Summary Report

Former Water Tower Structure 373 (MSC W1) and
Former Water Tower Structure 222 (MSC W2) Sites
Marine Corps Air Station
El Toro, California

SWDIV Contract No. N68711-93-D-1459, Delivery Order No. 0112
OHM Project No. 20242
Document Control No. SW6622
Revision 0
August 12, 1999

OHM Remediation Services Corp.

1202 Kettner Boulevard
San Diego, California 92101

Prepared by:

Dhananjay Rawal
Project Engineer

Reviewed by:

Douglas P. Ford, R.G.
Project Geologist

REGISTERED GEOLOGIST
DOUG FORD
no. 6412
Exp. 1/31/01
State of California

Approved by:

William L. Sedlak
Senior Project Manager

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

OHM TRANSMITTAL/DELIVERABLE RECEIPT

CONTRACT N68711-93-D-1459 **DOCUMENT CONTROL NO: SW6622**

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Bozier H. Demaree, Code 02R1.BD
1220 Pacific Highway
San Diego, California 92132-5190

Date: 16-Aug-99

D.O.: 112

Location: MCAS EL TORO

FROM: James Franklin FOR
Stewart Bornhoft, Program Manager

Edwin G. Bond, Contracts Manager

DESCRIPTION OF ENCLOSURE: **Summary Report, Former Water Tower Structure 373 (MSC-W1) and Former Water Tower Structure 222 (MSC W2) Sites, dated August 12, 1999**

TYPE: Contract Deliverable ( ) ($) D. O. Deliverable (X) (Tech) Request for Change ( ) Other ( )

VERSION: FINAL **REVISION** 0

ADMIN RECORD: Yes ( ) No (X) Category ( ) Confidential ( )

SCHEDULED DELIVERY DATE: 16-Aug-99 **ACTUAL DELIVERY DATE:** 16-Aug-99

NUMBER OF COPIES SUBMITTED TO THE NAVY: 1/O, 3/C, 2/E
[AS REQUIRED/DIRECTED BY THE (SOW)]

COPIES TO: SWDIV	OHM	OTHER
Name, Code	Name, Location	Name, Company, Location
L. Holloway, 4EN.LLH (1C/1E)	File (1C/1E)	El Toro Environ. 3E
L. Hornecker, 5BME.LH (1C/1E)	Chron (1C)	
G. Tinker, 05BM.GT (1C)	W. Sedlak, Irv (1C/1E)	
	D. Rawal, Irv (1C/1E)	

Date/Time Received: _____ / _____

Doc Class: D-03

Table of Contents

List of Figures ..... *iii*

List of Tables ..... *iii*

Acronyms and Abbreviations ..... *iv*

Section 1 Introduction and Background *1-1*

1.1 Site Location 1-1
1.2 Background 1-1
1.3 Project Objectives 1-2
1.4 Chemical of Concern and Cleanup Goals 1-3
1.5 Project Scope of Work 1-3

Section 2 Preliminary Field Sampling Activities *2-1*

2.1 Site Inspection 2-1
2.2 Utility Clearance and Geophysical Survey 2-1
2.3 Field Sampling and Analysis 2-2

Section 3 Field Response Action Activities *3-1*

3.1 Preparatory Work 3-1
3.2 Soil Removal and Confirmation Sampling Activities 3-1
3.3 Land Surveying 3-3
3.4 Backfilling and Site Restoration 3-3
3.5 Waste Management 3-3

Section 4 Data Quality Assessment and Validation *4-1*

4.1 Quality Control Sampling 4-1
4.1.1 Equipment Decontamination 4-1
4.2 Analytical Methods 4-2
4.3 Data Quality Assessment 4-2
4.4 Data Validation 4-2
4.4.1 Analytical Quality Control Program 4-3

Section 5 Risk Assessment *5-1*

5.1 Physical Characteristics of the MSC W2 Site 5-1
5.2 Exposure Assessment 5-1
5.3 Toxicity Assessment 5-2
5.4 Risk Characterization 5-2

Section 6 Conclusions and Recommendations *6-1*

Section 7 References *7-1*

Appendix A *Newspaper Article Clipping*

Appendix B *ROICC Information Package*

Appendix C *BCP Excerpts*

Appendix D *Station's Oil SPCC*

Appendix E *OHM Technical Memorandum*

Appendix F *Site Inspection Log*

Appendix G *Geophysical Survey Report*

Appendix H *Preliminary Field Sampling Analytical Reports*

Appendix I *Site Photographs*

Appendix J *Confirmation Sampling Analytical Reports*

Appendix K *Land Survey Data*

Appendix L *Waste Manifests*

Appendix M *LDC Data Validation Reports*

Appendix N *Tentative Reuse Parcel Location of MSC W2 Site*

List of Figures

Figure 1-1	Facility Location Map
Figure 1-2	Location Map
Figure 2-1	Preliminary Field Sampling Data – October 1998
Figure 3-1	Extent of Excavation and Soil Sample Locations
Figure 3-2	Extent of Excavation and Confirmation Sample Locations
Figure 5-1	Conceptual Site Model
Figure 5-2	Potential Migration Pathways Exposure Routes and Receptors

List of Tables

Table 2-1	Preliminary Field Sampling Analytical Results – MSC W2 Site
Table 3-1	Summary of Soil Samples Analytical Results – MSC W2 Site
Table 3-2	Summary of Confirmation Soil Sample Analytical Results – MSC W2 Site

Acronyms and Abbreviations

bgs	below ground surface
BNI	Bechtel National, Inc.
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CDM	Camp, Dresser & McKee, Inc.
CTF	Central Treatment Facility
DO	Delivery Order
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
FS	Feasibility Study
GPR	Ground Penetrating Radar
HSP	Health and Safety Plan
IRP	Installation Restoration Program
JEG	Jacobs Engineering Group Inc.
LOC	Locations of Concern
LCS/LCSD	laboratory control sample/laboratory control sample duplicate
LDC	Laboratory Data Consultant
MCAS	Marine Corps Air Station
mg/kg	milligrams per kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
OHM	OHM Remediation Services Corp.
PCB	polychlorinated biphenyl
PPE	Personal Protective Equipment
PR	Preliminary Review
PRG	Preliminary Remediation Goal
QA/QC	Quality Assurance/Quality Control
RAC	Remedial Action Contract
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
ROICC	Resident Officer in Charge of Construction
SOW	Scope of Work
SPCC	Spill Prevention, Control and Countermeasure
Station	Marine Corps Air Station, El Toro
STLC	Soluble Threshold Limit Concentration
SWDIV	Southwest Division Naval Facilities Engineering Command
SWMU	Solid Waste Management Unit
TCLP	Toxic Characteristic Leachate Procedure
TFH	Total Fuel Hydrocarbons
TPH	total petroleum hydrocarbons
TSCA	Toxic Substances Control Act
VOC	volatile organic compound
VSI	Visual Site Inspection
µg/kg	micrograms per kilogram

Section 1
Introduction and Background

This Summary Report summarizes the results of the field response activities conducted at the environmental Locations of Concern (LOC), Former Water Tower Structure 373 (MSC W1) and Former Water Tower Structure 222 (MSC W2) at the Marine Corps Air Station, El Toro, California (hereinafter referred to as "the Station"). The work was performed by OHM Remediation Services Corp. (OHM) for the Southwest Division Naval Facilities Engineering Command (SWDIV) under the Remedial Action Contract No. N68711-93-D-1459, Delivery Order (DO) 112.

1.1 Site Location

The Station is located approximately 45 miles southeast of the city of Los Angeles in Orange County, California; 1 mile north of the intersection of Interstates 5 (Santa Ana) and 405 (San Diego) freeways. The Station covers approximately 4,738 acres. Approximately 800 acres of the Station property are currently designated for agricultural outlease. Agricultural outleased lands are located at the corners of the Station, and are used for plant nursery and crop production (MCAS El Toro, 1997). The location of the Station is shown in Figure 1-1, Facility Location Map.

The two former water towers with elevated water tanks (MSC W1 and MSC W2) were located in the northwest quadrant of the Station adjacent to Building 744, between 5th Street and 7th Street as shown on Figure 1-2, Location Map. These water towers were used to maintain water pressure for the fire fighting systems at the Station. The gauging apparatus for both towers that contained mercury was located in a vault at former water tower structure 222 (MSC W2). No gauging or control apparatus was located at former water tower structure 373 (MSC W1).

Former water tower structure 373 (MSC W1) was built in 1953 with a capacity of 300,000 gallons. Former water tower structure 222 (MSC W2) was built in 1943 with a capacity of 200,000 gallons and was located approximately 150 feet from structure 373. The water tanks were not used after 1973 and they were both finally demolished and removed (leaving the concrete vault at MSC W2 site) in September 1993. The accidental release of mercury from the gauge at structure 222 was reported to have occurred prior to demolition of the water towers in 1993. A copy of the news article photograph showing the water tower demolition is included in Appendix A, Newspaper Article Clipping.

1.2 Background

According to information provided by the Station Resident Office In Charge of Construction (ROICC), mercury was released to the ground from the pressure gauge at MSC W2 site due to an accident at an unknown time. A copy of the ROICC information package is included in Appendix B, ROICC Information Package.

No further action status was proposed for MSC W1 (structure 373) in the March 1999 Base Realignment and Closure Cleanup Plan (BCP) because no mercury-containing gauges were located on structure 373. Additionally, the BCP indicates that remedial actions are underway at MSC W2 (structure 222) where the gauge for both water tower structures was located. A copy of Table 3-1a from the BCP is included in Appendix C, BCP Excerpts.

In October 1998, OHM performed preliminary field sampling activities at the MSC W2 site to ascertain whether or not mercury was released on to the ground. The approximate location of the mercury spill was identified by Station employees. A total of 21 soil samples were collected from 12 hand auger borings. Mercury concentrations at several locations exceeded the Preliminary Remediation Goals (PRGs) issued by the United States Environmental Protection Agency, Region IX in May 1998. The maximum reported mercury concentration was 1,140 milligrams per kilogram (mg/kg), while the PRG for residential use is 22 mg/kg.

The response action summarized in this report was conducted in accordance with the spill response procedures in the Station's Oil and Hazardous Substances Spill Prevention, Control and Countermeasures Plan (SPCC) and Oil and Hazardous Substances Spill Contingency Plan. A copy of the Station's Oil SPCC plan is included in Appendix D, Station's Oil SPCC.

OHM initiated a field response action, on behalf of the Station, in December 1998 at the MSC W2 site to remove surface and subsurface mercury contaminated soil and perform confirmation soil sampling at the spill site. Fieldwork was performed in accordance with the *Technical Memorandum, Preliminary Field Response Action Strategy at Former Water Tower Structure 222 (MSC W2) Site* (OHM 1998a) and the field sampling procedures and analytical test method were defined in the *Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine Corps Air Station, El Toro* (OHM, 1997). A copy of the OHM Technical Memorandum is included in Appendix E, OHM Technical Memorandum.

This field summary report includes a screening risk assessment based upon a comparison of the residual mercury concentrations at the spill site to the USEPA Region IX PRGs for residential use.

The depth to groundwater in the vicinity of the MCS W2 site was based on the available water level data collected from groundwater monitoring wells 18_BGMW18, 20_DBMW55, and TF3MW-03. The locations of these wells are shown in Figure 1-2. Based on this data, the depth to groundwater at the MSC W2 site is approximately 150 feet below ground surface (bgs) (Camp, Dresser, & McKee, Inc. Federal Programs Corporation, 1997).

1.3 Project Objectives

The objectives of this project were to conduct a field response action at MSC W2 site to remove surface and near subsurface mercury-contaminated soil as an MCAS El Toro operational spill response action.

1.4 Chemical of Concern and Cleanup Goals

Based on the available background information, pressure/level instruments at the MSC W2 site had liquid mercury inside a glass gauge. Mercury is a silvery white, heavy, mobile, liquid metal that is insoluble in water. If dropped, it scatters on the ground as tiny droplets. Mercury is the only chemical of concern at the MSC W2 site.

The cleanup goals established for soil removal activities at MSC W2 site were based on the following:

- Mercury Contaminants in Soils - EPA Region IX Preliminary Remediation Goals (EPA, May 1998).

1.5 Project Scope of Work

As stated in the *Technical Memorandum* (OHM, 1998), the Scope of Work (SOW) consisted of the following:

- preliminary field sampling and analysis
- excavation and removal of approximately 60 cubic yards of mercury contaminated surface and subsurface soil surrounding the concrete vault
- confirmation soil sampling and laboratory analysis of soil samples collected from the excavated areas
- stockpile sampling for waste disposal purposes
- off-site disposal of contaminated soil
- preparation of a summary report to describe and document the field work performed

Section 2
Preliminary Field Sampling Activities

OHM performed preliminary field sampling activities to ascertain whether or not a mercury release had occurred at the former water tower structure MSC W2 site and to identify the vertical and lateral extent of the mercury contamination.

Field sampling activities were conducted in accordance with the *Technical Memorandum, Sampling Strategy for Locations of Concern MSC W1 and MSC W2 (sites 86 and 87) Former Water Tanks at the Marine Corps Air Station El Toro, California*, (OHM 1998b) and *Draft Supplemental Work Plan* (OHM 1997).

2.1 Site Inspection

OHM personnel conducted a site inspection in September 1998 to observe the current condition of the MSC W1 and MSC W2 sites. The MSC W1 site, located between Building 744 and North 6th Street, is currently occupied by an open grass field. No sign of any other remaining structure from the former water tower was observed. Footprints of the former water tower legs were observed on the ground. No concrete vault structure was observed. Based on available background information, no gauging apparatus was associated with the water tower tank at MSC W1 site. No evidence of spills or release near the former water tower legs footprint area was observed. Therefore, no soil sampling was required or conducted at MSC W1 site.

The MSC W2 site location was observed adjacent to the south side of "D" Street in an open grass field. An open rectangular concrete vault (approximately 5 feet by 8 feet and 6 feet deep) was observed at the MSC W2 site. OHM observed some dirt inside the concrete vault and the vault was missing some 2" by 6" wooden planks across the top. No visible stains were observed near the concrete vault area.

OHM personnel conducted another site visit on October 26, 1998 at MSC W2 site to confirm the general location of the hand auger soil sampling locations. OHM determined to sample the soil inside and outside of the concrete vault. Copies of the Site Inspection Logs are included in Appendix F, Site Inspection Logs.

2.2 Utility Clearance and Geophysical Survey

The utility clearance consisted of reviewing site specific utility maps obtained from the Station, reviewing the site inspection log, performing a geophysical survey of the site, and notifying Underground Service Alert of the intent to drill.

GeoVision conducted a geophysical survey on October 27, 1998. A multi-frequency utility locator and Ground Penetrating Radar (GPR) were used to locate the underground utilities. The results of the analog and GPR surveys indicated the presence of a electrical line and

possible valves around the concrete vault. A copy of the GeoVision geophysical survey report is included in Appendix G.

2.3 Field Sampling and Analysis

In October 1998, OHM collected a total of 21 soil samples (sample numbers 20242-615 to 20242-635) at two depths, 6-inches and 24-inches below ground surface (bgs). Soil samples were collected from 12 locations around and inside the concrete vault of the MSC W2 site using a hand auger (HA-01 to HA-12). All the soil samples were analyzed for mercury using EPA method 7471A.

The location of the hand auger soil samples are shown in Figure 2-1, Preliminary Field Sampling Location Map and are summarized in Table 2-1, Preliminary Field Sampling Analytical Results, MSC W2 Site. Copies of the Laboratory Analytical Results are included in Appendix H, Preliminary Field Sampling Analytical Reports.

Review of the soil sample analytical results confirmed that mercury was spilled at the site. Soil sampling analytical results from five different locations (HA-02, HA-03, HA-04, HA-05, and HA-12) detected mercury concentrations above the residential PRG value of 22 mg/kg. The highest mercury concentration was detected at 1,140 mg/kg from a soil sample collected inside the concrete vault. The highest concentration from the area outside the concrete vault was 96.9 mg/kg

Based on the review of the preliminary field sampling analytical results, it was confirmed that mercury was released in to the subsurface soil at the MSC W2 site. Therefore, OHM, according to Station's Final SPCC and Oil and Hazardous Substance Spill Contingency Plan (MCAS El Toro 1997) and as part of the Station's operational spill response, initiated a field response action (after approval from SWDIV and the Station) at the MSC W2 site to remove surface and subsurface mercury contaminated soil and perform confirmation soil sampling. Details on the field response action activities are discussed in Section 3 and the data quality assessment is discussed in Section 4.

Section 3
Field Response Action Activities

The following subsections describe the activities that were performed at MSC W2 site. A field response strategy was developed after authorization from SWDIV, the Station, and in accordance with the following approved documents:

- Technical Memorandum, Preliminary Field Response Action Strategy at Former Water Tower Structure 222 (MSC W2) Site (OHM, 1998a).
- *Final Oil and Hazardous Substances Spill Prevention, Control and Countermeasure Plan (SPCC) and Oil and Hazardous Substances Spill Contingency Plan MCAS El Toro*, dated November 3, 1997.
- OHM Remediation Services Corp. (OHM) 1997. Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine Corps Air Station, El Toro. Navy Contract N68711-93-D-1459, Delivery Order 0070.
- *Addendum to the original HSP, Amendment No. 70-05*, dated December 14, 1998. A copy of OHM's addendum to original HSP.
- *OHM Remediation Services Corp. (OHM) 1995. Site Health and Safety Plan, RCRA Closure Building 673-T3 MCAS El Toro.* Navy Contract N68711-93-D-1459, Delivery Order 0020 and 0070.

Field activities conducted at the MSC W2 site included preparatory work, soil removal activities, confirmation soil sampling, and waste management.

3.1 Preparatory Work

OHM performed a site visit at the MSC W2 site on December 14, 1998 to mark the soil removal area (approximately 20 feet by 30 feet and by 4 feet deep) based on the preliminary field sampling analytical results. Also, the planned excavation area was staked and fenced off to keep the area secured.

3.2 Soil Removal and Confirmation Sampling Activities

Field activities to remove the subsurface soil and collect confirmation samples were conducted from December 14 through December 31, 1998. Photographs of these field activities are presented in Appendix I, Site Photographs.

Prior to start of the excavation, soil inside the concrete vault was disturbed to see if there was any free liquid mercury as droplets. OHM discovered some liquid mercury droplets (the size

of a pen tip) mixed with soil. Therefore, OHM secured the vault by placing 2" by 6"-wood planks and a plastic cover on top.

Excavation started on December 17, 1998 when an initial 20 cubic yards of soil was excavated from around the vault. Two buried utility lines, not previously detected, were encountered. The lines were inspected and identified as abandoned. An additional 60 cubic yards of soil were removed. Confirmation samples were collected from twelve locations (sample numbers 20242-666 through 20242-678), with a duplicate sample from the south wall (sample number 20242- 671). The location of the soil samples are shown in Figure 3-1, Extent of Excavation and Soil Sample Location Map and are summarized in Table 3-1, Soil Samples Analytical Results, MSC W2 Site. Copies of the Laboratory Analytical Results are included in Appendix J, Confirmation Sampling Analytical Reports.

Analytical results of the excavation confirmation samples indicated that the north half of the excavation did not contain mercury concentration above the residential PRG value of 22 mg/kg. However, these results also indicated that sample number 20242-672 (51.5 mg/kg) from the south wall and sample number 20242-677 (27.1 mg/kg) from the south floor of the excavation contained mercury concentrations greater than the PRG value for residential soil (22 mg/kg).

Based on the confirmation sample analytical results, the northern half of the excavation was backfilled on December 22, 1998 with 38 cubic yards of clean soil from the Station's non-hazardous stockpile soil. Approximately 40 cubic yards of soil from the southern half of the pit was then over excavated, extending the pit southward and increasing the depth. Five additional confirmation soil samples (sample numbers 20242-684 to 20242-688) were collected on December 23,1998. Analytical results from these samples were below the residential PRG value of 22 mg/kg for mercury.

On December 24, 1998 approximately 2 cubic yards of mercury-contaminated soil were removed from the inside of the concrete vault. Also, some free mercury droplets were recovered using a mercury spill kit. The spoil and soil from the concrete vault were placed into three 55-gallon drums. After removal of the soil from inside of the vault, a clay drain pipe with a broken end (approximately 2 feet of length) was uncovered at the bottom of the concrete vault. One soil sample (sample number 20242-689) was collected from the soil inside the clay pipe. Mercury concentration from the clay pipe soil was detected at 15.4 mg/kg. Consequently, soil was removed around the clay pipe and the pipe trench was then over excavated, removing approximately 20 cubic yards. The inside of the concrete vault was then decontaminated with a high-pressure washer. The wash water was collected in one 55-gallon drum.

A total of 14 confirmation soil samples were collected (seven from the bottom and seven from side walls of the excavation) after one round of sampling and removal of a total of approximately 140 cubic yards of mercury-contaminated soil. Sample handling and packaging was conducted in accordance with the approved Draft Supplemental Work Plan (OHM 1997). All soil samples were analyzed for mercury using EPA method 7471A.

Analytical results of the final 14 confirmation samples are presented in Table 3-2, Confirmation Soil Samples Analytical Results MSC W2 site. Copies of the Laboratory Analytical Results are included in Appendix J. The locations of the final 14 confirmation soil samples are shown in Figure 3-2, Extent of Excavation and Confirmation Sample Locations Map.

Review of the analytical results of the 14 confirmation soil samples collected from the excavation pit confirmed that all mercury-contaminated soil was excavated and the remaining residual concentration of mercury was below the residential PRG value of 22 mg/kg. The highest concentration of residual mercury in the excavation was detected at 2.9 mg/kg. Therefore, based on the review of the analytical results, no further excavation was conducted.

3.3 Land Surveying

After completing the confirmation soil sampling, the soil sample locations and limits of excavation were surveyed by Calvada Surveying Inc., a California-registered land surveyor. The surveyed locations were measured to ± 0.01 feet horizontally and tied to the California State Plane Coordinate Systems, North American Datum 1983. The surveyed elevations were measured to ± 0.01 feet vertically and tied to mean sea level elevation. The land survey data for MSC W2 site are presented as Appendix K, Land Survey Data.

3.4 Backfilling and Site Restoration

Excavation backfilling at MSC W2 site commenced on December 30, 1998. Initially the concrete vault was filled with approximately 20 tons of roadbase, and the remaining road base (approximately 5 tons) was placed in the bottom of the excavation pit. The remaining excavation pit was backfilled, with approximately 66 cubic yards of imported fill soil and 6 cubic yards of non-impacted or "clean" stockpiled soil from the Station's Biocell area. The backfill soil was spread in loose, shallow lifts then wheel rolled with a rubber tire backhoe for compaction. On December 31, the final 12 cubic yards of soil were placed on the top of the excavation to match the existing surface grade.

3.5 Waste Management

Waste generated during the soil removal activities at the MSC W2 site included the following:

- three 55-gallon drums of mercury-contaminated soil from the concrete vault
- approximately 140 cubic yards of excavated mercury-contaminated soil within 8-20 cubic yard, closed top roll-off bins
- one 55-gallon drum of mixed rinse and decon water from the cleaning of the inside of the concrete vault

All generated wastes have been disposed of in accordance with applicable State and Federal regulations. Based on the results and review of analytical data, OHM disposed of the wastes as follows:

- All four drums (three drums of mercury-contaminated soil and one drum of wash water) were disposed of offsite as hazardous waste at Advanced Environmental Recycling Company in Allentown, Pennsylvania.
- All eight bins which contained potentially mercury-contaminated soil excavated from around the concrete vault and PPE were classified as mercury-impacted, non RCRA hazardous waste solid and shipped to Chemical Waste Management Facility in Kettleman City, California. Copies of the waste manifest are provided in Appendix L, Waste Manifest.

Section 4
Data Quality Assessment and Validation

The objective of the sampling and analysis was to provide analytical data to verify the release of mercury around the concrete vault associated with the MCS W2 site. The sampling methodology, analytical methods, analytical results, and interpretation of confirmation soil sampling have been in accordance with the Technical Memorandum (OHM 1998b).

The laboratory analyses were performed using EPA Solid Waste-846 (Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods, June 1997). The test methods used for analyses were selected on the basis of their ability to detect the chemicals of potential concern with suitable detection limits to prove that there is no risk to human health and the environment.

Samples were analyzed by Quanterra or APCL Laboratories, both which have State of California certification and Naval Facilities Engineering Services Center approval.

4.1 Quality Control Sampling

Field quality assurance/quality control (QA/QC) samples collected for the MSC W2 site included two field duplicate soil samples.

The following laboratory QA/QC sample analysis was performed by Quanterra and APCL Laboratories:

- Laboratory control sample/sample duplicate sample analysis was performed at a frequency of 1 per 20 samples or per batch.
- Laboratory matrix spike/spike duplicate sample analysis was performed at a frequency of 1 per 20 samples or per batch.
- Laboratory method blank analysis was performed at a frequency of 1 per 20 samples or per batch.

4.1.1 Equipment Decontamination

The equipment used in the exclusion zone for collecting soil samples was decontaminated between each sample collection and prior to removal from the site, as identified in the site specific Health and Safety Plan (HSP). The hand auger assembly was washed in a typical three step procedure consisting of: decontaminating the equipment first using a brush in a bucket of Alconox™ detergent and water; then a second bucket of water for immediate rinse, and again in a third bucket of water for the final rinse.

4.2 Analytical Methods

Analytical methods were selected to encompass all the chemicals of potential concern at the MSC W2 site. All soil samples were analyzed for mercury using EPA Method 7471A. For waste characterization purposes, soil samples were also analyzed for the Soluble Limit Threshold Concentration (STLC) by the California Waste Extraction Test (CAL-WET) and the Toxic Characteristic Leachate Procedure (TCLP) by EPA Method 1311/7470A.

4.3 Data Quality Assessment

The analytical data generated for the analysis of the samples collected in conjunction with the assessment of MSC W2 were reviewed and validated with respect to the QA/QC parameters specified in the work plan. The following parameters were evaluated:

- EPA recommended holding times
- cooler condition upon receipt by the laboratory
- initial and continuing calibration standards
- method blanks
- matrix spike/matrix spike duplicate (MS/MSD) recoveries
- laboratory control sample/sample duplicate (LCS/LCSD) recoveries

All samples were prepared and analyzed within EPA recommended holding times. The sample cooler was received intact and within the required temperature range of 4±2 degrees Celsius. Any sample results associated with QC parameters that were out of compliance with the Work Plan have been flagged and annotated in Table 3-1 and Table 3-2.

4.4 Data Validation

This section addresses the validity and quality of the data collected from MSC W2 site. Analytical data were reviewed and validated in accordance with the EPA National Functional Guidelines for Organic and Inorganic Data Review (USEPA, 1994). Laboratory Data Consultants (LDC), an independent data validation company, performed Level III or Level IV validation on the data. A hard copy of the LDC report is provided in Appendix M, LDC Data Validation Reports.

Laboratory analytical data were subjected to a four-stage process of evaluation: completeness checks, verification of hard copy and electronic results, validation of the data, and final evaluation based on the professional judgment of the OHM project chemist.

The data were qualified by LDC to indicate any deviations from the analytical protocols established in the Draft Supplemental Work Plan (OHM, 1997a). Unusable data was qualified with an "R" (rejected). All other results were either unqualified (no flag),

nondetected ("U" flag), nondetected with uncertainty in the report detection limits ("UJ" flag), or detected with uncertainty in the reported concentration ("J" flag).

4.4.1 Analytical Quality Control Program

This section provides a description of the field and laboratory QC sample results, which were used to evaluate the precision, accuracy, representativeness, completeness, and comparability of the data.

Precision — Precision was evaluated based on the QC results submitted from the field and from the laboratory. The calculated relative percent difference (RPD) of MS/MSDs, LCS/LCSDs, and the field duplicate pair provided information on the precision of sampling and analytical procedures. RPDs for duplicate samples were not calculable when one or both results were not detected. The precision results for all the samples were within the required limits.

Accuracy — Evaluation of the percent recovery of spiked analytes in MS/MSD and LCS/LCSD samples provided information on accuracy. In addition, the continuing calibration percent differences (%D) between the initial and continuing calibrations provided information on analytical accuracy. The accuracy results for all samples were within the required limits with the following exceptions:

- The percent recovery for the MS/MSD for mercury was outside of control limits; therefore mercury for sample 20242-684 was flagged as estimated with "J".

Representativeness — Representativeness was assessed through the evaluation of method blank samples. Target analytes were not detected in the method blank

Completeness — Completeness was evaluated in two criteria. The first criteria assured that all analytical requests were met, samples were received in the proper condition, and all analyses were performed within the technical holding times. The second criteria evaluated the analytical completeness by calculating the percent of acceptable analytes. The completeness parameters are:

- the completeness goal for holding times is 100 percent
- the goal for sample collection and analysis frequency of duplicate and MS/MSD samples is 10 and 20 percent, respectively
- the percent analytical completeness goal is 90 percent

All samples were extracted and analyzed within the appropriate holding times. One field duplicate sample was collected, and MS/MSDs were analyzed by the laboratory at the required frequency. The percent analytical completeness goal is based on a project-wide sampling program and cannot be assessed on a site-by-site basis.

Comparability — To ensure comparability, sampling was performed using standardized procedures. Laboratory procedures followed EPA method guidelines. All soil samples were reported on a dry weight basis. The data were then evaluated for comparability of reporting

detection limits (RDLs) and associated dilution factors. RDLs were elevated when samples required dilution to quantify target compounds within the linear range of the instrument or when there was sample matrix interference.

All required reporting limits were achieved for analysis of mercury by the laboratories.

Summary — All data associated with the MSC W2 site were usable and acceptable as qualified. Overall precision and accuracy were met. The analytical results and associated qualifiers are summarized in Table 2-1, Table 3-1, and Table 3-2.

Section 5
Risk Assessment

This section briefly describes the approach used to estimate risk and summarizes the baseline screening level risk assessment results for MSC W2. No risk assessment was conducted for MSC W1 because a source(s) was not identified at the site. A screening level risk assessment for human health was conducted following the guidance provided in the EPA Region IX PRGs Memorandum (EPA, 1998). The results of confirmation soil sampling conducted at MSC W2 were used to characterize the risk.

5.1 Physical Characteristics of the MSC W2 Site

Based on the review of the boring logs advanced at the nearby Oil/Water Separator (OWS) Site 744 -OWS 744 SB-01 and SB-02, the subsurface lithology of the MSC W2 site consist primarily of silts, sands, and clays. These sediments have moderate to high porosity and low permeability. The principal aquifer is present at a depth of approximately 150 feet bgs. The regional groundwater flow direction in the area of site is generally west-northwest (OHM, 1999).

5.2 Exposure Assessment

The MSC W2 site contained one water tower with elevated water tank for the fire fighting system for the Station. Mercury was accidentally spilled to the surrounding ground from the level gauge. For the purposes of this risk screening evaluation, the residential scenario is used as the worst case scenario. The current and future industrial use would have lower exposures and the risk would be less. If the risk is acceptable for the residential land use scenario, the risk would also be acceptable for both the current and future land use scenarios. Figure 5-1 presents the site conceptual model for the MSC W2 site.

The Station closed on July 2, 1999 in accordance with the Base Closure and Realignment Act of 1993 (BRAC III). According to the El Toro Community Reuse Plan (County of Orange, 1997), MSC W2 and MSC W1 sites are located within an area that has been tentatively identified for future use as a terminal complex, adjacent to a parking area. The County of Orange issued The Airport and Open Space Plan Year 2020 (also known as Concept C) in August 1998; and that plan also identified the MSC W2 and MSC W1 sites as the terminal complex parking area. The El Toro Community Reuse Plan working maps are provided in Appendix N, Tentative Reuse Parcel Location of MSC W2 site.

Human exposure to soil at MSC W2 site is limited based on the size of the site and the clean fill that was placed over the site after excavation. The site is approximately 20 feet by 30 feet and there was approximately 4 feet of clean soil (Figure 5-1).

The potential migration pathways, exposure routes and receptors for MSC W2 site are shown in Figure 5-2. The pathways of concern include ingestion, dermal, contact and inhalation from soil to the current industrial receptors.

The PRGs include the pathways and routes of concern. The residential land use scenario is used as a worst-case future land use scenario for screening purposes in the risk characterization.

5.3 Toxicity Assessment

The PRGs incorporate the toxicity values from the Integrated Risk Information System, the Health Effects Assessment Summary Tables, and the National Center for Environmental Assessment. Cancer PRGs incorporate cancer toxicity values and the noncancer PRGs incorporate the toxicity values for chronic health effects other than cancer (EPA, 1998). Both cancer risk and noncancer hazards were evaluated in this screening risk assessment.

5.4 Risk Characterization

The PRGs are concentrations calculated using standard exposure factors that are protective of humans, including sensitive groups, over a lifetime. These PRG concentrations pose acceptable cancer risk or non-cancer hazard under the exposure scenarios evaluated. Generally, a cancer risk of 10^{-6} to 10^{-4} and a non-cancer hazard index of 1 or less are considered acceptable levels of exposure. The PRG concentrations are calculated to at a cancer risk level of $1x10^{-6}$ and a non-cancer hazard index of 1.

Cancer risk is calculated by dividing the site concentration by the PRG for each chemical. The ratios are added and multiplied by 10^{-6}. The hazard index is calculated by dividing the site concentration by the PRG for each chemical and adding the ratios.

At the MSC W2 site, the only detected chemical of concern is mercury. Mercury is not a carcinogen. No cancer causing chemicals were detected; therefore the cancer risk is acceptable.

Mercury was detected in five out of eleven confirmation soil samples collected at the site after excavation. The highest detected concentration of mercury after excavation is 2.9 mg/kg. The non-cancer PRG for mercury is 22 mg/kg under the residential land use scenario. The non-cancer hazard index for mercury is 2.9 divided by 22, or 0.1.

The non-cancer PRG under the current industrial land use scenario is 560 mg/kg. The non-cancer hazard index under the industrial scenario is 2.9 mg/kg divided by 560, which is less than 0.01.

The site-related incremental cancer risk and non-cancer hazard index at the MSC W2 site is acceptable for the following reasons:

- No carcinogens were identified.

- The non-cancer hazard index for the detected chemical of concern (mercury) is less than 1.0 for the residential and industrial scenario.
- The chemical of concern (mercury) was detected only 5 times out of eleven and was detected at 2.9 mg/kg and less.
- The exposure to MSC W2 site soil with the residual mercury concentrations is limited because the site is small and the excavation was backfilled with 4 feet of clean soil.

Section 6
Conclusions and Recommendations

The following conclusions are based upon available background information, the field soil removal and soil sampling activities, and screening level risk assessment calculations:

- The MSC W1 and MSC W2 sites had water towers with elevated water tanks to maintain water pressure for fire fighting system for the Station. Both of these towers and tanks were demolished and removed in September 1993. No gauging apparatus were associated with the MSC W1 site and the water level gauge, pressure gauge at the MSC W2 site monitored both the water towers. Therefore, it is concluded that the no further action status designated for MSC W1 in the 1999 BCP update is appropriate.
- According to background information, mercury was released at an unknown time from the open top level gauge apparatus into the ground at the MSC W2 site.
- During a site inspection in September 1998, OHM observed no stains or evidence of any staining at the MSC W1 site. At present, the MSC W1 site is an open grass field. An open rectangular concrete vault was observed at the MSC W2 site.
- OHM performed preliminary field sampling at the MSC W2 site to ascertain the lateral and vertical extent of spilled mercury contamination. A total of 21 soil samples (at depths of 6-inches and 24-inches bgs) were collected from 12 hand auger locations. Soil sampling analytical results from five separate locations detected mercury concentrations above the residential PRG value of 22 mg/kg. The highest mercury concentration was 96.9 mg/kg outside the concrete vault.
- OHM removed and disposed offsite approximately 140 cubic yards of potentially mercury-contaminated soil from the MSC W2 site as part of the Station's operational spill response. Analysis of the 14 confirmation soil samples collected from the bottom and walls of the soil removal area did not detect any mercury concentrations above the residential PRG value of 22 mg/kg. The highest residual mercury concentration detected during confirmation sampling activities was 2.9 mg/kg.
- The excavated area (approximately 20 feet by 30 feet by 4 feet deep) and concrete vault at the MSC W2 site was backfilled with clean soil to original grade.
- The residential and industrial risk calculations for the MSC W2 site resulted in a site-related non-cancer hazard index of less then 1.0.

The objectives of this project were achieved; spilled mercury-contaminated soil and PPE waste were removed and disposed of to an appropriate off-site facility. Confirmation sampling analytical results did not detect any concentrations of mercury compounds above the residential PRG value and laboratory reporting limits were below the EPA residential PRGs (EPA, May 1998).

Field response action at the MSC W2 site to remove surface and near subsurface mercury contaminated soil as a Station operational spill response was successfully completed. Furthermore, a field site visit and available background information verified that no level gauge was associated with the water tank at MSC W1 site; therefore it is recommended that the MSC W1 (former elevated west water tower 373) and MSC W2 (former elevated east water tower 222) sites be identified as "closed."

Section 7
References

Addendum to the original HSP, Amendment No. 70-05, dated December 14, 1998. A copy of OHM's addendum to original HSP.

BNI, see Bechtel National, Inc.

Camp, Dresser and McKee, Inc. Federal Programs Corporation, 1997, *Final Groundwater Monitoring Report, July 1997 Sampling Round, Groundwater Monitoring Program for Marine Corps Air Station, El Toro*, October, [Navy Contract N68711-96-D-2029, Delivery Order 5].

CDM, see Camp, Dresser and McKee, Inc. Federal Programs Corporation.

County of Orange, 1997, *Alternative A, El Toro Community Reuse Plan, 1997 Working Map, Land Uses/Conveyances, Gross Acres*, [Prepared by P&D Consultants for the County of Orange, March 1997.]

County of Orange, 1998, *The Airport and Open Space Plan Year 2020, Concept C*, August 1998.

EPA, see United States Environmental Protection Agency.

Marine Corps Air Station El Toro, California, 1997, *Final Base Realignment and Closure Cleanup Plan*, March.

Marine Corps Air Station El Toro, California, 1999. *Final Base Realignment and Closure Cleanup Plan*, March.

MCAS El Toro, see Marine Corps Air Station El Toro, California.

OHM, see OHM Remediation Services Corp.

OHM Remediation Services Corp. (OHM) 1995. Site Health and Safety Plan, RCRA Closure Building 673-T3 MCAS El Toro. Navy Contract N68711-93-D-1459, Delivery Order 0020 and 0070.

OHM Remediation Services Corp., 1997, *Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine Corps Air Station El Toro, Santa Ana, California*, March.

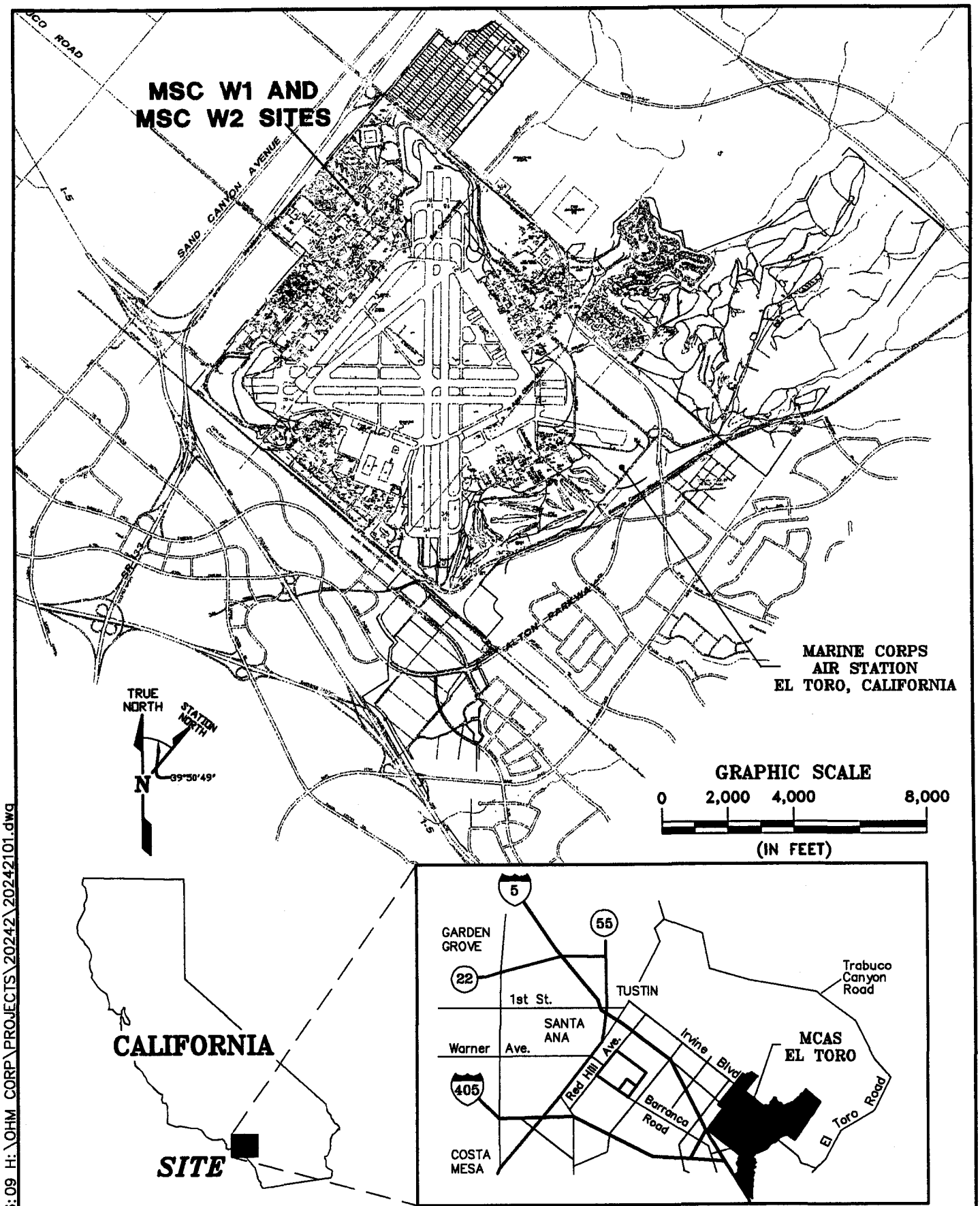
OHM Remediation Services Corp., 1998a, *Preliminary Field Response Action Strategy at Former Water Tower Structure 222 (MSC W2) Site,* December.

OHM Remediation Services Corp., 1998b, *Technical Memorandum Sampling Strategy for Locations of Concern MSC W1 and MSC W2 (Site 86 and 87) Former Water Tanks at MCAS El Toro*, October.

United States Environmental Protection Agency, 1994, *National Functional Guidelines for Organic and Inorganic Data Review*. December.

United States Environmental Protection Agency, 1998, Region IX Preliminary Remediation Goals (PRGs) 1998, Memorandum from Stanford J. Smucker to the PRG Table Mailing List, 1 May.

Figures



OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

CONTRACT NAME: SWDIV

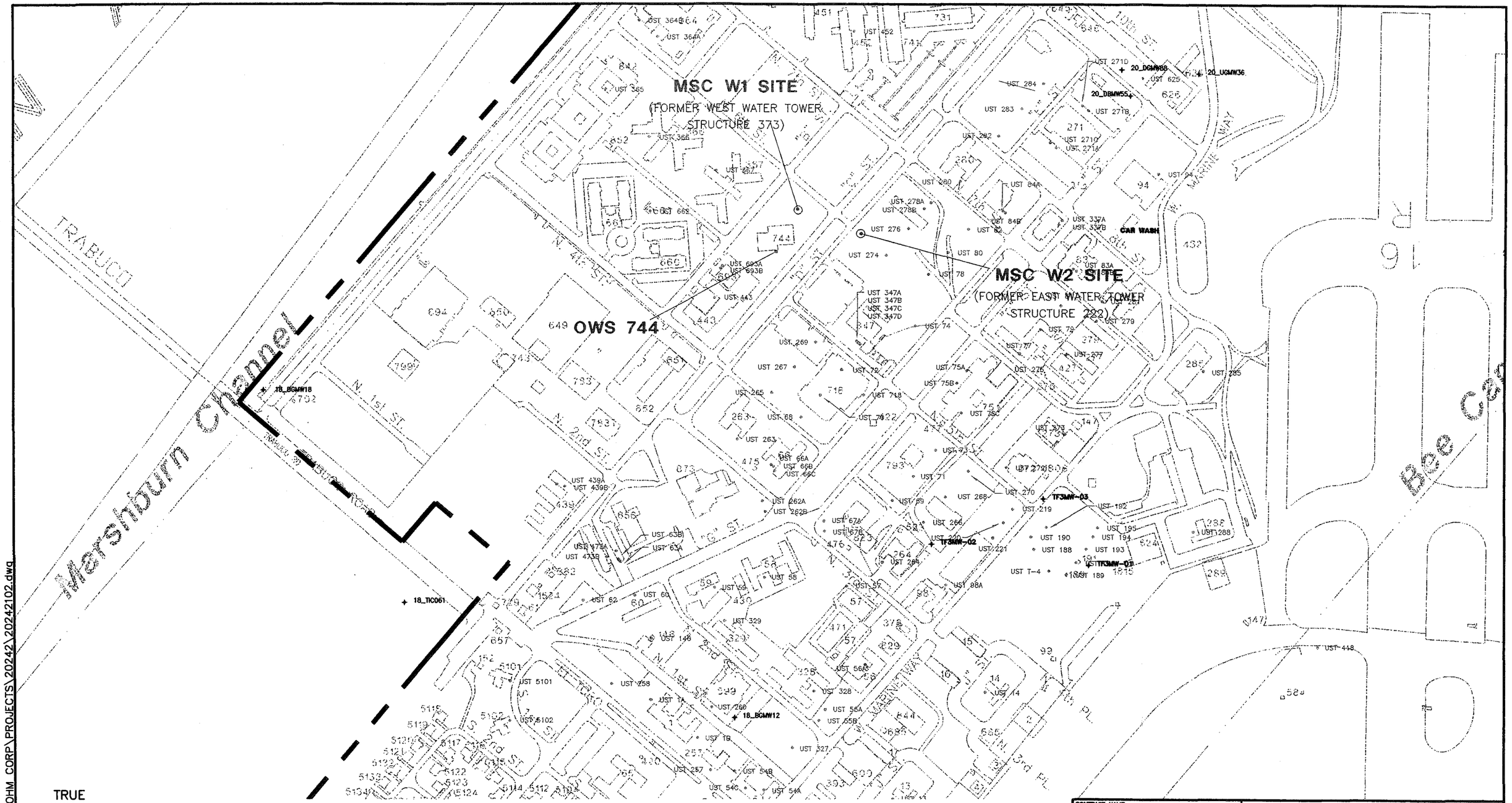
DRAWN BY: R. PIRMORADIAN	DATE: 08/11/99	
CHECKED BY: DR	DATE: 8/11/99	
APPROVED BY	DATE	
PROJECT MANAGER: W Seidel	DATE: 8/13/99	

FACILITY LOCATION MAP
MSC W1 AND MSC W2 SITES

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

AUTOCAD FILE No.	PLOT SCALE	SHEET	OF	SCALE	DOCUMENT CONTROL No.	OHM PROJECT No.	FIGURE No.	REVISION
20242101.DWG	1=1	1	6	1"=4,000'	SW6622	20242	FIG 1-1	0

Aug 11, 1999 - 13:36:09 H:\OHM CORP\PROJECTS\20242\20242101.dwg



TRUE NORTH
STATION NORTH
N
39°50'49"

EXPLANATION:

- UNDERGROUND STORAGE TANKS
- GROUNDWATER MONITORING WELL

GRAPHIC SCALE

0 200 400 800

(IN FEET)

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED

CONTRACT NAME	SWDIV
DRAWN BY	R. PIRMORADIAN
DATE	08/11/99
CHECKED BY	DR
DATE	8/12/99
APPROVED BY	
DATE	
PROJECT MANAGER	
DATE	8/13/99
AUTOCAD FILE No.	20242102.DWG

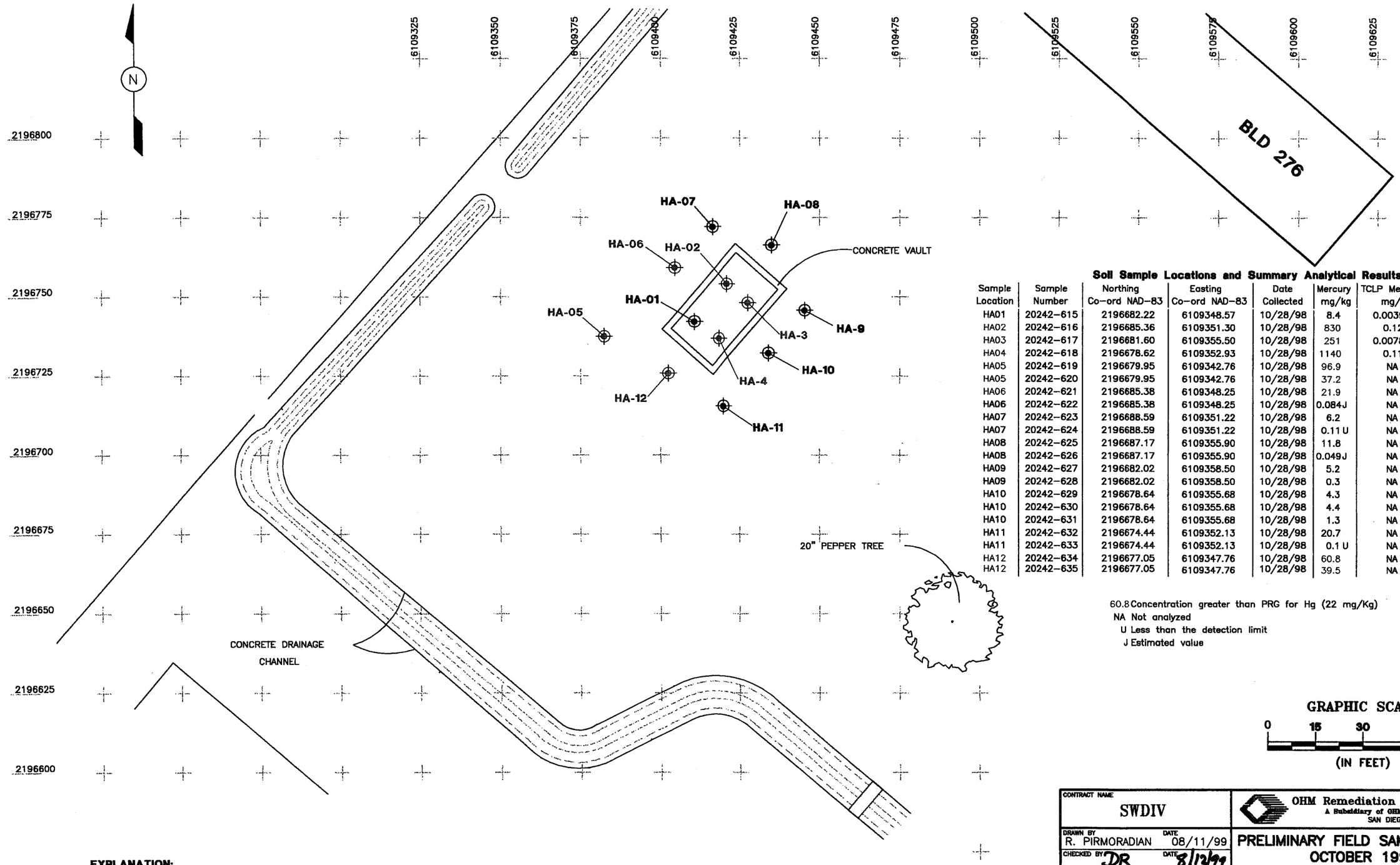
OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
IRVINE, CA

LOCATION MAP
MSC W1 AND MSC W2 SITES

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=400'	1	1	SW6622	20242	FIG 1-2

Aug 12, 1999 – 15:44:05 H:\OHM CORP\PROJECTS\20242\20242102.dwg



Soil Sample Locations and Summary Analytical Results

Sample Location	Sample Number	Northing Co-ord NAD-83	Easting Co-ord NAD-83	Date Collected	Mercury mg/kg	TCLP Mercury mg/L	STLC Mercury mg/L
HA01	20242-615	2196682.22	6109348.57	10/28/98	8.4	0.0039	0.053
HA02	20242-616	2196685.36	6109351.30	10/28/98	830	0.12	NA
HA03	20242-617	2196681.60	6109355.50	10/28/98	251	0.0078	NA
HA04	20242-618	2196678.62	6109352.93	10/28/98	1140	0.11	NA
HA05	20242-619	2196679.95	6109342.76	10/28/98	96.9	NA	NA
HA05	20242-620	2196679.95	6109342.76	10/28/98	37.2	NA	NA
HA06	20242-621	2196685.38	6109348.25	10/28/98	21.9	NA	NA
HA06	20242-622	2196685.38	6109348.25	10/28/98	0.084J	NA	NA
HA07	20242-623	2196688.59	6109351.22	10/28/98	6.2	NA	NA
HA07	20242-624	2196688.59	6109351.22	10/28/98	0.11 U	NA	NA
HA08	20242-625	2196687.17	6109355.90	10/28/98	11.8	NA	NA
HA08	20242-626	2196687.17	6109355.90	10/28/98	0.049J	NA	NA
HA09	20242-627	2196682.02	6109358.50	10/28/98	5.2	NA	NA
HA09	20242-628	2196682.02	6109358.50	10/28/98	0.3	NA	NA
HA10	20242-629	2196678.64	6109355.68	10/28/98	4.3	NA	NA
HA10	20242-630	2196678.64	6109355.68	10/28/98	4.4	NA	NA
HA10	20242-631	2196678.64	6109355.68	10/28/98	1.3	NA	NA
HA11	20242-632	2196674.44	6109352.13	10/28/98	20.7	NA	NA
HA11	20242-633	2196674.44	6109352.13	10/28/98	0.1 U	NA	NA
HA12	20242-634	2196677.05	6109347.76	10/28/98	60.8	NA	NA
HA12	20242-635	2196677.05	6109347.76	10/28/98	39.5	NA	NA

60.8 Concentration greater than PRG for Hg (22 mg/Kg)
NA Not analyzed
U Less than the detection limit
J Estimated value

GRAPHIC SCALE

0 15 30 60

(IN FEET)

EXPLANATION:

SAMPLE POINTS

TOP TOP OF CONCRETE

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
01	97102-106.DWG BY CALVADA SURVEYING INC.	11/12/98	

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

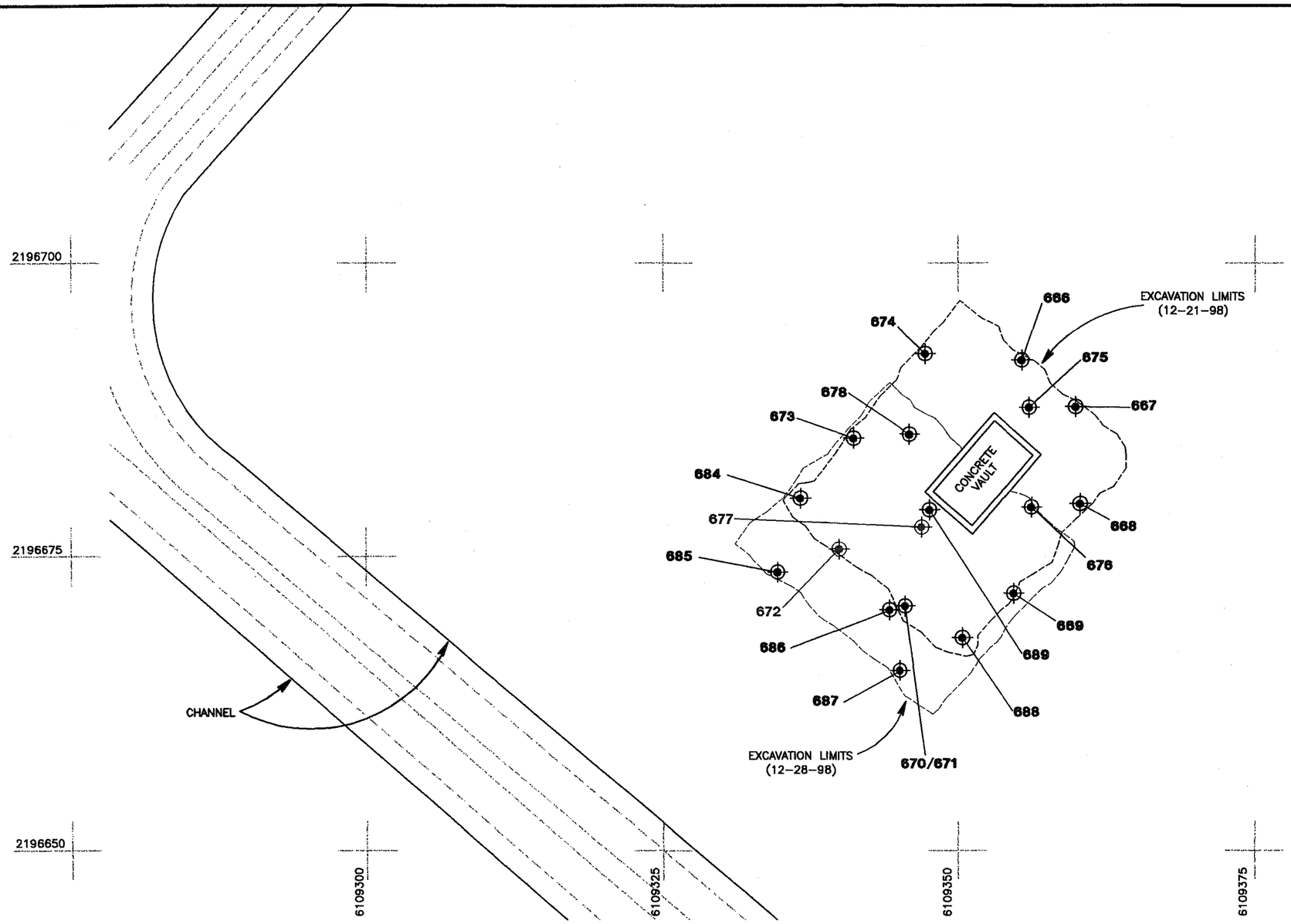
DRAWN BY: R. PIRMORADIAN DATE: 08/11/99
CHECKED BY: DR DATE: 8/12/99
APPROVED BY: DATE:
PROJECT MANAGER: DATE: 8/13/99
AUTOCAD FILE No.: 20242104.DWG

PRELIMINARY FIELD SAMPLING DATA
OCTOBER 1998
MSC W2 SITE

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=30'	1	1	SW6622	20242	FIG 2-1

Aug 11, 1999 - 14:35:30 H:\OHM CORP\PROJECTS\20242\20242104.dwg



Soil Sample Locations and Analytical Summary

OHM Sample Location	Description	Northing (NAD 83)	Easting (NAD 83)	Mercury (EPA 7471A) mg/kg
20242-666	LOC-87-NW-No. Wall	2196691.78	6109355.43	0.019U
20242-667	LOC-87-NE-No. Wall	2196687.79	6109359.95	0.019U
20242-668	LOC-87-NE-East Wall	2196679.54	6109360.36	0.056J
20242-669	LOC-87-SE-East Wall	2196671.92	6109354.79	0.019U
20242-670	LOC-87-SE-So. Wall	2196670.81	6109345.59	9.6
20242-671	LOC-87-SE-So. Wall (Dup)	2196670.81	6109345.59	5.2
20242-672	LOC-87-SW-So. Wall	2196675.67	6109339.90	51.5
20242-673	LOC-87-SW-West Wall	2196685.10	6109341.07	2.5
20242-674	LOC-87-NW-West Wall	2196692.31	6109347.29	0.055
20242-675	LOC-87-N-Inside	2196687.75	6109356.06	0.020U
20242-676	LOC-87-E-Inside	2196679.25	6109356.30	0.019U
20242-677	LOC-87-S-Inside	2196677.53	6109347.00	27.1
20242-678	LOC-87-W-Inside	2196685.43	6109345.93	0.019U
20242-684	LOC-87-N-Inside	2196679.99	6109336.68	1.5J
20242-685	LOC-87-NE-Inside	2196673.69	6109334.74	2.9
20242-686	LOC-87-S-Center	2196673.47	6109344.18	2.1
20242-687	LOC-87-SE-Inside	2196665.33	6109345.12	0.059U
20242-688	LOC-87-S-Wall	2196668.11	6109350.42	0.057U
20242-689	SOIL INSIDE THE CLAY DRAIN PIPE	NONE	NONE	15.4

51.5 Concentration greater than PRG for Hg (22 mg/Kg)
NA Not analyzed
U Less than the detection limit
J Estimated value

N

GRAPHIC SCALE
0 5 10 20
(IN FEET)

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
01	97102-106B.DWG BY CALVADA SURVEYING CORP	11&12/98	

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

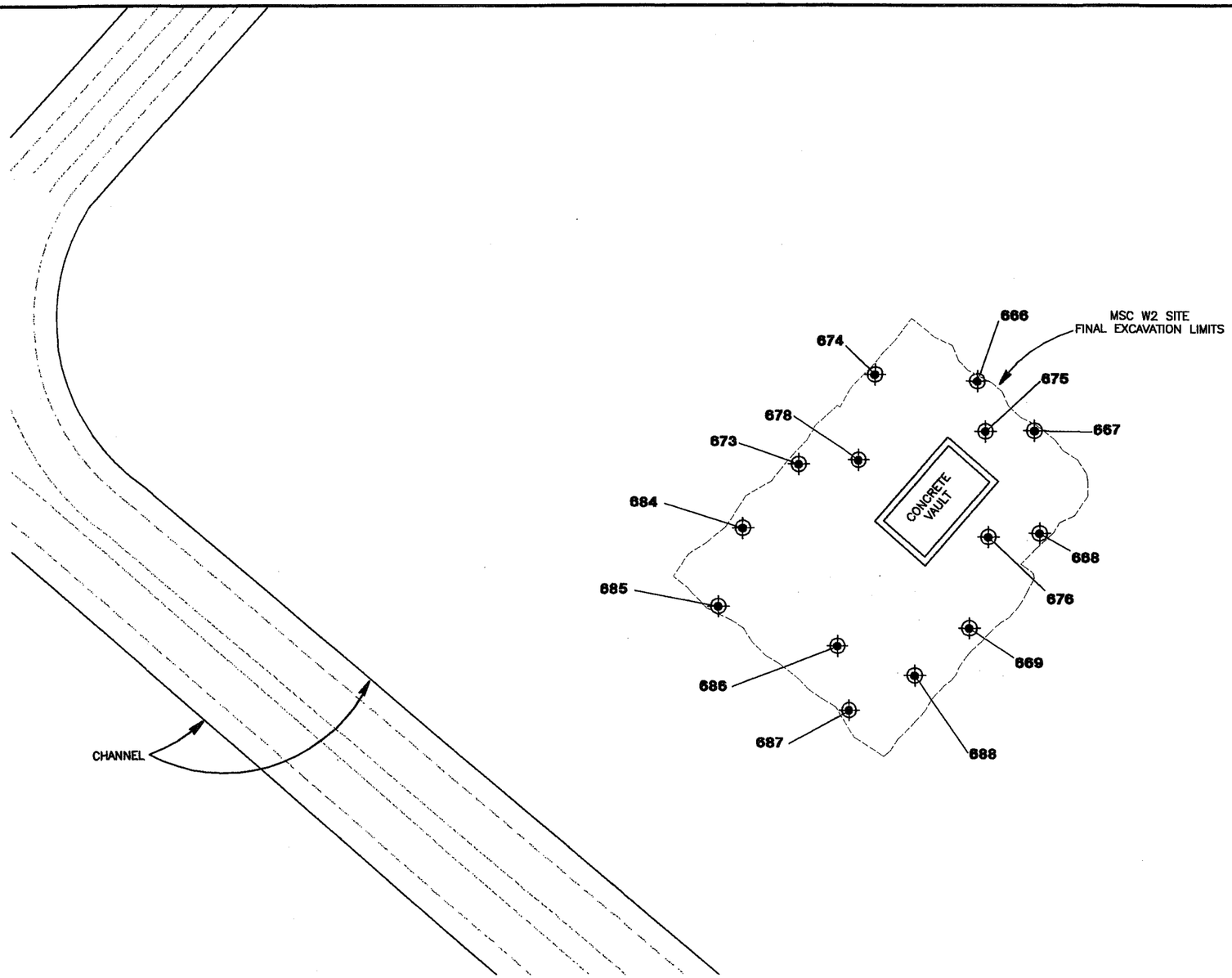
DRAWN BY: R. PIRMORADIAN DATE: 08/12/99
CHECKED BY: DR DATE: 8/12/99
APPROVED BY: DATE:
PROJECT MANAGER: DATE: 8/13/99
AUTOCAD FILE No.: 20242105.DWG

