-93	85	24.98	19.22	36845
1-12-93	921	23.94	18.42	36846
1-12-93	80	25.26	19.43	36847
1-12-93	104	25.98	19.98	36848
1-12-93	30	24.62	18.94	36849
1-12-93	85	24.71	19.01	36850
1-12-93	80	24.63	18.95	36851
1-13-93	85	25.47	19.59	36852
2-2-93	25	6.83	5.25	36853
2-2-93	18	8.12	6.25	36854
Total Shipped to BKK Landfill	168 Truck Loads	Total=4,112.07 Tons	3,163.62	

*Waste destination to BKK Landfill unless otherwise noted (Laidlaw).

ATTACHMENT A

Table A-3
Waste Disposed at Laidlaw Environmental Services Landfill
Westmoreland, California

Date	Truck	Pit	Tonnage	Cubic Yards
2-1-93	1038	A	6.8	5.23
2-1-93	1700	A	11.8	9.08
Total Shipped to Laidlaw	2 Truck Loads	1 Burn Pit	18.6	14.31

RADIAN CORPORATION

ATTACHMENT B

Table B-1

Burn Pit Confirmation Sample Results for EPA Method SW6010 Metals

BURN PIT:	A	OP	H	X	TTLC	10 x STLC
SAMPLE ID:	L6673	OP-5	L6662	X-3		
Analyte	Concentration in mg/kg				(mg/kg)	(mg/L)
Aluminum	7,200	12,000	13,000	14,000		
Antimony	9.6	ND (7.8)	ND (6.9)	ND (7.8)	500	150
Arsenic	ND (23)	ND (23)	ND (21)	ND (23)	500	50
Barium	65	100	99	130	10,000	1,000
Beryllium	0.28	0.31	0.32	0.36	75	7.5
Boron	ND (46)	ND (47)	ND (41)	ND (47)		
Cadmium	ND (0.38)	ND (0.39)	ND (0.34)	ND (0.39)	100	10
Calcium	1,500	1,500	1,300	1,600		
Chromium	3.0	5.4	6.1	5.7	2,500	5,600
Cobalt	3.1	4.9	4.9	5.4	8,000	800
Copper	2.1	4.4	4.4	3.2	2,500	250
Iron	11,000	16,000	18,000	19,000		
Lead	8.8	4.5	6.9	6.8	1,000	50
Magnesium	3,000	4,300	5,100	5,300		
Manganese	160	240	270	270		
Molybdenum	ND (3.8)	ND (3.9)	ND (3.4)	ND (3.9)	3,500	3,500
Nickel	ND (1.5)	1.6	2.3	3.4	2,000	200
Potassium	4,200	5,500	8,100	7,000		
Selenium	ND (23)	ND (23)	ND (21)	ND (23)	100	10
Silicon	160	460	420	460		
Silver	ND (0.77)	ND (0.78)	ND (0.69)	ND (0.78)	500	50
Sodium	ND (77)	ND (78)	98	ND (78)		
Strontium	11	13	9.2	16		
Thallium	ND (7.7)	ND (7.8)	ND (6.9)	ND (7.8)	700	70
Vanadium	19	25	29	30	2,400	240
Zinc	39	54	60	64	5,000	2,500

ID = Identification number.
mg/kg = Milligrams per kilogram.
mg/L = Milligrams per liter.
ND = Compound was not detected. Detection limit is noted in parenthesis.
TTLC = Total Threshold Limit Concentration.
STLC = Soluble Threshold Limit Concentration.

ATTACHMENT B

Table B-2

Burn Pit Confirmation Samples Results for EPA Method SW8240 Volatile Organic Compounds

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6674	OP-3	L6661	X-1
Analyte	Concentration in μg/kg			
Acetone	ND (100)	ND (110)	ND (110)	ND (100)
Acrolein	ND (78)	ND (84)	ND (82)	ND (78)
Acrylonitrile	ND (52)	ND (56)	ND (54)	ND (52)
Benzene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Bromodichloromethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Bromomethane	ND (10)	ND (11)	ND (11)	ND (10)
Carbon disulfide	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Carbon tetrachloride	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Chlorobenzene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Chloroethane	ND (10)	ND (11)	ND (11)	ND (10)
2-Chloroethyl vinyl ether	ND (10)	ND (11)	ND (11)	ND (10)
Chloroform	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Chloromethane	ND (10)	ND (11)	ND (11)	ND (10)
Dibromochloromethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Dibromomethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Trans-1,4,-Dichloro-2-butene	ND (10)	ND (11)	ND (11)	ND (10)
Dichlorodifluoromethane	ND (21)	ND (22)	ND (22)	ND (21)
1,1-Dichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,2-Dichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1-Dichloroethene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
trans-1,2-Dichloroethene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,2-Dichloropropane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
cis-1,3-Dichloropropene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
trans-1,3-Dichloropropene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Ethyl benzene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Ethyl methacrylate	ND (16)	ND (17)	ND (16)	ND (16)
2-Hexanone	ND (52)	ND (56)	ND (54)	ND (52)
Iodomethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)

Table B-2

Continued

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6674	OP-3	L6661	X-1
Analyte	Concentration in μg/kg			
Methyl ethyl ketone	ND (100)	ND (110)	ND (110)	ND (100)
4-Methyl-2-pentanone(MIBK)	ND (52)	ND (56)	ND (54)	ND (52)
Methylene chloride	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Styrene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1,2,2-Tetrachloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Tetrachloroethene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Toluene	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Tribromomethane(Bromoform)	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1,1-Trichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
1,1,2-Trichloroethane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Trichloroethene	ND (5.2)	1.2[a] (5.6)	ND (5.4)	ND (5.2)
Trichlorofluoromethane	ND (10)	ND (11)	ND (11)	ND (10)
1,2,3-Trichloropropane	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Vinyl acetate	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)
Vinyl chloride	ND (10)	ND (11)	ND (11)	ND (10)
Xylenes	ND (5.2)	ND (5.6)	ND (5.4)	ND (5.2)

[a] Compound detected at less than the detection limit of 5.6 μg/g. This value should be considered an estimate.
ID = Identification number.
μg/g = Micrograms per gram.
ND = Compound not detected. Method detection limit is noted in parenthesis.

ATTACHMENT B

Table B-3

Burn Pit Confirmation Samples Results for EPA Method SW8270 Semivolatile Organic Compounds

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in µg/g			
Acenaphthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Acenaphthylene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Acetophenone	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Aminobiphenyl	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Aniline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Anthracene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzidine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(a)anthracene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(a)pyrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(b)fluoranthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(g,h,i)perylene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzo(k)fluoranthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Benzoic acid	ND (1.8)	ND (1.9)	ND (1.8)	ND (1.7)
Benzyl alcohol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Bromophenyl phenyl ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Butylbenzylphthalate	ND (0.35)	ND (0.37)	0.0086[a] (0.37)	ND (0.35)
4-Chloro-3-methylphenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
p-chloroaniline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
bis(2-Chloroethoxy)methane	ND (0.35)	0.13[a] (0.37)	ND (0.37)	ND (0.35)
bis(2-Chloroethyl)ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
bis(2-chloroisopropyl)ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1-Chloronaphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Chloronaphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Chlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Chlorophenyl phenyl ether	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Chrysene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Di-n-octylphthalate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dibenz(a,h)anthracene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dibenz(a,j)acridine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

Table B-3

(Continued)

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in μg/g			
Dibenzofuran	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dibutylphthalate	ND (0.35)	ND (0.37)	0.011[a] (0.37)	ND (0.35)
1,2-Dichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,3-Dichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,4-Dichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
3,3'-Dichlorobenzidine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4-Dichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,6-Dichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Diethylphthalate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
p-Dimethylaminoazobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
7,12-Dimethylbenz(a)anthrancene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dimethylphenethylamine	ND (4.2)	ND (4.5)	ND (4.4)	ND (4.2)
2,4-Dimethylphenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Dimethylphthalate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4,6-Dinitro-2-methylphenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4-Dinitrophenol	ND (0.70)	ND (0.74)	ND (0.74)	ND (0.70)
2,4-Dinitrotoluene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,6-Dinitrotoluene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Diphenylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,2-Diphenylhydrazine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Ethyl methanesulfonate	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Bis(2-Ethylhexyl)phthalate	ND (0.35)	ND (0.37)	0.057[a] (0.37)	ND (0.35)
Fluoranthene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Fluorene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachlorobutadiene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachlorocyclopentadiene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Hexachloroethane	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Indeno(1,2,3-cd)pyrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

Table B-3

(Continued)

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in µg/g			
Isophorone	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Methyl methanesulfonate	ND (1.8)	ND (1.9)	ND (1.8)	ND (1.7)
3-Methylcholanthrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Methylnaphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Methylphenol(o-cresol)	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Methylphenol(p-cresol)	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitroso-di-n-butylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitrosodimethylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitosodiphenylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitosodipropylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
N-Nitrosopiperidine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Naphthalene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1-Naphthylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Naphthylamine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Nitroaniline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
3-Nitroaniline	ND (0.70)	ND (0.74)	ND (0.74)	ND (0.70)
4-Nitroaniline	ND (0.70)	ND (0.74)	ND (0.74)	ND (0.70)
Nitrobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-Nitrophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
4-Nitrophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pentachlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pentachloronitrobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pentachlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Phenacetin	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Phenanthrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Phenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2-picoline	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pronamide	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
Pyrene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

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Table B-3

(Continued)

BURN PIT:	A	OP	H	X
SAMPLE ID:	L6673	OP-4	L6661	X-2
Analyte	Concentration in μg/g			
Pyridine	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,2,4,5-Tetrachlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,3,4,6-Tetrachlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
1,2,4-Trichlorobenzene	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4,5-Trichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)
2,4,6-Trichlorophenol	ND (0.35)	ND (0.37)	ND (0.37)	ND (0.35)

[a] Compound detected at less than the detection limit. This value should be considered an estimate.
ID = Identification number.
μg/g = Micrograms per gram.
ND = Compound not detected. Detection limit is noted in parenthesis.

LAIDLAW
ENVIRONMENTAL
SERVICES

Secure Landfill

December 3, 1992

LOCKHEED CORPORATION
P.O. Box 1075
Coalinga, CA. 93210

Subject: Approval To Accept Waste For Disposal

To: Gene Matsushita/Chris Hess:

This letter is to notify you that the Imperial Valley Facility of Laidlaw Environmental Services has the appropriate permits for, and will accept the waste identified below.

> Generating Process and/or Location: Burn Pit Residues and Soil from Rocket Fuels and Propellants Testing located at 17255 South Highland Springs Road; Beaumont, California.
>
> Evaluation Number: 81201

This waste stream has been profiled NONHAZARDOUS by the generator and therefore does NOT need to provide the certification required under 40 CFR 268.

Acceptance of the above waste stream is based on an evaluation of information provided by the generator in the predisposal evaluation. Should the generator become aware of any changes to the content or characteristics of the waste, acceptability must be reevaluated. This evaluation will expire one year from the date of this letter and must be recertified if the waste stream is to continue to be disposed of at this facility.

Very truly yours,

Roger Higson

Roger Higson
General Manager

Laidlaw Environmental Services (Imperial Valley), Inc.
5295 South Garvey Road Post Office Box 158 Westmorland, California 92281
Phone 619.344.9400 Fax 619.344.9405

RADIAN
CORPORATION

FWS Approval Letter

United States Department of the Interior

FISH AND WILDLIFE SERVICE
FISH AND WILDLIFE ENHANCEMENT
SOUTHERN CALIFORNIA FIELD STATION
2730 Loker Avenue West
Carlsbad, California 92008

November 13, 1992

Mr. Hugh Hewitt
Pettis, Tester, Kruse & Krinsky
18881 Von Karman Ave., Suite 1600
Irvine, CA 92715

Re: Lockheed Potrero Remediation

Dear Mr. Hewitt:

This latter should serve to assure the County of Riverside officials that the U.S. Fish & Wildlife Service has approved Lockheed's remediation plan at Potrero, and that the Service worked closely with Dr. Michael O'Farrell to design the experiment protocol under which the remediation excavation is to proceed. Dr. O'Farrell has confirmed that he has trapped the site and that the SKR fence has been erected. Please relay to the County staff that issuance of the grading permit will not violate the Section 10(a) permit, and that the remediation excavation is being undertaken with the knowledge and prior approval of the Service pursuant to Dr. O'Farrell's scientific permit.

Sincerely,

Martin J. Kenney
for Jeffrey D. Opdycke
Field Supervisor

cc: Katherine Lind
Riverside County Counsel

RADIAN CORPORATION

Grading Permit

RADIAN CORPORATION

7 Corporate Park, Suite 240
Irvine, CA 92714
(714)261-8611

10 November 1992

290-062-09-06

Mr. Abdul Behnawa
Department of Building and Safety
County of Riverside
1370 South State Street, Suite A
San Jacinto, CA 92583

Subject: Application for Preliminary Grading Permit
Soil Remediation Site near Beaumont, California

Dear Mr. Behnawa:

This letter accompanies our application for a preliminary grading permit for soil remediation activities planned at a site near Beaumont, California. Our application is made up of the following:

1. A figure showing the location of the site, the actual area to be disturbed, the affected parcels, and existing topography is attached. The figure has been prepared under the guidance of a Registered Civil Engineer.

2. A check for $30.00 for plan review.

An additional sum required to complete review of this application will be determined at the time this application is submitted to your office. This sum will be added to the aforementioned $30.00 and submitted as one check.

The removal of all contaminated soils will be administered by the California State Department of Toxics Substances Control. Following completion of the remediation activities, final engineering plans will be prepared and submitted to the Building and Safety Department for review. Ending topography and compaction reports will also be submitted. Compaction shall meet the requirements of County of Riverside Ordinance No. 457 and also meet the requirements of the Chapters 26 and 70 of the 1991 edition of the Uniform Building Code.

Because remediation activities are scheduled to begin on Monday, 16 November 1992 any assistance you could provide to expedite the approval of the preliminary grading permit would be appreciated.

Thank you in advance for your timely attention to this matter.

Very truly yours,

Andrew I. Nishida, P.E.
Staff Engineer

AIN/me

Enc.

copy: Will Manker, Radian
Vicki Fry, Radian
File

UNIMPROVED ROADS

PARCEL BOUNDARY

2190 EXISTING TOPOGRAPHY

5 PARCEL NUMBER

e removal of soil will be conducted under the direction of
: California Department of Toxic Substances Control.

e approximate quantity of soil to be removed is 4,500 cubic yards.

final grading plan, prepared by a Registered Civil Engineer,
be submitted to the County of Riverside Department of Building
d Safety following restoration of the site.

information for the dashed lines was not available.
: locations shown are approximate.

erence: Assessor's Book 421, Page 25, County of Riverside,
uary 1972. The parcels shown are located in Section 36,
vnship 3 South, Range 1 West, Sections 1 and 2, Township 4
ith, Range 1 West, and Section 31, Township 3 South,
ge 1 East, San Bernardino Meridian.

6. HISTORICAL DRAINAGE SHALL BE MAINTAINED. AIN 11/10/92

7. IMMEDIATELY UPON COMPLETION OF THE PROJECT, THE COUNTY OF RIVERSIDE DEPARTMENT OF BUILDING AND SAFETY SHALL BE NOTIFIED.

8. SOIL TO BE BACKFILLED IN THE REMOVAL AREA WILL BE PLACED AND COMPACTED IN COMPLIANCE WITH ORDINANCE 457.

COUNTY OF RIVERSIDE
DEPARTMENT OF
BUILDING & SAFETY
APPROVED

BY [signature] 11/19/92
DATE

Approval of these plans shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of the state or county laws. This set of plans must be kept on the job until completion.

LOCKII PARCEL3 11/09/92

Cq #34820

PARCEL3 PARCEL2 PARCEL5	SCALE 1" = 400'		DRAWING TITLE: Location of Burn Pit Remediation, Lockheed Corporation, Beaumont, California — LOCKHEED BEAUMONT
...N ...Company	DRAWN BY VRL	DATE 11/06/92	
	CHECKED BY AAl	DATE 11/10/92	
	APPROVED BY AIN	DATE 11/10/92	CONTRACT NO. 290-062-03 / DRAWING NO. 1 OF 1 / REV.

Lockheed
Environmental Systems & Technologies Company

Burbank Program Office
2550 N. Hollywood Way, Suite 305, Burbank, CA 91505

RNH-0593/228
May 17, 1993

Mr. Abdul Behnawa
Department of Building and Safety
County of Riverside
1370 South State Street, Suite A
San Jacinto, CA 92583

Subject: Submittal of Final Grading Plan
Soil Remediation, Beaumont Site No. 1

Dear Mr. Behnawa,

This letter accompanies our submittal of the final grading plan for soil remediation activities at the Lockheed Beaumont No. 1 site off Highland Springs Road in Beaumont, California. A preliminary grading permit application was submitted (November 19, 1992) and approved.

The removal and recompaction of 48,000 cubic yards of topsoil and overburden took place from November 23 to December 29, 1992. The excavation of non-hazardous material from the burn pit area was conducted from November 26 through January 27, 1993. The transporting and final disposal of material at BKK Landfill, located in West Covina, California, was completed between December 1, 1992 and January 12, 1993. Materials removed chiefly consisted of wood, rusted drums, and miscellaneous non-hazardous materials in a soil matrix. Approximately 4100 tons of material was removed. 18.6 tons of additional waste was transported to Laidlaw Landfill in Westmoreland, California between February 1 and 5, 1993.

Following excavation activities, the area was graded to maintain historical drainage. The soil in the excavation areas was compacted in accordance with Ordinance 457. Compaction testing took place on December 4, 1992, January 20, and February 4, 1993. Final elevations were surveyed by Paul Perea on March 1, 1993.

Our submittal is made up of the following:

1. A figure showing the location of the site, an outline of the area that was disturbed, the affected parcel, and current and former topography is attached. Please note that the "existing topography" elevations which appear were obtained through aerial photography and accounts for the apparent discrepancy between original and final elevation. Spot elevations outside the excavated area confirm that the final grade is consistent with the surrounding area. The figure has been prepared under the guidance of a Registered Civil Engineer.

2. A compaction report describing the results of all compaction testing conducted at the site.

3. A check for plan review and anticipated administrative costs shall be written for the amount specified at the time of the submittal of this plan.

Should you have any questions please call Carol Yuge at 818/847-0197 or Gene Matsushita at (818) 847-0166.

Sincerely,

Carol Yuge fr

R.N. Helgerson,
Program Manager
Environmental Technical Services

RNH/GM/sk

Enclosure: As Noted

cc: Radian-Koerner

RADIAN
CORPORATION

7 Corporate Park, Suite 240
Irvine, CA 92714
(714)261-8611

21 May 1993

Mr. Abdul Behnawa
Department of Building and Safety
County of Riverside
1370 South State Street, Suite A
San Jacinto, CA 92583

Subject: Supplement to Final Grading Plan
Soil Remediation, Beaumont Site No. 1

Dear Mr. Behnawa:

This letter supplements our submittals regarding the soil remediation activities at the Lockheed Beaumont No. 1 site off Highland Springs Road in Beaumont, California.

Please consider this letter written certification that the final grading of the identified site was completed in accordance with the requirements of the preliminary grading permit (log #349820, approved 19 November 1992). Details of the site grading appear in the figure "Burn Pit Area Site Topography, March 1993", which Messrs. Gene Matsushita, Bob Gilbert and Will Manker presented to you 17 May 1993.

If you have any questions regarding this matter, please contact Carol Yuge at (818) 847-0197 or Gene Matsushita at (818) 847-0166.

Sincerely,

Andrew I. Nishida, P.E.
Staff Engineer

cc: G. Matsushita, Lockheed
C. Yuge, Lockheed
R. Helgerson, Lockheed
C. Koerner, Radian

APPENDIX D

WIND SPEED MONITORING LOGS

CONVERSION TABLE
FT/MIN ---> MILES/HOUR

FT/MIN	MILES/HR	FT/MIN	MILES/HR	FT/MIN	MILES/HR
1	0.011	60	0.682	1100	12.5
2	0.023	70	0.795	1200	13.6
3	0.034	80	0.909	1300	14.8
4	0.045	90	1.023	1400	15.9
5	0.057	100	1.1	1500	17.0
6	0.068	200	2.3	1600	18.2
7	0.080	300	3.4	1700	19.3
8	0.091	400	4.5	1800	20.5
9	0.102	500	5.7	1900	21.6
10	0.114	600	6.8	2000	22.7
20	0.227	700	8.0	2100	23.9
30	0.341	800	9.1	2200	25.0
40	0.455	900	10.2	2300	26.1
50	0.568	1000	11.4	2400	27.3

AIR MONITORING
NOTES

ACTION LEVELS/ACTION:

- 25 MPH INSTANTANEOUS WIND SPEED (25 MPH = 36.67 FT/SEC = 2200 FT/MIN)

  If at any time during monitoring a 25 MPH instantaneous wind speed is measured, notify the Senior Construction Site Representative and STOP work. Continue to monitor wind speed for 3 minutes collecting 1 measurement every minute until the average wind speed is less than 20 MPH. Work can resume when the average wind speed over a 3 minute duration falls below 20 MPH. Thereafter, continue to collect measurements every 15 minutes.

- 20 MPH AVERAGE WIND SPEED OVER A 3 MINUTE DURATION (20 MPH = 29.34 FT/SEC = 1760 FT/MIN)

  If 20 MPH or greater wind speeds are measured, continue monitoring for 3 minutes collecting 1 measurement every minute. If the average wind speed over that duration is 20 MPH or greater, notify the Senior Construction Site Representative and STOP work. Continue to monitor wind speed. Work can resume when the average wind speed over a 3 minute duration falls below 20 MPH.

