

DEPARTMENT OF THE NAVY SOUTH BAY AREA FOCUS TEAM SOUTHWEST DIVISION NAVAL FACILITIES ENGINEERING COMMAND 2585 CALLAGAN HWY, BLDG 99 SAN DIEGO, CALIFORNIA 92136-5198

> 5090.3(a) Ser 5SEN.MB/246 September 11, 2003

Mr. Daniel Cordero Department of Toxic Substance Control (DTSC) 5796 Corporate Avenue Cypress, CA 90630

Enclosed is the Draft Removal Action Closeout Report for the Time-Critical Removal Action (TCRA), Installation Restoration Site 5 - Unit 2, Naval Air Station North Island, San Diego, California. The California Environmental Protection Agency ID Number for North Island is CA7170090016.

This TCRA was performed as an interim measure by the Navy for the protection of human health and the environment and in an effort to reduce long-term environmental management costs. The closeout report documents the major activities making-up the removal action effort. This includes descriptions of the fieldwork, chemical sampling efforts, laboratory test results and documentation on monitored natural attenuation (MNA) practicality.

Overall, the TCRA objective of significantly reducing risk was accomplished. An estimated two tons of VOCs were removed from the site during the TCRA. Site conditions indicate MNA will be an effective remedy for residual groundwater contamination. Recommended follow-up evaluations based on TCRA decision rules include performing a soil risk assessment, an inhalation risk assessment, and a groundwater MNA evaluation. These tasks are expected to occur either during a site Feasibility Study or other follow-up site evaluation.

The North Island Federal Facility Site Remediation Agreement review period for this document is 60 days. Please send written comments to the above address.

The point of contact at this command is Mark Bonsavage, Remedial Project Manager, South Bay Area Focus Team, at (619) 556-7315.

Sincerely,

ollins

WILLIAM E. COLLINS Environmental Engineer By direction of the Commander

#### 5090.3(a) Ser 5SEN.MB/246 September 11, 2003

Enclosures: (1) Draft Removal Action Closeout Report for the Time-Critical Removal Action (TCRA), Installation Restoration Site 5 - Unit 2, Naval Air Station North Island, San Diego, California

Copy to:

Dr. Charles Cheng (CD-ROM) California Regional Water Quality Control Board, San Diego Region 9174 Sky Park Court, Suite 100 San Diego, CA 92123

Ms. Rosa Salcedo (CD-ROM) Richard Smith (w/o encl.) San Diego Air Pollution Control District 9150 Chesapeake Drive San Diego, CA 92123

Ms. Laurie Sullivan (w/o encl.) National Oceanic and Atmospheric Administration NOAA/HAZMAT Mail Zone H-8-5 75 Hawthorne Street San Francisco, CA 94105

Ms. Judy A. Gibson (w/o encl.) Division of Environmental Contaminants U.S. Fish and Wildlife Service 2730 Loker Avenue West Carlsbad, CA 92008

Ms. Pamela Willis (5 encl) City of Coronado Office of the City Manager 1825 Strand Way Coronado, CA 92118

Mr. Larry McCauley (w/o encl.) San Diego Unified Port District P.O. Box 488 San Diego, CA 92112

5090.3(a) Ser 5SEN.MB/246 September 11, 2003

Ms. Laura Hunter (CD-ROM) C/o Environmental Health Coalition 1717 Kettner Blvd., Ste. 100 San Diego, CA 92101

Mr. Bob Geilenfeldt (w/o encl.) Community Co-chair Restoration Advisory Board 354 Glorietta Blvd. Coronado, CA 92118

Ms. Dottie Marron (w/o encl.) 422 Orange Coronado CA 92118

Mr. James D. Darnell (w/o encl.) 237 E Avenue Coronado CA 92118

Mr. L. Art Van Rooy (w/o encl.) 59 Trinidad Bend Coronado CA 92118

Mr. Gregory L. Walker (w/o encl.) 921 E Avenue #C Coronado CA 92118

Mr. Robert W. Logan (w/o encl.) 510 Country Club Lane Coronado CA 92118

Mr. Foster Marshall (w/o encl.) 8269 Hillandale Terrace San Diego, CA 92120

Mr. Roger Argus (CD-Rom) Tetra Tech EM Inc. 1230 Columbia Street, Suite 1000 San Diego, CA 92108

5090.3(a) Ser 5SEN.MB/246 September 11, 2003

Mr. Tim Heironimus Bechtel Environmental Incorporated 1230 Columbia Street, Suite 400 San Diego, CA 92101

Mr. Richard Wong (CD-ROM) Shaw Environmental, Inc. 1230 Columbia Street, Suite 1200 San Diego, CA 92101

Commanding Officer (CD-ROM) Navy Public Works Center (ASW Bldg. 50) Attn: Mr. Rod Soule (Code 980) Box 368113 2730 McKean Street, Suite 1 San Diego, CA 92136-5294

Commanding Officer (w/o encl.) Naval Aviation Depot (Code 08213) Attn: Ms. Kate Morrison Building 334M P.O. Box 357058 San Diego, CA 92135-7058

Deputy Assistant Chief of Staff (CD-ROM) Environmental Department (N4512) Attn: John Locke 33000 Nixie Way, Building 50, Suite 326 San Diego, CA 92147-5110

## CERTIFICATION

I certify that the information contained in or accompanying this submittal is true, accurate, and complete. As to those portions of this submittal for which I cannot personally verify the accuracy, I certify that this submittal and all attachments were prepared at my direction in accordance with procedures designed to assure that qualified personnel properly gathered and evaluated the information submitted. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

of Signature:

Name:

Document Title: Draft Removal Action Closeout Report IR Site 5 - Unit 2 Naval Air Station North Island San Diego, California

Date:

2003

#### DRAFT

**REMOVAL ACTION CLOSEOUT REPORT** *Time-Critical Removal Action Installation Restoration Site 5 – Unit 2 Naval Air Station North Island San Diego, California* 

Environmental Remedial Action Contract No. N62474-98-D-2076 Contract Task Order No. 0027

Document Control No. 5399 Revision 0

September 15, 2003

Submitted to:

U.S. Department of the Navy Southwest Division Naval Facilities Engineering Command 1220 Pacific Highway San Diego, California 92101-8571

Submitted by: Shaw Environmental, Inc. 4005 Port Chicago Highway Concord, California 94520-1120

## DRAFT REMOVAL ACTION CLOSEOUT REPORT Time-Critical Removal Action Installation Restoration Site 5 – Unit 2 Naval Air Station North Island San Diego, California

Environmental Remedial Action Contract No. N62474-98-D-2076 Contract Task Order No. 0027

**Document Control No. 5399 Revision 0** 

September 15, 2003

Prepared by:

Brian C. White

9/11/03 Date:

Brian C. White Project Technical Lead

Approved by:

Richard Wong, CEG, CHG Project Manager

11Sep03 Date:

# Table of Contents\_

List of	Tables	ss. dices	V
Acronyms and Abbreviations			
1.0	Introd	luction	1-1
	1.1	Project Objective	1-1
	1.2	Background	1-1
		1.2.1 Site Description	1-1
		1.2.2 Site Background	
		1.2.3 Site Geology	
		1.2.4 Groundwater Contaminant Delineation	
		1.2.5 Human Health and Ecological Risk	
	1.3	TCRA Remediation Activities	
2.0		n's Reagent Groundwater Treatment Pilot Study	
	2.1	Pilot Study Bench Test	
	2.2	Pilot Study Field Preparation	
		2.2.1 Geophysical Survey to Locate Utilities	
		2.2.2 Injection and Monitoring Well Installation	
	0.0	2.2.3 Soil-Gas Probe Installation	
	2.3	Testing of Site Conditions to Assess Pilot Study	
		2.3.1 Soil Sampling and Analysis	
		2.3.2 Groundwater Sampling and Analysis	
		2.3.3 Aquifer Conductivity Test	
	2.4	2.3.4 Soil Vapor Sampling and Analysis	
	2.4	Fenton's Reagent Pilot Study Chemical Injections	
		2.4.1 First and Second Injection Events	
	<b>Э</b> Е	2.4.2 Third Injection Event	
	2.5	Pilot Study Conclusions	
	2.6	Conceptual Full-Scale Treatment System Design 2.6.1 Full-Scale Treatment Area Well Field Design	
		<ul><li>2.6.1 Full-Scale Treatment Area Well Field Design</li><li>2.6.2 Chemical Injection</li></ul>	
		2.6.2.1 Oxidant Solution	
		2.6.2.2 Conditioning and Catalyst Solution	
		2.6.2.3 Chemical Injection	
	2.7	Recommended Supplemental Site Assessment	
3.0		lemental Site Assessment	
5.0	3.1	Geophysical Survey to Locate Utilities	
	3.1 3.2	MIP/DSITMS Delineation	
	3.2 3.3	Confirmation and Site Delineation Soil Sampling	
	3.4	Supplemental Site Assessment Conclusions	
	0.1	Supportental one Assessment conclusions.	55

# Table of Contents (continued)

4.0 Vadose Zone Source Area Removal		4-1	
	4.1	Source Area Delineation	4-1
		4.1.1 Source Area Delineation Soil Sampling	4-1
		4.1.2 Source Area Delineation Soil Sampling Results	4-1
		4.1.3 Estimated Extent of Vadose Zone TCE-Impacted Soil	
	4.2	Excavation Field Activity Preparation	
		4.2.1 Site Approval and Public Notification	
		4.2.2 Site Health and Safety Plan Addendum	
		4.2.3 Equipment, Materials, and Personnel	
		4.2.4 Rolloff Bin Storage Area	
	4.3	Excavation Activities	4-4
		4.3.1 Soil Excavation	4-4
		4.3.2 Excavation Extent	4-6
		4.3.3 Excavation Air Monitoring	4-6
	4.4	Site Restoration	
	4.5	Excavated Soil Waste Characterization	4-7
	4.6	Disposal of Excavated Waste	
	4.7	Western Liquid Waste Disposal Pit Location	4-9
5.0	Explo	oratory Trenching to Locate Secondary Sources	
	5.1	Geophysical Survey to Locate Secondary Sources	
	5.2	Exploratory Trenching	
	5.3	Exploratory Trenching Waste Disposal	5-3
	5.4	Summary of Exploratory Trenching	5-3
6.0	Chen	nical Oxidation Groundwater Treatment	
	6.1	Groundwater Treatment Well Field Design	6-1
	6.2	Monitoring Well Installation	6-1
	6.3	Baseline Groundwater Sampling	6-2
		6.3.1 Pre-ISCO Baseline Groundwater Analytical Results	
	6.4	Injection Well Installation	6-3
	6.5	Pre-ISCO Baseline Soil Sampling	
	6.6	Fenton's Reagent Bench Testing	6-4
		6.6.1 Fenton's Reagent Bench Test Methods	
		6.6.2 Fenton's Reagent Bench Test Results	6-5
		6.6.3 Fenton's Reagent Bench Test Discussion	
	6.7	Fenton's-Type Reaction Groundwater Treatment	
		6.7.1 First Groundwater Treatment	
		6.7.1.1 First Interim Groundwater Sampling	6-6
		6.7.1.2 First Interim Groundwater Sampling Results	
		6.7.2 Second Groundwater Treatment	
		6.7.2.1 Second Interim Groundwater Sampling	
		6.7.2.2 Second Interim Groundwater Sampling Results	
		6.7.2.3 Discussion of Second Interim Groundwater Sampling Results	6-7

# Table of Contents (continued)

6.8	KMnO <sub>4</sub> Groundwater Treatment	6-6
		6-8
		hods6-9
		ults6-9
		ter Sampling6-10
		ter Sampling Results6-10
		rim Groundwater Sampling Results
	•	Installation6-10
		6-11
6.9	•	ng6-11
		r Sampling Activities6-11
		r Sampling Results6-12
		t Groundwater Sampling Results6-13
6.10		6-13
		ults6-14
		Sampling Results6-14
6.11		6-14
6.12		Abandonment6-15
6.13		ng6-15
		Sampling Activities
		Sampling Results6-16
		t Groundwater Sampling Results6-17
6.14		6-17
		6-17
		6-18
6.15		eduction6-18
7.1		
		vities7-2
	1 0	ults7-1
7.2		
		g Activities7-2
		g Results7-2
		obial Sampling Results7-3
7.3		Monitoring Data7-3
		Assessment7-4
	7.3.2 MNA Assessment	