EXTENT OF EXCAVATION AND SOIL SAMPLE LOCATIONS MSC W2 SITE

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=10'	1	1	SW6622	20242	FIG 3-1

Aug 12, 1999 - 15:35:09 H:\OHM CORP\PROJECTS\20242\20242105.dwg



Confirmation Sample Locations and Analytical Summary

OHM Sample Location	Description	Northing (NAD 83)	Easting (NAD 83)	Mercury (EPA 7471A) mg/kg
20242–666	LOC–87–NW–No. Wall	2196691.78	6109355.43	0.019U
20242–667	LOC–87–NE–No. Wall	2196687.79	6109359.95	0.019U
20242–668	LOC–87–NE–East Wall	2196679.54	6109360.36	0.056J
20242–669	LOC–87–SE–East Wall	2196671.92	6109354.79	0.019U
20242–673	LOC–87–SW–West Wall	2196685.10	6109341.07	2.5
20242–674	LOC–87–NW–West Wall	2196692.31	6109347.29	0.055
20242–675	LOC–87–N–Inside	2196687.75	6109356.06	0.020U
20242–676	LOC–87–E–Inside	2196679.25	6109356.30	0.019U
20242–678	LOC–87–W–Inside	2196685.43	6109345.93	0.019U
20242–684	LOC–87–N–Inside	2196679.99	6109336.68	1.5 J
20242–685	LOC–87–NE–Inside	2196673.69	6109334.74	2.9
20242–686	LOC–87–S–Center	2196673.47	6109344.18	2.1
20242–687	LOC–87–SE–Inside	2196665.33	6109345.12	0.059U
20242–688	LOC–87–S–Wall	2196668.11	6109350.42	0.057U

U Less than the detection limit
J Estimated value

N

GRAPHIC SCALE
0 5 10 20
(IN FEET)

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED
01	97102–106B.DWG BY CALVADA SURVEYING CORP	11&12/98	

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: R. PIRMORADIAN DATE: 08/11/99
CHECKED BY: DR DATE: 8/12/99
APPROVED BY: DATE:
PROJECT MANAGER: DATE: 8/13/99
AUTOCAD FILE No.: 20242112.DWG

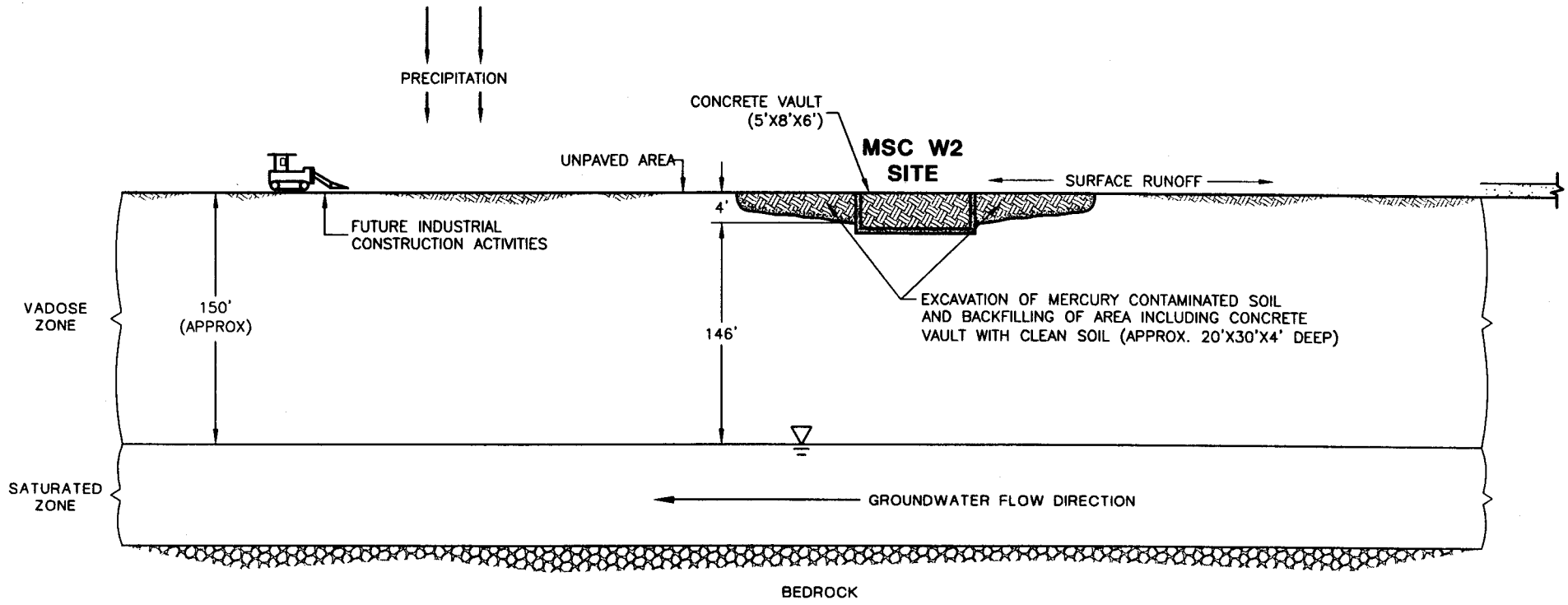
EXTENT OF EXCAVATION AND CONFIRMATION SAMPLE LOCATIONS
MSC W2 SITE

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=10'	1	1	SW6622	20242	FIG 3–2

Aug 11, 1999 – 17:02:53 H:\OHM CORP\PROJECTS\20242\20242112.dwg

Aug 12, 1999 - 14:10:55 H:\OHM CORP\PROJECTS\20242\20242111.dwg



EXPLANATION:

RECEPTORS:

WORKERS

PATHWAYS:

GROUNDWATER

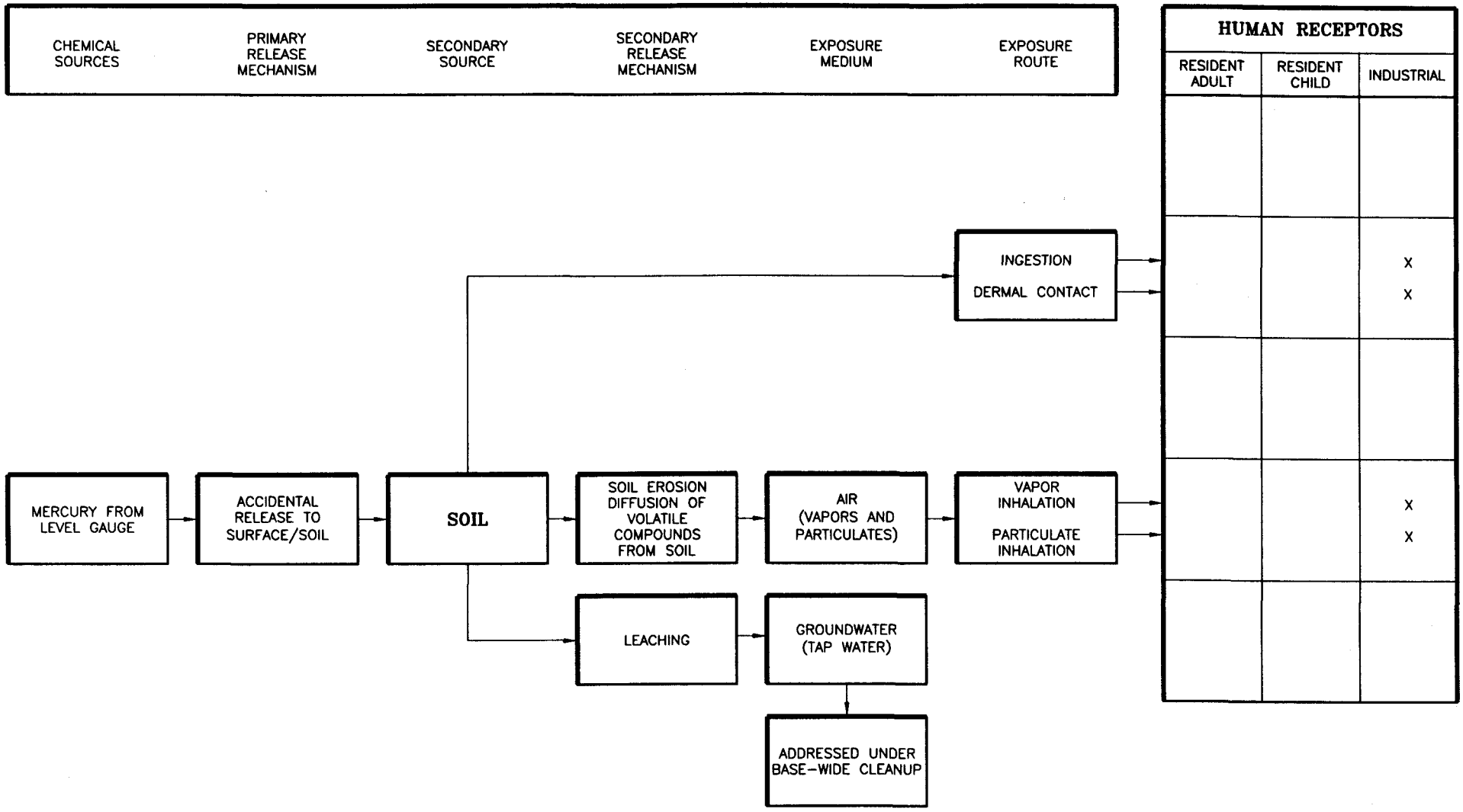
PRECIPITATION

REFERENCE:
103M2088.DWG

NOTE:
DRAWING NOT TO SCALE.

OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA			DRAWN BY R. PIRMORADIAN	DATE 08/12/99	CONCEPTUAL SITE MODEL MSC W2 SITE		
			CHECKED BY DR	DATE 8/12/99			
			APPROVED BY	DATE			
CONTRACT NAME SWDIV			PROJECT MANAGER	DATE 8/13/99	MARINE CORPS AIR STATION EL TORO, CALIFORNIA		
AUTOCAD FILE No. 20242111.DWG	PLOT SCALE 1=1	SHEET 1	OF 1	SCALE NONE	DOCUMENT CONTROL No. SW6622	OHM PROJECT No. 20242	FIGURE No. FIG 5-1

Aug 12, 1999 - 11:25:55 H:\OHM CORP\PROJECTS\20242\20242110.dwg



EXPLANATION:

X COMPLETE PATHWAY

REFERENCE:
103C2089.DXF

OHM Remediation Services Corp. A Subsidiary of OHM Corporation SAN DIEGO, CA	DRAWN BY R. PIRMORADIAN	DATE 08/11/99	POTENTIAL MIGRATION PATHWAYS EXPOSURE ROUTES AND RECEPTORS MSC W2 SITE
	CHECKED BY DR	DATE 8/12/99	
	APPROVED BY	DATE	
CONTRACT NAME SWDIV	PROJECT MANAGER W Bell	DATE 8/13/99	MARINE CORPS AIR STATION EL TORO, CALIFORNIA

AUTOCAD FILE No.	PLOT SCALE	SHEET	OF	SCALE	DOCUMENT CONTROL No.	OHM PROJECT No.	FIGURE No.
20242110.DWG	1=1	1	1	NONE	SW6622	20242	FIG 5-2

Tables

Table 2 - 1
Preliminary Field Sampling Analytical Results — MSC W2 Site

Sample Identification			20242-615	20242-616	20242-617	20242-618	20242-619	20242-620
Location Code			LOC-87-HA01	LOC-87-HA02	LOC-87-HA03	LOC-87-HA04	LOC-87-HA05	LOC-87-HA05
Date Sampled			10/28/98	10/28/98	10/28/98	10/28/98	10/28/98	10/28/99
Depth (feet below ground surface)			0.25	0.25	0.25	0.25	0.5	2.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	8.4	**830**	**251**	**1140**	**96.9**	**37.2**
CAL-WET								
Mercury	mg/L	22	0.053	NA	NA	NA	NA	NA
EPA 1311/7470A								
Mercury	mg/L	22	0.0039	0.12	0.0078	0.11	NA	NA

Table 2 - 1
Preliminary Field Sampling Analytical Results — MSC W2 Site

Sample Identification			20242-621	20242-622	20242-623	20242-624	20242-625	20242-626
Location Code			LOC-87-HA06	LOC-87-HA06	LOC-87-HA07	LOC-87-HA07	LOC-87-HA08	LOC-87-HA08
Date Sampled			10/28/98	10/28/98	10/28/98	10/28/98	10/28/98	10/28/98
Depth (feet below ground surface)			0.5	2.0	0.5	2.0	0.5	2.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	21.9	0.084 J	6.2	0.11 U	11.8	0.049 J
CAL-WET								
Mercury	mg/L	22	NA	NA	NA	NA	NA	NA
EPA 1311/7470A								
Mercury	mg/L	22	NA	NA	NA	NA	NA	NA

Table 2 - 1
Preliminary Field Sampling Analytical Results — MSC W2 Site

Sample Identification			20242-627	20242-628	20242-629	20242-630	20242-631	20242-632
Location Code			LOC-87-HA09	LOC-87-HA09	LOC-87-HA10	LOC-87-HA10 (DUP)	LOC-87-HA10	LOC-87-HA11
Date Sampled			10/28/98	10/28/99	10/28/98	10/28/98	10/28/98	10/28/98
Depth (feet below ground surface)			0.5	2.0	0.5	1.0	2.0	0.5
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	5.2	0.30	4.3	4.4	1.3	20.7
CAL-WET								
Mercury	mg/L	22	NA	NA	NA	NA	NA	NA
EPA 1311/7470A								
Mercury	mg/L	22	NA	NA	NA	NA	NA	NA

Table 2 - 1
Preliminary Field Sampling Analytical Results — MSC W2 Site

Sample Identification			20242-633	20242-634	20242-635
Location Code			LOC-87-HA11	LOC-87-HA12	LOC-87-HA12
Date Sampled			10/28/98	10/28/98	10/28/99
Depth (feet below ground surface)			2.0	0.5	2.0
	Unit	**Residential PRG**			
EPA 7471A					
Mercury	mg/kg	22	0.10 U	**60.8**	**39.5**
CAL-WET					
Mercury	mg/L	22	NA	NA	NA
EPA 1311/7470A					
Mercury	mg/L	22	NA	NA	NA

Explanation:
Bold typeface indicates the value exceeds the target cleanup level.
CAL-WET - California Waste Extraction Test
EPA - United States Environmental Protection Agency
J - estimated value
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
NA - not analyzed
OHM - OHM Remediation Services Corp.
PRG - Preliminary Remedial Goal
U - not detected at or above the stated reporting limit

Table 3 - 1
Summary of Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-666	20242-667	20242-668	20242-669	20242-670	20242-671
Location Code			NW-No. Wall	NE-No. Wall	NE-East Wall	SE-East Wall	SE-So. Wall	SE-So. Wall (DUP)
Date Sampled			12/18/98	12/18/98	12/18/98	12/18/98	12/18/98	12/18/98
Depth (feet below ground surface)			3.5	3.5	3.5	3.0	3.0	3.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	0.019 U	0.019 U	0.056 J	0.019 U	9.6	5.2

Table 3 - 1
Summary of Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-672	20242-673	20242-674	20242-675	20242-676	20242-677
Location Code			SW-So. Wall	SW-West Wall	NW-West Wall	N-Inside	E-Inside	S-Inside
Date Sampled			12/18/98	12/18/98	12/18/98	12/18/98	12/18/98	12/18/98
Depth (feet below ground surface)			3.0	3.0	3.0	3.8	3.8	3.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	**51.5**	2.5	0.055 J	0.020 U	0.019 U	**27.1**

Table 3 - 1
Summary of Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-678	20242-684	20242-685	20242-686	20242-687	20242-688
Location Code			W-Inside	N-Floor	NE-Inside	S-Center	SE-Inside	S-Wall
Date Sampled			12/18/98	12/23/98	12/23/98	12/23/98	12/23/98	12/23/98
Depth (feet below ground surface)			3.8	4.0	4.0	4.0	4.0	4.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	0.019 U	1.5 J	2.9	2.1	0.059 U	0.057 U

Table 3 - 1
Summary of Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-689
Location Code			Drain Pipe
Date Sampled			12/28/98
Depth (feet below ground surface)			Surface
	Unit	**Residential PRG**	
EPA 7471A			
Mercury	mg/kg	22	15.4

Explanation:
Bold typeface indicates the value exceeds the target cleanup level.
EPA - United States Environmental Protection Agency
J - estimated value
mg/kg - milligrams per kilogram
OHM - OHM Remediation Services Corp.
PRG - Preliminary Remedial Goal
U - not detected at or above the stated reporting limit

Table 3 - 2
Summary of Confirmation Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-666	20242-667	20242-668	20242-669	20242-673	20242-674
Location Code			NW-No. Wall	NE-No. Wall	NE-East Wall	SE-East Wall	SW-West Wall	NW-West Wall
Date Sampled			12/18/98	12/18/98	12/18/98	12/18/98	12/18/98	12/18/98
Depth (feet below ground surface)			3.5	3.5	3.5	3.0	3.0	3.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	0.019 U	0.019 U	0.056 J	0.019 U	2.5	0.055 J

Table 3 - 2
Summary of Confirmation Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-675	20242-676	20242-678	20242-684	20242-685	20242-686
Location Code			N-Inside	E-Inside	W-Inside	N-Floor	NE-Inside	S-Center
Date Sampled			12/18/98	12/18/98	12/18/98	12/23/98	12/23/98	12/23/98
Depth (feet below ground surface)			3.8	3.8	3.8	4.0	4.0	4.0
	Unit	**Residential PRG**						
EPA 7471A								
Mercury	mg/kg	22	0.020 U	0.019 U	0.019 U	1.5 J	2.9	2.1

Table 3 - 2
Summary of Confirmation Soil Sample Analytical Results — MSC W2 Site

Sample Identification			20242-687	20242-688
Location Code			SE-Inside	S-Wall
Date Sampled			12/23/98	12/23/98
Depth (feet below ground surface)			4.0	4.0
	Unit	**Residential PRG**		
EPA 7471A				
Mercury	mg/kg	22	0.059 U	0.057 U

Explanation:
Bold typeface indicates the value exceeds the target cleanup level.
EPA - United States Environmental Protection Agency
J - estimated value
mg/kg - milligrams per kilogram
OHM - OHM Remediation Services Corp.
PRG - Preliminary Remedial Goal
U - not detected at or above the stated reporting limit

Appendix A
Newspaper Article Clipping

w costly ther way

My son has a bicycle helmet, but no bicycle. Oh, he used to have a bicycle until someone ed into the back yard one ınd stole it and my lawn er.

at's why I want Gov. Wil- o sign that bicycle-helmet nto law. It's been sitting on esk all week now. The way it, the sooner he signs it, uicker I'll get Ben's bike

u gotta figure anybody ll steal a Ninja Turtle bike thinking about wearing a et. So the cops will stop write him up and maybe e out he's on Ben's bike. be he'll be pulling my lawn er with it, and I can get back, too.

:, OK. I'm dreaming. But 'e Pete Wilson and the Leg- ıre if they think they're go- o wipe out bicycle mishaps tragedies by passing a law says everybody under 18 on a bike must wear a hel- It's not going to happen. ink about it. On those cold, days, your mom would out- ou in that stupid hat and ens. What was the first g you did once you got out er eyesight? You ditched n. Ask any kid: Bicycle hel- s aren't cool. So just think l the helmets that'll be sit- behind bushes and in mail- s.

ıd that's money. I priced nets at Orange Cycle on ssell Street the other day. bulk were priced around 40 ks, but John Paulisin, whose s own the store, says some as cheap as $20.

ıout 40 percent of the people buy bikes at his store buy ıets, too, Paulisin says.

By RICKY YOUNG
The Orange County Register

She still has the gold charm her father gave her, a tiny replica of the huge trademark globe outside the first Leisure World, in Seal Beach.

But Jade Pedersen was unable to convince an Orange County Superior Court commissioner Friday that she deserved any riches from the five-state retire-

ings," Pederson said Saturday. "But I have [illegible] ace knowing my father love[illegible]."

Pedersen, 32, of Huntington Beach, argued that she was mistakenly omitted from Cortese's will. He died in 1991 at age 74.

The will governs about $5,000 in Cortese's court-governed estate. But a victory could give Pedersen claim to private trusts estimated at more than $100 million.

was unaware of Pedersen when he signed the will.

"That's obvious from the face of the document," he said.

The will states that Cortese had no children other than his legitimate daughter, Heidi.

Attorneys for Cortese's trusts said Pedersen was entitled to nothing because the will didn't include her.

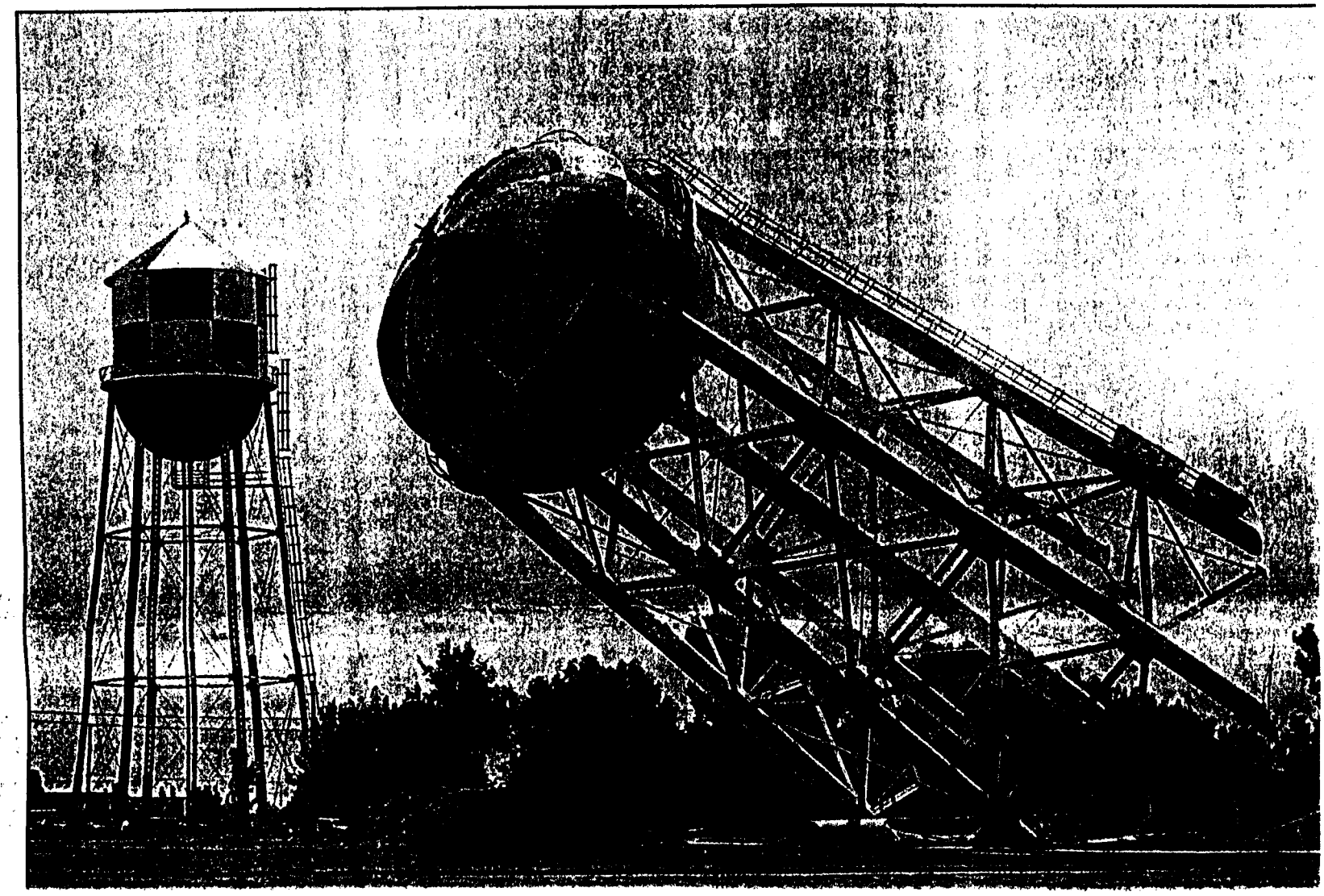
"She was not left anything in

tend he di[illegible] have a daughte she said. [illegible]e wanted to dis herit me, he would have done i

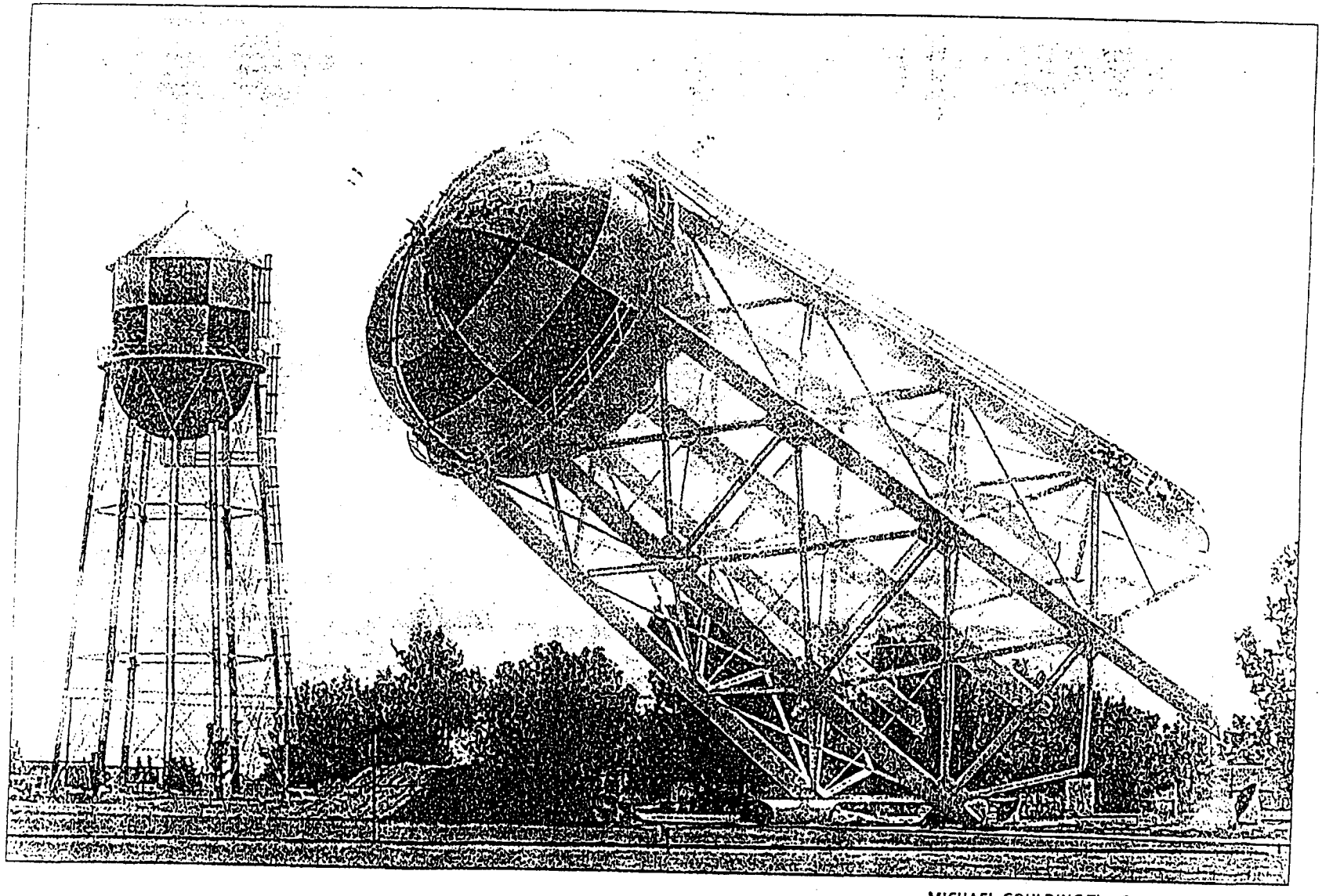
Pedersen's mother is R Elaine Hall, an interior deco tor for Cortese who had a sev year relationship with him. C tese never married Hall, but named Ruth Elaine Drive af her when he developed Rc moor near Los Alamitos.

Pedersen lives with her sec

ONE, TWO ... AND DOWN GOES A WATER TOWER



ONE, TWO ... AND DOWN GOES A WATER TOWER



MICHAEL GOULDING/The Orange County Register

It took most of the day Saturday, but crews finally pulled down this landmark 50-year-old water tower and its companion at El Toro Marine Corps Air Station. Neither tower had been in use for 20 years, and authorities feared the rusting structures posed an earthquake hazard. Vamille Metal Supply of Huntington Park bought the towers for their scrap value. The company paid $1,000 for the dome-shaped tower, which came down intact on the second try. The purchase price of the cylinder-shaped tower wasn't available.

Appendix B
ROICC Information Package

To: Lynn M Horneckerⓐ BRACⓐ NAVFAC EFDSWEST
Cc:
Bcc:
From: Scott M Kehe@ROICC ELTOROⓐ NAVFAC EFDSWEST
Subject: Mercury Spill LOC 87
Date: Wednesday, November 25, 1998 10:41:54 PST
Attach:
Certify: N
Priority: Normal
Defer until:
Expires:
Forwarded by:

This is to document the conversation I had today with Mr. Joe Saenz (Mechanical Planner and Estimator with the MCAS El Toro Installations Department and former foreman of the plumbing shop) regarding the mercury pressure switch at the former water tower, facility number 222.
Mr. Saenz stated that the tube containing the mercury for the pressure switch was open to the atmosphere. There was also a screw top which could be removed in order to fill the tube with mercury. He stated that no manuals or drawings of the device are available since the water tower was removed in 1993.

Scott Kehe

SITE NO. 8

MSCW1

STRUCTURE C L A S S 2 D I S P O S A L R E C O R D

TIME: 08:11:20 DATE: 93/09/18

(004) UIC..M60050
MCAS EL TORO SANTA ANA CA

(001) PR NO.....200770
(005) FACILITY NO..373
(106) SPEC AREA....

(604) EXCESS CODE..
(605) EXCESS DATE..

PR LAST UPDATED....14 SEP 1993

(008) FAM HOUSING....NO
(101) COUNTRY.....US UNITED STATES
(102) STATE.....06 CALIFORNIA
(103) COUNTY.....059 ORANGE
(104) CITY.....0000
(107) MAP GRID.....N2
(201) ESTATE.....11 MCON
(203) ACQ DATE.....01 JAN 1953
(204) GOVT COST..... $91,932
(304)/(308) AREA/UM.. 0
(401) YR BUILT.....1953
+(601) DISP DATE.....14 SEP 1993
+(602) DISP METHOD....DEMOLITION
(603) GSA DISP CONT..
+(606) DISP CONTRACT..DRMO
(607) CONSOL PR.....

93SEP18 EFD.N68711 MC.M00027 *ACTIVITY.M60050 PR.2-00770

DEMO

HQMC O&MMC PROJECT SURVEY DATA SHEET

MAJOR REPAIR

MCAS ELTORO	92/02/24	10 of 11
ACTIVITY NAME	YR/MO/DY	COMMAND PRI (incl supplementals)

FT 408M	DEMO WATER TOWER *373	419
PROJECT NO.	TITLE	COST

373 WATER TOWER STORAGE	841-30	
FACILITY NO./USE/RPV	CAT CODE	COST BENEFIT RATING

A. Associated construction project number (if any): NO

B. Is NEPA documentation included: NO*

COMMAND PRIORITY

Upper 1/3		Mid 1/3		Lower 1/3	
15	13	10	6	2	0

OPERATIONAL INFLUENCE (What is the project's impact on the organization's operational capability?)

Direct		Indirect		None
10	7	5	2	0

FACILITY USE (What is facility's primary function; based on cat code?)	LOW	MED		HIGH
OPERATIONS	17	18	19	20
TRAINING	14	15	16	17
MAINTENANCE	12	13	14	15
UTILITIES	11	12	13	14
ADMINISTRATIVE	10	11	12	13
HABITABILITY/MESSHALLS	10	11	12	13
STORAGE	5	6	7	8
MWR	4	5	6	7
OTHER	1	5	10	15

SAVINGS OR COST INCREASE FACTOR (Economic analysis required to award points)	NO			YES
A. Cost will escalate considerably if delayed one year.	0	5	8	10
B. Is project self amortizing?	0	2 5	8	10
C. Will delaying project cause deterioration of other assets?	0	5	8	10

IMPACT ON MISSION IF DELAYED ONE YEAR (Economic analysis required to award points)	0	(2)	5	10	15

	NO			YES
PROJECT GENERATED TO SUPPORT CMC DIRECTED PROGRAM, ELIMINATE LIFE THREATENING SITUATION, EXTERNALLY DIRECTED WORK, ETC.	(0)	2	7	10
PROJECT REQUIRED TO COMPLY WITH CURRENT LIFE SAFETY STANDARDS (Provide copy of standard cited)	(0)	2	7	10

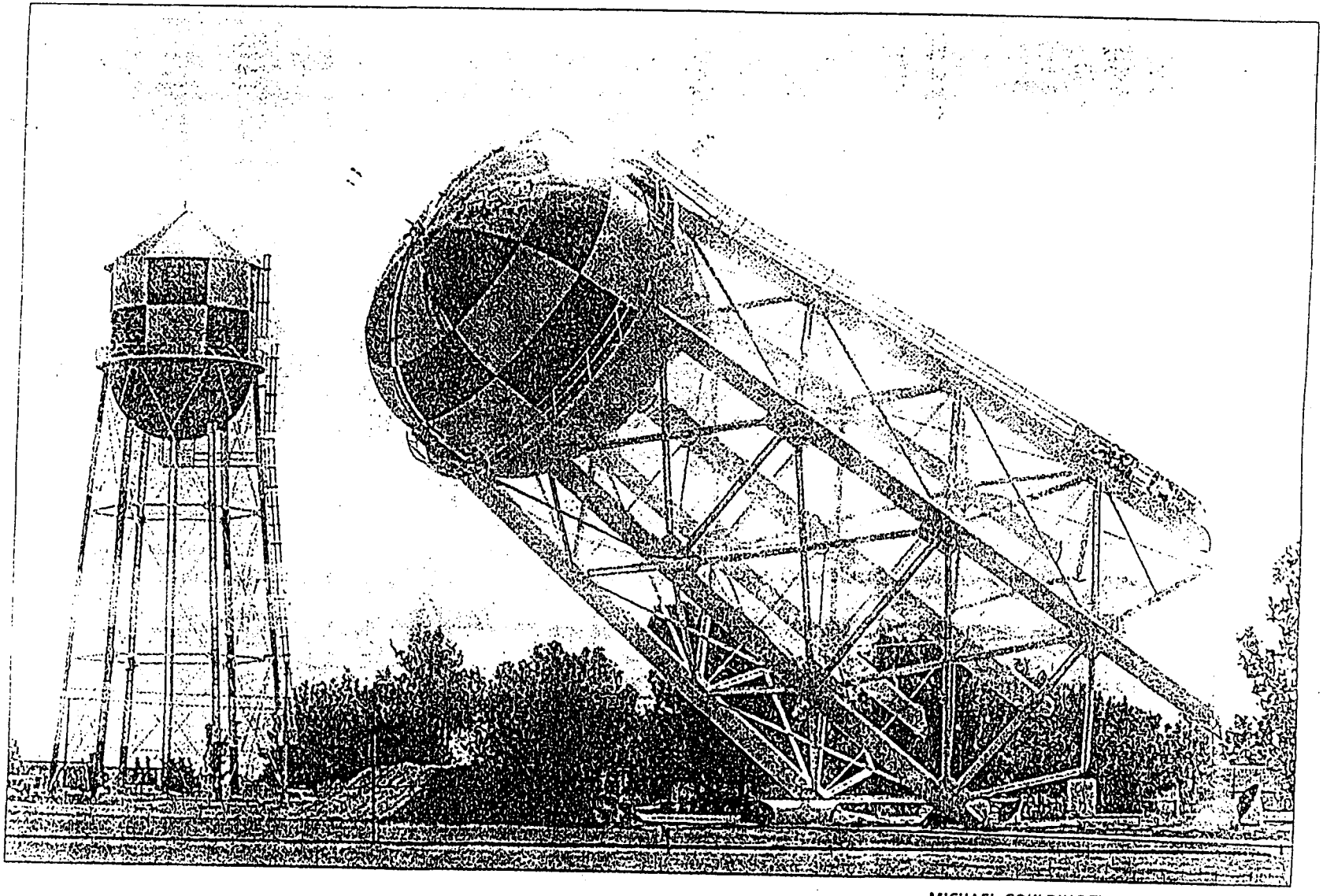
HQMC REP: MJB ACTIVITY REP: EJL 2/25 TOTAL: 21

REMARKS:

Can this be approved as in for Demolition

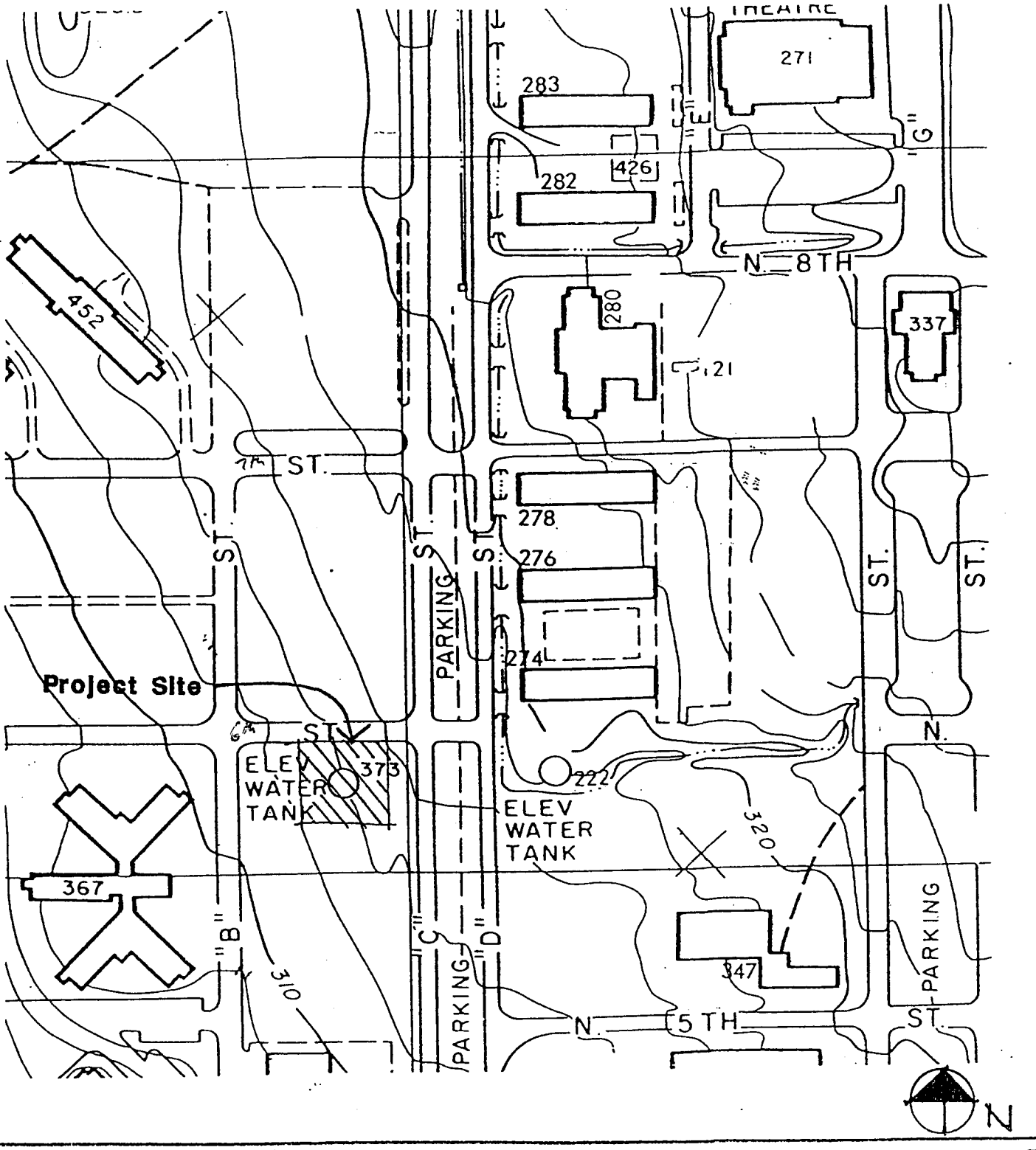
*NEPA DOCUMENTATION.

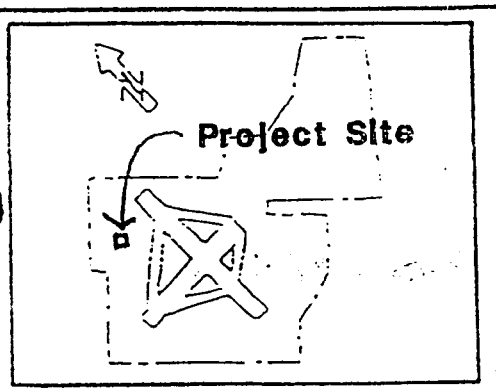
ONE, TWO ... AND DOWN GOES A WATER TOWER



MICHAEL GOULDING/The Orange County Register

It took most of the day Saturday, but crews finally pulled down this landmark 50-year-old water tower and its companion at El Toro Marine Corps Air Station. Neither tower had been in use for 20 years, and authorities feared the rusting structures posed an earthquake hazard. Vamille Metal Supply of Huntington Park bought the towers for their scrap value. The company paid $1,000 for the dome-shaped tower, which came down intact on the second try. The purchase price of the cylinder-shaped tower wasn't available.

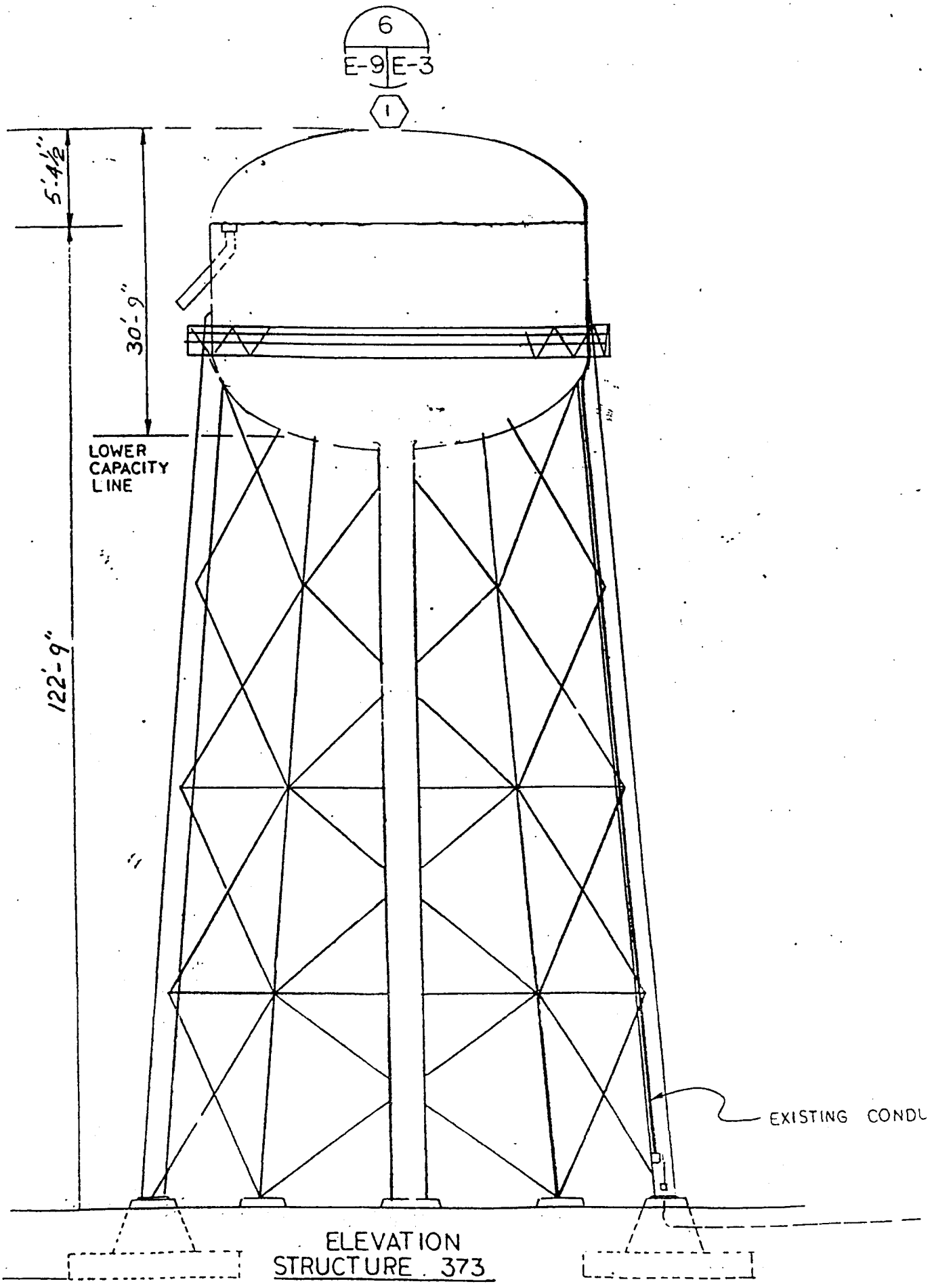




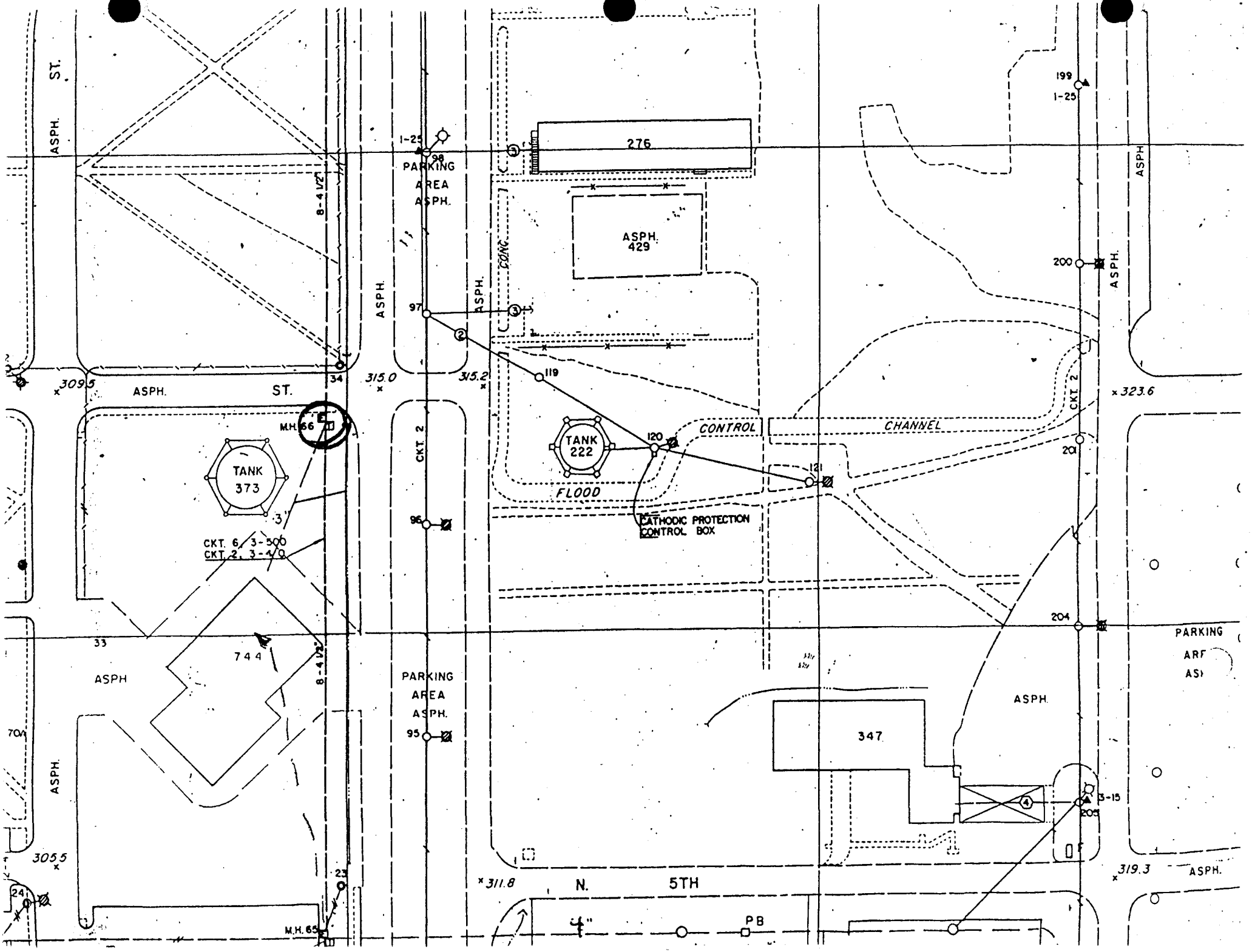
MCAS EL TORO

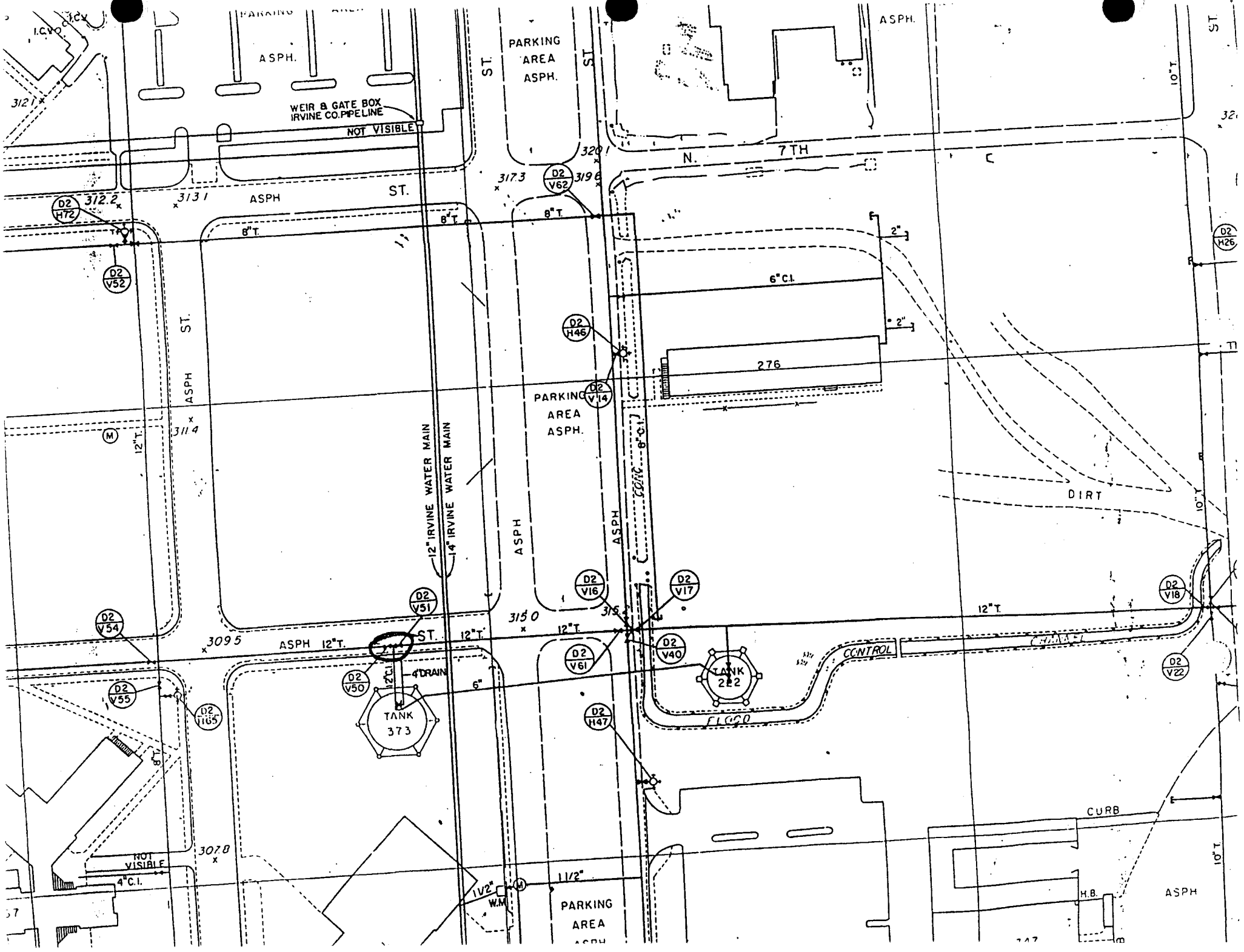
SITE MAP ET-408

DEMOLITION WATER STORAGE TOWER B.373



ELEVATION
STRUCTURE 373


ASPH. ST.
ASPH.
ST.
8-4 1/2"
1-25
98
PARKING
AREA
ASPH.
276
ASPH.
429
CONC.
ASPH.
97
119
315.0
315.2
309.5
34
M.H. 66
TANK
373
3'
CKT. 6, 3-500
CKT. 2, 3-400
CKT. 2
96
TANK
222
120
CONTROL
CHANNEL
121
FLOOD
CATHODIC PROTECTION
CONTROL BOX
199
1-25
200
201
CKT. 2
323.6
204
PARKING
ARE
ASI
33
744
ASPH
8-4 1/2"
PARKING
AREA
ASPH.
95
ASPH.
347
3-15
205
ASPH.
305.5
23
24
M.H. 65
311.8
N.
5TH
4"
PB
319.3
ASPH.


ASPH.
PARKING AREA ASPH.
WEIR & GATE BOX IRVINE CO. PIPELINE
NOT VISIBLE
N. 7TH
ST.
ASPH
8"T.
D2 H72
D2 V52
D2 V62
D2 H46
D2 V14
6"C.I.
2"
276
12"T.
12" IRVINE WATER MAIN
14" IRVINE WATER MAIN
8"C.I.
DIRT
D2 V16
D2 V17
D2 V18
D2 V51
D2 V54
D2 V40
D2 V61
D2 V22
D2 V50
D2 V55
D2 T165
D2 H47
D2 H26
4"DRAIN
TANK 373
TANK 222
CONTROL
CHANNEL
FLOOD
CURB
NOT VISIBLE
4"C.I.
1 1/2"
W.M.
H.B.
10"T.
8"T.

SITE NO. 8

STRUCTURE CLASS 2 DISPOSAL RECORD

TIME: 08:11:20 DATE: 93/09/18 MSCW2

(004) UIC..M60050
MCAS EL TORO SANTA ANA CA

(001) PR NO.....200113
(005) FACILITY NO..222
(106) SPEC AREA....

(604) EXCESS CODE..
(605) EXCESS DATE..

PR LAST UPDATED....14 SEP 1993

(008) FAM HOUSING....NO
(101) COUNTRY.....US UNITED STATES
(102) STATE.....06 CALIFORNIA
(103) COUNTY.....059 ORANGE
(104) CITY.....0000
(107) MAP GRID.....N3
(201) ESTATE.....11 MCON
(203) ACQ DATE.....15 JAN 1943
(204) GOVT COST..... $28,000
(304)/(308) AREA/UM.. 0
(401) YR BUILT.....1943
+(601) DISP DATE.....14 SEP 1993
(602) DISP METHOD....DEMOLITION
(603) GSA DISP CONT..
+(606) DISP CONTRACT..DRMO
(607) CONSOL PR.....

DEMO

HQMC O&MMC PROJECT SURVEY DATA SHEET

MAJOR REPAIR

MCAS El Toro	92/02/24	11 of 11
ACTIVITY NAME	YR/MO/DY	COMMAND PRI (incl supplementals)

ET 405M	Demolition of Water Tower Bldg 222	308
PROJECT NO.	TITLE	COST

222 Water Tower	841-30	
FACILITY NO./USE/RPV	CAT CODE	COST BENEFIT RATING

A. Associated construction project number (if any): NO

B. Is NEPA documentation included: NO *

COMMAND PRIORITY

Upper 1/3,	Mid 1/3,	Lower 1/3			
15	13	10	6 (S)	2	0

OPERATIONAL INFLUENCE (What is the project's impact on the organization's operational capability?)

Direct	Indirect	None		
10	7	5	2	(0)

FACILITY USE (What is facility's primary function; based on cat code?)	LOW	MED		HIGH
OPERATIONS	17	18	19	20
TRAINING	14	15	16	17
MAINTENANCE	12	13	14	15
UTILITIES	(11)	12	13	14
ADMINISTRATIVE	10	11	12	13
HABITABILITY/MESSHALLS	10	11	12	13
STORAGE	5	6	7	8
MWR	4	5	6	7
OTHER	1	5	10	15

SAVINGS OR COST INCREASE FACTOR (Economic analysis required to award points)	NO			YES
A. Cost will escalate considerably if delayed one year.	(0)	5	8	10
B. Is project self amortizing?	0	(5)	8	10
C. Will delaying project cause deterioration of other assets?	(0)	5	8	10

IMPACT ON MISSION IF DELAYED ONE YEAR (Economic analysis required to award points)	0	(2)	5	10	15

	NO			YES
PROJECT GENERATED TO SUPPORT CMC DIRECTED PROGRAM, ELIMINATE LIFE THREATENING SITUATION, EXTERNALLY DIRECTED WORK, ETC.	(0)	2	7	10
PROJECT REQUIRED TO COMPLY WITH CURRENT LIFE SAFETY STANDARDS (Provide copy of standard cited)	(0)	2	7	10

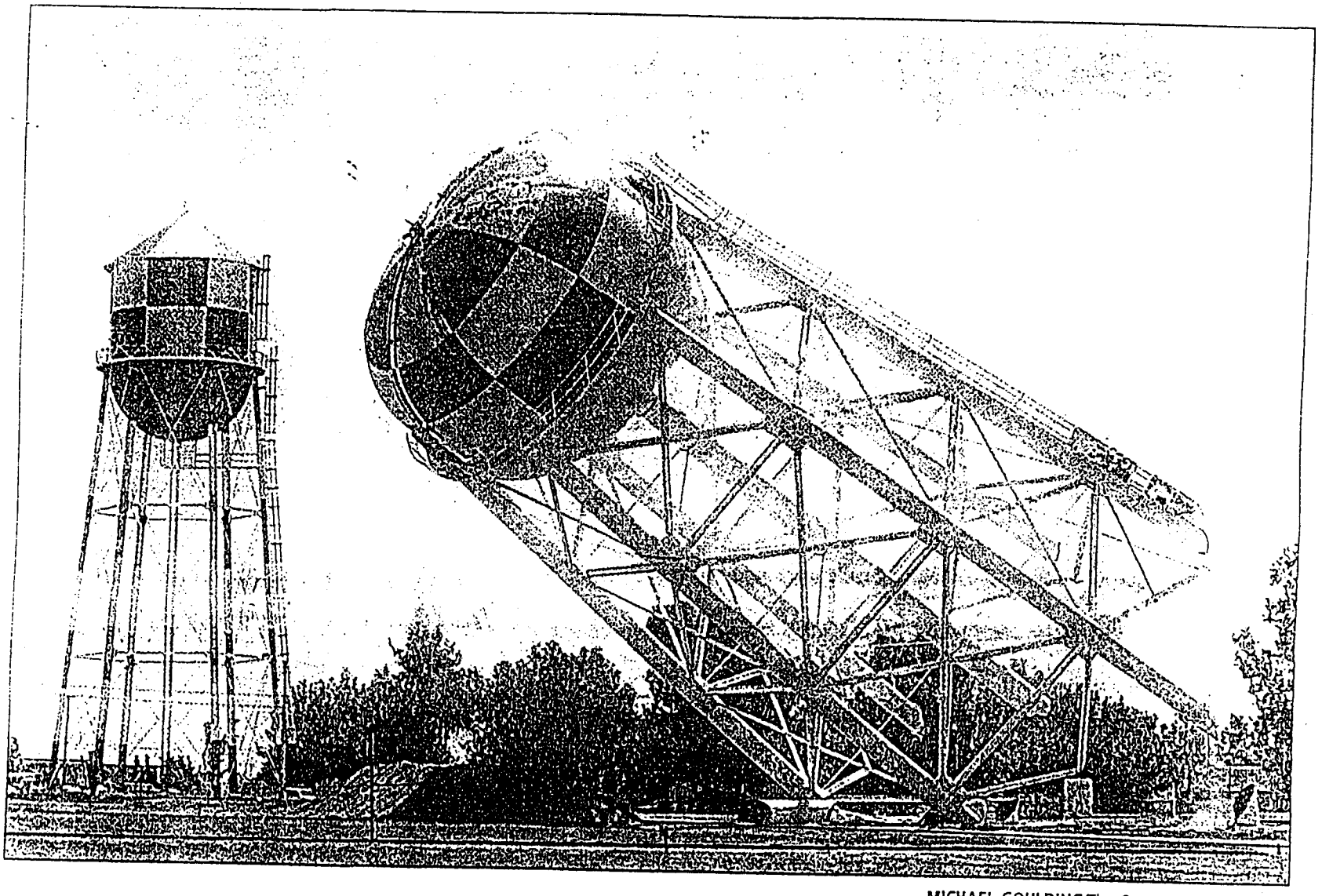
HQMC REP: MJB ACTIVITY REP: gl 2/25 TOTAL: 20

REMARKS:

Can this be approved as ~~some~~ ~~[illegible]~~ a special Project for Demolition.