OTHER ACTIONS INCLUDE:

- NONE. If the average wind speed is less than 20 MPH or instantaneous wind speed is less than 25 MPH, no action is required.

  NOTE: Wind speed measurements should be collected every 15 minutes unless otherwise required.

WIND SPEED MONITORING LOG

DATE 11-23-92 OPERATOR(S) T. TAYLOR

TIME	WIND SPEED (FT/MIN) MIN	WIND SPEED (MPH)	WIND DIRECTION	ACTION
11:05	154	1.7	South	~~NORTH CURB of [illegible] AREA NE CORNER~~ NON.
11:20	560	6.382	South	NONE
11:30	520	6.0	South	NONE
11:45	450	5.1	South	None
12:00	760	8.7	South	None
12:15	260	3.0	South	NONE
12:30	350	4.0	South	NONE
12:45	270	3.1	South	None
13:00	300	3.4	South	None
13:15	150	1.7	South	None
13:30	263	3.01	South	None
13:45	200	2.3	South	none
14:00	207	2.4	South	None
14:15	250	2.9	South	none
14:30	140	1.6	South	None
14:45	180	2.0	South	None
15:00	262	3.0	South	None
15:15	220	2.5	South	None
15:33	290	~~290~~ 3.3	South	None
15 45	190	2.1	"	"
1600	270	3.1	"	"
1615	300	3.4	"	"
1630	410	4.6	"	
1645	420	4.7		STOP MONITORING

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 11-24-92 MIN OPERATOR(S) TOM TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:30	50	.6	South	NONE
07:46	200	2.3	"	"
08:00	170	1.9	"	"
08:15	82	.93	"	"
08:32	160	1.8	"	"
08:46	6	.068	"	"
09:00	315	3.6	"	"
09:15	190	2.1	"	"
09:30	115	1.3	"	"
09:45	180	2.0	"	"
10:00	50	.6	"	"
10:15	280	3.2	"	"
moved 10:45	200	2.3	North	"
11:00	680	7.0	"	"
11:20	550	6.3	"	"
11:30	250	2.9	"	"
11:45	180	2.0	"	"
12:00	300	3.4	"	"
12.15	530	6.6	"	"
12:30	370	4.2	"	"
12:45	700	8.0	"	"
13:00	600	6.8	"	"
13:45	400	4.5	"	"
14:00	550	6.3	"	"
14:15	200	3.4	"	"
14:30	50	.6	"	"
14:45	180	2.0	"	"

PAGE 1 OF 2

WIND SPEED MONITORING LOG

DATE 11-24-92 MIN OPERATOR(S) TOM TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
1500	30	.34	NORTH	NONE
15:15	450	5.1	"	"
15:55	200	2.3	South North	"
16:15	350	4.0	NorthEast	"
16:30	300	3.4	South	"
16:45	650	7.4	"	"
~~1700~~ 16:55	600	6.8	"	"

PAGE 2 OF 2

WIND SPEED MONITORING LOG

DATE 11-25-92 MIN OPERATOR(S) Tom Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
08:15	800	9.1	EAST	NONE
08:30	900	10.2	"	"
08:45	910	10.3	"	"
09:00	1000	11.4	"	"
09:20	850	9.7	"	"
09:30	950	10.8	"	"
~~09:3~~ 09:45	900	10.2	"	"
10:00	1000	11.4	"	"
10:15	1200	13.6	"	"
11:00	650	7.4	"	"
11:16	600	6.8	"	"
11:45	650	7.4	"	"
12:00	1300	14.8	"	"
12:15	1200	13.6	"	"
12:30	1100	12.5	"	"
12:45	1000	11.4	"	"
13:15	700	8.0	"	"
13:30	1300	14.8	"	"
13:45	1000	11.4	"	"
14:00	1400	15.9	"	"
14:15	1700	19.3	"	"
14:30	1600	18.2	"	"
14:45	1630	18.5	"	"
15:00	1300	14.8	"	"

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 11/30/92 MIN OPERATOR(S) TOM TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
0830	1365	15.6	EAST ⇒ WEST	NONE
08:45	1800	20.5	"	"
09:15	3400	38.7	"	" Job Down
09:22	1500	17.0	"	"
09:23	1900	21.6	"	"
09:24	2500	28.4	"	"
09:30	2250	26.0	"	"
10:15	1500	17.0	"	"
10:30	1400	15.9	"	"
10:45	1400	15.9	"	"
11:00	1750	20.0	"	"
11:15	1650	18.8	"	"
11:35	1600	18.2	"	START UP
11:50	1630	18.5	"	"
12:00	1900	21.6	"	"
12:15	1300	14.8	"	"
12:30	1660	19.0	"	"
12:45	1200	13.6	"	"
13:00	1700	19.3	"	"
13:15	1800	20.5	"	"
13:30	1700	19.3	"	"
13:45	1900	21.6	"	"
1400	1400	15.9	"	"
14:15	1700	19.3	"	"
14:30	1800	20.5	"	"
14:45	1800	20.5	"	"
15:00	1100	12.5	"	"

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 12-1-92 OPERATOR(S) T. TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:15	400	4.5	South EASTERLY	NONE
07:30	400	4.5	"	"
07:45	300	3.4	"	"
08:00	100	1.1	"	"
08:15	80	.9	"	"
08:30	200	2.3	South	"
08:45	70	.8	"	"
09:00	Ø	Ø	"	"
70° 09:15	80	.9	"	"
09:30	40	.5	"	"
09:45	40	.5	"	"
10:00	160	1.7	"	"
10:15	200	2.3	"	"
10:30	600	6.8	"	"
10:45	250	3.0	"	"
11:00	650	7.4	EAST	"
11:15	950	10.8	"	
11:30	1200	13.6	"	"
11:45	1350	15.4	"	"
12:00	1200	13.6	"	"
12:15	900	10.2	"	"
73° 12:30	650	7.4	"	"
12:45	400	4.5	"	"
13:00	600	6.8	"	"
13:15	500	5.7	"	"
13:30	450	5.1	"	"
13:45	500	5.7	"	"

WIND SPEED MONITORING LOG

DATE 12-1-92 MIN OPERATOR(S) T.Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
1400	700	8.0	North	None
14:15	800	9.1	North	None
14:30	600	6.8	"	"
14:45	430	4.8	"	"
15:00	500	5.7	"	"

PAGE 2 OF 2

WIND SPEED MONITORING LOG

DATE 12-2-92 OPERATOR(S) TOM TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:15	180	2.0	SOUTHEAST	NONE
07:30	300	3.4	"	"
07:45	200	2.3	"	"
08:00	200	2.3	"	"
08:15	250	2.9	EAST	"
08:30	100	1.1	"	"
08:45	50	.6	"	"
09:00	300	3.4	"	"
09:15	70	.8	"	"
09:30	30	.341	"	"
09:45	300	3.4	"	"
10:00	200	2.3	"	"
10:15	300	3.4	"	"
10:30	50	.0568	"	"
10:45	50	.0568	"	"
11:00	300	3.4	"	"
11:15	400	4.5	"	"
11:30	600	6.8	"	"
11:45	900	10.2	NORTHWEST	"
12:15	600	6.8	"	"
12:30	200	2.3	WEST	"
12:45	80	.909	"	"
13:00	100	1.1	"	"
14:30	400	4.5	"	"
14:45	50	.568	"	"
1500	50	.568	"	"
1515	100	1.1	"	"

PAGE 1 OF ___

WIND SPEED MONITORING LOG

DATE 12-2-92 OPERATOR(S) T. Turgl

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
15:30	100	1.1	WEST	NONE
15:45	200	2.3	"	"
16:00	150	1.7	"	"

WIND SPEED MONITORING LOG

DATE 12/3/92 OPERATOR(S) Courtney Morris

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
755	101	1.1	NW	
815	105	1.2	NW	
830	13	0.1	NW	
845	74	0.8	NE	
900	77	0.9	NW	
935	266	3.0	NE	
945	49	0.6	N	
1000	437	5.0	NE	
1015	939	10.7	E	
1030	436	5.0	E	
1045	305	3.5	E	
1100	284	3.2	E	
1115	572	6.5	E	
1130	465	5.3	E	
1145	231	2.6	E	
1200	40	0.5	NW	
1230	64	0.7	NW	
1245	316	3.6	NW	
1300	728	8.3	E	
1320	339	3.9	E	
1330	284	3.2	SE	
1345	166	1.9	SE	
1400	215	2.4	SE	
1415	160	1.8	SE	
1430	370	4.2	W	
1445	236	2.7	NW	
1500	182	2.0	NW	

WIND SPEED MONITORING LOG

DATE 12/3/92 OPERATOR(S) Courtney Morris

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
1515	271	3.0	NW	
1530	302	3.4	W	
1545	291	3.3	W	
1600	53	0.6	W	

WIND SPEED MONITORING LOG

DATE 12/4/92 OPERATOR(S) Courtney Morris

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
0745	1571	17.9	E	
0800	1238	14.0	E	
0815	993	11.3	E	
0830	1259	14.3	E	
0845	1021	11.6	E	
0900	864	9.8	E	
0915	702	8.0	E	
0930	367	4.2	E	
0945	405	4.6	E	
1000	550	6.3	W	
1015	424	4.8	W	
1045	364	4.1	E	
1100	55	0.6	E	
1115	150	1.7	E	
1130	133	1.5	E	

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 12-7-92 OPERATOR(S) T. TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:30	120	1.3	South	none
07:45	130	1.4	"	"
08:00	160	1.8	"	"
08:15	50	.6	"	"
08:30	60	.7	"	"
08:45	40	.5	"	"
09:00	90	1.0	"	"
09:15	300	3.4	"	"
55° 09:30	160	1.8	"	"
09:45	300	3.4	Easterly	"
10:00	200	2.3	"	"
10:15	150	1.7	"	"
10:30	180	2.0	"	"
10:45	400	4.5	"	"
11:00	400	4.5	"	"
11:15	200	2.3	"	"
11:30	350	4.0	"	"
11:45	200	2.3	"	"
12:00	300	3.4	"	"
12:15	100	1.1	"	"
12:30	600	6.8	"	"
55° 12:45	500	5.7	"	"
13:00	400	4.5	"	"
52° 13:15	400	4.5	"	"
13:30	300	3.4	"	"

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 12-8-92 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	300	3.4	South	NONE
07:15	300	3.4	"	"
07:30	130	1.4	"	"
[illegible]	[illegible]	[illegible]	[illegible]	"
[illegible]	[illegible]	[illegible]	[illegible]	
	[illegible]	[illegible]	W-E	
[illegible]	150	[illegible]	W-E	
[illegible]	[illegible]		[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]		S-N	
[illegible]	796		S-N	
[illegible]	450		S-N	
[illegible]				
[illegible]				
[illegible]	475		S-N	NONE
[illegible]	[illegible]			
15				
[illegible]	520		S-N	
[illegible]	[illegible]			
[illegible]	[illegible]		[illegible]	
[illegible]	425		[illegible]	None
[illegible]				

PAGE 1 OF ___

WIND SPEED MONITORING LOG

DATE 12/9/92 OPERATOR(S) MSH

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
6.45	165	1.88	E-W	None
7:00	178	2.02	"	"
7:15	210	2.39	"	"
7:30	143	1.62		
7:45	286	3.25	E-W	
8:00	[illegible]	1.70		
8.15	no wind	∅		
8:30	57	0.65	S-N	
8:45	85	0.97	"	"
9:00	60	0.68	E-W	
9:15	120	1.37	S-N	
9:30	124	1.41	S-N	None
9:45	136	1.55	[illegible]	"
10:00				
10:15				
10:30	[illegible]	7.41	[illegible]	None
10:45	500	5.70	W-E	"
11:00	275	3.13	"	"
11.15	630	7.18	"	
11.30	500	5.70	"	"
11.45	500	5.70	"	
12:00	360	4.10	"	"
12.15	420	4.78	"	"
12:30	550	6.27	"	"
12:45	550	6.27	"	"
1:00	580	6.61	"	"
1:15	700	7.98	"	"

PAGE 1 OF 2

WIND SPEED MONITORING LOG

DATE 12/9/92 OPERATOR(S) M8H

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
1:30	430	4.9	W-E	None
1:45	360	4.10	"	"
2:00	400	4.56	"	"
2:15	375	4.27	"	"
2:30	230	2.62	"	"
2:45	120	1.37	"	"
3:00	95	1.08		
3:15	225	2.56	S-N	"
3:30	90	1.02	"	"
3:45	100	1.1	"	"
4:00	50	.6	"	"

PAGE 2 OF 2

WIND SPEED MONITORING LOG

DATE 12/10/92 OPERATOR(S) Massie Hatch

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
7:00	Ø	Ø	N/A	None
7:15	80	0.91	S-N	"
7:30	100	1.14	"	"
7:45 8:00	~~50~~ 50 100	0.57 1.14	" "	"
8:15	Ø	Ø	"	"
8:30	90	1.02	"	"
8:45	215	2.45	"	"
9:00	22	0.25	"	
9:15	50	0.57	"	"
9:30	30	0.46	"	"
9:45	70	0.80	W-E	"
10:00	110	1.25	S-N	"
10:15	320	3.65	S-N	"
10:30	70	0.80	"	"
10:45	430	4.9	N-S	"
11:00	900	10.26	"	"
11:15	375	4.28	"	"
11:30	500	5.7	"	"
11:45	50	0.57	"	"
12:00	320	3.65	"	"
12:15	80	0.91	"	"
12:30	600	6.84		
12:45	375	4.28	"	"
1:00	660	7.52	W-E	"
1:15	420	4.79	"	"
1:30	500	5.7	"	"
1:45	350	3.99	"	"

WIND SPEED MONITORING LOG

DATE 12/10/92 OPERATOR(S) Massie Hatch

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
2:00	625	7.12	N-S	None
2:15	350	3.99	"	"
2:30	35	0.4	"	"
2:45	∅	∅	"	"
3:00	200	2.28	"	"
3:15	450	5.13	"	"
3:30				
3:45				
4:00				

WIND SPEED MONITORING LOG

DATE 12-11-92 OPERATOR(S) T. Tay[illegible]

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
06:45	0	0	North	None
07:00	0	0	"	"
07:15	0	0	"	"
07:30	50	.6	"	"
07:45	50	.6	"	"
800	30	.3	"	"
8:15	40	.5	"	"
8:30	200	2.3	"	"
8:45	100	1.1	"	"
9:00	250	2.90	"	"
9:15	150	1.70	"	"
9:30	200	2.3	"	"
9:45	100	1.1	"	"
10:00	50	.6	"	"

WIND SPEED MONITORING LOG

DATE 12/14/92 OPERATOR(S) CAROL GALIZA

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
0830	152	1.7	N → S	NONE
0845	162	1.8	N → S	NONE
0900	59	0.65	"	NONE
0915	220	2.5	E → W	NONE
0930	30	0.34	N → S	"
0945	250	2.9	E → W	"
1000	100	1.1	N → S	"
1015	550	6.3	W → E	"
1030	800	9.1	N → S	"
1045	300	3.4	N → S	"
1115	350	3.96	S → N	"
1130	400	4.5	S → N	"
1145	450	5.06	N → S	"
1200	350	3.96	S → N	"
1215	500	5.7	E → W	"
1230	320	3.7	S → N	"
1300	320	3.7	E → W	"
1315	450	5.06	W → E	"
1345	100	1.1	E → W	"
1400	120	1.3	E → W	"
1415	440	5.0	W → E	
1430	STOPPED WORK FOR THE DAY			

WIND SPEED MONITORING LOG

DATE 12/15/92 OPERATOR(S) CAROL CALIZA

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
0655	100	1.1	E → W	NONE
0700	320	3.6	N → S	"
0715	50	0.57	N → S	"
0800	500	5.7	N → S	"
0815	350	3.9	N → S	"
0830	250	2.8	E → W	"
0845	130	1.4	W → E	"
0900	100	1.1	S → N	"
0915	580	6.7	E → W	"
0930	420	4.7	E → W	"
0945	300	3.4	E → W	"
1015	500	5.7	E → W	"
1030	400	4.5	S → N	"
1045	400	4.5	S → N	"
1100	450	5.0	E → W	"
1115	640	7.2	S → N	"
1130	550	6.3	S → N	"
1145	400	4.5	S → N	"
1200	400	4.5	S → N	"
12:15	300	3.4	"	"
12:30	400	4.5	"	"
12:45	600	6.8	"	"
13:00	~~600~~ 650	7.4	"	"
13:15	600	6.8	"	"
13:30	650	7.4	"	"
13:45	450	5.0	"	"
14:00	400	4.5	"	"

PAGE 1 OF 2

WIND SPEED MONITORING LOG

DATE 12-15-92 OPERATOR(S) ____________

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
14:15	400	4.5	N to S.	None
14:30	300	3.4	"	"

WIND SPEED MONITORING LOG

DATE 12-16-92 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
06:45	200	2.3	E to W	None
07:00	300	3.4	"	"
07:15	150	1.7	"	"
07:30	250	2.9	"	"
07:45	700	8.0	"	"
8:00	200	2.3	"	"
08:15	250	2.9	"	"
08:30	300	3.4	"	"
08:45	1000	11.4	"	"
09:00	600	6.8	"	"
09:15	500	5.7	"	"
09:30	800	9.1	"	"
09:45	800	9.1	"	"
10:00	700	8.0	"	"
15	450	5.1	"	"
30	500	5.7	"	"
10:45	300	3.4	"	"
11:00	800	9.1	"	"
11:15	500	5.7	"	"
11:30	700	8.0	"	"
11:45	550	6.3	"	"
12:00	900	10.2	"	"
12:15	500	6.8	"	"
12:30	200	2.3	"	"
12:45	400	4.5	"	"
13:00	300	3.4	"	"
13:15	350	4.0	"	"

WIND SPEED MONITORING LOG

DATE 12-16-92 OPERATOR(S) T. TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
13:30	100	1.1	E to W	Nado
13:45	200	2.3		
14:00	300	3.4		
14:15	250	2.9		
14:30	150	1.7		
14:45	300	3.4		
15:00	100	1.1		
15:15	150	1.7		
15:30	200	2.3		
15:45	200	2.3		
16:00	300	3.4		
16:15	100	1.1		

PAGE 2 OF 2

WIND SPEED MONITORING LOG

DATE 12-17-92 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:30	300	3.4	N to S.	NONE
07:45	Ø	Ø	"	"
08:00	40.	.5	"	"
0815	Ø	Ø	"	"
08:30	Ø	Ø	"	"
08:45	50	.6	"	"
09:00	40	.5	"	"
9:15	30	.3	"	"
9:30	20	.2	"	"
9:45	Ø	Ø	"	"
10:00	100	1.1	"	"
10:15	50	.6	"	"
30	200	2.3	"	"
45	100	1.1	"	"
11:00	300	3.4	"	"
11:30	100	1.1	~~N~~	"
11:45	200	2.3	"	"
12:15	270	3.1	"	"
12:45	125	1.4	NW	"
1:00	870	10.0	NW	
1:15	[illegible]	5.5	NW	"

PAGE 1 OF ___

WIND SPEED MONITORING LOG

DATE 12-18-92 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	400	4.5	S to N	None
07:15	350	4.0	"	"
07:30	100	1.1	"	"
07:45	0	0	"	"
08:00	200	2.3	"	"
08:15	200	"	"	"
08:30	50	.6	"	"
08:45	175	2.0	"	"
09:00	300	3.4	"	"
09:15	200	2.3	"	"
09:30	100	1.1	"	"
09:45	100	1.1	"	"
10:00	300	3.4	"	"
10:15	550	6.3	"	"
10:30	700	8.0	"	"
10:45	430	4.8	"	"
11:00	600	6.8	"	"

PAGE 1 OF ___

WIND SPEED MONITORING LOG

DATE 12-22-92 OPERATOR(S) T. TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	550	6.3	West/EAST	NONE
07:15	700	8.0	"	"
07:30	600	6.8	"	"
07:45	700	8.0	"	"
08:00	750	8.6	"	"
08:15	900	10.2	"	"
08:30	640	7.3	"	"
08:45	400	4.5	"	"
09:00	500	5.7	"	"
09:15	100	1.1	"	"
09:30	200	2.3	"	"
09:45	510	5.8	"	"
10:00	600	6.8	"	"
10:15	1050	12.0	EAST to West	"
10:30	900	10.2	"	"
10:45	1300	14.8	"	"
11:00	380	4.3	"	"
11:15	1700	19.3	"	"
11:30	2000	22.7	"	"
11:45	1500	17.0	"	"
12:00	1800	20.5	"	"
12:15	600	6.8	"	"
12:30	500	5.7	"	"
12:45	1300	14.8	"	"
13:00	1300	14.8	"	"
13:15	1000	11.4	"	"
13:30	1200	13.6	"	"

PAGE 1 OF 2

WIND SPEED MONITORING LOG

DATE 12-22-92 OPERATOR(S) [illegible]

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
13:45	700	8.0	East to West	None
14:00	400	4.5	"	"
14:30	1100	12.5	"	"
15:00	1450	16.5	"	"
15:15	200	2.3	"	"
15:30	1050	12.0	"	"
15:45	1000	11.4	"	"
16:00	640	7.3	"	"
16:15	900	10.2	"	"

WIND SPEED MONITORING LOG

DATE 12-22-92 OPERATOR(S) T Tay[illegible]