7.0

# Table of Contents (continued)

8.0	TCRA	A Decision Rules and Objectives	8-1
	8.1	TCRA Decision Rules	
		8.1.1 Full-Scale ISCO Process	8-1
		8.1.2 Evaluation of Site Soil	
		8.1.3 Evaluation of Site Vapor	
		8.1.4 Evaluation of Site Groundwater	
	8.2	TCRA Project Objectives Assessment	8-3
9.0	Summary and Cost		9-1
	9.1	TCRA Summary	9-1
		9.1.1 Site Contaminant Delineation	
		9.1.2 Site Contaminant Mass Reduction	
		9.1.3 Natural Attenuation Assessment	
	9.2	Cost of TCRA	9-4
	9.3	Site Recommendations	
10.0	TCRA	A Conclusions	
11.0	References11-1		

## List of Figures \_

- Figure 1 Project Location and Site Vicinity Map
- Figure 2 Pretreatment Site Conditions and Site Utilities
- Figure 3 Delineation Soil Boring Locations
- Figure 4 Source Area Delineation Soil Sample Results and Excavation Extent
- Figure 5 Idealized Excavation Cross-Section
- Figure 6 Treatment Monitoring Well, Injection Well, and Treatment Assessment Soil Boring Locations
- Figure 7 Chemical Treatment Area and Monitoring Well Locations
- Figure 8 Baseline and Final Posttreatment Total VOC Contours
- Figure 9 Baseline and Final Posttreatment Vinyl Chloride and *cis*-1,2-Dichloroethene Contours
- Figure 10 Baseline and Final Posttreatment Toluene and Naphthalene Contours
- Figure 11 Propagation Injection Well Design
- Figure 12 Detected VOCs in Baseline and Posttreatment Soil Samples
- Figure 13 Treatment Area Total Detected VOC Analytical Results
- Figure 14 Boundary Well Total Detected VOC Analytical Results
- Figure 15 Baseline and Posttreatment Total VOC Soil Sample Analytical Results
- Figure 16 Groundwater Contours—April 21, 2003
- Figure 17 Treatment Area Total Detected VOC Analytical Results

# List of Tables \_\_\_\_\_

- Table 1Source Area Delineation Soil Sample Analytical Results
- Table 2
   Excavated Soil VOC Waste Characterization Analytical Results
- Table 3
   Excavated Soil TCLP Waste Characterization Analytical Results
- Table 4
   Excavated Soil Pesticides Screening Analytical Results
- Table 5Excavated Soil PCB Screening Analytical Results
- Table 6Excavated Soil SVOC Screening Analytical Results
- Table 7
   Excavated Soil Metals Screening Analytical Results
- Table 8
   Groundwater VOC Analytical Results for Treatment Area Monitoring Wells
- Table 9
   Groundwater VOC Analytical Results for Boundary Monitoring Wells
- Table 10
   Groundwater General Chemistry Analytical Results
- Table 11
   Pretreatment and Posttreatment Soil Analytical Results
- Table 12
   Groundwater VOC Analytical Results for Perimeter Monitoring Wells
- Table 13Groundwater Water Quality Objectives
- Table 14Project Objectives Assessment

# List of Appendices\_

- Appendix A Geophysical Reports
- Appendix B Location Survey Data
- Appendix C Laboratory Chemical Analytical Data
- Appendix D Site 5 Unit 2 Public Fact Sheet and Communication Plan
- Appendix E Excavation Subcontractor Reports and Waste Disposal Manifests
- Appendix F Boring Logs
- Appendix G Full-Scale Chemical Oxidation Reports
- Appendix H Microbial Natural Attenuation Reports
- Appendix I Posttreatment Monitored Natural Attenuation Evaluation Report

# Acronyms and Abbreviations \_\_\_\_\_

μg/L	microgram(s) per liter
bgs	below ground surface
BNI	Bechtel National, Inc.
BTEX	benzene, toluene, ethylbenzene, xylenes
САН	chlorinated aliphatic hydrocarbon
cis-1,2-DCE	cis-1,2-dichloroethene
CERCLA	Comprehensive Environmental Response, Compensation, and
	Liability Act
COPC	chemicals of potential concern
СРТ	cone penetrometer testing
СТО	Contract Task Order
DCA	dichloroethane
DCE	dichloroethene
DGGE	denaturing gradient gel electrophoresis
DHE	Dehalococcoides ethenogenes
DNA	deoxyribonucleic acid
DOT	U.S. Department of Transportation
DSITMS	direct sampling ion trap mass spectrometer
DTSC	Department of Toxic Substances Control
EBSI	Environmental Business Solutions International, Inc.
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
GC/MS	gas chromatograph/mass spectrometer
gpm	gallons per minute
HCl	hydrochloric acid
IR	Installation Restoration
ISCO	in situ chemical oxidation
IT	IT Corporation
KMnO <sub>4</sub>	potassium permanganate
mg/kg	milligram(s) per kilogram
MIP	membrane interface probe
MNA	monitored natural attenuation
NAS	Naval Air Station
ORP	oxidation-reduction potential
OHM	OHM Remediation Services Corp.
Parsons	Parsons Engineering Science, Inc.
PAH	polynuclear aromatic hydrocarbon(s)
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
Pelorus	Pelorus EnBiotech, Inc.
PLFA	phospholipid fatty acid content

# Acronyms and Abbreviations (continued)

pmole	picomole
PPE	personal protective equipment
ppmv	parts per million by volume
PRG	Preliminary Remediation Goal
psi	pound(s) per square inch
PVC	polyvinyl chloride
PWC	Public Works Center
RAW	Removal Action Work Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RNA	remediation by natural attenuation
RSK	R.S. Kerr
RWQCB	Regional Water Quality Control Board
SAM	Site Assessment and Mitigation
SCAPS	Site Characterization and Analysis Penetrometer System
SHSP	Site Health and Safety Plan
SiREM	SiREM Laboratory
SPLP	synthetic precipitation leaching procedure
SVOC	semivolatile organic compound
SWDIV	Naval Facilities Engineering Command – Southwest Division
TCE	trichloroethene
TCLP	toxicity characteristic leaching procedure
TCRA	Time-Critical Removal Action
trans-1,2-DCE	trans-1,2-dichloroethene
TIC	total ion count
TOC	total organic carbon
VC	vinyl chloride
VOC	volatile organic compound
WQO	water quality objective

## 1.0 Introduction

This removal action closeout report details Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) time-critical removal action (TCRA) activities completed for Installation Restoration (IR) Site 5 – Unit 2, Naval Air Station (NAS) North Island, San Diego County, California. TCRA measures were conducted by Shaw Environmental, Inc., under Contract Task Order (CTO) 0027 for the U.S. Department of the Navy, Engineering Field Activities – West (EFA-West) Environmental Remedial Action Contract Number N62474-98-D-2076.

## 1.1 Project Objective

The objective of the TCRA was to reduce the potential risk to human health and the environment posed by site contaminants, to reduce site contaminant mass, and to ensure that remediation by natural attenuation (RNA) is an effective remedy for residual chlorinated aliphatic hydrocarbons (CAHs) in groundwater following the TCRA. The selected method for the rapid reduction of groundwater CAHs, particularly vinyl chloride (VC), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), trichloroethene (TCE), and 1,1-dichloroethane (DCA) was via source area removal using *in situ* chemical oxidation (ISCO) (U.S. Department of the Navy, 1999)

## 1.2 Background

This section provides a concise description of the site, site background, site geology, and identified extent of site contaminants, which are detailed in previous reports (Bechtel National, Inc. [BNI], 1998; Parsons Engineering Science, Inc. [Parsons], 1999).

#### 1.2.1 Site Description

IR Site 5 is located in the southeastern corner of NAS North Island in San Diego County, California. The site is subdivided into Units 1 and 2 to differentiate the former municipal landfill and a former liquid waste disposal area, respectively. Figure 1 shows the location, topography, and geographical features of IR Site 5 and the boundaries of Units 1 and 2.

Unit 2 of IR Site 5 is located approximately 250 feet south-southeast east of the intersection of Rogers and Sherman Roads and is about 1,800 feet from the western limit of the city of Coronado (Figure 1). The site is generally flat, covered mostly with loose sand, extends over approximately 3.4 acres, and is located predominately within the approach for NAS North Island Runway 29. The nearest natural (nonintrusive) pathway to potential environmental and human receptors is a slough (IR Site 1 -Outfall 16) that is located approximately 550 feet south of the identified source area.

#### 1.2.2 Site Background

NAS North Island was enlarged in the 1930s and 1940s using dredged bay sediments to fill shallow inlets and extend the shoreline. Between 1943 and 1945, the shallow inlet between North Island and Coronado Island, known as the Spanish Bight, was backfilled. Shortly thereafter, a solid waste disposal facility began operation atop the newly created land at the southwest corner of the former Spanish Bight. The solid waste disposal facility, now known as IR Site 5 – Unit 1, was initially operated as a cut-and-cover sanitary landfill (BNI, 1998).

During the remedial investigation (RI)/Resource Conservation and Recovery Act (RCRA) facility investigation for IR Site 5, it was discovered that groundwater immediately southwest of the former solid waste disposal facility was impacted by volatile organic compounds (VOCs). Contaminant delineation activities determined that the VOC plume adjacent to the site did not originate from the solid waste disposal facility. The RI/RCRA Facility Investigation reported that the VOC source area was suspected to be two generally rectangular-shaped pits observed in a 1948 aerial photograph. The pits were identified as being located under or adjacent to Sherman Road near the upgradient extent of the delineated VOC plume (Figures 1 and 2). The exact nature and quantity of waste that was disposed of in the identified liquid waste disposal pits are unknown (BNI, 1998).

Waste disposal activities at IR Site 5 were ended between 1965 and 1968, after which the site was used until 1983 as a waste transfer station to dispose of Navy wastes off base (BNI, 1998).

## 1.2.3 Site Geology

Two discrete aquifers exist just below the subsurface at IR Site 5 - Unit 2. They consist of an upper shallow aquifer, which was created when the former Spanish Bight was filled with dredged sediment, and the underlying aquifer that is the upper extent of the Bay Point Formation.

The upper unconfined aquifer in which the VOC plume is located consists of an approximately 8- to 12-foot-thick layer of hydraulic fill that is predominantly poorly-graded fine to very fine-grained sand. Immediately below the hydraulic fill is a 3- to 5-foot-thick layer of bay floor mud, consisting of organic silts and clays that were deposited in quiet shallow water of the former Spanish Bight. Bay floor sediments of the former Spanish Bight (Spanish Bight sediment) are identified as extending under IR Site 5 – Unit 2, but are discontinuous along the western edge and plunge deeper south of the site (BNI, 1998; Parsons, 1999). The Spanish Bight sediment below the site is identified as a clayey silt that was described as a leaky confining/semiconfining layer by BNI (1998) and as a zone of low-permeability silt and clay by Parsons (1999).

Beneath the Spanish Bight sediment is the Bay Point Formation. The sediments of the Bay Point Formation at the site were observed in sample borings drilled by BNI (1998), and were described as medium dense to dense and composed of interbedded sand, silt, and clay layers.

The top of groundwater occurs in the surficial hydraulic fill layer at approximately 5.0 feet below ground surface (bgs). The base of this upper water-bearing zone occurs at the top of the underlying low-permeability Spanish Bight sediments, at a depth of approximately 8 to 12 feet. The flow direction of groundwater in the upper aquifer is predominantly to the southwest, within the main body of the VOC plume. A weighted average hydraulic gradient of 0.0036 feet per foot and an average hydraulic conductivity of 37.5 feet per day were provided by Parsons (1999) as hydraulic parameters for the upper aquifer at the site. Groundwater in the upper aquifer is nonsaline and is not affected by tidal fluctuations.

#### 1.2.4 Groundwater Contaminant Delineation

Chemicals of potential concern (COPC) identified at IR Site 5 – Unit 2 in groundwater include chlorinated VOCs and petroleum hydrocarbons. RI/RFI sampling performed by BNI delineated VOC-impacted groundwater at IR Site 5 – Unit 2 as being located predominantly in the shallow 5- to 8-foot-thick upper aquifer, which is situated above the aquitard formed by Spanish Bight sediments. The distribution of VOCs in groundwater was identified as an inverted, "teardrop-shaped" plume that extends from the suspected source area to the south-southwest for a distance of about 400 feet. Detected COPCs in groundwater identified at concentrations exceeding risk-based standards and criteria for human health protection and the associated maximum measured concentrations were *cis*-1,2-DCE (19,000 micrograms per liter  $[\mu g/L]$ ), benzene  $(180 \,\mu\text{g/L}),$ methylene 1,4-dichlorobenzene  $(21 \, \mu g/L),$ chloride  $(1,900 \,\mu g/L),$ tetrachloroethene (PCE) (1,200 µg/L), TCE (11,000 µg/L), VC (48,000 µg/L), 2,4-dimethylphenol  $(9,800 \, \mu g/L),$  $(200 \, \mu g/L),$ bis(2-chloroethyl)ether acenaphthylene  $(3,000 \, \mu g/L),$ bis(2-ethylhexyl)phthalate (24  $\mu$ g/L), fluorine (0.6  $\mu$ g/L), phenanthrene (1  $\mu$ g/L), arsenic (147  $\mu$ g/L), barium (2,870  $\mu$ g/L), beryllium (4.9  $\mu$ g/L), mercury (3  $\mu$ g/L), and thallium (5.3 µg/L) (BNI, 1998).