*NEED NEPA DOCUMENTATION

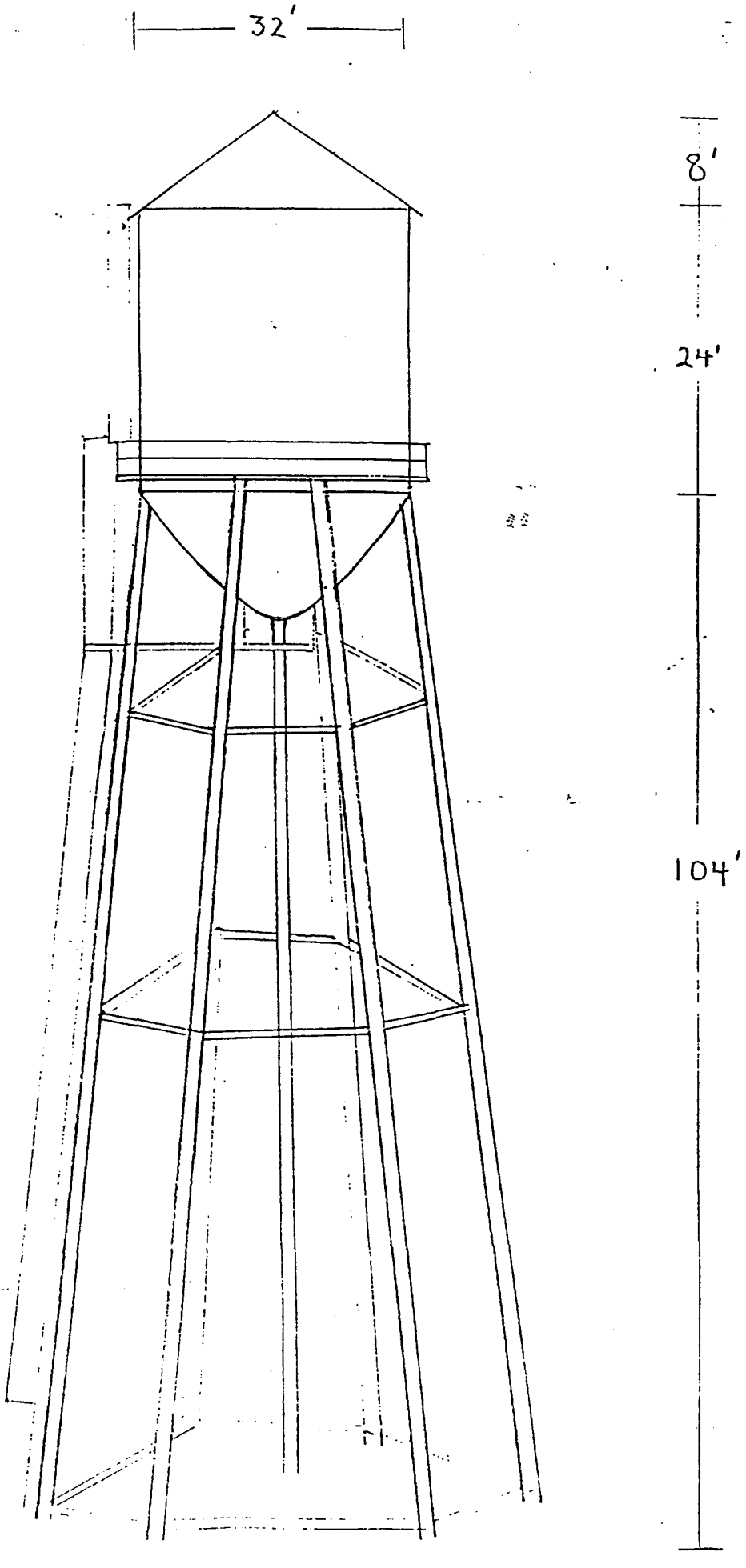
ONE, TWO ... AND DOWN GOES A WATER TOWER

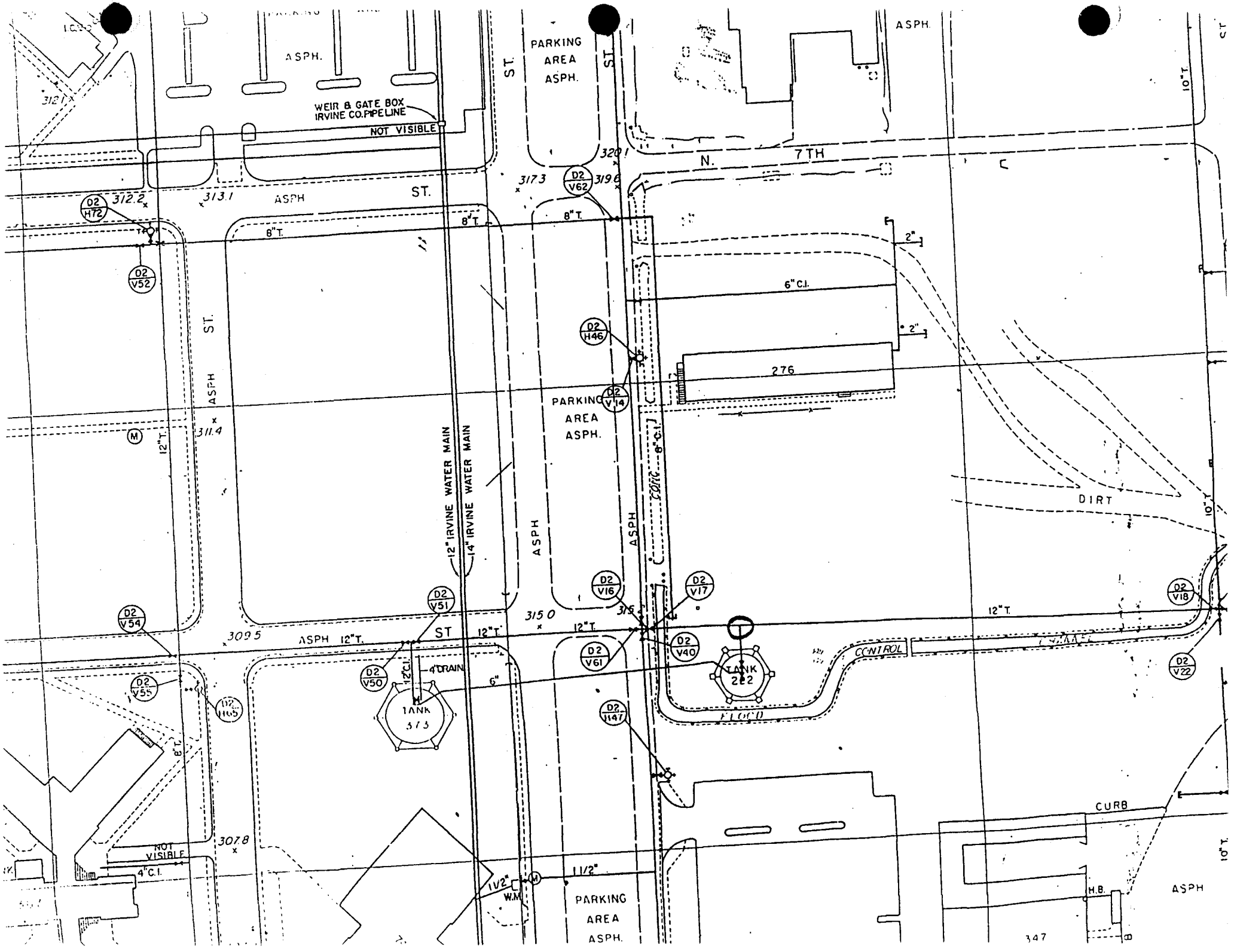


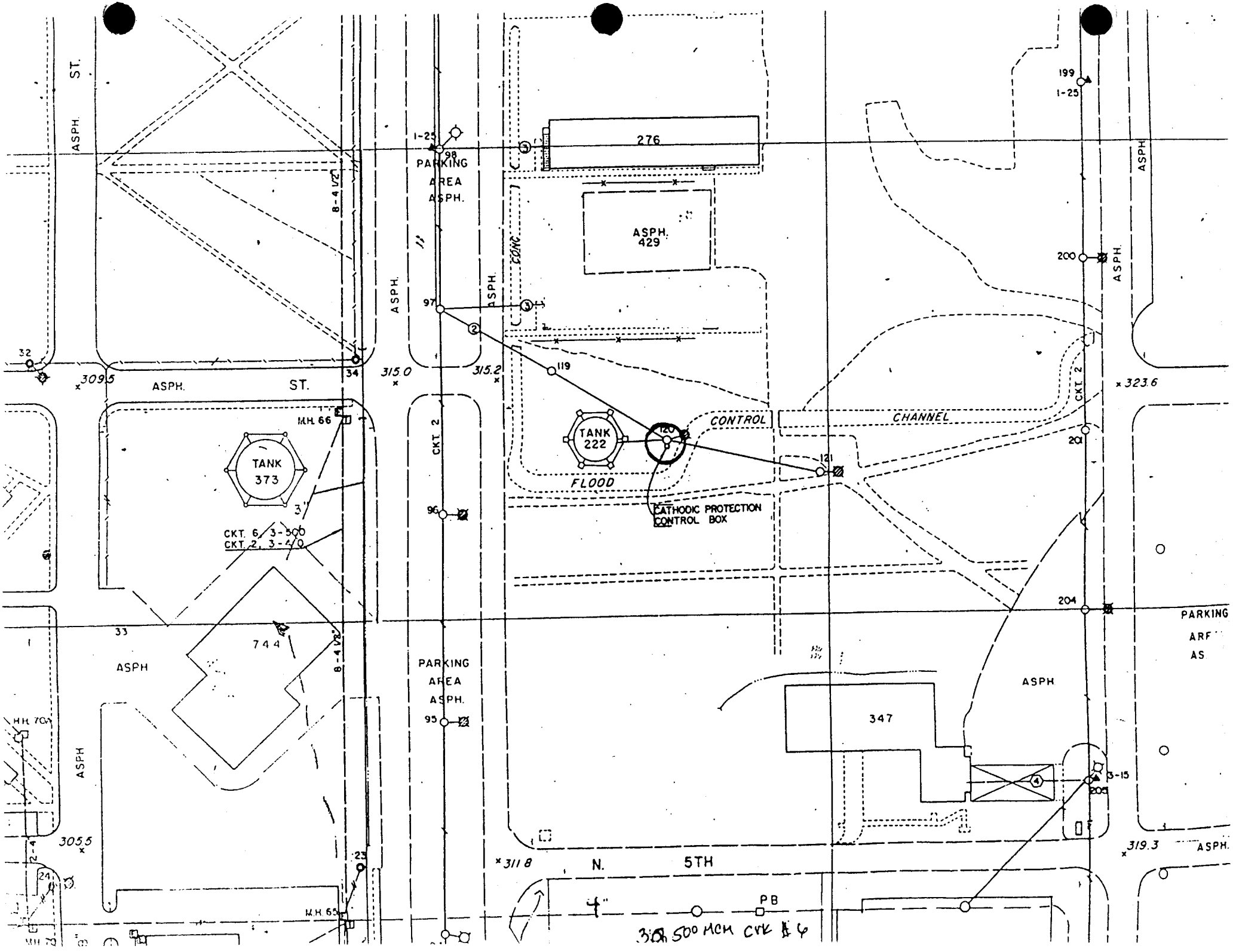
MICHAEL GOULDING/The Orange County Register

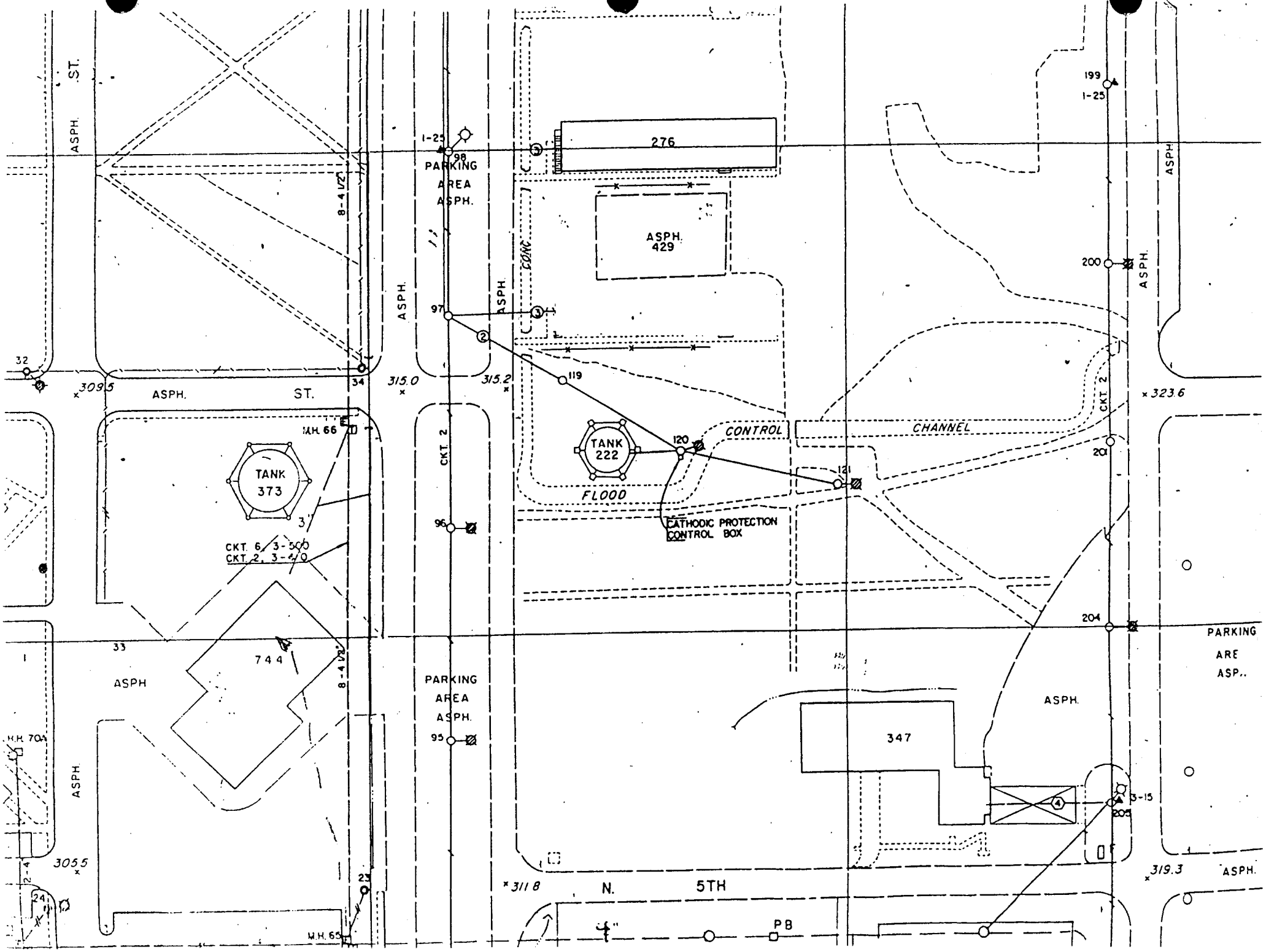
It took most of the day Saturday, but crews finally pulled down this landmark 50-year-old water tower and its companion at El Toro Marine Corps Air Station. Neither tower had been in use for 20 years, and authorities feared the rusting structures posed an earthquake hazard. Vamille Metal Supply of Huntington Park bought the towers for their scrap value. The company paid $1,000 for the dome-shaped tower, which came down intact on the second try. The purchase price of the cylinder-shaped tower wasn't available.

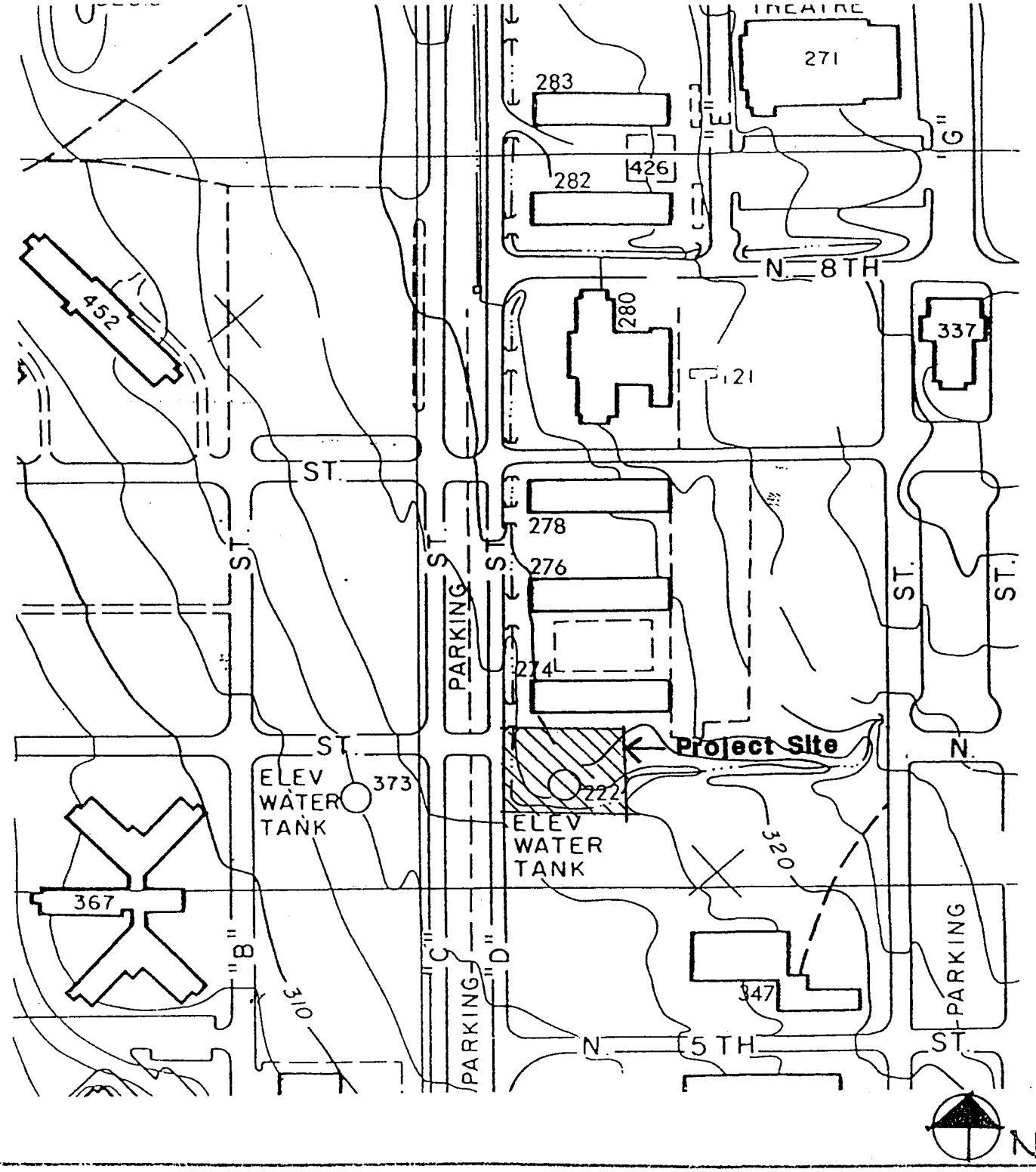
ORANGE COUNTY

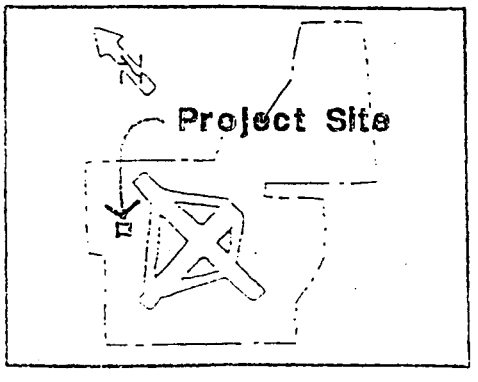

32'
8'
24'
104'


ASPH.
PARKING AREA ASPH.
WEIR & GATE BOX IRVINE CO. PIPELINE
NOT VISIBLE
N. 7TH
ST.
ASPH
8"T.
6"C.I.
2"
276
D2 H72
D2 V52
D2 V62
D2 H46
D2 V14
D2 V16
D2 V17
D2 V18
D2 V51
D2 V54
D2 V55
D2 V50
D2 V61
D2 V40
D2 V22
D2 H147
D2 H105
12"T.
12" IRVINE WATER MAIN
14" IRVINE WATER MAIN
8"C.I.
DIRT
10"T.
TANK 373
TANK 222
12"C.I.
4" DRAIN
6"
CONTROL
FLOW
CURB
NOT VISIBLE
4"C.I.
1 1/2"
W.M.
H.B.
347


ASPH. ST.
ASPH.
ST.
309.5
32
34
8-4 1/2
315.0
315.2
1-25
98
PARKING
AREA
ASPH.
97
ASPH.
CONC.
276
ASPH.
429
119
TANK
222
120
CONTROL
CHANNEL
FLOOD
121
CATHODIC PROTECTION
CONTROL BOX
199
1-25
200
201
204
CKT. 2
323.6
M.H. 66
TANK
373
3'
CKT. 6, 3-500
CKT. 2, 3-4/0
96
33
744
ASPH
8-4 1/2
PARKING
AREA
ASPH.
95
347
ASPH
PARKING
ARE
AS
H.H. 70
ASPH
305.5
23
24
M.H. 65
311.8
N.
5TH
4"
PB
3-500 MCM CKT #6
3-15
203
319.3
ASPH.


ST.
ASPH.
ASPH.
ST.
309.5
32
34
M.H. 66
TANK
373
3'
CKT. 6, 3-500
CKT. 2, 3-4/0
33
744
ASPH
8-4 V2
M.H. 70
ASPH.
305.5
24
23
M.H. 65
1-25
98
PARKING
AREA
ASPH.
97
315.0
CKT. 2
96
PARKING
AREA
ASPH.
95
ASPH.
ASPH.
CONC.
315.2
119
276
ASPH.
429
TANK
222
120
121
CONTROL
CHANNEL
FLOOD
CATHODIC PROTECTION
CONTROL BOX
311.8
N.
5TH
PB
199
1-25
200
CKT. 2
201
323.6
204
347
ASPH.
3-15
205
319.3
ASPH.
ASPH.
PARKING
ARE
ASP..





MCAS EL TORO

SITE MAP ET-405M

DEMOLITION WATER STORAGE

TOWER B.222

Appendix C
BCP Excerpts

United States Marine Corps

Base Realignment and Closure Cleanup Plan (BCP)

For

Marine Corps Air Station El Toro, CA

March 1999

Table 3-1a
Site Summary
(Sheet 34 of 34)

Seq No.	Database Tracking	LRA Reuse Parcel	Description	Material Disposed	Date of Operation	Status	Risk to Human Health and the Environment†	Regulatory Mechanism	NFA	Comments	ECP Area Type*
882	MSC W1	32	Former elevated water reservoir (west tower)			Inactive			X	Draft EBS Report interviews identified past mercury releases from level gauge. Additional interviews conducted during 1998 clarified that no water lever gauge existed at MSC W1 (west tower - Structure 373) and that water level gauge at MSC W2 (east tower - Structure 373) monitored both water towers.	1*
883	MSC W2	32	Former elevated water reservoir (east tower)			Inactive				Draft EBS Report interviews identified past mercury releases from level gauge.	5*

Notes:

† The risk values shown for IRP sites 2, 3, 5 and 17 were calculated by using U.S. EPA and Cal EPA toxicity values. Risk estimates shown in parentheses are based on Cal-EPA cancer slope factors. The risk values shown for IRP Site 24 were calculated by using U.S. EPA and Cal-EPA Cancer Slope Factors.

* Area types with an asterisks (*) have changed since the March 1998 BCP.

1 IRP Site 18 is defined as groundwater only and does not include source areas.
2 IRP Site 23 was evaluated in the RCRA Facility Assessment as SWMU/AOC 12.
3 IRP Site 24 was identified in the Draft Phase II RI Work Plan and consists of most of the southwest quadrant of the Station. This area encompasses numerous LOCs; however, LOCs located within the Site 24 boundary are considered independently from IRP Site 24.

Abbreviations:

APHO - aerial photograph
AST - aboveground storage tank
BLD - building
DRMO - Defense Reutilization and Marketing Orgranization
ECP - environmental condition of property
EE/CA - Engineering Evaluation/Cost Analysis
EO - Environmental Office, MCAS El Toro
FA - further action
FFA - Federal Facility Agreement
FS - Feasibility Study
gal - gallon(s)
Inst. - installed
INT LF - possible landfills identified during interviews
LOC - location of concern
LPG - liquid propane gas
LRA - Local Redevelopment Authority
MSC B - miscellaneous LOC - burn pit
MSC P - miscellaneous LOC - pesticide storage area
MSC R - miscellaneous LOC - refuse area
NA - not applicable. The LOC location is either unknown, or it covers multiple parcels
NFA - no further action
OCHCA - Orange County Health Care Agency
OU - operable unit
OWS - oil/water separator
PCB - polychlorinated biphenyl
PCB A - PCB transformer storage area
PCB T - PCB transformer
PP - Proposed Plan
R/O - RWQCB or OCHCA
ROD - Record of Decision
RFA - RCRA (Resource Conservation and Recovery Act) Facility Assessment
RI - Remedial Investigation
RWQCB - Regional Water Quality Control Board
SAIC - Science Applications International Corporation (refers to features/anomalies identified in SAIC report)
SRU - silver recovery unit
SWMU/AOC - Solid Waste Management Unit/Area of Concern
TAA - temporary accumulation area
UST - underground storage tank
VOC - volatile organic compound

This table does not include buildings with known asbestos.

Appendix D
Station's Oil SPCC

APPENDIX D
STATION'S OIL SPCC

AS PER RPM (L. HORNECKER) THE ABOVE IDENTIFIED APPENDIX IS AN EXCERPT SOME PARTS OF THE TABLE OF CONTENTS WERE NOT ISSUED

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132
TELEPHONE: (619) 532-3676

FINAL
MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

OIL and HAZARDOUS SUBSTANCES
SPILL PREVENTION,
CONTROL AND COUNTERMEASURE PLAN

AND

OIL and HAZARDOUS SUBSTANCES
SPILL CONTINGENCY PLAN

November 3, 1997

Submitted to:

Southwest Division Naval Facilities Engineering Command
1420 Kettner Boulevard, # 507
San Diego, California 92101-2404

Prepared by:
Integrated Environmental Management, Inc.
3002 Dow Avenue Suite 412
Tustin, CA. 92680

Contract No. N68711-96-D-2059
Delivery Order No. 0001

EXECUTIVE SUMMARY

Oil and Hazardous Substance Spill Prevention, Control and Countermeasure (SPCC) Plans, directed by the Clean Water Act (CWA) with regulations promulgated at 40 CFR 112, are required at all facilities that have a potential to discharge a harmful quantity of oil to navigable waters of the United States and have either: (1) a single tank with a storage capacity greater than 660 gallons; or (2) a total storage capacity of greater than 1,320 gallons. The regulations also require to instruct personnel in proper spill prevention procedures, to use standardized written operating procedures, to conduct routine inspections, and to document and maintain document the successful implementation of these requirements. In addition, the State of California requires any facility storing 10,000 gallons or more of petroleum, regardless of location, to meet the requirements of 40 CFR 112. The Department of Defense also recommends that SPCC Plans be prepared to address all hazardous substances, as well as oil.

In addition to SPCC Plans, Oil and Hazardous Substance Spill Contingency Plans are required at all facilities managing oil and hazardous substances to address response measures after a spill has occurred. These requirements are directed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA) with regulations promulgated at 40 CFR 300 and 40 CFR 265, respectively.

The ultimate responsibility for oil and hazardous substances spill prevention and response measures at MCAS El Toro remains with the Commanding Officer. However, MCAS El Toro has established a hierarchy of responsibility to ensure compliance with the requirements of the SPCC Plan. The first responder to a spill or release of oil or hazardous substances will usually be the Unit Environmental Manager. In instances where the Unit Environmental Manager cannot completely respond to the incident, the MCAS El Toro Fire Department/HazMat Team or Crash Crew will be contacted for assistance.

Based on a field survey conducted at MCAS El Toro by Integrated Environmental Management, Inc. (IEM) in October 1996, 39 sites requiring a SPCC Plan have been identified. These sites include oil and petroleum storage areas with underground and aboveground tanks (tank farms), vehicle service stations, engine test sites, and hazardous waste accumulation and storage areas. This *Oil and Hazardous Substances Spill Prevention, Control and Countermeasure Plan and Oil and Hazardous Substances Spill Contingency Plan* has been prepared by IEM under contract to the Southwest Division Naval Facilities Engineering Command to aid each unit in locating the procedures for both spill prevention and response measures for oil and hazardous substances for these sites. In addition, this document updates and combines both the *Oil SPCC Plan* and *Contingency Plan*, March 1995, prepared by Science Applications International Corporation (SAIC), and incorporates OSPR elements throughout each section. It should be noted that the information used to produce this document is current only through the October 1996 survey; therefore, this plan may not represent current conditions, as closures or other changes occur.

This document is organized as follows: Section 1.0 provides general information regarding oil and hazardous substance uses, spill histories, and organizational responsibilities for spill

prevention and response. Section 2.0 presents the SPCC Plans for the 39 sites identified during the October 1996 survey. During the survey, it was recognized that several of these sites were essentially the same regarding overall composition of the tanks and the required elements of the plan, although tank capacities and contents varied . For these similar sites, only one plan was developed, which is then cross-referenced for use at all these sites. Section 3.0 is a general Spill Contingency Plan for MCAS El Toro. This does not replace the Contingency Plan developed for the RCRA-permitted hazardous waste storage area.

To further assist each unit in preventing and responding to spills of oil and hazardous substances, it is recommended that the pages that pertain to a specific unit be extracted and copied for the unit in question. It is not necessary for each unit to keep a copy of the entire SPCC Plan. However, it is essential that each Unit Environmental Manager be familiar with all aspects of his unit.

This Oil and Hazardous Substances Spill Prevention, Control, and Countermeasure Plan and Spill Contingency Plan was prepared in accordance with the guidelines set forth in the following documents and remains in effect for the next 3 years:

- "Hazardous Substance Spill Prevention Planning Manual" (NEESA 15-030), July 1988;
- "Oil Spill Prevention, Control and Countermeasures Planning Manual" (NEESA 7-030), June 1988;
- "Oil Spill Contingency Planning Manual" (NEESA 7-029), Part II, June 1987.
- "Hazardous Substance Spill Contingency Planning Manual (NEESA 15-022), Part I, May 1986.

CERTIFICATION

I hereby certify that I have examined the facility and, being familiar with the provisions of Title 40, Code of Federal Regulations, Part 112, attest that this Spill Prevention, Control and Countermeasure Plan has been prepared in accordance with good engineering practices.

John R. Lane

Print Name of Professional Engineer

John R Lane

Signature of Professional Engineer

Date: 11/10/97 Registration No.: 13878 State: CO

TABLE OF CONTENTS

SECTION		PAGE
1.0 INTRODUCTION		1
1.1	Purpose	1
1.2	Site Information	3
1.3	Oil and Hazardous Substance Use	3
1.4	Surface Water Drainage	3
1.5	Spill History	4
1.6	Organization of Responsibility	5
1.6.1	Facility Management Department, Environmental Department	5
1.6.2	Supply Department	7
1.6.3	Provost Marshall's Office	8
1.6.4	Unit Environmental Managers	8
1.6.5	On-Scene Operations Team	9
1.6.6	Military and Civilian Personnel	9
1.7	General Spill Prevention Measures	9
1.8	Plan Review and Amendment	11
1.9	Summary of Construction and Work Projects	11
1.10	Best Available Demonstrated Technology	11
1.11	Oil and Hazardous Substances Storage Sites	13
2.0 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLANS		16
2.1	Tank Farm 6	16
2.2	Tank Farm 555	17
2.3	Building 298 (Tank 298A,B,D)	19
2.4	Building 390 (Tank 390A, B)	21
2.5	Building 414 (Tank 891A,B,C and Tank 404)	22
2.6	Building 637 (Tank 637 & 637 1-3)	23
2.7	Building 651 (Tank 651 1-7)	25
2.8	Building 800 (Tank 800A-E)	26
2.9	Building 658 Test Cells Fuel Tank	28
2.10	Building 797 (Tanks 797 UST & AST)	29
2.11	Tank Farm 902	30
2.12	Building 155 (Tank 155)	32
2.13	Building 245 (Tank 245)	33
2.14	Building 372 (Tank 372A)	33
2.15	Building 388 (Tank 388B)	35
2.16	Building 392 (Tank 392B)	36
2.17	Building 568 (Tank 568)	37
2.18	Building 610 (Tank 610)	38
2.19	Building 619 (Tank 619)	39

TABLE OF CONTENTS (Continued)

SECTION		PAGE
SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLANS (Continued)		
2.20	Building 717 (Tank 717)	40
2.21	Building 372 (Tank 724A)	41
2.22	Building 730 (Tank 730)	42
2.23	Hazardous Waste Storage Building	43
2.24	Hazardous Waste/Hazardous Material Accumulation Areas	44
2.25	Oil/Water Separators	46
3.0 SPILL CONTINGENCY PLAN		53
3.1	Introduction	53
3.2	Emergency Coordinators	53
3.3	Coordination	53
3.4	Emergency Response Equipment	54
3.5	Emergency Response Notifications	59
3.6	Emergency Response Procedures	60
3.7	Evacuation Plan	62

List of Figures

Figure 1-1	MCAS El Toro Site Location Map
Figure 3-1	Marine Corps Emergency Response Organization for Oil Spills
Figure 3-2	Marine Corps Emergency Response Organization for Hazardous Substance Releases
Figure 3-3	Marine Corps Suggested Organization of Hazardous Substance On-Scene Operations Team
Figure 3-4	MCAS El Toro Evacuation Route

List of Tables

Table 1-1	MCAS El Toro Spill History
Table 1-2	Summary of Work Projects
Table 1-3	Oil and Hazardous Substances Storage Sites
Table 2-1	Summary of Recommendations
Table 3-1	Emergency Coordinators
Table 3-2	Emergency Coordinators (Flightline)
Table 3-3	HazMat Equipment and Supplies
Table 3-4	Facilities Management Department Emergency Van Equipment List
Table 3-5	Emergency Notification Phone List

TABLE OF CONTENTS (Continued)

List of Attachments

Attachment A	Accumulation Points and Hazardous Materials Storage Locations
Attachment B	Underground Storage Tank Locations
Attachment C	Stormwater Drainage
Attachment D	Mutual Aid Agreement
Attachment E	Daily and Weekly Inspection Checklists
Attachment F	Spill Response Equipment to be Maintained by Each Unit
Attachment G	Spill Reporting: Reportable Quantities
Attachment H	Personnel Evacuation Plan
Attachment I	EPA Evaluation Letter for Facility Response Plan and Related Correspondence
Attachment J	Slug Control Plan
Attachment K	Joint Public Affairs Office Standard Operating Procedures (SOP) SECNAVINST 5720.44A
Attachment L	Activities Following an Emergency Response

RECORD OF REVIEW AND AMENDMENTS

A Spill Prevention Control and Countermeasure Plan must be reviewed and recertified every three years by a professional engineer as required by 40 CFR 112. The MCAS El Toro Facilities Management Department Environmental Director will ensure that this plan is reviewed in a timely manner and will be responsible for maintaining the definitive copy of this plan.

The following items have been revised since the previous SPCC Plan, dated March 1996. The remainder of this page should be used to record updates until the next SPCC Plan is prepared.

DATE	PROFESSIONAL ENGINEER	REG. NO.	AMENDMENT
			Tanks 208, 209, 211, 213, 215, T-06 and T-08 at Tank Farm # 5 have been removed. These tanks will not be included in this report.
			Tank 392A has been removed and will not be incorporated in this report.
			Building 673-T3 has been closed by the Department of Toxic Substance Control (DTSC) by their letter dated March 8, 1996. Therefore, this building will not be included in this report.
			Six new hazardous waste accumulation areas have been constructed since the submittal of the previous SPCC Plan.
			No space heating tanks with No. 2 fuel oil were observed during the October 1996 base survey.
			The following tanks are empty and considered inactive, but will be included in this report: 317, 318, 319, 626, and 800 B & C.
			3.5 Emergency Response Notifications for the Joint Public Affairs Office (JPAO) and the Standard Operating Procedures (SOP) for the JPAO has been added as Attachment K. (ECE Corrections)
			3.6, Step 4, "Regulations for after-action meetings and determination of caustive factors have been added as Attachment L Activities following an Emergency Response. (ECE Corrections)

1.0 INTRODUCTION

1.1 Purpose

Owners and operators of facilities that have discharged, or could discharge, oil in harmful quantities into or upon navigable waters of the United States must prepare a Spill Prevention Control and Countermeasure (SPCC) Plan. This requirement is found in the regulations promulgated under the Clean Water Act (Title 40, Code of Federal Regulations, Part 112). These SPCC Plan requirements focus on oil spill prevention measures. The Department of Defense anticipated a proposed U.S. Environmental Protection Agency (USEPA) regulation requiring SPCC plans for hazardous substances. As of this time, the requirement has not been issued; however, the Department of Defense has recommended that military installations prepare a Hazardous Substance SPCC Plan as well.

To assist in the development of an Oil SPCC Plan, the Naval Energy and Environmental Support Activity (NEESA) prepared a guidance document, "Oil Spill Prevention Control and Countermeasures Planning Manual" (NEESA 7-030, June 1988). NEESA also prepared "Hazardous Substance Spill Prevention Planning Manual" (NEESA 15-030) to assist in the preparation of a Hazardous Substance SPCC Plan.

According to the guidance found in 40 CFR 112.7, an SPCC Plan should include the following elements:

- Description of each spill, corrective action, and plans for preventing reoccurrence;
- In the event of a potential for equipment failure (tank overflow, rupture, leakage), a prediction of the direction, rate of flow, and total quantity of oil (or hazardous substance) discharged;
- Appropriate containment and diversionary structures to prevent oil (and hazardous substances) from reaching navigable waters;
- Discussion of conformance with applicable guidelines, effective spill prevention, and containment procedures;
- Recommendations for improved spill prevention methods and equipment under separate paragraphs; and
- Written inspection procedures.

When it is determined that the installation of preventative structures or equipment is not practicable, then the SPCC should also include the following:

- Discussion of the impracticability;

- Oil (and hazardous substance) spill contingency plan; and

- Commitment of personnel, equipment and materials to remove any harmful quantity of oil (and hazardous substance) discharged.

In contrast to SPCC requirements that focus on spill preventative measures, a Spill Contingency Plan details how personnel will respond to a spill that has already occurred. The requirement to prepare a Spill Contingency Plan is found in the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300). Two types of Spill Contingency Plans are required by the Marine Corps, in accordance with MCO P5090.2, Section 11301: one for hazardous substances, and one for oil. These two plans can be combined. In addition to the requirements found in 40 CFR 300.210(c)(2), two manuals have been prepared by NEESA and are available to assist in the preparation of Spill Contingency Plans: "Oil Spill Contingency Planning Manual" (NEESA 7-029), and "Hazardous Substances Spill Contingency Planning Manual" (NEESA 15-022).

Spill Contingency Plans must:

- Establish responsibilities of response personnel prior to a spill or release to minimize confusion regarding individual duties during an emergency;

- Provide for a pre-arranged organization and coordination with various Federal, State, and local response agencies to achieve a more accurate, effective response and minimize the spread of a release and additional damages;

- Identify probable locations of discharges and releases;

- Identify resources to respond to multi-media incidents;

- Provide procedures for responding to a release and notification to the Emergency Coordinator and the public;

- Provide a description of the emergency equipment and the personnel responsible for the equipment; and

- Identify the actions for responding to a release.

Integrated Environmental Management (IEM) has been contracted by the Southwest Division Naval Facilities Engineering Command, (Contract No. N68711-96-D-2059, Delivery Order No. 0001) to update the Oil and Hazardous Substances SPCC Plans and Spill Contingency Plans for the Marine Corps Air Station El Toro. In order to make this document more useful, both the SPCC Plan and the Spill Contingency Plan are incorporated into this one document.

1.2 Site Information

Marine Corps Air Station (MCAS) El Toro is located in an unincorporated area within Orange County, California, approximately 7 miles east of Irvine, and 10 miles northeast of Newport Bay. Figure 1-1 shows the location of MCAS El Toro. The Station is bordered by agricultural land on the north and southeast, and by commercial, light industrial, and some residential usage to the south, southeast, and southwest.

In 1950, MCAS El Toro was selected for the location of a master jet air station and permanent center for Marine aviation on the West Coast supporting the Fleet Marine Forces, Pacific. Its mission is to provide support to the aviation activities. MCAS El Toro is scheduled to close by July 1999 under the current Base Closure Plan.

1.3 Oil and Hazardous Substance Use

MCAS El Toro provides maintenance of military aircraft and ground support equipment. Oil and hazardous substances are used and wastes are generated. Oil and hazardous substances used include jet fuel (JP-5), diesel fuel, three grades of motor fuel, motor oil, lubricants, antifreeze, degreasing solvents, paints, paint thinner, strippers, and batteries.

1.4 Surface Water Drainage

Off-site drainage from the northeast combines with on-site storm water run-off and flows into four main drainage channels: (1) Borrego Canyon Wash, along the eastern and southeastern borders of the Base; (2) Rifle Range Road Ditch, the northwestern border of the Station; (3) Agua Chinon Wash, crossing the central portion of the Station; and (4) Bee Canyon Wash, also crossing the central portion of the Station (see Attachment B). Borrego Canyon, Agua Chinon, and Bee Canyon Washes are continuous with natural washes originating in the Santa Ana Mountains to the northeast. Borrego Canyon Wash is concrete-lined and flows into Agua Chinon Wash approximately 0.25 mile downgradient from MCAS El Toro. Agua Chinon and Bee Canyon Washes collect storm water run-off from the runway and apron areas. These flows are contained within culverts as they cross the Station, and flow into the San Diego Creek. In addition, the Rifle Range Road Ditch is also concrete-lined and also flows into the San Diego Creek. The San Diego Creek flows to the west into Upper Newport Bay, approximately seven miles from the confluence with Rifle Range Road Ditch. The beneficial uses of San Diego Creek include groundwater recharge, recreation, warm freshwater habitat, and wildlife habitat. The beneficial uses of Upper Newport Bay include recreation, commercial sport fishing, preservation of areas of special biological significance, wildlife habitat, marine habitat, and shellfish harvesting. The MCAS El Toro base and the storm water drainage system overlie the Irvine Forebay Groundwater Subbasin, the beneficial uses of which include municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply. Storm water discharge from MCAS El Toro is currently regulated under Order No. 93-16, (NPDES No. CA0106593) dated March 5, 1993, and modified on December 13, 1996. This National Pollution Discharge and Elimination System permit allows MCAS El Toro to discharge storm

water run-off from the aircraft runways and parking areas, aircraft and vehicle maintenance areas, and wash rack and fueling areas. Four discharge points have been permitted:

- Discharge Serial No. 1: Agua Chinon Wash. Non-storm water discharges (i.e., aircraft wash water commingled with agricultural run-off) are prohibited and are pumped to the sanitary sewer. Agricultural and irrigation run-off from strawberry fields discharges through this discharge point;

- Discharge Serial No. 2: Bee Canyon Wash. Non-storm water discharges are prohibited and are pumped to the sanitary sewer. Agricultural and landscape irrigation run-off from the University of California Agriculture Research Station located upstream of MCAS El Toro discharges through this discharge point;

- Discharge Serial No. 3: Rifle Range Road Ditch. Storm water, agricultural, and landscape irrigation run-off from administration, housing and recreation areas discharges through this discharge point; and

- Discharge Serial No. 4: Rifle Range Road Ditch at Trabuco Road. Storm water and agricultural and landscape irrigation run-off from administration, housing and recreation areas, and agricultural run-off from commercial nurseries upstream of MCAS El Toro discharge through this discharge point.

Waste discharge requirements were established for the discharge points. These requirements are outlined in the NPDES permit included as Appendix K. Whenever a storm event occurs, MCAS El Toro must collect a representative sample from each discharge point and analyze it for EPA priority pollutants and other constituents.

Oil/water separation systems have been placed at the discharge points on the Agua Chinon and Bee Canyon Washes. The systems consist of weirs to contain dry weather flows, pumps to discharge to the sanitary sewer, and oil recovery equipment. Effluent from the separators passes through a sewage monitoring station prior to discharge to the sewer system.

1.5 Spill History

MCAS El Toro provided information regarding the present and past spills of oil and hazardous substances (see Table 1-1). These incidents required MCAS El Toro to implement their Oil and Hazardous Substances Spill Contingency Plan.

Since the March 1995 edition of the SPCC plan, there have been approximately 10 releases ranging from 10-80 gallons. All of these were contained, cleaned up, and disposed of in accordance to the proper protocol.

Discharge from the four serial ports have been analyzed during the recent months. The results for the representative samples have been within the maximum daily concentration limits for the EPA priority pollutants and the other constituents. MCAS El Toro has implemented a facility vehicle/aircraft washing schedule to assist in eliminating unauthorized discharges. The combination of this washing schedule and increased awareness by El Toro's personnel has helped to prevent unauthorized releases.

1.6 Organization of Responsibility

It is the ultimate responsibility of the Commanding General of MCAS El Toro to ensure oil and hazardous substances are not discharged to the waters of the United States. However, MCAS El Toro has established a chain of command to ensure compliance with the SPCC Plan and Contingency Plan. The following subsections outline that chain of command.

1.6.1 Facility Management Department, Environmental Department

The Environmental Department, under the direction of the Environmental Director, GS-15 Wayne Lee, is responsible for implementing the following activities as they relate to Oil and Hazardous Substances SPCC and Spill Contingency Plans:

- Conduct surveys at least once every 3 years to determine if modifications to the SPCCPlan are required and update the SPCC Plan as necessary;
- Review plans and drawings for new construction, maintenance, or remodeling of oil and hazardous substances handling facilities;
- Provide training in spill prevention and the implementation of the Spill Contingency Plan and maintain the training records;
- Inspect each unit's spill control equipment at least four times per year, record these inspections, and maintain inspection records for at least 3 years;
- Review SPCC Plan annually;
- Review and revise SPCC Plan as necessary whenever: (1) an oil spill of 1,000 gallons or more occurs, or (2) a reportable quantity of hazardous substances occurs, or (3) after two or more spills greater than five gallons occurs within a 12-month period;
- Schedule and implement SPCC Plan corrective actions.

Table 1-1
MCAS El Toro Spill History

Date	Incident	Description
December 6, 1996	N/A	Unknown amount of methylene chloride compound spill at building 320, when forklift drum-lift puncture the side of the drum. Drum was patched and placed in a large plastic bag, then transported to a hazardous containment pallet at building 320.
September 6, 1996	N/A	Approximately 25 gallons of JP-5 spilled in Hanger Bldg. 371, when maintenance personnel pulled a cap on the aircraft's external fuel tank, while the tank was still under pressure. Shop personnel applied speedy dry absorbent pads as method of containment.
July 23, 1996	N/A	Approximately 80 gallons of JP-5 fuel spilled, during fuel transfer at VMGR 352. Spill was contained and speedy dry absorbent pads were used to clean spill.
May 14, 1996	N/A	Approximately 50 to 100 gallons of diesel fuel were spilled at tank farm 5, when tank removal contractor was cutting fuel lines to isolate the tanks for removal. Affected soil was treated in the biocell by OHM.
May 7, 1996	N/A	Approximately 30 gallons of JP-5 spilled at building 671, when transferring fuel between two M-970's. The spill was contained by dry sweep and absorbent pads.
January 30, 1996	N/A	Approximately 10 gallons of JP-5 spilled, due to external tank leak. Fuel evaporated from heat of pavement, therefore could not be cleaned.
December 15, 1995	N/A	Approximately 40 gallons of JP-5 spilled when right sump drain on wing of a H-46 jammed open and began pouring out on the flight line. Speedy dry, absorbent pads, absorbent booms, and 50 gallon barrel were used to clean up spill.
November 28, 1995	N/A	Approximately 2 quarts of hydraulic fluid were lost on the roadway and shoulder when a forklift's hydraulic line was inadvertently punctured. A drip pan was placed under the leaking line to contain the leak and contaminated soil was removed and drummed as hazardous waste.
September 18, 1995	N/A	A one gallon container of liquid scale dissolve spilled when it was dropped by warehouse personnel. The spill was diked and absorbed with ash. Spill contained to the warehouse floor.
September 12, 1995	N/A	Three quarts of hydraulic fluid spilled onto the concrete warehouse floor when a forklift's fork punctured the stored material during issuance. Spilled cleaned up with speedy dry absorbent. Spill contained to the warehouse floor.
July 21, 1995	N/A	Approximately 80 gallons of JP-5 fuel spilled when a fuel truck attempted to fuel an aircraft with an open fuel cell. Spill cleaned up with speedy dry absorbent. Spill contained to the flightline.
July 20, 1995	N/A	Approximately 10 gallons of JP-5 fuel spilled when an aircraft vented its tanks. Spill cleaned up with speedy dry absorbent. Spill contained to the flightline.
June 29, 1995	N/A	Approximately 70 gallons of JP-5 fuel spilled from an aircraft fuel tank with a dysfunctional valve. Spill cleaned up with speedy dry absorbent. Spill contained to the flightline.
November 1, 1994	N/A	Approximately 400 gallons of JP-5 fuel leaked from an F/A-18 aircraft. Three hundred gallons were recovered and 100 gallons were cleaned up with speedy dry absorbent. Spill contained to the flightline.
November 1, 1994	N/A	Approximately 250 gallons of JP-5 fuel leaked from an F/A-18 aircraft. Spill cleaned up with speedy dry absorbent. Spill contained to the flightline.
September 1, 1994	N/A	Approximately 1 gallon of hydrochloric acid and another gallon of chlorine spilled when their lines ruptured. Pumping through the line was stopped immediately and the spill was cleaned up with sodium bicarbonate. Spill contained to the flightline.
August 12, 1994	N/A	A small amount of paint stripper (methylene chloride) from a 5 gallon can spilled when the can overheated and blew its cap. The small amount evaporated before cleanup could occur.
July 14, 1994	249777	Approximately 25 gallons of transformer oil, possibly containing more than 55 ppm

	--	PCBs, spilled when the personnel handling the transformer overturned it. The initial responders laid down absorbent socks, mats pads and Lite-Dri absorbent around the spill and on the liquid. Workers then removed and drummed soil from the spill area as hazardous waste. Cleanup began immediately on 14 July 94 and was completed 15 July 94. Additional hazardous waste included the absorbent materials, personal protective gear rags and mops used to cleanup the spill.
April 26, 1994	N/A	Approximately 100 gallons of JP-5 fuel spilled when an aircraft vented its tanks. Spill cleaned up with speedy dry absorbent. Spill contained to the flightline.
March 8, 1994	N/A	Approximately 20 gallons of JP-5 fuel spilled when an aircraft was refueling. Spill cleaned up with speedy dry absorbent. Spill contained to the flightline.
May 11, 1993	318	Caustic soap concentrate leaked from its container located in a trailer behind Bldg. 317.
March 1, 1993	146	Approximately one quart of methyl ethyl ketone was spilled onto the ground near Bldg. 306. The spill was contained with absorbent and disposed.
Sept. 9, 1992	873	Unknown quantity of Vapum (a fumigant) released to the soil at Strawberry Field.

- Maintain a file of all spill or emergency response investigations and submit any required reports to the appropriate regulatory agency;
- Implement the Oil and Hazardous Substance Spill Contingency Plan;
- Respond to the chemical spills and ensure cleanup and decontamination procedures are carried out correctly;
- After a spill cleanup, certify an area acceptable for returning to normal use;
- Assign employees to the On-Scene Operations Team;
- Ensure proper training for the On-Scene Operations Team and the individuals responsible for small spills, and maintain training records;
- Coordinate evacuation activities with the Provost Marshall's Office;
- Initiate facility modifications to achieve compliance with the SPCC guidelines by submitting a project request as soon as possible;
- Provide necessary spill cleanup equipment; and
- Provide trained personnel for spill mitigation.

1.6.2 Supply Department

The Supply Department is responsible for procurement of materials and dispensing fuel. It also performs the following tasks:

- Inspect fuel systems and maintain inspection records for at least 3 years;

- Provide equipment and materials for spill investigations; and
- Contact the Environmental Department in case of problems.

1.6.3 Provost Marshall's Office

The Provost Marshall's Office provides security functions at MCAS El Toro. The functions of the Office are to:

- Conduct daily inspections of security systems such as access control, locked storage areas, lighting, fencing, and traffic control areas to ensure spills do not result from vandalism or unauthorized entry;
- Inspect vehicles delivering fuels for leaks and obvious mechanical problems which could cause a spill;
- Assist in evacuation procedures with the Environmental Department; and
- Maintain inspection records for at least 3 years.

1.6.4 Unit Environmental Managers

Each military unit at MCAS El Toro has a designated Environmental Manager responsible for managing the hazardous materials and hazardous wastes generated and for making the proper notifications when a spill or emergency occurs. The responsibilities related to this Plan include:

- Attend training of at least 24 hours initially and 8 hours of refresher courses annually related to spill prevention and remediation;
- Conduct inspections at least weekly of each oil and hazardous substance storage area, and maintain the inspection records for at least 3 years;
- Initiate corrective actions for deficiencies discovered during the inspection;
- Ensure the proper handling and storage of oil and hazardous substances;
- Act as first line of command during a spill;
- Implement the Spill Contingency Plan;
- Ensure the On-Scene Operations Team and Facilities Management Department are notified whenever a spill greater than 5 gallons occurs. If a spill of less than 5 gallons occurs, then assist and provide guidance in the proper cleanup methods;

- Evacuate all affected personnel if needed, and account for all evacuated personnel; and

- Ensure that emergency response equipment is available and functional to respond to an emergency.

1.6.5 On-Scene Operations Team

The On-Scene Operations Team (OSOT) responds to spills and related incidents in conjunction with the MCAS El Toro Crash Crew and Fire Department/HazMat Team. If a spill occurs on or near the aircraft runway or aircraft operation areas, the Crash Crew responds; elsewhere, the Fire Department/HazMat Team responds. Responsibilities of the On-Scene Operations Team include:

- Attend training of at least 24 hours initially and 8 hours of refresher courses annually related to spill prevention and remediation;

- Inspect each unit at least every 6 months and become familiar with the individual units and oil and hazardous substances used;

- Inspect the spill control equipment at each unit at least every 6 months to ensure operability;

- Respond to all calls involving chemical spills; and

- Maintain inspection records for at least 3 years.

1.6.6 Military and Civilian Personnel

All MCAS El Toro personnel are responsible for following the guidelines and procedures presented in this Oil and Hazardous Substances SPCC Plan and Spill Contingency Plan. Specifically, the employee must:

- Notify a supervisor or the Unit Environmental Manager immediately after discovering a spill;

- Notify the On-Scene Operations Team if a supervisor or Unit Environmental Manager cannot be found; and

- Minimize the possibilities of a spill by following all safety rules and spill prevention guidelines when handling oil or hazardous substances.

1.7 General Spill Prevention Measures

The following countermeasures will reduce the risk of spills at MCAS El Toro:

- Each unit handling oil or hazardous substances will prepare an inspection checklist specific for that unit. The checklist will include the frequency of the inspections, the signature of the inspector, date of inspection, and the items to be checked. The Unit Environmental Manager (or his alternate) will conduct the inspections. All hazardous waste accumulation areas will be inspected daily, and all vehicles and equipment will be inspected at least weekly in order to detect leaks or deterioration. Example inspection checklists are provided in Attachment D.

- If during an inspection, a release or potential release is discovered, the Unit Environmental Manager will initiate corrective action immediately. Preventative maintenance practices such as better housekeeping and security will be evaluated.

- The Environmental Department and Supply Department will ensure that petroleum handling operations comply with the spill prevention measures described in the equipment operator's manual.

- The Unit Environmental Manager will ensure drip pans are used whenever the possibility of liquid release from vehicles or equipment is expected. Drip pans will be emptied into appropriate waste containers at the end of each day, and during the day as needed.

- The Unit Environmental Manager will ensure flammable materials are stored in flammable cabinets, and that incompatible wastes (e.g., acids and bases) will be separated.

- The Unit Environmental Manager will ensure hazardous waste and waste POL (petroleum, oil, and lubricants) accumulate in designated containers, labeled with the date of accumulation and the contents of the container, or full hazardous waste labels.

- Generators of hazardous waste will initiate disposal procedures by contacting the Environmental Division and completing Form DD-1348-1. Waste will not accumulate for periods longer than 90 days.

- Copies of Material Safety Data Sheets will be maintained with the unit.

- Personnel routinely involved in the handling and disposal of oil and hazardous substances (i.e., Unit Environmental Managers, Environmental Department, Supply Department, Fire Department, Emergency Coordinators [On-Scene Coordinator], and On-Scene Operations Team) will be provided with an initial training of at least 24 hours and at least 8 hours of annual refresher training in handling and storage of oil and hazardous wastes, and emergency response. In addition, all personnel will be trained in the operation and maintenance of equipment to prevent oil and hazardous substance spills.

Best management practices implemented since the submittal of the previous SPCC Plan include:

- Routine sweeping schedule in and around indoor/outdoor work areas;

- Separate and isolated storage areas for hazardous materials and hazardous wastes; and
- Oil/water separation systems at all aircraft, vehicle, and equipment wash rack stations.

1.8 Plan Review and Amendment

This Oil and Hazardous Substances SPCC Plan and Spill Contingency Plan supersedes an Oil SPCC and Spill Contingency Plan prepared for MCAS El Toro in March 1995 by SAIC, and remains in effect for 3 years. When the Environmental Director determines that a change in facility design, construction, operation, or maintenance affects the potential for a spill, this Plan will be amended. This Plan will also be reviewed (and revised, if necessary) whenever an oil spill of 1,000 gallons or more occurs, or a reportable quantity spill of hazardous substances occurs; or after two or more spills greater than 5 gallons occurs within a 12-month period.

Within 3 years of the effective date of this plan, a complete audit of the facility will be performed to verify the conformance with the requirements of 40 CFR 112. This review will include an assessment of new spill prevention technology (see Section 1.10). All amendments to the Oil and Hazardous Substances SPCC Plan will be certified by a Registered Professional Engineer.

1.9 Summary of Construction and Work Projects

Identified in Table 1-2 are construction and work projects related to oil and hazardous substances, completed or in progress, as of December 1996. The status in July 1992 is also shown in order to indicate progress made.

1.10 Best Available Demonstrated Technology

Numerous available and demonstrated technologies, that prevent leaks and discharges of oil and hazardous substances, have been on the market for some time for both underground and aboveground storage tanks. These include leak detection and monitoring systems, double-walled tanks, and concrete-vaulted tanks. New technologies have been emerging that assist in monitoring for leaks from underground tanks in the vadose zone. Most of these are sampling devices used to detect if a release has occurred from tanks not already equipped with leak detection systems. One of these technologies is a diffusive sampler for passive monitoring of underground storage tanks (Karp, 1993). Another is conducting soil-gas monitoring (Durant, et al, 1993).

Table 1-2
Summary of Work Projects

Project Number/ Work Request	Project Description	Status: July 1992	Status: Dec. 1996
P-341	Hazardous/Flammable Material, 16,000 ft^2 storage and ten-150 ft^2 lockers	Under Design	Completed
37-048-89	Five concrete sumps in Hazardous Waste Storage Building.	Scheduled	No sumps constructed
37-058-89	20 ft x 20 ft x 4 in. berm for Hazardous Waste Accumulation areas.	Scheduled	No berm constructed
	Closure of six 12 ft x 16 ft Hazardous Waste Accumulation areas.	Proposed	In progress
	Underground storage tank testing program.	In progress	Completed
ET821R	Drop Tank Drainage area.	Under design	Completed
ET823R	Hazardous Waste Storage Facility.	Under design	Canceled
	Construction of a berm Surrounding Test Cell T-26.		Completed

1.11 Oil and Hazardous Substances Storage Sites

Based on a survey conducted by IEM in October 1996, a total of 39 sites have been identified that require a SPCC Plan. These sites include large underground fuel tank farms, vehicle maintenance stations, and hazardous waste and hazardous materials storage areas. Table 1-3 lists those sites.