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	400	4.5	E to W	none
07:15	200	2.3	"	"
07:30	410	4.6	"	"
07:45	200	2.3	"	"
08:00	300	3.4	"	"
08:15	100	1.1	"	"
08:30	70	.8	"	"
08:45	600	6.8	"	"
09:00	1200	13.6	"	"
09:15	500	5.7	"	"
09:30	400	8.0	"	"
09:45	200	2.3	"	"
10:00	1000	11.4	"	"
10:15	1500	17.0	"	"
10:30	1400	15.9	"	"
10:45	1000	11.4	"	"
11:00	1500	17.0	"	"
11:15	1200	13.6	"	"
11:30	800	9.1	"	"
11:45	1500	17.0	"	"
Gust 12:00	1800	20.5	"	"
12:15	1300	14.8	"	"
12:30	1300	14.8	"	"
12:45	1500	17.0	"	"
13:00	1750	19.9	"	"
13:15	1500	17.0	"	"
13 30 13 45	1200 1400	13.6 15.9	" "	"

PAGE 1 OF ___

WIND SPEED MONITORING LOG

DATE 12-21-92 OPERATOR(S) T.TAYLOR

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:15	200	2.3	~~South~~ N	NONE
07:30	300	3.4	"	"
07:45	250	2.9	"	"
08:00	170	1.9	"	"
08:15	200	2.3	"	"
08:30	200	2.3	EAST	"
08:45	100	1.1	"	"
09:00	100	1.1	"	"
09:15	300	3.4	South	"
09:30	600	6.8	"	"
09:45	350	4.0	"	"
10:00	400	4.5	"	"
10:15	260	3.0	"	"
10:30	210	2.4	"	"
10:45	90	1.0	"	"
11:00	300	3.4	"	"
11:15	340	3.9	"	"
11:30	50	.6	"	"
11:45	60	.7	"	"
12:00	150	1.7	"	"
12:15	200	2.3	"	"
12:30	150	2.0	"	"
12:45	305	3.5	"	"
13:00	250	2.9	"	"
13:15	200	2.3	Northeast	"
13:30	100	1.1	"	"
13:45	150	1.7	"	"

PAGE 1 OF 2

WIND SPEED MONITORING LOG

DATE 12-21-92 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
14:00	200	2.3	N/E	None
14:15	550	6.3	"	"
14:30	250	2.9	"	"
14:45	280	3.2	"	"
15:00	50	.6	"	"
15:15	160	1.6	"	"
1530	100	1.1	"	"
15:45	210	2.4	"	"
16:00	125	1.4	"	"
16:15	100	1.1	"	"

WIND SPEED MONITORING LOG

DATE 12/28/92 OPERATOR(S) Will Manker

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
0700	100	1.1	W to E	None
0730	150	1.7	"	"
0800	200	2.3	"	"
0845	250	2.9	"	"
0900	200	2.3	"	"
0930	100	1.1	"	"
1015	170	1.9	"	"
1030	200	2.3	"	"
1100	100	1.1	"	"
1130	150	1.7	"	"
1200	150	1.7	"	"
1245	250	2.9	"	"
1315	300	3.4	"	"
1400	350	4.0	"	"

PAGE ___ OF ___

WIND SPEED MONITORING LOG

DATE 12-29-92 OPERATOR(S) [illegible]

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	200	2.3	South	None
07:15	300	3.4	"	"
07:30	100	1.1	"	"
07:45	450	5.1	"	"
08:00	600	6.8	"	"
08:15	200	2.3	"	"
08:30	430	4.8	"	"
08:45	700	8.0	"	"
09:00	850	9.7	"	"
09:15	1000	11.4	"	"
09:30	1400	15.9	"	"
09:45	1200	13.6	"	"
10:00	750	8.6	"	"
10:15	270	3.1	"	"
10:30	600	6.8	"	"
10:45	200	2.3	"	"
11:00	450	5.1	"	"
11:15	500	5.7	"	"
11:30	1000	11.4	"	"
11:45	1150	13.1	"	"
12:00	1200	13.6	"	"
12:15	550	6.3	"	"
12:30	400	4.5	"	"
12:45	900	10.2	"	"
13:00	1000	11.4	"	"

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 12-30-92 OPERATOR(S) T. TAylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	50	.6	South	Noble
07:15	50	.6	"	"
07:30	Ø	Ø	"	"
07:45	0	Ø	"	"
08:00	30	.3	"	"
8:15	0	Ø	"	"
8:30	100	1.1	"	"
8:45	50	.6	"	"
9.00	40	.5	"	"
9:15	60	.7	"	"
30	50	1.Ø	"	"
10:00	Ø	Ø	"	"
10:30	Ø	Ø	"	"
11:00	120	1.3	EAST	"
11:30	80	.9	"	"
12:00	100	1.1	"	"
12:30	300	3.4	"	"
12:45	500	5.7	"	"
13:00	320	3.6	"	"
13:15	400	4.5	"	"
13:30	500	5.7	"	"
13:45	400	4.5	"	"
14:00	430	4.8	"	"
14:15	550	6.3	"	"
14:30	800	9.1	South West	"
14:45	600	6.8	"	"
15:00	500	5.7	"	"

PAGE 1 OF 2

WIND SPEED MONITORING LOG

DATE 12-30-92 OPERATOR(S) T. [illegible]

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
15:00	200	2.3	SouthWest	Vap
15:30	300	3.4	"	"
16:00	100	1.1	"	"

WIND SPEED MONITORING LOG

DATE 12-31-92 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:30	ø	ø	South	None
07:45	50	.6	"	"
08:00	100	1.1	"	"
08:15	600	6.8	"	"

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 1-4-93 OPERATOR(S) [illegible signature]

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	50	.6	South	None
07:30	60	.7		
08:00	80	.9		
08:15	70	.8		
8:30	100	1.1		
8:45	100	1.1		
9:00	50	.6		
9:15	40	.5		
9:30	80	.91		
45	60	.7		
10:00	80	.91		
12:00	400	4.5	North	None
12:15	1100	12.5	"	"

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 1-5-93 OPERATOR(S) T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
07:00	50	.6	West	None
07:30	80	.9		
08:00	100	1.1		
08:30	60	.7		
09:00	30	.3		
09:30	0	0		
12:00	300	3.4	North	None
12:30	200	2.3		
13:00	500	5.7		
13:30	100	1.1		
14:00	600	6.8		
14:30	550	6.3		

PAGE 1 OF 1

WIND SPEED MONITORING LOG

DATE 1/1-93 OPERATOR(S. T. Taylor

TIME	WIND SPEED (FT/MIN)	WIND SPEED (MPH)	WIND DIRECTION	ACTION
8:00	200	2.3	South	None
8:30	400	4.5		
9:00	250	2.90		
9:30	100	1.1		
10:00	150	1.7		
10:30	200	2.3		
11:00	500	5.7		
12:00	200	2.3	North	
13:00	300	3.4	North	
14:00	100	1.1	West	
15:00	500	5.7		

PAGE 1 OF 1

RADIAN
CORPORATION

APPENDIX E

VOC MONITORING AND OVM/PID CALIBRATION LOGS

OVM CALIBRATION LOG

					Calibration			Post-Use Calibration			
					Calibration Gas						
Date	Time	OVM Serial No.	Model No.	Lamp (10.2, 11.8)	Concentration (ppm)	Cylinder/ Batch No.	PRE CAL / POST Calibration Check (ppm)	Post-Use Calibration Check (ppm)	Time	Project	Initials
11/23/92	800	35403-250	580B	10	100 ± 2	267952	100	60	1700	LB BP	CLG
11/24/92	605	"	"	"	"	060892 "	152 / 172	64.2	1700	LB BP	CLG
11/25/92	7:00	"	"	"	"	"	98.4 / 100.8	68.0	15:15	LB BP	~~TT~~
11/30/92	07:30	"	"	"	"	12-18 060892	66.1 / 101.5	64.4	15:15	LB BP	T.T.
12/1/92	06:35	"	"	"	"	"	73.0 / 101.9	N/A	[illegible]	LB BP	T.T.
12/1/92	06:45	3262	"	"	"	"	91.9 / [illegible]	57.9	15:35	"	T.T.
12/2/92	07:05	3260	"	"	"	"	54.6 / 101.5	89.0	[illegible]	"	"
12/3/92	07:20	"	"	"	"	"	84.3 / 99.6	86.8	16:15	"	T.T.
"	"	2490	"	"	"	"	125.4 / 110.0	86.6	16:15	"	T.T.
12-4-92	7:10	2490	"	"	"	L3242 081192	84.0 / 103.7	68.5	12:38	"	T.T.
"	"	3262	"	"	"	"	77.0 / 103.0	186.7	12:38	"	T.T.
12-7-92	07:00	3262	"	"	"	"	103.5 /	PLACED ON Feb[illegible]	10:2[illegible]	"	"
12-7-92	10:20	2490	"	"	"	"	98	95	14:55	"	"
12-8-92	0635	"	"	"	"	"	98	92	14:20	"	"
"	"	3262	"	"	"	"	91.6 / 101.9	94.3	"	"	"
12-9-92	06:35	2490	"	"	"	"	92.0 / 102.0	99.3	15:18	"	"
12-9-92	06:35	3262	"	"	"	"	83.6 / 98.9	82.0	16:15	"	"
12-10-92	06:25	2490	"	"	"	"	98.0	~~[illegible]~~ 92.5	14:55	"	"
"	"	3262	"	"	"	"	82.0 / 99.5	[illegible]	[illegible]	"	MFH
12-11-92	0630	2490	"	"	"	267952-123091	89.0 / 101.3	99.7	14:00	"	T.T.
12-14-92	06:25	2490	"	"	"	"	103.0	[illegible]	[illegible]		
12-14-92	0730	3262	"	"	"	"	70.3 / 102.9	98.0	14:40	"	CLG
12-15-92	06:10	2490	"	"	"	"	98.2	97.4	14:30	" Not used Today	T.T.
12-15-92	0630	3262	"	"	"	"	87 / 100.9	100.9	"	"	"
12-16-92	06:00	2490	"	"	"	"	98.0	94.0	16:30	"	T.T.

OVM CALIBRATION LOG

					Calibration			Post-Use Calibration			
					Calibration Gas						
Date	Time	OVM Serial No.	Model No.	Lamp (10.2, 11.8)	Concentration (ppm)	Cylinder/ Batch No.	Calibration Check (ppm)	Post-Use Calibration Check (ppm)	Time	Project	Initials
12-17-92	06:10	3262	580 B	10	100±2	267952 123091	87.0/100.9	90.6	—	LASC	WJM
12-18-92	06:45	"	"	"	"	267952 060892	100.7	100.9	BEO	LASC	T.T.
12-21-92	06:40	"	"	"	"	"	95.4/104.1	95.7	11:30	"	"
12-22-92	06:15	"	"	"	"	"	91.5/100.9	94.0	16:36	"	"
12-23-92	06:10	"	"	"	"	"	87.0/101.5	97.1	14:15	"	"
12-28-92	06:20	"	"	"	"	060892	97.1/104.8	97.1	16:45	"	WJM
12-29-92	06:20	"	"	"	"	"	99.1/	104.3	14:00	"	T.T.
12-30-92	06:15	"	"	"	"	"	104.8	97.1	14:40	"	"
12-31-92	06:13	"	"	"	"	051092	87.3/100.9	100.9	14:32	"	"
1-4-93	11:00	"	"	"	"	"	100.9 --	92.8	17:15	"	T.T.
1-5-93	06:00	"	"	"	"	"	91.8/98.4	96.4	14:10	"	"
1-11-93	06:45	"	"	"	"	"	99.0	96.4	14:15	"	T.T.

OVM/VOC MONITORING
NOTES

ACTION LEVEL/ACTION:

- 50 PPM

  If at any time during monitoring a reading of 50 PPM is measured, notify the Senior Construction Site Representative. Implement vapor suppression measures. If readings are still at or greater than 50 PPM then STOP work. Continue to monitor air for VOC concentration. Work can resume when the concentration falls below 50 PPM. (From Radian Site Health & Safety Plan)

- 100 PPM

  According to the SCAQMD rules, if a reading of 100 PPM or greater is measured, the area generating the emissions shall immediately be completely covered with a minimum of 6 inches of clean dirt or an approved foam and the following actions implemented:

  1) Excavation of the affected area shall not be recommence until the organic readings are below 100 PPM.

  2) Excavation of the affected area shall be conducted in such a manner as to limit the working face to less than 1000 square feet or other smaller area deemed appropriate by SCAQMD personnel to reduce nuisance potential.

OTHER ACTIONS INCLUDE:

- NONE. If the concentrations remain less than 50 PPM, no action is required.

  NOTE: The OVM will be set-up 10 feet directly downwind of the excavation activities, and will be moved according to changes in excavation activity location. Readings will be collected continuously and the average value over 1 minutes will be automatically logged by the OVM. An alarm will sound if the concentration hits 50 PPM at any one time.

  At the end of each day, record the logged data on the "VOC Monitoring Log", check the calibration, recalibrate if necessary, and charge the batteries.

MANUAL LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11/24/92 OPERATOR TOM TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:30	0	NE CORNER POSITION #1	NONE
07:46	0	"	"
08:00	0	"	"
08:15	0	"	"
08:33	0	"	"
08:46	0	"	"
09:01	0	"	"
09:15	0	"	"
09:32	0	"	"
09:45	3.0	"	"
10:00	9.8	"	"
10:15	0	"	"
10:45	0	Position #2	"
11:00	Ø	"	"
11:20	Ø	"	"
11:30	0	"	"
11:45	Ø	"	"
12:00	Ø	"	"
12:10	check calibration @ 72.0ppm	recalibrated @ 104 PPM.	
12:15	3.1	Position #2	NONE
12:30	1.6	"	"
12:45	Ø	"	"
13:00	Ø	"	"
13:45	0	"	"
13:50	Moved location	to Position #3	See Map -
14:00	Ø	POSITION #3	NONE
14:15	Ø	"	"
14:30	Ø	"	"

MORNING 0615

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ____ YES ✓

PAGE 1 OF 2

AUTO LOG ON OVM

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11/23/92 OPERATOR CAROL L. GALIZA

TIME	VOCs (PPM)	OVM POSITION	ACTION
1131	1.0		
1145	4.7		
1200	6.5		
1215	5.9		
1230	12.0		
1245	16.2		
1300	21.7		
1315	28.4		
1330	32.7		
1345	39.4		
1400	44.9		
1417	37.6		
1432	39.4		
1447	39.4		
1502	37.6		
1517	28.4		
1532	19.9		
1547	15.0		
1602	6.5		
1617	0.00		
1632	00.0		

POST CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES ✓

1700

→ LAMP & FILTER CLEANED, OVM WILL BE CALIBRATED AT LEAST 3 TIMES/DAY TO ENSURE CORRECT ~~REA~~ MEASUREMENTS ARE

AUTO LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11/24/92 OPERATOR C. GAUZA

TIME	VOCs (PPM)	OVM POSITION	ACTION
0725	00.0		
0740	00.0		
0755	00.0		
0810	00.0		
0825	00.0		
0840	00.0		
0855	00.0		
0910	00.0		
0925	00.0		
0940	~~00~~2.3		
0955	9.8		
1010	00.0		
1025	00.0		
1040	00.0		
1055	00.0		
1110	00.0		
1125	00.0		
1140	00.0		
1155	00.0		
1210	00.9		
1225	01.6		
1240	00.0		
1255	00.0		
1310	00.0		
1325	00.0		
1340	00.0		
1355	00.0		
1410	00.0		

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ____ YES ✓

MANUAL LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11-24-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:45	Ø	POSITION #3	NONE
15:00	Ø	"	"
15:15	Ø	"	"
15:55	Ø	"	"
16:15	Ø	"	"
16:30	Ø	"	"
16:35	moved OVM	Back to Position #1	"
16:45	Ø	"	"
16:55	Ø	"	"

CALIBRATION CHECKED? _______

RECALIBRATION NECESSARY? NO____ YES____

PAGE 2 OF 2

Positions for OVM 11-24 92

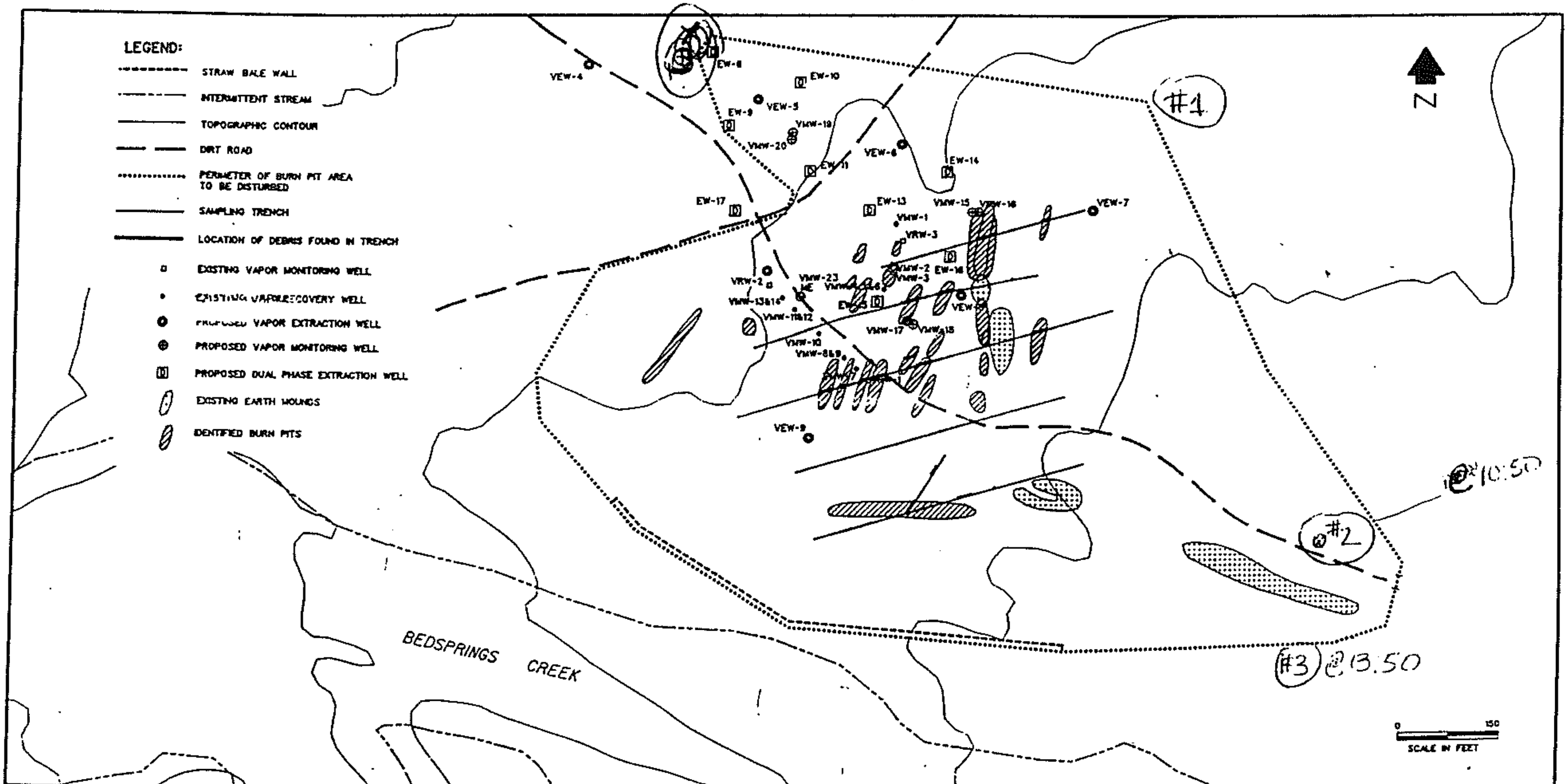


Figure 1.
Location of Graded Area &
Sediment Control Measures

AUTOLOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11/24/92 OPERATOR C. GALIZA

TIME	VOCs (PPM)	OVM POSITION	ACTION
1425	00.0		
1440	00.0		
1455	00.0		
1510	00.0		
1525	00.0		
1540	00.0		
1555	00.0		
1610	00.0		
1625	00.0		
1640	00.0		
1655	00.0		

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO ___ YES ✓

AutoLog

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11-25-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:25	00.0		
07:40	00.0		
07:55	00.0		
08:10	00.0		
08:25	00.0		
08:40	00.0		
08:55	00.0		
09:10	00.0		
09:25	00.0		
09:40	02.3		
09:55	09.8		
10:10	00.0		
10:25	00.0		
10:40	00.0		
10:55	00.0		
11:10	00.0		
11:25	00.0		
11:40	00.0		
11:55	00.0		
12:10	0.9		
12:25	1.6		
12:40	00.0		
12:55	00.0		
13:10	00.0		
13:25	00.0		
13:40	00.0		
13:55	00.0		
14:10	00.0		

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ___ YES ✓

PAGE 1 OF 2

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11-25-92 OPERATOR Tom Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
08:15	2.3	Position #1	NONE.
08:30	Ø	"	"
08:45	Ø	"	"
09:00	Ø	"	"
09:20	Ø	"	"
09:30	Ø	"	"
09:35	Moved to Position #2	Position #2	"
09:45	Ø	"	"
10:00	Ø	"	"
10:15	2.3	"	"
11:00	10.3	"	"
11:16	11.9	"	"
11:45	15.0	"	"
12:00	16.6	"	"
12:15	16.6	"	"
12:30	19.8	"	"
12:45	19.8	"	"
12:50	Calibrate @ 111.0 ppm	Recalibrate	93.0 @ 12:55
13:15	10.1	Position #2	NONE
13:30	.5	"	"
13:45	Ø	"	"
14:00	Ø	"	"
14:16	Ø	"	"
14:30	Ø	"	"
14:45	Ø	"	"
15:00	Ø	"	"