The monitored natural attenuation (MNA) assessment performed by Parsons following the RI/RFI included four quarters of groundwater monitoring to ascertain VOC concentrations, to delineate the distribution of impacted groundwater, and to assess whether MNA is an acceptable means to achieve site remediation. The contaminant plume identified by Parsons consisted of an inverted, "teardrop-shaped" main body of impacted groundwater surrounded by a generally oval-shaped zone of less impacted groundwater (Figures 1 and 2). VOCs detected by Parsons during quarterly sampling and identified in the RI/RFI as COPCs and the associated maximum measured concentrations were *cis*-1,2-DCE (550,000  $\mu$ g/L), benzene (280  $\mu$ g/L), methylene chloride (340  $\mu$ g/L), TCE (180  $\mu$ g/L), and VC (110,000  $\mu$ g/L). The majority of the contaminants

with elevated concentrations were detected in monitoring wells S5-MW-20 and S5-MW-21 (Figure 2).

#### 1.2.5 Human Health and Ecological Risk

The RI/RFI provided a human health risk assessment for Unit 2 that identified a conservative total cancer risk estimate of  $5.7 \times 10^{-4}$  (to future residents), based largely on exposure to VC-contaminated soil at a depth of approximately 5 to 8 feet bgs. The ecological risk evaluation for Site 5 – Unit 2 recommended further evaluation of site conditions and indicated that remedial action for contaminated soil and groundwater could be required after a period of monitoring to assess plume migration and natural attenuation (BNI, 1998).

Additional assessment of the site by Parsons (1999) concluded that natural attenuation of chlorinated VOCs and petroleum hydrocarbons in groundwater is occurring. The Parsons report also identified that with source removal, VC would not reach potential downgradient receptors (i.e., the slough located south of the site), and that VOC concentrations should decrease to site cleanup goals within 60 to 78 years. Without source area removal, the maximum duration for long-term remediation via RNA of the VOC plume was estimated at 475 years. The Parsons report also recommended that a soil vapor risk assessment be performed prior to the initiation of long-term monitoring to assess the potential risk posed by the high concentrations of VC in groundwater at the site.

## 1.3 TCRA Remediation Activities

Given site conditions and the objectives of the TCRA, the primary TCRA remediation activities performed for IR Site 5 – Unit 2 included the following:

- Fenton's reagent groundwater treatment pilot study
- Supplemental site assessment
- Vadose zone source area soil removal
- Exploratory trenching to locate potential secondary sources
- Full-scale ISCO groundwater treatment
- Microbial natural attenuation assessment

The following documents describe procedures followed for the implementation of the TCRA and present additional assessment data needed to perform remedial source area removal activities:

• OHM Remediation Services Corp. [OHM], 2001, *Remedial Action Work Plan, Time-Critical Removal Action, Installation Restoration Site 5, Unit 2, Naval Air Station North Island, California,* Delivery Order 0141, DCN SW6838, Revision 3, June 8.

- IT Corporation (IT), 2001, Remedial Action Work Plan Addendum, Time-Critical Removal Action, Installation Restoration Site 5, Unit 2, Naval Air Station North Island, California, CTO-0027, DCN 1441, Revision 1, November 19.
- SWDIV, 2002, Summary Letter Describing the Planned Oxidant Change for IR Site 5–Unit 2, Time Critical Removal Action, Naval Air Station North Island, California, December 4.

Activities described in the Remedial Action Work Plan (RAW) and RAW addendum are summarized herein to provide a complete report of TCRA activities. Four revisions of the RAW have been distributed. They include Revision 0 (the initial document); Revision 1 (created by placing page inserts into the initial document), which provided modified soil sampling procedures (U.S. Environmental Protection Agency [EPA] Method 5035 using Encore<sup>®</sup> samplers); Revision 2, which provided initial Department of Toxic Substances Control (DTSC) comments and related responses, pilot test data, and proposed technology for full-scale implementation; and Revision 3 (created by placing page inserts into the Revision 2 document), which provided the last RAW DTSC comments and related responses. There have been two revisions of the RAW addendum. They include Revision 0 (the initial document) and Revision 1 (created by placing page inserts into the initial document), which provided the health and safety plan addendum to detail procedures for source area excavation activities.

# 2.0 Fenton's Reagent Groundwater Treatment Pilot Study

The Fenton's reagent groundwater pilot study for IR Site 5 – Unit 2 was performed by ManTech, Inc., under subcontract to Shaw Environmental, Inc. The pilot test encompassed the following tasks:

- Bench testing
- Field preparation
- Baseline testing of site conditions
- Applications of Fenton's reagent
- Posttest assessment of site conditions
- Data evaluation and conceptual treatment system design

Chemical oxidation by Fenton's reagent is accomplished by injecting an oxidizer (e.g., hydrogen peroxide) and a ferrous catalyst (e.g., ferrous sulfate) into a contaminated aquifer that has a pH between 6 and 3 (either naturally occurring or through acidification). The catalyst converts the oxidizer to hydroxyl radicals, which, in turn, oxidize petroleum and/or CAH contaminants to harmless compounds. As shown below, in the process of creating hydroxyl radicals, the Fenton reaction converts ferrous iron in the catalyst to ferric iron and precipitates ferric compounds:

 $H_2O_2 + Fe^{+2} \rightarrow Fe^{+3} + OH^{\scriptscriptstyle \bullet} + OH^{\scriptscriptstyle -}$ 

 $H_2O_2 =$  Hydrogen peroxide

 $Fe^{+2}$  = Ferrous iron (provided by the iron catalyst)

 $Fe^{+3}$  = Ferric iron (rust)

OH• = Hydroxyl free radical

 $OH^- = Hydroxyl ion$ 

The hydroxyl free radical generated by Fenton's reagent is a powerful, nonselective oxidant. Oxidation of organic compounds by Fenton's reagent is a rapid and exothermic reaction (heat-producing), and 100 percent mineralization is generally complete in minutes. Intermediate compounds produced during the reaction are primarily carboxylic acids. The end products of oxidation are primarily carbon dioxide, water, and chloride ion. Hydrogen peroxide not consumed in the initial reaction will continue to oxidize groundwater contaminants or will naturally degrade to oxygen and water. The injected reagents should not adversely affect the aquifer, with the exception of the temporal effects of iron precipitation and lowered pH.

## 2.1 Pilot Study Bench Test

Bench test soil and groundwater samples for the pilot study were collected from the site by Shaw Environmental, Inc. on April 13, 2000. VOC-impacted soil samples were collected from just above and below the top of groundwater in soil borings S5-B-13 (subsequent number to the last BNI RI/RFI soil boring) through S5-B-15 using a direct-push drill rig (OHM, 2001). Groundwater samples were collected from monitoring well S5-MW-21 (Figure 2), where total VOCs historically have been the highest at the site (OHM, 2001).

Bench testing was initiated by ManTech, Inc. on April 18, 2000, to assess selected Fenton's reagent chemical oxidation processes and evaluate their effectiveness on site groundwater and soil. Bench test analytical results for site groundwater indicated that a greater than 99 percent reduction of VOCs could be achieved when compared against prebench and control sample results. Soil sample results showed contaminant reduction and indicated sample heterogeneity in contaminant distribution. Bench test results also indicated that the ManTech CleanOx<sup>®</sup> process could lower the pH in groundwater and saturated soil to the desired range of 3 to 5, which is necessary for a Fenton reagent reaction to work effectively (OHM, 2001).

## 2.2 Pilot Study Field Preparation

Field preparations performed prior to the pilot study included a geophysical survey to locate possible ignition sources and utilities and the installation of an injection well, monitoring wells, and soil-gas probes.

#### 2.2.1 Geophysical Survey to Locate Utilities

Prior to the pilot study, a geophysical survey was performed on April 5, 2000, in an attempt to locate subsurface utilities, the two former liquid waste disposal pits, and other buried features within the central portion of the site. The intent of the survey was to clear the immediate vicinity of proposed drilling locations and to identify any possible ignition sources within the treatment area. No structures or devices constituting potential ignition sources were identified during the survey that could potentially ignite flammable soil vapor, which might be produced during ISCO groundwater treatment. Various subsurface metallic anomalies (representing buried metallic material) were identified throughout the site. One of the metallic anomalies found in the central portion of the VOC plume corresponded to an apparent backfilled excavation that was also identified by the geophysical survey. Utilities identified to the south of Sherman Road and east of Rogers Road are shown in Figure 2. The ignition source/utility geophysical survey report is provided in Appendix A (A-1).

#### 2.2.2 Injection and Monitoring Well Installation

On May 8 and 9, 2000, pilot test injection well S5-VIW-01 and six monitoring wells (S5-MW-24 through S5-MW-29, sequentially numbered following the last Parsons monitoring well [Parsons, 1999]) were installed in the central portion of the VOC plume (Figure 2). Pilot study wells were installed in proximity to the apparent backfilled excavation identified during the ignition source geophysical survey (Section 2.2.1 and Appendix A-1). A seventh monitoring well (S5-MW-30) was installed on August 22, 2000. Boring logs for those monitoring wells were provided in the RAW (OHM, 2001). Monitoring wells were installed in a generally "T"-shaped pattern roughly parallel and perpendicular to the direction of groundwater flow at distances of 5, 10, 15, 20, 25, and 30 feet around the injection well, as shown in Figure 2. Location survey data for pilot study wells are provided in Appendix B.

Prior to installation of wells, continuous soil cores were collected for baseline soil and lithologic samples of the contaminated aquifer. Groundwater in the pilot study area was encountered at approximately 5 feet bgs, and the top of the underlying Spanish Bight sediments was encountered at approximately 10 feet bgs. A zone of apparent landfill debris was found in the subsurface within the pilot study area. The debris is situated at and above groundwater and contains broken glass, oxidized and welded metal, wood, charcoal, putty, paint, oil, and other industrial consumer-type materials. Debris density appeared to be greatest in the vicinity of injection well S5-VIW-01 and upgradient monitoring well S5-MW-27, with less debris apparent cross-gradient to the northwest and downgradient of the injection well.

#### 2.2.3 Soil-Gas Probe Installation

Three soil-gas probes (S5-SG-01 through S5-SG-03) were installed close to the pilot study injection well (S5-VIW-01) on May 19, 2000. The stainless steel probes were located within 15 feet of the injection well and the screened intervals extend from 1.5 to 2 feet bgs. The locations of the soil-gas probes in conjunction with the pilot study injection well are shown in Figure 2.

## 2.3 Testing of Site Conditions to Assess Pilot Study

Soil, groundwater, and vapor sampling; aquifer conductivity testing; and general site monitoring activities were performed at the site to establish pretreatment site conditions and quantify changes resulting from chemical treatment. Testing was conducted prior to the pilot study (baseline), during the pilot study for selected parameters (interim), after the second pilot study injection event (rebaseline), and shortly after the study was completed (posttreatment).

#### 2.3.1 Soil Sampling and Analysis

Baseline soil samples were collected from the borings into which injection well S5-VIW-01 and monitoring wells S5-MW-24 through S5-MW-29 were installed (Section 2.2.2) using a hollow-stem auger drill rig and standard splitspoon sampler. Sample intervals included the depth of groundwater (water table) at approximately 5 to 5.5 feet bgs and deeper selected intervals to a maximum of 10 feet bgs. Interim soil samples (soil borings S5-B-16 through S5-B-22), rebaseline soil samples (soil borings S5-B-23 through S5-B-30), and posttreatment soil samples (soil borings S5-B-31 through S5-B-38) were collected using a direct-push drill rig on August 12, 13, and 29, and September 20, 2000, respectively (OHM, 2001).

The soil samples were analyzed for VOCs using EPA Method 8260B. In addition, baseline and interim soil samples were analyzed for total iron using EPA Method 6010B and rebaseline and posttreatment soil samples were analyzed for total organic carbon (TOC) using EPA Method 9060. Analytical data tables and laboratory reports for pilot test soil samples are provided in the RAW (OHM, 2001).