TABLE 1-3

OIL AND HAZARDOUS SUBSTANCES STORAGE SITES

Building	Tank No.	Description
Tank Farm 6	204, 206, 207, T-07, T-08	**Tank 204**: 50,000 gal. diesel UST **Tanks 206, 207**: 50,000-gal unleaded/AVGAS USTs **Tanks T-07 ,T-08**: 2,000-gal spill containment USTs
Tank Farm 555	547-551, T-01	**Tanks 547-551**: 567,000-gal JP-5 USTs **Tank T-01**: 2,000-gal spill containment UST
298	298 A,B,C,D	**Tank 298A**: 3,000-gal unleaded UST **Tank 298B**: 2,000-gal diesel UST (**Tank 298C**: 100-gal oil/water separator) **Tank 298D**: 185-gal waste oil UST
390	390 A,B	**Tank 390A**: One 500-gal unleaded AST **Tank 390B**: One 500-gal diesel AST
414	404 891A,B,C	**Tank 404**: One 500-gal. diesel UST **Tanks 891A ,B**: 30,000-gal JP-5 USTs **Tank 891C**: 2,500-gal JP-5 recovery UST
637	637, 637 - 1,2,3	**Tanks 637-1,2,3**: 12,000-gal unleaded USTs **Tank 637**: 500-gallon propane AST
651	651, 651 - 1 thru 7	**Tanks 651-1,2,3,4**: 12,000-gallon unleaded USTs **Tanks 651-5,6**: 500-gallon new bulk oil USTs **Tank 651-7**: One 500-gallon waste oil UST 55-gallon containers for waste and product oil, antifreeze, hydraulic fluid, and grease, Safety-Kleen solvent, and lead-acid batteries **Tank 651**: One 1,000 gallon AST for propane
800	800A thru E	**Tanks 800A,B**: 10,000-gal diesel UST **Tank 800B**: 10,000-gal unleaded UST **Tanks 800D,E**: 1,000-gal waste oil UST 55-gallon containers of waste and product oil, antifreeze, hydraulic fluid, and grease, Safety-Kleen solvent, and lead-acid batteries
658	658A,B	**Tanks 658A, B**: 10,000-gal JP-5 USTs
797	797	**Tank 797**: 10,000-gal. aviation gas UST **Tank 797**: 1,000-gal. waste oil AST
902	902A,B,C	**Tanks 902A,B**: 50,000-gal. JP-5 USTs **Tank 902C**: 2,500-gal recovery UST
155	155	**Tank 155**: 200-gal. lube oil AST
245	245	**Tank 245**: 1,000-gal. propane AST
372 (*)	372A	**Tank 372A**: 1,000-gal. diesel UST
386 (*)	386C	**Tank 386C**: 185-gal. waste oil reservoir
716 (*)	716A	**Tank 716**: 3,000-gal waste oil UST
758 (*)	758B	**Tank 758B**: 185-gal used product UST
759 (*)	759B	**Tank 759B**: 185-gal. waste oil UST
760 (*)	760A	**Tank 760A**: 185-gal. waste oil UST
761 (*)	761B	**Tank 761B**: 500-gal. waste oil UST
763 (*)	763B	**Tank 763B**: 500-gal. waste oil UST
764 (*)	764A	**Tank 764A**: 500-gal. waste oil UST
765 (*)	765A	**Tank 765A**: 185-gal. waste oil UST
766 (*)	766B	**Tank 766B**: 500-gal. waste oil UST
388	388B	**Tank 388B**: 2,000-gal diesel UST
392	392B	**Tank 392B**: 2,000-gal diesel UST
568	568	**Tank 568**: 500-gal. diesel UST
610	610B	**Tank 610B**: 300-gal. diesel AST
619	619	**Tank 619**: 500-gal. diesel AST
717	717	**Tank 717**: 500-gal. diesel AST
724	724A	**Tank 724A**: 500-gal. diesel AST

TABLE 1-3 (Continued)

OIL AND HAZARDOUS SUBSTANCES STORAGE SITES

Building	Tank No.	Description
730	730	**Tank 730**: 1,000-gal. diesel UST
Hazardous Waste Storage Area	900	RCRA-permitted hazardous waste storage area
Hazardous Waste/ Materials Accumulation Areas	40 known sites	Hazardous wastes and hazardous materials accumulate in designated accumulation areas and in underground and aboveground tanks (see Attachments A and B)
Oil/Water Separators	46 known sites	Included with Attachment A
297 (*)	T-11	**Tank T-11**: 1,000-gal. JP-5 spill containment
753 (*)	753	**Tank 753**: 200-gal. pesticide AST
850 (*)	850 A,B,C	**Tank 850 A,B**: 5,000-gal. JP-5 USTs **Tank 850 C**: 500-gal. waste oil UST
862 (*)	862	**Tank 862**: 30,000-gal. JP-5 AST

Note: Tanks labeled with an asterisk (*) are essentially the same for the purpose of developing Oil and Hazardous Substances SPCC and Spill Contingency plans; although contents and quantities may vary. Therefore, only one plan was developed (Building 372) to represent all of these sites. This plan is presented in Section 2.0.

2.0 SPILL PREVENTION, CONTROL, AND COUNTERMEASURE PLANS

This section presents the spill prevention and response measures in place and additional measures recommended for sites within MCAS El Toro that have the potential for an oil or hazardous substance spill or release. A survey of MCAS El Toro was conducted by IEM in October 1996 to determine which facilities, because of their storage capacities, location in environmentally sensitive areas, or potential to discharge oil or hazardous substances into navigable waters, require SPCC Plans. For sites that are essentially the same, only one plan was prepared. Therefore, the plan provided for site No. 7, described in Section 2.14, serves as the plan for all the sites marked with an asterisk (*) in Table 1-3.

Attachment A presents all the hazardous waste accumulation points, hazardous materials storage points, and underground storage tanks including the oil/water separators. Attachment B is an oversized figure of the storm water basins and open channels on the base.

2.1 Tank Farm 6

Tank Farm 6 consists of three steel/concrete underground storage tanks (USTs): Tanks 204, 206, and 207. The tank farm is located in the northeastern corner of the Station off U Street. The tanks are constructed of concrete, coated with tar, with steel tops and bottoms. Tank 206 contains fuel (50,000-gallons of premium unleaded gasoline). Currently, Tank 204 contains 50,000-gallons of Diesel. Tank 207 has a capacity of 50,000-gallons and is used as a back-up tank for AVGAS during the air shows. No other hazardous substances are handled.

Fuel Transfer

Fuel is delivered to this tank farm by tanker trucks. Transfer piping consists of both underground and aboveground piping. The aboveground pipelines lead from the tanks to the loading racks. Valves, pumps, and hose connections are located in concrete vaults below grade to aid in preventing releases of fuel during transfer operations.

Security

The tank farm is secured by chain-link fence with locked gates. Starter controls are locked in the "off" position and are only accessible to authorized personnel. Personnel in the Supply Department of MCAS El Toro perform daily inspections of the tank farm to check for leaks.

Containment and Drainage Control

Two underground tanks (Tanks T-07 and T-08) are used as part of a spill containment system to contain spills that may occur as fuel is pumped to vacuum trucks. They have 2,000-gallon capacities and are fiberglass-coated steel tanks. Both tanks recently passed tank integrity tests. Tank T-07 is located about 30 feet west of the southwestern corner of Tank Farm 6, and Tank T-08 is located between Tank Farms 5 and 6, about 40 feet south of the southwestern corner of the Pump Station. A concrete pad surrounded by a concrete berm marks the locations of each tank.

TABLE 2-1
SUMMARY OF RECOMMENDATIONS

BUILDING NO.	RECOMMENDATION	CORRECTIVE ACTION(S)
Tank Farm 6	It is recommended that each tank be equipped with overfill protection, including an automatic shut-off on the fill port and ball float valves on the vent and vapor lines. A high-level indicator with high and low level alarms should also be installed. The loading/unloading areas should have physical barriers to protect them from collisions.	
Tank Farm 555	It is recommended that each tank be equipped with overfill protection, including an automatic shut-off on the fill port and ball float valves on the vent and vapor lines. A high-level indicator with high and low level alarms should also be installed. The loading/unloading areas should have physical barriers to protect them from collisions.	
Building 298 (Tanks 298A,B, &D)	It is recommended that waste accumulation drums be left within the service station, so that transfer of the waste oil and other wastes from the vehicles to the drums can be accomplished with minimal possibility of spillage. The wastes can then be transferred to the waste accumulation building at the end of each day, thus minimizing the number of trips to the building and the number of personnel entering the building. It is also recommended that a berm be constructed around the hazardous materials storage building and that overfill protection, alarms, and automatic shut-offs be installed on the fuel tanks.	
Building 390 (Tanks 390A & B)	It is recommended that transfer activities be carefully analyzed by the responsible personnel and that a heightened awareness for the containment of the storm water drains be implemented. Leak detection schedules for the ASTs and fuel lines should be incorporated.	
Building 414 (Tanks 891A-C and Tank 404)	It is recommended that secondary containment be installed for the piping and a concrete or asphalt base be constructed. Also, the computer leak detection system should be desensitized to detect condensation on the check cables.	

TABLE 2-1 (Continued)
SUMMARY OF RECOMMENDATIONS

BUILDING NO.	RECOMMENDATION	CORRECTIVE ACTION(S)
Building 637 (Tanks 637 & 637 1-3)	It is recommended that overfill protection, alarms, and automatic shutoffs should be installed on all of the fuel tanks, and that the leak detection system be made operational.	
Building 651 (Tank 651 and Tanks 651 1-4, 7)	It is recommended that overfill protection, alarms, and automatic shutoffs be installed on all fuel tanks.	
Building 800 (Tanks 800A-E)	It is recommended that overfill protection, alarms, and automatic shutoffs be installed on all fuel tanks.	
Building 658 (Test Cells Fuel Tanks)	It is recommended that a berm be constructed around the test cells. In addition, overfill protection and automatic shutoffs should be installed on all fuel tanks. Special care should be taken in the event of a release to the storm water catch basin, located approximately 20 feet from the underground storage tanks	
Building 797 (Tanks 797 UST and AST)	-----	
Tank Farm 902	It is recommended that each tank be equipped with overfill protection, including an automatic shut-off on the fill port and ball float valves on the vent and vapor lines. A high-level indicator with high and low level alarms should also be installed. The loading/unloading areas should have physical barriers to protect them from collisions.	
Building 155 (Tank 155)	If Tank 155 is to be activated and used once again, then the single-wall AST should be upgraded to a double-wall AST. Several manufacturers construct ASTs in all sizes and shapes with double containment. In addition, a leak detection system should be installed to prevent undetected releases	
Building 245 (Tank 245)	If Tank 245 is to be activated and used once again, then the single-wall AST should be upgraded to a double-wall AST. Several manufacturers construct ASTs in all sizes and shapes with double containment. In addition, a leak detection system should be installed to prevent undetected releases.	

TABLE 2-1 (Continued)
SUMMARY OF RECOMMENDATIONS

BUILDING NO.	RECOMMENDATION	CORRECTIVE ACTION(S)
Building 372 (Tank 372A)	It is recommended that the single-wall UST be replaced with a double-wall UST, and that the black iron fuel pipe be installed into a secondary containment pipe. In addition, liquid and vapor sensors that can be added on to the existing leak detection system should be installed. Personnel should maintain their daily inspections of the control panel of the leak detector.	
Building 388 (Tank 388B)	It is recommended that secondary containment surrounding the fuel lines be installed. Liquid and vapor sensors can be added to check for leaks in the pipeline. In addition to the sensors, the dispensing systems should have both vapor recovery phases I and II.	
Building 392 (Tank 392B)	It is recommended that secondary containment surrounding the fuel lines be installed. Liquid sensors can be added to check for leaks in the pipeline. In addition to the sensors, the dispensing systems should have both vapor recovery phases I and II.	
Building 568 (Tank 568)	It is recommended that the single-wall UST be replaced with a double-wall UST and the black iron fuel pipe be installed into a secondary containment pipe. In addition, liquid and vapor sensors that can be added on to the existing leak detection system should be installed. Personnel should maintain their daily inspections of the control panel of the leak detector.	
Building 610 (Tank 610B)	It is recommended the AST be upgraded to a double-wall AST. Several manufacturers construct ASTs in all sizes and shapes with double containment. In addition, a leak detection system should be installed to prevent undetected releases. The fuel lines should also be removed and reinstalled into secondary containment sleeve.	

TABLE 2-1 (Continued)
SUMMARY OF RECOMMENDATIONS

BUILDING NO.	RECOMMENDATION	CORRECTIVE ACTION(S)
Building 619 (Tank 619)	The single-wall AST should be upgraded to a double-wall AST. Several manufacturers construct ASTs in all sizes and shapes with double containment. The fuel lines should be removed and replaced in a secondary containment sleeve. In addition, a leak detection system should be installed to prevent undetected releases. This site requires improved security for this tank. The shut off valves should be enclosed and or locked.	
Building 717 (Tank 717)	The single-wall AST should be upgraded to a double-wall AST. Several manufacturers construct ASTs in all sizes and shapes with double containment. In addition a leak detection system should be installed to prevent undetected releases. This site requires improved security for this tank. The shut off valves should be enclosed and or locked.	
Building 724 (Tank 724A)	The single-wall AST should be upgraded to a double-wall AST. Several manufacturers construct ASTs in all sizes and shapes with double containment. In addition, a leak detection system should be installed to prevent undetected releases.	
Building 730 (Tank 730)	It is recommended that the single-wall UST be replaced with a double-wall UST, and the black iron fuel pipe be installed into a secondary containment pipe. In addition, liquid and vapor sensors should added onto the existing leak detection system. Personnel should maintain their daily inspections of the control panel of the leak detector.	
Hazardous Waste Storage Building	It is recommended that secondary containment be installed for the drum staging area. The secondary containment can consist of: (1) installing a berm surrounding the area and designed to contain 110 percent of the maximum volume of waste in the staging area, and/or (2) sloping the area toward a waste collection sump to contain any release.	

TABLE 2-1 (Continued)
SUMMARY OF RECOMMENDATIONS

BUILDING NO.	RECOMMENDATION	CORRECTIVE ACTION(S)
Hazardous Waste/Hazardous Material Accumulation Areas	Currently, there are no regulatory requirements for secondary containment regarding these accumulation areas. It is recommended that berms and permanent structures be constructed for all hazardous waste accumulation buildings, similar to those present at permitted container storage areas (i.e., berms/structures that are capable of containing 10% of the maximum volume of liquid hazardous waste drums, that inhibit run-on, and/or that have additional capacity to contain run-on).	
Oil/Water Separators	It is recommended that the oil/water separators be checked for structural integrity, and be maintained so that no oil reaches the discharge points. Typical maintenance can include regular pumping of any product in the separators and immediate removal of any collected debris such as leaves, twigs, or trash.	

3.0 Spill Contingency Plan

3.1 Introduction

Title 40, Code of Federal Regulations, Part 112.7(d) requires that an oil spill contingency plan (SCP) be prepared at all facilities that have a potential to discharge harmful quantities of oil to navigable waters of the United States. In addition, a spill contingency plan is required for hazardous waste generators under 40 CFR 262.34(a)(4). This SCP presents the procedures for responding to spills and other emergencies and is in accordance with Federal, State, and Navy regulations.

3.2 Emergency Coordinators

All facilities that handle hazardous wastes are required to have, at all times, at least one employee either on the facility or on call, with the responsibility for coordinating all emergency response measures. The emergency coordinator (On-Scene Coordinator) must be thoroughly familiar with all aspects of the facility's Contingency Plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, the emergency coordinator must be trained in emergency response and have the authority to commit the resources necessary to carry out the Spill Contingency Plan. Tables 3-1 and 3-2 list emergency coordinators for emergency events both on and off the Flightline.

3.3 Coordination

Coordination among the various departments within MCAS El Toro is imperative to ensure the proper and complete response to a spill or emergency event. In most instances, the coordination of activities will occur among the specific unit where the potential release occurred, the Environmental Department, Crash Crew, Fire Department/HazMat Team, Provost Marshall's Office, and the Facilities Management Department. In general, the Environmental Department will provide technical support. The Crash Crew, Provost Marshall's Office, Fire Department/HazMat Team, and Facilities Management Department will provide all necessary equipment and personnel for the On-Scene Operations Team. The MCAS El Toro HazMat Team has access to an emergency van, the contents of which are included in Table 3.4. The MCAS El Toro Fire Department and Crash Crew will be the primary emergency coordinators.

In cases where support is required from off-site sources, Orange County has entered into a Mutual Aid Agreement to provide police, fire, and ambulance assistance. MCAS El Toro has authority to contract with spill control and hazardous waste disposal companies for additional assistance. In addition, in circumstances such as a hazardous waste spill associated with another type of emergency (i.e., earthquake), support from State and Federal agencies will be solicited. These agencies include the California Department of Toxic Substances Control, the National Response Center, and the U.S. Environmental Protection Agency.

Figures 3-1, 3-2, and 3-3 present organizational charts. Figure 3-1 depicts the Marine Corp's emergency response organization for oil spills; Figure 3-2 depicts the Marine Corp's emergency response organization for a hazardous substance spill; and Figure 3-3 depicts the suggested organization of a hazardous substance On-Scene Operations Team.

3.4 Emergency Response Equipment

Each unit is responsible for acquiring and maintaining its own spill control equipment. A list of spill control equipment to be maintained by each unit is provided as Attachment E. In addition, the MCAS El Toro Fire Department/HazMat Team, Environmental Department, and the Facilities Management Department maintain equipment for the On-Scene Operations Team including an emergency van, heavy equipment, 55-gallon drums, sorbent material, pumps, lights, and personal protective equipment. This equipment is stored with the MCAS El Toro Fire Department/HazMat Team. Table 3-3 lists Hazmat Equipment and Supplies, while Table 3-4 lists Emergency Van Equipment.

TABLE 3-1

EMERGENCY COORDINATORS

Shift A

Primary - Fire Department
Capt. Dan Beerer
4081 West 1st Street #53
Santa Ana, CA 92703
Work (714) 726-3716
Home (714) 554-8559

Alternate #1 - Fire Department
Capt. Richard A. Davis
20261 Chaucer Lane
Huntington Beach, CA 92646
Work (714) 726-3919
Home (714) 963-6310

Alternate #2 - Environmental Dept
Sgt. R.S. Pashalian
Work (714) 726-3035/2164
Pager (714) 286-8225
Home (714) 733-2088

Alternate #3- Environmental Dept
MSgt Czernuik
Work (714) 726-3035/2164
Pager (714) 286-8229
Home N/A

Alternate #4- Environmental Dept
Sgt. E. A. Ibarra
Work (714) 726-3035/2164
Pager (714) 286-8226
Home (714) 733-3044

Shift B

Primary - Fire Department
Asst. Chief William Cook
3923 South Harvard Blvd.
Los Angeles, CA 90006
Work (714) 726-3919
Home (714)296-6484

Alternate #1 - Fire Department
Same as that for shift A

Alternate #2, #3, and #4 - Env. Dept
Same as those for Shift A

TABLE 3-2

EMERGENCY COORDINATORS (Flightline)

Duty Section 1

Primary - Aircraft Rescue and Fire Fighting
SSgt Thomas E. Peters
183 Commor Ave.
Irvine, CA 92718
Work (714) 726-3922
Home (714) 733-2505

Alternate #1 - ARFF
LCpl Michael Higley
Barracks 842, Room B105
Santa Ana, CA 92709
Work (714) 726-3922
Home (714) 726-3198

Alternate #2 - Environmental Dept
Sgt. R.S. Pashalian
Work (714) 726-3035/2164
Pager (714) 286-8225
Home (714) 733-2088

Alternate #3- Environmental Dept
MSgt R. Nelson
Work (714) 726-3035/2164
Pager (714) 286-8229
Home (619) 722-4794

Alternate #4- Environmental Dept

Sgt. E. A. Ibarra
Work (714) 726-3035/2164
Pager (714) 286-8226
Home (714) 733-3044

Duty Section 2

Primary - ARFF
SSgt Thomas E. Peters
183 Commor Ave.
Irvine, CA 92718
Work (714) 726-3922
Home (714) 733-2505

Alternate #1 - ARFF
Sgt Paul Taylor
3184 C-Gard Ct.
Irvine CA 92714
Work (714) 726-6847
Home (714) 551-3592

Alternate #2, #3, and #4 - Env. Dept
Same as those for Duty Section 1

TABLE 3-3

HAZMAT EQUIPMENT AND SUPPLIES

Quantity and Description	Capability
Personnel protective equipment including Level A suits, Tyvek, and gloves (Butyl, Viton, Nitrile, Silver Shield, cotton, and surgical)	Splash, absorption, and hand protection
Self-contained breathing apparatus with spare air bottles	Respiratory protection
Draëger detection kits: gas, petroleum hydrocarbon, chlorine, ammonia	Chemical identification
Gastech GX-86 multi-meter, Radiation detection meter, Hydrocarbon detection lamp	Chemical and radiation identification
Firefinder	Fire identification
"Dangerous Properties of Industrial Materials," Condensed Chemical Dictionary, "Chemical Substances in Workroom Air," "Merck Index," CHRIS manual, "Farm Chemicals Handbook," "Guide to Threshold Limit Values," " Guide to Protective Clothing," "DOT Emergency Guide Book," "NFPA Hazardous Materials Handbook"	Reference materials
Class A, Class B, Class C, Class D fire extinguishers	Fire suppression (combustible, chemical, and electric)
Speedy-dry	Spill cleanup
Sodium dihydrogen phosphate	Neutralizer
Assorted absorbent booms and pads	Spill cleanup
Tools including non-sparking bung wrench, socket set, hacksaw, non-sparking hammer, pocket knife, rubber and wood mallets, metal snips, non-sparking pliers, and pry bar	Various capabilities
High power binoculars	Emergency response observation
Portable weather station	Ambient weather conditions
Spark-proof hand lights	Visual aid
Communication radios (G.E. two-way, Motorola MX hand held, Motorola Spectra C9 with dual control heads [800 Hz], two-way 49 [Mhz], and two-way base station [49Mhz])	Communications
Decontamination solutions	Decontamination
Buckets, sponges, brushes, brooms, mops	Decontamination

Table 3-4: Facilities Management Department-Emergency Van Equipment List

Description	Capability
Emergency Spill Guide	Procedures
Building guides and street maps	Location reference
Bung wrench, bung hole covers, shower cap-type drum covers	Opening and closing drums
First aid kit, blanket	Injury and shock response
Emergency eye wash, and extra 1-gallon water bottle	Eye protection
Aural protector	Ear protection
Plastic bucket, broom, squeegees, shovels, miscellaneous tools, plastic sheeting, wire brushes	Cleanup and decontamination
Personal protective equipment (hard hats, gloves [fabric and rubber], coveralls, chemical suits, face shields, aprons, respirators [organic acid, dust & fume], and rain gear)	Personal protection
Absorbent (Safe-Step and vermiculite)	Spill cleanup
Plastic bags, wide-mouth glass jars, and test vials	Sample collection
Lanterns, flashlights	Visual aid
Test kits (colorimeter, pH paper)	Chemical identification
Hand cleaner	Decontamination
Hazardous waste labels and forms	Identification and disposal
HMIS	Identification

3.5 Emergency Response Notifications

Spills are discovered by casual observation, part of a routine investigation, or during handling or use. The primary responsibility of the discoverer of the spill is to notify the appropriate personnel who are trained and equipped to deal with the emergency. The discoverer must notify either:

- **MCAS El Toro Crash Crew at x 3921 or 3922** if the spill occurred on or near the flight line, runways, taxiways, aircraft parking aprons, or on any other area associated with aircraft operations; or

- **MCAS El Toro Fire Department/HazMat Team at x 3917** if the spill occurred anywhere on the Station outside of the aircraft operations area.

Each of the above organizations have someone designated as the On-Scene Coordinator. It is the responsibility of the Crash Crew or Fire Department/HazMat Team to notify one of the following organizations depending upon the situation:

- Environmental Department x 2772 or 6607 during duty hours.
- Facilities Management Department Trouble Desk x 2165 during off-duty hours.
- Provost Marshall's Office x 9911.

The On-Scene Coordinator, in conjunction with the Environmental Department, will make a determination of the size and extent of the situation, and pursue further notifications, if necessary. At the same time, the MCAS El Toro Fire Department's HazMat Team will be activated if necessary, pursuant to the advice of the On-Scene Coordinator. Agencies to be notified, and the criteria for doing so, follow.

<u>MCAS El Toro On-Station Departments</u>

- Medical Department X 3172 if a threat to human health exists.

<u>Local Agencies</u>

- Orange County Sanitation District: (714) 962-2411 or 3301 if a spill enters the sewer system. A Slug Control Plan is included as Attachment I.

- South Coast Air Quality Management District: (909) 396-2000 or (800) 572-6306 if a spill could impact air quality.

- Orange County Health Care Agency: (714) 667-3700 if additional health care, beyond what can be provided by MCAS El Toro, is necessary, or if a risk to human health exists off-Station.

- Orange County Emergency Management Division: (714) 834-7255 if a spill affects areas outside MCAS El Toro boundaries.

State Agencies

- California Regional Water Quality Control Board, Santa Ana Region: (909) 782-4130 if a spill has affected, or may affect, surface water or groundwater.

- California Department of Toxic Substances Control: (818) 551-2800 if a spill threatens, or may threaten, human health or the environment, or if a reportable quantity (see Attachment F) of a hazardous substance has been released as discussed in the facility's hazardous waste facility permit and the appendix to 49 CFR 172.101 and 40 CFR 302.4.

- California Office of Emergency Services: (800) 852-7550 or (916) 262-1621 **must** be notified whenever any spill occurs that could threaten human health or welfare, or if a reportable quantity is released to the environment.

Federal Agencies

- National Response Center: (800) 424-8802 **whenever** a spill greater than 100 gallons occurs, regardless of location or hazard, or reportable quantity. The National Response Center will notify other agencies and implement the National Oil and Hazardous Substances Spill Contingency Plan.

- U.S. Environmental Protection Agency: (415) 744-2000 if a spill threatens, or may threaten, human health or the environment, or if a reportable quantity (see Attachment F) of a hazardous substance has been released as discussed in the facility's hazardous waste facility permit and the appendix to 49 CFR 172.101 and 40 CFR 302.4.

Table 3-5 is a comprehensive list of federal, state, local, and MCAS El Toro points-of-contact for emergency notification in the event of a spill.

3.6 Emergency Response Procedures

The following steps will be taken when encountering a spill, uncontrolled discharge, or a fire.

Step 1. Initial Response Actions

- The discoverer of the spill or fire will immediately notify the MCAS El Toro Fire Department/HazMat Team or Crash Crew. The nature and location of the incident, as well as any information regarding injuries or threat of injury to human health or environment, will be reported.

- Individuals trained in spill response (including Unit Environmental Managers, Environmental Department, Fire Department/HazMat Team, Crash Crew, and On-Scene Operations Team) will attempt to contain the spill or extinguish the fire using spill kits, fire equipment, and other emergency equipment located in the immediate vicinity of the spill or fire.

EMERGENCY NOTIFICATION PHONE LIST			
PRIORITIZED CONTACT LIST	RESPONSE ROLE	DAY PHONE	24 HR.PHONE
Technical Support Point of Contact: MCAS El Toro Environmental Department Response Time: < 1 hr	Technical support coordination	714-726-3035	Pager 714-733-2088
Joint Public Affairs Office Point of Contact: MCAS El Toro Joint Public Affairs Office Response Time: Varies	Community Relations	714-726-2937 714-726-2938	N/A

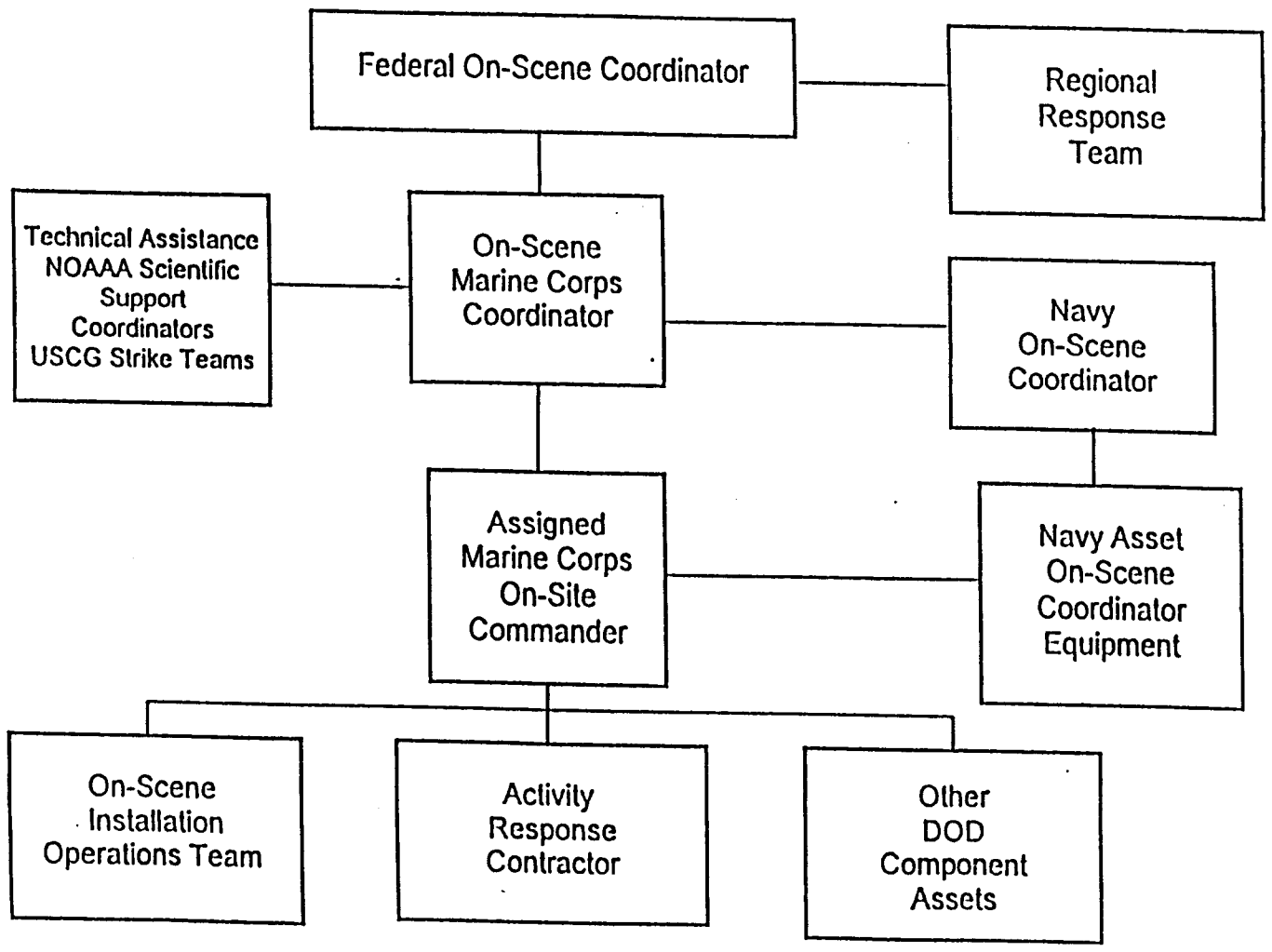


Figure 3-1: Marine Corps Emergency Response Organization for Oil Spills

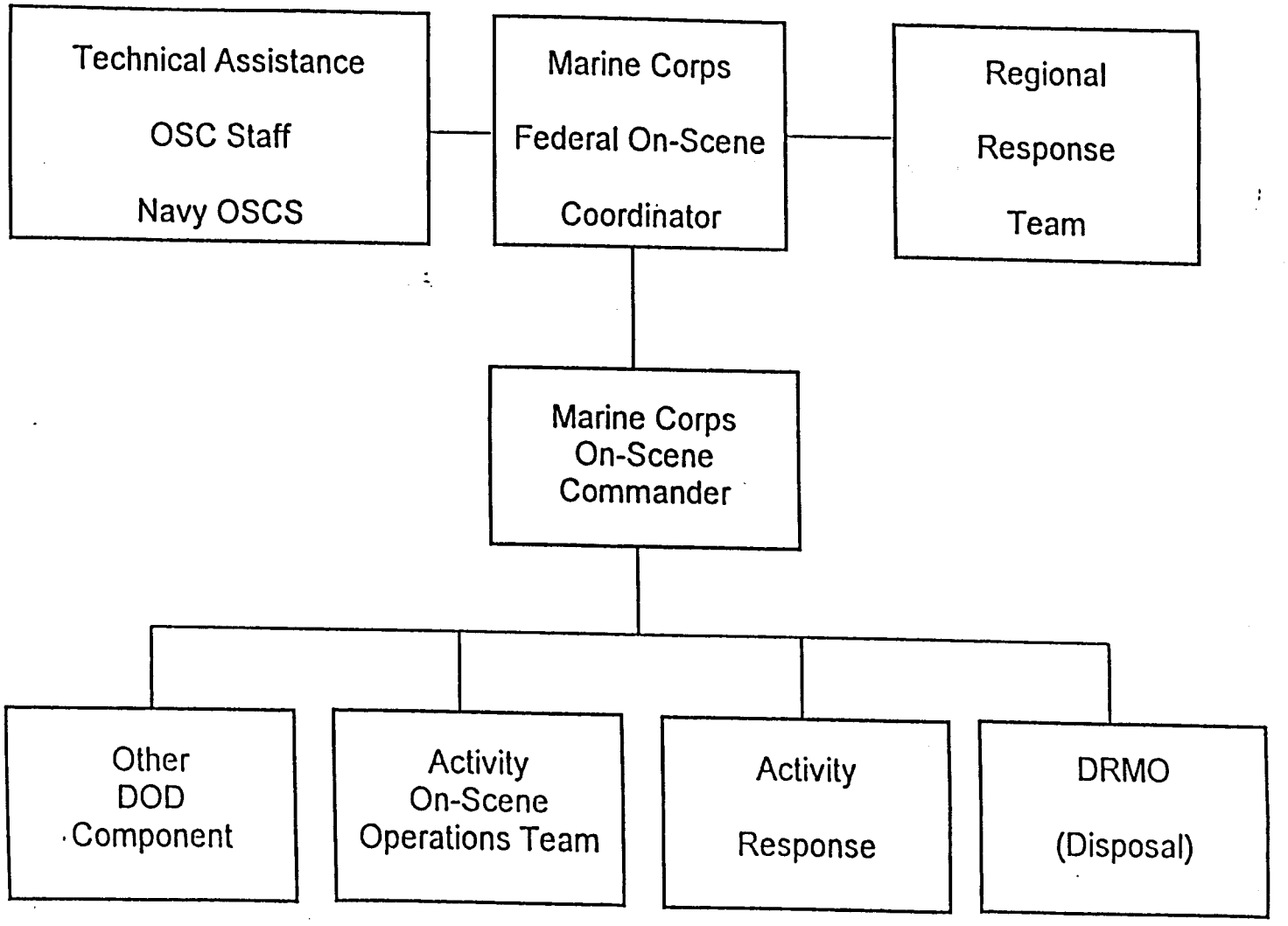


Figure 3-2: Marine Corps Emergency Response Organization for Hazardous Substance Releases

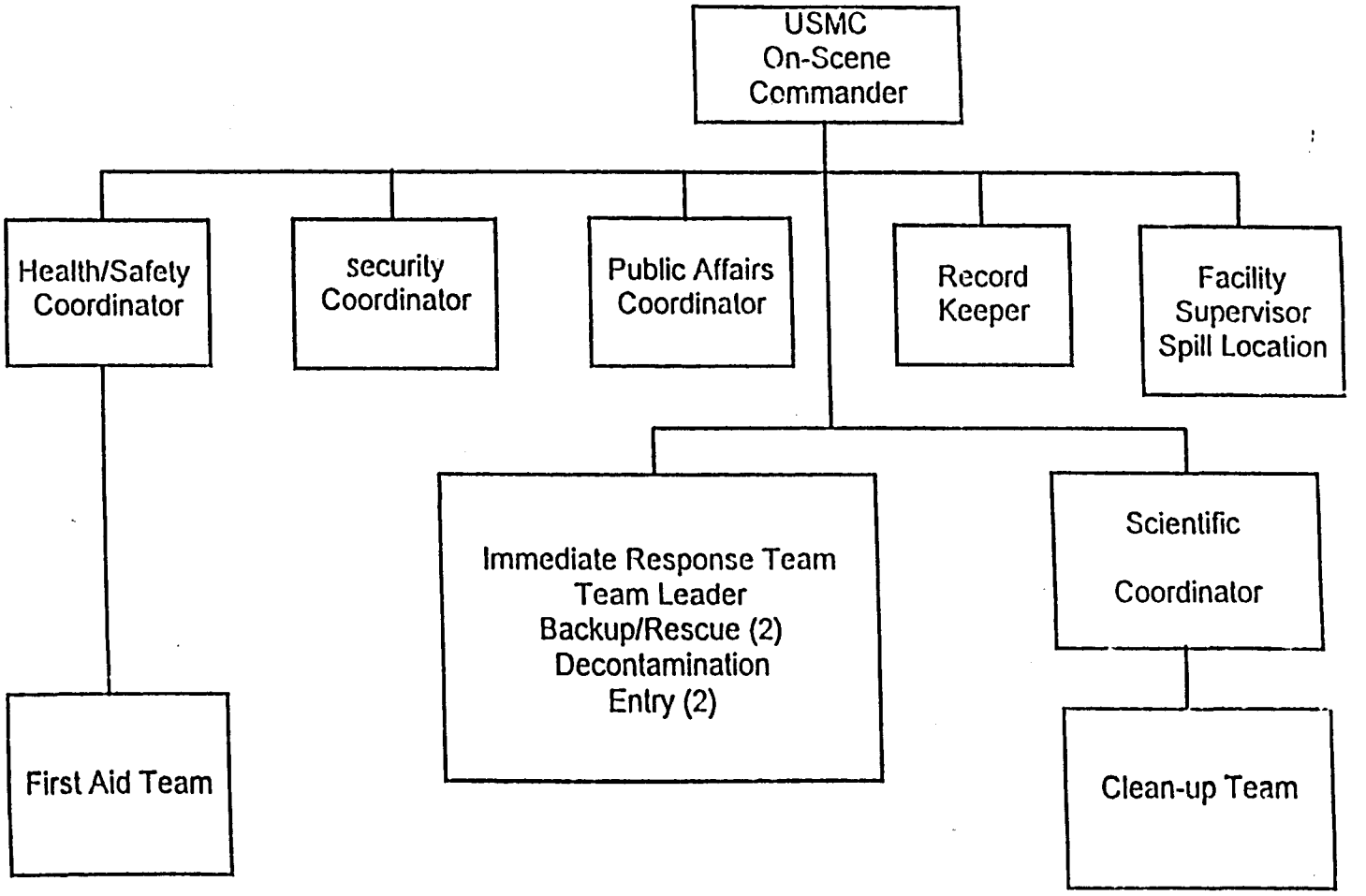


Figure 3-3: Marine Corps Suggested Organization of Hazardous Substance On-Scene Operations Team

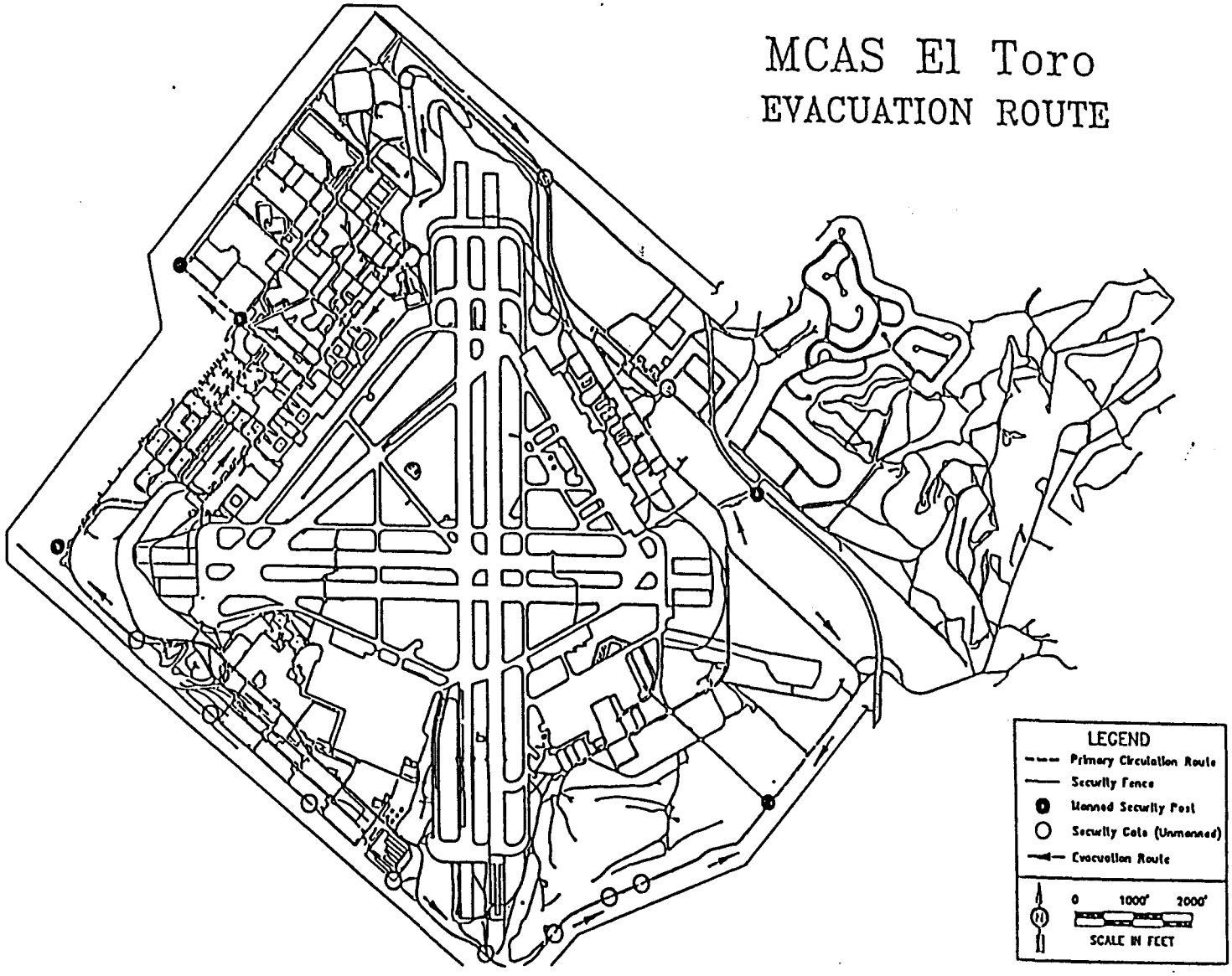


Figure 3-4: MCAS El Toro Evacuation Route

ATTACHMENT A

Accumulation Points/Hazardous Materials Storage Locations/ Underground Storage Tank Locations

ATTACHMENT C

Mutual Aid Agreement

ORIGINAL

CLERK OF THE BOARD
ORANGE COUNTY

LETTER OF AGREEMENT
Between The
COMMANDING GENERAL, MARINE CORPS AIR STATION
El Toro (Santa Ana), California
And
COUNTY OF ORANGE

THIS AGREEMENT, made this 2nd day of MAY 1989 between the U.S. Marine Corps Air Station, El Toro (Santa Ana), California, hereinafter referred to as the Air Station, and the County of Orange, hereinafter referred to as the County, replaces the agreement between these two parties dated 7 Dec 1982 for mutual aid fire and rescue assistance and any modifications thereto.

WHEREAS, it is the responsibility of the County to provide fire and rescue services for those areas and properties over which Orange County has jurisdiction and which are adjacent to the Marine Corps Air Station El Toro and

WHEREAS, it is the desire of the Air Station to protect those areas and properties adjacent to it from the ravages and destruction of fire and assist with rescue service, and

WHEREAS, it is possible for the fire department of the Air Station to respond to and assist in fire and rescue on such adjacent areas and properties with more facility and in a lesser period of time than fire companies of the County, and

WHEREAS, it is possible that a fire may break out within the confines of the Air Station which may exceed the capabilities of the Air Station fire department, and

WHEREAS, it is the desire of the Air Station and the County to assist each other in affording fire and rescue services for those areas and properties adjacent to and including the Air Station on a mutual assistance basis, and

WHEREAS, this Agreement is between a Federal agency and a local agency, to provide fire and rescue assistance to each other, and the fact that the available force is crash, structural, and aircraft should make no difference in the Agreement, as whatever assistance is requested and available is dispatched,

IT IS THEREFORE AGREED:

1. The Air Station, through its fire department, shall offer initial fire and rescue services within the capabilities of the Fire Department of the Air Station to the areas adjacent to the Air Station. However, during extreme emergency situations, this immediate area is waived to include all areas protected by the County.

2. The County shall retain the primary responsibility for affording fire and rescue services to those areas outside the Air Station to which the Air Station offers its services.

3. After the Air Station has provided initial fire protection services, the Air Station will assist the County Fire Department, upon their arrival at the fire, to continue to combat the fire until its extinguishment or release by the County Fire Department.

4. The County will furnish fire, rescue, hazardous material assistance to the Air Station in those instances where the County Fire Department is notified that assistance is required within the confines of the Air Station and will continue such assistance until release by the Air Station Fire Department.

5. The availability and the extent of the assistance to be provided at the time rests solely within the discretion of the respective parties to this Agreement who are providing assistance.

6. The area to which the Air Station has primary responsibility for emergency services that the County may be requested to assist is shown in Enclosure 1.

7. The technical head of the fire department of the requesting service shall assume full charge of the operations; but, if that individual specifically requests a senior officer of a fire department furnishing assistance to assume command, that individual shall not, by relinquishing command, be relieved of his/her responsibility for the operation, even though the apparatus, personnel, and equipment of the agency rendering assistance shall be under the immediate supervision of and shall be the immediate responsibility of the senior officer of the fire department rendering assistance.

8. The chief fire officers and personnel of both fire departments are invited and encouraged, on a reciprocal basis, to frequently visit each other's activities for guided familiarization tours consistent with local security requirements, and as feasible, to jointly conduct pre-fire planning inspections, drills, and fire investigations.

9. Neither the Air Station nor the county shall receive any compensation or reimbursement from the other for any services provided in performance of this Agreement, however, direct expenses and losses which are additional firefighting cost over and above normal operating costs incurred while fighting a fire on property which is under the jurisdiction of the United States may be reimbursed in accordance with the Federal Fire Prevention and control Act of 1974 (Public Law No. 93-498, 15 U.S.C. 2201 et seq.) and its implementing regulations 44, C.F.R. 151.

10. The Air Station and County agree to hold harmless and waive all claims against the other party for compensation for any loss, damage, personal injury, or death occurring in consequence of the performance of such Agreement. Any service performed under this Agreement by any officer or employee of the United States or any member of any armed force of the United States shall constitute service rendered in the line of duty in such office, employment, or force. Service performed by any other individual pursuant to this letter of Agreement shall not be deemed federal service or employment.

11. This Agreement will be reviewed biennially at least 120 days prior to the anniversary date. It may be revised at any time upon the mutual consent in writing of the parties concerned. A request for modification will be furnished by one party to the other by written notice at least 30 days prior to the desired effective date of such modification. This Agreement may be canceled/terminated at any time by mutual consent of the parties concerned. It may also be canceled by either party upon giving at least 180 days written notice to the other party.

In WITNESS WHEREOF, the parties hereto have caused the Agreement to be executed by the Commanding General, Marine Corps Air Station, El Toro (Santa Ana), California and by the County of Orange through its duly authorized officers as of the dates below their names.

Dated: 5-2, 1989

County of Orange

By Thomas F. Riley
Chairman, Board of Supervisors

Dated: 8-8-89

Approved as to Form:

, County Counsel
Orange County, California

By Carol D. Brown, Deputy
4/18/89

Marine Corps Air Station, El Toro (Santa Ana), California

By J. Underwood
J. E. UNDERWOOD, Col, USMC
Chief of Staff

Dated: 5-2-89

Signed and certified that a copy of this document has been delivered to the Chairman of the Board.

Linda D. Luth
Clerk of the Board of Supervisors,
County of Orange, California

ATTACHMENT K:

Joint Public Affairs Office (SOP)

3.5 Emergency Response Notifications

The On-Scene Coordinator, in conjunction with the Environment and Safety Department, will make a determination of the size and extent of the situation, and pursue further notifications, if necessary. If a threat to human health exists or if a spill affects areas outside MCAS El Toro boundaries the MCAS El Toro Joint Public Affairs Office (JPAO) will be notified (A Joint Public Affairs Office Standard Operating Procedures (SOP) is included as Attachment K).

Joint Public Affairs Office X2937 or 2938.

SECTION C:

INCIDENTS INVOLVING TOXIC WASTE

0811 INTRODUCTION

a. History. The military services use and produce large quantities of hazardous materials and waste products. Lack of stringent legislation in the past led to the use of expedient disposal methods that threaten human health and the overall quality of the environment. Past hazardous waste disposal relied on burial. Although acceptable at the time, this method over the long term has led to the spread of contaminants largely through release in soil and ground water. This process, called migration, has resulted in materials moving from the land area in which they were originally deposited into other public and private lands. Installation Restoration (IR) is the Department of the Navy program of identifying and cleaning hazardous waste sites.

b. Basic IR Phases. The IR program, governed by reference (l), consists of three basic phases of action. Two involve the identification of waste sites and an evaluation of their environmental impact, and the third deals with corrective measures.

(1) Preliminary Assessment/Site Investigation (PA/SI) Study. The PA/SI, formerly called initial assessment studies, involve a record review, both at the activity itself and elsewhere, and an on-site examination of the activity's waste disposal history and identification of any known pollutant problems.

(2) Remedial Investigation/Feasibility Study (RI/FS). The RI/FS, formerly called the confirmation studies, consists of on-site, physical or analytical testing or monitoring of suspected pollutants at a site. A confirmation study might include soil and ground water sampling and analysis. A study of alternatives is also done as part of the RI/FS.

(3) Remedial Action (RA). If the RI/FS reveals the need for corrective action, such action will be taken in the RA phase and programmed using Defense Environmental Restoration Account (DERA) or normal Navy appropriation accounts. First priority will be given to remedial actions to control contamination migrating from Navy or Marine Corps owned property when such migration poses an immediate threat to the health and welfare of the installation or the adjacent community.

c. Clearance for Non-DoD Site Inspectors. Upon presentation of proper credentials, authorized representatives of state or federal environmental protection agencies must be allowed to enter a Navy or Marine Corps facility at reasonable times to examine or copy records, inspect inactive hazardous substance disposal facilities and to take samples. Proper credentials include an appropriate security clearance and a valid inspection purpose (e.g., Clean Air Act Inspection as opposed to OSHA inspection). See Section 11203(b)(2) of reference (l).

d. The National Priorities List (NPL). The NPL is a listing by the Environmental Protection Agency of the nation's worst hazardous waste sites. The listing, required by the Comprehensive Environmental Restoration Compensation and Liabilities Act (CERCLA), may include military as well as other public and

private sites. Each site listed in the NPL is required by EPA Regulations (at 40 C.F.R. 300.67) to follow a Community Relations* Plan. See Article 0812 (IR-required Community Relations Plan).

e. Study Release Policy. It is the policy of the Department of the Navy to provide completed studies to the news media and concerned local individuals and organizations on request. The following guidance is in keeping with this policy:

(1) Local and state officials, news media, interested organizations and individuals should be kept apprised of the IR activity at the commencement and conclusion of each phase of work. Completed studies should be released as soon as practical. The activity commanding officer is responsible for study release. As with all public disclosures, studies and related statements will undergo security and policy review before release. When environmental or public relations impact is expected to extend beyond the immediate area of the activity, the command should coordinate release of the study with the cognizant area coordinator.

(2) IR and related studies must be released to the cognizant EPA Regional Office and the appropriate state agency within 30 days of receipt of the study by the concerned activity.

(3) When local interest is high, periodic status reports of the field activities of the contractor performing the study should be provided.

(4) PAOs must coordinate the release of all information and preparation of contingency questions and answers with both the installation public works officer and the appropriate Naval Facilities Engineering Command Engineering Field Division representatives.

f. Basic Points of Emphasis. Commanders and their PAOs are encouraged to discuss IR studies and remedial actions within their areas of cognizance with local news media, civic and environmental organizations and individuals. Every effort should be made to avoid the impression that the Navy or Marine Corps is hiding an adverse environmental condition or withholding information on former hazardous waste sites. Points to emphasize include:

(1) The Navy and Marine Corps are concerned about and committed to protecting the environment. Commands will continue to pursue vigorous remedial action to clean up pollutants.

(2) Past hazardous waste disposal methods, although acceptable at the time, have often caused problems as long term characteristics of pollutants and land disposal became known.

(3) State and local agencies will be notified without delay by Navy or Marine Corps officials if health, welfare or other environmental problems are identified--even before publication of final technical reports.

(4) If an immediate hazard to human health or the environment is identified, remedial action will begin immediately.

*Although the EPA titles it a Community Relations Plan, most of the actions in the plan are public information efforts aimed at the local community.

0812 NAVY IR-REQUIRED COMMUNITY RELATIONS PLAN

a. Plan Requirements. The intent of public affairs involving hazardous waste problems is to present factual and timely information, obtain community feedback, dispel rumors and promote understanding. Public affairs efforts are not intended to persuade the public to support a given study outcome or disposal action. Accordingly, technical expertise is required to assist in the development of public affairs plans and initiatives related to hazardous waste. This is normally furnished by the installation Public Works Officer and the Naval Facilities Engineering Command Engineering Field Division.

(1) The Plan must take into account the mandatory 21-day public comment period that precedes final selection of remedial or corrective action (IR Phase Three).

(2) The Plan must consist of:

(a) Background and history of community involvement at the site, including local activity and interest, key issues and site history;

(b) IR objectives for the particular site;

(c) Community relations activities to be used to meet stated objectives;

(d) A mailing list of the affected groups and individuals, plus a list of Navy, EPA and other agency officials responsible for community relations.

(3) The Community Relations Plan must be based on discussions with state and local officials, civic and community organizations, interested residents and local news media representatives to gain a first-hand understanding of the major community issues, the level of public interest and the information needs of citizens. In early meetings with citizens, commands should be more intent on receiving input from them rather than furnishing information. Try to identify the real concerns of citizens (e.g., threats to health) which may be masked by emotional demands to effect immediate clean-up. Tell citizens that their contributions are valuable. Some may have technical expertise or offer information about responsible parties, the extent of off-site contamination, health hazards, etc.

(4) Public information activities must be closely integrated with the technical activities of site study and remedial action. A close working relationship should be built between the technical response staff, public affairs staff and contractors supporting the command's efforts.

(5) Final reports (i.e., those following selection of the remedial action) must indicate in what ways community contribution was considered by decision makers and how it was incorporated into response plans.

CHAPTER EIGHT

PUBLIC AFFAIRS HANDLING OF CONTINGENCIES

GUIDANCE PAGES

G-0807 ACTIONS FOLLOWING AN ACCIDENT OR INCIDENT

a. General. Immediately following an accident or disaster, operational personnel are involved in containment and control-- survivor rescue and treatment, damage control, protection of classified information, etc.--while public affairs personnel are obtaining facts and authority to release information as well as considering the establishment of a Command Information Bureau (CIB). After releasing initial information on the accident the affairs staff members where accurate information can be rapidly gathered, coordinated and released.

b. Emergency Stations. In most accidents and all those involving weapons systems and serious aircraft accidents , public affairs personnel should be situated in as many of the following suggested locations as possible:

(1) Command post or emergency crisis control center of the installation;

(2) At or near the accident scene;

(3) The public affairs office or Command Information Bureau (CIB).

Personnel should be assigned to such stations in the customary manner (e. g., through an up-to-date Watch, Quarter and Station Bill).

c. Staff Action on Learning of an Accident. The PAO should promulgate, through office notice or Standard Operating Procedure, that, at the first word of a major accident, personnel should proceed to the assignments made in the Watch, Quarter and Station Bill, then immediately establish communications with command post or emergency crisis control center. Regardless of the location of the accident, communications must be established rapidly between the public affairs representative at the scene of the accident and at the installation. This allow as public affairs staff members at the accident site and those at the installation to coordinate information release on a timely basis. Communications should also be established directly with the PAO of the Immediate Superior in Command (ISIC) or the area coordinator. It should be emphasized to personnel that such assignments may change during the course of an emergency.

d. Protracted Accident Situations. In accidents or incidents likely to require public affairs support around the clock for several days, or one that is likely to exceed the capabilities of the cognizant command's public affairs staff, the PAO should:

(1) Set up a 24-hour CIB.

(2) Consider operating the CIB as a joint bureau if other federal, state and local agency spokespersons are on scene.

(3)Notify switchboard operators and duty officers to direct news media queries and public inquiries to the CIB rather than the command post.

(4) Provide copies of official Navy/Marine Corps news releases to any state, local, municipal or federal agencies and other officials concurrent with their release to the public when possible.

(5) Anticipate public concerns, and ussue timely news releases before such concerns distort public perceptions.

(6) Forward requests for additional personnel and material support to the PAO in the next higher echelon if necessary.

(7) Appoint a staff member to keep a running log of:

(a) The time of the accident and a basic description of the occurence;

(b) Important developments;

(c) Times news releases are issued;

(d) Policy as it was passed to you and how and when you implemented it;

(e) Copies of OPREP-3s and other pertinent messages;

(f) Other important information.

(8) If holding news conferences, advise news media representatives in advance that there will be no speculation as to cause or causes of an accident, and official comment will be made only after the investigation is completed. Brief personnel who will appear before the media. The briefing should begin with a review of the command press releases that have been issued, particular areas of interest on the part of the news media and other related issues of concern. Briefing points can include the following:

(a) "Reporters are eager to get as many details about the occurrence as possible. You're a source of information about either the incident or the people involved. Discuss only those matters with which you are personally familiar and are under your cognizance or authority. Do not discuss hearsay or speculation."

(b) "The decision to be interviewed or to participate in a press conference is entirely your own. There are excellent reasons, however, for being interviewed--such as placing the incident in proper perspective, mentioning acts of heroism, and so on."

(c) "Do not speculate and do not answer 'what if...' questions."

(d) "Do not repeat stories of which you are unsure."

(e) "Avoid any mention of classified information, inclucing (insert applicable warnings, such as nature of a classified mission the aircraft was on at time of crash, etc.)."

(f) "Do not speculate as to the cause of the accident or incident. Advise the correspondents that the cause will be investigated, and speculation may adversely affect the conduct of the investigation."

(g) "If you feel critical of someone's actions which you believe may have led to the accident or hampered our actions following the accident, avoid disclosing this to the news media. First, you may not know the details of the individual's action or the motivation involved. Also, discussing this openly may hamper the conduct of the official investigation."

(h) "As the Public Affairs Officer, I will make a comment if I feel during the interview or conference that you are getting into trouble."

G-0808 HANDLING NEWS MEDIA AT THE ACCIDENT SCENE

a. Defining the Area. Upon arrival at the accident scene, the senior military official should request either military police or other law enforcement authorities to rope off the entire area to protect the public from injury, government property from further disturbance and classified information from compromise.

b. Briefing Reporters. The command should prepare contingency questions and answers to respond to likely news media inquiries at the accident scene. Once statements or contingency answers are approved, the senior public affairs official at the scene should be granted permission to release the pre-approved information. See Article 0303e (7) (Delegation of Release Authority). In addition, reporters should be briefed on safety hazards and the need to preserve the site for investigators before they are permitted to enter the cordoned area. The briefing should be done by the public affairs official at the scene who can get information from others present. If a reporter refuses to cooperate, follow the instructions given in Article 0805 (Protection of Classified Material) and 0809 (Control of Video and Photography at Accident Sites). Keep in mind that a Navy or Marine Corps member may not physically restrict the movement of the news media at accident sites except on DoD property or in the civilian domain when martial law has been imposed or a National Defense Area established.

c. Admitting reporters to the Area. After the area is cordoned off and once news media representatives are briefed, the senior military official or senior public affairs official on the scene may grant permission to enter the accident area. The senior public affairs official at the scene is kept informed by communicating with the Command Information Bureau (CIB), public affairs office, emergency crisis control center or command post and also keeps the CIB informed of media activities at the scene. See Article G-0807b (Emergency Stations). Lack of escorts is not grounds for denying media access at accident sites off base If classified information is exposed, the public affairs official or the OSC should explain the situation and ask reporters to stay back until the material can be covered or removed. See also Article 0809 (Control of Video and Photography at Accident Sites).

d. Media Identification. As part of the public affairs office's contingency planning, special news media identification badges should be kept on hand. These may consist of inexpensive plastic badges, arm bands or other similar devices that conform to the command's security badging system and are ready for immediate issue in the event of an accident or other emergency. Badges can be prepared in advance, with one or more badges marked and set aside for each local newspaper, several for each television station, etc. The badges can be taken to the accident scene by the public affairs office member assigned that station by the public affairs office Watch, Quarter and Station Bill; see Article G-0807b (Emergency Stations). Wearing the badge signifies to base security and law enforcement personnel that the wearer has been briefed on safety considerations regarding the accident site and the need to preserve the site for investigators. This briefing may have been presented at the annual briefing held by shore activities for local officials. See Article 0804 (Briefing Local Officials on Emergency Procedures). More importantly, the badge system can ease confusion at a busy, crowded site. Wearing such identification by reporters is voluntary in areas outside military installations but can be required of them on base.

Appendix E
OHM Technical Memorandum

OHM Remediation
Services Corp.
A Subsidiary of OHM Corporation

December 14, 1998

Contracting Officer
Naval Facilities Engineering Command, Southwest Division
Ms. Bozier H. Demaree, Code OZR.BD
Building 131
1220 Pacific Highway
San Diego, California 92132-5187

Attn: Ms. Lynn Marie Hornecker, Code 56MC.LMH

Re: ***Technical Memorandum***
Preliminary Field Response Action Strategy at
Former Water Tower Structure 222 site (MSC W2)
Marine Corps Air Station El Toro, California
SWDIV Contract No. N68711-93-D-1459
DCN SW 6140, Delivery Order No. 112

Introduction and Background

The purpose of this technical memorandum is to present existing information and a plan for field response action at the environmental Locations of Concern (LOC) identified as the Former Water Tower Structure 222 (MSC W2) site at the Marine Corps Air Station, El Toro, California (hereinafter referred to as "the Station").

Former water tower structure 222 had a capacity of 200,000 gallons and was built in 1943. Water tower 222 was out of commission for a number of years and was demolished and removed in September 1993. At present an open grass field occupies the former water tower 222 site. The water tank was used to maintain water pressure for the fire fighting systems.

A mercury release was reported from the pressure level instrument associated with controlling the water level and/or pressure from the tank. Discussion and information provided by the Station ROICC indicate that the mercury was spilled from the glass gauge due to malicious mischief by unknown parties.

OHM conducted preliminary site sampling activities at former water tower 222 site in October 1998 as directed for Deliver Order (DO) 112 for the Southwest Division Naval Facilities Engineering Command (SWDIV) under the Remedial Action Contract No. N68711-93-D-1459.

Summary of Field Sampling Activities

OHM performed field-sampling activities to ascertain whether or not a mercury release had occurred at former water tower structure 222 site, to identify the vertical and lateral

2031 Main Street ■ Irvine, California 92614-6509 ■ 714-263-1146 ■ FAX: 714-263-1147

extent of the mercury contamination, and to provide data for future planning of verification activities at MSC W2 site, if required.

Field sampling activities were conducted in accordance with the *Technical Memorandum, Sampling Strategy for Locations of Concern MSC W1 and MSC W2 (sites 86 and 87) Former Water Tanks at the Marine Corps Air Station El Toro, California, OHM Remediation Services Corp. October 16, 1998.*

OHM conducted the following field activities at MSC W2 site:

- Geophysical survey to identify utilities around the MSC W2 site.
- Sampling and Analysis of the soil samples.
- Land survey of the sampling points.

Geophysical Survey
The OHM subcontractor, Geovision Geophysical Services Inc, conducted a geophysical survey of the MSC W2 site on October 27, 1998. The geophysical survey was conducted to locate the underground utilities around the concrete vault. The geophysical survey data is provided in Appendix A.

Sampling and Analysis
Per the Technical Memorandum, OHM collected a total of 12 soil samples at two different depths (6" and 24" bgs) around the concrete vault of the MSC W2 site and from the soil inside the vault. Review of the soil sample analytical results confirmed that mercury was spilled at the site. The highest mercury concentration was detected at 1,140 mg/kg from the soil samples collected from the soil inside the concrete vault and 96.9 mg/kg from the area outside the concrete vault.

Copy of the OHM's sampling strategy Technical Memorandum is included in Appendix B. Laboratory Analytical Reports with Summary Table are included in Appendix C, Preliminary Field Sampling Analytical Reports.

Land Surveying
After completing the preliminary field sampling activities, soil sample locations were surveyed by a California-registered land surveyor from Calveda Surveying Inc. The land surveying data for MSC W2 site are presented as Appendix D.