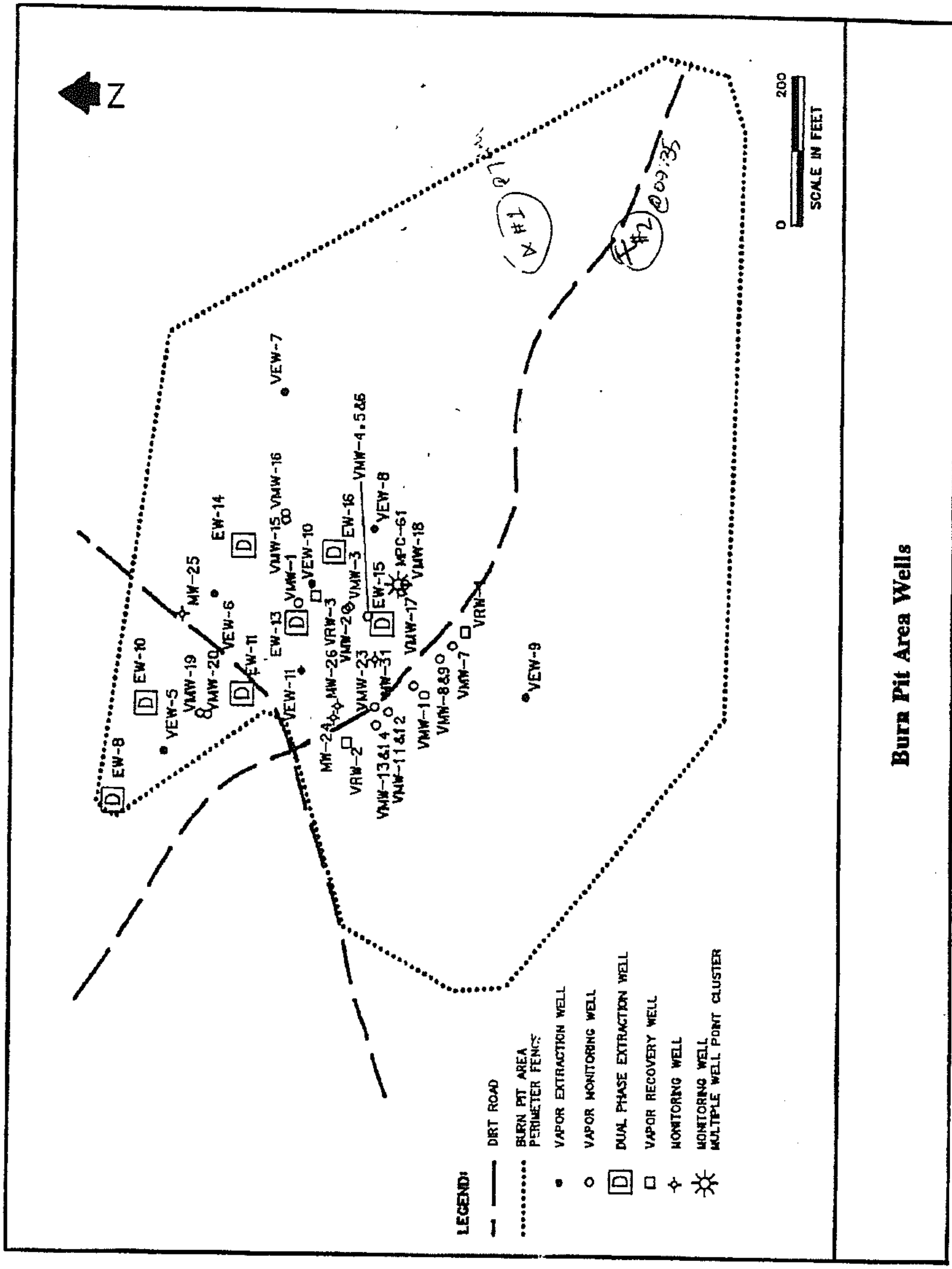
CALIBRATION CHECKED? ✓ T. Taylor
RECALIBRATION NECESSARY? NO ____ YES ✓

98.4
✓ 06:50 @ 100.8 ppm

PAGE 1 OF ___

SENT BY: 11-11-92 : 12:29 : RADIAN CORP IRVINE→ 7147839363:# 2/

RADIAN CORPORATION



Burn Pit Area Wells

OVM Positions on 11-25-93

Auto Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11-25-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:25	00.0		
14:40	00.0		
14:55	00.0		
15:10	00.0		
15:25	00.0		
15:40	00.0		
15:55	00.0		
16:10	00.0		
16:25	00.0		
16 40	00.0		
16:55	00.0		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

auto log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11-30-92 OPERATOR Tom Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:25	00.0		
07:40	00.0		
07:55	00.0		
8:10	00.0		
8:25	00.0		
8:40	00.0		
8:55	00.0		
09:10	00.0		
09:25	00.0		
12:55	00.0		
13:10	00.0		
13:25	00.0		
13:40	00.0		
13:55	00.0		
14:10	00.0		
14:25	00.0		
14:40	00.0		
14:55	00.0		
15:10	00.0		
15:25	00.0		

CALIBRATION CHECKED? ✓ @15:15 694

RECALIBRATION NECESSARY? NO____ YES____

PAGE ___OF ___

Note that auto log was not on until 13:30.
also removal did not start until 11:30 Am approx

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 11-30-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
0830	13.1	position 1	NONE.
08:45	13.0	"	NONE Shut Down
11:35	6.3	position #2	Start up
11:50	0	"	"
12:00	Ø	"	"
12:15	Ø	"	"
12:30	Ø	"	"
12:45	Ø	"	"
13:00	Ø	"	"
~~13:00~~ 13:15	Ø	"	"
13:30	Ø	"	"
13:45	Ø	"	"
14:00	Ø	"	"
14:30	Ø	"	"
14:45	Ø	"	"
15:00	Ø	"	"

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES ✓

PAGE 1 OF 1

purge @ 1334
(66.4)
07:30 - 101.5
Fedall 11:30 - 105.1
Fast 15:15 69.4

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-1-92 OPERATOR T. Taylor

OVM TAKEN For Bump to removal

TIME	VOCs (PPM)	OVM POSITION	ACTION
08:00	Ø	Position #1	NONE.
08:12			

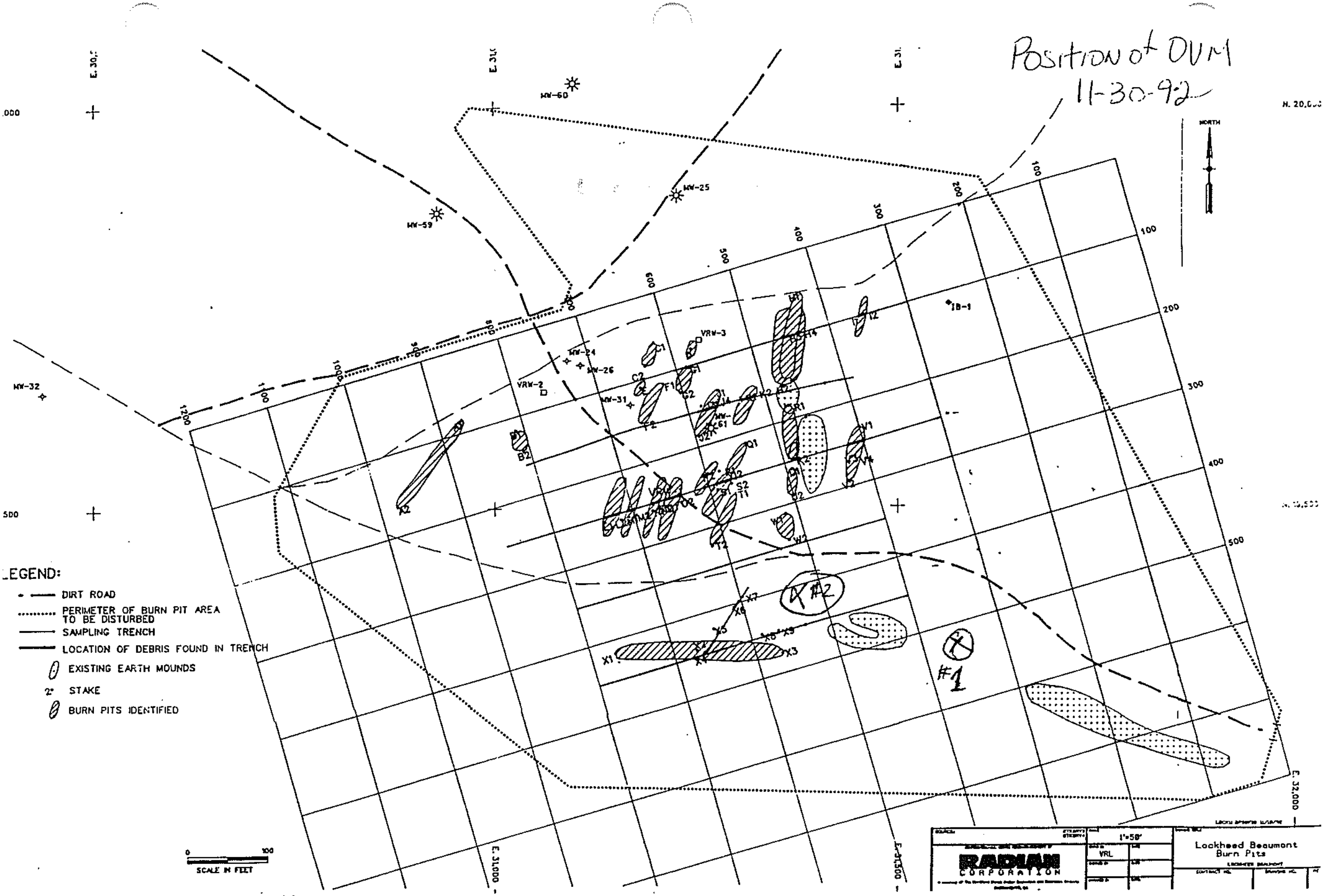
OVM #3262

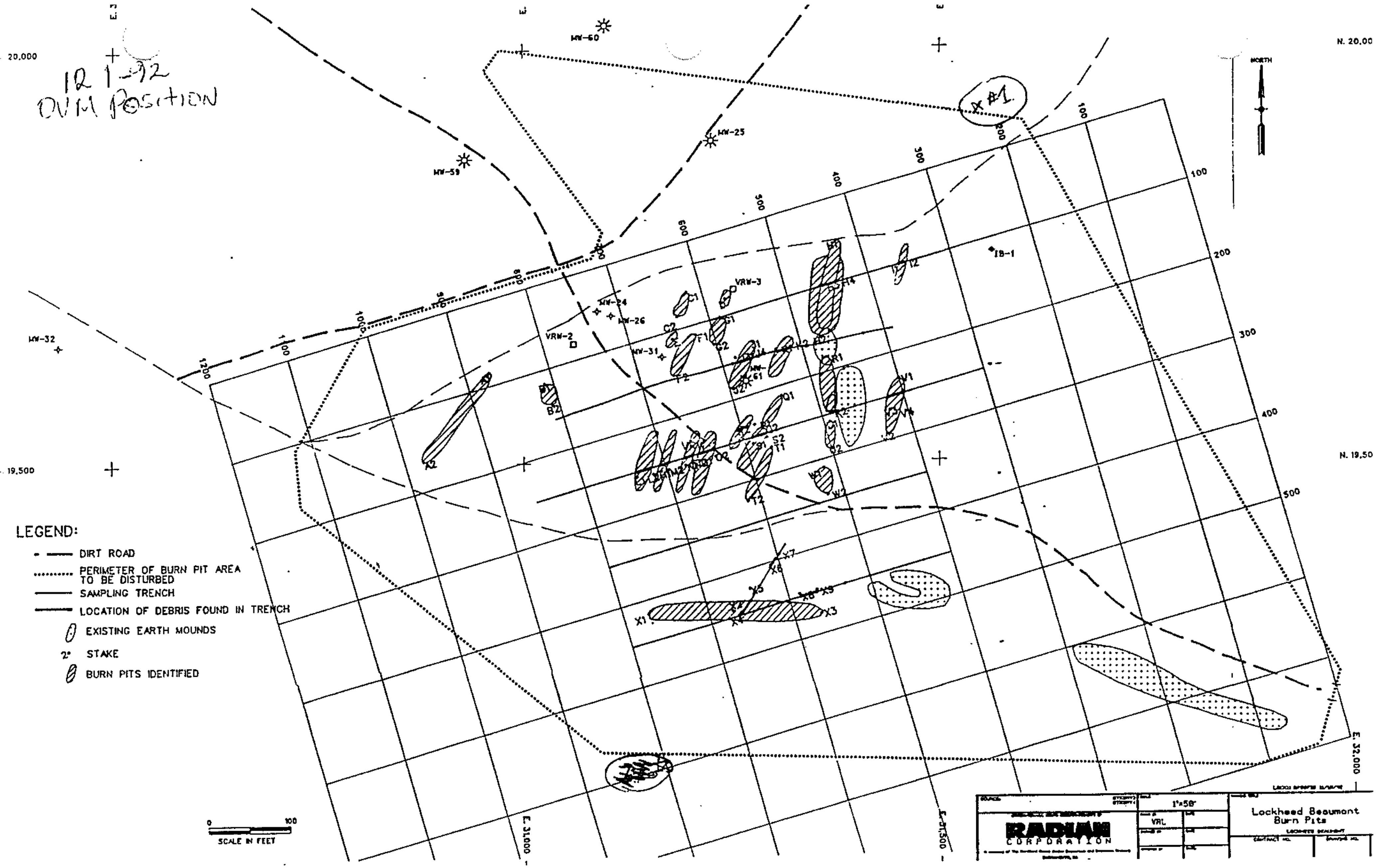
CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES ✓

T.T. 06:45 @ 99.9

PAGE ___ OF ___


Position of OVM
11-30-92
NORTH
N. 20,000
MW-60
MW-25
MW-59
MW-32
MW-24
MW-26
MW-31
VRW-2
VRW-3
IB-1
#1
#2
LEGEND:
DIRT ROAD
PERIMETER OF BURN PIT AREA TO BE DISTURBED
SAMPLING TRENCH
LOCATION OF DEBRIS FOUND IN TRENCH
EXISTING EARTH MOUNDS
STAKE
BURN PITS IDENTIFIED
SCALE IN FEET
E. 31,000
E. 31,500
E. 32,000
1"=50'
VRL
RADIAN CORPORATION
Lockheed Beaumont
Burn Pits


12 1-92
OVM Position
X #1
LEGEND:
DIRT ROAD
PERIMETER OF BURN PIT AREA TO BE DISTURBED
SAMPLING TRENCH
LOCATION OF DEBRIS FOUND IN TRENCH
EXISTING EARTH MOUNDS
STAKE
BURN PITS IDENTIFIED
SCALE IN FEET
NORTH
N. 20,00
N. 19,50
20,000
19,500
E. 31,000
E. 31,500
E. 32,000
MW-32
MW-59
MW-60
MW-25
MW-24
MW-26
MW-31
VRW-2
VRW-3
IB-1
RADIAN CORPORATION
1"=58'
VRL
Lockheed Beaumont
Burn Pits

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-1-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:15	∅	Position #1	NONE.
07:30	∅	"	"
Shorten Time 08:00			

OVM #2585

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO ___ YES ✓

TT 06:35 - 0101.9

PAGE 1 OF ___

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-2-92 OPERATOR Tom Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
09:45	Ø	Downwind of Burnpit Excavation Pit L.M	NONE
10:00	Ø	"	"
10:15	1.1	"	"
10:45	1.1	"	"
11:00	1.1	"	NONE
11:35	Ø	"	"
12:20	Ø	"	"
12:30	Ø	"	"
12:45	Ø	"	"
13:00	Ø	"	"
14:30	Ø	"	"
14:45	Ø	"	"
15:00	Ø	"	"
15:15	Ø	"	"
15:30	Ø	"	"
15:45	Ø	"	"
16:00	Ø	"	"

In Hole 4.41 ppm

outside of hole

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ____ YES ✓

PAGE 1 OF 1

07:05 Pre cal 54.6 | Post 101.5ppm

TT 12:00 Ck calibration ok @ 98.6ppm

Auto LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-1-92 OPERATOR ~ Cisur-wen Morris

TIME	VOCs (PPM)	OVM POSITION	ACTION
11:19	00.0		
11:34	00.0		
11:49	00.0		
12:04	00.0		
12:19	00.0		
12:34	00.0		
12:49	00.0		
13.11	00.0		
13:26	00.0		
13:41	00.0		
13:56	00.0		
14:11	00.0		
14:26	00.0		
14:41	00.0		
14:56	00.0		
15:11	00.0		
15:26	00.0		
15:41	00.0		
15:56	00.0		
16:11	00.0		
16:26	00.0		
16:41	00.0		
16:56	00.0		
17:11	00.0		

CALIBRATION CHECKED? ____
RECALIBRATION NECESSARY? NO____ YES____

T.T. 15:25 @ 57.9

PAGE ___ OF ___

Manual Log VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-3-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
0800	Ø	Downwind of Burn pit EXCAVATION	NONE
0815	Ø	"	"
08:30	Ø	"	"
8:45	Ø	"	"
9:00	Ø	"	"
9:15	Ø	"	"
9:30	Ø	"	"
9:45	Ø	"	"
10:00	Ø	"	"
10:15	0	"	"
10:30	Ø	"	"
10:45	Ø	"	"
11:00	Ø	"	"
11:15	Ø	"	"
11:30	Ø	"	"
11:45	Ø	"	"
12:00	Ø	"	"
12:15	Ø	"	"
12:30	Ø	"	"
12:45	Ø	"	"
13:00	Ø	"	"
13:15	Ø	"	"
13:30	Ø	"	"
13:45	Ø	"	"
14:00	0	"	"
14:15	Ø	"	"
14:30	Ø	"	"
14:45	Ø	"	"

T.T. OVM# 3262 CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO ___ YES ✓

07:20 @ 99.6

PAGE 1 OF 2

Auxiliary

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-2-92 OPERATOR T. Tang

TIME	VOCs (PPM)	OVM POSITION	ACTION
11:19	00.0		
11:34	00.0		
11:49	00.0		
12:04	00.0		
12:19	00.0		
12:34	00.0		
12:49	00.0		
13:11	00.0		
13:26	00.0		
13:41	00.0		
13:56	00.0		
14:11	00.0		
14:26	00.0		
14:41	00.0		
14:56	00.0		
15:11	00.0		
15:26	00.0		
15:41	00.0		
15:56	00.0		
16:11	00.0		
16:26	00.0		

CALIBRATION CHECKED? ____
RECALIBRATION NECESSARY? NO____ YES____

PAGE 1 OF 1

Auto log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-3-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
11:19	00.0		
11:34	00.0		
11:49	00.0		
12:04	00.0		
12:19	00.0		
12:34	00.0		
12:49	00.0		
13:11	00.0		
13:26	00.0		
13:41	00.0		
13:56	00.0		
14:11	00.0		
14:26	00.0		
14:41	00.0		
14:56	00.0		
15:11	00.0		
15:26	00.0		
15:41	00.0		
15:56	00.0		
16:11	00.0		

CALIBRATION CHECKED? ______

T.T. RECALIBRATION NECESSARY? NO____ YES____

PAGE ___OF ___

OVM # 3262

Post cal. -16: @ ppm

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-3-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
15:00	Ø	Downwind of Burn Pit Excavation	None
15:15	Ø	"	"
15:30	Ø	"	"
15:45	Ø	"	"
16:00	Ø	"	"

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO ____ YES ____

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/3/92 OPERATOR Courtney Morris

TIME	VOCs (PPM)	OVM POSITION	ACTION
1530	0.0	Downwind	
1545	0.0		
1600	0.0		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

MANUAL

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/3/92 OPERATOR Courtney Morris

TIME	VOCs (PPM)	OVM POSITION	ACTION
755	0.0	DOWNWIND OF EXCAVATION	
815	0.0		
830	0.0		
845	0.1		
900	0.0		
935	0.0		
945	0.1		
1000	0.0		
1015	0.0		
1030	0.0		
1045	0.0		
1100	0.0		
1115	0.0		
1130	0.0		
1145	0.0		
1200	0.0		
1230	0.0		
1245	0.0		
1300	0.0		
1320	0.0		
1330	0.0		
1345	0.0		
1400	0.0		
1415	0.0		
1430	0.0		
1445	0.0		
1500	0.0		
1515	0.0		

CALIBRATION CHECKED? ________

RECALIBRATION NECESSARY? NO____ YES____

autolog OVM #2490

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-4-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
09:11	00.0		
09:[illegible]	00.0		
10:35	00.0		
10:58	00.0		
11:22	00.0		
11:46	00.0		
12:10	00.0		
12:34	00.0		

CALIBRATION CHECKED? ________
RECALIBRATION NECESSARY? NO____ YES____

PAGE ____ OF ____

AUTO LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/3/92 OPERATOR COURTNEY/MORRIS

TIME	VOCs (PPM)	OVM POSITION	ACTION
0900	0.0	DOWN WIND OF EXCAVATION	
1454	0.0		
1518	0.5		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO ____ YES ____

PAGE ___ OF ___

Manual

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-4-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
08:00	0	Down wind of Burn Pit Excavation	NONE
08:15	0	"	"
08:30	Ø	"	"
08:45	Ø	"	"
09:00	8.4	"	" WIND picking up.
09:15	10.2	"	
09:30	25.0	"	OVM not Reading correctly checked with other OVM
09:45	Ø	"	got OVM #2490 to check Reading will keep the unit ~~Batten~~ Short Duration #32
10:00	0	"	NONE
10:15	0	"	"
10:30	0	"	"
10:45	Ø	"	"