#### 2.3.2 Groundwater Sampling and Analysis

Baseline groundwater samples were collected from injection well S5-VIW-01 and pilot test monitoring wells S5-MW-24 through S5-MW-29 on May 15, 2000. Interim groundwater samples were also collected from the same wells on May 30, 2000; June 1, 3, 19, 21, and 23, 2000; and July 11, 2000. Rebaseline groundwater samples were collected from the previously sampled wells, monitoring well S5-MW-21, and the newly installed monitoring well S5-MW-30 on August 29, 2000. Post rebaseline interim groundwater samples were collected from monitoring wells S5-MW-24 through S5-MW-27 and S5-MW-30 on September 14, 2000, to evaluate the dilution effect of conditioner (hydrochloric acid [HC1] and ferrous iron catalyst) application. Posttreatment groundwater samples were collected from monitoring wells S5-MW-24 through S5-MW-30 on September 20, 2000, and from injection well S5-VIW-01 on September 21, 2000. Groundwater samples were collected using low-flow sampling procedures.

Baseline, selected interim split samples, interim samples collected on July 11, 2000, rebaseline samples, post-rebaseline interim groundwater samples, and posttreatment groundwater samples were analyzed for VOCs using EPA Method 8260B. Remaining interim groundwater samples were analyzed for VOCs (EPA Method 8260B) using a portable Inficon Hapsite<sup>®</sup> gas chromatograph/mass spectrometer (GC/MS). In addition, baseline and July 11, 2000, interim groundwater samples from S5-MW-24 through S5-MW-26 were analyzed for Title 22 metals, excluding mercury, iron, magnesium, manganese, potassium, and sodium) using EPA Method 6010B; hexavalent chromium using EPA Method 7196A; and general chemistry using EPA Methods 300.0A, 310.1, and 160.1. Rebaseline and posttreatment groundwater samples were

analyzed for selected metals (aluminum, calcium, total iron, magnesium, potassium, and sodium) using EPA Method 6010B and for general chemistry using EPA Methods 300.0A, 310.1, 340.2, 350.3, 120.1, and 160.1 and Standard Method 1030F. Analytical data tables and laboratory reports for pilot test groundwater samples are provided in the RAW (OHM, 2001).

## 2.3.3 Aquifer Conductivity Test

Pilot study aquifer testing was performed to evaluate how aquifer permeability is influenced by ferric iron precipitation (expected to result from the chemical reaction caused by oxidant injection). Baseline slug testing of the injection well was conducted on May 19 and 21, 2000. Posttreatment slug testing of the injection well was conducted on September 26 and 27, 2000. Slug test graphs and calculations are provided in the RAW (OHM, 2001).

## 2.3.4 Soil Vapor Sampling and Analysis

Baseline soil vapor samples were collected from soil-gas probes S5-SG-01 through S5-SG-03 on May 22, 2000. Interim soil vapor samples were collected from those probes while the first injection event was in progress on May 25, 2000, as part of rebaseline sampling on August 29 and 30, 2000, and while the third/final injection event was in progress on September 15, 2000. Posttreatment soil vapor samples were collected from the three site soil-gas probes on September 20, 2000. Soil vapor samples were analyzed for VOCs using a portable GC/MS in general conformance with EPA Method TO-14 (OHM, 2001).

## 2.4 Fenton's Reagent Pilot Study Chemical Injections

The Fenton's reagent pilot-scale field test was initiated in May 2000. The pilot test program was composed of three injection events, each entailing approximately 1 week of injecting chemicals into injection well S5-VIW-01 and concurrent groundwater monitoring. Chemical reagents that were added to the aquifer included HCl for pH adjustment, ferrous sulfate as catalyst, and hydrogen peroxide as the oxidizer. Chemical injection activities were conducted by ManTech, Inc.

## 2.4.1 First and Second Injection Events

The first two pilot test injection events began on May 22 and June 12, 2000, and lasted 4 and 3 days each, respectively. Based on bench test results and initial estimates to meet pilot test objectives, it was determined that 7,500 pounds of 35 percent hydrogen peroxide, 600 pounds of ferrous sulfate, and 60 gallons 34.1 percent HCl were needed to prepare reagent solutions for injection during these combined events. Total fluids produced and injected from the estimated quantity of chemicals during the first and second injection events included approximately 700 gallons of conditioning/catalyst solution composed of HCl and ferrous iron and approximately 1,600 gallons of oxidant solution at 8- to 20-percent hydrogen peroxide. Two-thirds of the total reagent volumes were injected during the first event and the remainder was injected during the second event. Conditioner/catalyst application was performed each day

prior to oxidant application during these injection events. Conditioning/catalyst and oxidant solutions were applied at a rate of approximately 1 to 2 gallons per minute (gpm).

## 2.4.2 Third Injection Event

The third injection event began on September 11, 2000, and lasted 5 days. The objective of the third and final pilot test injection event was to address data gaps identified during the first two events. Specific objectives for the third event were to evaluate aquifer-buffering capacity to determine the economic feasibility of aquifer acidification, to estimate the design radius of influence for conditioning reagents, and to evaluate contaminant mass reduction versus mass movement through phase transport and migration.

Based on VOC mass calculations and previous injection event results, it was determined that 9,500 pounds of 35 percent hydrogen peroxide, 800 pounds of ferrous sulfate, and 260 gallons 34.1 percent HCl were needed to prepare reagent solutions for the third injection event. Total fluids produced and injected from the estimated quantity of chemicals included approximately 2,800 gallons of conditioning/catalyst solution and 1,950 gallons of oxidant solution at 8 to 20 percent hydrogen peroxide. The total volume of conditioning/catalyst solution was applied prior to oxidant application at a rate of approximately 6 to 7 gpm. The oxidant application rate ranged from 1 to 2 gpm.

## 2.5 Pilot Study Conclusions

Evaluation of the data collected during the pilot study indicated that full-scale ISCO by Fenton's reagent should successfully achieve TCRA goals. The following pilot study results support this conclusion:

- Groundwater concentrations of total VOCs decreased an average of 60 percent within 25 feet of the injection well based upon baseline and posttreatment sample results.
- Soil concentrations decreased an average of 69 percent within a 15-foot radius of the injection well based on sample results collected before and after the third injection event.
- VOC mass calculations based on all sample media (vapor, soil, and groundwater) indicated that VOCs were destroyed rather than moved from one media to another.
- Mass calculations determined that approximately 76 pounds of VOCs were destroyed during the pilot test.
- Aquifer hydrogeologic characteristics are conducive to treating groundwater through chemical injection (the radius of influence is adequate, no adverse effects were observed, and aquifer geochemical and hydrologic changes appear to be temporary).
- Aquifer buffering capacity can be overcome through acidification sufficient to obtain pH levels conducive to Fenton's reaction.

The following pilot study observations and conclusions were identified as necessary in understanding site conditions, designing the full-scale treatment system, and implementing full-scale treatment activities:

- Calculations indicate that approximately 95 percent of the VOC mass within the pilot study area is sorbed to soil at and below the water table (OHM, 2001).
- Increases (rebound) in groundwater contaminant concentrations following the application of conditioning solution and chemical treatment in selected groundwater samples suggest that sorbed-phase VOCs were released from saturated soil into groundwater.
- Total VOC soil vapor concentrations increased during chemical injection (from approximately 10 to 100 parts per million by volume [ppmv]), but were not detected during breathing zone air monitoring.
- Sample results indicated that most contaminant reduction occurred downgradient and cross-gradient from the injection well.

## 2.6 Conceptual Full-Scale Treatment System Design

Full-scale conceptual treatment system design provided in the RAW included well field design and chemical injection parameters. The following sections summarize recommended full-scale treatment system design.

## 2.6.1 Full-Scale Treatment Area Well Field Design

Pilot study results indicated a parabola-shaped treated area surrounding the injection well. Based on that finding, the estimated treatment area for each injection well, including treatment area overlap, would be a 30- by 45-foot rectangle (1,350 square feet) oriented parallel to groundwater flow. The injection well in each of the rectangle treatment areas would be located in the center upgradient third of the rectangle. For proper overlap, the injection wells of adjacent treatment areas should be aligned with the upgradient edge of the neighboring treatment area rectangle. Using the delineated aquifer source area of approximately 20,000 square feet and the estimated injection wells would be needed for full-scale treatment of the highly impacted saturated soil and groundwater at the site.

In addition to the 15 source area injection wells, another 30 injection/monitoring wells were proposed to surround the source area. The additional wells would envelop the source area aquifer and the identified site groundwater plume that has total selected VOC concentrations of greater than 1,000  $\mu$ g/L. The conceptual well field outside the identified aquifer source area covers approximately 40,000 square feet.

Initial treatment injections would be concentrated in the source area aquifer (as defined by pretreatment baseline groundwater sampling). Surrounding injection/monitoring wells would be monitored to assess treatment progress and potential outward migration of VOCs. Based on monitoring results, chemicals would be applied to injection wells outside the source area to meet TCRA objectives.

#### 2.6.2 Chemical Injection

The volume, concentration, and injection rate of the chemicals required to achieve the remedial design goals were presented in the RAW and are summarized in the following sections. As discussed in the RAW, the actual volumes of chemicals that would be used to meet TCRA objectives would depend on contaminant distribution and geochemical conditions within the full-scale treatment area.

#### 2.6.2.1 Oxidant Solution

Based on site conditions and pilot test results, it was estimated that approximately <sup>1</sup>/<sub>4</sub> pound of 35 percent hydrogen peroxide solution would be needed to oxidize 1 gram of VOCs (OHM, 2001). Given the assumptions derived in the RAW, VOC mass within the source area aquifer was estimated at 3,638 pounds (combined in water-saturated soil and groundwater). The VOC mass for the area outside the source area aquifer was estimated at 308 pounds (groundwater only). The total estimated mass, if groundwater outside the aquifer source area was to be treated, was approximately 3,946 pounds. Therefore, the volume of 17 percent hydrogen peroxide solution (optimal proportion determined by the pilot study) identified as needed to oxidize the identified contaminant mass at the site was estimated to be approximately 75,000 gallons (OHM, 2001).

#### 2.6.2.2 Conditioning and Catalyst Solution

The results of the third injection event of the pilot study identified that 1,800 to 2,000 gallons of conditioning and catalyst fluid containing 3.5 percent HCl and 500 pounds ferrous sulfate would be needed at each injection well to adequately condition the aquifer prior to oxidant application. From that volume, it is estimated that 80,000 to 90,000 gallons of conditioning/catalyst solution of that makeup would be required to condition the aquifer in and surrounding the source area at the site.

#### 2.6.2.3 Chemical Injection

Optimum pumping pressure and flow rate for conditioning fluids identified during the pilot study were 5 to 15 pounds per square inch (psi), as needed to maintain a flow rate of 6 to 7 gpm. It was also determined that the oxidant solution should be allowed to infiltrate by gravity feed at an estimated flow rate of approximately 2 gpm.

### 2.7 Recommended Supplemental Site Assessment

The following additional site assessment activities supporting full-scale remediation planning were identified and recommended in the RAW (OHM, 2001):

- Additional assessment of the nature and extent of VOCs in soil and groundwater to delineate the aquifer source area in greater detail
- Verification of site geometry, including the depth to Spanish Bight sediments
- Delineation of vadose zone source area

The location of injection wells for full-scale groundwater treatment would then be selected based on the results of the supplemental study.

# 3.0 Supplemental Site Assessment

Beginning in February 2001, following the pilot study, additional site assessment activities were performed to characterize the nature and extent of the shallow aquifer and VOC contaminants at the site in greater detail. Supplemental site assessment activities included a geophysical survey, membrane interface probe (MIP)/direct sampling ion trap mass spectrometer (DSITMS) screening, delineation soil sampling, and groundwater well sampling. Data acquired during the site assessment were reported in the RAW addendum (IT, 2001) and are summarized in the following sections.

### 3.1 Geophysical Survey to Locate Utilities

A second geophysical survey was performed at the site on February 2, 2001, to locate subsurface utilities and other buried features within the southern extent of the site. The intent of the survey was to clear the immediate vicinity of the proposed Navy Site Characterization and Analysis Penetrometer System (SCAPS) boring locations and to supplement the pilot study geophysical survey by delineating buried metallic anomalies to the south of the initial survey.