Mercury Contaminated Soil Characterization and Management
Based on the review of the field sampling analytical results, Resource Conservation and Recovery Act (RCRA) regulation pertaining to spilled mercury and information obtained from the Station ROICC (Scott Kehe) concluded that mercury used at the former water tower was "used and weathered mercury". Therefore, spilled mercury at MSC W2 site was classified as "characteristic waste". Copies of the Station ROICC and OHM

memorandum explaining mercury waste characterization are included in Appendix E, Waste Characterization Information.

Field Response Action Task

On December 5, 1998, OHM received authorization from the SWDIV Navy to proceed with the field response action at MSC W2 site to remove surface and near subsurface mercury contaminated soil as an MCAS El Toro operational spill response action.

OHM will conduct the field response action at the MSC W2 site in accordance with the following regulatory approved plans:

- *Final Oil and Hazardous Substances Spill Prevention, Control and Countermeasure Plan and Oil and Hazardous Substances Spill Contingency Plan MCAS El Toro, dated November 3, 1997.*
- *OHM Remediation Services Corp. (OHM) 1995. Site Health and Safety Plan, RCRA Closure Building 673-T3 MCAS El Toro. Navy Contract N68711-93-D-1459, Delivery Order 0020 and DO 0070.*
- *Addendum to the original HSP, Amendment No. 70-05 dated December 14, 1998.*
- *OHM Remediation Services Corp. (OHM) 1997. Draft Supplemental Work Plan, Closure of Various Temporary Accumulation Areas and RCRA Facility Assessment Sites, Marine Corps Air Station, El Toro. Navy contract N68711-93-D-1459, Delivery Order 70.*

According to Station's *Final Oil and Hazardous Substances Spill Prevention, Control and Countermeasure Plan (SPCC) and Oil and Hazardous Substances Spill Contingency Plan,* MCAS EL Toro must address the response measures after a spill has occurred under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA regulation promulgated under 40 CFR 300 and 40 CFR 265 respectively.

A copy of the Station's Oil SPCC plan is included in Appendix F and a copy of the OHM's addendum to original HSP is included in Appendix G.

OHM will perform the following task and activities as part of field response action at the MSC W2 site;

- Excavation and removal of approximately 60 cubic yards of mercury contaminated surface and subsurface soil from the designated marked area from the inside and outside of the concrete vault as shown in. Figure 1, Site Plan included in Appendix H.

- Collection of approximately 10 confirmation soil samples from the bottom and wall of the excavated area and analysis of the samples for mercury using EPA method 7470, TCLP and STLC analysis on an as needed basis.

- Land surveying of the limits of the excavation area and confirmation soil sample locations.
- Backfilling of the excavated area using soil from the clean soil stockpile and/or imported clean fill material.
- Compaction of the excavated area using a backhoe to a minimum 85% relative compaction and match the area to the original grade.
- Off-site transportation and disposal of mercury-contaminated soil as a characteristic waste to an off-site RCRA approved facility.
- Completion of a Field Summary Report describing the field response action with all the necessary documentation as an attachment, including analytical data, land survey data and site photographs.

Should you have any questions or comments, please feel free to contact the undersigned at (714) 263-1146.

Sincerely,
OHM Remediation Services Corporation

Dhananjay Rawal
Project Engineer

William Sedlak, P.E.
Sr. Project Manager

Copies to: Per attached Letter of Transmittal

Attachments:

Appendix A Geophysical Survey Data
Appendix B Sampling Strategy Technical Memorandum
Appendix C Preliminary Field Sampling Analytical Reports
Appendix D Land Survey Data
Appendix E Waste Characterization Information
Appendix F Station's Oil SPCC Plan
Appendix G OHM's HSP Addendum
Appendix H Figure 1, Site Plan

Appendix A
Geophysical Survey Data

GE Vision
geophysical services
a division of Blackhawk Geometrics

GEOPHYSICAL CLEARANCE FORM

PROJECT NAME: OHM/IT PROJECT NUMBER
LOCATION MCAS El Toro
DATE 10/27/98 TIME 1020hrs
SITE DESCRIPTION: Mercury Spill Area near Bldg. 276
Former Surface H2O tank 222

SCOPE OF WORK: Limited clearance within 5 feet of vault as requested by OHM
(More ~~thorough~~ complete clearance not necessary as only hand augering to be conducted)

GEOPHYSICAL EQUIPMENT

GROUND PENETRATING RADAR (GPR) UNIT: _____ MAGNETOMETER: _____
ELECTROMAGNETIC (EM): _____ UTILITY LOCATOR (UL): Metrotech 9890
METAL DETECTOR (MD): Fisher Gemini 3 OTHER: _____

PROCEDURES

- [x] 1. Inspect available utility maps and trace all recorded utilities in the vicinity of the target using UL, and if necessary GPR. (Sanitary sewer, storm sewer, communication, electric*, water*
- [ ] 2. Review available geophysical data: Magnetic EM-31 EM-61 gas)
- [x] 3. Inspect site and trace all pipes evident from field observations (i.e. manhole, vault, valve, cracked asphalt, pipe at surface, etc.)
- [x] 4. Sweep target area with UL in passive 50/60 Hz mode.
- [x] 5. Hold UL transmitter over target / at several locations around target area and circle at about a 40-foot radius with receiver tracing all utilities encountered.
- [x] 6. Sweep target area with MD.
- [ ] 7. Conduct perpendicular / multiple GPR profiles through target area (see map on reverse).
  GPR antenna: _____
  GPR range: _____ Estimated depth penetration *: _____
  * utility lines or other features below this depth cannot be detected using GPR
- [ ] 8. Other _____

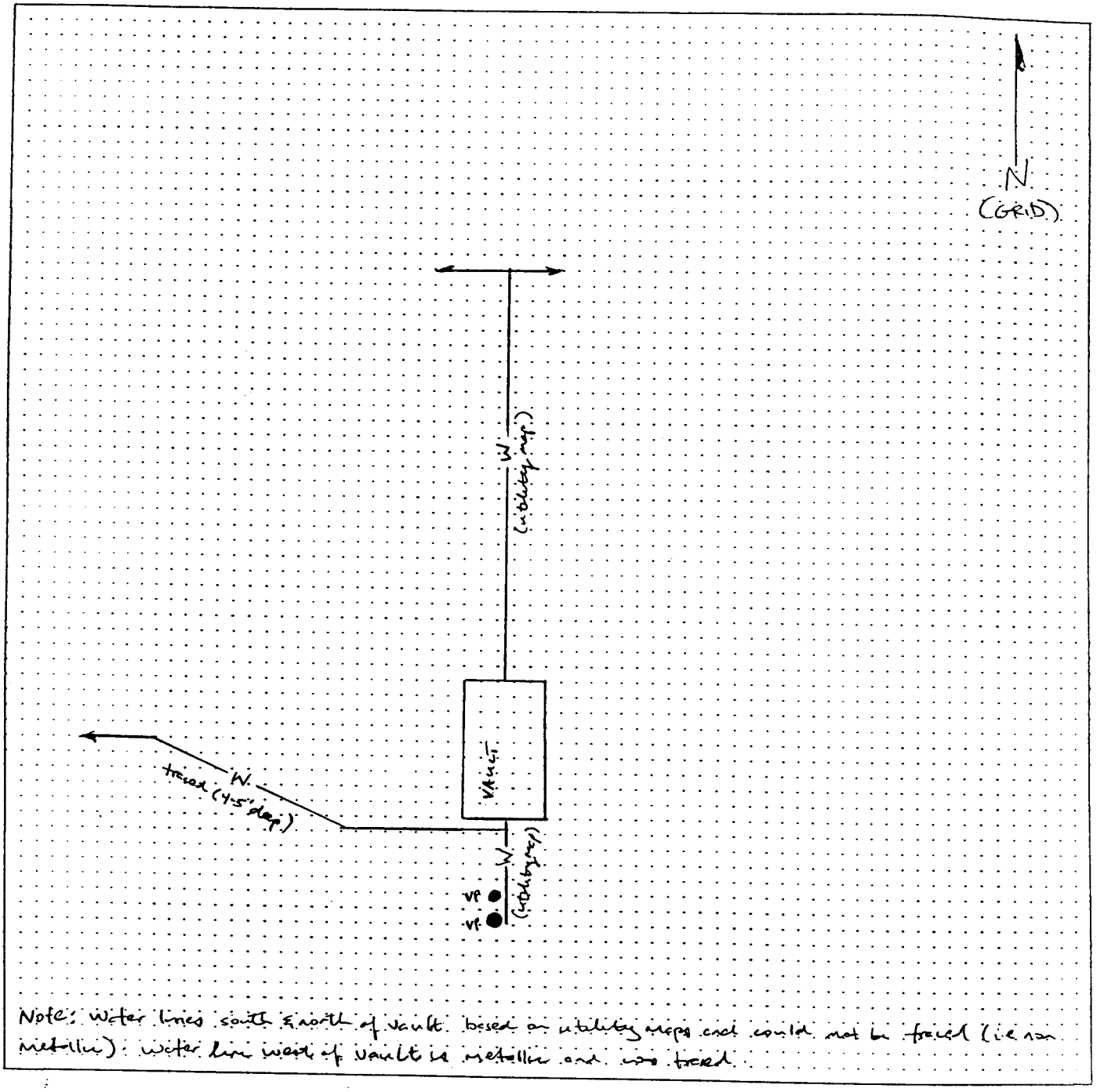
Note: vault within footprint of former tank.

FIELD PERSONNEL: A. Martin, A. Jack

SIGNATURE: [signature]

CLEARFRM.DOC 02/98

GEOPHYSICAL SURVEY MAP



LEGEND

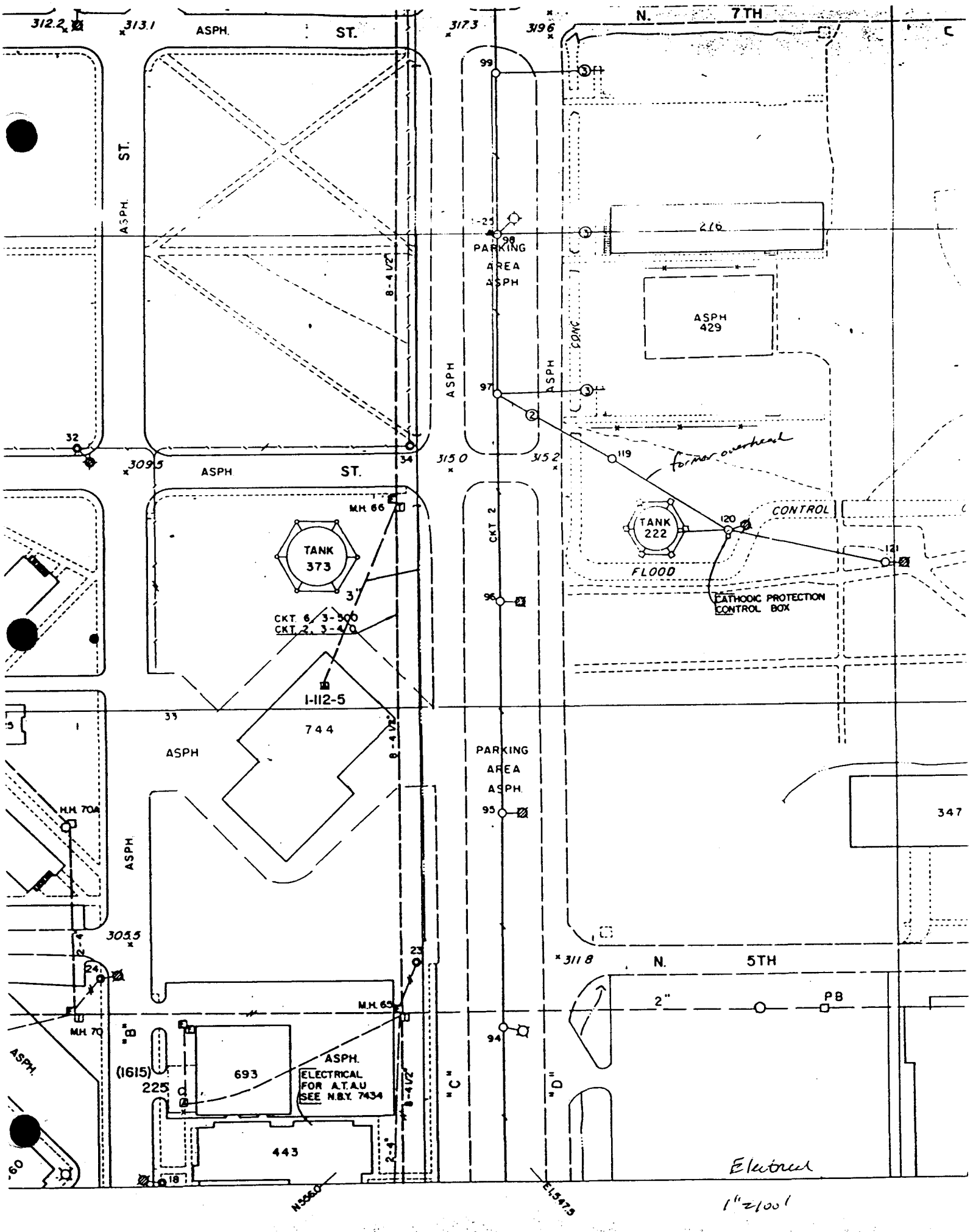
GEOPHYSICAL TRAVERSE

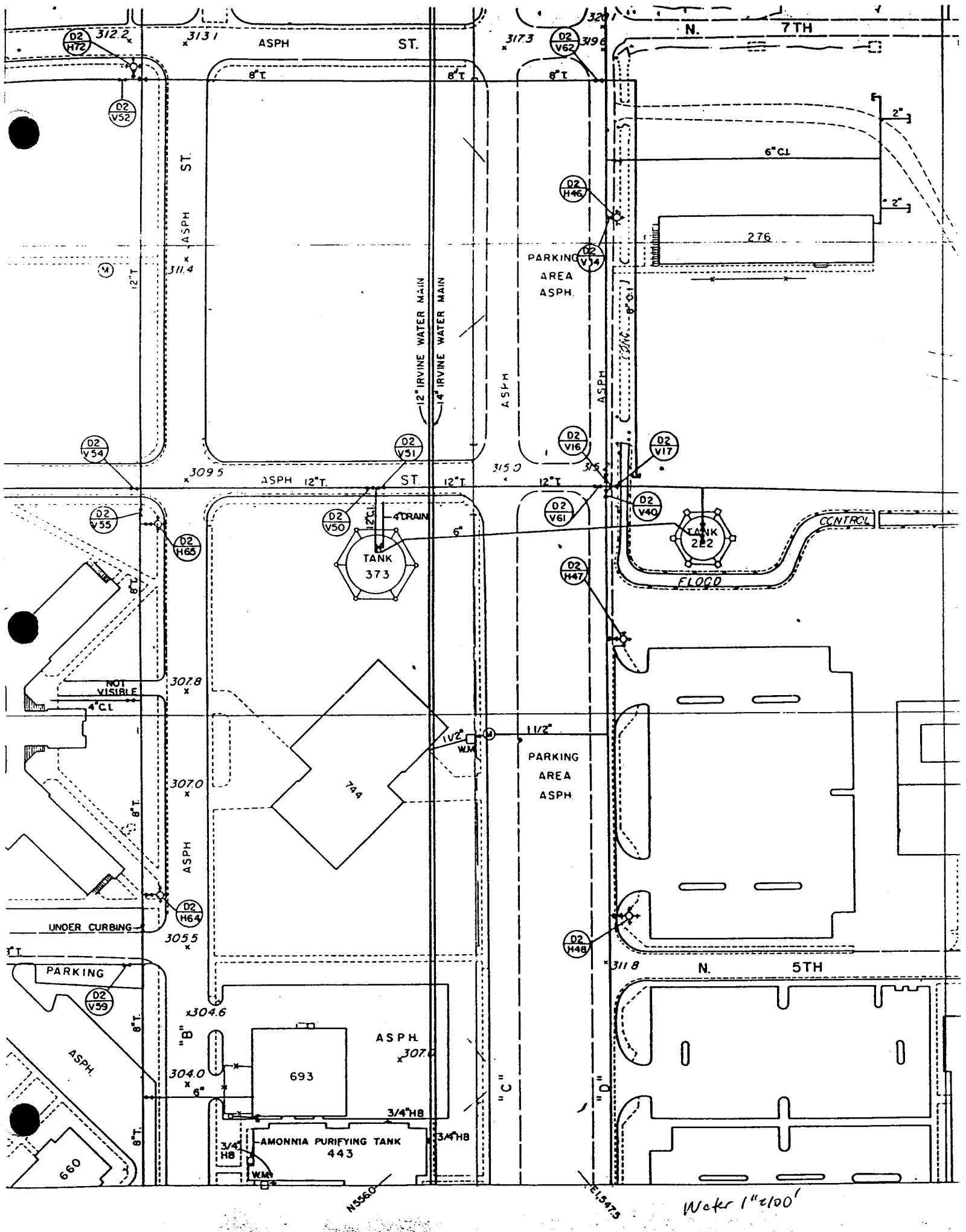
UTILITY:
E=ELECTRICAL, T=TELEPHONE,
G=GAS, S=SEWER, SD=STORM DRAIN,
W=WATER, P=PRODUCT LINE,
V=VENT LINE, L=UNKNOWN LINE VP = vertical pipe

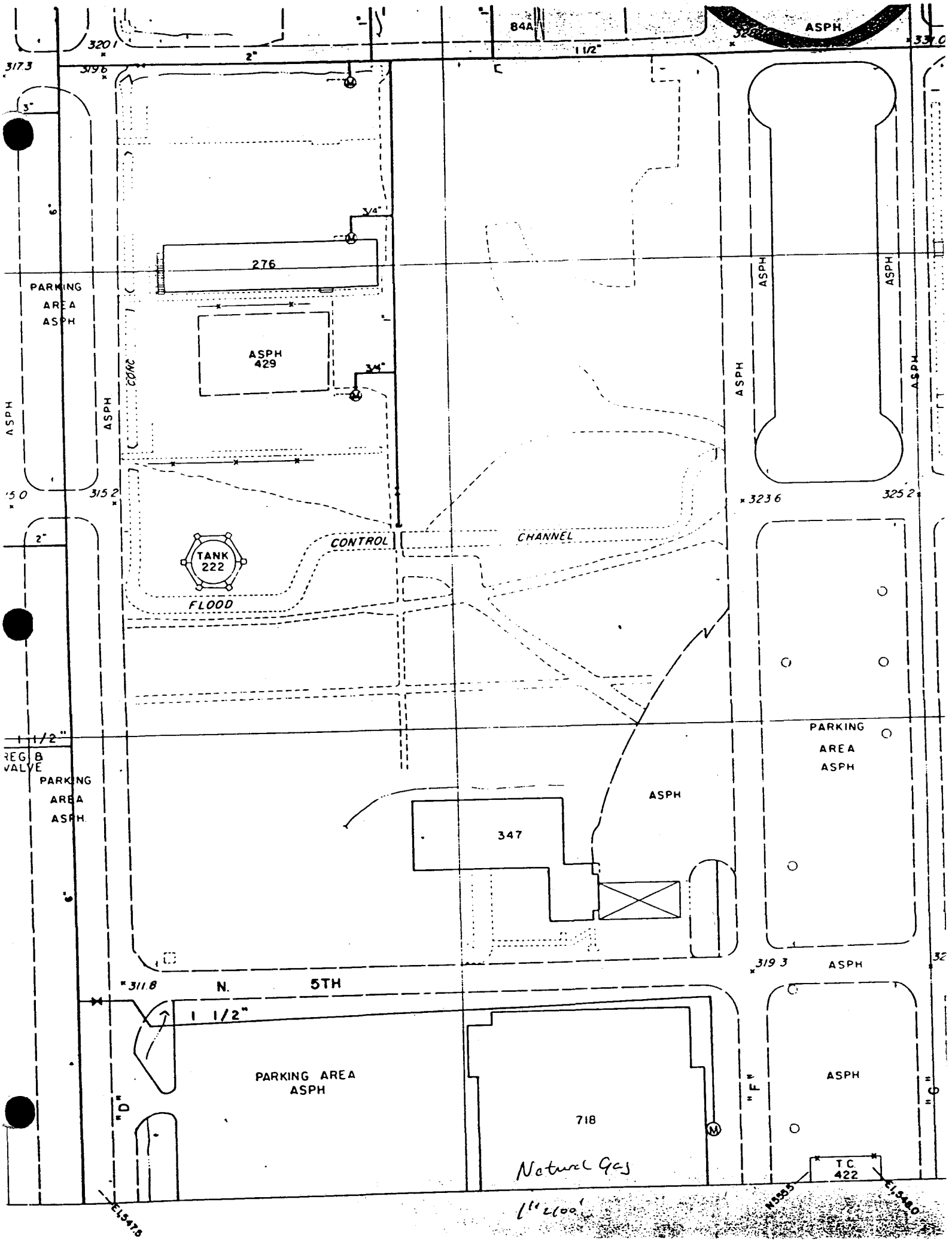
SCALE:
0 5 10 FEET

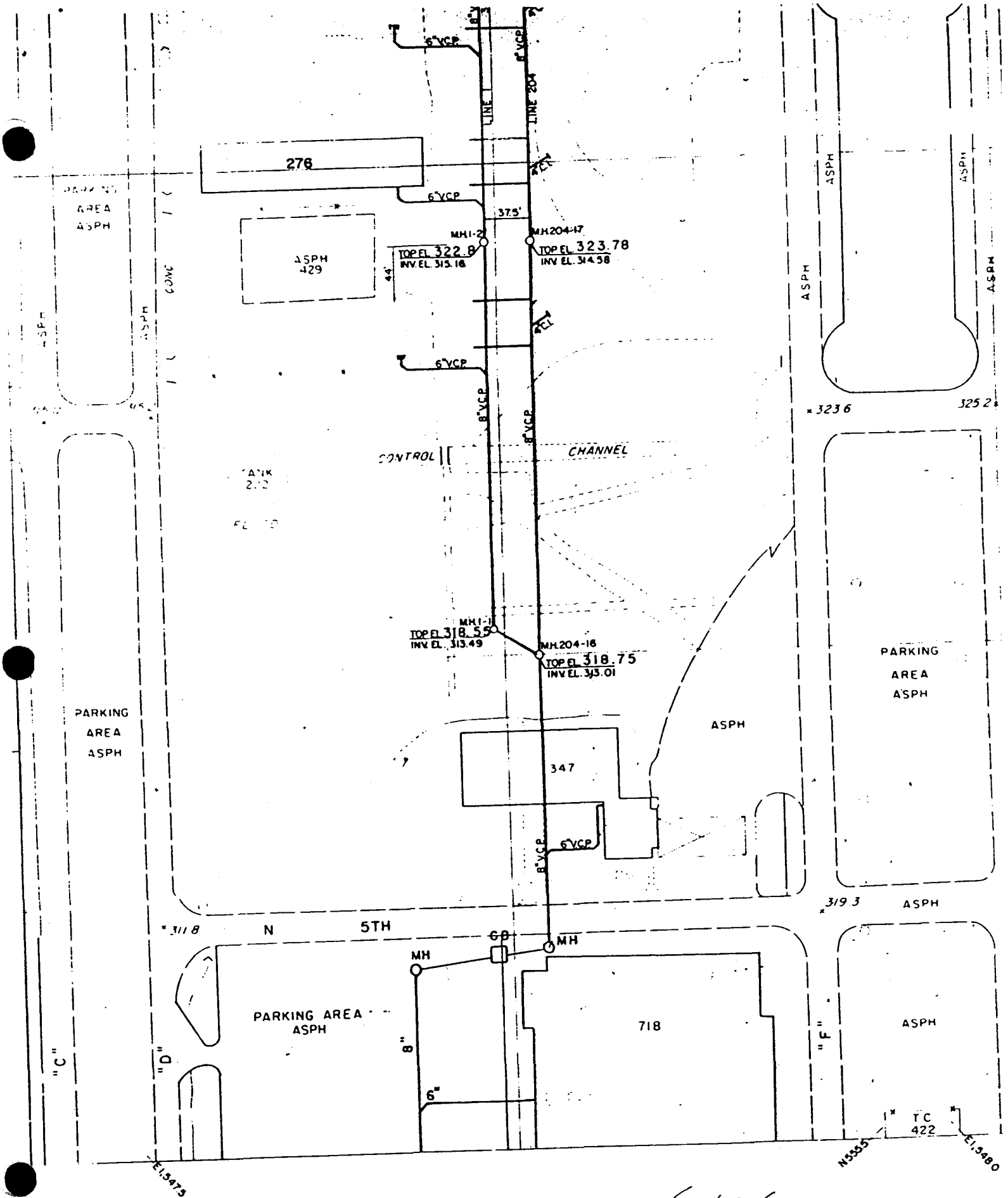
NOTE: All geophysical methods have limitations dependent on instrumentation used, soil conditions, and local cultural noise and other interference. The geophysical conditions interpretation presented above comprises a declaration of the geophysicist's professional judgment using methods and a degree of care and skill ordinarily exercised, under similar circumstances, by reputable members of their profession practicing in the same or similar locality. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations or ordinances. If you require further information about the limitations of the instruments and/or methods used on this project please contact GEOVision Geophysical Services.

CLEARFIN.DOC 6/96


N. 7TH
ASPH.
ST.
312.2
313.1
317.3
319.6
99
98
97
96
95
94
119
120
121
32
34
23
24
18
PARKING AREA ASPH
ASPH
CONC
216
ASPH 429
former overhead
TANK 222
CONTROL
FLOOD
CATHODIC PROTECTION CONTROL BOX
CKT 2
8-4 1/2"
315.0
315.2
309.5
M.H. 66
TANK 373
3"
CKT. 6, 3-500
CKT. 2, 3-4/0
I-112-5
744
PARKING AREA ASPH.
M.H. 70A
305.5
M.H. 65
M.H. 70
"B"
(1615)
225
693
ASPH.
ELECTRICAL FOR A.T.A.U SEE N.B.Y. 7434
443
"C"
"D"
311.8
N. 5TH
2"
PB
347
N3560
E15475
Electrical
1"=100'


N. 7TH
ASPH
ST.
8"T.
D2 H72
312.2
313.1
317.3
D2 V62
319.6
D2 V52
2"
6"CL
D2 H46
276
D2 V54
PARKING AREA ASPH.
ASPH
311.4
12"T.
12" IRVINE WATER MAIN
14" IRVINE WATER MAIN
D2 V16
D2 V17
D2 V54
309.5
315.0
12"T.
D2 V51
D2 V55
D2 V50
4" DRAIN
6"
D2 V61
D2 V40
TANK 373
TANK 222
CONTROL
FLOOD
D2 H65
D2 H47
NOT VISIBLE
307.8
4"CL
1 1/2"
W.M.
PARKING AREA ASPH.
744
307.0
D2 H64
UNDER CURBING
305.5
D2 H48
311.8
N. 5TH
PARKING
D2 V59
304.6
"B"
ASPH.
693
304.0
"C"
"D"
3/4"H8
AMONNIA PURIFYING TANK 443
660
N3560
E1,347.5
Water 1"=100'


84A
ASPH.
320.1
2"
1 1/2"
317.3
319.6
3"
6"
3/4"
276
PARKING
AREA
ASPH
ASPH
429
CONC
ASPH
ASPH
ASPH
ASPH
ASPH
ASPH
315.0
315.2
323.6
325.2
2"
TANK
222
CONTROL
CHANNEL
FLOOD
1 1/2"
REG. B
VALVE
PARKING
AREA
ASPH.
ASPH
347
PARKING
AREA
ASPH
319.3
ASPH
6"
311.8
N.
5TH
1 1/2"
PARKING AREA
ASPH
"D"
718
"F"
ASPH
"C"
Natural Gas
T.C.
422
EL.547.5
N.5535
EL.540.0
1" = 100'

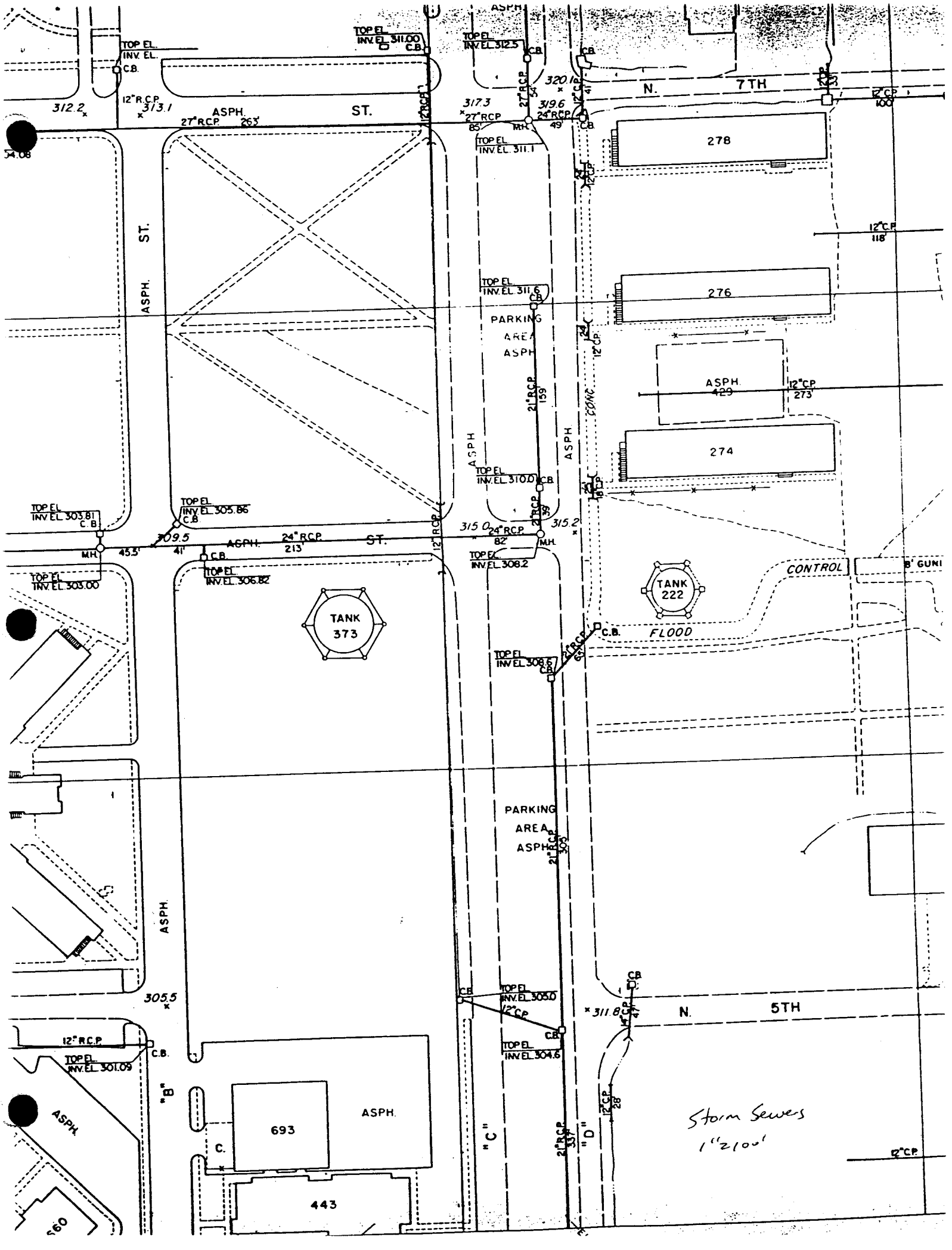


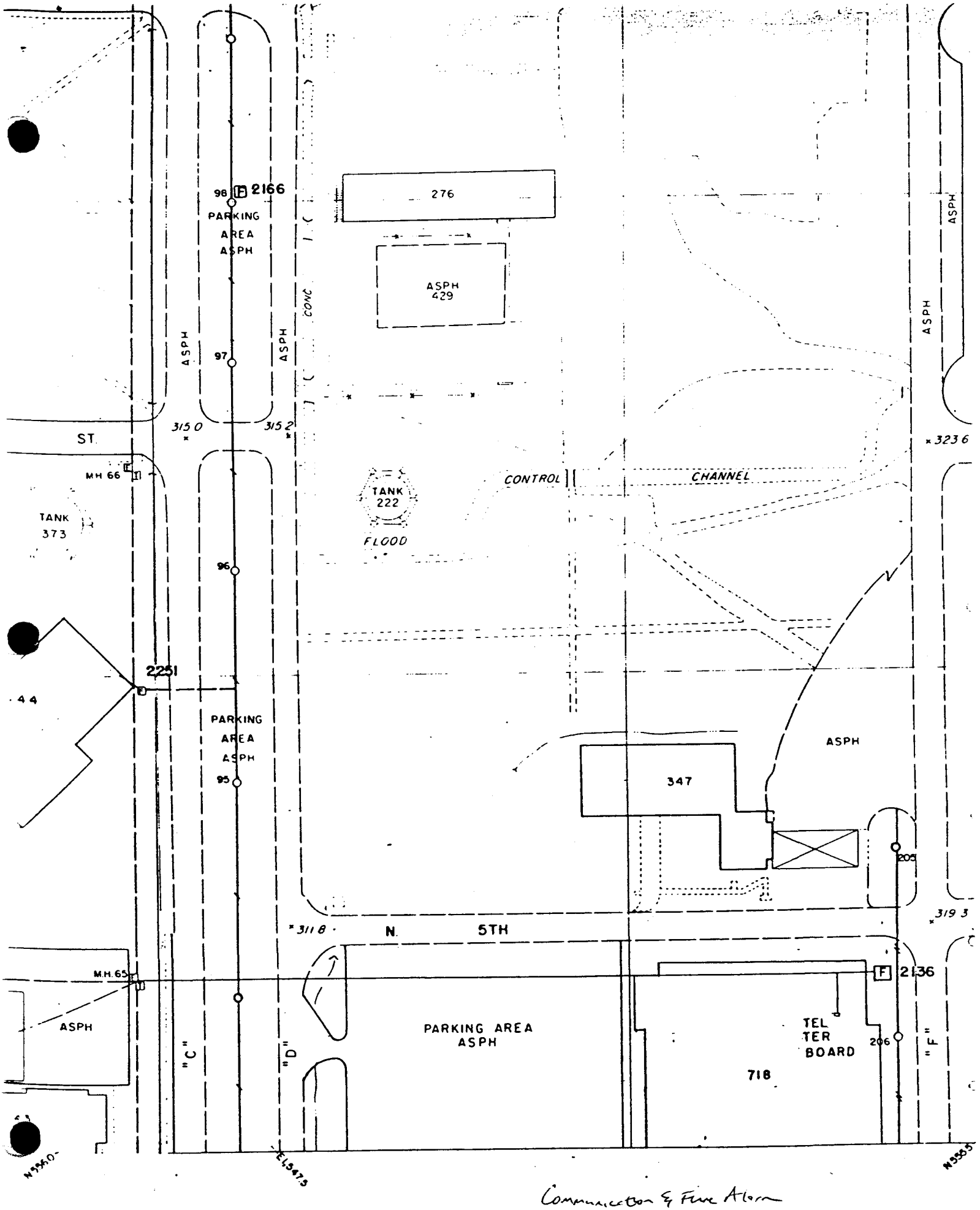
Sanitary Sewer

1"=100'

1200

300' 400' 500'


ASPH.
ST.
N. 7TH
N. 5TH
278
276
274
ASPH. 429
TANK 373
TANK 222
693
443
PARKING AREA ASPH.
CONTROL
FLOOD
"B"
"C"
"D"
Storm Sewers
1"=100'



Communication & Fire Alarm

SCALE 1:1200

Appendix B
Sampling Strategy Technical Memorandum

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation

MSC W2,

October 16, 1998

Mr. Dave Jesperson, Code 57CS1.DJ
Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway
San Diego, CA 92132-5187

Attention: Ms. Lynn Hornecker, 56MC.LMH

Subject: Sampling Strategy, for Locations of Concern MSC W1 and MSC W2, (Sites 86 and 87) Former Elevated Water Tanks
Contract N68711-93-D-1459, Delivery Order 112,
Remediation of Various Underground Storage Tank Sites at MCAS El Toro, California

Dear Ms. Hornecker:

OHM has developed the attached Sampling Strategy for the mercury releases at Structures 222 and 373, (former elevated water tanks) based on your requests of June 1, 1998. Site visits were made to the locations of both former structures to determine the best approach. Several discussions were held with Scott Kehe at MCAS El Toro to aid in determining the extent of the mercury use and release at the sites.

As we have discussed, the current condition of the vault is unprotected and poses a possible safety risk to persons walking across the site. OHM proposes to obtain and place 2" x 6" wood planks across the top of the vault to replace those which have been damaged or removed over the years. In addition, if the Navy concurs, we could place dirt into the two old water pipes (12-inch and 8-inch diameters) that were only filled to about 3 feet below grade, bringing the fill up to current grade.

We are ready to implement this sampling following your concurrence with our strategy.

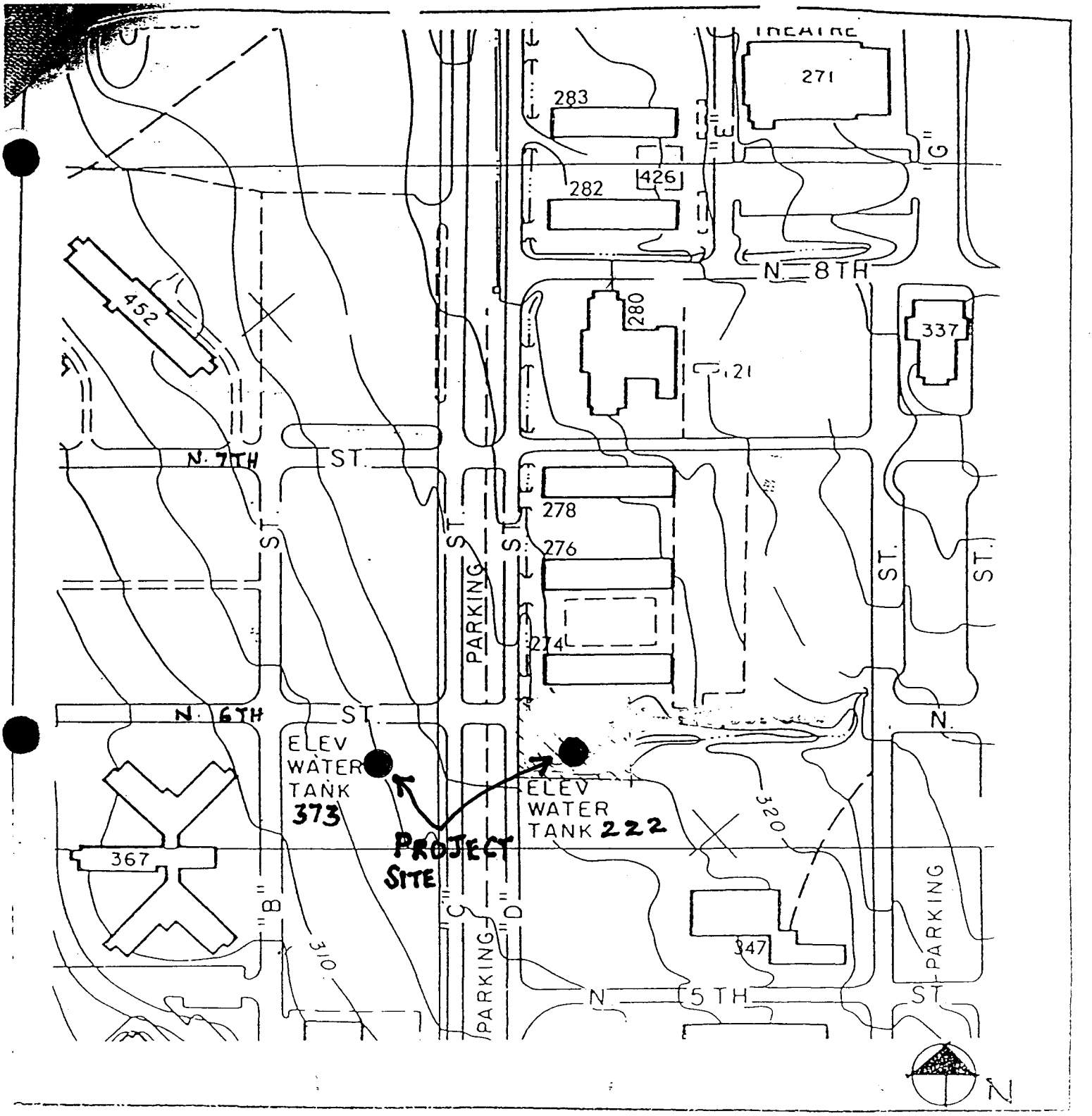
If you have any questions or need additional information please call me.

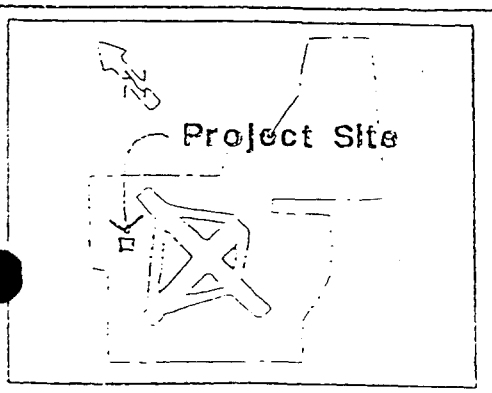
Sincerely,

William Sedlak
Sr. Project Manager

cc: L. Holloway, SWDIV, COTR
Scott Kehe, ROICC
OHM PMO File (1C/1E)
Project File, B.01
Dhananjay

2031 Main Street ■ Irvine, California 92614-6509 ■ 714-263-1146 ■ FAX: 714-263-1147





MCAS ELTORO
SITE MAP

FIGURE 1

Sampling Strategy for Locations of Concern Sites 86 and 87
(Former Elevated Water Tanks)

Background

This document covers the sampling and analysis strategy for a reported mercury release at two locations, Site 86 (Structure 373) and Site 87 (Structure 222) at Marine Corps Air Station (MCAS), El Toro (the Station). Each of these two sites were occupied by an elevated water storage tank, (Figure 1) used to provide water pressure for fire protection for the main area of the station.

The Structure 222 tank had a capacity of 200,000 gallons and was built in 1943. The Structure 373 tank had a capacity of 300,000 gallons and was built in 1953. Both tanks were out of commission for 20 years before they were demolished and removed in September 1993. At the present time both sites are occupied by grass fields.

A mercury release was reported from the pressure/level instruments associated with controlling the water level and/or pressure from these tanks. Discussions and information provided by the MCAS El Toro ROICC (Scott Kehe) indicate that the mercury was only located at one of the two sites, on the piping that interconnected the tanks. No other apparent source of mercury is identified for these sites.

Chemicals of Concern

It is reported that the pressure or level instruments/controls for the water tanks level in the tank released mercury on the ground at the location of the instrument. Mercury is silvery white, heavy, mobile, liquid metal that is insoluble in water. If dropped, it scatters on the ground as tiny droplets. Mercury is the only Chemical of Concern at the sites.

Sampling Strategy

Both of the water tanks were more than 100 feet high and were supported by six legs in a hexagonal pattern (Figure 2). The location of the instrumentation is reported to be in or adjacent to a concrete vault located under Structure 222. Since the time and the amount of release is unknown, soil samples will be collected from inside the vault and within an area surrounding the vault at the former Structure 222 site. The vault (which is still present) is rectangular, approximately 5 feet by 8 feet and between 5 and 6 feet deep. The vault has dirt in the bottom, but the depth of the dirt and the presence of a concrete floor are not known.

OHM proposes to collect soil samples from 8 locations around the vault at the Structure 222 site. The sample locations will be at each corner and the middle of each side of the vault, approximately 2 to 5 feet from the vault. Three or four samples will be collected inside the vault, depending on the amount and depth of soil found in the vault. The proposed sample locations are shown on Figure 2.

The samples will be collected from soil borings which will be hand augered. At each sample location, two soil samples will be collected. One soil sample will be collected within the top 6 inches, and a second soil sample will be collected at approximately 24 to 30 inches below ground surface. Soil

sampling procedures and analyses identified in the Delivery Order 070, Final Supplemental Work Plan (dated September 26, 1997) will be used.

Soil samples will be collected in 8-ounce glass jars, including QA/QC samples. The samples collected outside of the vault will only have the shallow sample (collected from the top 6 inches) analyzed unless mercury is detected. In the case where mercury is detected at an elevated amount, the corresponding deep sample will be analyzed.

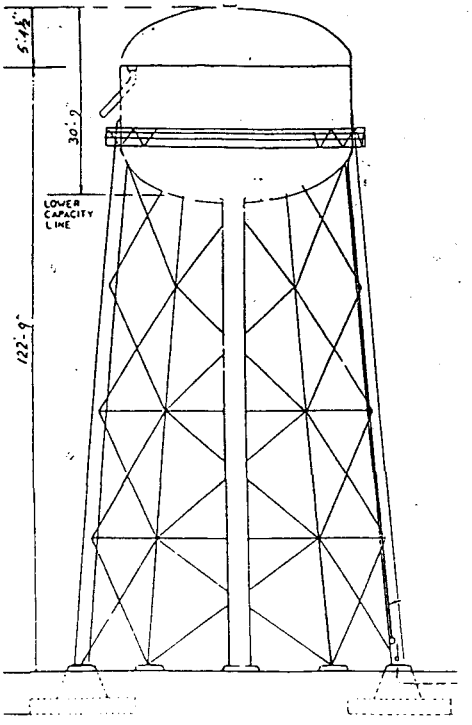
Chemical Analysis

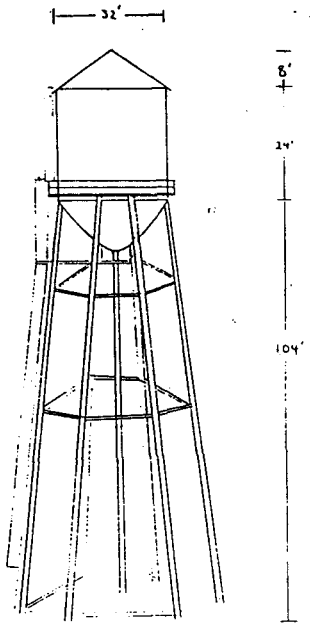
All samples will be labeled in accordance with the Final Supplemental Work Plan, placed into a cooler with ice and shipped to the laboratory for analysis. Mercury is only Chemical of Concern at the site, so all soil samples will be analyzed for mercury using EPA Method 7471.

Remediation

In the event that mercury is found in the soil inside the vault, the soil within the vault will be removed and placed into drums. These drums will be disposed of offsite, based on the level of mercury found and the resulting hazardous/nonhazardous classification.

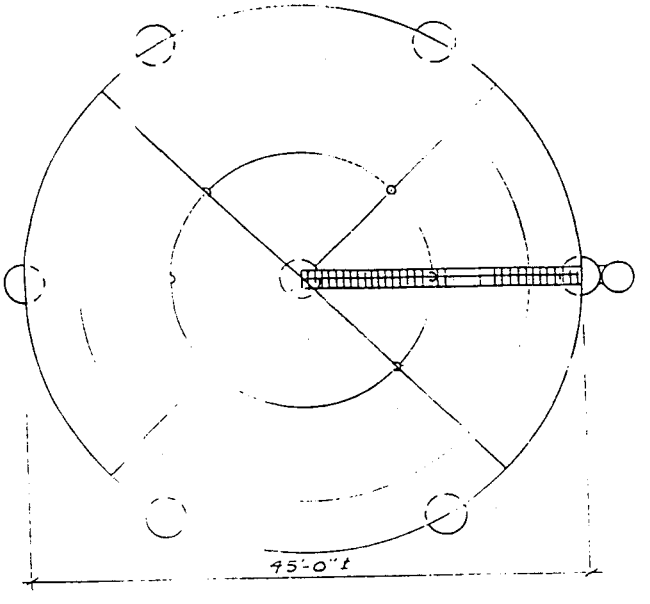
If mercury is found in any of the shallow soil samples at an elevated concentration (i.e., above the background level of 0.044 mg/kg) and not in the deeper sample or surrounding samples, the soil around the sample will be excavated to the depth of the deeper sample, or extent of the surrounding samples. At this point additional samples will be collected to confirm the removal of the soil containing mercury. This soil will be placed into drums and disposed of according to the classification based on the analytical results. The Residential and Industrial Preliminary Remedial Goals (PRG) (Region IX, May 1, 1998) for mercury compounds are 22 mg/kg and 560 mg/kg, respectively.





STRUCTURE 222

STRUCTURE 373



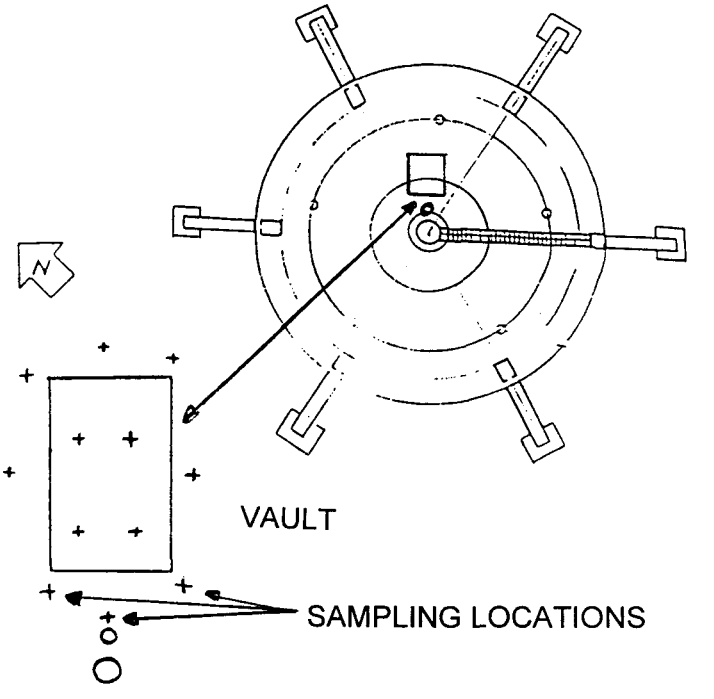


FIGURE 2
ELEVATED WATER TANKS , STRUCTURES 222 AND 373
SITE ORIENTATION AND SAMPLE LOCATIONS

SOUTHWESTNAVFACENGCOM
Code 56MC.LMH
1420 Kettner Blvd, Suite 507
San Diego, CA 92101
Telephone: (619) 532-4162 Fax (619) 532-4160

File: LMH0601E.DOC

For Discussion Only
1 June 1998

RAC / DO #112
Continued Free Product Recovery at the Tank 398 Site and Other Projects
MCAS El Toro
Contract N68711-93-D-1459

LOC Identification	Description	Service Request ID
LOCs 82, 84, and 85	82 Desert Storm Staging Area near DRMO Yard 3 84 Pesticide Storage Area near Bldg 1687 85 Pesticide Storage Area near Bldg 464 Planning: Utilize sampling procedures and test methods that have been identified in the DO #20/DO #70 RCRA sampling plans. Assume that metals, petroleum hydrocarbons, and VOCs are contaminants of potential concern. Field Work: Assume ten shallow soil borings (5 to 10 feet deep) at each LOC. Reporting: Assume reports are submitted to DTSC (comparable to RFA sites)	ET98-012 Investigate, remediate, and close sites.
LOCs 86 & 87	86 Former Elevated Water Tank, West Tower (reported mercury release from level gage) 87 Former Elevated Water Tank, East Tower (reported mercury release from level gage) Planning: Utilize sampling procedures and test methods that have been identified in the DO #20/DO #70 RCRA sampling plans. Assume that mercury is the only chemical of potential concern. Field Work: Assume ten shallow soil borings (5 to 10 feet deep) at each LOC. Reporting: Assume reports are submitted to DTSC (comparable to RFA sites)	ET98-013 Investigate, remediate, and close sites.

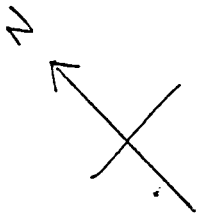
Appendix C
Preliminary Field Sampling Analytical Reports

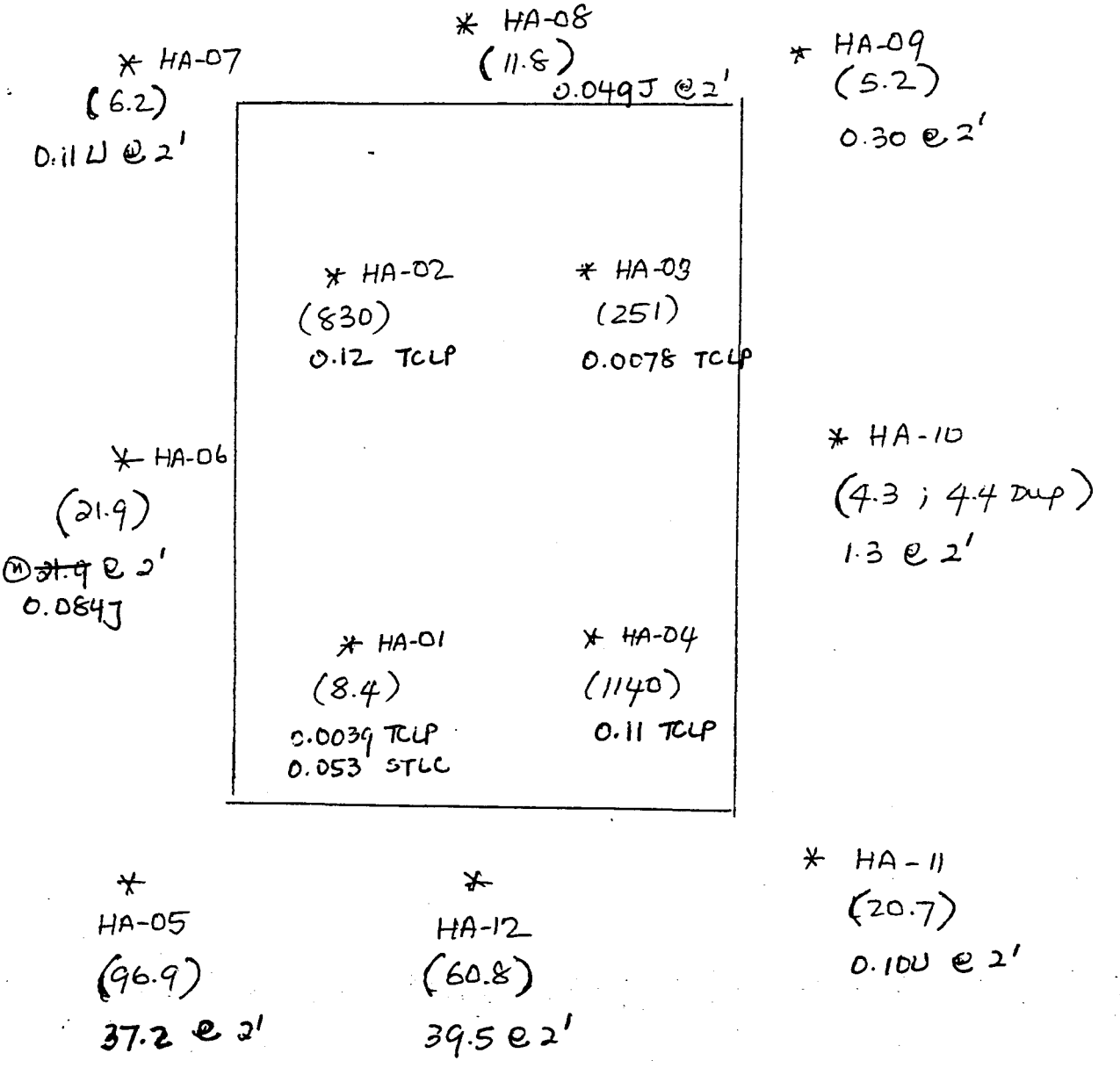
Table 2 - 1
Summary of Soil Sample Analytical Results - Location 87

Sample Number	Sample Location	Date Collected	Mercury mg/kg	TCLP Mercury mg/L	STLC Mercury mg/L
20242-615	LOC-87-HA01	10/28/98	8.4	0.0039	0.053
20242-616	LOC-87-HA02	10/28/98	830	0.12	NA
20242-617	LOC-87-HA03	10/28/98	251	0.0078	NA
20242-618	LOC-87-HA04	10/28/98	1140	0.11	NA
20242-619	LOC-87-HA05	10/28/98	96.9	NA	NA
20242-620	LOC-87-HA05	10/28/98	37.2	NA	NA
20242-621	LOC-87-HA06	10/28/98	21.9	NA	NA
20242-622	LOC-87-HA06	10/28/98	0.084 J	NA	NA
20242-623	LOC-87-HA07	10/28/98	6.2	NA	NA
20242-624	LOC-87-HA07	10/28/98	0.11 U	NA	NA
20242-625	LOC-87-HA08	10/28/98	11.8	NA	NA
20242-626	LOC-87-HA08	10/28/98	0.049 J	NA	NA
20242-627	LOC-87-HA09	10/28/98	5.2	NA	NA
20242-628	LOC-87-HA09	10/28/98	0.3	NA	NA
20242-629	LOC-87-HA10	10/28/98	4.3	NA	NA
20242-630	LOC-87-HA10	10/28/98	4.4	NA	NA
20242-631	LOC-87-HA10	10/28/98	1.3	NA	NA
20242-632	LOC-87-HA11	10/28/98	20.7	NA	NA
20242-633	LOC-87-HA11	10/28/98	0.1 U	NA	NA
20242-634	LOC-87-HA12	10/28/98	60.8	NA	NA
20242-635	LOC-87-HA12	10/28/98	39.5	NA	NA

LOC-87

Mercury Result in mg/kg





TCLP = all samples

STLC = 20 > X > 2.0 ppm

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

217254

FORM 0019 REV. 2-97

OHM's LAB COORDINATOR: Thizar Tintut-Williams	LAB COORDINATOR'S PHONE: (949) 263-1146	LAB COORDINATOR'S FAX: (949) 263-1147	LABORATORY SERVICE ID: Q134835	LABORATORY CONTACT: KEITH ALLCKSON	MAIL REPORT (COMPANY NAME): OHM Remediation
PROJECT NAME: LOC-87 (Structure 222)	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 20242	LABORATORY PHONE: (714) 258-8610	LABORATORY FAX:	RECIPIENT NAME: Dieclupe Ishida
PROJECT CONTACT: Thizar Tintut-Williams	PROJECT PHONE NUMBER: (949) 263-1146	PROJECT FAX: (949) 263-1147	LABORATORY ADDRESS: QUANTERRA		ADDRESS: 2031 Main St.
PROJECT ADDRESS: MCAS EL TORO	CITY, STATE AND ZIPCODE: SANTA ANA, CA	CLIENT: LYNN HONNECKER - SWDIV	CITY, STATE AND ZIPCODE: Santa Ana, CA		CITY, STATE, AND ZIPCODE: Irvine, CA
PROJECT MANAGER: BILL SEDLAK	PROJECT MANAGER'S PHONE: (949) 263-1146	PROJECT MANAGER'S FAX: (949) 263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: Hg, 7470	TCLP / Hg	STLC / Hg						Comments
1	20242-615	Soil	10/28/98	0805	4°C	/	III	5-DAY	X	X	X						
2	20242-616	Soil	10/28/98	0810	4°C	/	III	5-DAY	X	X							
3	20242-617	Soil	10/28/98	0813	4°C	/	III	5-DAY	X	X							
4	20242-618	Soil	10/28/98	0815	4°C	/	III	5-DAY	X	X		HOLD					
5	20242-619	Soil	10/28/98	0825	4°C	/	III	5-DAY	X	~~X~~							
6	20242-620	Soil	10/28/98	0830	4°C	/	III	5-DAY	X								~~HOLD~~ (71) 11/5/98
7	20242-621	Soil	10/28/98	0835	4°C	/	III	5-DAY	X	~~X~~		HOLD					
8	20242-622	Soil	10/28/98	0837	4°C	/	III	5-DAY	X								~~HOLD~~ (71) 11/5/98
9	20242-623	Soil	10/28/98	0840	4°C	/	III	5-DAY	X	~~X~~	~~X~~	HOLD					
10	20242-624	Soil	10/28/98	0842	4°C	/	III	5-DAY	X								~~HOLD~~ (71) 11/5/98

SAMPLES COLLECTED BY: [signature]

COURIER AND AIR BILL NUMBER:

COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[signature]	[signature]	10/28/98	1105	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1. LOC87-HA01 @ 3"	X		X	
2. LOC87-HA02 @ 3"	X		X	
3. LOC87-HA03 @ 3"	X		X	
4. LOC87-HA04 @ 3"	X		X	
5. LOC87-HA05 @ 6"	X		X	
6. LOC87-HA05 @ 2'	X		X	
7. LOC87-HA06 @ 6"	X		X	
8. LOC87-HA06 @ 2'	X		X	
9. LOC87-HA07 @ 6"	X		X	
10. LOC87-HA07 @ 2'	X		X	

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

COMPLETE 10/27

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
217253
FORM 0019 REV. 2-97

OHM's LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
Thizar Tintil Williams	(949) 263-1146	(949) 263-1147	Q134835	Keith Aleckson	OHM Remediation

PROJECT NAME	PROJECT LOCATION	PROJECT NUMBER	LABORATORY PHONE	LABORATORY FAX	RECIPIENT NAME
LOC 87 (Structures 222)	MCAS EL TORO	20242	714 258-8610		Duane Ishida

PROJECT CONTACT	PROJECT PHONE NUMBER	PROJECT FAX	LABORATORY ADDRESS	ADDRESS
Thizar Tintil Williams	(949) 263-1146	(949) 263-1147	QUANTERRA	2031 Main Street

PROJECT ADDRESS	CITY, STATE AND ZIPCODE	CLIENT	CITY, STATE AND ZIPCODE	CITY, STATE, AND ZIPCODE
MCAS EL TORO	Santa Ana, CA	Lynn Hinrichs - SHDIV	Santa Ana, CA	Irvine, CA

PROJECT MANAGER	PROJECT MANAGER'S PHONE	PROJECT MANAGER'S FAX
BILL SEDLAK	(949) 263-1146	(949) 263-1147

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: Mercury	TCLP/Hg	STLC/Hg					Comments
1	20242.625	Soil	10/21/98	0845	4°C	1	IV	5 DAY	X	~~X~~	~~X~~	Hold				
2	20242.626	Soil	10/21/98	0850	4°C	1	III	5 DAY	X							~~HOLD~~ (n) 11/5/98
3	20242.627	Soil	10/21/98	0852	4°C	1	III	5 DAY	X	~~X~~	~~X~~	Hold				
4	20242.628	Soil	10/21/98	0855	4°C	1	III	5 DAY	X							~~HOLD~~ (n) 11/5/98
5	20242.629	Soil	10/21/98	0857	4°C	1	III	5 DAY	X	~~X~~	~~X~~	Hold				
6	20242.630	Soil	10/21/98	0858	4°C	1	III	5 DAY	X	~~X~~	~~X~~	Hold				
7	20242.631	Soil	10/21/98	0900	4°C	1	III	5 DAY	X							~~HOLD~~ (n) 11/5/98
8	20242.632	Soil	10/21/98	0905	4°C	1	III	5 DAY	X	~~X~~	Hold					
9	20242.633	Soil	10/21/98	0907	4°C	1	III	5 DAY	X							~~HOLD~~ (n) 11/5/98
10	20242.634	Soil	10/21/98	0910	4°C	1	III	5 DAY	X	~~X~~	Hold					

SAMPLES COLLECTED BY: [signature]
COURIER AND AIR BILL NUMBER:
COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[signature]	[signature]	10/21/98	1105	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section For Project Personnel Only Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1. LOC87-HA08 @ 6"	X		X	
2. LOC87-HA08 @ 2'	X		X	
3. LOC87-HA09 @ 6"	X		X	
4. LOC87-HA09 @ 2'	X		X	
5. LOC87-HA10 @ 6"	X		X	
6. LOC87-HA10 @ 1'	X		X	X
7. LOC87-HA10 @ 2'	X		X	
8. LOC87-HA11 @ 6"	X		X	
9. LOC87-HA11 @ 2'	X		X	
10 LOC87-HA12 @ 6"	X		X	

Comments

(5) and (6) are duplicates.