OVM #2490

OVM #3262
7:10

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ____ YES ✓

T.T. PM
77.0

PAGE ___ OF ___

MANUAL LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/4/92 OPERATOR COURTNEY MORRIS

TIME	VOCs (PPM)	OVM POSITION	ACTION
0745	0.0	DOWNWIND OF EXCAVATION	
0800	0.0		
0815	0.0		
0830	0.0		
0845	0.0		
0900	0.0		
0915	0.4		
0930	0.0		
		GAVE OVM TO TOM TAYLOR	
		TO USE ON B.P. EXCAVATIONS	
		-HIS OVM STOPPED WORKING	
		PROPERLY	

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO ____ YES ✓

PAGE 1 OF 1

OVM # 2490 RECALIBRATE 0710 am
PRE - 84.0

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-2-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:30	8.4	Downwind of Excavation	None
07:45	7.0	"	"
08:00	6.7	"	"
08:15	8.4	"	"
08:30	Removed OVM from Field	since Rain can damage the OVM	
10:20	check OK	Downwind of Excavation	
11:00	0	"	"
11:30	0	"	"

Replace with OVM 2490

OVM#3268

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ____ YES ✓

07:00 @ 103.5

OVM #2490 @10:20 OVM@ 98.0

PAGE 1 OF 1

RADIAN CORPORATION HAZCO -

OVA Log # 24-31 12-7-92

	100ppm	10,000ppm
14:30 Pre 1	100	>1.0
14:41 Post 1	100	ok

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-8-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:00	Ø	Down wind of EXCAVATION	NONE
07:15	Ø	"	"
07:30	Ø	"	"
10:00	Ø	H_2 H_3 Stock pile	"
11:00	Ø	H_2 H_3 Stock pile	"
12:00	Ø	X Stock pile	"
13:00	Ø	X Stock pile	"
13:40	Ø	I1 & I2 in place	"

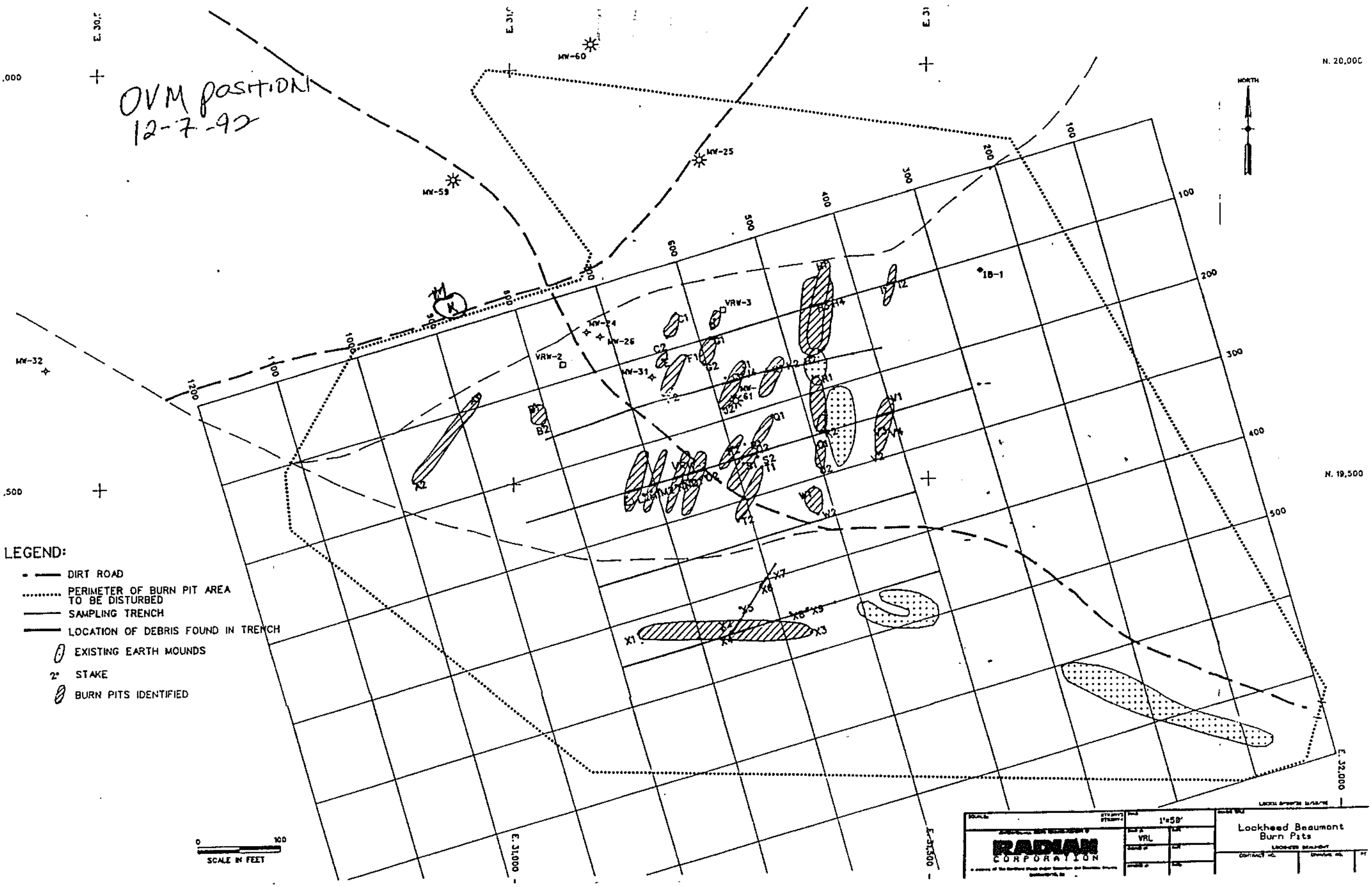
OVM #2490

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ____ YES ✓

FT 06:35 98 ppm

PAGE 1 OF ___


OVM position
12-7-92
LEGEND:
DIRT ROAD
PERIMETER OF BURN PIT AREA TO BE DISTURBED
SAMPLING TRENCH
LOCATION OF DEBRIS FOUND IN TRENCH
EXISTING EARTH MOUNDS
STAKE
BURN PITS IDENTIFIED
SCALE IN FEET
N. 20,000
N. 19,500
E. 31,000
E. 31,500
E. 32,000
NORTH
MW-59
MW-60
MW-25
MW-32
MW-24
MW-26
MW-31
VRW-2
VRW-3
IB-1
RADIAN
CORPORATION
Lockheed Beaumont
Burn Pits
1"=50'
VRL

Auto Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-8-92 OPERATOR M. Hatch

TIME	VOCs (PPM)	OVM POSITION	ACTION
11:19	Ø.		
1134	Ø		
11:49	Ø		
12:04	Ø		
12:19	Ø		
12:34	Ø		
12:49	Ø		
13:11	Ø		
13:26	Ø		
13:41	Ø		
13:56	Ø		
14:11	Ø		
14:26	Ø		
14:41	Ø		

CALIBRATION CHECKED? ______

RECALIBRATION NECESSARY? NO____ YES____

PAGE ___OF ___

Manual
Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-8-92 OPERATOR ____

TIME	VOCs (PPM)	OVM POSITION	ACTION
[illegible]	[illegible]		[illegible]
[illegible]			
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]			
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	[illegible]		
[illegible]	2.4		
[illegible]	[illegible]		

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES ✓

OVM#3262
TT 06:35 @ 101.9 ppm

PAGE ___ OF ___

Manual Log
No auto Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/9/92 OPERATOR MRH

TIME	VOCs (PPM)	OVM POSITION	ACTION
6:45	0.0	downstream of sparging site (A-6)	None
7:00	0.0	"	"
7:15	0.0	"	"
7:30	0.0		
7:45	0.0	"	"
8:00	[illegible]		
8:15	1.0	"	"
8:30	0.0	"	"
8:45	1.0	"	"
9:00	0.0	"	"
9:15	0.0	"	"
9:30	~~0.0~~ 2.0	"	"
9.45	1.0		
10.00			
10:~~0~~15			
10:30	1.0		
10:45	1.0	"	"
11:00	1.0	"	"
11:15	0.0	"	"
11:30	1.0	"	"
11:45	1.0	"	"
12:00	0.0		
12:15	1.0	"	"
12:30	1.0	"	"
12:45	1.0	"	"
1:00	0.0	"	"
1:15	0.0	"	"
1:30	0.0	"	"

CALIBRATION CHECKED? Yes
RECALIBRATION NECESSARY? NO____ YES ✓

PAGE 1 OF 2

Manual log

VOLATILE ORGANIC COMPOUND MONITORING LOG

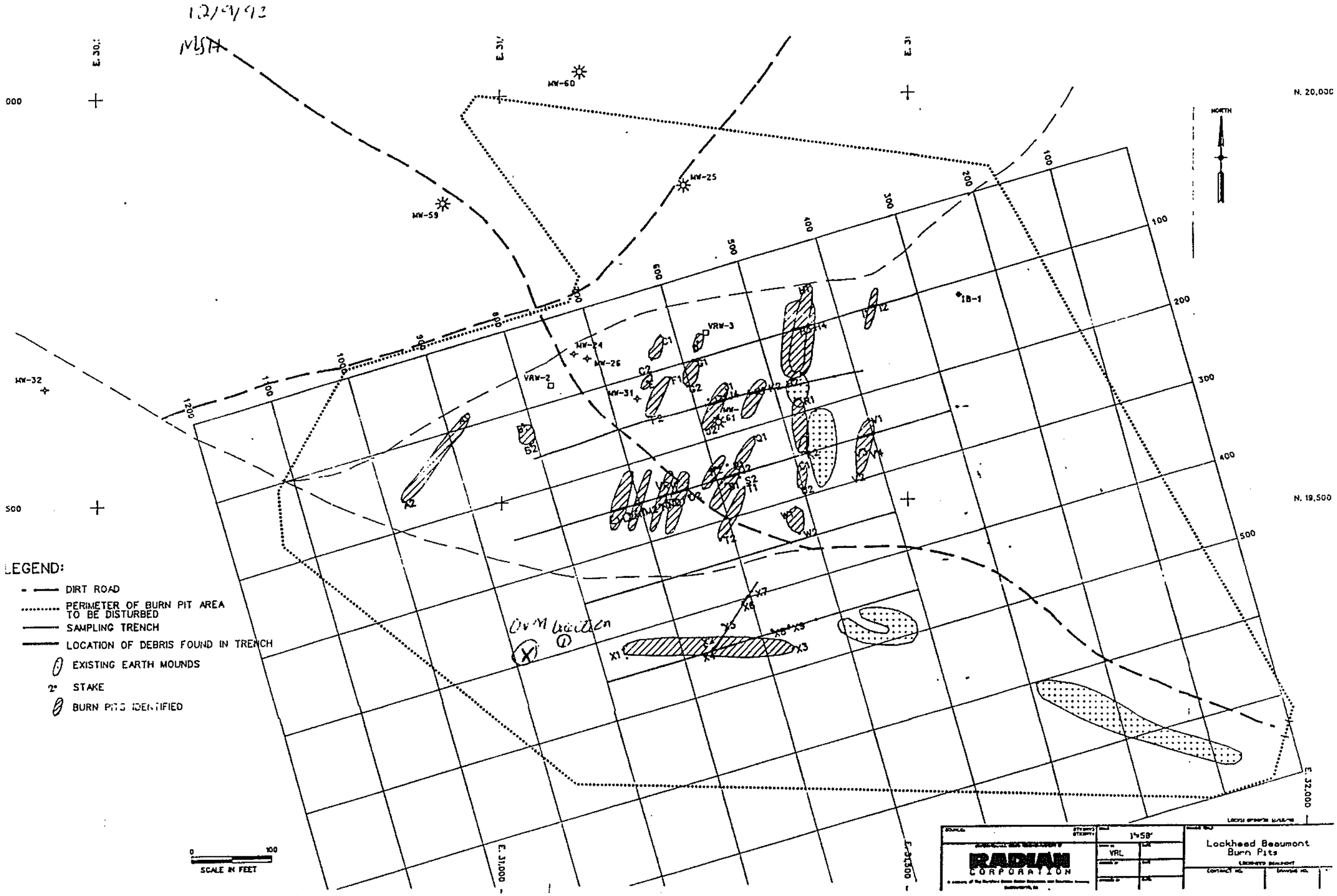
DATE 12-9-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
06:40	Ø	Excavation I 102	None
07:35	Ø	Excavator α	"
08:25	Ø	Excavating Removal area #1	"
08:45	Ø	"	"
09:00	Ø	"	"
09:15	Ø	"	"
13:00	Ø	B1+2 Hole	"
13:50	Ø	Blue Dye areas	"

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES ✓

OVM # 2490
pre 0635 @ 102.9 ppm
post 15:18 @ 99.3



12/9/93
MSA
N. 20,000
N. 19,500
E. 31,500
E. 31,000
E. 32,000
NORTH
MW-60
MW-59
MW-25
MW-32
MW-24
MW-26
MW-31
VRW-2
VRW-3
IB-1
OVM Location
LEGEND:
DIRT ROAD
PERIMETER OF BURN PIT AREA TO BE DISTURBED
SAMPLING TRENCH
LOCATION OF DEBRIS FOUND IN TRENCH
EXISTING EARTH MOUNDS
STAKE
BURN PITS IDENTIFIED
0
100
SCALE IN FEET
RADIAN CORPORATION
VRL
Lockheed Beaumont Burn Pits

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/9 OPERATOR M8H

TIME	VOCs (PPM)	OVM POSITION	ACTION
1:45	0.0	next to scrapping site	None
2:00	1.0	"	"
2:15	1.0	"	"
2:30	1.0	"	"
2:45	1.0	"	"
3:00	1.0	"	"
3:15	1.0	"	"
3:30	1.0	"	"
3:45	1.0	"	"
4.00	1.0	"	"

CALIBRATION CHECKED? yes
RECALIBRATION NECESSARY? NO____ YES ✓

PAGE 2 OF 2

location ① on attached map

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/10/92 OPERATOR Massie Hatch

TIME	VOCs (PPM)	OVM POSITION	ACTION
7:00	0.0	NW of scrapping area (Area 6)	None
7:15	0.0	"	"
7:30	0.0	"	"
7:45	0.0	"	"
8:00	0.0	"	"
8:15	0.0	"	"
8:30	0.0	"	"
8:45	0.0	"	"
9:00	0.0	"	"
9:15	0.0	"	"
9:30	0.0	"	"
9:45	2.9	"	"
10:00	0.0	"	"
10:15	0.0	"	"
10:30	0.0	"	"
10:45	0.0	"	"
11:00	0.0	"	"
11:15	0.0	"	"
11:30	0.0	"	"
11:45	0.0	"	"
12:00	0.0	North east of new scrapping area (loc ⑤)	"
12:15	0.0	"	"
12:30	0.0		
12:45	0.0		
1:00	0.0	"	"
1:15	0.0	"	"
1:30	0.0	"	"
1:45	0.0	"	"
2:00	0.0	"	"

OVM #3262

CALIBRATION CHECKED? yes

RECALIBRATION NECESSARY? NO ___ YES ✓

06:25 @ 99.5 ppm

PAGE 1 OF ___

Manual Log
Pits

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-10-92 OPERATOR T. TAYLOR

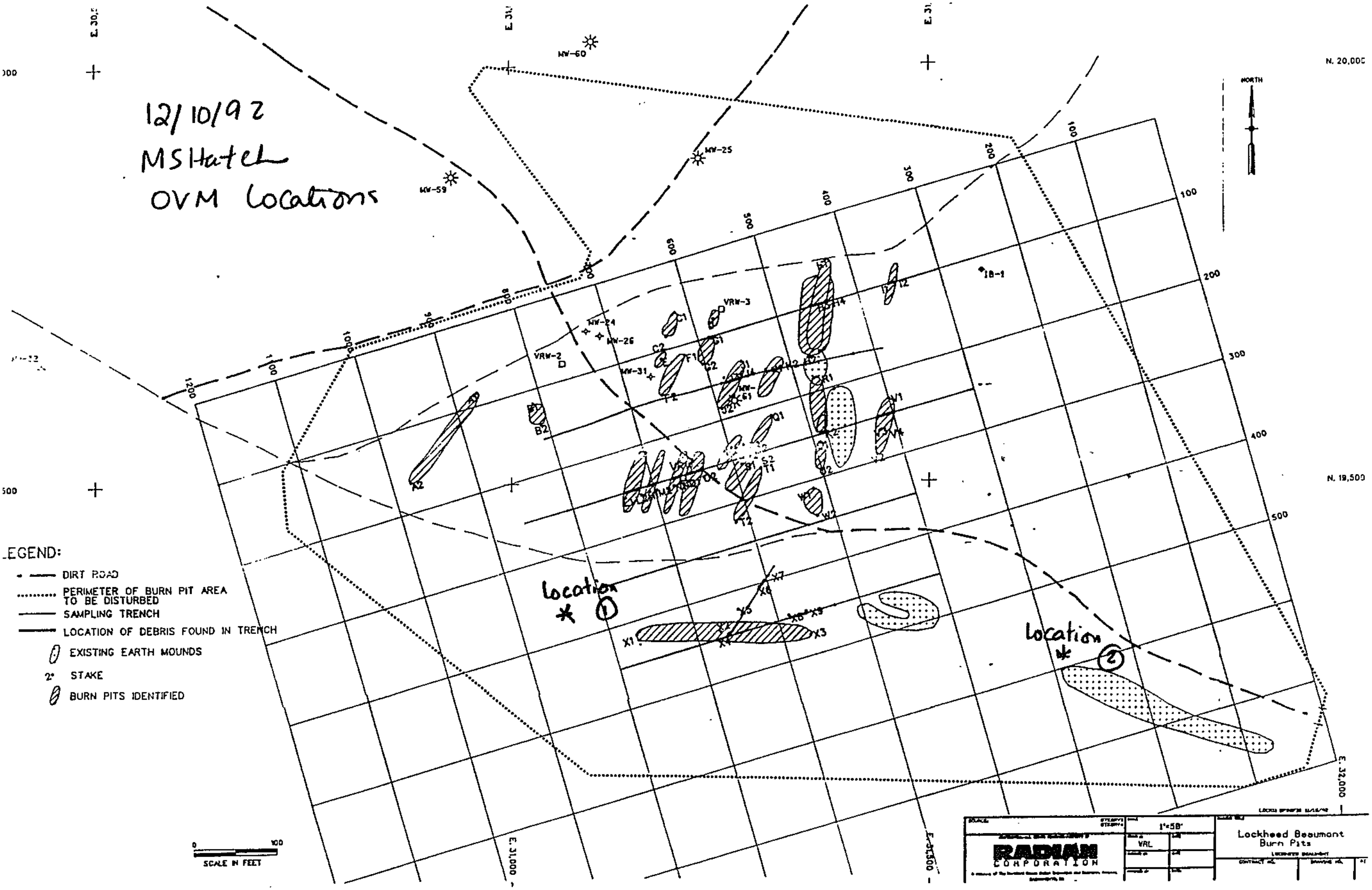
TIME	VOCs (PPM)	OVM POSITION	ACTION
07:00	0	X pit	None
07:30	0	X pit	"
08:00	Ø	X pit	"
08:30	Ø	J area	"
08:45	Ø	J Stock Pile	"
09:00	Ø	"	"
1000	Ø	m hole K pit	"
10:15	Ø	Downwind of K pit	"
10:30	Ø	"	"
13:00	Ø	~~Earth~~ Mounds	"
13:15	Ø	"	"
13:30	Ø	K Pit	"
13:45	Ø	G pit	Ø
14:00	Ø	"	"
14:15	Ø	"	"
14:30	Ø	"	"

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES ✓

OVM 2490
06:25 @ 98.0 ppm
Post 14:55 @ 92.5 ppm

PAGE ___ OF ___

12/10/92
MSHatch
OVM Locations



VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/10/92 OPERATOR Massie Hatch

TIME	VOCs (PPM)	OVM POSITION	ACTION
2:15	0.0	NE of new scrapping area (E of A-6)	None
2:30	0.0	"	"
2:45	0.0	"	"
3:00	0.0	"	"
3:15	0.0	"	"
3:30			
3:45			
4:00			

CALIBRATION CHECKED? yes

RECALIBRATION NECESSARY? NO____ YES ✓

Wennell

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-11-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:15	Ø	F&G Pit	NONE
08:30	Ø	downwind [illegible]	"
08:45	Ø	"	"
9:00	Ø	"	"
09:15	Ø	"	"
09:30	Ø	"	"
9:45	Ø	"	"
10:00	Ø	"	"
10:15	Ø	"	"
10:30	Ø	"	"
10:45	Ø	"	"
11:00	Ø	"	"

OVM #2490

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ___ YES ✓

PAGE 1 OF 1

6:35 @ 104.3 ppm

12:00 ~~Post~~ 99.7 ppm

Auto log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/10/92 OPERATOR MJH

TIME	VOCs (PPM)	OVM POSITION	ACTION
11:34	0.0		
11:49	0.0		
12:04	0.0		
12:19	0.0		
12:34	0.0		
12:49	0.0		
13:11	0.0		
13:26	0.0		
13:41	0.0		
13:56	0.0		
14:11	0.0		
14:26	0.0		
14:41	0.0		
14:56	0.0		
15:11	0.0		
15:26	0.0		
15:41	0.0		

CALIBRATION CHECKED? ______

RECALIBRATION NECESSARY? NO____ YES____

PAGE ____ OF ____

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-14-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
06:45	.9	Along borders of Pit O&P	None.
07:00	Ø	"	"
	Ø	Pit C&E	"
	Ø	Down wind of excavation	
	Ø		
	Ø		
	Ø		
14:30	Ø		

OVM #2490

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES ✓

PAGE ___ OF ___

Cal. 06:05 @ 103.0 ppm

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/14/92 OPERATOR CAROL GALIZA

TIME	VOCs (PPM)	OVM POSITION	ACTION
0830	0.00	SE CORNER AREA 7	NONE.
0845	0.00	"	"
0900	0.00	"	"
0915	0.00	"	"
0930	0.00	"	"
0945	0.00	"	"
1000	0.00	"	"
1015	0.00	"	"
1030	0.00	"	"
1045	0.00	"	"
1115	0.00	"	"
1130	0.00	"	"
1145	0.00	"	"
1200	0.00	"	"
1215	0.00	"	"
1230	0.00	"	"
1300	0.00	"	"
1315	0.00	"	"
1345	0.00	"	"
1400	0.00	"	"
1415	0.00	"	"
1430	STOP WORK DONE FOR TODAY		
AUTOLOGGED DATA CORRELATES W/ MANUALLY LOGGED DATA.			