Various subsurface metallic anomalies (representing buried metallic material) distributed throughout the southern portion of the site were identified during the second geophysical survey. The map provided in the second geophysical survey report incorporates geophysical data acquired from the initial pilot study survey and the second survey to provide a site geophysical map that depicts metallic anomalies and the three utilities within the surveyed portion of the site. Utilities identified to the south of Sherman Road and east of Rogers Road are shown in Figure 2. The second geophysical survey report is provided in Appendix A (A-2).

#### 3.2 MIP/DSITMS Delineation

Site screening was conducted from February 6 through 11, 2001, to assess site soil type and delineate VOC distribution using the SCAPS combined direct-push cone penetrometer testing (CPT) technology and MIP, respectively. Screening was performed at 36 borings locations (S5-MIP-01 through S5-MIP-36) as shown in Figure 3. MIP samples, collected from 140 sample points, were analyzed using a DSITMS.

SCAPS CPT boring logs indicated that the fine-grained Spanish Bight sediments start at about 9 to 10 feet bgs have a minimal thickness of about 2.5 feet. A few fine-grained layers with limited thickness (0.25 to 1 foot) were also identified as being scattered through the upper aquifer from about 6 to 9 feet bgs. CPT boring logs also indicated that the Spanish Bight sediments thin and terminate below the western portion of the VOC plume. SCAPS CPT boring logs are presented in the RAW addendum (IT, 2001).

Compounds that were quantified using the DSITMS included TCE, *cis*-1,2-DCE, VC, and PCE. Identified contaminant concentrations at each of the 140 MIP sample locations represent a combined sorbed, dissolved, and volatile phase concentration for each compound. In many cases, the DSITMS values for total dichloroethene (DCE) and VC were masked by the presence of late eluting VOCs such as fuel hydrocarbons, which are known to be present at the site. Therefore, in addition to specific compound quantification, total ion counts (TICs) were collected to qualitatively assess total VOCs (in all phases) present in the subsurface at the site. Figures 2 and 3 show the MIP delineated extent of TICs exceeding 50,000 in conjunction with the estimated extent of selected VOCs in groundwater identified by Parsons (1999). The MIP boring with the greatest measured contaminant concentration was MIP-28, which is located approximately 28 feet upgradient from monitoring well S5-MW-21. Elevated contaminant concentrations were also identified adjacent to the southeast edge of the site in MIP-09 and MIP-11. SCAPS/MIP boring logs, DSITMS results, and location survey data for SCAPS borings are provided in the RAW addendum (IT, 2001).

### 3.3 Confirmation and Site Delineation Soil Sampling

Soil sampling was conducted to quantify and confirm selected MIP sample results, to further delineate site contaminants, and to attempt to locate potential vadose zone source areas. Preliminary soil samples (soil borings S5-B-39 to S5-B-48) and secondary soil samples (soil borings S5-B-49 to S5-B-61) were collected using a direct-push drill rig on February 22 and March 21, 2001, respectively (Figure 3). Soil samples were collected at depths ranging from 1.5 to 7.5 feet bgs, with the majority of the samples originating from the lower portion of the vadose zone at 3 to 4 feet bgs. Soil samples were analyzed for VOCs using EPA Method 8260B. Synthetic precipitation leaching procedure (SPLP) was performed on vadose zone soil samples using EPA Method 1312 to produce sample leachate that was analyzed for VOCs using EPA Method 8260B. SPLP/VOC analysis was performed to evaluate the potential impact that contaminated vadose zone soil could have on site groundwater. SCAPS confirmation and site delineation soil sample boring locations are shown in Figure 3. Boring logs, analytical data tables, and laboratory reports for delineation soil samples are provided in the RAW addendum (IT, 2001). Location survey data for delineation soil borings are provided in Appendix B.

The soil sample identified with the highest TCE concentration was collected from soil boring S5-B-41, which is located approximately 28 feet upgradient from MIP-28 (MIP boring with highest identified contaminant concentration). The TCE concentration reported for the soil sample from soil boring S5-B-41 (650 milligrams per kilogram [mg/kg]) was about seven times greater than the TCE concentration reported for the soil sample collected adjacent to MIP-28 in S5-B-46 (89 mg/kg). The TCE leachate concentration derived from the S5-B-41 soil sample was 4,400  $\mu$ g/L. Analytical data tables and laboratory reports for soil samples are provided in the RAW addendum (IT, 2001).

Of the contaminants detected in the vadose zone soil, only PCE and TCE were consistently found in associated sample leachate. Of these contaminants, TCE concentrations in leachate represented the greater hazard to groundwater. It was established in the RAW addendum (IT, 2001) that a TCE concentration in soil greater than approximately 10 mg/kg corresponded to a potential TCE leachate concentration that could pose a possible impact to groundwater.

#### 3.4 Supplemental Site Assessment Conclusions

Primary conclusions derived from supplemental site assessment data are as follows:

- Spanish Bight sediments thin out to the west and are not present below the western edge of the site VOC plume.
- Elevated contaminant concentrations/groundwater aquifer source area extended farther to the east than previously delineated (MIP TIC contour).
- Elevated VOC concentrations in vadose zone soil in the vicinity of soil boring S5-B-41 likely represented the location of the former eastern liquid waste disposal pit.
- VOC-impacted soil in the suspected eastern former disposal pit represented a potential ongoing contaminant source to groundwater.
- Impacted vadose zone soil with a TCE concentration of greater than 10 mg/kg appeared to have the greatest potential to impact or reimpact (after treatment) groundwater.

Because the identified eastern former disposal pit represented a potential ongoing contaminant source that could reimpact groundwater subsequent to TCRA groundwater treatment, the following actions were recommended in the RAW addendum (IT, 2001):

- Collect soil samples needed to identify the center of the vadose zone source area and to estimate the boundary of the former liquid waste disposal pit.
- Excavate the vadose zone VOC source area, targeting soil with TCE concentrations exceeding 10 mg/kg.

## 4.0 Vadose Zone Source Area Removal

Vadose source area removal was performed to eliminate an ongoing source of groundwater contamination that could reimpact groundwater following TCRA remediation activities. Removal of the vadose zone source area (suspected to be the former eastern liquid waste disposal pit) included source area delineation, field activity preparation, excavation of impacted soil, site restoration, characterization of excavated soil, and waste disposal.

#### 4.1 Source Area Delineation

Prior to the excavation of the VOC source area, it was necessary to delineate the horizontal extent of impacted soil in the vadose zone. The following sections describe source area delineation soil sampling, sampling results, and the estimated extent of impacted soil that required excavation.

#### 4.1.1 Source Area Delineation Soil Sampling

Preconstruction source area soil sampling was performed on September 6, 2001, to determine the center of the vadose zone source area and to attempt to determine the former boundary of the source area, which was suspected to be the former eastern liquid waste disposal pit. Soil samples were collected from direct-push delineation soil borings S5-B-01D through S5-B-09D (Figures 3 and 4). These borings were located surrounding S5-B-41 (S5-B-04D to S5-B-07D), just east-southeast of those borings (S5-B-02D and S5-B-03D), to the west-northwest of S5-B-40 (S5-B-08D and S5-B-09D), and to the southeast of S5-B-50 (S5-B-01D) as proposed in the RAW addendum (IT, 2001). A soil sample was collected from each of these borings in the lower portion of the vadose zone at approximately 3.8 feet bgs. Soil samples were analyzed for VOCs using EPA Method 8260B. Boring logs were not created for soil borings S5-B-01D through S5-B-09D because of their limited depth and the discrete collection of soil only from the sampled interval. Location survey data for vadose zone source area delineation soil borings is provided in Appendix B.

#### 4.1.2 Source Area Delineation Soil Sampling Results

Elevated TCE concentrations were reported for the four soil samples collected from soil borings S5-B-04D (540 mg/kg), S5-B-05D (1,000/1,100 [duplicate] mg/kg), S5-B-06D (2,300 mg/kg), and S5-B-07D (1,100 mg/kg) that were drilled to encompass soil boring S5-B-41 (the supplemental site assessment boring with the highest reported TCE concentration). Moderate TCE concentrations were reported for the soil samples collected just to the south-southeast of S5-B-41 in soil borings S5-B-02D (150 mg/kg) and S5-B-03D (300 mg/kg). TCE concentrations reported for soil borings S5-B-01D (not detected), S5-B-08D (0.82 mg/kg), and S5-B-09D (1.1 mg/kg) were below the project TCE screening criteria of 10 mg/kg. Supplemental site

assessment delineation soil sample results in the vicinity of the suspected source area are shown in Figure 4 and presented in Table 1. Laboratory analytical results for these samples are included in Appendix C.

## 4.1.3 Estimated Extent of Vadose Zone TCE-Impacted Soil

Elevated TCE concentrations reported for the four soil samples surrounding S5-B-41 suggest that soil boring S5-B-41 is situated in the central portion of the vadose zone TCE source area. The moderate TCE concentrations reported for the soil samples collected in soil borings S5-B-02D and S5-B-03D indicated that soil with contaminant concentrations exceeding the 10-mg/kg project screening criteria extends to the south-southeast from the source area to at least the location of those two borings. Soil boring locations that form the minimum delineated extent of TCE impacted vadose zone soil exceeding 10 mg/kg are S5-B-40, S5-B-46, S5-B-49, S5-B-50, S5-B-02D, S5-B-03D, S5-B-05D, and S5-B-07D (Figure 4). Most of the delineated vadose zone TCE-impacted soil is located beneath Sherman Road.

The estimated surface extent of the excavation to remove impacted soil of the vadose zone source area was identified in the RAW addendum as approximately 70 by 45 feet (IT, 2001), as shown in Figure 4. Based on additional data provided from delineation soil sampling, the planned extent of the proposed excavation would cover about the same surface area as proposed in the RAW addendum, but the location of the excavation was shifted to the northeast to center the dig around the most impacted portion of the delineated source area (Figure 4) and still encompass the area with TCE concentrations exceeding 10 mg/kg.

The final vertical limits of the excavation were to be determined by the presence of groundwater during excavation activities. The site water table occurs at approximately 5 feet ( $\pm 1$  foot) and impacted soil was believed to extend to at least that depth. Based on the estimated surface extent of the excavation and the depth to groundwater, it was estimated that approximately 600 cubic yards of soil would be excavated.

## 4.2 Excavation Field Activity Preparation

Multiple tasks were performed prior to initiation of site excavation activities. Tasks included acquiring Navy and DTSC site approval; drafting an addendum to the Site Health and Safety Plan (SHSP); acquiring necessary equipment, materials, and personnel; and preparation of the rolloff bin storage area.

Because of the proximity of the site to military and city of Coronado housing, the Navy requested that excavation activities be completed in the shortest time span possible and that the excavation be performed when it would cause the least impact to base operations and personnel. Therefore, it was decided that excavation activities would begin late Friday afternoon and would be completed by the following morning (approximately 16 hours). Because of the time

constraint for the completion of the excavation, detailed preparatory excavation planning was necessary and all contingencies had to be considered and prepared for in order to ensure that the task was completed in the allotted time frame.

#### 4.2.1 Site Approval and Public Notification

Prior to the initiation of site remediation activities, site approval was required from the Navy. Site approval by the Navy and the DTSC public notification ensured that base personnel and the public were notified about upcoming site activities, that site activities met DTSC requirements, and that activities would not impact base operations. DTSC (Negative Declaration) and Navy site approval were issued on October 12 and November 15, 2001, respectively. Methods used by the Navy to inform the public about site activities included conducting presentations at NAS North Island Restoration Advisory Board meetings, meetings with city of Coronado administrators and fire department, placing project work plans at the city of Coronado public library for review, running newspaper announcements, and mailing information packets to local residents. The two information packets that were distributed for the site are provided in Appendix D.

## 4.2.2 Site Health and Safety Plan Addendum

Because the excavation of VOC-impacted soil was a task that was added subsequent to the initiation of the TCRA, an SHSP addendum was drafted to modify the existing SHSP (OHM, 2001) to establish policies and procedures to protect workers and the public from potential hazards posed by the planned excavation. Only changes and/or additions to the original SHSP were presented in the SHSP addendum (IT, 2001). Activities detailed in the SHSP addendum included air monitoring within the worker breathing zone, around the site perimeter, and along the NAS North Island boundary using a portable GC/MS, flame-ionization detector, and detector tube monitoring devices for comparison with action levels. Other activities included monitoring of nuisance odors, traffic control, excavation utility clearance, establishing the excavation exclusion zone, identifying necessary personal protective equipment (PPE), means to reduce vapor emissions, storage container monitoring, site communications, spill response, and contingency planning for aircraft emergencies. The SHSP addendum was provided as an attachment to the RAW addendum (IT, 2001).