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
217255
FORM 0019 REV. 2-97

OHM's LAB COORDINATOR: Nizar Tinteil-Williams	LAB COORDINATOR'S PHONE: (949)263-1146	LAB COORDINATOR'S FAX: (949)263-1147	LABORATORY SERVICE ID: Q134835.	LABORATORY CONTACT: Keith Aleckson	MAIL REPORT (COMPANY NAME): OHM Remediation
PROJECT NAME: OC.87 (Structure 229)	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 20292	LABORATORY PHONE: (714)258.8610	LABORATORY FAX:	RECIPIENT NAME: Dwayne Ishida
PROJECT CONTACT: Nizar Tinteil-Williams	PROJECT PHONE NUMBER: (949)263.1146	PROJECT FAX: (949)263.1147	LABORATORY ADDRESS: QUANTERRA		ADDRESS: 2031 Main St.
PROJECT ADDRESS: MCAS EL TORO	CITY, STATE AND ZIPCODE: Santa Ana, CA	CLIENT: Lynn Hornecker. SWDIV.	CITY, STATE AND ZIPCODE: Santa Ana, CA		CITY, STATE, AND ZIPCODE: Irvine, CA
PROJECT MANAGER: Bill Sedlak	PROJECT MANAGER'S PHONE: (949)263-1146	PROJECT MANAGER'S FAX: (949)263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: Mercury								Comments
1	202112-635	Soil	10/1/98	0920	4C	1	III	5 DAY	X								~~HOLD~~ (initials) 11/5/98
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

(initials) 10/2/98

SAMPLES COLLECTED BY: Dwayne (signature)

COURIER AND AIR BILL NUMBER:

COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
Dwayne (signature)	Gideon Coslane (signature)	10/1/98	1105	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	G	C	F	QC
LOC 87-12 HA @ 2'	X		X	

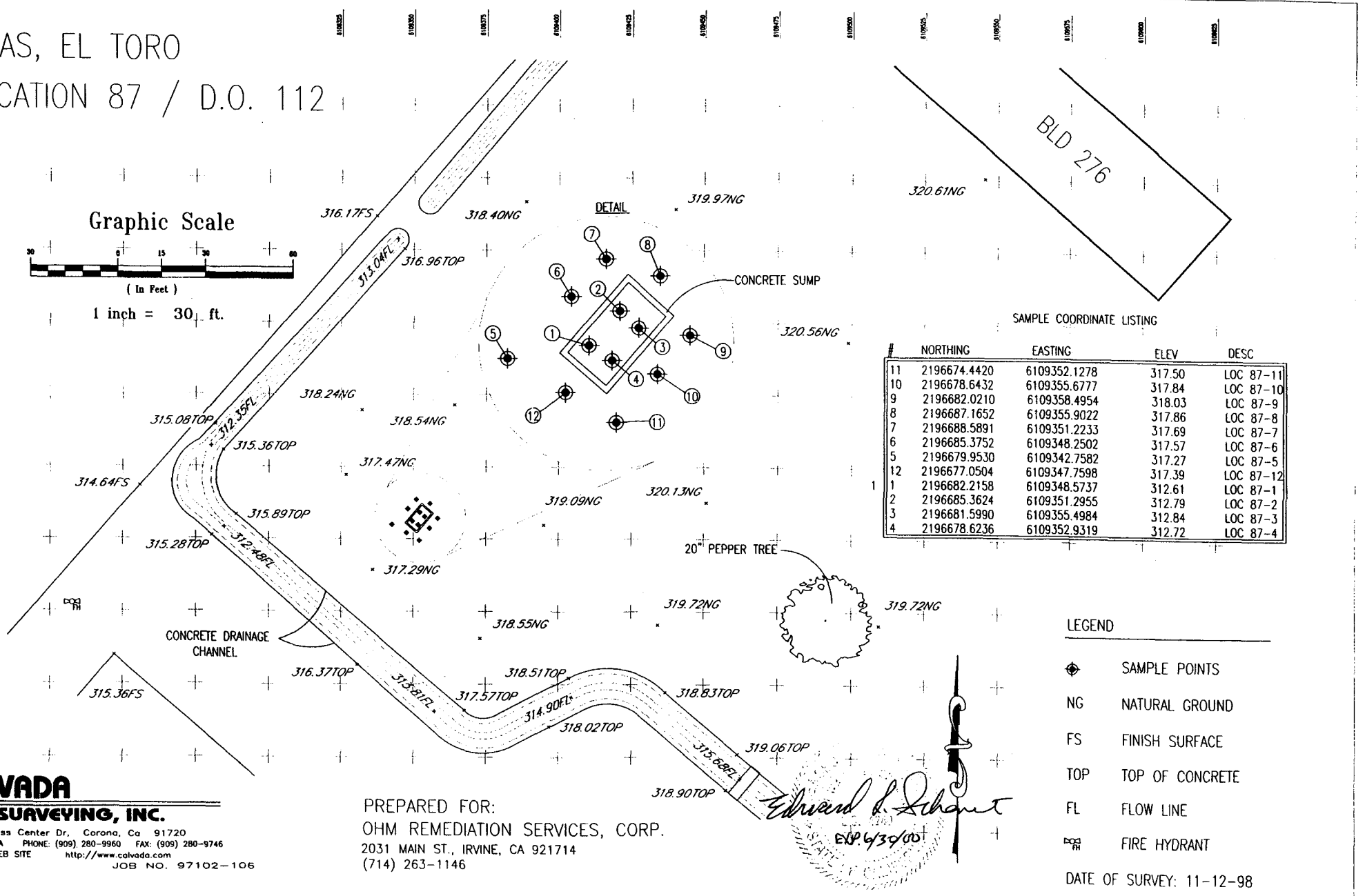
Comments

Hand Auger

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

Appendix D
Land Survey Data

MCAS, EL TORO
LOCATION 87 / D.O. 112



SAMPLE COORDINATE LISTING

#	NORTHING	EASTING	ELEV	DESC
11	2196674.4420	6109352.1278	317.50	LOC 87-11
10	2196678.6432	6109355.6777	317.84	LOC 87-10
9	2196682.0210	6109358.4954	318.03	LOC 87-9
8	2196687.1652	6109355.9022	317.86	LOC 87-8
7	2196688.5891	6109351.2233	317.69	LOC 87-7
6	2196685.3752	6109348.2502	317.57	LOC 87-6
5	2196679.9530	6109342.7582	317.27	LOC 87-5
12	2196677.0504	6109347.7598	317.39	LOC 87-12
1	2196682.2158	6109348.5737	312.61	LOC 87-1
2	2196685.3624	6109351.2955	312.79	LOC 87-2
3	2196681.5990	6109355.4984	312.84	LOC 87-3
4	2196678.6236	6109352.9319	312.72	LOC 87-4

LEGEND

- SAMPLE POINTS
- NG — NATURAL GROUND
- FS — FINISH SURFACE
- TOP — TOP OF CONCRETE
- FL — FLOW LINE
- FH — FIRE HYDRANT

DATE OF SURVEY: 11-12-98

CALVADA SURVEYING, INC.
Business Center Dr. Corona, Ca 91720
CALVADA PHONE: (909) 280-9960 FAX: (909) 280-9746
WEB SITE http://www.calvada.com

JOB NO. 97102-106

PREPARED FOR:
OHM REMEDIATION SERVICES, CORP.
2031 MAIN ST., IRVINE, CA 921714
(714) 263-1146

Appendix E
Waste Characterization Information

To: Lynn M Horneckerⓐ BRACⓐNAVFAC EFDSWEST
Cc:
Bcc:
[redacted]: Scott M Kehe@ROICC ELTOROⓐNAVFAC EFDSWEST
[redacted]ect: Mercury Spill LOC 87
Date: Wednesday, November 25, 1998 10:41:54 PST
Attach:
Certify: N
Priority: Normal
Defer until:
Expires:
Forwarded by:

This is to document the conversation I had today with Mr. Joe Saenz (Mechanical Planner and Estimator with the MCAS El Toro Installations Department and former foreman of the plumbing shop) regarding the mercury pressure switch at the former water tower, facility number 222.
Mr. Saenz stated that the tube containing the mercury for the pressure switch was open to the atmosphere. There was also a screw top which could be removed in order to fill the tube with mercury. He stated that no manuals or drawings of the device are available since the water tower was removed in 1993.

Scott Kehe

Memorandum

To: Bill Sedlak

CC: Dhananjay Rawal

From: Steve Chandler

Date: 12/02/98

Re: El Toro: Mercury Soil Spill

The major issue surrounding the mercury contamination associated with the water system equipment located at the El Toro Marine Corps Air Station is the hazardous waste characterization of the soils. This characterization centers on the source of the mercury and whether or not the mercury had been "used" prior to the spill onto the land. Should the mercury be classified as unused, it could meet the requirements of being a listed waste. If "listed", all mercury contaminated soil, regardless of the mercury concentrations in the soil, would be classified as a RCRA hazardous waste.

Should it be determined that the spilled mercury does not meet the definition of a "listed" waste, the contaminated soil could then be RCRA hazardous if the soil exceeds the concentration value as specified in RCRA for mercury characteristic waste. The soil may also be a California hazardous waste if the total mercury concentration exceeds the Total Threshold Concentration Limit (TTLC) of 20 mg/kg, or if the soil exceeds the Soluble Threshold Limit Concentration (STLC) concentration of 0.2 mg/l. Currently, seven (7) of the sample locations exceed the California TTLC values.

The direct affects of the soil's waste classification are the Land Disposal Restrictions (LDR) and treatment standards for the soil. Listed or characteristic mercury RCRA hazardous wastes with a total concentration of 260 mg/kg or higher would require treatment technology called retorting or roasting; a thermal process designed to recover the mercury. This process is expensive. When last reviewed the cost was approximately $5,000 per drum, plus transportation. Should the total concentrations be below 260 mg/kg the treatment standards are based on the new Phase IV LDR regulations of .025 mg/l. It is unknown at this time what the treatment/disposal costs would be to meet the new treatment standards. California hazardous waste does not carry any specific treatment standards for this waste stream. This soil would be directly landfilled into a permitted Class 1 (Subtitle C) landfill. Also, there are two (2) sample locations with mercury concentrations above 260 mg/kg.

The obvious question is how should the mercury-contaminated soil be characterized. During remediation activities for Delivery Order #086 conducted at North Island Naval Air Station, San Diego, California in the fourth quarter of 1996, a similar situation and issue concerning a mercury spill and subsequent waste characterization was encountered. At that time it was determined that a chemical, in this case mercury, that had been used for its intended purpose would not meet the requirements of a listed waste. This determination was based on a Federal Register, 54 FR 31335,

CONFIDENTIAL

(July 28, 1989), attached, which provides guidance on the issue of chemicals used for their intended purpose.

If this interpretation is implemented for the situation at El Toro most of the soils with mercury contamination could be characterized and disposal at a Class 1 (Subtitle C) landfill as California hazardous waste based on the total mercury concentrations. The one criterion that would prevent any of these soils from land disposal would be the presence of free mercury in a liquid state. Liquids are prohibited from disposal in any landfill. Any liquid state mercury would either have to be individually removed or those soils would be subject to the retort or roasting treatment process.

§261.33 Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof.

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in §261.2(a)(2)(i), when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land in lieu of their original intended use or when they are contained in products that are applied to the land in lieu of their original intended use, or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel.

(a) Any commercial chemical product, or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section.

(b) Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (e) or (f) of this section.

(c) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section, unless the container is empty as defined in §261.7(b) of this chapter.

[*Comment:* Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated, stored, transported or treated prior to such use, re-use, recycling or reclamation, EPA considers the residue to be intended for discard, and thus, a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.]

(d) Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (e) or (f) of this section.

[*Comment:* The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in . . ." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraph (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraph (e) or (f), such waste will be listed in either §261.31 or §261.32 or will be identified as a hazardous waste by the characteristics set forth in subpart C of this part.]

U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H_2S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I, T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I, T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I, T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor
U154	67-56-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide

To: Kimberly H Wheeler@Code 540@NAVFAC EFDSWEST
Cc: William E Collins@Code 540@NAVFAC EFDSWEST
Perry H Sobel@Code 09C@NAVFAC EFDSWEST
Bcc:
From: Rex Callaway@Code 09C@NAVFAC EFDSWEST
Subject: NASNI Hg Spill
Date: Wednesday, August 28, 1996 13:43:50 PDT
Attach:
Certify: N
Priority: Normal
Defer until:
Expires:
Forwarded by:

Kim:

Good news re whether the spilled Hg is a listed waste! The RCRA/CERCLA Hotline came through for me. I got a Federal Register notice citation from them, 54 FR 31335, 31336 (July 28, 1989) which included the following statement: "The U-list does not include chemical mixtures where the listed chemical is not the sole active ingredient, and does not apply to chemicals that have been used for their intended purpose." The Hg had already been used for its intended purpose (ballast) before it was spilled. Phew!

Rex C.

Cite as: 54 FR 31335)
contact Mitch Kidwell, Office of Solid Waste (OS-332), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 475-8551. For information regarding the recycling of CFC refrigerants, contact Jean Pinacci, Office of Air and Radiation, Global Change Division (ANR-445), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-7750.

SUPPLEMENTARY INFORMATION:

Background

On May 19, 1980, the Environmental Protection Agency (EPA) promulgated a final rule pursuant to section 3001 of the Resource Conservation and Recovery Act of 1976, as amended (RCRA). This rule (45 FR 33084) specifically listed 85 process wastes as hazardous wastes and approximately 400 chemicals as hazardous wastes if they are, or are intended to be, discarded. It also identified four characteristics of hazardous wastes to be used by persons handling a solid waste in determining whether that waste is a hazardous waste (see 40 CFR Part 261 Subpart C).

The list of hazardous wastes (see 40 CFR 261.31-261.33) includes certain chlorofluorocarbons (CFCs). These CFCs are listed as certain spent halogenated solvents from non-specific sources (i.e., F001 and F002, found at 40 CFR 261.31) and two CFCs are listed as commercial chemical products (i.e., dichlorodifluoromethane (CFC-12) and trichloromonofluoromethane (CFC-11), U075 and U121, respectively, found at 40 CFR 261.33(f).

Note: F001 includes all chlorofluorocarbons used in degreasing; F002 includes only limited chlorofluorocarbons, including trichlorofluoromethane.

The applicability of RCRA Subtitle C regulations to CFCs is limited to three basic scenarios: (1) Where CFCs are used as solvents and the wastes containing CFCs meet the F001 and F002 listing descriptions, (2) where either dichlorodifluoromethane (CFC-12) or trichloromonofluoromethane (CFC-11) is an unused commercial chemical product, off-specification commercial chemical product, inner liner or *31336 container residue, or spill residue that is (or is intended to be) discarded, or (3) where CFCs are solid wastes that exhibit a characteristic of hazardous waste. However, through efforts by EPA's Office of Air and Radiation to promote the recycling of CFC refrigerants, it has become evident that some confusion exists in the regulated community regarding the RCRA regulatory status of CFC refrigerants. Today's Notice of Data Availability will clarify this status.

Clarification of the RCRA Regulatory Status of CFCs Used as Refrigerants

By way of clarifying the regulatory status of recycled CFC refrigerants, the Agency will discuss the first two scenarios listed above, and announce data that applies to the third scenario (i.e., whether CFC refrigerants exhibit a characteristic of hazardous waste). First, the spent solvent listings found at 40 CFR 261.31 (specifically, CFCs listed under F001 and F002) apply solely to wastes containing listed solvents when they are used for their solvent properties. CFCs used as refrigerants are not typically subject to the spent solvent listings because, as refrigerants, the CFCs are not used as solvents.

Copr. (C) West 1996 No claim to orig. U.S. govt. works

Second, the U-listings found at 40 CFR 261.33(f) apply to commercially pure grades of listed chemicals, technical grades, and formulations in which the listed chemical is the sole active ingredient. The U-list does not include chemical mixtures where the listed chemical is not the sole active ingredient, and does not apply to chemicals that have been used for their intended purpose. Thus, CFC refrigerants that are removed from a refrigeration system and are reclaimed would not be classified as "commercial products," but rather would be classified as "spent materials." If the CFC refrigerants were not used for their solvent properties, they could not be F001 or F002 wastes, and thus, these spent materials could only be hazardous wastes under the characteristics of 40 CFR 261.21-261.24.

As a spent material, a CFC refrigerant is a solid waste. It is therefore the generator's responsibility to test the waste or apply knowledge of the waste to determine whether the waste exhibits a characteristic of a hazardous waste (see 40 CFR 261.5(f)(1), 261.5(g)(1) and 262.11(c)). The characteristics of a hazardous waste (i.e., ignitability, corrosivity, reactivity, or EP toxicity) are found at 40 CFR 261.21-261.24. The "generator" includes each person, by site, whose act or process produces a hazardous waste, or whose act first causes the waste to become subject to regulation. In most cases, the generator would be the owner of the refrigeration equipment, as well as the service person or company who, in servicing the equipment, collects the material for reclamation (i.e., there may be "co-generator" situations (see 45 FR a 72026)). This Notice announces the availability of data that relate to a generator's application of knowledge of the waste in addressing the possible hazardous characteristic of corrosivity (see 40 CFR 261.22).

The Agency has previously determined that CFC refrigerants are not likely to exhibit a characteristic of a hazardous waste; however, the Agency maintained reservations regarding the characteristic of corrosivity (see the July 21, 1988 letter from Sylvia K. Lowrance, Director of EPA's Office of Solid Waste to Mr. Marshall R. Turner, Vice President of Racon Refrigerants, included in the docket for this Notice). EPA was concerned about the possible formation of hydrochloric acid due to the breakdown of the CFCs at high compressor temperatures. EPA has since received data (included in the docket for this Notice) demonstrating that the conditions under which CFC refrigerants would break down and form hydrochloric acid, while theoretically possible, are not a practical possibility during normal use. Generators of CFC refrigerants that are reclaimed are not required to test their wastes to determine that their CFCs are not hazardous wastes. Of course, the generator is required to know if the CFC is a hazardous waste. Therefore, in circumstances where something outside the realm of normal practice may cause a CFC refrigerant to exhibit a characteristic (e.g., a CFC refrigerant is inadvertently mixed with an acid material), generators may need to determine, using testing or knowledge, whether the waste is hazardous. Even if the material is a hazardous waste, full Subtitle C management standards may not apply. Exemptions for household hazardous waste or waste from small quantity generators may apply to some of these wastes (see 40 CFR 261.4(b)(1); 40 CFR 261.5).

The Agency notes, however, that the preceding discussions pertain to Federal regulations. While EPA strongly encourages State regulatory agencies to adopt similar regulations to facilitate the recycling of CFC refrigerants, States can and do have their own regulations which may be more stringent than Federal

Copr. (C) West 1996 No claim to orig. U.S. govt. works

regulations. The regulated community is advised to consult the appropriate State regulatory agency to determine the State regulatory status of CFC refrigerants that are recycled.

List of Docket Materials

1. July 21, 1988 letter from Sylvia K. Lowrance, Director of EPA Office of Solid Waste, to Marshall R. Turner of Racon Refrigerants.
2. August 3, 1988 letter from Stephen O. Andersen and Jean Lupinacci of EPA Office of Air and Radiation to David J. Stirpe of the Air-Conditioning and Refrigeration Institute.
3. October 11, 1988 letter from David J. Stirpe of the Air-Conditioning and Refrigeration Institute to Stephen O. Andersen and Jean Lupinacci of EPA Office of Air and Radiation.
4. August 8, 1988 letter from David J. Bateman of E.I. du Pont de Nemours and Company to Stephen O. Andersen of EPA Office of Air and Radiation.
5. September 5, 1988 letter from R.E. Boberg of Allied-Signal Inc. to David J. Stirpe of the Air-Conditioning and Refrigeration Institute.
6. September 28, 1988 letter from L. Denise Pope of Racon Inc. to David Stirpe of the Air-Conditioning and Refrigeration Institute, and attachment entitled "Development of Worst Case Scenario."
7. August 25, 1988 EPA internal memorandum from N. Dean Smith of the Industrial Processes Branch to Steve Andersen of the Program Development Division, and attachment (an excerpt from "Test Methods for Evaluating Solid Wastes" (SW-846).
8. November 8, 1988 letter from J.E. Cox of American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. to Jean Lupinacci of EPA Office of Air and Radiation, and two enclosures: "Rates of Thermal Decomposition of CHCLF2 and CF2CL2" by Frances J. Norton (1957) and "Reactions Chlorofluorocarbons with Metals" by B.J. Eiseman (1963).
9. June 10, 1988 letter from Harold J. Lamb of Racon Inc. to Joseph N. McGuire of the Air-Conditioning and Refrigeration Institute.
10. September 14, 1987 letter from L. Denise Pope of Racon Inc. to John P. Goetz of the Kansas Department of Health and Environment.
11. October 5, 1987 letter from John S. Ramsey of the Kansas Department of Health and Environment to L. Denise Pope of Racon Inc.
12. October 21, 1987 letter from L. Denise Pope of Racon Inc. to John S. Ramsey of the Kansas Department of Health and Environment.
13. October 30, 1987 letter from John S. Ramsey of the Kansas Department of Health and Environment to L. Denise Pope of Racon Inc.
*31337 14. January 22, 1988 Racon Inc. internal memorandum from L. Denise Pope to the File.
15. February 1, 1988 letter from Marshall R. Turner of Racon Refrigerants to Lee Thomas, Administrator of EPA.
16. March 21, 1988 letter from Matthew A. Straus of EPA Characterization and Assessment Division to Marshall R. Turner of Racon Inc.
17. May 20, 1988 internal Racon Inc. memorandum from L. Denise Pope to the File.

Date: July 14, 1989.

Copr. (C) West 1996 No claim to orig. U.S. govt. works

Appendix F
Station's Oil SPCC Plan

M60050.002509
MCAS EL TORO
SSIC NO. 5090.3

APPENDIX F - STATION'S OIL SPCC
APPENDIX E
OHM TECHNICAL MEMORANDUM

SUMMARY REPORT
FORMER WATER TOWER STRUCTURE 373 AND FORMER WATER TOWER STRUCTURE 222 SITES

QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

Appendix G
OHM's HSP Addendum

SITE SAFETY PLAN CHANGE APPROVAL FORM

Amendment No. 70-05

Project Name: MCAS EL TORO Project Number: 920242/918609

Section of SHSP: 5 + ATTACH. C Page Number: _____ Date of Change: 12-14-98 ~~11-25-98~~

Change to read

SEE attached sheet

Reason for change Remediation of contaminents not covered under the site Health and Safety plan

Approvals:

Site Superintendent

12-23-99 Robert Orr

Site Safety Officer

Project Health & Safety Manager

Job Safety Analysis

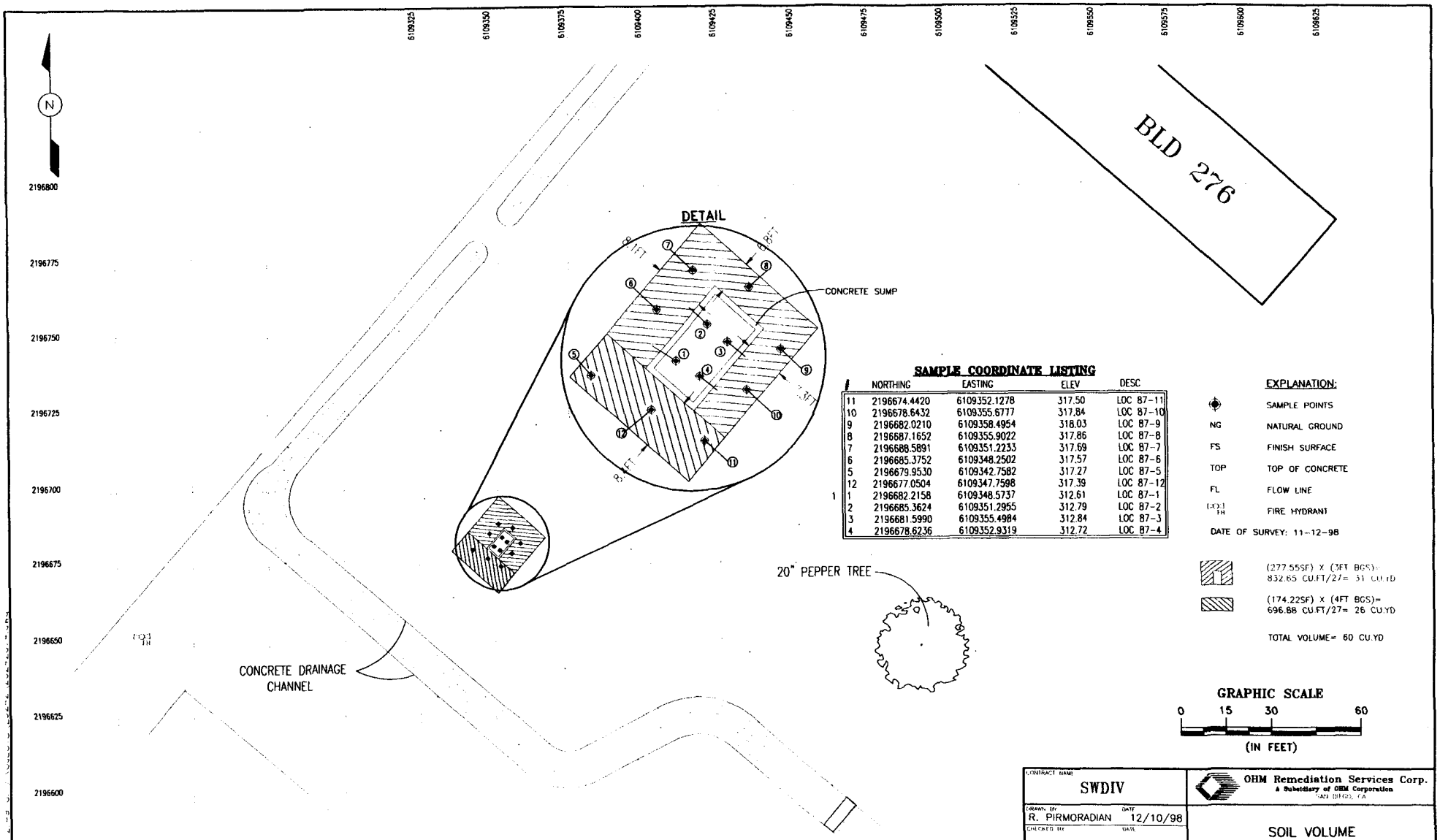
Date Nov. 25, 1998

Job Title: MERCURY CLEAN UP AT LOCATION 87. STRUCTURE 222	Supervisor: ROBERT ORR	New ☒ Revised ☐
Title of Person Who Does Job: ROBERT ORR	Conducted By: D. CHILDERS	
Required and/or Recommended Personal Protective Equipment:	LEVEL "C" PROTECTION UTILIZING SAFE AIR BADGES RESPIRATOR CARTRIDGES APPROVED FOR MERCURY/DUST	

Sequence of Basic Job Steps	Potential Hazards	Recommended Action or Procedure
ESTABLISH WORK ZONES	ENVIRONMENTAL/MERCURY	WEAR LEVEL "C" PROTECTION
EXCAVATION	PINCH POINTS	ESTABLISH SWING RADIUS
		AND KEEP ALL PERSONNEL
		OUT
	MERCURY	UTILIZE LEVEL "C" PPE
		WITH MINI-RAM TO MONITOR
		DUST. SUPPRESS DUST
		AND VAPORS UTILIZING
		FINE MIST OF WATER.
CONTAINMENT	MERCURY	UTILIZE LEVEL "C" PPE

DISK: 1995 8-HR Refresher– "Job Safety Form"

Appendix H
Figure 1, Site Plan



SAMPLE COORDINATE LISTING

#	NORTHING	EASTING	ELEV	DESC
11	2196674.4420	6109352.1278	317.50	LOC 87-11
10	2196678.6432	6109355.6777	317.84	LOC 87-10
9	2196682.0210	6109358.4954	318.03	LOC 87-9
8	2196687.1652	6109355.9022	317.86	LOC 87-8
7	2196688.5891	6109351.2233	317.69	LOC 87-7
6	2196685.3752	6109348.2502	317.57	LOC 87-6
5	2196679.9530	6109342.7582	317.27	LOC 87-5
12	2196677.0504	6109347.7598	317.39	LOC 87-12
1	2196682.2158	6109348.5737	312.61	LOC 87-1
2	2196685.3624	6109351.2955	312.79	LOC 87-2
3	2196681.5990	6109355.4984	312.84	LOC 87-3
4	2196678.6236	6109352.9319	312.72	LOC 87-4

REVISIONS

REV. No.	DESCRIPTION	DATE	APPROVED
01	97102-106.DWG BY CALVADA SURVEYING INC.	11/12/98	

CONTRACT NAME: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: R. PIRMORADIAN DATE: 12/10/98
CHECKED BY: DATE:
APPROVED BY: DATE: 12/14/98
PROJECT MANAGER: DATE: 12/14/98
AUTOCAD FILE No.: 20242074.DWG

SOIL VOLUME
LOCATION 87

MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=30'	1	1	SW6140	20242	FIG 1

Appendix F
Site Inspection Log

SITE ASSESSMENT LOG
MCAS El Toro
REMEDIATION OF VARIOUS UST SITES
20242, D.O. 112

FORMER WATER TOWER 373
~~UST SITE~~: MSCW1

Field Observations by: D. Rawal **Date:** 9/8/98

Former ~~UST~~ Water Tower area: Paved or Unpaved Unpaved, glass field, No Sign of former water tower structure, Concrete footing was observed but, no vault
Paved: Concrete or Asphalt N/A
Unpaved: Open dirt area Yes
Any Visible Sprinkler System: Yes / No

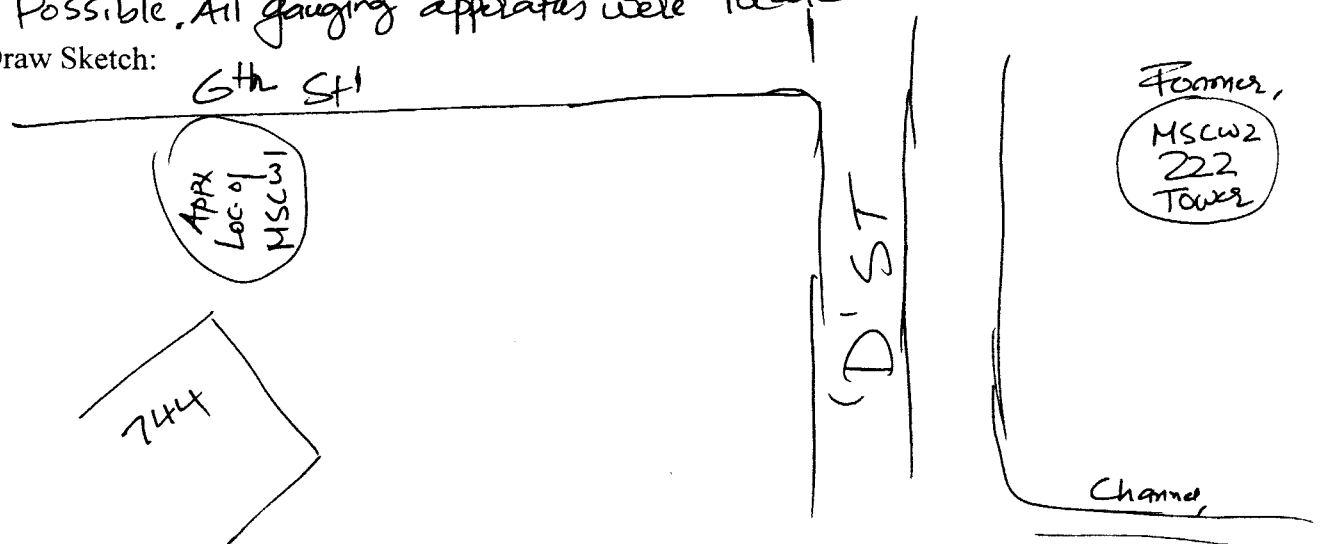
-Nearest Building or Structure Distance: Building 744 Appx. 50-60' feet Northwest.

-Any Underground Piping/Lines, or Transformer Observed: None

-Overhead Utility Lines/Poles: None

-Site Setup Constrains: N/A, No Sign of any Spills and per RolCC information. MSCW1 (373) water tank had no gauges, so no mercury release was Possible. All gauging apperatus were located at ~~MSW1~~ MSCW1 (222).

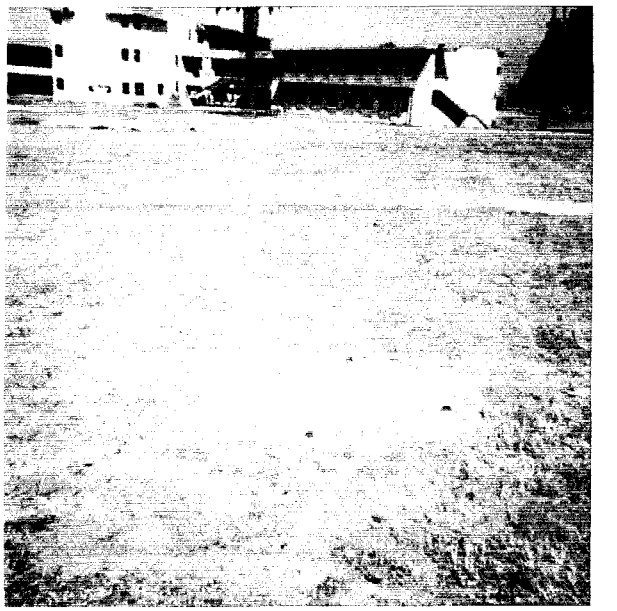
Draw Sketch:



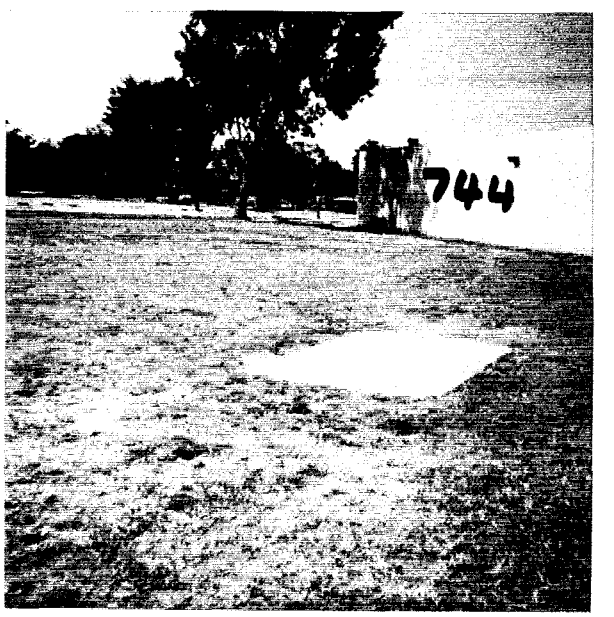
Additional Field Notes:

No Sign of Former Water Tower Structure 373 was observed. Some Concrete footpaints but no Vault or Structure was observed.
Please See attached Photograph.

MSC W1 AREA Unpaved grass Area.



MSC W1, old tower legs Footprint.



MSC W1 AREA Concrete Footings.

Photographs of the MSC W1 area, Former Water Tower 373 next to Building 744. Unpaved grass area shows old footprints of the tower legs. No concrete vault was observed. No sign of spills or stains were observed at the time of Site Inspection.

SITE ASSESSMENT LOG
MCAS El Toro
REMEDIATION OF VARIOUS UST SITES
20242, D.O. 112

~~UST SITE~~: MSC W2, Former Water Tower Structure 222.

Field Observations by: D. Rawal, **Date:** 9/8/98, and Oct. 26, 98. to mark HA locations.

~~**Former UST area**~~ Former Water Tower area: Paved or (Unpaved). Open ground. Concrete Vault with some missing 4x4 wood was observed. Some dirt inside the Concrete Vault.

Paved: Concrete or Asphalt N/A,

Unpaved: Open dirt area grass field

Any Visible Sprinkler System: Yes (No)

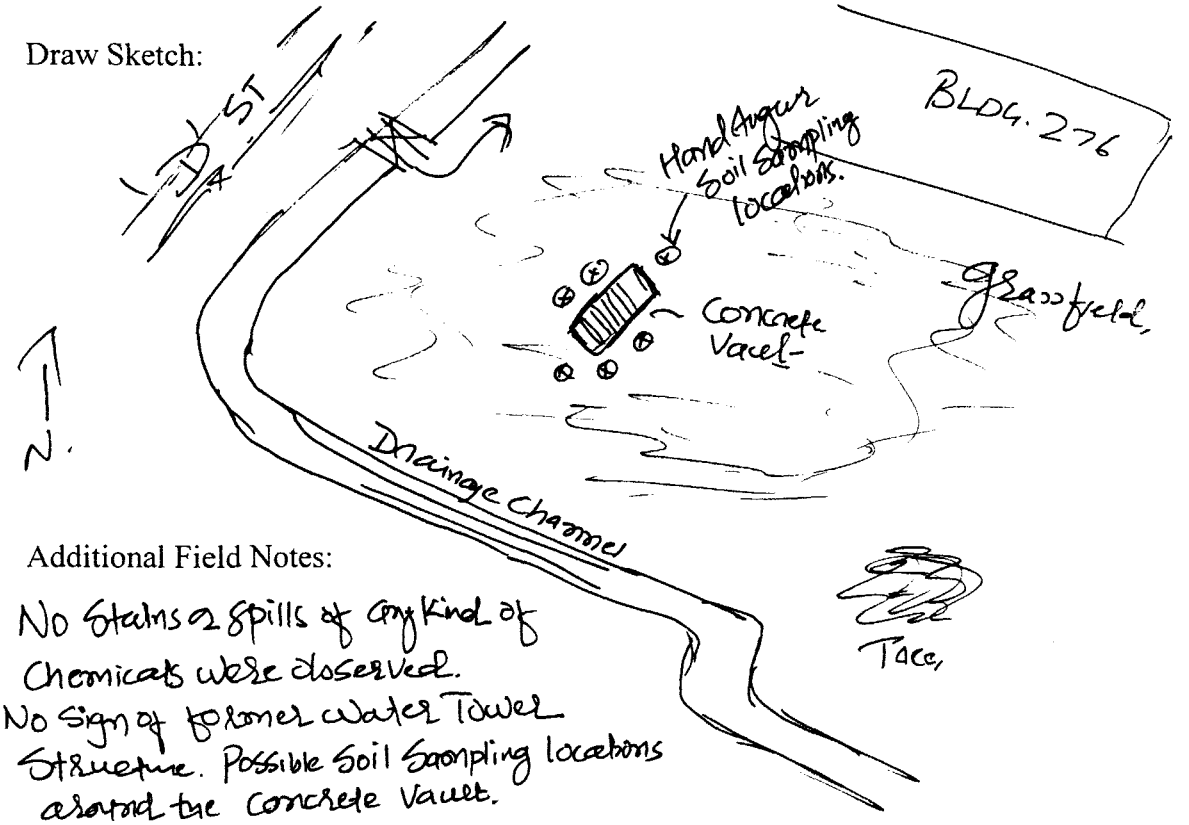
-Nearest Building or Structure Distance: Building 276, Appx. 100 feet - Northwest

-Any Underground Piping/Lines, or Transformer Observed: None,

-Overhead Utility Lines/Poles: None,

-Site Setup Constrains: None, Ingress & Outgress Pathway should be setup correctly. No Other difficulty in setup of Roll off bins, or drilling hand auguer.

Draw Sketch:



Additional Field Notes:

No Stains or Spills of any kind of Chemicals were observed.
No sign of former Water Tower Structure. Possible Soil Sampling locations around the Concrete Vault.

Appendix G
Geophysical Survey Report

GE Vision
geophysical services
a division of Blackhawk Geometrics

GEOPHYSICAL CLEARANCE FORM

PROJECT NAME: OHM/IT PROJECT NUMBER
LOCATION MCAS El Toro
DATE 10/27/98 TIME 1020 hrs
SITE DESCRIPTION: Mercury Spill Area near Bldg. 276
Former Surface H2O tank 222

SCOPE OF WORK: Limited clearance within 5 feet of vault as requested by OHM
(More ~~thorough~~ complete clearance not necessary as only hand augering to be conducted)

GEOPHYSICAL EQUIPMENT

GROUND PENETRATING RADAR (GPR) UNIT: _____ MAGNETOMETER: _____
ELECTROMAGNETIC (EM): _____ UTILITY LOCATOR (UL): Metrotech 9840
METAL DETECTOR (MD): Fisher Gemini 3 OTHER: _____

PROCEDURES

- [x] 1. Inspect available utility maps and trace all recorded utilities in the vicinity of the target using UL, and if necessary GPR. (Sanitary sewer, storm sewer, communication, electric*, water*, gas)
- [ ] 2. Review available geophysical data: Magnetic EM-31 EM-61
- [x] 3. Inspect site and trace all pipes evident from field observations (i.e. manhole, vault, valve, cracked asphalt, pipe at surface, etc.)
- [x] 4. Sweep target area with UL in passive 50/60 Hz mode.
- [x] 5. Hold UL transmitter over target / at several locations around target area and circle at about a 40-foot radius with receiver tracing all utilities encountered.
- [x] 6. Sweep target area with MD.
- [ ] 7. Conduct perpendicular / multiple GPR profiles through target area (see map on reverse).
  GPR antenna: _____
  GPR range: _____ Estimated depth penetration *: _____
  * utility lines or other features below this depth cannot be detected using GPR
- [ ] 8. Other _____

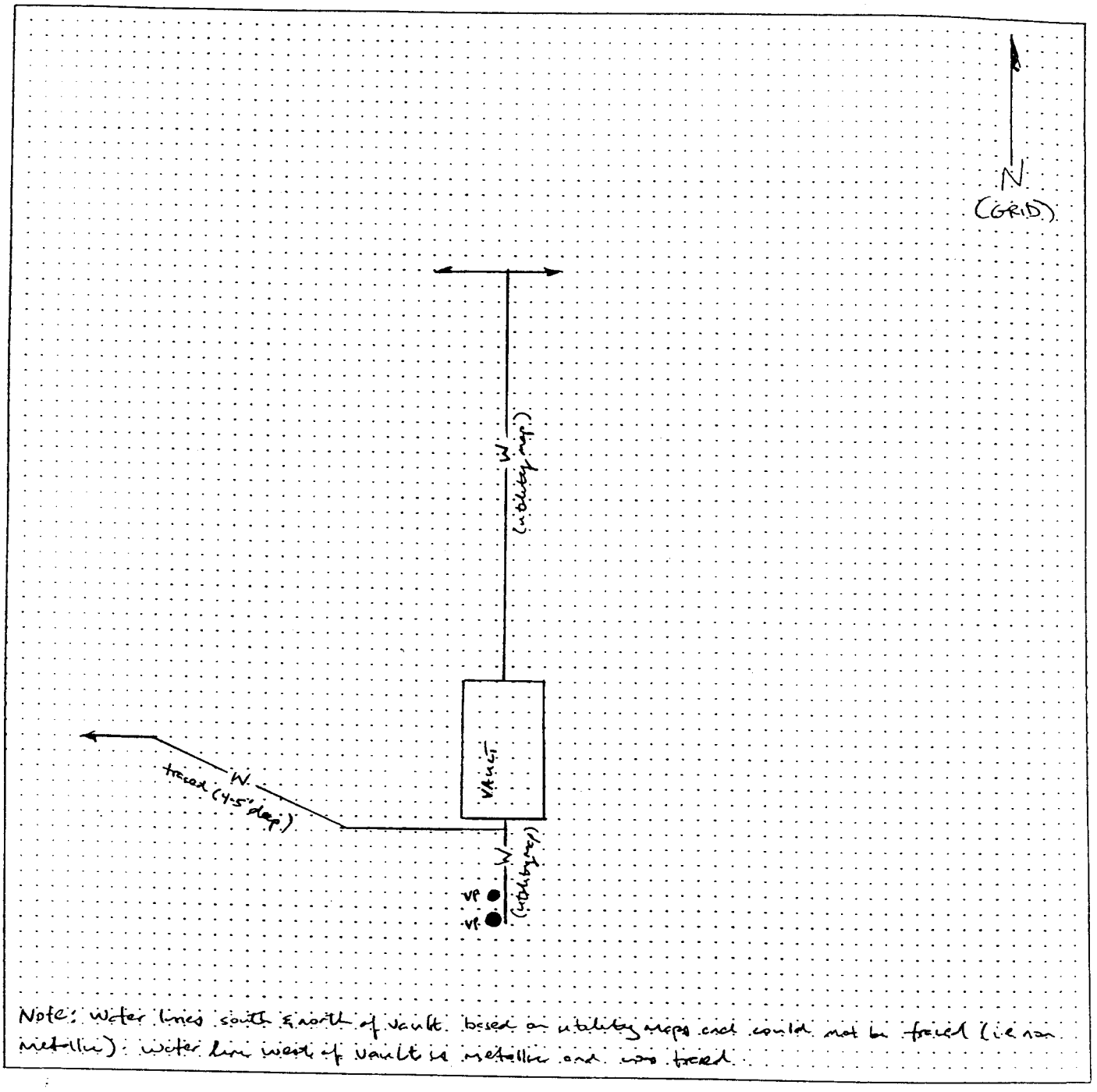
Note: vault within footprint of former tank.

FIELD PERSONNEL: A. Martin, A. Jack

SIGNATURE: [signature]

CLEARFRM.DOC 02/01

GEOPHYSICAL SURVEY MAP



Note: Water lines south & north of vault based on utility maps and could not be traced (i.e. non metallic); water line west of vault is metallic and was traced.

LEGEND

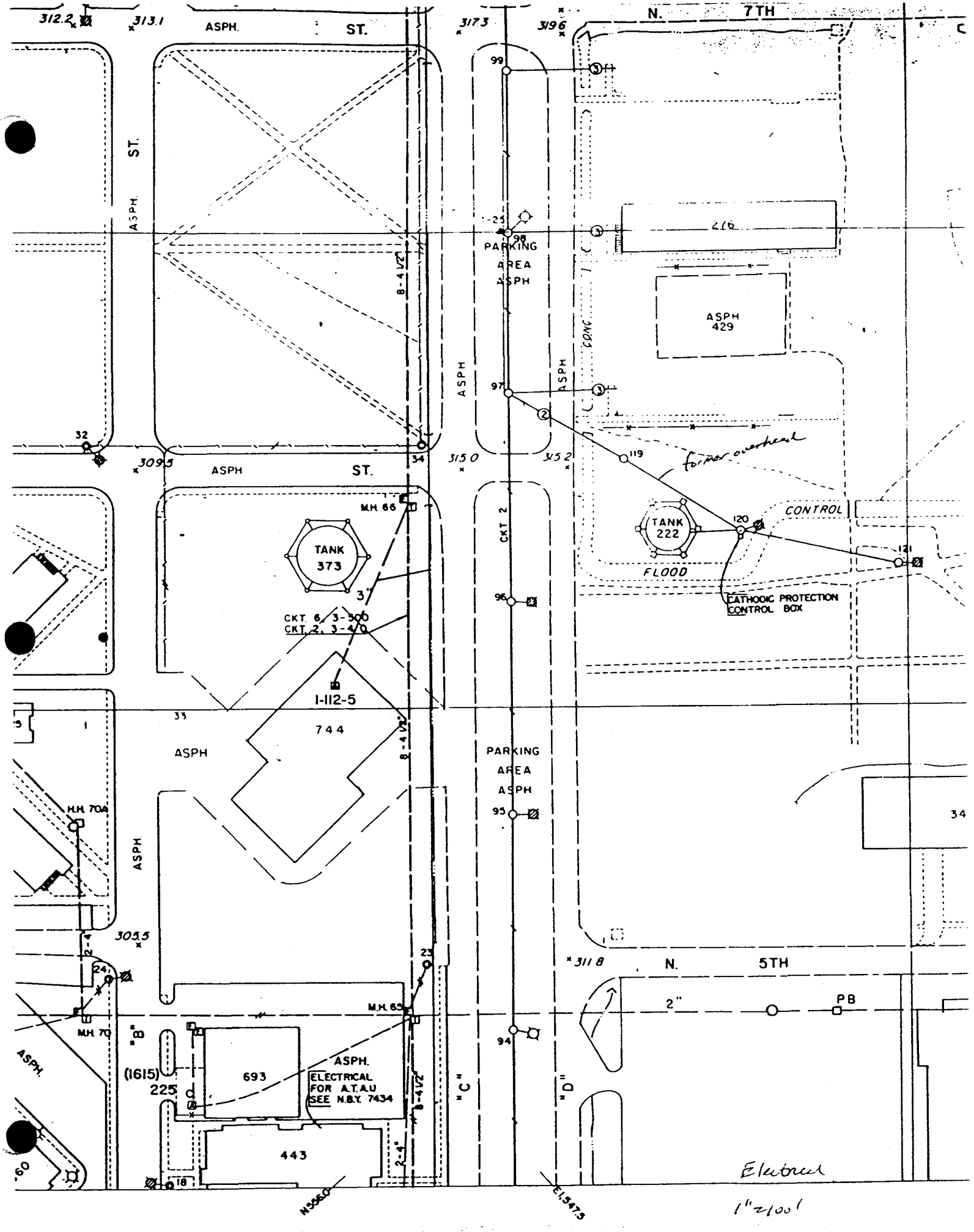
GEOPHYSICAL TRAVERSE

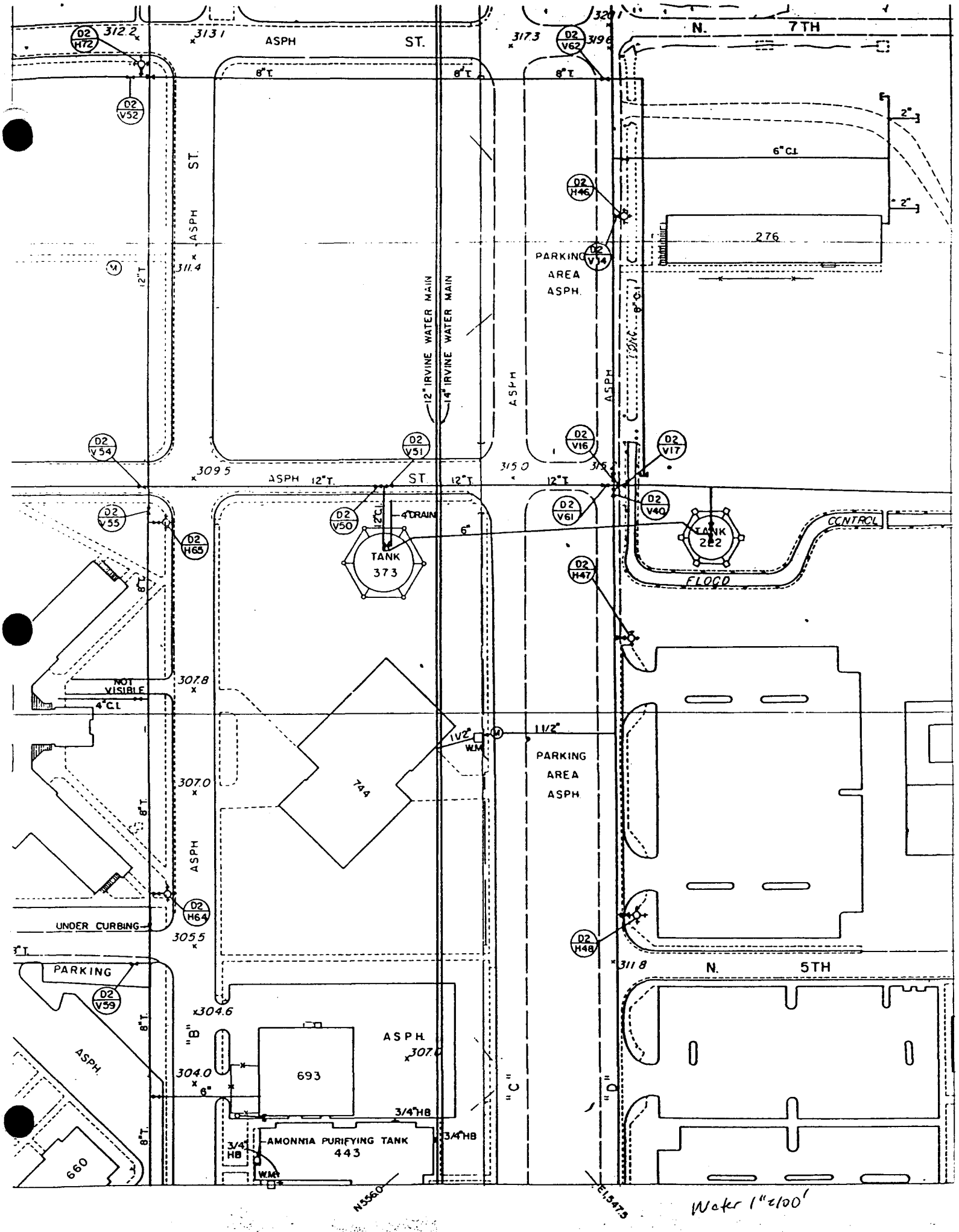
UTILITY:
E=ELECTRICAL, T=TELEPHONE,
G=GAS, S=SEWER, SD=STORM DRAIN,
W=WATER, P=PRODUCT LINE,
V=VENT LINE, L=UNKNOWN LINE VP = vertical pipe

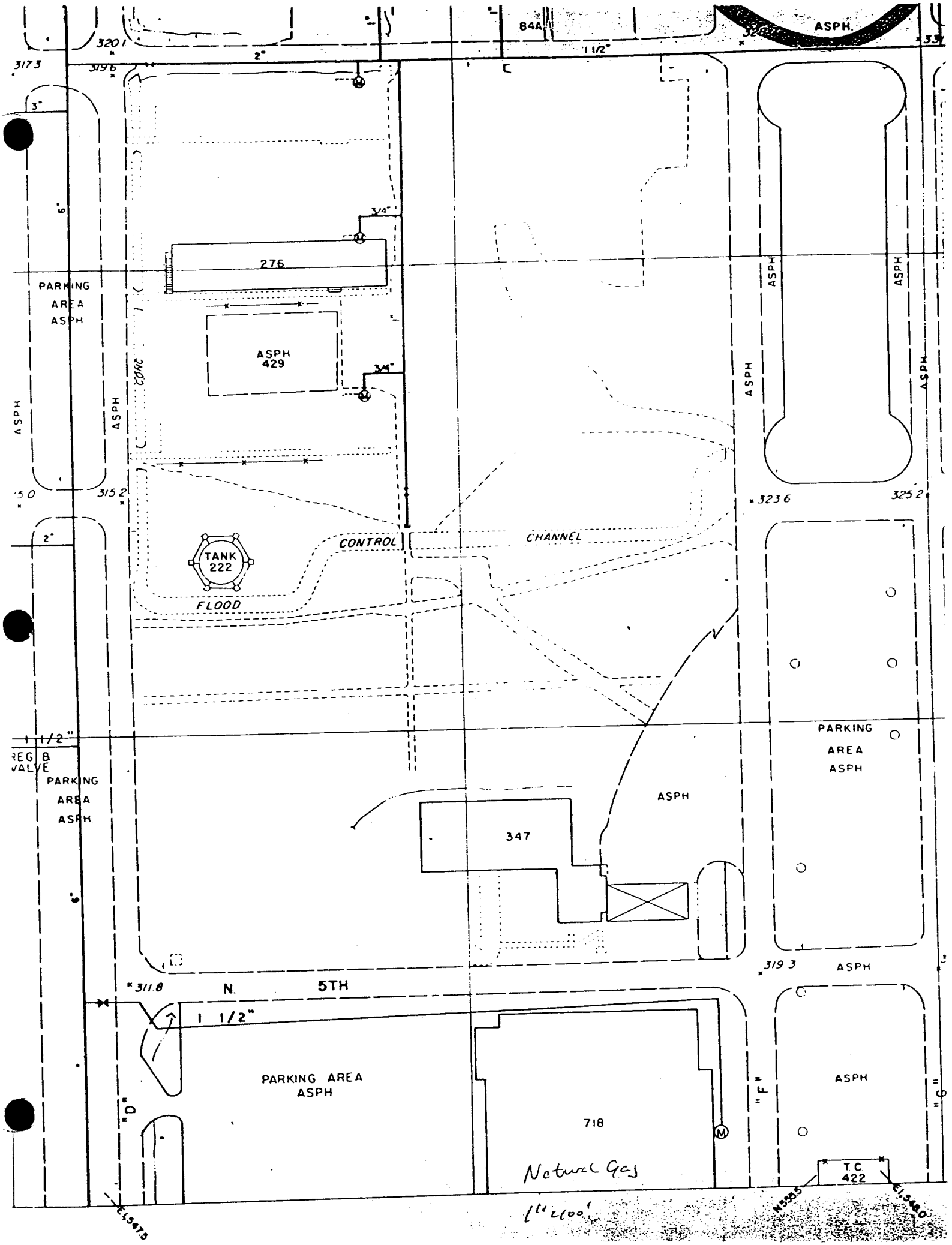
SCALE:
0 5 10 FEET

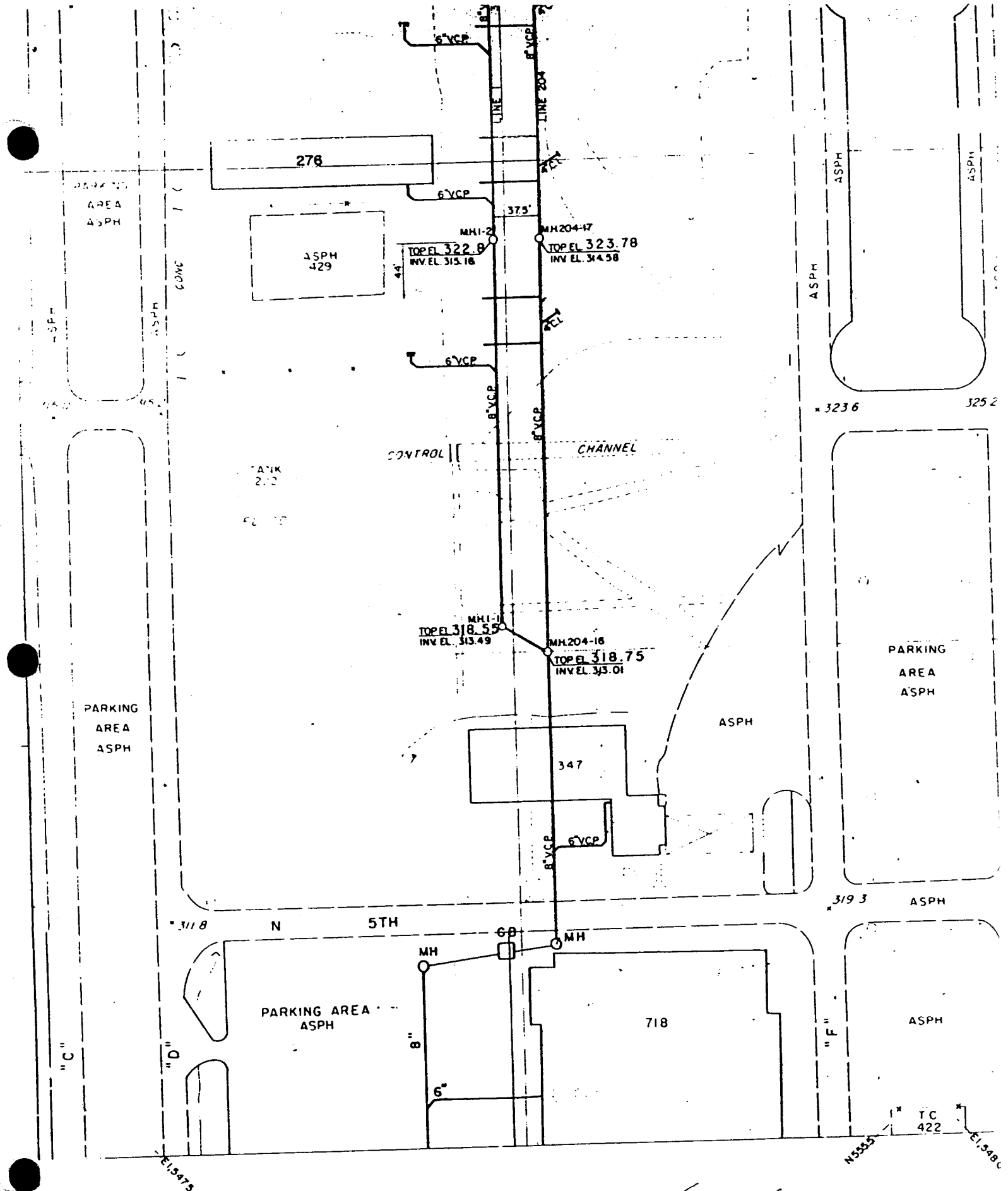
NOTE: All geophysical methods have limitations dependent on instrumentation used, soil conditions, and local cultural noise and other interference. The geophysical conditions interpretation presented above comprises a declaration of the geophysicist's professional judgment using methods and a degree of care and skill ordinarily exercised, under similar circumstances, by reputable members of their profession practicing in the same or similar locality. It does not constitute a warranty or guarantee, expressed or implied, nor does it relieve any other party of its responsibility to abide by contract documents, applicable codes, standards, regulations or ordinances. If you require further information about the limitations of the instruments and/or methods used on this project please contact GEOVision Geophysical Services.