CALIBRATION CHECKED ✓ → OK → 102.9 ppm

0730 CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO ___ YES ✓

PRE - 70.3 ppm

POST - 102.9 ppm

1440 POST USE CAB CHECKED READING 91.0 ppm

PAGE 1 OF 1

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-15-92 OPERATOR TOM TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:15	60: to 2.2	S/E CORNER of AREA 2	None
14:30	"	"	"
Q2ᶜ LOGGED DATA AGREES	IN MANUALLY LOGGED DATA		

1500 CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO ✓ YES ____

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/15/92 OPERATOR CAROL GALIZA

TIME	VOCs (PPM)	OVM POSITION	ACTION
0655	0.00 → 2.2	SE CORNER OF AREA 7	NONE.
0700	0.00 → 2.2	"	"
0715	0.00 → 2.2	"	"
0800	0.00 → 2.2	"	"
0815	0.00 → 2.2	"	"
0830	0.00 → 2.2	"	"
0845	0.00 → 2.2	"	"
0900	0.00 → 2.2	"	"
0915	0.00 → 2.2	"	"
0930	"	"	"
0945	"	"	"
1015	"	"	"
1030	"	"	"
1045	"	"	"
1100	"	"	"
1115	"	"	"
1130	"	"	"
1145	"	"	"
1200	"	"	"
12:15	"	Removed OVM of area Between Pit H&D	"
12:15	"	"	"
12:30	"	"	"
12:45	"	"	"
13:00	"	"	"
13:15	"	"	"
13:30	"	"	"
13:45	"	"	"
14:00	"	"	"

1200
CALIBRATION
CHECKED
ok 100.9 ppm

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES ✓

0630 PRE/POST
87 100.9

PAGE 1 OF 2

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-16-92 OPERATOR T TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
13:45	Ø	excavation pit	NONE
14:00	Ø		
14:15	Ø		
14:30	Ø		
14:45	Ø		
15:00	Ø		
15:15	Ø		
15:30	Ø		
15:45	Ø		
16:00	Ø		
16:15	Ø		
16:30			

CALIBRATION CHECKED? _______

RECALIBRATION NECESSARY? NO ____ YES ____

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-16-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
06:45	Ø	Downwind Area #7 Position	None
7:00	Ø	"	"
07:15	Ø	"	"
07:30	00 to 2.2	"	"
07:45	00 to 1.3	"	"
08:00	"	"	"
08:15	"	"	"
08:30	"	"	"
08:45	Ø	"	"
09:00	"	"	"
09:15	"	"	"
09:30	"	"	"
09:45	"	"	"
10:00	0 to .9	"	"
10:15	0 to .9	"	"
10:30	"	"	"
10:45	"	"	"
11:00	"	"	"
11:15	"	"	"
11:30	"	"	"
11:45	"	"	"
12:00	"	"	"
12:15	"	"	"
12:30	"	"	"
12:45	"	"	"
13:00	"	"	"
13:15	"	"	"
13:30	"	"	"

auto log Yes

OVM #2490

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES ✓

Pre 06:00 @ 98.0 ppm

Post 94.0 ppm

PAGE 1 OF 2

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-17-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:30	000 to 2.5	Downwind of	None.
07:45	"	"	"
08:00	"	"	"
08:15	"	"	"
9:30	"	"	"
9:45	"	"	"
9:00	"	"	"
9:15	"	"	"
9:30	"	"	"
9:45	"	"	"
10:00	"	"	"
10:15	"	"	"
10:30	"	Downwind of B4 Fill Plume mh 31	"
10:45	"	"	"
11:00	"	"	"
11:30	"	"	"
11:45	"	"	"
12:15	"	"	"
12:45	"	"	"
1:00	"	"	"
1:15	"	"	"

OVM #-3262

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES____

PAGE 1 OF ___

Pre 06:10 @ 87.0 ppm / 100.9

auto log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-17-92 OPERATOR TT, WJM

TIME	VOCs (PPM)	OVM POSITION	ACTION
0742	00.0	DOWNWIND OF REMOVAL AREA 7	NO ACTION
0757	02.5	"	"
0812	00.0	"	"
0827	00.0	"	"
0842	02.5	"	"
0857	00.0	"	"
0913	02.5	"	"
0928	00.0	"	"
0943	00.0	"	"
0958	00.0	"	"
1013	00.0	"	"
1028	02.5	"	"
1043	02.5	"	"
1058	02.5	"	"
1113	00.0	"	"
1128	02.5	"	"
1143	00.0	"	"
1158	00.0	"	"
1213	00.0	"	"
1230	02.5	"	"
1245	00.0	"	"
1300	00.0	"	"
1315	00.0	"	"
1330	00.0	"	"
1345	00.0	"	"
1400	00.0	"	"
1415	00.0	"	"
1430	02.5	"	"

CALIBRATION CHECKED? ______ 70.6 - 156.1 ?

RECALIBRATION NECESSARY? NO____ YES____

PAGE ____ OF ____

Auto log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-18-92 OPERATOR TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:42	Ø		
7:57	Ø 2.5		
8:12	Ø		
8:27	Ø		
8:42	2.5		
0857	Ø		
9:13	2.5		
9:28	Ø		
9:43	Ø		
9:58	Ø		
10:13	Ø		
10:28	2.5		
10:43	2.5		
10:58	2.5		
11:13	Ø		
11:28	2.5		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

PAGE ___ OF ___

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-18-92 OPERATOR T. Tayl

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:00	00.0 to 2.5	Downwind of Sampling	None.
07:15	"	"	"
07:30	"	"	"
07:45	"	"	"
08:00	"	"	"
08:15	"	"	"
08:30	"	"	"
08:45	"	"	"
09:00	"	"	"
09:15	2.5 to 7.7	"	"
09:30	"	"	"
09:45	"	"	"
10:00	00.0 to 2.5	"	"
10:15	"	"	"
10:30	"	"	"
10:45	"	"	"
11:00	"	"	"

NMA# 3262

CALIBRATION CHECKED? ______

RECALIBRATION NECESSARY? NO ____ YES ____

PAGE 1 OF 1

06:45 - 100.9 ppm

Manuel

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-21-92 OPERATOR TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:15	0 to 3.1	surrounding Excavation	none.
14:30	"	"	"
14:45	"	"	"
15:00	"	"	"
15:15	"	"	"
15:30	"	"	"
15:45	"	"	"
16:00	"	"	"
16:15	"	"	"

CALIBRATION CHECKED? ______

RECALIBRATION NECESSARY? NO____ YES____

Mhum

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-21-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:15	Ø	Down wind of Excavation	None.
07:30	0 to 3.1	"	"
07:45	"	"	"
08:00	"	"	"
08:15	"	"	"
08:30	"	"	"
08:45	"	"	"
09:00	"	"	"
09:15	"	"	"
09:30	"	"	"
09:45	"	"	"
10:00	"	"	"
10:15	"	"	"
10:30	"	"	"
10:45	"	"	"
11:00	"	"	"
11:15	"	"	"
11:30	"	"	"
11:45	"	"	"
12:00	"	"	"
12:15	"	"	"
12:30	"	"	"
12:45	"	"	"
13:00	"	"	"
13:15	"	"	"
13:30	"	"	"
13:45	"	"	"
14:00	"	"	"

OVM #
3362
06:40 - 104.1 PPM

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES ✓

PAGE 1 OF 2

Auto Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-21-92 OPERATOR H. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:45	2.5	Ø	Ø
15:00	Ø		
15:15	Ø		
15:30	Ø		
15:45	Ø		
16:00	Ø		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

AutoLog

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-21-92 OPERATOR T Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:42	0		
07:57	2.5		
08:12	Ø		
08:27	Ø		
08:42	2.5		
08:57	Ø		
09:13	2.5		
9:28	Ø		
09:43	Ø		
09:58	Ø		
10:13	Ø		
10:28	2.5		
10:43	2.5		
10:58	2.5		
11:13	Ø		
11:28	2.5		
11:43	Ø		
11:58	Ø		
12:13	Ø		
12:30	2.5		
12:45	Ø		
13:00	Ø		
13:15	Ø		
13:30	Ø		
13:45	Ø		
14:00	Ø		
14:15	Ø		
14:30	2.5		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

PAGE 1 OF 2

Manual log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-22-92 OPERATOR T. T[illegible]

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:00	0 to 3.4	Downwind of area #9	None.
14:30	"	"	"
15:00	"	"	"
15:15	"	"	"
15:30	"	"	"
15:45	"	"	"
16:00	"	"	"
16:15	"	"	"

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-22-92 OPERATOR T. TAYLOR

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:00	∅	DOWNWIND of FILL AREA# 5	NONE
07:15	0 to 3.4	"	"
07:30	"	"	"
07:45	"	"	"
08:00	"	"	"
08:15	"	"	"
08:30	"	"	"
08:45	"	"	"
09:00	"	"	"
09:15	"	"	"
09:30	"	"	"
09:45	"	"	"
10:00	"	"	"
10:15	"	"	"
10:30	"	"	"
10:45	"	"	"
11:00	"	"	"
11:15	"	"	"
11:30	"	"	"
11:45	"	Downwind of Area F9	"
12:00	"	"	"
12:15	"	"	"
12:30	"	"	"
12:45	"	"	"
13:00	"	"	"
13:15	"	"	"
13:30	"	"	"
13:45	"	"	"

OVM #3080

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES ✓

06:15 Pre 91.5 / Post 100.9 ppm

Auto Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-22-92　　　OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
14:38	Ø		
14:53	Ø		
15:08	3.4		
15:25	Ø		
15:40	Ø		
15:55	Ø		
16:11	Ø		

CALIBRATION CHECKED? ______

RECALIBRATION NECESSARY?　NO____　YES____

PAGE 2 OF 2

Autolog

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-22-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:29	3.4		
07:44	Ø		
07:59	Ø		
08:14	Ø		
08:29	Ø		
08:44	3.4		
08:59	3.4		
09:14	Ø		
09:29	3.4		
09:44	3.4		
09:59	3.4		
10:14	3.4		
10:29	3.4		
10:44	Ø		
10:59	Ø		
11:14	3.4		
11:29	Ø		
11:44	3.4		
11:59	3.4		
12:14	3.4		
12:38	Ø		
12:53	Ø		
13:08	Ø		
13:23	3.4		
13:38	Ø		
13:53	Ø		
14:08	Ø		
14:23	Ø		

CALIBRATION CHECKED? ____
RECALIBRATION NECESSARY? NO ____ YES ____

auto log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-23-92 OPERATOR T Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
06:57	3.8		
07:12	Ø		
07:27	3.8		
0742	Ø		
07:57	0		
0912	3.8		
08:26	3.8		
08:41	3.8		
08:56	Ø		
09:11	3.8		
09:26	3.8		
09:41	Ø		
09:56	3.8		
10:11	3.8		
10:26	3.8		
10:41	Ø		
10:56	3.8		
11:11	3.8		
11:26	Ø		
1141	3.8		
11:56	Ø		
12:11	3.8		
12:26	Ø		
12:41	3.8		
12:56	3.8		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

PAGE 1 OF 1

Manual Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-23-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:00	0 to 3.8	Downwind of Exc. area F9	None
07:15	"	"	"
07:30	"	"	"
07:45	"	"	"
08:00	"	"	"
08:15	"	"	"
08:30	"	"	"
08:45	"	"	"
09:00	"	"	"
09:15	"	"	"
09:30	"	"	"
09:45	"	Downwind of Pit 24A	"
10:00	"	"	"
10:15	"	"	"
10:30	"		
10:45	"	"	"
11:00	"	"	"
11:15	"	No Excavation	"
11:30	"	"	"
11:45	"	"	"
12:00	"	"	"
12:15	"	"	"
12:30	"	"	"
12:45	"	"	"
13:00	"	"	"
13:15	"	"	"
13:30	"	"	"
13:45	"	"	"

WM #3262

CALIBRATION CHECKED? \
RECALIBRATION NECESSARY? NO____ YES \

PAGE 1 OF 1

Pre: @ 06:00 87.2 PPM Post @ 104.8 ppm

14:15 Post @ 97.1 ppm

Manual PASS log
no cuts log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-29-92 OPERATOR T. Tarpz

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:00	Ø to 3.8	Down wind of "AA loading	None
07:15	"	"	"
07:30	"	Down wind of Pit Blding	"
07:45	"	"	"
08:00	11.6	"	"
10:45	3.8 to 11.6	While loading "AA" Pit	"
11:00	"	"	"
11:15	"	"	"

OVM # 3262

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

06:20 @ 99.1 ppm

PAGE 1 OF ___

AUTO LOG

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12/28/92 OPERATOR Will Manker

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:05	3.8	DOWNWIND OF LOADING AREA.	NO ACTION
07:20	Ø	"	"
07:35	Ø	"	"
07:50	3.8	"	"
0805	3.8	"	"
0820	Ø	"	"
0835	Ø	"	"
0850	3.8	"	"
0905	Ø	"	"
0920	3.8	"	"
0935	Ø	"	"
0950	Ø	"	"
1005	Ø	"	"
1020	3.8	"	"
1035	3.8	"	"
1050	Ø	"	"
1105	3.8	"	"
1220	Ø	"	"
1235	Ø	"	"
1250	3.8	"	"
1305	3.8	"	"
1320	3.8	"	"
1335	Ø	"	"
1350	3.8		

CALIBRATION CHECKED? YES
RECALIBRATION NECESSARY? NO ✓ YES ___

Rut. ② Joly

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-30-92 OPERATOR T. Tay

TIME	VOCs (PPM)	OVM POSITION	ACTION
12:41	Ø		
12:56	3.8		
13:11	3.8		
13:26	3.8		
13:41	Ø		
13:56	3.8		
14:11	3.8		
14:26	Ø		
1441	3.8		
14:56	3.8		
15:11	Ø		
15:26	Ø		
15:41	3.8		
1556	3.8		

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO ✓ YES ____

PAGE 1 OF 1

~~Manual Log~~ ~~Shaft Ventilation Drilling Monitor~~: T.T.

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-30-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
12:45	3.8	Down Wind of Removal Activity	None
13:00	3.8	"	"
13:00	3.8	"	"
13:15	"	"	"
13:30	0 to "	"	"
13:45	0 to 3.8	"	"
14:00	"	"	"
14:15	"	"	"
14:30	"	"	"
14:45	"	"	"
15:00	"	"	"
15:15	"	"	"
15:30	"	"	"
16:00	"	"	"

UM#3262

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO____ YES____

PAGE 1 OF 1

AM 06:15 @ 104.8 ppm
PM 16:40 @ 97.1 ppm

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 1-11-93 OPERATOR T Taylor

No excavation

TIME	VOCs (PPM)	OVM POSITION	ACTION
1130	0	BB "A" pit	none

OVMH 3362

CALIBRATION CHECKED? ✓

RECALIBRATION NECESSARY? NO____ YES ✓

06:45 @ 99.0 ppm

post 16:15 @ 96.4 ppm

PAGE 1 OF 1

Canal Log

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 12-31-92 OPERATOR T. Taylor

TIME	VOCs (PPM)	OVM POSITION	ACTION
07:30	Ø	Downwind of Removal area	None.
07:45	"	"	"
08:00	Ø	"	"
08:15	Ø	"	"

5262

CALIBRATION CHECKED? ✓
RECALIBRATION NECESSARY? NO____ YES____

PAGE 1 OF 1

@ 87.1 ppm then redo - 100.9 ppm

4:22 101.9 ppm

No OVM Manual Only
@ 7 AM
Checkout @ 11!

VOLATILE ORGANIC COMPOUND MONITORING LOG

DATE 1-9-93 OPERATOR T.T

TIME	VOCs (PPM)	OVM POSITION	ACTION
11:15	Ø	at Blue Dye Pit	None.

OVM #3262

CALIBRATION CHECKED? ______
RECALIBRATION NECESSARY? NO ✓ YES ____

@ 11:00 AM 100.9 PPM
Post 17:15 92.8 ppm

PAGE 1 OF 1

APPENDIX B DAILY AND QUALITY CONTROL REPORTS

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	09/29/09
NO.	01
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444

FIELD ACTIVITY SUBJECT: Mobilization, Site setup and preparation, briefings and orientation.

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Safety/Ops meeting, all UXO personnel present four total, mobilized yesterday. Mike McGuire w/TTECI also present.

All traveled to site for familiarization/orientation, to accept delivery of a water truck and tractor with brush cutter attachment, and briefings by ECORP regarding the Stevens Kangaroo Rat, and David Bertolacci regarding site specific safety.

Briefings, familiarization/orientation completed, received and checked equipment, Instrument Test Strip was established.

UXO Safety Officer conducted site Work Plan and Site Safety and Health Plan training.

Gear stored. No violations or discrepancies noted.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 84F winds mostly West up to about 15 mph.	IMPORTANT TELEPHONE CALLS: None

PERSONNEL ON SITE: 4 UXO Personnel, 3 non-UXO Personnel.

Prepared by: Scott Roberts, SUXOS

DATE: 09/29/09, Tuesday

TETRA TECH NUS, INC.

Scott Roberts – SUXOS/Tech III Scott Roberts

Clayton Kaplan- UXO Tech II Clayton Kaplan

Alfred Smith – UXO Tech I

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	09/30/09
NO.	02
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Site Setup and preparation	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Safety/Ops meeting, all UXO personnel present four total. Mike McGuire w/TTECI also present.

All traveled to site. Biologist(s) from ECORP present and will be on site all day.

All personnel perform site preparation tasks and establish site boundary and transect points.

Boundary and transects established. Vallon magnetometers were tested and performed properly.

Gear stored. No violations or discrepancies noted.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 80F winds mostly West up to about 13 mph.	IMPORTANT TELEPHONE CALLS: None

PERSONNEL ON SITE: 4 UXO Personnel, 2 non-UXO Personnel.

Prepared by: Scott Roberts, SUXOS — DATE: 09/30/09, Wednesday

TETRA TECH NUS, INC.

Scott Roberts – SUXOS/Tech III ____ Scott Roberts ______________________

Clayton Kaplan- UXO Tech II ____ Clayton Kaplan ______________________

Alfred Smith – UXO Tech I ________ A F Smith ______________________

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/01/09
NO.	03
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation

PROJECT NO: 112IC02444

FIELD ACTIVITY SUBJECT: Boundary transect, brush cutting

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All UXO four personnel present. Mike McGuire w/TTECI and a biologist from ECORP also present.

Two personnel establish site boundary transect points, this transect circles the project area outside of the boundary fence. Remaining personnel begin brush cutting transects.

Boundary transect established, Mike McGuire demobilized. Brush cutting was accomplished for transects one through forty-one and the accessible section of the boundary transect. A fire watch was performed for thirty minutes after brush cutting ceased with water truck on stand-by, no fires.

Gear stored. No violations or discrepancies noted.

VISITORS ON SITE: None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None

WEATHER CONDITIONS: Clear skies, high of about 84F winds mostly East up to about 14 mph.

IMPORTANT TELEPHONE CALLS: None

PERSONNEL ON SITE: 4 UXO Personnel, 2 non-UXO Personnel.

Prepared by: Scott Roberts, SUXOS

DATE: 10/01/09, Thursday

TETRA TECH NUS, INC.

Scott Roberts – SUXOS/Tech III____ Scott Roberts ______________________

Clayton Kaplan- UXO Tech II____ Clayton Kaplan ______________ ________

Alfred Smith – UXO Tech I ________ A F Smith ______________________

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/02/09
NO.	04
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444

FIELD ACTIVITY SUBJECT: Equipment turn in, transect sweeps

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All UXO four personnel present. Biologist from ECORP also present.

Vehicle and equipment inspections were performed (tractor had a flat tire). Water truck and tractor were staged for rental company pick up. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup.

UXO Team began mag and dig ops on transect one; recording GPS coordinates for each anomaly excavated.

Water truck and tractor were picked up by rental company.

Completed transect one, no MEC or MD located, fifty-six anomalies. Completed excavation of three anomalies on transect two, no MEC or MD located. Total of fifty-nine anomalies investigated today.

Vallon magnetometer checked at ITS (pass). Gear stored. No violations or discrepancies noted.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 86F winds mostly West up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None

PERSONNEL ON SITE: 4 UXO Personnel, 1 Biologist.

Prepared by: Scott Roberts, SUXOS DATE: 10/02/09, Friday

TETRA TECH NUS, INC.