## 4.2.3 Equipment, Materials, and Personnel

Equipment mobilized to the site was selected and sized based on excavation requirements. Necessary equipment for excavation and restoration activities included a track-mounted excavator; rubber tire front-end loaders; gasket-sealing, closed-top, 20-yard soil storage rolloff bins; rolloff bin transfer trucks; a water truck; light towers; handheld air monitoring equipment; two field-portable GC/MS devices for air monitoring; self-contained breathing apparatuses; frequency modulated transceivers; decontamination equipment; and asphalt resurfacing

equipment. Materials acquired to complete excavation activities included <sup>3</sup>/<sub>4</sub>-inch gravel and soil backfill; asphalt; geotextile; well screen and blank casing for horizontal wells; chemical detector tubes; and PPE specified in the RAW for Level D, Modified Level D, and Level B. Personnel required to complete excavation activities included heavy equipment operators, transfer and water truck drivers, air monitoring personnel, health and safety officer, project oversight personnel, quality control officer, sampling technicians, soil compaction testing technician, general laborers, and asphalt resurfacing personnel.

### 4.2.4 Rolloff Bin Storage Area

Empty rolloff bins were stored at the site in the immediate vicinity of the excavation to facilitate access during excavation activities. Once rolloff bins were filled with excavated soil, they were transferred to a secured area located approximately 1,000 feet northeast of the site, between Building 662 and the NAS North Island golf course driving range.

## 4.3 Excavation Activities

The following sections detail the excavation of impacted vadose zone source area soil, the extent of the excavation, and excavation air monitoring.

### 4.3.1 Soil Excavation

Vadose zone source removal was initiated on December 14, 2001, at 6:00 p.m. Impacted soil was excavated in 10-foot sections (reach of excavator) in a northwesterly direction from the eastern edges of the excavation (Figure 4). For each section, first a 10-foot section of asphalt was pulled up and placed in an open-top rolloff bin. Then the underlying soil without discernible staining was excavated in approximate 2-foot tiers until groundwater was encountered or stained soil was observed. Stained soil was partitioned from unstained soil and placed into separate rolloff bins to simplify waste characterization.

Excavated soil was placed by the track-mounted excavator directly into rolloff bins as it was extracted. Once a rolloff bin was filled with soil and sealed, it was loaded onto a bin transport truck and transported to the rolloff bin storage area for sampling and storage. Following the removal of each loaded bin, empty bins were placed within reach of the excavator using a front-end loader equipped with lifting forks.

During the process of removing the first section of soil from the excavation, very dark staining and odor were identified in the central western face of the excavation. The impacted soil was left in place to be excavated as part of the next section of extracted soil. Excavation of the first section continued in tiers until standing water was observed in the excavation at approximately 7.5 feet bgs. Prior to reaching that depth, highly impacted soil (very dark staining) was encountered at about 6.5 to 7 feet bgs extending across the base of the excavation. Because subsurface conditions differed from what was expected (i.e., soil with a low hydraulic conductivity extending below the planned excavation depth), an assessment of the planned excavation extent was initiated. The reassessment was performed to ensure that excavation activities removed the maximum volume of impacted soil that could not be readily treated by chemical oxidation (i.e., vadose zone or low-permeability soil).

Based on the reassessment of site conditions, a field decision was made that the apparent lowpermeability soil in the upper portion of the aquifer (below the vadose zone source area) should be excavated to promote site cleanup and to remove a potential ongoing groundwater contaminant source. Because of the time constraint for the completion of the excavation, only the volume of soil that was originally planned could be excavated from the site. Therefore, to account for the additional soil that would be excavated from below the water table, the southern and western extents of the planned excavation were reduced (Figure 4).

Excavation activities resumed with a target excavation depth of approximately 7 feet bgs. Soil excavation continued to the northwest until the whole of the vadose zone source area was removed.

During excavation of the delineated vadose zone source area, which is suspected to have been the location of the eastern liquid waste disposal pit, various kinds of debris were encountered. Objects encountered included 55-gallon metal drums; 5-gallon metal containers similar to those used to store oil, solvent, paint, etc.; rubber gloves; rags; and other debris. At least six 55-gallon metal drums were excavated coincident with impacted soil. All of the drums identified during the excavation of the former disposal pit were either already crushed or unintentionally crushed during excavation activities. Excavated drums were placed in rolloff bins with related excavated soil.

Three notches (Figure 4) were cut into the southern edge of the excavation to permit the installation of 30-foot-long horizontal infiltration well screens (Section 4.4). The excavated notches were equally spaced along the southern wall, about 4 feet wide, and 3 feet into the side of the excavation, and extended to the depth of the excavation.

Soil excavation and subsequent grooming of the excavation were completed on December 15, 2001, at 3:00 a.m. At completion of the excavation, approximately 3 to 4 inches of standing water was present in the bottom of the excavation, separated by the soil ridges produced by the teeth of the excavator bucket during final grooming. At the conclusion of excavation activities, a total of 51 closed-top rolloff bins and 2 open-top rolloff bins had been filled with excavated soil and asphalt, respectively.

### 4.3.2 Excavation Extent

Excavated soil removed from the site was derived predominantly from below Sherman Road (Figure 4). The finished dimensions of the excavation were approximately 66 feet long and 34 feet wide, with an average depth of approximately 7 feet bgs; an estimated total volume of 582 cubic yards of soil was excavated.

Because the planned western and southern excavation boundaries were moved inward to account for the additional soil excavated from below the source area water table, a quantity of TCE-impacted soil with concentrations exceeding the project screening level of 10 mg/kg was left in place at the site. TCE delineation sample concentrations for the soil that was not excavated are 11 mg/kg in S5-B-40 (4 feet bgs), 89 mg/kg in S5-B-46 (3 feet bgs), 160 and 100 mg/kg in S5-B-49 (1.5 and 3.5 feet bgs, respectively), and 12 mg/kg in S5-B-50 (4 feet bgs). The estimated volume of soil above the water table with TCE concentrations exceeding project screening criteria is approximately 128 cubic yards. Approximately half of the impacted soil remaining in place is located beneath the pavement of Sherman Road.

# 4.3.3 Excavation Air Monitoring

Air monitoring was performed to ensure that workers and off-site personnel were not affected by airborne contaminants resulting from excavation activities. Air monitoring was performed in the immediate vicinity of the excavation, at locations surrounding the excavation to a distance of approximately 300 feet, and at distant locations between the excavation and residential areas (near Navy base housing and the NAS North Island/city of Coronado fence line). Monitoring was performed using flame-ionization detectors and two field-portable GC/MSs. The GC/MSs were calibrated to monitor for benzene, 1,1-DCA, methylene chloride, PCE, TCE, toluene, and VC, with a detection limit of 0.2 ppmv for those compounds.

With the exception of a single very low TCE detection of 0.37 ppmv near Building 513 (approximately 600 feet southwest of site), airborne contaminants were not detected away from the excavation. Maximum airborne contaminant concentrations measured in the immediate vicinity of the excavation, as determined by the GC/MS, were TCE at 20 ppmv, 1,1-DCA at 3.0 ppmv, toluene at 1.6 ppmv, PCE at 0.89 ppmv, and methylene chloride at 0.25 ppmv. VC and benzene were not detected during excavation activities. All detected airborne contaminant concentrations were transitory and below project action levels. The excavation air monitoring report is provided in Appendix E (E-1).

# 4.4 Site Restoration

Site restoration included installing three horizontal wells across the bottom of the excavation; filling the excavation with approximately 4 feet of <sup>3</sup>/<sub>4</sub>-inch gravel from the base of the excavation to approximately 3 feet bgs; installing a nonwoven geotextile (Mirafi<sup>®</sup> 140N) atop the gravel;

placing and properly compacting sand from 3 feet to 4 inches bgs; and repaving Sherman Road with a pavement section consisting of 3 inches of asphaltic concrete over 4 inches of Caltrans Class II aggregate base (Figure 5). Road striping was painted on the replaced asphalt on January 17, 2002. The compaction test report is provided in Appendix E (E-2).

Horizontal wells S5-HIW-01 through -03 were installed at about 1 foot above the base of the excavation during the placement of the <sup>3</sup>/<sub>4</sub>-inch gravel. The wells were installed for the injection of chemical oxidants and consist of three 30-foot-long screen sections that were placed perpendicular to Sherman Road at roughly equal intervals along the length of the excavation (Figure 4). Well screens consist of 2-inch-diameter 0.01-inch slot Schedule 80 polyvinyl chloride (PVC) screen that is capped at the northern end and connected to the surface through blank PVC casing that extends upward in the notches that were cut in the southern side of the excavation (Figures 4 and 5). The horizontal injection wells are situated at a depth approximately 1 foot below the water table, immediately under the location of the former source area.

### 4.5 Excavated Soil Waste Characterization

Waste characterization soil samples were collected from each of the 51 rolloff bins that were filled during excavation activities. Soil samples were collected as grab samples using glass jars and Encore<sup>®</sup> samplers, as each bin arrived at the bin storage area. Waste characterization soil samples were analyzed by the Navy Public Works Center (PWC) laboratory for VOCs using EPA Method 8260B and the toxicity characteristic leaching procedure (TCLP) using EPA Method 1311/8260A. VOC and TCLP waste characterization soil sample results are provided in Tables 2 and 3, respectively.

Contaminant screening was performed on greater than 10 percent of the waste characterization samples collected, to ensure proper waste disposal and to assess whether other COPC were disposed of in the former liquid waste disposal pit. Soil screening analyses included pesticides by EPA Method 8081A, polychlorinated biphenyls (PCBs) by EPA Method 8082, semivolatile organic compounds (SVOCs) by EPA Method 8270C, and Title 22 metals by EPA Method 6010/7471A. Based on metals analytical data, TCLP for cadmium, chromium, and lead by EPA Method 1311/6010B was also performed on selected soil samples. Contaminants screening analytical results are listed in Tables 4 through 7, and TCLP data for cadmium, chromium, and lead are listed in Table 3. Laboratory analytical reports for waste characterization soil samples are provided in Appendix C.

Contaminants detected in the excavated source area soil included VOCs, PCBs, SVOCs, and metals. Pesticides were not detected. Aroclor-1260 was the only PCB detected, with a maximum reported concentration of 2.10 mg/kg. VOCs detected in excavation waste

characterization soil samples are listed in Table 2. Detected SVOCs and maximum reported concentrations are as follows:

- 4-Methylphenol (313 mg/kg)
- 2-Methylnaphthalene (248 mg/kg)
- 2,4-Dimethylphenol (240 mg/kg)
- 2-Methylphenol (210 mg/kg)
- Naphthalene (199 mg/kg)
- Phenol (147 mg/kg)
- Fluorene (61.6 mg/kg)
- Phenanthrene (48.4 mg/kg)
- bis(2-ethylhexyl)phthalate (25.6 mg/kg)
- Acenaphthene (18 mg/kg)
- Dibenzofuran (14 mg/kg)
- 1,2-Dichlorobenzene (14 mg/kg)

Detected metals and maximum reported concentration are as follows:

- Lead (1,510 mg/kg)
- Zinc (693 mg/kg)
- Chromium (487 mg/kg)
- Copper (481 mg/kg)
- Barium (97 mg/kg)
- Cadmium (96 mg/kg)
- Antimony (89 mg/kg)
- Nickel (25 mg/kg)
- Vanadium (22 mg/kg)
- Molybdenum (6 mg/kg)
- Mercury (0.3 mg/kg)

Waste characterization of excavated soil identified that 34 of the 51 rolloff bins contained RCRA hazardous waste that required treatment by incineration prior to disposal. Of the remaining 17 rolloff bins filled with excavated soil, two contained RCRA hazardous waste that required stabilization prior to disposal, two contained RCRA hazardous waste for direct landfill disposal, and 13 contained California hazardous waste for direct landfill disposal. Significantly elevated concentrations of TCE, PCE, and lead were the primary drivers for waste disposal requirements (Tables 2, 3, and 7).

# 4.6 Disposal of Excavated Waste

A materials profile package was prepared by Shaw Environmental, Inc. for the transportation and disposal of RCRA and California hazardous waste in accordance with U.S. Department of

Transportation (DOT) and EPA regulations. Following the review and approval of the materials profile package by the NAS North Island PWC and the permitted waste disposal facility, hazardous waste manifests for the transportation and disposal of excavated wastes were issued by the PWC.