CLEARFRN.DOC 6/96


N. 7TH
ASPH.
ST.
ASPH.
ST.
ASPH
ST.
PARKING
AREA
ASPH
ASPH
429
CONC
former overhead
TANK
222
CONTROL
FLOOD
CATHODIC PROTECTION
CONTROL BOX
TANK
373
M.H. 66
CKT. 6, 3-500
CKT. 2, 3-400
CKT. 2
1-112-5
744
ASPH
PARKING
AREA
ASPH
M.H. 70A
ASPH.
M.H. 65
M.H. 70
"B"
(1615)
225
693
ASPH.
ELECTRICAL
FOR A.T.&U
SEE N.B.Y. 7434
443
"C"
"D"
N. 5TH
2"
PB
Electrical
1"=100'


N. 7TH
ASPH ST.
D2 H72
312.2
313.1
D2 V52
D2 V62
317.3
319.6
8"T.
2"
6"C.I.
D2 H46
D2 V14
276
PARKING AREA ASPH.
ASPH ST.
311.4
12"T.
12" IRVINE WATER MAIN
14" IRVINE WATER MAIN
ASPH
8"C.I.
D2 V54
D2 V51
309.5
ASPH 12"T. ST. 12"T.
315.0
12"T.
D2 V16
D2 V17
D2 V55
D2 H65
D2 V50
12"C.I.
4" DRAIN
6"
TANK 373
D2 V61
D2 V40
TANK 222
CONTROL
FLOOD
D2 H47
NOT VISIBLE
307.8
4"C.I.
1 1/2"
W.M.
PARKING AREA ASPH.
744
307.0
ASPH
D2 H64
UNDER CURBING
305.5
D2 H48
311.8
N. 5TH
PARKING
D2 V59
304.6
"B"
ASPH.
307.0
304.0
693
"C"
"D"
3/4" HB
AMONNIA PURIFYING TANK 443
660
N556.0
E1,547.5
Water 1"=100'

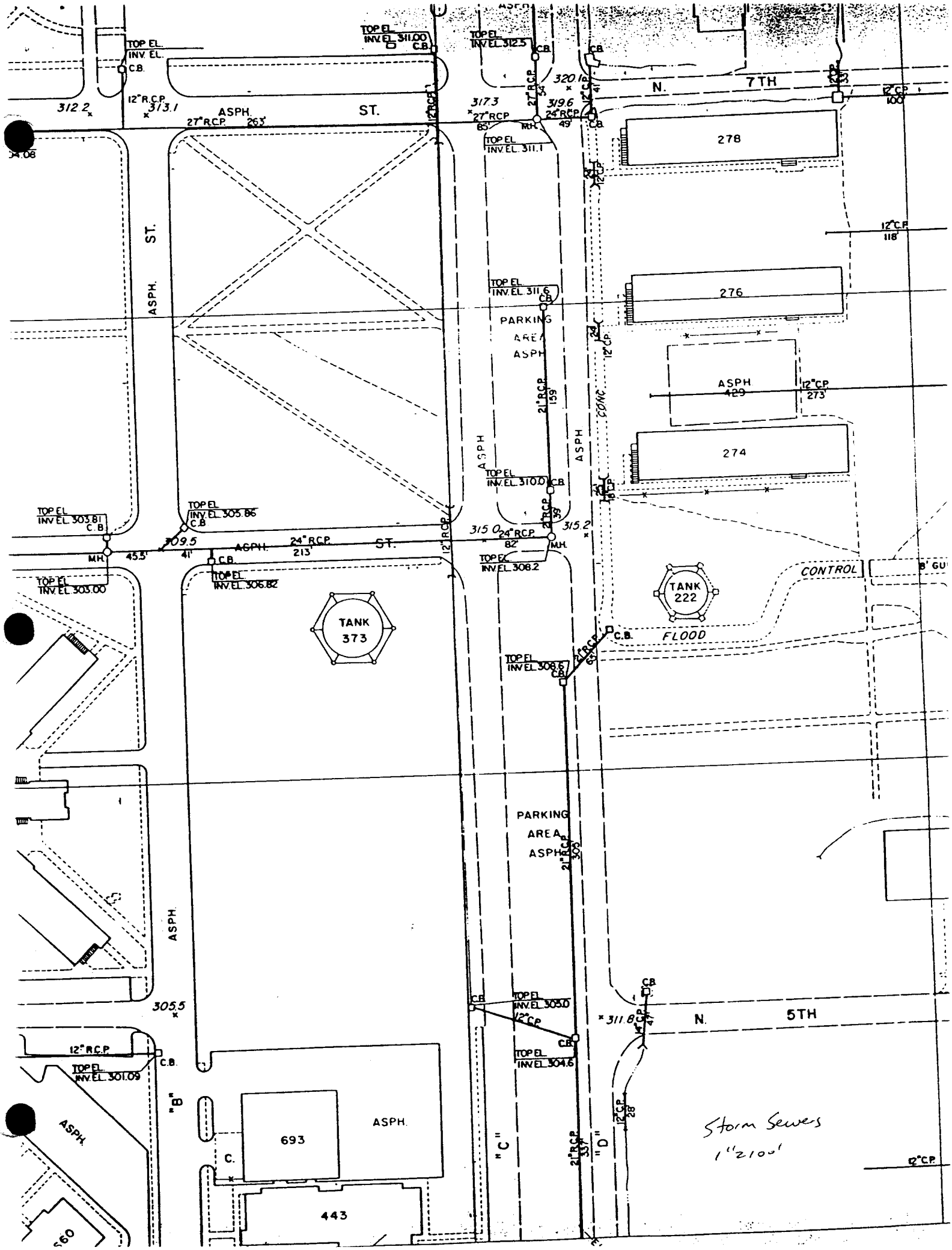

ASPH.
84A
320 1
317 3
319 6
2"
1 1/2"
3"
6"
3/4"
276
PARKING
AREA
ASPH
ASPH
429
CONC
ASPH
ASPH
ASPH
ASPH
ASPH
ASPH
315 2
323 6
325 2
2"
TANK
222
CONTROL
CHANNEL
FLOOD
1 1/2"
REG B
VALVE
PARKING
AREA
ASPH
ASPH
347
PARKING
AREA
ASPH
319 3
ASPH
311.8
N.
5TH
1 1/2"
PARKING AREA
ASPH
"D"
718
"F"
ASPH
"C"
Natural Gas
TC
422
E1,547.5
N555.5
E1,548.0
1st floor

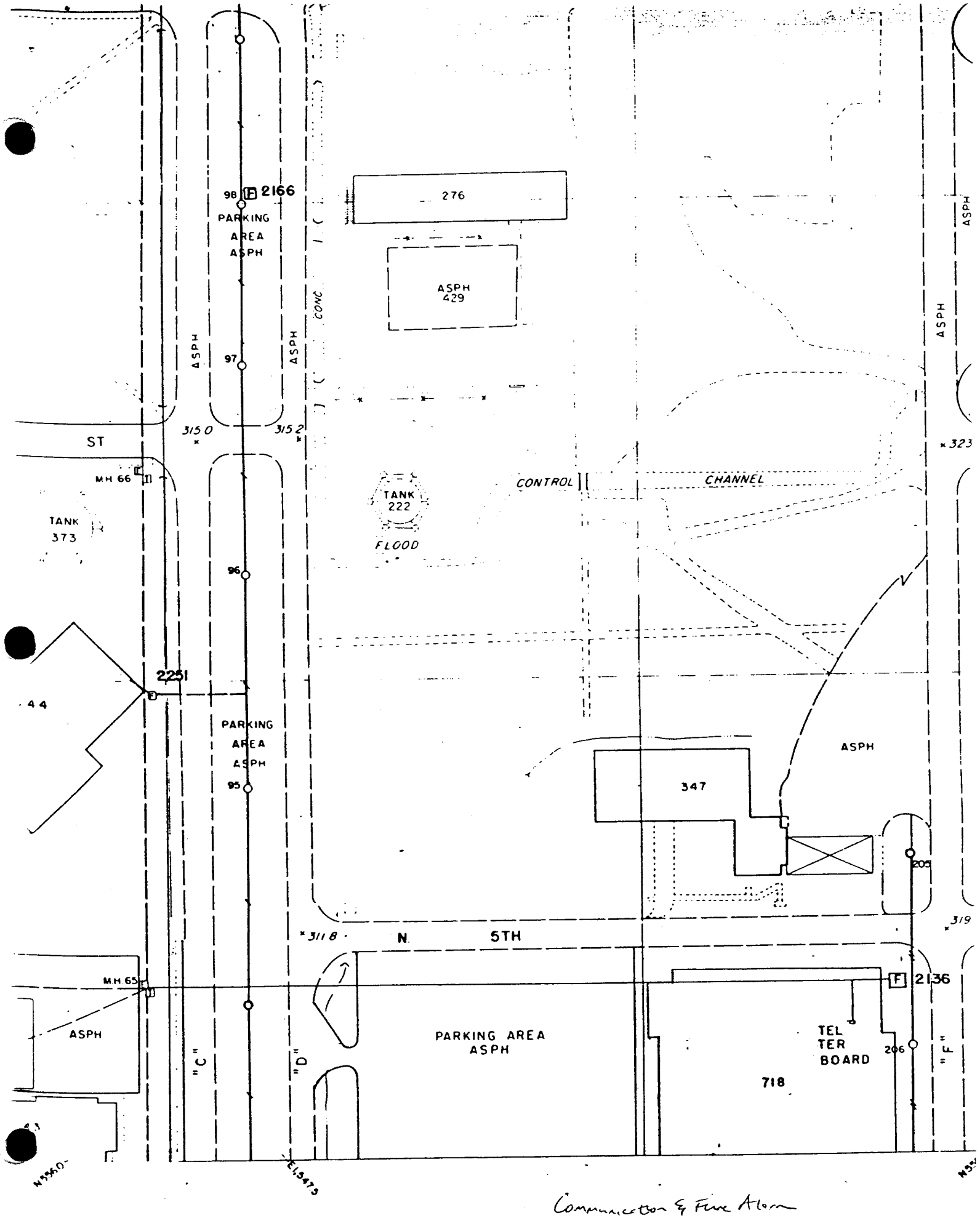


Sanitary Sewer
1"=100'

1200

300' 400' 500'


TOP EL.
INV. EL.
C.B.
TOP EL.
INV. EL. 311.00
C.B.
TOP EL.
INV. EL. 312.5
C.B.
C.B.
N. 7TH
12" C.P.
100'
312.2
12" R.C.P.
313.1
ASPH.
27" R.C.P.
263'
ST.
12" R.C.P.
317.3
27" R.C.P.
85'
M.H.
319.6
24" R.C.P.
49'
C.B.
TOP EL.
INV. EL. 311.1
278
12" C.P.
12" C.P.
118'
ASPH.
ST.
TOP EL.
INV. EL. 311.6
C.B.
276
PARKING
AREA
ASPH.
12" C.P.
ASPH.
429
12" C.P.
273'
21" R.C.P.
159
CONC.
ASPH.
ASPH.
274
TOP EL.
INV. EL. 310.0
C.B.
TOP EL.
INV. EL. 303.81
C.B.
TOP EL.
INV. EL. 305.86
C.B.
315.0
24" R.C.P.
82'
315.2
M.H.
M.H.
45.5'
309.5
41'
ASPH.
24" R.C.P.
213'
ST.
12" R.C.P.
TOP EL.
INV. EL. 308.2
TOP EL.
INV. EL. 303.00
C.B.
TOP EL.
INV. EL. 306.82
CONTROL
TANK
222
TANK
373
C.B.
FLOOD
TOP EL.
INV. EL. 308.5
C.B.
21" R.C.P.
PARKING
AREA
ASPH.
21" R.C.P.
309
ASPH.
305.5
C.B.
TOP EL.
INV. EL. 305.0
12" C.P.
C.B.
C.B.
311.8
N. 5TH
12" R.C.P.
C.B.
TOP EL.
INV. EL. 301.09
TOP EL.
INV. EL. 304.6
"B"
ASPH.
693
ASPH.
C.
"C"
21" R.C.P.
"D"
12" C.P.
28'
Storm Sewers
1"=100'
12" C.P.
443



Communication & Fire Alarm

SCALE 1:1200

Appendix H
Preliminary Field Sampling Analytical Reports

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

217254

FORM 0019 REV 2-97

OHM's LAB COORDINATOR: Mizar Tintut-Williams	LAB COORDINATOR'S PHONE: (949) 263-1146	LAB COORDINATOR'S FAX: (949) 263-1147	LABORATORY SERVICE ID: Q134835	LABORATORY CONTACT: KEITH ALLCKSON	MAIL REPORT (COMPANY NAME): OHM Remediation
PROJECT NAME: OC-87 (Structure 222)	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 20242	LABORATORY PHONE: (714) 258-8614	LABORATORY FAX:	RECIPIENT NAME: Philipe Ishida
PROJECT CONTACT: Mizar Tintut-Williams	PROJECT PHONE NUMBER: (949) 263-1146	PROJECT FAX: (949) 263-1147	LABORATORY ADDRESS: QUANTERRA	ADDRESS: 2031 Main St.	
PROJECT ADDRESS: MCAS EL TORO	CITY, STATE AND ZIPCODE: SANTA ANA, CA	CLIENT: LYNN HERNEKER - SWDIV	CITY, STATE AND ZIPCODE: Santa Ana, CA	CITY, STATE, AND ZIPCODE: Irvine, CA	
PROJECT MANAGER: JILL SEDIAK	PROJECT MANAGER'S PHONE: (949) 263-1146	PROJECT MANAGER'S FAX: (949) 263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T	Hg-7470	TCLP/Hg	STLC/Hg						Comments
1	20242-615	Soil	10/28/98	0805	4C	1	III	5 DAY	X	X	X						
2	20242-616	Soil	10/28/98	0810	4C	1	III	5 DAY	X	X							
3	20242-617	Soil	10/28/98	0813	4C	1	III	5 DAY	X	X							
4	20242-618	Soil	10/28/98	0815	4C	1	III	5 DAY	X	X							
5	20242-619	Soil	10/28/98	0825	4C	1	III	5 DAY	X	X							
6	20242-620	Soil	10/28/98	0830	4C	1	III	5 DAY	X								~~HOLD~~ (7) 11/5/98
7	20242-621	Soil	10/28/98	0835	4C	1	III	5 DAY	X	X							
8	20242-622	Soil	10/28/98	0837	4C	1	III	5 DAY	X								~~HOLD~~ (7) 11/5/98
9	20242-623	Soil	10/28/98	0840	4C	1	III	5 DAY	X	X	X						
10	20242-624	Soil	10/28/98	0842	4C	1	III	5 DAY	X								~~HOLD~~ (7) 11/5/98

SAMPLES COLLECTED BY: [signature]

COURIER AND AIR BILL NUMBER:

COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[signature]	[signature]	10/28/98	1105	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type G	C	F	QC
1. LOC87-HA01 @ 3"	X		X	
2. LOC87-HA02 @ 3"	X		X	
3. LOC87-HA03 @ 3"	X		X	
4. LOC87-HA04 @ 3"	X		X	
5. LOC87-HA05 @ 6"	X		X	
6. LOC87-HA05 @ 2'	X		X	
7. LOC87-HA06 @ 6"	X		X	
8. LOC87-HA06 @ 2'	X		X	
9. LOC87-HA07 @ 6"	X		X	
10. LOC87-HA07 @ 2'	X		X	

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
217253
FORM 0019 REV 2-97

OHM's LAB COORDINATOR	LAB COORDINATOR'S PHONE	LAB COORDINATOR'S FAX	LABORATORY SERVICE ID	LABORATORY CONTACT	MAIL REPORT (COMPANY NAME)
Inger Tintil Williams	(949) 263-1146	(949) 263-1147	Q134835	Keith Alexson	OHM Remediation
PROJECT NAME: NC 87 (Stanchnezzi)	PROJECT LOCATION: MCAS El Toro	PROJECT NUMBER: 20242	LABORATORY PHONE: 714 758-7610	LABORATORY FAX	RECIPIENT NAME: Dwayne Ishida
PROJECT CONTACT: Inger Tintil Williams	PROJECT PHONE NUMBER: (949) 263-1146	PROJECT FAX: (949) 263-1147	LABORATORY ADDRESS: QUANTERRA		ADDRESS: 2031 Main Street
PROJECT ADDRESS: MCAS El Toro	CITY, STATE AND ZIPCODE: Santa Ana, CA	CLIENT: Lynn Stanchnezzi, SWDIV	CITY, STATE AND ZIPCODE: Santa Ana, CA		CITY, STATE, AND ZIPCODE: Irvine, CA
PROJECT MANAGER: M. SEDIAK	PROJECT MANAGER'S PHONE: (949) 263-1146	PROJECT MANAGER'S FAX: (949) 263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: Mercury	TCLP / Hg	STLC / Hg						Comments
1	20242.625	Soil	10/21/98	0845	4°C	1	IV	5 DAY	X	X	X						
2	20242.626	Soil	10/21/98	0850	4°C	1	III	5 DAY	X								~~HOLD~~ (n) 11/5/98
3	20242.627	Soil	10/21/98	0852	4°C	1	III	5 DAY	X	X	X						
4	20242.628	Soil	10/21/98	0855	4°C	1	III	5 DAY	X								~~HOLD~~ (n) 11/5/98
5	20242.629	Soil	10/21/98	0857	4°C	1	III	5 DAY	X	X	X						
6	20242.630	Soil	10/21/98	0858	4°C	1	III	5 DAY	X	X	X						
7	20242.631	Soil	10/21/98	0900	4°C	1	III	5 DAY	X								~~HOLD~~ (n) 11/5/98
8	20242.632	Soil	10/21/98	0905	4°C	1	III	5 DAY	X	X							
9	20242.633	Soil	10/21/98	0907	4°C	1	III	5 DAY	X								~~HOLD~~ (n) 11/5/98
10	20242.634	Soil	10/21/98	0910	4°C	1	III	5 DAY	X	X							

SAMPLES COLLECTED BY: Megan

COURIER AND AIR BILL NUMBER:

COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
Megan	[illegible]	10/21/98	1105	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1. LOC87-HA08 @ 6"	X		X	
2. LOC87-HA08 @ 2'	X		X	
3. LOC87-HA09 @ 6"	X		X	
4. LOC87-HA09 @ 2'	X		X	
5. LOC87-HA10 @ 6"	X		X	
6. LOC87-HA10 @ 1'	X		X	X
7. LOC87-HA10 @ 2'	X		X	
8. LOC87-HA11 @ 6"	X		X	
9. LOC87-HA11 @ 2'	X		X	
10 LOC87-HA12 @ 6"	X		X	

Comments

(5) and (6) are duplicates.

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
217255
FORM 0019 REV. 2-97

OHM's LAB COORDINATOR: Oscar Tinsley Williams	LAB COORDINATOR'S PHONE: (949) 263-1146	LAB COORDINATOR'S FAX: (949) 263-1147	LABORATORY SERVICE ID: Q134835	LABORATORY CONTACT: Keith Aleckson	MAIL REPORT (COMPANY NAME): OHM Remediation
PROJECT NAME: OC-87 (Structures)	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 20242	LABORATORY PHONE: (949) 558-8610	LABORATORY FAX:	RECIPIENT NAME: Dwayne Ishida
PROJECT CONTACT: Oscar Tinsley Williams	PROJECT PHONE NUMBER: (949) 263-1146	PROJECT FAX: (949) 263-1147	LABORATORY ADDRESS: QUANTERRA		ADDRESS: 2051 Main St.
PROJECT ADDRESS: MCAS EL TORO	CITY, STATE AND ZIPCODE: Santa Ana, CA	CLIENT: Lynn Hornecker, SWDIV	CITY, STATE AND ZIPCODE: Santa Ana, CA		CITY, STATE, AND ZIPCODE: Irvine, CA
PROJECT MANAGER: Ill Zdiak	PROJECT MANAGER'S PHONE: (949) 263-1146	PROJECT MANAGER'S FAX: (949) 263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses Requested								Comments
	20242-635	Soil	10/1/98	0920	4C	1	III	5 DAY	X								~~HOLD~~ 11/5/98

SAMPLES COLLECTED BY: [illegible]
COURIER AND AIR BILL NUMBER:
COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[illegible]	[illegible]	10/1/98	1105	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type G	C	F	QC
LOC 87-12 @ 2'	X		X	

Comments: Hand Auger

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

METALS

Client Name: OHM Remediation Services
Client ID: 20242-615
LAB ID: 134835-0001-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	8.4		10	0.20	1.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 2.1%. All results and limits are reported on a dry weight basis.

Metals
TCLP Leachate

Client Name: OHM Remediation Services
Client ID: 20242-615
LAB ID: 134835-0001-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below
Leached: 09 NOV 98

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.0039		1.0	0.00010	0.0020	mg/L	7470A	13 NOV 98	13 NOV 98

METALS
California Title 22 (Title 26) Protocol
STLC Data Sheet (Citrate Buffer Leachate)

Client Name: OHM Remediation Services
Client ID: 20242-615
LAB ID: 134835-0001-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below
Leached: 09 NOV 98

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.053		1.0	0.0010	0.0020	mg/L	7470A	13 NOV 98	13 NOV 98

METALS

Client Name: OHM Remediation Services
Client ID: 20242-616
LAB ID: 134835-0002-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	830		500	10.1	50.7	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.4%. All results and limits are reported on a dry weight basis.

Metals
TCLP Leachate

Client Name: OHM Remediation Services
Client ID: 20242-616
LAB ID: 134835-0002-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below
Leached: 09 NOV 98

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.12		20	0.0020	0.040	mg/L	7470A	13 NOV 98	13 NOV 98

METALS

Client Name: OHM Remediation Services
Client ID: 20242-617
LAB ID: 134835-0003-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	251		500	10.2	50.9	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.8%. All results and limits are reported on a dry weight basis.

Metals
TCLP Leachate

Client Name: OHM Remediation Services
Client ID: 20242-617
LAB ID: 134835-0003-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below
Leached: 09 NOV 98

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.0078		1.0	0.00010	0.0020	mg/L	7470A	13 NOV 98	13 NOV 98

METALS

Client Name: OHM Remediation Services
Client ID: 20242-618
LAB ID: 134835-0004-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	1140		1000	21.6	108	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 7.5%. All results and limits are reported on a dry weight basis.

Metals
TCLP Leachate

Client Name: OHM Remediation Services
Client ID: 20242-618
LAB ID: 134835-0004-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below
Leached: 09 NOV 98

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.11		20	0.0020	0.040	mg/L	7470A	13 NOV 98	13 NOV 98

METALS

Client Name: OHM Remediation Services
Client ID: 20242-619
LAB ID: 134835-0005-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	96.9		500	10.2	51.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 2.0%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-620
LAB ID: 134835-0006-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	37.2		50	1.1	5.3	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 5.4%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-621
LAB ID: 134835-0007-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	21.9		20	0.41	2.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 2.0%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-622
LAB ID: 134835-0008-SA
Matrix: SOIL Sampled: 28 OCT 98 Received: 28 OCT 98
Authorized: 28 OCT 98 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.084	J	1.0	0.022	0.11	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 7.5%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-623
LAB ID: 134835-0009-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	6.2		10	0.20	1.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.5%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-624
LAB ID: 134835-0010-SA
Matrix: SOIL Sampled: 28 OCT 98 Received: 28 OCT 98
Authorized: 28 OCT 98 Prepared: See Below Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	ND		1.0	0.022	0.11	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 8.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

METALS

Client Name: OHM Remediation Services
Client ID: 20242-625
LAB ID: 134835-0011-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	11.8		10	0.20	1.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.8%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-626
LAB ID: 134835-0012-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.049	J	1.0	0.021	0.11	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 5.4%. All results and limits are reported on a dry weight basis.

J = Result is detected below the reporting limit or is an estimated concentration.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-627
LAB ID: 134835-0013-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	5.2		10	0.20	1.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.4%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-628
LAB ID: 134835-0014-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	0.30		1.0	0.021	0.11	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 5.1%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-629
LAB ID: 134835-0015-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	4.3		10	0.20	1.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.9%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-630
LAB ID: 134835-0016-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	4.4		10	0.20	1.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 2.0%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-631
LAB ID: 134835-0017-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	1.3		1.0	0.021	0.10	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 3.9%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-632
LAB ID: 134835-0018-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	20.7		20	0.41	2.0	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 2.2%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-633
LAB ID: 134835-0019-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	ND		1.0	0.021	0.10	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 3.9%. All results and limits are reported on a dry weight basis.

ND = Not Detected

METALS

Client Name: OHM Remediation Services
Client ID: 20242-634
LAB ID: 134835-0020-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	60.8		100	2.0	10.2	mg/kg	SW7471	30 OCT 98	02 NOV 98

Percent moisture is 1.6%. All results and limits are reported on a dry weight basis.

METALS

Client Name: OHM Remediation Services
Client ID: 20242-635
LAB ID: 134835-0021-SA
Matrix: SOIL
Authorized: 28 OCT 98

Sampled: 28 OCT 98
Prepared: See Below

Received: 28 OCT 98
Analyzed: See Below

Parameter	Result	Qual	Dil	MDL	Rep Lim	Units	Method	Prepared Date	Analyzed Date
Mercury	39.5		50	1.1	5.3	mg/kg	SW7471	06 NOV 98	09 NOV 98

Percent moisture is 4.8%. All results and limits are reported on a dry weight basis.

QC LOT ASSIGNMENT REPORT - MS QC
Metals Analysis and Preparation

Laboratory Sample Number	QC Matrix	QC Category	QC Lot Number (DCS)	QC Run Number (SCS/BLANK/LCS)	MS QC Run Number (SA,MS,SD,DU)
134835-0001-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0002-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0003-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0004-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0005-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0006-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0007-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0008-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0009-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0010-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0011-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0012-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0013-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0014-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0015-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0016-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0017-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0018-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0019-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0020-SA	SOLID	QHG-S		30 OCT 98-IX	30 OCT 98-IA
134835-0021-SA	SOLID	QHG-S		06 NOV 98-IX	06 NOV 98-IA
134835-0001-SA	LEACHATE	HG-CVAA-SL		13 NOV 98-AX	13 NOV 98-AA
134835-0001-SA	LEACHATE	QHG-TL		13 NOV 98-MX	13 NOV 98-MA
134835-0002-SA	LEACHATE	QHG-TL		13 NOV 98-MX	13 NOV 98-MA
134835-0003-SA	LEACHATE	QHG-TL		13 NOV 98-MX	13 NOV 98-MA
134835-0004-SA	LEACHATE	QHG-TL		13 NOV 98-MX	13 NOV 98-MA

LABORATORY CONTROL SAMPLE REPORT
Metals Analysis and Preparation
Project: 134835

Category: QHG-S Mercury by CVAA
Matrix: SOLID
QC Run: 30 OCT 98-IX
Concentration Units: mg/kg
Date Analyzed: 02 NOV 98

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) LCS	Accuracy(%) Limits
Mercury	0.833	0.805	97	85-115

Category: QHG-S Mercury by CVAA
Matrix: SOLID
QC Run: 06 NOV 98-IX
Concentration Units: mg/kg
Date Analyzed: 09 NOV 98

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) LCS	Accuracy(%) Limits
Mercury	0.833	0.843	101	85-115

Category: HG-CVAA-SL Mercury by CVAA
Matrix: LEACHATE
QC Run: 13 NOV 98-AX
Concentration Units: mg/L
Date Analyzed: 13 NOV 98

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) LCS	Accuracy(%) Limits
Mercury	0.0500	0.0484	97	80-120

Category: QHG-TL Method 7470 - Mercury, Cold Vapor AA TCLP Leachate
Matrix: LEACHATE
QC Run: 13 NOV 98-MX
Concentration Units: mg/L
Date Analyzed: 13 NOV 98

Analyte	Concentration Spiked	Concentration Measured	Accuracy(%) LCS	Accuracy(%) Limits
Mercury	0.00500	0.00484	97	85-115

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 134835

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Sample: 134835-0001
MS Run: 30 OCT 98-IA
Units mg/kg Units Qualifier: Wet weight

Analyte	Sample Result	MS Result	MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
	Concentration								
Mercury	8.22	6.48	7.05	1.67	NC	NC	NC	85-115	20

Category: QHG-S Mercury by CVAA
Matrix: SOLID
Sample: 134835-0021
MS Run: 06 NOV 98-IA
Units mg/kg Units Qualifier: Wet weight

Analyte	Sample Result	MS Result	MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
	Concentration								
Mercury	37.6	40.3	39.8	0.167	NC	NC	NC	85-115	20

Category: HG-CVAA-SL Mercury by CVAA
Matrix: LEACHATE
Sample: 134835-0001
MS Run: 13 NOV 98-AA
Units mg/L Units Qualifier: Wet wt.

Analyte	Sample Result	MS Result	MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
	Concentration								
Mercury	0.0528	0.0611	0.0619	0.0100	NC	NC	NC	80-120	20

NC = Not Calculated, calculation not applicable.

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE QC REPORT
Metals Analysis and Preparation
Project: 134835 (cont.)

Category: QHG-TL Method 7470 - Mercury, Cold Vapor AA TCLP Leachate
Matrix: LEACHATE
Sample: 134835-0001
MS Run: 13 NOV 98-MA
Units: mg/L

Analyte	Sample Result	Concentration MS Result	Concentration MSD Result	Amount Spiked MS/MSD	%Recovery MS	%Recovery MSD	%RPD	Acceptance Limit Recov.	Acceptance Limit RPD
Mercury	0.00386	0.00873	0.00868	0.00500	97	96	0.5	50-150	20

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT
Metals Analysis and Preparation
Project: 134835

Test: Q-HG-CVAA-S Method SW7471A - Mercury, Cold Vapor AA
Matrix: SOLID
QC Run: 30 OCT 98-IX Date Analyzed: 02 NOV 98

Analyte	Result	Units	RL	MDL
Mercury	ND	mg/kg	0.10	0.020

QC Run: 06 NOV 98-IX Date Analyzed: 09 NOV 98

Analyte	Result	Units	RL	MDL
Mercury	ND	mg/kg	0.10	0.020

Test: Q-HG-CVAA-STLC-SL Method 7470A- Mercury, CVAA w/ CAM STLC (Citrate Buffer)
Matrix: LEACHATE
QC Run: 13 NOV 98-AX Date Analyzed: 13 NOV 98

Analyte	Result	Units	RL	MDL
Mercury	ND	mg/L	0.0020	0.0010

Test: Q-HG-CVAA-TCLP-TL Method 7470A- Mercury, Cold Vapor AA TCLP Leachate
Matrix: LEACHATE
QC Run: 13 NOV 98-MX Date Analyzed: 13 NOV 98

Analyte	Result	Units	RL	MDL
Mercury	ND	mg/L	0.0020	0.00010

ND = Not Detected

Appendix I
Site Photographs

Photograph No. 1: Initial Site Condition at MSC W2 Site, Concrete Vault with some missing 4 x 4.

Photograph No. 2: Excavation area marked and roll-off bins staged at MSW W2 site.

Photograph No. 3: Excavation of mercury contaminated soils at MSC W2 site.

Photograph No. 4: Excavation of mercury contaminated soils at MSC W2 site.

Photograph No. 5: Final Excavation limits at MSC W2 site.

Photograph No. 6: Inside of concrete vault after cleaning with water and bottom drain pipe.

Photograph No. 7: End of clay drain pipe after removal of soil around the concrete vault.

Photograph No. 8: Backfilling of the excavation and concrete vault with clean backfill soil.

Appendix J
Confirmation Sampling Analytical Reports

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
217281
FORM 0019 REV. 2-97

OHM's LAB COORDINATOR: Nizar Tintut-Williams	LAB COORDINATOR'S PHONE: (949) 263-1146	LAB COORDINATOR'S FAX: (949) 475-5433	LABORATORY SERVICE ID: 98-7020	LABORATORY CONTACT: JIM LIN	MAIL REPORT (COMPANY NAME): OHM Remediation
PROJECT NAME: Excavation 87 (Structure 222)	PROJECT LOCATION: MCAS EL TORO	PROJECT NUMBER: 20242	LABORATORY PHONE: (909) 590-1828	LABORATORY FAX:	RECIPIENT NAME: Duwayne Ishida
PROJECT CONTACT: Nizar Tintut-Williams	PROJECT PHONE NUMBER: (949) 263-1146	PROJECT FAX: (949) 263-1147	LABORATORY ADDRESS: APCL		ADDRESS: 2031 Main Street
PROJECT ADDRESS: MCAS EL TORO	CITY, STATE AND ZIPCODE: Santa Ana, CA	CLIENT: Lynn Hornecker-SWDIV.	CITY, STATE AND ZIPCODE: Chino, CA		CITY, STATE, AND ZIPCODE: Irvine, CA
PROJECT MANAGER: Paul St. Dirak	PROJECT MANAGER'S PHONE: (949) 263-1146	PROJECT MANAGER'S FAX: (949) 263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: Mercury	Comments
1	20242-666	Soil	12/15/98	1527	4°C	1	IV	24h	X	
2	20242-667			1530			III		X	
3	20242-668			1535					X	
4	20242-669			1538					X	
5	20242-670			1539					X	
6	20242-671			1540					X	
7	20242-672			1544					X	
8	20242-673			1548					X	
9	20242-674			1554					X	
10	20242-675			1556					X	

SAMPLES COLLECTED BY: RO
COURIER AND AIR BILL NUMBER:
COOLER TEMPERATURE UPON RECEIPT:

RELINQUISHED BY	RECEIVED BY	DATE	TIME	SAMPLE'S CONDITION UPON RECEIPT
[illegible]	[illegible]	12/18/98	1115	

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

NW - No Wall

Sample Point Location	Sample Type: G	C	F	QC
1 ~~NE-W~~ ~~NW-W~~	X			
2 NE-~~W~~ No. Wall	X			
3 NE-E. Wall	X			
4 SE-E. Wall	X			
5 SE-S. Wall	X			
6 SE-S. Wall (dup)				X
7 SW-S. Wall	X			
8 SW-W. Wall	X			
9 NW-W. Wall	X			
10 N-INSIDE	X			

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY

217286

FORM 0019 REV 2-97

OHM's LAB COORDINATOR: TT Williams	LAB COORDINATOR'S PHONE: (949) 263-1146	LAB COORDINATOR'S FAX: 475-5433	LABORATORY SERVICE ID: 987020	LABORATORY CONTACT:	MAIL REPORT (COMPANY NAME): OHM Remediation
PROJECT NAME: Location 87	PROJECT LOCATION: MCAS El Toro	PROJECT NUMBER: 20242	LABORATORY PHONE:	LABORATORY FAX:	RECIPIENT NAME: Dwayne Ishida
PROJECT CONTACT: TT Williams	PROJECT PHONE NUMBER: (949) 263-1146	PROJECT FAX: 263-1147	LABORATORY ADDRESS: APCL		ADDRESS: 2031 Main St
PROJECT ADDRESS: MCAS El Toro	CITY, STATE AND ZIPCODE: Santa Ana, CA	CLIENT: SWDIV	CITY, STATE AND ZIPCODE: Chino, CA		CITY, STATE, AND ZIPCODE: Irvine, CA
PROJECT MANAGER: Bill Sedlak	PROJECT MANAGER'S PHONE: 263-1146	PROJECT MANAGER'S FAX: 263-1147			

Item	Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: Mercury							Comments
1	20242-676	Soil	12/18/98	1600	4°C	1	III	~~5 day~~	X							
2	20242-677	↓	↓	1602	↓	↓	IV	↑	X							
3	20242-678	↓	↓	1604	↓	↓	III	↓	X							
4																
5								24h								
6																
7				12/18/98				12/18/98								
8																
9																
10																

SAMPLES COLLECTED BY: RO

RELINQUISHED BY: [signature]

COURIER AND AIR BILL NUMBER:

RECEIVED BY: [signature] DATE: 12/18/98 TIME: 1715

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE'S CONDITION UPON RECEIPT:

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type G	C	F	QC
1 E-INSIDE	X			
2 S-INSIDE	X			
3 W-INSIDE	X			

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

OHM Remediation Services Corp.
Subsidiary of OHM Corporation
U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3526

COMPLETED

CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
217031

FORM 0019 REV. 2-97

OHM's LAB COORDINATOR: IZNE T. NTU WILLIAMS	LAB COORDINATOR'S PHONE: 949-263-1146	LAB COORDINATOR'S FAX: 949-263-1147	LABORATORY SERVICE ID: 9807107 AKL	LABORATORY CONTACT: JIM	MAIL REPORT (COMPANY NAME): OHM
PROJECT NAME: ELTORO	PROJECT LOCATION: LOC 87/STRUCTURE 222	PROJECT NUMBER: 20242	LABORATORY PHONE	LABORATORY FAX	RECIPIENT NAME: DWAYNE ISHOF
PROJECT CONTACT: —	PROJECT PHONE NUMBER: 949-263-1146	PROJECT FAX: 949-263-1147	LABORATORY ADDRESS		ADDRESS: 2031 MAIN ST
PROJECT ADDRESS: ICAS ELTORO	CITY, STATE AND ZIPCODE: SANTA ANA CA	CLIENT: EDDIN	CITY, STATE AND ZIPCODE: CHINO, CA.		CITY, STATE, AND ZIPCODE: IRVINE, CA.
PROJECT MANAGER: ILL SEDLAK	PROJECT MANAGER'S PHONE: 949-263-1146	PROJECT MANAGER'S FAX: 949-263-1147			

Sample Identifier	Matrix	Date	Time	Preserved	# of Cont.	QC Level	T.A.T.	Analyses: MERCURY	Comments
20242-684	S	12-23	1410	4°C	1	III	24HR	X	
20242-685	S	12-23	1415	4°C	1	III	24HR	X	
20242-686	S	12-23	1420	4°C	1	III	24HR	X	
20242-687	S	12-23	1425	4°C	1	III	24HR	X	
20242-688	S	12-23	1430	4°C	1	III	24HR	X	

SAMPLES COLLECTED BY: C. PADRISA

RELINQUISHED BY	RECEIVED BY	DATE	TIME
[illegible]	[illegible]	12-23-8	[illegible] AM

COURIER AND AIR BILL NUMBER:

COOLER TEMPERATURE UPON RECEIPT:

SAMPLE'S CONDITION UPON RECEIPT:

Distribution: White - Laboratory (To be returned with Analytical Report); Goldenrod - Project File; Yellow - Project Data Manager

Project Information Section
For Project Personnel Only
Do Not Submit to Laboratory

Sample Point Location	Sample Type: G	C	F	QC
1. NORTH ~~WALL~~ FLOOR 4'x6S	X			
2. NORTH EAST ~~WALL~~ FLOOR 4'x6S	X			
3. SOUTH CENTER ~~WALL~~ FLOOR 4'x6S	X			
4. SOUTH EAST ~~WALL~~ FLOOR 4'x6S	X			
5. SOUTH WALL 4'x6S	X			

Comments

Sample Type: G - Grab, C - Composite, F - Field Sample, QC - Quality Control Sample

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-1	Received Date:	12/18/98
Sample ID:	**20242-666**	Sample Matrix	Soil	Moisture %:	4.8
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.019	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4908

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-2	Received Date:	12/18/98
Sample ID:	**20242-667**	Sample Matrix	Soil	Moisture %:	5.2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.019	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4909

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-3	Received Date:	12/18/98
Sample ID:	**20242-668**	Sample Matrix	Soil	Moisture %:	5.0
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	0.056	B	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4910

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-4	Received Date:	12/18/98
Sample ID:	**20242-669**	Sample Matrix	Soil	Moisture %:	3.9
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.019	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4911

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-5	Received Date:	12/18/98
Sample ID:	**20242-670**	Sample Matrix	Soil	Moisture %:	7.2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	2.2	9.6		CV		98M2680N	12/21/98	12/21/98	10	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4912

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-6	Received Date:	12/18/98
Sample ID:	**20242-671**	Sample Matrix	Soil	Moisture %:	5.4
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	2.1	5.2		CV		98M2680N	12/21/98	12/21/98	10	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4913

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-7	Received Date:	12/18/98
Sample ID:	**20242-672**	Sample Matrix	Soil	Moisture %:	8.0
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	11	51.5		CV		98M2680N	12/21/98	12/21/98	50	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4914

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-8	Received Date:	12/18/98
Sample ID:	**20242-673**	Sample Matrix	Soil	Moisture %:	6.1
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	2.1	2.5		CV		98M2680N	12/21/98	12/21/98	10	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4915

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-9	Received Date:	12/18/98
Sample ID:	**20242-674**	Sample Matrix	Soil	Moisture %:	5.2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	0.055	B	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4916

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-10	Received Date:	12/18/98
Sample ID:	**20242-675**	Sample Matrix	Soil	Moisture %:	8.6
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.22	<0.020	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4917

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-11	Received Date:	12/18/98
Sample ID:	**20242-676**	Sample Matrix	Soil	Moisture %:	4.9
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.019	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4918

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-12	Received Date:	12/18/98
Sample ID:	**20242-677**	Sample Matrix	Soil	Moisture %:	10.7
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	22	27.1		CV		98M2680N	12/21/98	12/21/98	100	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4919

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/18/98
Project ID:	Location 87	Service ID:	987020	Collected by:	RO
		Lab Sample ID:	98-7020-13	Received Date:	12/18/98
Sample ID:	**20242-678**	Sample Matrix	Soil	Moisture %:	5.2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.019	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4920

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/23/98
Project ID:	MCAS El Toro	Service ID:	987107	Collected by:	C.Parrish
		Lab Sample ID:	98-7107-1	Received Date:	12/23/98
Sample ID:	**20242-684**	Sample Matrix	Soil	Moisture %:	2.3
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.20	1.5		CV		98M2693N	12/24/98	12/24/98	1	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

8307

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/23/98
Project ID:	MCAS El Toro	Service ID:	987107	Collected by:	C.Parrish
		Lab Sample ID:	98-7107-2	Received Date:	12/23/98
Sample ID:	**20242-685**	Sample Matrix	Soil	Moisture %:	4.8
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	1.1	2.9		CV		98M2693N	12/24/98	12/24/98	5	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

8308

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/23/98
Project ID:	MCAS El Toro	Service ID:	987107	Collected by:	C.Parrish
		Lab Sample ID:	98-7107-3	Received Date:	12/23/98
Sample ID:	**20242-686**	Sample Matrix	Soil	Moisture %:	3.5
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.41	2.1		CV		98M2693N	12/24/98	12/24/98	2	7471

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

8309

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/23/98
Project ID:	MCAS El Toro	Service ID:	987107	Collected by:	C.Parrish
		Lab Sample ID:	98-7107-4	Received Date:	12/23/98
Sample ID:	**20242-687**	Sample Matrix	Soil	Moisture %:	6.2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.059	U	CV		98M2693N	12/24/98	12/24/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

8310

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/23/98
Project ID:	MCAS El Toro	Service ID:	987107	Collected by:	C.Parrish
		Lab Sample ID:	98-7107-5	Received Date:	12/23/98
Sample ID:	**20242-688**	Sample Matrix	Soil	Moisture %:	2.7
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.21	<0.057	U	CV		98M2693N	12/24/98	12/24/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

8311

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/21/98
Project ID:	Location 87	Service ID:	987020	Collected by:	
		Lab Sample ID:	98M2680-MB-01	Received Date:	12/21/98
Sample ID:	**98M2680-MB-01**	Sample Matrix	Soil	Moisture %:	
Sample Type:	Method Blank				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.2	<0.018	U	CV		98M2680N	12/21/98	12/21/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4907

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 7471

Client Name:	OHM Remediation Services (Irvine)	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	987020
Project ID:	Location 87	Project No:	20242	Sample Matrix:	Soil
		Batch No:	98M2680N		
MS Filename:	-	Date Analyzed:	122198	Time Analyzed:	16:21
MSD Filename:	-	Date Analyzed:	122198	Time Analyzed:	16:24
MS Sample No:	**20242-668**	Sample Lab ID:	98-7020-3	Moisture, %	5.0

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration MS	MS Rec% #	QC Limit, % REC
MERCURY	mg/kg	0.877	0.056	0.792	84	74-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
MERCURY	mg/kg	0.877	0.798	85	1	22	74-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* – Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

4924

U. S. EPA - CLP
6
DUPLICATES

EPA SAMPLE NO.

20242-668

Lab Name: Applied P & Ch Lab Contract:

Lab Code: Case No.: SAS No.: SDG No.: 98-7020

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 95.0 % Solids for Duplicate: 95.0

Concentration units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic								NR
Barium								NR
Beryllium								NR
Cadmium								NR
Calcium								NR
Chromium								NR
Cobalt								NR
Copper								NR
Iron								NR
Lead								NR
Magnesium								NR
Manganese								NR
Mercury		0.0555	B	0.0512	B	8.1		CV
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Strontium								NR
Molybdenum								NR
Tin								NR
Lithium								NR

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 7471

Client Name:	OHM Remediation Services (Irvine)	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	987020
Project ID:	Location 87	Project No:	20242	Sample Matrix:	Soil
		Batch No:	98M2680N		
LCS Filename:	-	Date Analyzed:	122198	Time Analyzed:	16:04
LCSD Filename:	-	Date Analyzed:	122198	Time Analyzed:	16:06

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration LCS	LCS Rec% #	QC Limit, % REC
MERCURY	mg/kg	0.833	0	0.800	96	85-115
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
MERCURY	mg/kg	0.833	0.815	98	2	22	85-115
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

4926

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	OHM Remediation Services (Irvine)	Project No:	20242	Collection Date:	12/24/98
Project ID:	MCAS El Toro	Service ID:	987107	Collected by:	
		Lab Sample ID:	98M2693-MB-01	Received Date:	12/24/98
Sample ID:	**98M2693-MB-01**	Sample Matrix	Soil	Moisture %:	
Sample Type:	Method Blank				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
MERCURY	7439-97-6	mg/kg	0.2	<0.055	U	CV		98M2693N	12/24/98	12/24/98	1	7471

Not Detected is shown as IDL moisture-corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

8306

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 7471

Client Name:	OHM Remediation Services (Irvine)	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	987107
Project ID:	MCAS El Toro	Project No:	20242	Sample Matrix:	Soil
		Batch No:	98M2693N		
MS Filename:	-	Date Analyzed:	122498	Time Analyzed:	12:20
MSD Filename:	-	Date Analyzed:	122498	Time Analyzed:	12:22
MS Sample No:	**20242-684**	Sample Lab ID:	98-7107-1	Moisture, %	2.3

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration MS	MS Rec%	#	QC Limit, % REC
MERCURY	mg/kg	0.853	1.5	1.75	29	*	75-125
# of Out-of-control					1		

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec%	#	RPD%	#	QC Limit, % RPD	QC Limit, % REC
MERCURY	mg/kg	0.853	2.04	63	*	74	*	22	75-125
# of Out-of-control				1		1			

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits D - Spiked components diluted out

Comments: _____

8314

U. S. EPA - CLP
6
DUPLICATES

EPA SAMPLE NO.

20242-684

Lab Name: Applied P & Ch Lab Contract:

Lab Code: Case No.: SAS No.: SDG No.: 98-7107

Matrix (soil/water): SOIL Level (low/med): LOW

% Solids for Sample: 97.7 % Solids for Duplicate: 97.7

Concentration units (ug/L or mg/kg dry weight): MG/KG

Analyte	Control Limit	Sample (S)	C	Duplicate	C	RPD	Q	M
Aluminum								NR
Antimony								NR
Arsenic								NR
Barium								NR
Beryllium								NR
Cadmium								NR
Calcium								NR
Chromium								NR
Cobalt								NR
Copper								NR
Iron								NR
Lead								NR
Magnesium								NR
Manganese								NR
Mercury		1.4886		1.2984		13.6		CV
Nickel								NR
Potassium								NR
Selenium								NR
Silver								NR
Sodium								NR
Thallium								NR
Vanadium								NR
Zinc								NR
Strontium								NR
Molybdenum								NR
Tin								NR
Lithium								NR

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 7471

Client Name:	OHM Remediation Services (Irvine)	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	987107
Project ID:	MCAS El Toro	Project No:	20242	Sample Matrix:	Soil
		Batch No:	98M2693N		
LCS Filename:	-	Date Analyzed:	122498	Time Analyzed:	12:03
LCSD Filename:	-	Date Analyzed:	122498	Time Analyzed:	12:06

Spiked Components	Unit	Spike Added	Concentration Unspiked	Concentration LCS	LCS Rec% #	QC Limit, % REC
MERCURY	mg/kg	0.834	0	0.869	104	80-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD	QC Limit, % REC
MERCURY	mg/kg	0.834	0.858	103	1	22	80-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

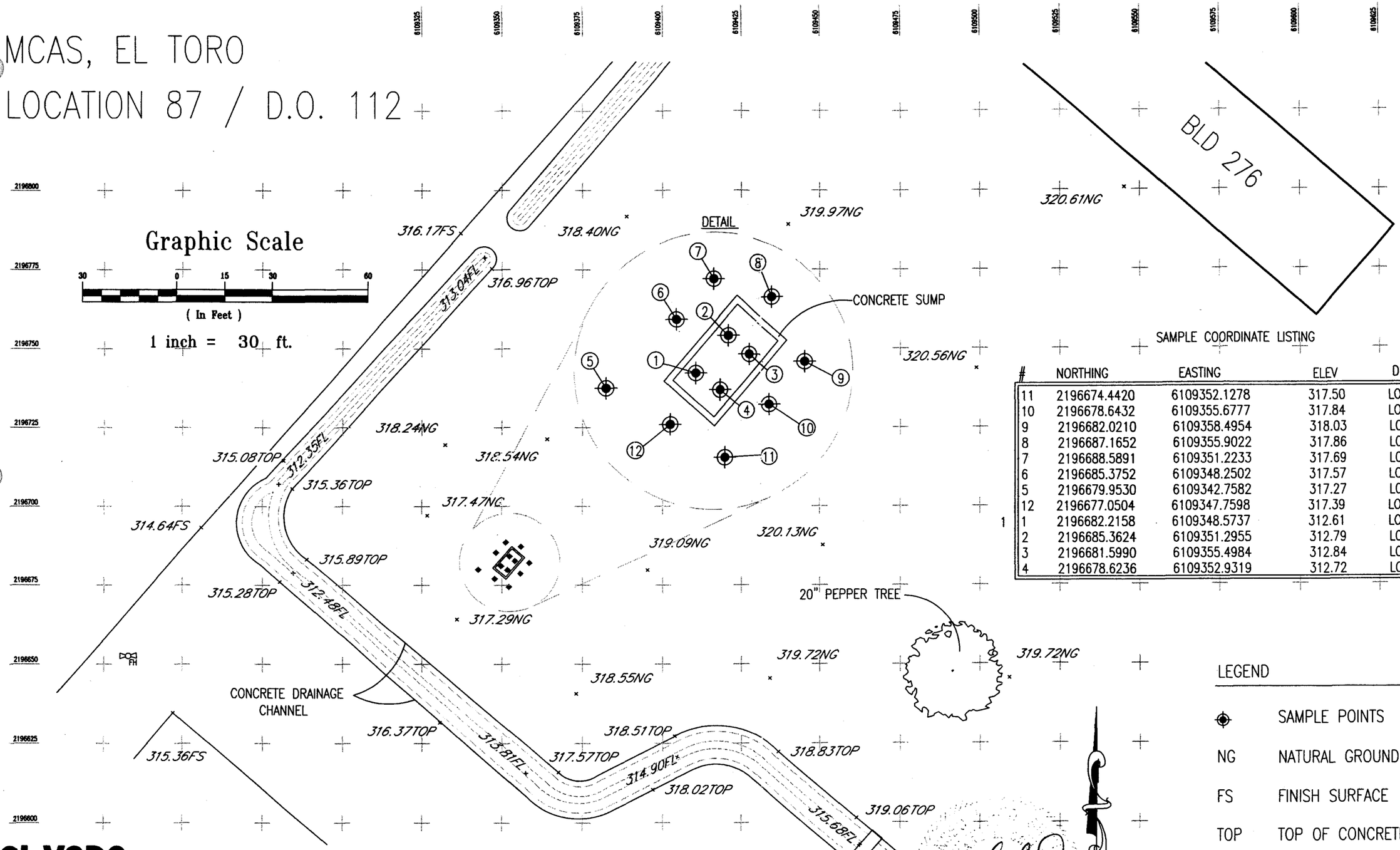
* - Values outside of contract required QC Limits D – Spiked components diluted out

Comments: _____

8316

Appendix K
Land Survey Data

MCAS, EL TORO
LOCATION 87 / D.O. 112



SAMPLE COORDINATE LISTING

#	NORTHING	EASTING	ELEV	DESC
11	2196674.4420	6109352.1278	317.50	LOC 87-11
10	2196678.6432	6109355.6777	317.84	LOC 87-10
9	2196682.0210	6109358.4954	318.03	LOC 87-9
8	2196687.1652	6109355.9022	317.86	LOC 87-8
7	2196688.5891	6109351.2233	317.69	LOC 87-7
6	2196685.3752	6109348.2502	317.57	LOC 87-6
5	2196679.9530	6109342.7582	317.27	LOC 87-5
12	2196677.0504	6109347.7598	317.39	LOC 87-12
1	2196682.2158	6109348.5737	312.61	LOC 87-1
2	2196685.3624	6109351.2955	312.79	LOC 87-2
3	2196681.5990	6109355.4984	312.84	LOC 87-3
4	2196678.6236	6109352.9319	312.72	LOC 87-4

LEGEND

⊕	SAMPLE POINTS
NG	NATURAL GROUND
FS	FINISH SURFACE
TOP	TOP OF CONCRETE
FL	FLOW LINE
FH	FIRE HYDRANT

DATE OF SURVEY: 11-12-98

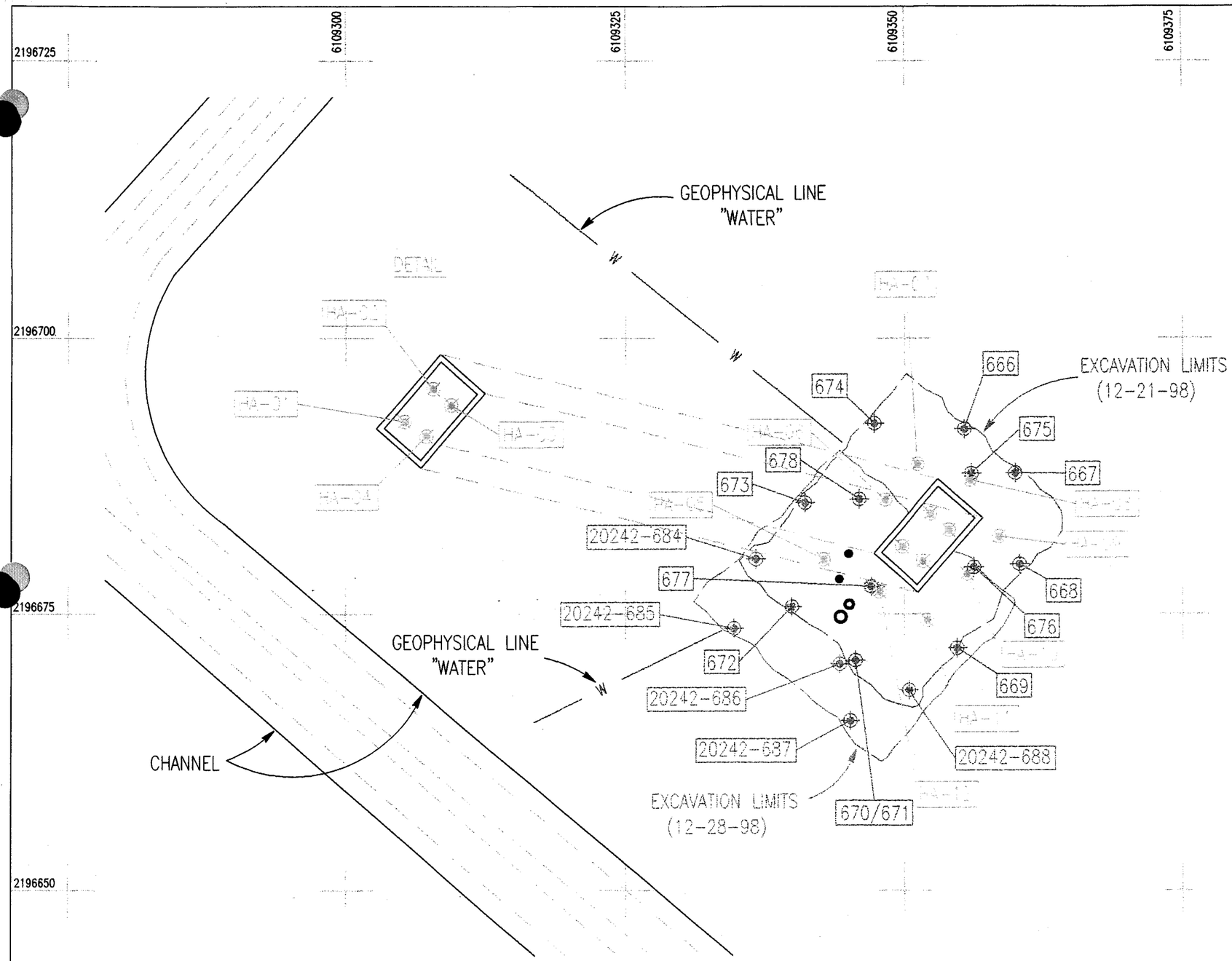
Edward L. Schaut
L.S. 6250
EXP. 6/30/00

CAL VADA SURVEYING, INC.
108 Business Center Dr, Corona, Ca 91720
1 800 CALVADA PHONE: (909) 280-9960 FAX: (909) 280-9746
WEB SITE http://www.calvada.com

JOB NO. 97102-106

PREPARED FOR:
OHM REMEDIATION SERVICES, CORP.
2031 MAIN ST., IRVINE, CA 921714
(714) 263-1146

MCAS, EL TORO
LOCATION 87 / D.O. 112



SAMPLE COORDINATE LISTING

NORTHING	EASTING	ELEV	DESC
12-15-98			
[illegible]	[illegible]	[illegible]	[illegible]
12-21-98			
2196691.7781	6109355.4320	313.90	666
2196687.7948	6109359.9460	314.10	667
2196679.5353	6109360.3564	313.70	668
2196671.9201	6109354.7879	313.95	669
2196670.8071	6109345.5852	313.60	670/671
2196675.6691	6109339.8995	313.72	672
2196685.1002	6109341.0718	313.50	673
2196692.3053	6109347.2850	313.80	674
2196687.7534	6109356.0620	313.35	675
2196679.2545	6109356.3003	313.56	676
2196677.5332	6109347.0044	313.25	677
2196685.4297	6109345.9294	313.45	678
12-28-98			
2196679.0868	6109336.6804	314.52	20242-684
2196673.6953	6109334.7358	314.46	20242-685
2196673.4747	6109344.1830	314.33	20242-686
2196668.3296	6109345.1216	314.31	20242-687
2196668.1055	6109350.4227	314.22	20242-688

LEGEND

- SAMPLE POINTS (12-15-98)
- SAMPLE POINTS (12-21-98)
- SAMPLE POINTS (12-28-98)

Graphic Scale

10 0 5 10 20

(In Feet)

1 inch = 10 ft.

CAL VADA
SURVEYING, INC.
108 Business Center Dr, Corona, Ca 91720
1 800 CALVADA PHONE: (909) 280-9960 FAX: (909) 280-9746
WEB SITE http://www.calvada.com

JOB NO. 97102-106-B

PREPARED FOR:
OHM REMEDIATION SERVICES, CORP.
2031 MAIN ST., IRVINE, CA 921714
(714) 263-1146

Appendix L
Waste Manifests

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land Recycling and Waste Management
P.O. Box 8550
Harrisburg, PA 17105-8550
OFFICIAL PENNSYLVANIA MANIFEST FORM

2500-FM-LRWM0051 REV. 8/98

Form approved. OMB No. 2050-0039 Expires 9-30-99

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ~~CAD617002208~~ CA617002208 — Manifest Document No. 00992

2. Page 1 of 1

Information within the blue border is not required by Federal law but may be required by State law.

3. Generator's Name and Mailing Address
Commanding General (IAO)
MCAS-El Toro PO BOX 95001
Santa Ana, CA 92709-5001

4. Generator's Phone ~~(949) 261-6441~~ (949) 726-2722

A. State Manifest Document Number: PAG 0341714

B. State Gen. ID: - SAME -

5. Transporter 1 Company Name: G+O Transportation Inc.

6. US EPA ID Number: NVR000000760

C. State Trans. ID: PA-AH

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone (702) 643-7245

E. State Trans. ID: PA-AH

9. Designated Facility Name and Site Address
Advanced Environmental Recycling Co., L.L.C.
2591 Mitchell Avenue
Allentown, PA 18103

10. US EPA ID Number: PAD987367216

F. Transporter's Phone ( )

G. State Facility's ID - SAME -

H. Facility's Phone (610) 797-7608

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE SOLID, N.O.S., (MERCURY) 9, NA3077, PG III	3	DM	02150	P	D009
b. HAZARDOUS WASTE LIQUID,N.O.S.,(MERCURY) 9, ~~NA3077~~ NA3082, PG III	1	DM	00750	P	D009
c.					
d.					

J. Additional Descriptions for Materials Listed Above

	Lab Pack	Physical State		Lab Pack	Physical State
a.		S/E Soil w/mercury	c.		
b.		L/E Water w/mercury	d.		

K. Handling Codes for Wastes Listed Above: a. c. b. d.

15. Special Handling Instructions and Additional Information

* Transportation Emergency contact 1-800-553-5053
Caller must I.D. Advanced Environmental Recycling Company
* 11.a.)ERG #171 Soil contaminated with mercury, module 1-11
* 11.b.)ERG #171 Water contaminated with mercury, module 1-8
"ALL QUANTITIES ARE ESTIMATED"

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: EDISON CARDENAS — Signature: Edison Cardenas — MONTH 02 DAY 19 YEAR 99

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: L. J. Justice — Signature: L. J. Justice — MONTH 02 DAY 19 YEAR 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — MONTH DAY YEAR

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name — Signature — MONTH DAY YEAR

GENERATOR

In case of an emergency or spill immediately call the National Response Center (800) 424-8802 and the PA DEP (717) 787-4343

EPA Form 8700-22 (Rev. 9/88) Previous editions are obsolete

Copy 1 - TSD: Mail to PA DEP

1

PAG 0341714

MTI

TREATMENT STANDARDS
RESTRICTED WASTE NOTIFICATION FORM

CA 6 1 9 0 0 2 2 0 8 0 2 9 7 2

This notice is being sent to you in accordance with 40 CFR 268.7(a) to inform you that this shipment contains wastes restricted from land disposal by the USEPA under the land disposal restrictions program. The following wastes or residues from the treatment of these wastes are restricted from land disposal unless the waste is treated in accordance with the treatment standards as specified in 40 CFR 268.40 for nonwastewater (N) or wastewater (W).