Scott Roberts – SUXOS/Tech III____ Scott Roberts ________________________

Clayton Kaplan- UXO Tech II____ Clayton Kaplan ____________ ________

Alfred Smith – UXO Tech I ________ A F Smith ________________________

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/05/09
NO.	05
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444

FIELD ACTIVITY SUBJECT: Transect sweeps

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All UXO four personnel present. Biologist from ECORP also present.

Vehicle inspection was performed. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup.

UXO Team began mag and dig ops on transect two where we stopped Friday; Per PM we are no longer recording GPS coordinates for each anomaly excavated, only for MEC or MD. Marking not digging anomalies which register on the magnetometer as a nine or below which is the weakest reading in the Instrument Test Strip.

Completed transect two; 49 digs, metal waste, did not find 4 (too small). No MEC or MD located, 54 anomalies marked, total of 103 anomalies in transect two today.

Completed transect three; 93 digs, metal waste, did not find 7 (too small). No MEC or MD located, 119 anomalies marked, total of 212 anomalies.

Completed approximately 400’ of transect four; 46 digs, located metal waste in all excavations. No MEC or MD located, 59 anomalies marked, total of 105 anomalies.

Vallon magnetometer checked at ITS (pass). Gear stored. No violations or discrepancies noted.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 70F winds mostly WNW up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None

PERSONNEL ON SITE: 4 UXO Personnel, 1 Biologist.

TETRA TECH NUS, INC.

Prepared by: Scott Roberts, SUXOS	DATE: 10/05/09, Monday

Scott Roberts – SUXOS/Tech III Scott Roberts

Clayton Kaplan- UXO Tech II Clayton Kaplan

Alfred Smith – UXO Tech I A F Smith

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/06/09
NO.	06
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Transect sweeps	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All four UXO personnel present.

Vehicle inspection was performed. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup.

UXO Team began mag and dig ops on transect four, started on dig # 47. Communications checks are good.

Completed transect four; 80 digs, 107 anomalies marked, Total of 187 anomalies in transect two. Anomaly descriptions are; small metal flakes, small aluminum scrap such as aluminum foil, metal scrap such as wire and small pieces average 1"-2" of ferrous metal , dug but did not find 2 anomalies (too small). No MEC located.

One MD item in transect four, #52, which appears to be a projectile fragment approximately 4" long x 1" wide, depth 8", meter reading on Vallon was 12. Coordinates are: Northing-2256655.071 Easting-6355564.116. Did not dig anomaly 57 because of a Stevens Kangaroo Rat burrow.

Completed approximately 400' of transect 5; 46 digs, 56 anomalies marked, total of 112 anomalies in transect 5 today. Anomaly descriptions are; small metal flakes, small aluminum scrap such as aluminum foil and a pull tab from a can, metal scrap such as wire, some pieces of 55 gallon drum about 8-12" long, and one drum lid. No MEC located.

Two MD items located in transect five. Anomaly 2 appears to be a projectile fragment approximately 2" long x 1" wide, depth 3", and Vallon meter reading was 12. Coordinates are: Northing-2256649.245 Easting-6356017.258.

Anomaly 14 is an empty 30mm shell casing, depth 6", meter reading on Vallon was 12. Coordinates are; Northing-2256657.488 Easting-6355936.108.

Photographs were taken of all Munitions Debris (MD).

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Vallon magnetometer checked at ITS (pass). Gear stored. Ceased ops. No violations or discrepancies noted.	
VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 73F winds mostly NNE-NNW up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None
PERSONNEL ON SITE: 4 UXO Personnel	
Prepared by: Scott Roberts, SUXOS	DATE: 10/06/09, Tuesday

Scott Roberts – SUXOS/Tech III Scott Roberts

Clayton Kaplan- UXO Tech II Clayton Kaplan

Alfred Smith – UXO Tech I A F Smith

TETRA TECH NUS, INC.

DATE	10/07/09
NO.	07
SHEET 1 OF 2	

FIELD ACTIVITY DAILY LOG

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Transect sweeps	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All four UXO personnel present.

Vehicle inspection was performed. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup. Per PM instruction we will move to various transects for characterization.

UXO Team began mag and dig ops on transect 37 East to West sweep. Communications checks are good.

Completed transect 37; 40 digs, 52 anomalies marked, Total of 92 anomalies in transect 37. Anomaly descriptions are; small metal flakes, small aluminum scrap such as aluminum foil, metal scrap such as wire and small pieces average 1" of ferrous metal, a pipe end cap, and some small pieces of 55 gallon drum.

No MEC or MD located. On dig 5 about 100' from West end; we found aluminum utility marking tape at 6" and stopped digging. Dig 6 about 110" from West end we found a 6" diameter pipe at 12" and stopped digging.

Completed approximately 150' of transect 33, East to West sweep; 49 digs, 53 anomalies marked, total of 102 anomalies in transect 33 today. Anomaly descriptions are; small metal flakes, small melted aluminum scrap and metal scrap such as wire, a bolt, small ferrous pieces and what appear to be electrical parts and washers. No MEC located.

There were 8 MD items located on transect 33 so far, all 30mm shell casings, empty. Details are:

Transect 33, anomaly 4, depth 8", Vallon meter reading 12, Northing-2257226.746, Easting- 6355677.659

Transect 33, anomaly 18, depth 6", Vallon meter reading 13-14, Northing-2257232.746, Easting 6355637.990

Transect 33, anomaly 20, depth 6", Vallon meter reading 13, Northing-2257230.378, Easting 6355629.479

Transect 33, anomaly 21, depth 6", Vallon meter reading 13, Northing-2257234.159, Easting 6355629.264

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Transect 33, anomaly 26, depth 4”, Vallon meter reading 13, Northing-2257241.330, Easting 6355578.980

Transect 33, anomaly 27, depth 4”, Vallon meter reading 13, Northing-2257239.102, Easting 6355582.007

Transect 33, anomaly 32, depth 2”, Vallon meter reading 13, Northing-2257242.400, Easting 6355554.900

Transect 33, anomaly 43, depth 2”, Vallon meter reading 13, Northing-2257233.473, Easting 6355549.279

At about Noon Brad the biologist from ECORP arrived at site with three Tetra Tech personnel that needed to do some sampling at monitoring wells, they all stayed outside of our Minimum Separation Distance, (MSD).

Photographs were taken of all Munitions Debris (MD). Excavated anomalies average 12-13 on the Vallon Meter. Anomalies that we mark with paint average readings are 4-8.

Vallon magnetometer checked at ITS (pass). Gear stored. Ceased ops. No violations or discrepancies noted.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 74F winds light and variable up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None
PERSONNEL ON SITE: 4 UXO Personnel, 1 Biologist, 3 Tetra Tech for sampling.	
Prepared by: Scott Roberts, SUXOS	DATE: 10/07/09, Wednesday

Scott Roberts – SUXOS/Tech III ____ Scott Roberts ____

Clayton Kaplan- UXO Tech II ____ Clayton Kaplan ____

Alfred Smith – UXO Tech I ____ A F Smith ____

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/08/09
NO.	08
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Transect 20 sweep	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All four UXO personnel present.

Vehicle inspection was performed. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup.

UXO Team began mag and dig ops on transect 20 East to West sweep. Communications checks are good.

Completed transect 20. 140 digs, 116 anomalies marked. No MEC located.

127 anomalies bypassed in a 100' section of the transect that we found to mainly have numerous pieces of 55 gallon drum leading up to it, and a 3" diameter pipe approximately 10' long depth 8", at the stop point. Total of 383 anomalies in transect 20.

Anomaly descriptions are; 1" diameter x 4" long ferrous pipe, small metal flakes, various size melted aluminum scrap, metal scrap such as wire and small pieces of ferrous metal, pieces of 55 gallon drum, and electrical parts.

There are two monitoring wells 78' West from the point we restarted.

Coordinates for stopping point in T-20: Northing; 2256962.307, Easting; 6355419.238.

Coordinates for the point where we re-started 100' away: Northing; 2256965.654 Easting; 6355317.873.

There were 3ea Munitions Debris (MD) items located on transect 20.

Anomaly 17, 30mm shell casing, empty, depth 3", Vallon meter reading 12, Northing-2256954.534, Easting- 6355788.491

Anomaly 31, projectile fragment, depth 6", Vallon meter reading 12, Northing-2257232.746, Easting 6355637.990

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Anomaly 57, unidentified fragment, depth 12”, Vallon meter reading 12, Northing-2256958.030, Easting 6355531.840 Photographs were taken of all Munitions Debris (MD). Excavated anomalies average 12-13 on the Vallon Meter. Anomalies that we mark with paint average readings are 4-8. Vallon magnetometer checked at ITS (pass). Gear stored. Ceased ops. No violations or discrepancies noted. **NOTE:** *The coordinates for Target 31 on Transect 20 were mis-copied from the field notebook. The correct coordinates are Northing 2256955.602 and Easting 6355649.206. These were checked in the Leica files to ensure they are correct.* *Carol Hutley, Project Manager October 23, 2009*

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 72F winds mostly West up to about 7 mph.	IMPORTANT TELEPHONE CALLS: None
PERSONNEL ON SITE: 4 UXO Personnel	
Prepared by: Scott Roberts, SUXOS	DATE: 10/08/09, Thursday

Scott Roberts – SUXOS/Tech III Scott Roberts

Clayton Kaplan- UXO Tech II Clayton Kaplan

Alfred Smith – UXO Tech I A F Smith

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/09/09
NO.	09
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Transect 25 sweep	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All four UXO personnel present.

Vehicle inspection was performed. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup.

UXO Team began mag and dig ops on transect 25 East to West sweep. Communications checks are good.

Ceased ops approximately 125' from the West end of transect 25 at coordinates: Northing-2257089.853, Easting-6355033.658. 138 digs, 123 anomalies marked. No MEC located. Total of 261 anomalies in transect 25.

Anomaly descriptions are; 1" diameter x 4" long ferrous pipe, small metal flakes, various size aluminum scrap, metal scrap such as wire and various sized pieces of ferrous metal, mostly there were pieces of 55 gallon drum, and nails.

Stopped at monitoring wells in the transect, coordinates: Northing; 2257071.428, Easting; 6355351.051.

Resumed mag and dig sweeps after wells at coordinates: Northing; 2257075.212, Easting; 6355288.075, skipped over 60"

There were 2ea Munitions Debris (MD) items located on transect 25.

Anomaly 37, unidentified fragment, depth 6", Vallon meter reading 13, Northing-2257060.906, Easting- 6355638.856

Anomaly 58, unidentified fragment, depth 4", Vallon meter reading 13, Northing-2257067.711, Easting- 6355526.588

In addition, coordinates were recorded for a pipe that was marked with aluminum marking tape and also for an anomaly point at which we ceased digging due to discolored soil.

Anomaly 79, pipe and marking tape, depth 4", Vallon meter reading 12, Northing- 2257070.194, Easting- 6355382.788

TETRA TECH NUS, INC.

Anomaly 122, discolored soil, depth 2”, Vallon meter reading 12, Northing- 2257086.286, Easting- 6355153.835 Photographs were taken of all Munitions Debris (MD). Excavated anomalies average 12-13 on the Vallon Meter. Anomalies that we mark with paint average readings are 4-8. Vallon magnetometer checked at ITS (pass). Gear stored. Ceased ops. No violations or discrepancies noted.	
VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Partly cloudy, high of about 76F winds light and variable up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None
PERSONNEL ON SITE: 4 UXO Personnel, 1 Biologist	
Prepared by: Scott Roberts, SUXOS	DATE: 10/09/09, Friday

Scott Roberts – SUXOS/Tech III Scott Roberts

Clayton Kaplan- UXO Tech II Clayton Kaplan

Alfred Smith – UXO Tech I

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/12/09
NO.	010
SHEET 1 OF 3	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Perimeter transect sweep	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

All traveled to site. Safety/Ops meeting. All four UXO personnel present.

Vehicle inspection was performed. Vallon magnetometer was checked at Instrument Test Strip (pass). GPS accuracy was verified for use without base station setup.

UXO Team began mag and dig ops on the perimeter transect East side moving North. Starting coordinates are: Northing; 2256586.461, Easting; 6356072.911. Communications checks are good.

Stopped at flag P-16. There were 63 digs in this segment and 118 anomalies were marked. No MEC or MD located, the anomalies were mostly wire, 55 gallon drum pieces, metal flakes.

Started the next segment on the South side moving West at coordinates: Northing; 2256523.334, Easting; 6356040.520. Skipped over approximately 200' for monitoring wells and Stevens Kangaroo Rat burrows. Stopped at Northing-2256526.449, Easting-6355810.802. Resumed at Northing-2256526.729, Easting-6355622.445.

Stopped this segment at flag P-3. No MEC located. There were 61 digs, 98 anomalies marked.

There were 3ea Munitions Debris (MD) items located on this segment. Most other anomalies were 55 gal drum pieces, banding material, wire and some nails.

Anomaly 9 in this segment, unidentified fragment, depth 4", Vallon meter reading 12, Northing-2256533.382, Easting-6355453.973.

Anomaly 16, unidentified fragment, depth 10", Vallon meter reading 13, Northing-2256540.685, Easting- 6355343.821

Anomaly 17, unidentified fragment, depth 6", Vallon meter reading 12, Northing-2256536.309, Easting- 6355340.932

TETRA TECH NUS, INC.

Started the next segment at flag P-5, a South to Northwest sweep. Stopped at flag P-6. There were 24 digs and 55 anomalies were marked. No MEC or MD located. Anomaly descriptions are metal flakes, some melted aluminum, wire, some nuts and bolts and welding rod pieces.

Started the next segment at flag P-8 sweeping Northeast direction. Stopped at flag P-11. There were 7 digs and 27 anomalies marked. No MEC or MD. Most anomalies were nuts, bolts and wire.

The last segment swept started at flag P-14 and ended at flag 15. There were 16 digs and 48 anomalies marked on this segment. No MEC or MD located. Most anomalies were wire, metal flakes and welding rod pieces.

Photographs were taken but the camera malfunctioned and there are no photographs. Excavated anomalies average 12-13 on the Vallon Meter. Anomalies that we mark with paint average readings are 4-8.

There were a total of 171 digs today, 347 total marked anomalies and 8 anomalies were marked, not dug, due to Stevens Kangaroo Rat burrows close proximity.

Vallon magnetometer checked at ITS (pass). Gear stored. Ceased ops. No violations or discrepancies noted.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Mostly cloudy, intermittent light rain , high of about 63F winds light and variable up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None
PERSONNEL ON SITE: 4 UXO Personnel and Mr. David Baldacci was on site for a short time to collect a sample of the discolored soil from Friday.	
Prepared by: Scott Roberts, SUXOS	DATE: 10/12/09, Monday

Scott Roberts – SUXOS/Tech III____ Scott Roberts ____________________________

Clayton Kaplan- UXO Tech II____ Clayton Kaplan ____________ ________

TETRA TECH NUS, INC.

Alfred Smith – UXO Tech I ____

TETRA TECH NUS, INC.

FIELD ACTIVITY DAILY LOG

DATE	10/13/09
NO.	010
SHEET 1 OF 2	

PROJECT NAME: Beaumont, CA UXO Investigation	PROJECT NO: 112IC02444
FIELD ACTIVITY SUBJECT: Preparation for demobilization	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Safety/Ops meeting. All four UXO personnel present.

Vehicle inspection was performed. Vallon magnetometers, Leica GPS and other site equipment packed up and taken to the Tetra Tech Office in San Bernardino. The Instrument Test Strip was left in place near the site bunker.

The site vehicles were cleaned and prepared for turn-in.

Administrative tasks were performed.

Demobilization preparations completed. All personnel will demobilize the site tomorrow, 10/14/09.

VISITORS ON SITE: None	CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: None
WEATHER CONDITIONS: Mostly cloudy, intermittent light rain , high of about 61F winds light and variable up to about 6 mph.	IMPORTANT TELEPHONE CALLS: None
PERSONNEL ON SITE: 4 UXO Personnel	
Prepared by: Scott Roberts, SUXOS	DATE: 10/13/09, Tuesday

Scott Roberts – SUXOS/Tech III Scott Roberts

TETRA TECH NUS, INC.

Clayton Kaplan- UXO Tech II Clayton Kaplan

Alfred Smith – UXO Tech I A F Smith

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name:	Beaumont Site I Area C	Report No:	001
Project No:	106-8613.002 Location: Beaumont, CA	Date:	090929

☐ Sunday ☐ Monday ☒ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / cool	High Temperature: Low Temperature:	Wind:	Humidity

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, set up Base Station and check against points at well # 2. Intrusive operations of contacts in AOC J-1 and J-2 and the landfill completed and QC'd. Items of interest in the landfill on the map generated by the EM-31 survey are items of trash on the surface. The area was swept and photos taken of the items found.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Photos of the operation that will be included by the SUXOS on the map submitted with his report. Observed use of Leica GPS, dig activities and clearance of contact holes

IV. Problems Encountered / Corrective Actions Taken

We were advised that the coordinates submitted were far off. Through phone calls assistance was received and it was determined that the export of the numbers was the problem and the coordinates were sent again in another provided format.

V. Directions Given / Received:

The PM advised that we have permission to conduct operations in the Gateway grids that lie on private property and will begin on 081125.

VI. Special Notes / Lessons Learned

Heavy rains are expected for the next two days.

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 090929

SGS ISO 14001 Zero Incident Performance Zip Do it safe... Do it right

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C — Report No: 001

Project No: 106-8613.002 — Location: Beaumont, CA — Date: 090929

☐ Sunday ☐ Monday ☒ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / warm	High Temperature: 88 Low Temperature: 66	Wind: mild	Humidity 40%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, Briefing conducted by Biologist Brad Haley for SK Rat and area of operations. Rental heavy equipment delivered and inspected. Shipped field gear delivered and inspected. Test pit installed and area of operations walked. Received hard copies of Site I work plan, Area C work plan and EHSP. Water truck filled and operators assigned.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Initial Site briefing given and Preparatory Inspection done. Observed the installation of Valon test bed.

IV. Problems Encountered / Corrective Actions Taken

Keys for water meter found to be wrong and corrected by David Bertolacci / TT San Bernardino office.

V. Directions Given / Received:

Conference call with PM for briefing. ECORP briefing for SKR. Local TT briefing of Site I specific knowledge.

VI. Special Notes / Lessons Learned

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 090929

UXO-06 Version 3 4/27/2005

DAILY QUALITY CONTROL REPORT

TETRA TECH EC, INC.

Project Name: Beaumont Site I Area C   Report No: 002

Project No: 106-8613.002   Location: Beaumont, CA   Date: 090929

☐ Sunday ☐ Monday ☐ Tuesday ☒ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / cool	High Temperature: Low Temperature:	Wind:	Humidity

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, set up Base Station. Area pre-swept by ECORP for signs of SKR and nest sites protected. Training held on Leica by M. McGuire and points set in for mowing and sweep. Both Valons assembled and checked out against test bed and then on general areas of area to be swept. Small head Valon appears to be more discreet for work to two foot depth.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed training on Leica, placement of points check out of Valon.
Initial Phase Inspection

IV. Problems Encountered / Corrective Actions Taken

None

V. Directions Given / Received:

None

VI. Special Notes / Lessons Learned

Attempt was made to use Leica without setting up a base station to save time but accuracy was not within acceptable limits.

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 090930

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C   Report No: 001

Project No: 106-8613.002   Location: Beaumont, CA   Date: 091001

☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☒ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / Hot/ Red Flag Warning	High Temperature: 92 Low Temperature: 68	Wind: high	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, set up Base Station, acquired new base station point inside work area and acquired and marked perimeter transit outside work area.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed mowing, surface sweep and GPS activities.

IV. Problems Encountered / Corrective Actions Taken

None

V. Directions Given / Received:

Advised by Mike McGuire that a perimeter transit lane had been added to work and not contained in work plan. Verified by PM.

VI. Special Notes / Lessons Learned

None

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091001

UXO-06 Version 3 4/27/2005

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C | Report No: 004

Project No: 106-8613.002 | Location: Beaumont, CA | Date: 091002

☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☒ Friday ☐ Saturday

Weather/Precipitation	Temperature	Wind	Humidity
Weather/Precipitation: Clear / Dry / Hot/ Red Flag Warning lifted	High Temperature: 92 Low Temperature: 68	Wind: breeze	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, acquired new base station point inside work area for verification of accuracy.
Mower and Water Truck collected and returned to equipment agency.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive has begun. Observed team and their system for finding and digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

Hits in too close a proximity to SKR holes. The monitor, Brad Haley, is on sight with us and offers quick inspections.

V. Directions Given / Received:

None

VI. Special Notes / Lessons Learned

More hits acquired than expected. All contacts are being dug, logged and GPS to turn in to PM to determine how much effort will be expended with the allotted time.

At this time with the hits so far there is not enough allotted time to complete the area.

VII. Visitors

None

VIII. Approval

Name and Signature	Title/Company	Date
Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091002

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C | Report No: 005

Project No: 106-8613.002 | Location: Beaumont, CA | Date: 091005

☐ Sunday ☒ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / Warm	High Temperature: 74 Low Temperature: 56	Wind: breeze	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, acquired new base station point inside work area for verification of accuracy.
Continued to search with the Valon and dig. Approx 7.5% of work completed.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive continued. Observed team digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances. I QC'd @30% w/Valon used by team.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

Contacts too excessive for allotted contract time. Advised PM offered possible solutions on Friday and received below instructions

V. Directions Given / Received:

PM directed digging on contacts above test bed reading, paint marking hits below and GPS only MD/MEC related items.