Excavated wastes were transported to designated waste disposal facilities by MP Environmental beginning on February 12, 2002. RCRA hazardous waste requiring incineration (500 tons) was transported to the Safety Kleen disposal facility located in Aragonite, Utah. RCRA hazardous waste requiring stabilization prior to interment (26.4 tons), RCRA hazardous waste for direct interment (28 tons), and non-RCRA hazardous waste/California hazardous waste (169.5 tons) were transported to the Safety Kleen disposal facility located in Buttonwillow, California. A total of 724 tons of contaminated soil was excavated and transported off site for treatment and/or disposal. The last load of hazardous waste departed NAS North Island on March 4, 2002. Hazardous waste disposal manifests for the soil excavated from the site are provided in Appendix E (E-3).

The estimated mass of VOCs removed from the site through excavation of the vadose zone source area and off-site disposal were calculated using the average mass of total VOCs detected in each bin (waste characterization sampling) and the measured mass of soil in each bin. Mass removal calculations identified that approximately 3,050 pounds of VOCs were disposed of as RCRA hazardous waste requiring incineration (2,987 pounds), non-RCRA hazardous waste/California hazardous waste (56 pounds), and RCRA hazardous waste for direct interment and requiring stabilization prior to interment (7 pounds).

### 4.7 Western Liquid Waste Disposal Pit Location

The approximate locations of the eastern and western liquid waste disposal pits were identified in the RI/RFI based on the correlation of two apparent pit-type structures seen in a 1948 aerial photograph and the estimated location of Sherman Road (BNI, 1998). Because nearby fixed structures (i.e., Sherman and Rogers Roads, etc.) were not present when the aerial photograph was taken, only a general location for the former disposal pits was provided. During excavation activities, it was confirmed that the eastern liquid waste disposal pit was located under the center of Sherman Road (Figure 4) and provided an additional reference point to correlate site structures with disposal pits seen in the 1948 aerial photograph (BNI, 1998). Therefore, the position of the former western liquid waste disposal pit was refined (Figure 6). Following the discovery of 55-gallon metal drums and 5-gallon metal containers in the excavated source area, a supplemental investigation was performed to assess subsurface electromagnetic (EM) anomalies, which were suspected to be landfill debris. This task was performed to determine whether other subsurface metallic objects identified during previous geophysical surveys contained solvents and/or petroleum hydrocarbons that could be ongoing contaminant sources. Tasks related to the investigation of potential secondary sources associated with metallic debris included a geophysical survey to delineate large metallic objects, exploratory trenching to assess identified metallic objects, and disposal of excavated waste.

# 5.1 Geophysical Survey to Locate Secondary Sources

A geophysical survey was performed at the site on June 5, 2002, to identify and mark locations where relatively large (about one-quarter the size of a 55-gallon metal drum or larger) subsurface metal objects were present. The geophysical survey extended south of Sherman Road and east of Rogers Road for approximately 300 and 360 feet, respectively. Metallic objects were located using a Geonics EM-61 high-sensitivity metal detector and EM utility-locating equipment. EM-61 readings were recorded at 5-foot intervals along a grid established for the geophysical survey. EM utility-locating methods were used following the EM-61 survey in an attempt to delineate the source of identified anomalies. The geophysical survey report to locate potential secondary sources is provided in Appendix A (A-3).

The secondary source geophysical survey identified and marked 34 locations where large metallic objects were present in the subsurface. Identified locations were marked using a wood stake to locate the center of the anomaly and a circle was painted around the stake that corresponded to the apparent size of the object. Plate 1 of the secondary source geophysical survey report in Appendix A (A-3) depicts site features and the locations of identified anomalies.

# 5.2 Exploratory Trenching

Initial exploratory trenching to quantify secondary sources at the site was performed on June 6 and June 7, 2002, using a backhoe. Locations, pinpointed and marked during the geophysical survey, were excavated until a large metallic object was uncovered and extracted, groundwater was encountered (ranging from 3.5 to 5 feet bgs), or screening indicated the presence of hydrocarbons. Screening of excavated soil and metallic objects for hydrocarbons was performed using a photoionization detector and visual observation.

Excavation of the 34 EM anomaly locations revealed 4 locations where hydrocarbon-related materials were discovered (including rusted and crushed drum fragments, rags, gloves, and a complete drum without lid). At locations where hydrocarbon-related material was discovered, the extracted impacted material was placed in polyethylene drum overpack containers, and the excavation was backfilled to be reassessed at a later date.

Re-excavation of the four possible secondary source locations (Anomalies A, T, X, and Y [Appendix A-3 – Plate 1]) was conducted on June 10 and 11, 2002. Anomalies X and Y were reexcavated on June 10, 2002, and anomalies A and T were re-excavated the following day. No further indications of hydrocarbons were identified during re-excavation of anomalies A and T. Soil and the capillary fringe were not impacted below the hydrocarbon-impacted material (rags, gloves, and dark stained soil within the crushed drum that had a solvent-type odor at about 2.5 feet bgs) that had been found at the Anomaly A location. Soil below the impacted waste and above the capillary fringe at Anomaly T was not impacted below the crushed drum and related soil with solvent-type odor (at about 1.5 to 2 feet bgs) that was removed from the Anomaly T location.

Re-excavation of anomalies X and Y yielded additional drum fragments, rags, impacted soil, and an intact drum without a lid. The locations of Anomalies X and Y are separated horizontally by about 22 feet (Appendix A-3 – Plate 1). Hydrocarbon-related materials found at Anomalies X and Y included impacted soil, drum fragments, and rags with a solvent-type odor extending from 2 feet bgs to the capillary fringe. The lidless intact drum found at Anomaly Y was filled with soil and was situated horizontally within the capillary fringe at the top of the water table, at approximately 3.5 feet bgs. Capillary fringe soil at Anomalies X and Y was stained black and had a solvent-type odor. Soil within the intact drum was disposed of with the drum. Remaining impacted soil at the capillary fringe at Anomalies X and Y was left in place.

Non-hydrocarbon-related materials encountered during exploratory trenching activities included various large metallic objects and landfill debris. With the exception of Anomaly BB, all EM anomaly locations produced a large metallic object or metallic debris. Anomaly BB is situated immediately adjacent to monitoring well S5-MW-26 and the metallic surface completion for that monitoring well may have resulted in a false EM signal. Other material encountered during excavation activities included a very large framed metal object that was left in place at Anomaly GG; a 6.5-foot-diameter concrete ring with suspected iron reinforcement extends from 2.5 feet bgs to greater than 4.5 feet bgs (Anomaly C); general landfill debris, including metal objects, bottles, and rubber (Anomalies DD and CC); and possible incinerated waste that included rusted/corroded metal, glass, and apparent ash (Anomalies FF, V, EE, and T). Excavated material to the south of the runway lights (which bisect the site) consisted of dispersed large metallic objects (large pipes, gears, sheet metal, etc.) but without the generic landfill type debris such as was found to the north of the runway lights.

# 5.3 Exploratory Trenching Waste Disposal

Impacted soil, related waste (rags, gloves, etc.), drum fragments, and the single intact soil-filled drum uncovered during exploratory trenching were placed directly into polyethylene drum overpack containers for containment and temporary storage. Excavated hydrocarbon-related wastes were then transferred to the NAS North Island PWC Industrial Waste Treatment Plant for characterization and disposal. Inert metallic debris was transported and disposed of at the Miramar Class III landfill.

# 5.4 Summary of Exploratory Trenching

Exploratory trenching identified that 4 of 34 identified EM anomalies south of Sherman Road and east of Rogers Road contained material related to hydrocarbon waste. Of the four locations identified as containing hydrocarbon waste, only two locations (Anomalies X and Y) were identified as possible secondary sources that may have contributed to the impacted groundwater at Site 5.

# 6.0 Chemical Oxidation Groundwater Treatment

Full-scale groundwater treatment was performed by Environmental Business Solutions International, Inc. (EBSI), under the oversight of Shaw Environmental, Inc. Groundwater treatment activities included injection well installation, full-scale bench testing, chemical injection, and posttreatment groundwater sampling. Treatment activities were performed with the intended goal of achieving 90 percent VOC concentration reduction of the groundwater plume source area. The following sections detail groundwater treatment activities and results.

# 6.1 Groundwater Treatment Well Field Design

Additional monitoring well locations were selected based on the identified groundwater plume (Figure 2) to complement existing monitoring wells, to measure whether contaminants were pushed outward from the plume during groundwater treatment (boundary monitoring wells), and to assess VOC reduction within the treatment area (treatment area monitoring wells). Treatment area monitoring well locations were selected such that monitoring wells were situated centrally between planned injection point locations to ensure that ISCO occurred throughout the treatment area. Multiple derivations of well field design were performed to achieve the final well field layout shown in Figures 6 and 7.

Injection well placement was based on the type of injection well selected for use at the site, existing monitoring well locations, the location of the horizontal injection wells within the former source area excavation, and optimal treatment overlap. Because injection wells were installed following the installation and sampling of boundary and treatment area monitoring wells (Section 6.3), injection well placement was based on a more complete understanding of the source area groundwater plume.

# 6.2 Monitoring Well Installation

Ten additional monitoring wells (S5-MW-31 through S5-MW-40) were installed at the site to monitor groundwater treatment. Monitoring wells were installed on May 1 through 3, 2002, and were developed the following week on May 7 and 8, 2002. Additional monitoring wells were constructed, completed, and developed in accordance with procedures specified in the RAW (OHM, 2001) and in general accordance with the San Diego County Department of Environmental Health *Site Assessment and Mitigation (SAM) Manual* (2003). Soil was collected from selected monitoring well borings (S5-MW-37, S5-MW-38, S5-MW-40) during monitoring well installation for full-scale bench testing. Monitoring well boring locations are shown in Figure 6 and boring logs are provided in Appendix B.

### 6.3 Baseline Groundwater Sampling

Baseline groundwater samples were collected May 14 through 22, 2002, from monitoring wells S5-MW-10, S5-MW-20, S5-MW-21, S5-MW-25, S5-MW-26, S5-MW-28, and S5-MW-30 through S5-MW-40. Groundwater samples were analyzed for VOCs using EPA Method 8260B. Groundwater samples from selected wells (S5-MW-10, S5-MW-21, S5-MW-30, S5-MW-36, and S5-MW-37) were analyzed for general chemistry, including TOC (EPA Method 415.0); sulfide (EPA Method 376.0); hardness (Standard Method 2340B); chloride, nitrate, and sulfate (EPA Method 300.0); and ethane, ethene, and methane (R.S. Kerr [RSK] 175M). General chemistry results were used to gauge the effects of ISCO on the subsequent natural attenuation of residual VOCs. Additional groundwater was collected during baseline sampling from monitoring wells S5-MW-30 and S5-MW-37 for full-scale bench testing.

Groundwater samples were collected by micro-purge sampling using a low-flow bladder pump that was located in the central portion of the aquifer in each monitoring well at approximately 8 feet bgs.

### 6.3.1 Pre-ISCO Baseline Groundwater Analytical Results

VOCs detected during baseline groundwater sampling (per the EPA Method 8260B analyte list) and their maximum reported concentrations at  $10 \mu g/L$  or greater are listed below to categorize site groundwater contaminants and their detected upper limit.

- *cis*-1,2-DCE (61,000 µg/L)
- VC (51,000 µg/L)
- Toluene (1,600 μg/L)
- *trans*-1,2-DCE (960 µg/L)
- Naphthalene  $(570 \,\mu g/L)$
- m/p-Xylene (240 µg/L)
- o-Xylene (190  $\mu$ g/L)
- 1,2,4-Trimethylbenzene (140 µg/L)
- Benzene (120 μg/L)
- Ethylbenzene (120 µg/L)
- p-Isoproyplytoluene (120 µg/L)
- 1,2-Dichlorobenzene (100 µg/L)
- TCE (76 µg/L)
- 1,3,5-Trimethylbenzene (70 µg/L)
- 1,4-Dichlorobenzene (58 µg/L)
- Acetone  $(17 \,\mu\text{g/L})$
- n-Propylbenzene (17 µg/L)
- Isopropylbenzene (13 µg/L)
- n-Butylbenzene (13 µg/L)

The primary compounds that form the majority of the site contaminant mass in groundwater are VC and *cis*-1,2-DCE. Combined VC and *cis*-1,2-DCE concentrations represent 96 percent of the total VOC concentrations reported for treatment area baseline groundwater samples. Of those, only two treatment area baseline groundwater samples contained TCE, with the highest reported treatment area concentration at 69  $\mu$ g/L (S5-MW-39). PCE was only detected in one baseline groundwater sample at below the laboratory detection limit (0.4  $\mu$ g/L in S5-MW-39).