Generator Commanding General (SAU) EPA ID# CAD-6190 02208 Manifest # PAG 0341914

Waste analysis data is not attached unless indicated (Data attached _____)

D001 (>10% TOC) (N _)
D001 (<10% TOC) ♦ (W _ N _)
D001 (<10% TOC) *(W _ N _)
(RORGS or CMBST)
D002 ♦ (W _ N _)
D003 (W _ N _)
D003 (CN) (W _ N _)
D003 (Sulfides) (W _ N _)
D003 (Explosives) (W _ N _)
D003 (Water React.) (N _)
D004 (W _ N _)
D005 (W _ N _)
D006 (W _ N _)
D006 (Batteries) (N _)
D007 (W _ N _)
D008 (W _ N _)
D008 (Acid Bat.) (N _)
D009 (W _)
D009 (Lo Hg) (N _)
D009 (Hi Hg-ORG) (N _)
D009 (Hi Hg-INORG) (N _)
D010 (W _ N _)
D011 (W _ N _)
D012 (W _)
D013 (W _)
D014 (W _)
D015 (W _)
D016 (W _)
D017 (W _)
F005 (2Nitro) (W _ N _)
F005 (2 Eth Et) (W _ N _)
F006 (W _ N _)
F007 (W _ N _)
F008 (W _ N _)
F009 (W _ N _)
F010 (W _ N _)
F011 (W _ N _)
F012 (W _ N _)
F019 (W _ N _)
F020 (W _ N _)
F021 (W _ N _)
F022 (W _ N _)
F023 (W _ N _)
F024 (W _ N _)
F025 (Spent Filters) (W _ N _)
F025 (Light Ends) (W _ N _)
F026 (W _ N _)
F027 (W _ N _)
F028 (W _ N _)
F037 (W _ N _)
F038 (W _ N _)
P001 (W _ N _)
P002 (W _ N _)
P003 (W _ N _)
P004 (W _ N _)
P005 (W _ N _)
P006 (W _ N _)
P007 (W _ N _)
P008 (W _ N _)
P009 (W _ N _)
P010 (W _ N _)
P011 (W _ N _)
P012 (W _ N _)
P013 (W _ N _)
P014 (W _ N _)
P015 (W _ N _)
P016 (W _ N _)
P017 (W _ N _)
P018 (W _ N _)
P020 (W _ N _)
P021 (W _ N _)
P022 (W _ N _)
P023 (W _ N _)
P024 (W _ N _)
P026 (W _ N _)
P027 (W _ N _)
P028 (W _ N _)
P029 (W _ N _)
P030 (W _ N _)
P031 (W _ N _)
P033 (W _ N _)
P034 (W _ N _)

P036 (W _ N _)
P037 (W _ N _)
P038 (W _ N _)
P039 (W _ N _)
P040 (W _ N _)
P041 (W _ N _)
P042 (W _ N _)
P043 (W _ N _)
P044 (W _ N _)
P045 (W _ N _)
P046 (W _ N _)
P047 (W _ N _)
P047 (Salts) (W _ N _)
P048 (W _ N _)
P049 (W _ N _)
P050 (W _ N _)
P051 (W _ N _)
P054 (W _ N _)
P056 (W _ N _)
P057 (W _ N _)
P058 (W _ N _)
P059 (W _ N _)
P060 (W _ N _)
P062 (W _ N _)
P063 (W _ N _)
P064 (W _ N _)
P065 (W _)
P065 (Lo Hg IR) (N _)
P065 (Lo Hg RMERC) (N _)
P065 (NIR or NRMERC) (N _)
P065 (Hi Hg IR or RMERC) (N _)
P066 (W _ N _)
P067 (W _ N _)
P068 (W _ N _)
P069 (W _ N _)
P070 (W _ N _)
P071 (W _ N _)
P072 (W _ N _)
P073 (W _ N _)
P074 (W _ N _)
P075 (W _ N _)
P076 (W _ N _)
P077 (W _ N _)
P078 (W _ N _)
P081 (W _ N _)
P082 (W _ N _)
P084 (W _ N _)
P085 (W _ N _)
P087 (W _ N _)
P088 (W _ N _)
P089 (W _ N _)
P092 (W _)
P092 (Lo Hg IR) (N _)
P092 (Lo Hg RMERC) (N _)
P092 (NIR or NRMERC) (N _)
P092 (Hi Hg IR or RMERC) (N _)
P093 (W _ N _)
P094 (W _ N _)
P095 (W _ N _)
P096 (W _ N _)
P097 (W _ N _)
P098 (W _ N _)
P099 (W _ N _)
P101 (W _ N _)
P102 (W _ N _)
P103 (W _ N _)
P104 (W _ N _)
P105 (W _ N _)
P106 (W _ N _)
P108 (W _ N _)
P109 (W _ N _)
P110 (W _ N _)
P111 (W _ N _)
P112 (W _ N _)
P113 (W _ N _)
P114 (W _ N _)
P115 (W _ N _)
P116 (W _ N _)
P118 (W _ N _)
P119 (W _ N _)
P120 (W _ N _)
P121 (W _ N _)

P122 (W _ N _)
P123 (W _ N _)
U001 (W _ N _)
U002 (W _ N _)
U003 (W _ N _)
U004 (W _ N _)
U005 (W _ N _)
U006 (W _ N _)
U007 (W _ N _)
U008 (W _ N _)
U009 (W _ N _)
U010 (W _ N _)
U011 (W _ N _)
U012 (W _ N _)
U014 (W _ N _)
U015 (W _ N _)
U016 (W _ N _)
U017 (W _ N _)
U018 (W _ N _)
U019 (W _ N _)
U020 (W _ N _)
U021 (W _ N _)
U022 (W _ N _)
U023 (W _ N _)
U024 (W _ N _)
U025 (W _ N _)
U026 (W _ N _)
U027 (W _ N _)
U028 (W _ N _)
U029 (W _ N _)
U030 (W _ N _)
U031 (W _ N _)
U032 (W _ N _)
U033 (W _ N _)
U034 (W _ N _)
U035 (W _ N _)
U036 (W _ N _)
U037 (W _ N _)
U038 (W _ N _)
U039 (W _ N _)
U041 (W _ N _)
U042 (W _ N _)
U043 (W _ N _)
U044 (W _ N _)
U045 (W _ N _)
U046 (W _ N _)
U047 (W _ N _)
U048 (W _ N _)
U049 (W _ N _)
U050 (W _ N _)
U051 (W _ N _)
U052 (W _ N _)
U053 (W _ N _)
U055 (W _ N _)
U056 (W _ N _)
U057 (W _ N _)
U058 (W _ N _)
U059 (W _ N _)
U060 (W _ N _)
U061 (W _ N _)
U062 (W _ N _)
U063 (W _ N _)
U064 (W _ N _)
U066 (W _ N _)
U067 (W _ N _)
U068 (W _ N _)
U069 (W _ N _)
U070 (W _ N _)
U071 (W _ N _)
U072 (W _ N _)
U073 (W _ N _)
U074 (W _ N _)
U075 (W _ N _)
U076 (W _ N _)
U077 (W _ N _)
U078 (W _ N _)
U079 (W _ N _)
U080 (W _ N _)
U081 (W _ N _)
U082 (W _ N _)
U083 (W _ N _)
U084 (W _ N _)

U085 (W _ N _)
U086 (W _ N _)
U087 (W _ N _)
U088 (W _ N _)
U089 (W _ N _)
U090 (W _ N _)
U091 (W _ N _)
U092 (W _ N _)
U093 (W _ N _)
U094 (W _ N _)
U095 (W _ N _)
U096 (W _ N _)
U097 (W _ N _)
U098 (W _ N _)
U099 (W _ N _)
U101 (W _ N _)
U102 (W _ N _)
U103 (W _ N _)
U105 (W _ N _)
U106 (W _ N _)
U107 (W _ N _)
U108 (W _ N _)
U109 (W _ N _)
U110 (W _ N _)
U111 (W _ N _)
U112 (W _ N _)
U113 (W _ N _)
U114 (W _ N _)
U115 (W _ N _)
U116 (W _ N _)
U117 (W _ N _)
U118 (W _ N _)
U119 (W _ N _)
U120 (W _ N _)
U121 (W _ N _)
U122 (W _ N _)
U123 (W _ N _)
U124 (W _ N _)
U125 (W _ N _)
U126 (W _ N _)
U127 (W _ N _)
U128 (W _ N _)
U129 (W _ N _)
U130 (W _ N _)
U131 (W _ N _)
U132 (W _ N _)
U133 (W _ N _)
U134 (W _ N _)
U135 (W _ N _)
U136 (W _ N _)
U137 (W _ N _)
U138 (W _ N _)
U140 (W _ N _)
U141 (W _ N _)
U142 (W _ N _)
U143 (W _ N _)
U144 (W _ N _)
U145 (W _ N _)
U146 (W _ N _)
U147 (W _ N _)
U148 (W _ N _)
U149 (W _ N _)
U150 (W _ N _)
U151 (W _)
U151 (Lo Hg RMERC) (N _)
U151 (Lo Hg N-RMERC) (N _)
U151 (Hi Hg) (N _)
U152 (W _ N _)
U153 (W _ N _)
U154 (W _ N _)
U155 (W _ N _)
U156 (W _ N _)
U157 (W _ N _)
U158 (W _ N _)
U159 (W _ N _)
U160 (W _ N _)
U161 (W _ N _)
U162 (W _ N _)
U163 (W _ N _)
U164 (W _ N _)
U165 (W _ N _)
U166 (W _ N _)

U167 (W _ N _)
U168 (W _ N _)
U169 (W _ N _)
U170 (W _ N _)
U171 (W _ N _)
U172 (W _ N _)
U173 (W _ N _)
U174 (W _ N _)
U176 (W _ N _)
U177 (W _ N _)
U178 (W _ N _)
U179 (W _ N _)
U180 (W _ N _)
U181 (W _ N _)
U182 (W _ N _)
U183 (W _ N _)
U184 (W _ N _)
U185 (W _ N _)
U186 (W _ N _)
U187 (W _ N _)
U188 (W _ N _)
U189 (W _ N _)
U190 (W _ N _)
U191 (W _ N _)
U192 (W _ N _)
U193 (W _ N _)
U194 (W _ N _)
U196 (W _ N _)
U197 (W _ N _)
U200 (W _ N _)
U201 (W _ N _)
U202 (W _ N _)
U203 (W _ N _)
U204 (W _ N _)
U205 (W _ N _)
U206 (W _ N _)
U207 (W _ N _)
U208 (W _ N _)
U209 (W _ N _)
U210 (W _ N _)
U211 (W _ N _)
U213 (W _ N _)
U214 (W _ N _)
U215 (W _ N _)
U216 (W _ N _)
U217 (W _ N _)
U218 (W _ N _)
U219 (W _ N _)
U220 (W _ N _)
U221 (W _ N _)
U222 (W _ N _)
U223 (W _ N _)
U225 (W _ N _)
U226 (W _ N _)
U227 (W _ N _)
U228 (W _ N _)
U234 (W _ N _)
U235 (W _ N _)
U236 (W _ N _)
U237 (W _ N _)
U238 (W _ N _)
U239 (W _ N _)
U240 (W _ N _)
U240 (salts/esters) (W _ N _)
U243 (W _ N _)
U244 (W _ N _)
U246 (W _ N _)
U247 (W _ N _)
U248 (W _ N _)
U249 (W _ N _)
U328 (W _ N _)
U353 (W _ N _)
U359 (W _ N _)
____ (W _ N _)
____ (W _ N _)
____ (W _ N _)
____ (W _ N _)
____ (W _ N _)

♦ Managed in CWA, CWA-equivalent or Class I SDWA systems
*Managed in non-CWA/non-CWA equivalent/non-Class I SDWA systems

AERC
2591 MITCHELL AVE.
ALLENTOWN, PA 18103
610-797-7608

AERC 13823

Received A.E.R.C. _____

A.E.R.C.
Approval Profile for Recycling of Hazardous Waste
(PLEASE TYPE OR PRINT IN INK!)

Waste Name/Description: mercury contaminated soil: free liquid mercury

Generator: Commanding General (1AU) (Facility Shipping to A.E.R.C.)

Manifest Address (Street, City, State, Zip): MCAS - El Toro
P.O. Box 95001, Santa Ana, CA 92709-5001

Manifest Contact: Steve Chandler (IT Corp) Phone: (949) 263-1146 x431 (old)
(949) 261-6441 (new)

EPA I.D. #: CA617002208

Billing Address (Street, City, State, Zip): IT Corp. 3347 Michelson Dr., Suite 200, Irvine, CA 92612

Billing Contact: Russ Stoltz Phone: (949) 261-6441

Process Generating Waste - Be Specific: site remediation

DOT INFORMATION

Ship Name: Hazardous waste, solid Hazardous Class: 9 Packing Group: III UN/NA: 3077 RQ: n/a

Physical Description of Waste: solid (soil) with small amounts of free mercury

EPA INFORMATION
Waste Code(s): D009

CHEMICAL COMPOSITION

	Total % (X)	Account for 100% Total PPM (X)	TCLP (MG/L) (X)
soil	99.9		
free mercury	.1	1140.	.12

Total Copper: Ø
Total Cyanides: Ø
Total Mercury: 1140. mg/kg
Total Nickel: Ø
Total Nitrates: Ø
Total Organics: Ø
Total Sulfates: Ø
Total Sulfides: Ø
Total Water: Ø
Total Zinc: Ø
Describe:

HALOGENS
☐ <2% ☐ Cl
☐ 2-5% ☐ F
☐ 5-10% ☐ Br
☐ 10-30% ☐ I
☐ >30% EXACT Ø

LAYERS
☐ MULTILAYERED
☐ BI-LAYERED
☒ SINGLE PHASE

COLOR: brn.

SOLIDS
☐ SUSPENDED Ø %
☐ SETTLEABLE Ø %
☐ DISSOLVED Ø %

ODOR
☒ NONE
☐ MILD
☐ STRONG
DESCRIBE:

PHYSICAL STATE
☒ SOLID ☐ FLOWABLE POWDER
☐ SEMISOLID
☐ LIQUID ☐ PUMPABLE SEMISOLID
☐ GAS

PH
☐ < 2
☐ 2-5
☒ 5-9
☐ 9-12.5
☐ >12.5
☐ EXACT

SPECIFIC GRAV.
☐ <.8
☐ .8-1.0
☒ 1.0
☐ 1.0-1.2
☐ >1.2
☐ EXACT

FLASH POINT (°F)
☐ <80
☐ 80-100
☐ 101-140
☐ 141-200
☐ >200
☒ NO FLASH
☐ EXACT

BTU/LB: 5,000
% ASH: Ø
WATER SOLUBILITY: Ø

VISCOSITY
☐ HIGH (SYRUP)
☐ MEDIUM (OIL)
☐ LOW (WATER)
n/a

HAZARDOUS CHARACTERISTICS
☐ REACTIVE
SPECIFY
☐ RADIOACTIVE
☐ EXPLOSIVE
toxic

ANNUAL REPORT INFORMATION
SIC CODE: 9 1 9 9
SOURCE: A 9 9
FORM: B 3 0 1
ORIGIN: 2
EM TYPE: M 1 4 1

Present Container: metal drum / Size: 55 gal.
Shipping Container: metal drum / 55 gal

Expected Volume:
_____ per month
_____ per year
4 drums one time only

Comments:

CERTIFICATION
I hereby certify that I have personally examined and am familiar with the information submitted in this and all attached documents. Based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed.

SIGNATURE: [illegible] DATE: March 21 1999 PHONE: (949) 726-2772

CUSTOMER COPY

07/29/99 17:18:31

Date Received	Manifest Number	Profile Number	Gross Weight	Tare Weight	Net Weight	Doc Gen Name	Profile Gen Name
12/23/98	0096612270	DZ4379	57040.00	36820.00	20220.00	DRMO-EL TORO MCAS	DRMO-EL TORO MCAS
	0096612350		70580.00	40020.00	30560.00	DRMO-EL TORO MCAS	DRMO-EL TORO MCAS
Total Docs for DZ4379 12/23/98					50780.00		
TOTAL COUNT 2							
12/24/98	0096612349	DZ4379	57580.00	37040.00	20540.00	DRMO-EL TORO MCAS	DRMO-EL TORO MCAS
Total Docs for DZ4379 12/24/98					20540.00		
TOTAL COUNT 1							
1/06/99	0096612378	DZ4379	83200.00	40520.00	42680.00	DRMO-EL TORO MCAS	DRMO-EL TORO MCAS
	0096612379		57480.00	40960.00	16520.00	DRMO-EL TORO MCAS	DRMO-EL TORO MCAS
	0096612380		64860.00	37300.00	27560.00	DRMO-EL TORO MCAS	DRMO-EL TORO MCAS
Total Docs for DZ4379 1/06/99					86760.00		
TOTAL COUNT 3							
Total Documents:					158080.00		
TOTAL COUNT 6							

* * * E N D O F R E P O R T * * *

CHEMICAL WASTE MANAGEMENT, INC
Kettleman Hills Facility

TO: Steve Chandler	DATE: 7/29/99
FROM: Julie Overmyer	PAGES: 1

Please call 209/386-6138 if problems occur.

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No: CA5170028208 Manifest Document No.: 00001

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
Commanding General (1AU)
MCAS-El Toro, P.O. Box 95001
Santa Ana, CA 92709-5001

4. Generator's Phone (714) 726-2772

5. Transporter 1 Company Name: Allwaste of Southern California

6. US EPA ID Number: CAD981615886

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
Chemical Waste Management
35251 Old Skyline Rd.
Kettleman City, CA 93239

10. US EPA ID Number: CAT000646117

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Mercury impacted soils, Non-RCRA hazardous waste, solid	001	CM	00020	Y
b.				
c.				
d.				

EIN

15. Special Handling Instructions and Additional Information
Send copies of manifest, weight ticket, and certificiate of disposal to: Steve Chandler at fax number (949) 263-1147, emergency number (949) 726-3917 , Project #20242, IT Corp P.O. # 99430

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR — Printed/Typed Name: Eddie Benavente — Signature: [signature] — Month 01 Day 06 Year 99

17. Transporter 1 Acknowledgement of Receipt of Materials
TRANSPORTER — Printed/Typed Name: JAMES PAZILON — Signature: [signature] — Month 01 Day 06 Year 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

19. Discrepancy Indication Space
FACILITY

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Year

DO NOT WRITE BELOW THIS LINE.

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802: WITHIN CALIFORNIA, CALL 1-800-852-7550

96612380

DTSC 8022A (4/97)
EPA 8700—22

White: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

GENERATOR

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No: C A 6 1 7 0 0 2 3 2 0 8
Manifest Document No: 0 0 0 0 1

2. Page 1 of 1

Information in the shaded areas is not required by Federal law

[redacted] 96612378

3. Generator's Name and Mailing Address
Commanding General (1AU)
MCAS-El Toro, P.O. Box 95001
Santa Ana, CA 92709-5001

4. Generator's Phone (714) 726-2772

5. Transporter 1 Company Name: ALL WASTE TRANSPORTATION & Remediation Inc
6. US EPA ID Number: C A D 0 6 2 5 4 7 9 9 0

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Chemical Waste Management
35251 Old Skyline Rd.
Kettleman City, CA 93239

10. US EPA ID Number: C A T 0 0 0 6 4 6 1 1 7

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Mercury impacted soils, Non-RCRA hazardous waste, solid	002	CM	00024	Y
b.				
c. 2 bins				
d.				

[redacted]

15. Special Handling Instructions and Additional Information
Send copies of manifest, weight ticket, and certificiate of disposal to: Steve Chandler at fax number (949) 263-1147, emergency number (949) 726-3917 , Project #20242, IT Corp P.O. # 99430

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Eddie Benavente
Signature: [signature]
Month 01 Day 05 Year 99

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DWAIN HARRINGTON
Signature: Dwain Harrington
Month 01 Day 05 Year 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name
Signature
Month Day Year

DO NOT WRITE BELOW THIS LINE.

White To: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS P.O. Box 3000, Sacramento, CA 95812

DTSC 8022A (4/97)
EPA 8700-22

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. *Form designed for use on elite (12-pitch) typewriter*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No: CA617002320800001
Manifest Document No.
2. Page 1 of 1

Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
Commanding General (1AU)
MCAS-El Toro, P.O. Box 95001
Santa Ana, CA 92709-5001
4. Generator's Phone (714) 726-2772

5. Transporter 1 Company Name: ALLWASTE, INC Transportation & Remediation
6. US EPA ID Number: CAD063547991

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Chemical Waste Management
35251 Old Skyline Rd.
Kettleman City, CA 93239
10. US EPA ID Number: CAT000646117

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste Number
a. Mercury impacted soils, Non-RCRA hazardous waste, solid	001	CM	00015	Y	NR
b. BIN					
c.					
d.					

15. Special Handling Instructions and Additional Information
Send copies of manifest, weight ticket, and certificiate of disposal to: Steve Chandler at fax number (949) 263-1147, emergency number (949) 726-3917 , Project #20242, IT Corp P.O. # 99430

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Eddie Benavente
Signature:
Month 01 Day 05 Year 99

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: DARREL BRAMHALL
Signature: Darrel Bramhall
Month 01 Day 05 Year 99

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name
Signature
Month Day Year

GENERATOR
TRANSPORTER
FACILITY

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA, CALL 1-800-852-7550

9661237 9

DO NOT WRITE BELOW THIS LINE.

White: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

DTSC 8022A (4/97)
EPA 8700—22

State of California—Environmental Protection Agency
Form Approved OMB No 2050-0039 (Expires 9-30-99)
Please print or type. *Form designed for use on elite (12-pitch) typewriter.*

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA617002320 8 — Manifest Document No 98121
2. Page 1 of 1

Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
Commanding General (1AU)
MCAS - El Toro, P.O. Box 95001, Santa Ana, CA 927095001
4. Generator's Phone ((714) 726-2772 Attn:

5. Transporter 1 Company Name
Allwaste Transportation
6. US EPA ID Number CAD06354796

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Chemical Waste Management Inc.
35251 Old Skyline Road
Kettleman City, CA 93239
10. US EPA ID Number CAT000646117

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non-RCRA hazardous waste solid	001 2	CM	00015 ~~00024~~	Y
b.				
c.				
d.				

15. Special Handling Instructions and Additional Information

Caution: Wear appropriate protective clothing and respiratory protection when handling.
IN CASE OF EMERGENCY CONTACT: Chem -Tel, Inc. at 1-800-255-3924
Site pick up address: MCAS El Toro

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Eddie Benevente — Signature: [signature] — Month 12 Day 22 Year 98

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Darrel Beamhall — Signature: [signature] — Month 12 Day 22 Year 98

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month — Day — Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month — Day — Year

GENERATOR — TRANSPORTER — FACILITY

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CAL-1-800-852-7550

DO NOT WRITE BELOW THIS LINE.

DTSC 8022A (4/97)
EPA 8700—22

White: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA617002320 8 Manifest Document No. 98121

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
Commanding General (1AU)
MCAS - El Toro, P.O. Box 95001, Santa Ana, CA 927095001

4. Generator's Phone ((714) 726-2772 Attn:

5. Transporter 1 Company Name
ALLWASTE Reduction TRANSPORTATION

6. US EPA ID Number
CAD 0 6 3 5 4 7 9 9 6

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
Chemical Waste Management Inc.
35251 Old Skyline Road
Kettleman City, CA 93239

10. US EPA ID Number
CAT000646117

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Non-RCRA hazardous waste solid	2	CM	00024	Y
b. 2 BINS				
c.				
d.				

Special Handling Instructions and Additional Information

Caution: Wear appropriate protective clothing and respiratory protection when handling.
IN CASE OF EMERGENCY CONTACT: Chem-Tel, Inc. at 1-800-255-3924 BINS. CLC 184/153
Site pick up address: MCAS El Toro

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
E. Benavente	[signature]	1 2	2 2	9 8

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
L. LEWIS	L. Lewis	1 2	2 2	9 8

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year

DO NOT WRITE BELOW THIS LINE.

White: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS.
To: P.O. Box 3000, Sacramento, CA 95812

DTSC 022A (4/97)
ATTACHMENT 22

State of California—Environmental Protection Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-99)
Please print or type. Form designed for use on elite (12-pitch) typewriter.

See Instructions on back of page 6.

Department of Toxic Substances Control
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CA 6 1 7 0 0 2 3 2 0 8 — Manifest Document No. 9 8 1 2 1 — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law

3. Generator's Name and Mailing Address
Commanding General (1AU)
MCAS - El Toro, P.O. Box 95001, Santa Ana, CA 927095001

4. Generator's Phone (714) 726-2772 Attn:

5. Transporter 1 Company Name
ALLWASTE TRANSPORTATION AND REMEDIATION, INC.

6. US EPA ID Number
C A D 0 6 3 5 4 7 9 9 6

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
Chemical Waste Management Inc.
35251 Old Skyline Road
Kettleman City, CA 93239

10. US EPA ID Number
C A T 0 0 0 6 4 6 1 1 7

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol
a. Non-RCRA hazardous waste solid	01	CM	0002 15 RL	Y
b.				
c.				
d.				

B/N

15. Special Handling Instructions and Additional Information

Caution: Wear appropriate protective clothing and respiratory protection when handling.
IN CASE OF EMERGENCY CONTACT: Chem-Tel, Inc. at 1-800-255-3924
Site pick up address: MCAS El Toro

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: LETA L. SUAREZ — Signature: [signature] — Month 1 2 Day 2 3 Year 9 8

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: ROBERT EDRINGTON — Signature: [signature] — Month 1 2 Day 2 3 Year 9 8

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name — Signature — Month Day Year

DO NOT WRITE BELOW THIS LINE.

White: TSDF SENDS THIS COPY TO DTSC WITHIN 30 DAYS.
To: P.O. Box 3000, Sacramento, CA 95812

DTSC 8022A (4/97)
EPA 8700-22

GENERATOR

IN CASE OF EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER (800) 424-8802 WITHIN CALIFORNIA CALL (800) 852-7550.

Appendix M
LDC Data Validation Reports

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: October 28, 1998

LDC Report Date: January 27, 1999

Matrix: Soil

Parameters: Mercury

Validation Level: NFESC Level C & D

Laboratory: Quanterra Environmental Services

Sample Delivery Group (SDG): 134835

Sample Identification

20242-615	20242-635
20242-616	20242-615MS
20242-617	20242-615MSD
20242-618	20242-635MS
20242-619	20242-635MSD
20242-620	
20242-621	
20242-622	
20242-623	
20242-624	
20242-625**	
20242-626	
20242-627	
20242-628	
20242-629	
20242-630	
20242-631	
20242-632	
20242-633	
20242-634	

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 25 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7471 for Mercury.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP was not utilized in this SDG.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits .

VI. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate sample analyses specified for the samples in this SDG, and therefore duplicate sample analyses were not performed for this SDG.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Not required by the method.

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

Samples 20242-629 and 20242-630 were identified as field duplicates. No mercury was detected in any of the samples with the following exceptions:

Analyte	Concentration (mg/Kg)		RPD
	20242-629	20242-630	
Mercury	4.3	4.4	2

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Mercury - Data Qualification Summary - SDG 134835

No Sample Data Qualified in this SDG

MCAS El Toro
Mercury - Laboratory Blank Data Qualification Summary - SDG 134835

No Sample Data Qualified in this SDG

LDC #: 3502A4 **VALIDATION COMPLETENESS WORKSHEET**

SDG #: 134835 ____EPA Level III/IV ___NFESC Level C/D

Laboratory: Quanterra Environmental Services

Date: 20-JAN-99

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Mercury (EPA SW 846 Method 7471)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/28/98
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Technique ~~ICP~~ NOT USED
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Furnace Atomic Absorption QC	N	Technique not used
IX.	ICP Serial Dilution	N	(ICP) Technique not used NOT REQUIRED BY METHOD
X.	Sample Result Verification	A	Not reviewed for Level III/C validation.
XI.	Overall Assessment of Data	A	
XII.	Field Duplicates	SW	FD=(15,16)
XIII.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV/D validation

1	20242-615 soil	11	20242-625** soil	21	20242-635 soil
2	20242-616	12	20242-626	22	20242-615MS
3	20242-617	13	20242-627	23	20242-615MSD
4	20242-618	14	20242-628	24	20242-635MS
5	20242-619	15	20242-629	25	20242-635MSD
6	20242-620	16	20242-630	26	PB
7	20242-621	17	20242-631	27	
8	20242-622	18	20242-632	28	
9	20242-623	19	20242-633	29	
10	20242-624	20	20242-634	30	

Notes:

1.0

METSW.CMB

.DC #: 3502A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer:
2nd reviewer:

All circled elements are applicable to each sample.

Sample ID	Matrix	Parameter
1	soil	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
2		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
3		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
4		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
5		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
6		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
7		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
8		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
9		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
10		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
11		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
12		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
13		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
14		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
15		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
16		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
17		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
18		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
19		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
20		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
21		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
22		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
23		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
24		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
25	↓	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B,
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
~~ICP-MS~~ CV		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
[illegible]		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B,

Comments:

LDC #: 3502A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer:
2nd reviewer:

Were samples preserved? Y N (N/A)
All circled dates have exceeded the technical holding time.
(Y) N N/A Were all cooler temperatures within validation criteria?

METHOD: EPA SW 846 Method 6010/7000		(CVAA) Hg	(ICP) Al, Sb, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Mg, Mn, Ni, K, Ag, Na, V, Zn	(GFAA) —	(GFAA) —	(GFAA) —	(GFAA) —	
Sample ID:	Sampling Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Qualifier
1	10/28/98	11/2/98						NO QUAL
2								
3								
4								
5								
6		11/9/98						
7		11/2/98						
8		11/9/98						
9		11/2/98						
10		11/9/98						
11		11/2/98						
12		11/9/98						
13		11/2/98						
14		11/9/98						
15		11/2/98						
16								
17		11/9/98						
18		11/2/98						
19		11/9/98						
20		11/2/98						
21		11/9/98						
22		11/2/98						
23								
24		11/9/98						
25								

Technical Holding Time Criteria

Mercury:	28 days preserved pH <2
All other metals	6 months preserved pH <2
Cyanide	14 days preserved pH >12
Organic lead	Extracted within 14 days of sampling, analyzed within 40 days of extraction. (no preservation)

LDC #: 35[illegible]A4
SDG #: 13[illegible]35

VALIDATION FIND[illegible]GS WORKSHEET
Cal[illegible]tion

Pa[illegible] of 1
Revie[illegible]
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?

Y N N/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%) and cyanide (85-115%)?

LEVEL IV ONLY:

Y N N/A Was a midrange cyanide standard distilled?

Y N N/A Are all correlation coefficients $\geq$0.995?

Y N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data

Comments:

CAL.4SW

LDC #: 3502A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
	ICP (Initial calibration)						
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	2.49	2.5	99.6	99.6	Y
	ICP (Continuing calibration)						
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	4.93	5.00	98.6	98.6	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 35[illegible] A4
SDG #: [illegible]835

VALIDATION FIN[illegible]'GS WORKSHEET
Prep Blank/I[illegible]CCB Findings

[illegible]: 1 of 1
Re[illegible]er: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)
Blank concentration units, unless otherwise noted: µg/L
Associated Samples: all

	Blank Identification										
Analyte	ICB	CCB1	CCB2	CCB3	PB ( )	ICB	CCB1	CCB2	CCB3	PB ( )	Analyte
Al											Al
Sb											Sb
As											As
Ba											Ba
Be											Be
Cd											Cd
Ca											Ca
Cr											Cr
Co											Co
Cu											Cu
Fe											Fe
Pb											Pb
Mg											Mg
Mn											Mn
Hg											Hg
Ni											Ni
K											K
Se											Se
Ag											Ag
Na											Na
Tl											Tl
V											V
Zn											Zn
B											B
Mo											Mo
Sr											Sr

No Blanks qualify

The highest concentration found in the Prep Blank and ICB/CCB for each analyte is circled on this worksheet and transferred to the PB/ICB/CCB Qualified Samples worksheet.

BLNKICB.4SW

LDC #: [illegible]
SDG #: 134835

ICP Interference Check Sample

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N (N/A) Were ICP interference check samples performed as required?

Y N (N/A) Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
		ICP	not	performed.		

Comments:

ICS.4SW

LDC #: 3[redacted]A4
SDG #: 1[redacted]635

VALIDATION FIN[redacted]GS WORKSHEET
Matrix Spike/Ma[redacted]Spike Duplicates

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

(Y) N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125~~ 80-120? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Were all duplicate sample relative percent differences (RPD) ≤ ~~20%~~ 15% for water samples and ≤ ~~35%~~ 25% for soil samples?

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
		22, 23							
		24, 25							

Comments:

MSD.4SW

LDC #: 3502A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all aqueous LCS percent recoveries (%R) within the control limits of 80-120% and all soil LCS %R within laboratory established control limits.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications

Comments:

LDC #: 3[illegible]44
SDG #: 1[illegible]35

VALIDATION FIN[illegible]GS WORKSHEET
Furnace Atom[illegible] Absorption QC

P[illegible] 1 of 1
Revie[illegible]: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW 846 Method 6010/7000)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A If MSA was performed was the correlation coefficients ≥0.995 ?

LEVEL IV ONLY:

Y N N/A Do all applicable analyses have duplicate injections?
Y N N/A For sample concentrations > CRDL, are applicable duplicate injection RSD values <20% ?
Y N N/A Are analytical spike recoveries with in the control limits of 85-115% ?

Sample ID	Findings				Criteria	Qualifications
	As	Pb	Se	Tl		
	Technique not used					

Comments:

FURNQC.4SW

LDC #: 3502A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
ICP Serial Dilution

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A If analyte concentrations were > 50X the IDL, was an ICP serial dilution analyzed?
Y N N/A Were ICP serial dilution percent differences (%D) ≤10%?
Y N N/A Is there evidence of negative interference? If yes, professional judgement will be used to qualify the data.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Diluted Sample ID	Matrix	Analyte	%D (Limits)	Associated Samples	Qualifications
		ICP not used					

Comments:

LDC #: 35[illegible]A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
	ICP interference check						
LCSS	Laboratory control sample	Hg	0.805	0.833	96.6	97	Y
~~24~~ 22	Matrix spike	Hg	(SSR-SR) 6.48 - 3.22	1.67	NC	NC	Y
25	~~Duplicate~~ MSD	Hg	34.8 - 37.6	0.167	NC	NC	Y
	ICP serial dilution						

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.4SW

DC #: 3502 A4
SDG #: 134835

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Have results been reported and calculated correctly?
Y N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
Y N N/A Are all detection limits below the CRDL?

Detected analyte results for 20242-6625 were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor

Recalculation:

$$Hg = \frac{0.133 \times 100 \times 500}{0.982 \times 1000 \times 0.6} = 11.2865 \text{ mg/Kg}$$

#	Sample ID	Analyte	Reported Concentration (mg/Kg)	Calculated Concentration (mg/Kg)	Acceptable (Y/N)
	11	Hg	11.8	11.3	Y

Note:

RECALC.4SW

LDC #: 3[illegible]A4
SDG #: 134735

VALIDATION FIN[illegible]GS WORKSHEET
Overall Assessment of Data

[illegible]: 1 of 1
Rev[illegible]er: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

Y N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualification

Comments: _____

OVR.4SW

LDC #: 3502A4
SDG #: 134825

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration (mg/Kg)		RPD (Limits)	Difference (Limits)	Qualifications
	15	16			
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Mercury	4.3	4.4	2		
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					
Boron					
Molybdenum					
Strontium					

Notes:

C #: 3502 Alt
G #: 134835

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer:
2nd reviewer:

ETHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Y N/A Were field blanks identified in this SDG?
N N/A Were target analytes detected in the field blanks?

mple: _____ Field Blank / Trip Blank / Rinsate / Other _____ (circle one)

Analyte	Concentration Units ( )

Sample: _____ Field Blank / Trip Blank / Rinsate / Other _____ (circle one)

Analyte	Concentration Units ( )

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: October 28, 1998

LDC Report Date: January 27, 1999

Matrix: Soil

Parameters: Mercury

Validation Level: NFESC Level C

Laboratory: Quanterra Environmental Services

Sample Delivery Group (SDG): 134835

Sample Identification

20242-615
20242-616
20242-617
20242-618
20242-615MS
20242-615MSD

All samples in this SDG underwent TCLP extraction

Introduction

This data review covers 6 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 7470A for Mercury.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP was not utilized in this SDG.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Mercury- Data Qualification Summary - SDG 134835

No Sample Data Qualified in this SDG

MCAS El Toro
Mercury- Laboratory Blank Data Qualification Summary - SDG 134835

No Sample Data Qualified in this SDG

LDC #: 3502A14a **VALIDATION COMPLETENESS WORKSHEET**

SDG #: 134835 ___ EPA Level III X NFESC Level C

Laboratory: Quanterra Environmental Services

Date: 20-JAN-99

Page: 1 of 1

Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: TCLP Mercury (EPA SW 846 Method 7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/28/98
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Technique not used.
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Technique not used
IX.	Furnace Atomic Absorption QC	N	↓ ↓ ↓
X.	ICP Serial Dilution	N	↓ ↓ ↓
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	20242-615 soil	11		21	
2	20242-616	12		22	
3	20242-617	13		23	
4	20242-618	14		24	
5	20242-615MS	15		25	
6	20242-615MSD	16		26	
7	PB	17		27	
8		18		28	
9		19		29	
10		20		30	

Notes: ___

0.083

METSW.III

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: October 28, 1998

LDC Report Date: January 27, 1999

Matrix: Soil

Parameters: Mercury

Validation Level: NFESC Level C

Laboratory: Quanterra Environmental Services

Sample Delivery Group (SDG): 134835

Sample Identification

20242-615
20242-615MS
20242-615MSD

All samples in this SDG underwent STLC extraction

Introduction

This data review covers 3 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Methods 7470A for Mercury.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP was not utilized in this SDG.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate sample analyses specified for the samples in this SDG, and therefore duplicate sample analyses were not performed for this SDG.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards (ICP-MS)

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Mercury- Data Qualification Summary - SDG 134835

No Sample Data Qualified in this SDG

MCAS El Toro
Mercury- Laboratory Blank Data Qualification Summary - SDG 134835

No Sample Data Qualified in this SDG

LDC #: 3502A14b **VALIDATION COMPLETENESS WORKSHEET** Date: 20-JAN-99

SDG #: 134835 ____EPA Level III X NFESC Level C Page: 1 of 1

Laboratory: Quanterra Environmental Services Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: STLC Mercury (EPA SW 846 Method 7470A)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 10/28/98
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Technique not used
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	
VIII.	Internal Standard (ICP-MS)	N	Technique not used
IX.	Furnace Atomic Absorption QC	N	↓ ↓ ↓
X.	ICP Serial Dilution	N	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	20242-615 soil	11		21	
2	20242-615MS ↓	12		22	
3	20242-615MSD	13		23	
4	PB	14		24	
5		15		25	
6		16		26	
7		17		27	
8		18		28	
9		19		29	
10		20		30	

Notes:

0.083

3502A14B.W3

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: December 18, 1998

LDC Report Date: February 23, 1999

Matrix: Soil

Parameters: Mercury

Validation Level: NFESC Level C & D

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 98-7020

Sample Identification

20242-666**
20242-667
20242-668
20242-669
20242-670
20242-671
20242-672
20242-673
20242-674
20242-675
20242-676
20242-677**
20242-678
20242-668MS
20242-668MSD
20242-668DUP

**Indicates sample underwent NFESC Level D review

Introduction

This data review covers 16 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7471 for Mercury.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a NFESC Level D review. A NFESC Level C review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Level C criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP was not utilized in this SDG.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Not required by the method.

XI. Sample Result Verification

All sample result verifications met validation criteria for samples on which a NFESC Level D review was performed. Raw data were not evaluated for the samples reviewed by Level C criteria.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Mercury - Data Qualification Summary - SDG 98-7020

No Sample Data Qualified in this SDG

MCAS El Toro
Mercury - Laboratory Blank Data Qualification Summary - SDG 98-7020

No Sample Data Qualified in this SDG

LDC #: 3600A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 16-FEB-1999

SDG #: 98-7020 ____EPA Level III/IV X NFESC Level C/D Page: 1 of 1

Laboratory: Applied P & Ch Laboratory Reviewer: [illegible]

2nd Reviewer: [illegible]

METHOD: Mercury (EPA SW 846 Method 7471)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/18/98
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Technique not used
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	A	DUP
VII.	Laboratory Control Samples (LCS)	A	LCS/LCSD
VIII.	Furnace Atomic Absorption QC	N	
IX.	ICP Serial Dilution	N	Technique not used
X.	Sample Result Verification	A	Not reviewed for Level III/C validation.
XI.	Overall Assessment of Data	A	
XII.	Field Duplicates	N	
XIII.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Level IV/D validation

1	20242-666** soil	11	20242-676 soil	21	
2	20242-667	12	20242-677**	22	
3	20242-668	13	20242-678	23	
4	20242-669	14	20242-668MS	24	
5	20242-670	15	20242-668MSD	25	
6	20242-671	16	20242-668DUP	26	
7	20242-672	17	PB	27	
8	20242-673	18		28	
9	20242-674	19		29	
10	20242-675	20		30	

Notes:

0.75

METSW.CMB

C #: 3600 [illegible]
DG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

l circled elements are applicable to each sample.

Sample ID	Matrix	Parameter
1	soil	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
2		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
3		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
4		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
5		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
6		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
7		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
8		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
9		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
10		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, ~~K, Se~~, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
11		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
12		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
13		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
14		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
15		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
16		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B,

Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
ICP Trace		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
ICP-~~MS~~CV	soil	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B, ___ ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, CN⁻, Mo, B,

Comments: _____

LDC #: 5600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Page: 1 of 1
Reviewer: [illegible]
2nd reviewer: [illegible]

Were samples preserved? Y N (N/A)
All circled dates have exceeded the technical holding time.
(Y) N N/A Were all cooler temperatures within validation criteria?

METHOD: EPA SW 846 Method 6010/7000		(CVAA) Hg	(ICP) Al, Sb, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Mg, Mn, Ni, K, Ag, Na, V, Zn	(GFAA) —	(GFAA) —	(GFAA) —	(GFAA) —	
Sample ID:	Sampling Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Analysis Date	Qualifier
1	12/18/98	12/21/98						NO QUALS
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								

Technical Holding Time Criteria

Mercury:	28 days preserved pH <2
All other metals	6 months preserved pH <2
Cyanide	14 days preserved pH >12
Organic lead	Extracted within 14 days of sampling, analyzed within 40 days of extraction. (no preservation)

LDC #: 3600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Calibration

Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?

Y N N/A Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110% for all analytes except mercury (80-120%) and cyanide (85-115%)?

LEVEL IV ONLY:

Y N N/A Was a midrange cyanide standard distilled?

Y N N/A Are all correlation coefficients $\geq$0.995?

Y N N/A Were recalculated results acceptable? See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.

#	Date	Calibration ID	Analyte	%R	Associated Samples	Qualification of Data

Comments:

LDC #: 3400A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
~~ICV~~	ICP (Initial calibration)						
	GFAA (Initial calibration)						
ICV	CVAA (Initial calibration)	Hg	7.35	7.5	98	97.9	Y
	ICP (Continuing calibration)						
	GFAA (Continuing calibration)						
CCV	CVAA (Continuing calibration)	Hg	4.86	5.0	97.2	97.3	Y
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibation)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 7600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Prep Blank/ICB/CCB Findings

Reviewer: 2
2nd Reviewer: 2

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)
Blank concentration units, unless otherwise noted: µg/L Associated Samples: all

	Blank Identification										
Analyte	ICB	CCB1	CCB2	CCB3	PB ( )	ICB	CCB1	CCB2	CCB3	PB ( )	Analyte
Al											Al
Sb											Sb
As											As
Ba											Ba
Be											Be
Cd											Cd
Ca											Ca
Cr											Cr
Co											Co
Cu											Cu
Fe											Fe
Pb											Pb
Mg											Mg
Mn											Mn
Hg											Hg
Ni											Ni
K											K
Se											Se
Ag											Ag
Na											Na
Tl											Tl
V											V
Zn											Zn
B											B
Mo											Mo
Sr											Sr

Blank Samples
no Qualifiers

The highest concentration found in the Prep Blank and ICB/CCB for each analyte is circled on this worksheet and transferred to the PB/ICB/CCB Qualified Samples worksheet

LDC #: 3[redacted]X4
SDG #: 0[redacted]7020

VALIDATION FIN[redacted]GS WORKSHEET
ICP Interfere[redacted] Check Sample

[redacted]ge: 1 of 1
R[redacted]wer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N (N/A) Were ICP interference check samples performed as required?

Y N (N/A) Were the AB solution percent recoveries (%R) within the control limits of 80-120% ?

LEVEL IV ONLY:

Y N (N/A) Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	ICS Identification	Analyte	Finding	Associated Samples	Qualifications
		Technique not used				

Comments:

ICS.4SW

LDC #: 3600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Was a matrix spike analyzed for each matrix in this SDG?

(Y) N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 74-120 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

(Y) N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ ~~35~~ ~~20~~ 20 % for soil samples? 22 %

LEVEL IV ONLY:

(Y) N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
		14, 15			OK				

Comments:

MSD

LDC #: 3[illegible]A4
SDG #: 9[illegible]7020

VALIDATION FIND[illegible]GS WORKSHEET
Duplicate Analysis

P[illegible] 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a duplicate sample analyzed for each matrix in this SDG?

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ ~~30~~ 22% for soil samples? If no, see qualifications below. A control limit of ±R.L. (±2X R.L. for soil) was used for sample values that were <5X the R.L., including the case when only one of the duplicate sample values was <5X R.L.. If field blanks were used for laboratory duplicates, note in the Overall Assessment.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Duplicate ID	Matrix	Analyte	RPD (Limits)	Difference (Limits)	Associated Samples	Qualifications
		16			OK			

Comments:

DUP.4SW

LDC #: 2600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a laboratory control sample (LCS) analyzed for each matrix in this SDG?

Y N N/A Were all aqueous LCS percent recoveries (%R) within the control limits of ~~80-120%~~ 75-120 and all soil LCS %R within ~~laboratory estab~~lished control limits. 74-120

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	LCS ID	Matrix	Analyte	%R (limits)	Associated Samples	Qualifications

Comments:

LDC #: 36[illegible]A4
SDG #: 98-7020

VALIDATION FIN[illegible]GS WORKSHEET
Furnace Atomic Absorption QC

P[illegible] 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace metals (EPA SW 846 Method 6010/7000)
Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A If MSA was performed was the correlation coefficients ≥0.995 ?

LEVEL IV ONLY:

Y N N/A Do all applicable analyses have duplicate injections?
Y N N/A For sample concentrations > CRDL, are applicable duplicate injection RSD values <20% ?
Y N N/A Are analytical spike recoveries with in the control limits of 85-115% ?

Sample ID	Findings				Criteria	Qualifications
	As	Pb	Se	Tl		
	technique not used					

Comments:

FURNQC.4SW

LDC #: 3600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
ICP Serial Dilution

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A If analyte concentrations were > 50X the IDL, was an ICP serial dilution analyzed?
Y N N/A Were ICP serial dilution percent differences (%D) ≤10%?
Y N N/A Is there evidence of negative interference? If yes, professional judgement will be used to qualify the data.

LEVEL IV ONLY:

Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	Diluted Sample ID	Matrix	Analyte	%D (Limits)	Associated Samples	Qualifications
		not required by method					

Comments:

LDC #: 36[illegible]A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Page: 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$$\%R = \frac{Found}{True} \times 100$$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$$RPD = \frac{|S-D|}{(S+D)/2} \times 100$$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula: 0.950

$$\%D = \frac{|I-SDR|}{I} \times 100$$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
NA	ICP interference check	—					
LCSS	Laboratory control sample	Hg	0.800	~~0.877~~ 0.833	96.0	96	Y
14	Matrix spike	Hg	(SSR-SR) 0.792 - 0.056 0.736	0.877	83.9	84	Y
16	Duplicate	Hg	0.0555 B	0.0512 B	8.1	8.1	Y
N/A	ICP serial dilution	—					

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

TOTCLC.4SW

..3600A2
#: 93-7020

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: ____ of ____
Reviewer: ____
2nd reviewer: ____

OD: Trace Metals (EPA SW 846 Method 6010 7000)

e see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

N/A Have results been reported and calculated correctly?
N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
N/A Are all detection limits below the CRDL?

ted analyte results for 20242-677 were recalculated and verified using the ing equation:

ration = (RD)(FV)(Dil) / (In. Vol.)

= Raw data concentration
= Final volume (ml)
= Initial volume (ml) or weight (G)
= Dilution factor

Recalculation:

Hg = 24102.791 / 0.883 x 1000 =

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
12	Hg	27.1	27.0	Y

RECALC.4SW

LDC #: 3[illegible]DA4
SDG #: 98-7020

VALIDATION FI[illegible]GS WORKSHEET
Overall Assessment of Data

[illegible]: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

All available information pertaining to the data were reviewed using professional judgement to compliment the determination of the overall quality of the data.

(Y) N N/A Was the overall quality and usability of the data acceptable?

#	Date	Sample ID	Finding	Associated Samples	Qualification

Comments: _____

OVR.4SW

LDC #: 3600A4
SDG #: 98-7020

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer:
2nd reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Y N N/A Were field duplicate pairs identified in this SDG?
Y N N/A Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ( )		RPD (Limits)	Difference (Limits)	Qualifications
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Mercury					
Nickel					
Potassium					
Selenium					
Silver					
Sodium					
Thallium					
Vanadium					
Zinc					
Cyanide					
Boron					
Molybdenum					
Strontium					

Notes:

DC #: 3600A4
DG #: 98-702 D

VALIDATION FINDINGS WORKSHEET
Field Blanks

Reviewer: [illegible]
2nd reviewer: [illegible]

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Y N N/A Were field blanks identified in this SDG?
Y N N/A Were target analytes detected in the field blanks?

Sample: _____ Field Blank / Trip Blank / Rinsate / Other _____ (circle one)

Analyte	Concentration Units ( )

Sample: _____ Field Blank / Trip Blank / Rinsate / Other _____ (circle one)

Analyte	Concentration Units ( )

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: MCAS El Toro

Collection Date: December 23, 1998

LDC Report Date: February 23, 1999

Matrix: Soil

Parameters: Mercury

Validation Level: NFESC Level C

Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 98-7107

Sample Identification

20242-684
20242-685
20242-686
20242-687
20242-688
20242-684MS
20242-684MSD
20242-684DUP

Introduction

This data review covers 8 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 7471 for Mercury.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found above the reporting limit in the initial, continuing and preparation blanks with the following exceptions:

Method Blank ID	Analyte	Concentration	Associated Samples
CCB1	Mercury	-0.2 ug/L	All samples in SDG 98-7107

Sample concentrations were compared to the maximum contaminant concentrations detected in the ICB/CCB/PBs. The sample concentrations were either not detected or were significantly greater (>5X blank contaminants) than the concentrations found in the associated method blanks.

IV. ICP Interference Check Sample (ICS) Analysis

ICP was not utilized in this SDG.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) analyses were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Analyte	MS (%R) (Limits)	MSD (%R) (Limits)	RPD (Limits)	Flag	A or P
20242-684MS/MSD (All samples in SDG 98-7107)	Mercury	29 (74-120)	63 (74-120)	-	J (all detects) R (all non-detects)	A

VI. Duplicate Sample Analysis

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable. Results were within QC limits.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VIII. Internal Standards

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

Not required by the method.

XI. Sample Result Verification

Raw data were not reviewed for this SDG.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

MCAS El Toro
Mercury - Data Qualification Summary - SDG 98-7107

SDG	Sample	Analyte	Flag	A or P	Reason
98-7107	20242-684 20242-685 20242-686 20242-687 20242-688	Mercury	J (all detects) R (all non-detects)	A	Matrix spike analysis (%R)

MCAS El Toro
Mercury - Laboratory Blank Data Qualification Summary - SDG 98-7107

No Sample Data Qualified in this SDG

LDC #: 3600B4

VALIDATION COMPLETENESS WORKSHEET

SDG #: 98-7107 ____EPA Level III X NFESC Level C

Laboratory: Applied P & Ch Laboratory

Date: 16-FEB-1999

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: Mercury (EPA SW 846 Method 7471)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 12/23/98
II.	Calibration	A	
III.	Blanks	SW	
IV.	ICP Interference Check Sample (ICS) Analysis	N	Technique not used
V.	Matrix Spike Analysis	SW	MS MSD
VI.	Duplicate Sample Analysis	A	DUP
VII.	Laboratory Control Samples (LCS)	A	LCS/LCSD
VIII.	Internal Standard (ICP-MS)	N	Technique not used
IX.	Furnace Atomic Absorption QC	N	↓ ↓ ↓
X.	ICP Serial Dilution	N	
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples:

1	20242-684 soil	11		21		31	
2	20242-685	12		22		32	
3	20242-686	13		23		33	
4	20242-687	14		24		34	
5	20242-688	15		25		35	
6	20242-684MS	16		26		36	
7	20242-684MSD	17		27		37	
8	20242-684DUP	18		28		38	
9	PB	19		29		39	
10		20		30		40	

Notes:

0.18

LDC #: 36009L4
SDG #: 98-7107

VALIDATION FINDINGS WORKSHEET
Prep Blank/ICB/CCB Findings

Reviewer:
2nd Reviewer:

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)
Blank concentration units, unless otherwise noted: µg/L
Associated Samples: all

	Blank Identification										
Analyte	ICB	CCB1	CCB2	CCB3	PB ( )	ICB	CCB1	CCB2	CCB3	PB ( )	Analyte
Al											Al
Sb											Sb
As											As
Ba											Ba
Be											Be
Cd											Cd
Ca											Ca
Cr											Cr
Co											Co
Cu											Cu
Fe											Fe
Pb											Pb
Mg											Mg
Mn											Mn
Hg		-0.2 B									Hg
Ni											Ni
K											K
Se											Se
Ag											Ag
Na											Na
Tl											Tl
V											V
Zn											Zn
B											B
Mo											Mo
Sr											Sr

The highest concentration found in the Prep Blank and ICB/CCB for each analyte is circled on this worksheet and transferred to the PB/ICB/CCB Qualified Samples worksheet.

LDC #: 3[redacted] B4
SDG #: 98[redacted]7107

VALIDATION FIN[redacted]GS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

P[redacted] 1 of 1
Reviewer:
2nd Reviewer:

METHOD: Trace metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a matrix spike analyzed for each matrix in this SDG?

Y N N/A Were matrix spike percent recoveries (%R) within the control limits of ~~75-125?~~ 74-120 If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.

Y N N/A Were all duplicate sample relative percent differences (RPD) ≤ 20% for water samples and ≤ ~~35~~ 22% for soil samples?

LEVEL IV ONLY:

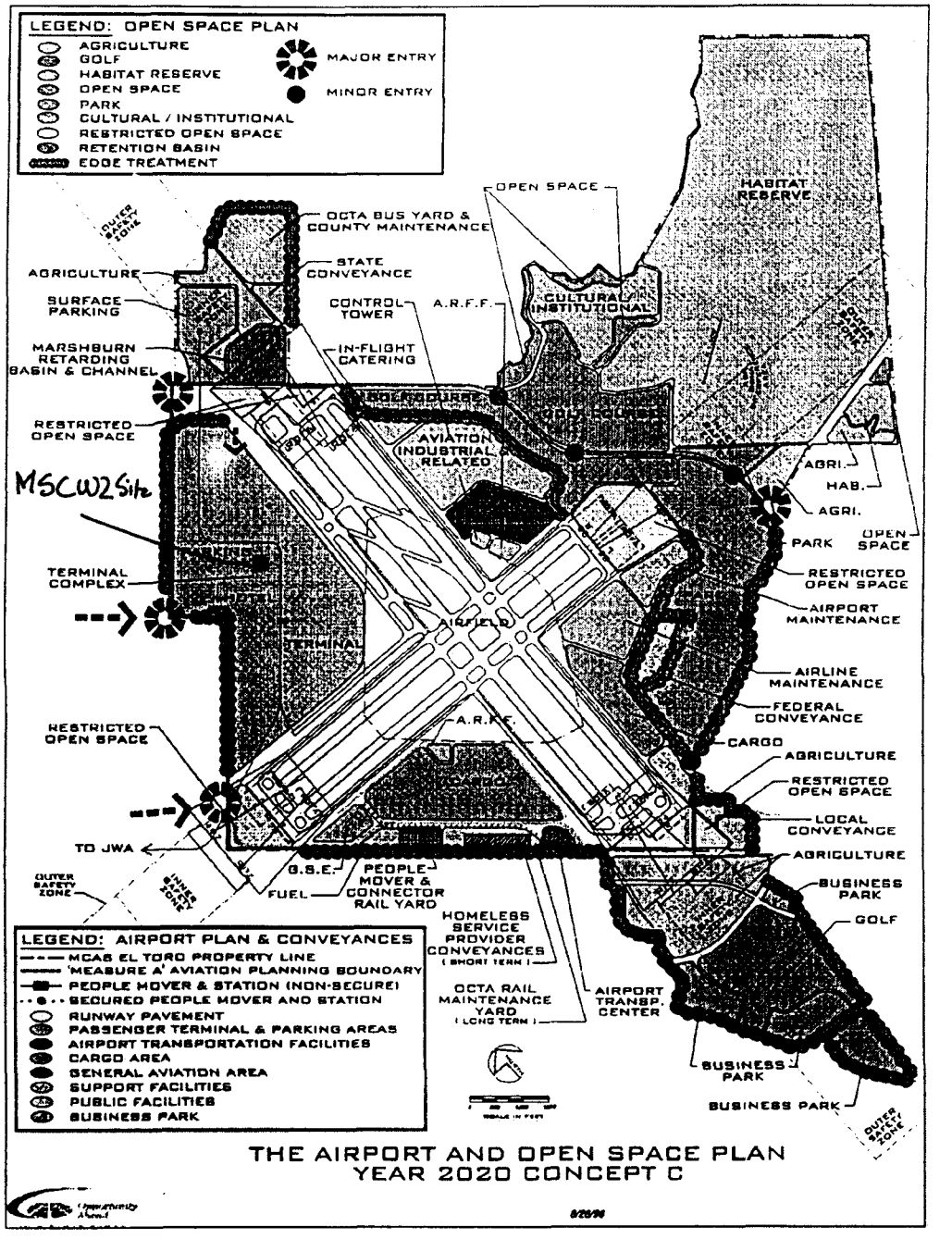
Y N N/A Were recalculated results acceptable? See Level IV Recalculation Worksheet for recalculations.

#	Date	MS/MSD ID	Matrix	Analyte	MS %Recovery	MSD %Recovery	RPD (Limits)	Associated Samples	Qualifications
		6,9	soil	Hg	29	63		all	J/A detects R/A N.D.(4)

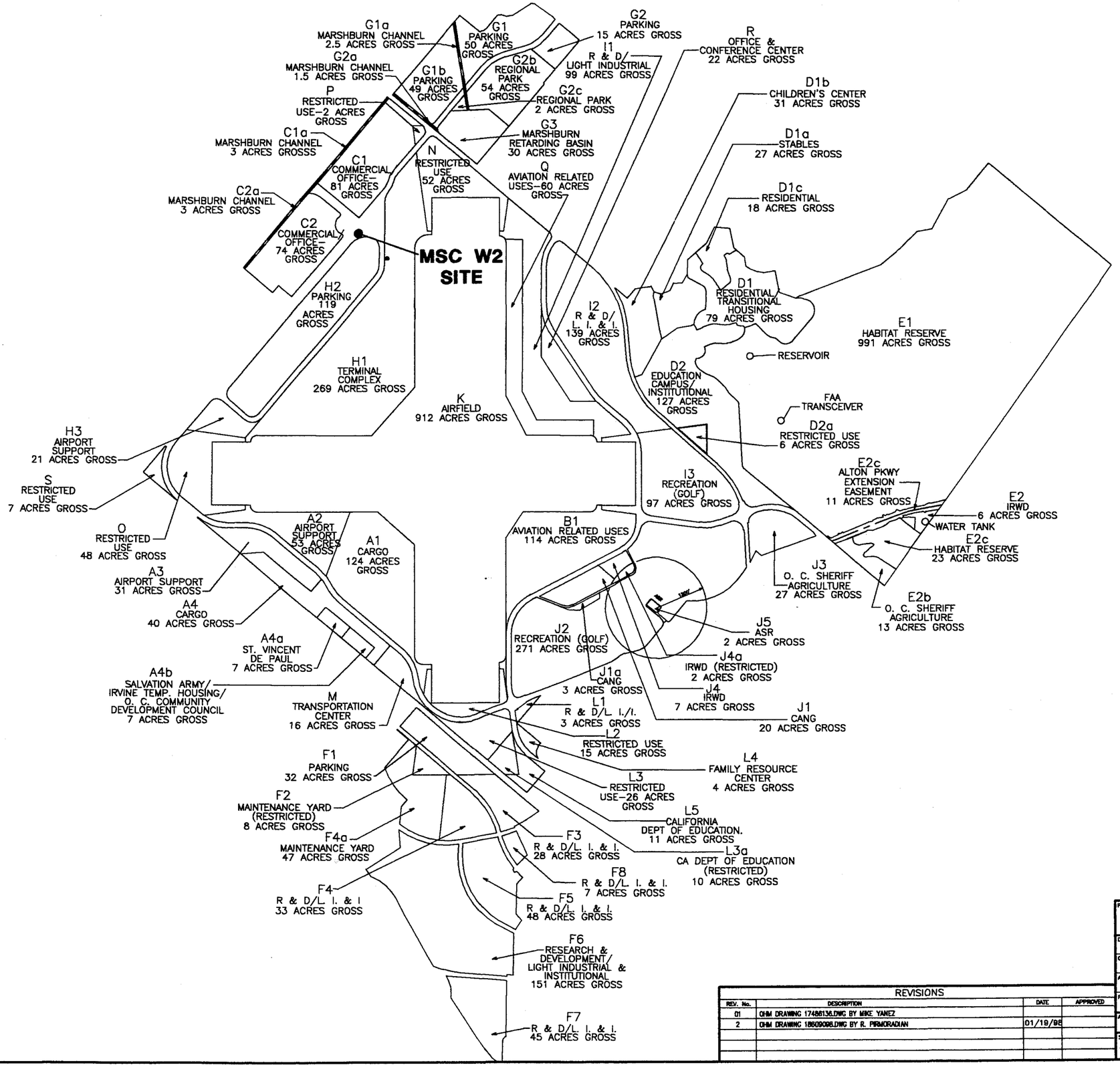
Comments:

MSD.4SW

Appendix N
Tentative Reuse Parcel Location of MSC W2 Site



MSC W2 SITE REUSE MAP



GRAPHIC SCALE
0 800 1,200 2,400
(IN FEET)

REVISIONS			
REV. No.	DESCRIPTION	DATE	APPROVED
01	OHM DRAWING 17486136.DWG BY MIKE YANEZ		
2	OHM DRAWING 18609096.DWG BY R. PIRMORADIAN	01/19/98	

PROJECT: SWDIV

OHM Remediation Services Corp.
A Subsidiary of OHM Corporation
SAN DIEGO, CA

DRAWN BY: R. PIRMORADIAN — DATE: 08/09/99
CHECKED BY: DR — DATE: 8/11/99
APPROVED BY — DATE
PROJECT MANAGER — DATE
AUTOCAD FILE No.: 20242103.DWG

EL TORO COMMUNITY REUSE PLAN
1997 WORKING MAP LAND USES/ CONVEYANCES GROSS ACRES
MSC W2 SITE
MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

SCALE	SHEET	OF	DOCUMENT CONTROL No.	OHM PROJECT No.	DRAWING No.
1"=2,400'	1	1	SW6622	20242	FIG 1

Aug 11, 1999 – 13:05:54 H:\OHM_CORP\PROJECTS\20242\20242103.dwg