VI. Special Notes / Lessons Learned

More hits acquired than expected and increasing as moving north in the site. Lane#2, 49 digs, 54 painted contacts, 4 no-finds / Lane#3, 93 digs, 119 painted contacts, 7 no-finds / 300' of Lane#4, 46 digs, 59 painted contacts, 0 no-finds. At this time with the hits so far there is not enough allotted time to complete the area. PM will contact client (LMC) and discuss alternatives/solutions.

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091005

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C	Report No: 006
Project No: 106-8613.002 Location: Beaumont, CA	Date: 091006

☐ Sunday ☐ Monday ☒ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / Warm	High Temperature: 74 Low Temperature: 56	Wind: Strong breeze	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing,re- acquired base station point inside work area for verification of accuracy.
Continued to search with the Valon and dig. Approx 10% of work completed. Two pieces of frag and one empty 30mm shell casing (MD) were found, GPS marked and photographed. All finds are from the East side of Area C.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive continued. Observed team digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances. I QC'd @10% w/Valon used by team.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

Advised by PM that she may be able to get some decisions from LMC today for sloutiond to the time line being too short.

V. Directions Given / Received:

PM directed digging on contacts above test bed reading, paint marking hits below and GPS only MD/MEC related items.

VI. Special Notes / Lessons Learned

More hits acquired than expected and increasing as moving north in the site. Lane#4 & part of lane#5 were worked. At this time, based on the hits so far, there is not enough allotted time to complete the area. PM will contact client (LMC) and discuss alternatives/solutions.

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091006

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C — Report No: 007

Project No: 106-8613.002 — Location: Beaumont, CA — Date: 091007

☐ Sunday ☐ Monday ☐ Tuesday ☒ Wednesday ☐ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Overcast / Dry / Warm	High Temperature: 74 Low Temperature: 56	Wind: Strong breeze	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, re- acquired base station point inside work area for verification of accuracy and it was within tolerance of ten feet. Continued to search with the Valon and dig. Approx 12.5% of work completed. Shifting from sequential lanes to random lanes spread across site for a wider evaluation per PM.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive continued. Observed team digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances. I QC'd @10% w/Valon used by team.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

Still too many contacts for allotted time. PM talking to client in regards to increasing the digs to only contacts of 12 or higher as indicated on the Valon meter to reduce digs on smaller items that didn't have the signature of the MD found so far.

V. Directions Given / Received:

PM directed digging on contacts above test bed reading until client approves the change of meter settings, paint marking hits below that meter reading and GPS only MD/MEC related items.

VI. Special Notes / Lessons Learned

The random search is being started today to give a better over view of the area in whatever time we will be allotted which is unknown at this time until the PM can talk to the client and receive further directions.

Surveillance report 003 DTD 091007

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091007

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name:	Beaumont Site I Area C	Report No:	008
Project No: 106-8613.002	Location: Beaumont, CA	Date:	091008

☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☒ Thursday ☐ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / Warm	High Temperature: 74 Low Temperature: 54	Wind: Breeze	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, re- acquired base station point inside work area for verification of accuracy and it was within tolerance of ten feet. Continued to search with the Valon and dig. Approx 20% of work completed. Shifted to random lanes spread across site for a wider evaluation per PM.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive continued. Observed team digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances. I QC'd @20%.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

PM talking to client in regards to increasing the digs to only contacts of 12 or higher as indicated on the Valon meter to reduce digs on smaller items that didn't have the signature of the MD found so far.

V. Directions Given / Received:

PM directed digging on contacts above test bed reading until client approves the change of meter settings, paint marking hits below that meter reading and GPS only MD/MEC related items. NUS personnel to extend flight date to 14 OCT.

VI. Special Notes / Lessons Learned

The random search is being done today to give a better over view of the area in whatever time we will be allotted which is unknown at this time until the PM can talk to the client and receive further directions. Lanes are being discontinued in areas of heavy pipe, well heads and SKR holes, stop/start points along lane marked with GPS and team moved to other lanes to gather more random and wide coverage of Area C. One 30mm case, one piece of frag and over 380 contacts and digs done in lane #20.

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091008

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name:	Beaumont Site I Area C	Report No:	009
Project No:	106-8613.002 Location: Beaumont, CA	Date:	091009

☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☒ Friday ☐ Saturday

Weather/Precipitation: Clear / Dry / Warm	High Temperature: 79 Low Temperature: 56	Wind: Strong Breeze	Humidity 8%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, re- acquired base station point inside work area for verification of accuracy and it was within tolerance of ten feet. Continued to search with the Valon and dig. Approx 20% of work completed. Shifted to random lanes spread across site for a wider evaluation per PM. Working lane #25 which will cross several pit areas. 138 digs/123 painted contacts/2 Frag/Unk material/chemical composition in digs near trench areas.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive continued. Observed team digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances. I QC'd @20%.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

PM talking to client in regards to increasing the digs to only contacts of 12 or higher as indicated on the Valon meter to reduce digs on smaller items that didn't have the signature of the MD found so far. Awaiting answers.

V. Directions Given / Received:

PM directed digging on contacts above test bed reading until client approves the change of meter settings, paint marking hits below that meter reading and GPS only MD/MEC related items. NUS personnel to extend flight date to 14 OCT.

VI. Special Notes / Lessons Learned

The random search is being done today to give a better over view of the area in whatever time we will be allotted which is unknown at this time until the PM can talk to the client and receive further directions. Lanes are being discontinued in areas of heavy pipe, well heads and SKR holes. An unknown greenish, crystalline deposit was unearthed in several of the holes while digging contacts and will be brought to the PM's attention. Photos were taken and I told the team not to dig further in the material. A 60' section was bypassed due to too many pipes, well heads, wire and SKR holes with stop/start points GPS marked. *Surveillance Report #004*

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091009

TETRA TECH EC, INC.

DAILY QUALITY CONTROL REPORT

Project Name: Beaumont Site I Area C			Report No: 010
Project No: 106-8613.002	Location: Beaumont, CA		Date: 091012
☐ Sunday ☒ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday			
Weather/Precipitation: overcast / Drizzle / Cool	High Temperature: 69 Low Temperature: 53	Wind: Mild	Humidity 48%

I. Personnel Present (Reference/attach superintendent's daily report if applicable) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	ESS/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael (DEMOB 091001)	Geo/GIS Specialist	Tetra Tech EC

II. Work Performed

Site safety briefing, re- acquired base station point inside work area for verification of accuracy and it was within tolerance of ten feet. Continued to search with the Valon and dig. Approx 20% of work completed. Shifted to outer perimeter transect to determine contamination outside Area C enclosure. Transect was done in sections to offer information on the entire perimeter in the time remaining. 171 digs/347 paint marked contacts/8 no digs due to SKR holes.

III. Quality Control Activities (Reference/attach inspection/surveillance reports):

Observed GPS activities as intrusive continued. Observed team digging contacts and observance of not disturbing the SKR. GPS was checked against Base Station point in Area C and found to be within tolerances. I QC'd @28% total for Area C.
I observed Valon tested in the test pit at the beginning of the day and end and saw that the detection level had been maintained.

IV. Problems Encountered / Corrective Actions Taken

Advised this morning by PM that this was the last day of field operations and Tuesday will be the clean up and shipping of equipment and Wednesday (14 OCT '09) will be DEMOB.

V. Directions Given / Received:

Directed to work perimeter transect outside Area C enclosure and technical personnel to come to site and examine unknown substance exposed in digs on Friday. David Bertolacci from Tetra Tech arrived and collected unknown substance for the lab.

VI. Special Notes / Lessons Learned

I recommend only the Valon VMH 3 type detector with a meter be used on this site because it provides the ability to visually measure a contact which allowed us to discriminate which digs to prosecute and which to bypass by comparing the meters reading to the test bed items. <u>This is the last Daily QC Report for Area C.</u>

VII. Visitors

None

VIII. Approval

Name and Signature: Stephen E Parkerton Stephen E. Parkerton	Title/Company: TTECI	Date: 091012

TETRA TECH EC, INC.

PREPARATORY PHASE INSPECTION REPORT

Project Name: Beaumont Site I Area C Project No: 106-8613.002 Report No: 001

UXO Team: I Location: Beaumont, CA Date: 090929

I. Definable Feature of Work

- ☒ Site Safety
- ☐ Required Reports/Submittals
- ☒ Surface Clearance Activities
- ☒ Site-specific training
- ☒ UXO Clearance
- ☒ Health and Safety Plan compliance
- ☒ Administrative/Training Records
- ☒ Other: Fire Danger & SK Rat

II. References (USACE DIDs, Corporate references, SOPs, etc.):

Beaumont Site I WP/ EHSP/Amended Area C WP

III. Personnel Present (employees performing the work) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	Safety/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael	Geo/GIS Specialist	Tetra Tech EC

IV. Submittals Reviewed (Work Plan, EHSP, Permits, etc.)

Submittals Reviewed.	Item No.	Date	Approval Authority
Site 1 & 2 H 7S Plan		01/10/2008 (update)	David Bertolacci
Environmental H & S Plan		07/31/06	Steve Neill
Supp. Work Plan Area C		08/11/2009	Dave Keller

Have all submittals been approved? ☒ Yes ☐ No

If No, what items have not been submitted/ approved?

Are all submittals on hand? ☐ Yes ☐ No

If No, what items are missing?

Check approved submittals against delivered material. (This should be done as material arrives.)

Comments:

V. Resources (Personnel & Equipment)

Are adequate resources on hand to effectively conduct work? ☐ Yes ☒ No

If No, what action will be taken?
Will be purchased locally

VI. Procedures (SUXO should be involved in this stage of the inspection)

TETRA TECH EC, INC.	**PREPARATORY PHASE INSPECTION REPORT**

Project Name:	Beaumont Site I Area C	Project No:	106-8613.002	Report No:	001
UXO Team:	I	Location:	Beaumont, CA	Date:	090929

Review contract specifications. (List special requirements such as location accuracy, format for deliverables, etc.)

In progress with GIS

Discuss procedure for accomplishing the work (Reference WP Section or SOP).

Mark points of transits by GPS, Surface sweep ahead of mowing lanes, Intrusive sweep with Valon to two feet.

Clarify any differences (revisions needed).

VII. Resolve Differences (What did you do to resolve outstanding issues/problems)

Comments: None occurred to this point

VIII. Testing/ Surveillance

Identify Tests/ Surveillance to be performed, frequency, and by whom.

Test pit installed and Valon to be checked prior to and upon completion of sweeps daily.

Where will the testing to take place (in the test bed, at a selected monument, etc.)?

In test bed at bunker site

Is the Testing/ Surveillance Plan Adequate?

Yes

IX. Safety (Safety should be involved in this stage of the inspection)

Review applicable portion of the Health and Safety Plan.

Has the Activity Hazard Analysis been approved? ☒ Yes ☐ No

X. Results of Inspection

☒ Acceptable ☐ Unacceptable		NCR #:
Name: Stephen E Parkerton	Signature: Stephen E. Parkerton	Date: 090929

QCM Comments

QCM Review

☐ Concur	☐ Non-Concur	Signature:	Date

XI. Distribution

☐ PM ☐ SITE MGR ☐ UXOQC ☐ SUXOS ☐ CLIENT REP

TETRA TECH EC, INC.

INITIAL PHASE INSPECTION REPORT

Project Name: Beaumont Site I Area C — Report No: 001

Project No: 106-8613.002 — Location: Beaumont, CA — Date: 090930

I. Definable Feature of Work

- ☒ Site Safety
- ☒ Required Reports/Submittals
- ☒ Surface Clearance Activities
- ☒ Site-specific training
- ☒ UXO Clearance
- ☒ Health and Safety Plan compliance
- ☐ Administrative/Training Records
- ☒ Other Fire Danger

II. References (USACE DIDs, Corporate references, SOPs, etc.):

Beaumont Site I WP, EHSP and Area C Supplemental WP

III. Personnel Present (employees performing the work) Attach supplemental sheet if necessary

Name	Position	Company
Parkerton, Stephen	Safety/QC	Tetra Tech EC
Roberts, Scott	Team Leader / Tech III	Tetra Tech NUS
Kaplan, Clayton	Tech II	Tetra Tech NUS
Smith, Alfred	Tech I	Tetra Tech NUS
McGuire, Michael	GEO/GIS Specialist	Tetra Tech EC

IV. Preparatory Work (equipment set up & testing, EZ set up, logbook entries, etc.)

Is preliminary work complete and correct? ☒ Yes ☐ No

If No, what action(s) will be taken?

V. Task Execution

Is work being completed in accordance with plans and specifications? ☒ Yes ☐ No

If No, what corrective action(s) will be taken?

Is workmanship acceptable? ☒ Yes ☐ No

If No, what action(s) will be taken?

V. Resolve Differences

TETRA TECH EC, INC.

INITIAL PHASE INSPECTION REPORT

Project Name: Beaumont Site I Area C

Report No: 001

Project No: 106-8613.002 Location: Beaumont, CA Date: 090930

Comments:

VI. Safety (Review work conditions using EHSP and AHAs)

Comments: Personnel are remaining very conscious of the hazard.

VII. Results of Inspection

☒ Acceptable ☐ Unacceptable NCR #:

Name: Stephen E. Parkerton	Signature: Stephen E. Parkerton	Date: 090930

QC Manager Comments

QC Manager Review

☐ Concur	☐ Non-Concur	Signature:	Date

VIII. Distribution

☐ PM ☐ SITE MGR ☐ UXOQC ☐ SUXOS ☐ CLIENT REP

ISO 14001 SGS

Zero Incident Performance Zip Do it safe... Do it right

TETRA TECH EC, INC.

FOLLOW-UP INSPECTION/SURVEILLANCE REPORT

Project Name: Beaumont Site I Area C — Report No: 001

Project No: 106.8613.002 — Location: Beaumont, CA — Date: 091001

I. Definable Feature of Work

- ☐ Site-specific training
- ☒ Surface Clearance Activities
- ☐ Other:
- ☒ UXO Clearance
- ☒ Site Safety
- ☐ Required Reports/Submittals
- ☒ Health and Safety Plan compliance
- ☐ Administrative/Training Records

II. Type of Inspection

☒ Follow-up ☐ Surveillance

II. References (USACE DIDs, Corporate references, SOPs, etc.):

Beaumont Site I WP, EHSP, Area C Supplemental WP

III. Activities/Conditions Observed

Mowing and surface sweep done in compliance with Safety and WP using proper PPE and methods with Fire Fighting capability maintained.
GPS completed with points and new base station position set inside work area to verify tolerance and accuracy through out operation.

Conducted By: Stephen E. Parkerton	Signature: Stephen E. Parkerton	Date:091001

X. UXOQC Review

☐ Acceptable ☐ Unacceptable — NCR #:

Comments:

Name:	Signature:	Date:

XI. Distribution

☐ PM ☐ SUXOS ☐ UXOSO ☐ UXO Quality Manager ☐ Client Rep

TETRA TECH EC, INC.

FOLLOW-UP INSPECTION/SURVEILLANCE REPORT

Project Name: Beaumont Site I Area C   Report No: 002

Project No: 106.8613.002   Location: Beaumont, CA   Date: 090102

I. Definable Feature of Work

- ☒ Site-specific training
- ☐ Surface Clearance Activities
- ☐ Other:
- ☒ UXO Clearance
- ☒ Site Safety
- ☒ Required Reports/Submittals
- ☒ Health and Safety Plan compliance
- ☐ Administrative/Training Records

II. Type of Inspection

☐ Follow-up   ☒ Surveillance

II. References (USACE DIDs, Corporate references, SOPs, etc.):

Beaumont Site I WP, Area C WP and EHSP

III. Activities/Conditions Observed

Watch the test bed checkout and verification of Valon to be used in the field. Noted the readings and filling out of the check list.
Supervised the removal of the Mower and Water Truck and escorted rig.
Observed the target acquiring and digging of contacts, logging and GPS marking of contacts and observation of SKR holes.

Conducted By: Stephen E. Parkerton	Signature: Stephen E. Parkerton	Date: 091002

X. UXOQC Review

☒ Acceptable   ☐ Unacceptable   NCR #:

Comments:

Name:	Signature:	Date:

XI. Distribution

☐ PM   ☐ SUXOS   ☐ UXOSO   ☐ UXO Quality Manager   ☐ Client Rep

FOLLOW-UP INSPECTION/SURVEILLANCE REPORT

TETRA TECH EC, INC.

Project Name: Beaumont Site I Area C — Report No: 003

Project No: 106.8613.002 — Location: Beaumont, CA — Date: 091007

I. Definable Feature of Work

- ☐ Site-specific training
- ☐ Surface Clearance Activities
- ☐ Other:
- ☒ UXO Clearance
- ☒ Site Safety
- ☒ Required Reports/Submittals
- ☒ Health and Safety Plan compliance
- ☐ Administrative/Training Records

II. Type of Inspection

☐ Follow-up ☒ Surveillance

II. References (USACE DIDs, Corporate references, SOPs, etc.):

Beaumont Site I WP, Area C WP and EHSP

III. Activities/Conditions Observed

Watch the test bed checkout and verification of Valon to be used in the field. Noted the readings and filling out of the check list.
Observed the morning test of the GPS for accuracy within the ten foot mark against the Base Station point in Area C.
Observed the target acquiring and digging of contacts, logging and GPS marking of contacts and observation of SKR holes.
The two man at hole dig rule is being maintained and third man standing off as a safety.
Per the PM the operation has changed from working the lanes in sequence and we are now checking different areas of Area C at random to get a better sampling in whatever time will be allotted after the PM talks with the client and discusses our observations and finds.
The digging contacts has been reduced to only hits registering equal to or higher than the Valon's meter reading in the test bed and the PM is discussing with the client the possibility of using a higher reading of 12 to reduce more digs and cover more area.

Conducted By: Stephen E. Parkerton	Signature: Stephen E. Parkerton	Date: 091007

X. UXOQC Review

☒ Acceptable ☐ Unacceptable — NCR #:

Comments:

Name:	Signature:	Date:

XI. Distribution

☐ PM ☐ SUXOS ☐ UXOSO ☐ UXO Quality Manager ☐ Client Rep

TETRA TECH EC, INC.

FOLLOW-UP INSPECTION/SURVEILLANCE REPORT

Project Name: Beaumont Site I Area C   Report No: 004

Project No: 106.8613.002   Location: Beaumont, CA   Date: 091009

I. Definable Feature of Work

☐ Site-specific training
☐ Surface Clearance Activities
☐ Other:
☒ UXO Clearance
☒ Site Safety
☐ Required Reports/Submittals
☒ Health and Safety Plan compliance
☐ Administrative/Training Records

II. Type of Inspection

☐ Follow-up   ☒ Surveillance

II. References (USACE DIDs, Corporate references, SOPs, etc.):

Beaumont Site I WP, Area C WP and EHSP

III. Activities/Conditions Observed

Watch the test bed checkout and verification of Valon to be used in the field. Noted the readings and filling out of the check list. Observed the morning test of the GPS for accuracy within the ten foot mark against the Base Station point in Area C. Observed the target acquiring and digging of contacts, logging and GPS marking of contacts and observation of SKR holes. The two man at hole dig rule is being maintained and third man standing off as a safety.

<u>A substance/material of a greenish, crystalline material that breaks apart on contact has been found in several digs along line #25. The team was concerned about what they were digging in and I told them to stop any dig that hit this material until I/we could talk to someone more knowledgeable.</u>

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Conducted By: Stephen E. Parkerton	Signature: Stephen E. Parkerton	Date: 091009

X. UXOQC Review

☒ Acceptable   ☐ Unacceptable   NCR #:

Comments:

Name:	Signature:	Date:

XI. Distribution

☐ PM   ☐ SUXOS   ☐ UXOSO   ☐ UXO Quality Manager   ☐ Client Rep

APPENDIX C PHOTOLOG

Photograph 1. Non-MEC scrap from Transects 2 and 3

Photograph 2. Transect 4 – Anomaly 52. Projectile Frag (1 inch x 4 inches)

Photograph 3. Transect 5 – Anomaly 2. Projectile Frag (1 inch x 2 inches)

Photograph 4. Transect 5 – Anomaly 14. Empty, 30mm Shell Casing (Non-Ferrous)

Photograph 5. Non-MD Scrap From Transects 4 and 5.

Photograph 6. Transect 20 – Anomaly 17. Empty, 30mm Shell Casing (Non-Ferrous)

Photograph 7. Transect 20 – Anomaly 31. Projectile Frag.

Photograph 8. Transect 20 – Anomaly 57. Unidentified Frag.

Photograph 9. Scrap from Transect 20.

Photograph 10. Transect 25 – Anomaly 37. Unidentified Frag.

Photograph 11. Transect 25 – Anomaly 58. Unidentified Frag.

Photograph 12. Transect 33 – Anomaly 4. Empty, 30mm Shell Casing (Non-Ferrous)

Photograph 13. Transect 33 – Anomaly 18. Empty, 30mm Shell Casing (Non-Ferrous).

Photograph 14. Transect 33 – Anomaly 20. Empty, 30mm Shell Casing (Non-Ferrous)

Photograph 15. Transect 33 – Anomaly 21. Empty, 30mm Shell Casing (Non-Ferrous).

Photograph 16. Transect 33 – Anomaly 26. Empty, 30mm Shell Casing (Non-Ferrous)

Photograph 17. Transect 33 – Anomaly 27. Empty, 30mm Shell Casing (Non-Ferrous).

Photograph 18. Transect 33 – Anomaly 32. Empty, 30mm Shell Casing (Non-Ferrous)

Photograph 19. Transect 33 – Anomaly 43. Empty, 30mm Shell Casing (Non-Ferrous).

Photograph 20. MD and Non-MD Scrap From Transects 33 and 37