Groundwater laboratory data were used to develop figures of baseline total VOCs (Figure 8); VC and *cis*-1,2-DCE (Figure 9); and toluene and naphthalene (Figure 10) distribution within and surrounding the saturated source area. These figures indicate that the primary groundwater plume extends to the southwest from the excavated source area in a teardrop-shaped configuration (Figure 8).

Baseline total VOC, toluene, and naphthalene contours suggest that at least one (Figures 8 and 10) and possibly two (Figure 10) secondary VOC sources could exist at the site, as indicated by elevated groundwater contaminant concentrations that appear to be unrelated to the main source area plume. The unrelated elevated groundwater concentrations/outlying concentric contours correlate with the location of the western liquid disposal pit (Section 4.7) and are downgradient from identified potential secondary sources EM Anomalies X and Y (Section 5.4) and elevated MIP TICs reported for MIP-09 and MIP-11 (Section 3.2). Baseline groundwater VOC and general chemistry analytical results are presented in Tables 8, 9, and 10.

# 6.4 Injection Well Installation

The majority of the injection wells installed at the site consist of a steel conveyance pipe that was driven to just above the base of the aquifer and a horizontal sand disk that extends outward from the bottom of the conveyance pipe (Figure 11). These injection wells, identified as propagation wells because of their sand propagation, provide an innovative approach for the introduction of chemicals into the aquifer. The injection of chemicals along the base of the aquifer (where denser than water VOCs tend to reside) and the larger delivery area provided by the propagation permits better distribution of injected chemicals. Because chemicals are distributed through the circular sand lens of the propagation, the resultant radial distribution pattern is larger than the parabolic-shaped treatment area provided by vertical injection wells. Figure 7 displays the estimated chemical distribution area for site injection wells (propagation, vertical, and horizontal) and the resulting treatment area.

Construction of propagation injection wells S5-PIW-01 through S5-PIW-19 included the installation of conveyance pipes, temporary traffic boxes, and sand propagations. Conveyance pipes consist of a 10-foot, 2-inch-diameter, Schedule 40 steel pipe with an end-cap drive point that was pushed to a depth of approximately 10 feet bgs using a direct-push drill rig. The

installation of sand propagations involved pushing the drive point downward from the end of steel conveyance pipe, cutting a small horizontal notch using a directional pressure washer bit that was lowered into the void below the conveyance pipe, and injecting sand through the conveyance pipe. Injected sand propagations consisted of Number 12/20 sand and a hydrated guar (a biodegradable food-grade starch) that provided the matrix to carry the injected sand into the subsurface. Conveyance pipes and temporary traffic boxes were installed on June 12 and 13, 2002. The sand propagations were installed from June 21 through June 23, 2002. Propagation injection well locations and well construction details are shown in Figures 6 and 11, respectively. Location survey data for propagation injection wells are provided in Appendix B.

In addition to the 19 propagation injection wells, four vertical injection wells (S5-VIW-02 through S5-VIW-05) were installed at the site on June 14, 2002, using a direct-push drill rig. The four additional vertical injection wells were installed within the downgradient end of the source area groundwater VOC plume. Vertical injection well locations are shown in Figure 6, and well construction diagrams are provided in the EBSI summary report (Appendix G [G-3]). Location survey data for vertical injection wells is provided in Appendix B.

# 6.5 Pre-ISCO Baseline Soil Sampling

Baseline soil samples were collected on June 27, 2002, from six soil borings (S5-B-01B through S5-B-06B) within the boundary of the VOC groundwater source area (Figure 12). These samples were collected and analyzed for later correlation with posttreatment soil samples. Baseline soil samples were collected from approximately the vertical center of the aquifer at about 7.5 feet bgs in each boring. Additional samples were collected from soil boring S5-B-02B at 4.4 and 11.6 feet bgs at the capillary fringe and the underlying confining layer, respectively. Soil samples were collected using a direct-push drill rig and were analyzed for VOCs by EPA Method 8260B. Baseline soil analytical results are presented in Table 11 and are listed in Figure 12. Location survey data, analytical reports, and boring logs for baseline soil samples are provided in Appendices B, C, and F, respectively.

# 6.6 Fenton's Reagent Bench Testing

A bench test was performed by Pelorus EnBiotech Inc. (Pelorus) for EBSI to determine appropriate chemicals for the ISCO treatment of the site groundwater plume using a Fenton's-type reaction. The following sections detail bench test methods and results.

### 6.6.1 Fenton's Reagent Bench Test Methods

Full-scale bench testing for the site was finalized on June 28, 2002. Testing was performed using a slurry of site VOC-contaminated soil and groundwater, which consisted of 30 percent solids by weight. The resulting mixture was placed in separate test vessels for treatment by selected chemicals and as a control sample that was not treated. Oxidant mixtures that were

evaluated included hydrogen peroxide; hydrogen peroxide with a mixture of complex organic acids; and hydrogen peroxide with a mixture of complex organic acids and ferrous iron. Oxidant mixtures used a 10 percent hydrogen peroxide solution. Fenton's reagent bench testing activities are detailed in the Pelorus (June 28, 2002) chemical oxidation bench test report provided in Appendix G (G-1).

### 6.6.2 Fenton's Reagent Bench Test Results

VC and DCE were effectively removed from the treated bench test slurries after two oxidant treatments. The hydrogen peroxide, hydrogen peroxide with a mixture of complex organic acids, and hydrogen peroxide with a mixture of complex organic acids and ferrous iron treatments resulted in a combined VC and DCE reduction of 94.2, 94.0 and 95.9 percent, respectively. A 1.3 percent reduction of combined VC and DCE concentrations was observed in the untreated control sample. Graphs and tables presenting VC and DCE bench text results are provided in the Pelorus Fenton's reagent bench test report provided in Appendix G (G-1).

### 6.6.3 Fenton's Reagent Bench Test Discussion

Considering the relatively small difference in removal efficiency between the three evaluated treatments, the simplest treatment method was recommended by Pelorus as the preferred groundwater treatment approach for the site. This consists of the use of hydrogen peroxide without aquifer acidification or the addition of ferrous iron. Bench testing indicated that, at least initially, there appeared to be enough naturally occurring iron at the site to support a Fenton's reagent chemical reaction. Furthermore, bench testing indicated that a Fenton's-type chemical reaction occurred without acidification and resulted in a VC and DCE reduction comparable to that produced by the Fenton's reagent reaction.

# 6.7 Fenton's-Type Reaction Groundwater Treatment

Groundwater treatment was performed at the site in a sequential manner consisting of chemical injection, a rebound period, then groundwater sampling and analysis to assess each treatment cycle. The following sections describe the two Fenton's-type reaction groundwater treatment cycles that were preformed at the site.

# 6.7.1 First Groundwater Treatment

The first groundwater treatment cycle at the site began on July 15, 2002, and consisted of two injection events. For each event, approximately 4,400 gallons of 17 percent hydrogen peroxide solution was injected into the VOC source area portion of the aquifer, for a total injected volume of 8,800 gallons.

Because naturally occurring ferrous iron was present in site groundwater during the first half of the first treatment cycle, ferrous iron catalyst was not injected. During the second half of the first treatment cycle, ferrous chloride solution was injected prior to the delivery of the hydrogen peroxide solution.

#### 6.7.1.1 First Interim Groundwater Sampling

Posttreatment groundwater sampling for the first treatment cycle was performed from August 12 through August 14, 2002. Groundwater samples were collected from 7 boundary monitoring wells (S5-MW-10, -20, -31, -33, -36, -39, and -40) and from 10 treatment area monitoring wells (S5-MW-21, -25, -26, -28, -30, -32, -34, -35, -37, and -38) (Figure 7). Interim groundwater sampling was initiated 16 days after the completion of the first chemical treatment cycle. Groundwater samples were collected using the same sample collection procedures as used during baseline groundwater sampling. Interim groundwater samples were analyzed for VOCs using EPA Method 8260B.

#### 6.7.1.2 First Interim Groundwater Sampling Results

A comparison of treatment area baseline and first interim groundwater analytical results indicated that a 47.9 percent reduction of total VOCs was achieved in the treatment area as a result of the initial Fenton's-type reaction chemical treatment cycle. Baseline and first interim posttreatment treatment area VOC groundwater sample results are listed in Table 8 and are shown in Figure 13. Laboratory analytical results are provided in Appendix C.

A comparison of boundary well baseline and first interim groundwater results (Table 9 and Figure 14) indicated that the first groundwater treatment resulted in a 28.4 percent reduction of total boundary well VOC concentrations, even though groundwater was not directly treated in the vicinity of the boundary wells (Figure 7). The decrease in groundwater VOC concentrations in boundary wells demonstrated that chemical injection in the treatment area is not resulting in the migration of VOC impacted groundwater from the VOC source area.

#### 6.7.2 Second Groundwater Treatment

The second groundwater treatment cycle at the site was conducted from September 16 through September 22, 2002. A total of approximately 4,400 gallons of a 17 percent hydrogen peroxide solution was injected throughout the treatment area during the second cycle. The majority of the injected chemical was delivered along the center length of the plume where the greatest mass of VOCs continued to persist, as determined from first interim groundwater sampling data. Prior to the injection of hydrogen peroxide, ferrous chloride solution was injected at each injection point to provide catalyst for the Fenton's-type reaction.

#### 6.7.2.1 Second Interim Groundwater Sampling

Posttreatment groundwater sampling for the second treatment cycle was performed October 23 and October 24, 2002. Groundwater samples were collected from monitoring wells S5-MW-21, -25, -26, -28, -30, -32, -34, -35, -37, and -38 (Figure 7). Interim groundwater sampling was initiated 30 days after the completion of the second chemical treatment cycle. Groundwater samples were collected using the same sample collection procedures as used during baseline groundwater sampling. Interim groundwater samples were analyzed for VOCs using EPA Method 8260B.

### 6.7.2.2 Second Interim Groundwater Sampling Results

A comparison of baseline and second interim treatment area groundwater analytical results indicated that a 48.1 percent reduction of total VOCs was achieved in the treatment area following the second Fenton's-type reaction chemical treatment cycle. The calculated VOC reduction for the second interim treatment event represents an additional 0.2 percent VOC reduction compared with the calculated result (47.9 percent) for the first interim posttreatment sampling event. Baseline and interim posttreatment treatment area VOC groundwater sample results are listed in Table 8 and are shown in Figure 13. Laboratory analytical results are provided in Appendix C.

### 6.7.2.3 Discussion of Second Interim Groundwater Sampling Results

Likely causes for the apparent lack of continued reduction in groundwater VOC concentrations following the second groundwater treatment event include the following:

- Continued release of sorbed contaminants (from water-saturated and vadose zone soil)
- Diffusion from dead-end pores
- A longer rebound period prior to the collection of the second posttreatment samples (4 weeks for the second period compared with 2 weeks for the first)
- The distance between monitoring wells and injection wells (small percent of total injected chemical/catalyst gets to monitoring points)
- The lack of ferrous iron/catalyst to initiate the Fenton's-type reaction
- The presence of subsurface calcium carbonate that could be acting as a hydroxyl radical scavenger.

Similar results, where subsequent Fenton's-type treatments did not appear to produce significant VOC reduction, were observed by EBSI (Adams, 2002) and Tetra Tech NUS, Inc. (Henn, 2002), at a site located on NAS Dallas. At that site, multiple-treatments using the Fenton's approach were performed but resulted in only limited contaminant reduction. Therefore, to improve the effectiveness of the *in-situ* treatment, the oxidant at that site was changed to potassium

permanganate (KMnO<sub>4</sub>). After two KMnO<sub>4</sub> treatments, the NAS Dallas project achieved a reduction in VOC concentrations of more than 95 percent.

### 6.8 KMnO<sub>4</sub> Groundwater Treatment

Because second interim posttreatment groundwater sample results indicated that the Fenton's-type treatment had stalled at the site, the use of KMnO<sub>4</sub> was considered for continuing groundwater treatment. The primary characteristics that differentiate chemical oxidation by KMnO<sub>4</sub> and Fenton's reaction are that KMnO<sub>4</sub> has a slower reaction rate (e.g., weeks compared to minutes) and does not require a catalyst. A slower reaction rate and lack of catalyst permits unreacted oxidants to disperse throughout the aquifer, oxidizing VOCs over a larger area and in finer-grained materials. In addition, the longer persistence of permanganate will allow it to oxidize contaminants that slowly desorb from the sediments. Based on these characteristics and the successful completion of a KMnO<sub>4</sub> bench test, it was decided that an aqueous solution of KMnO<sub>4</sub> would be used for remaining site groundwater treatments to promote the continued reduction of CAH contaminants into harmless compounds. The following formula shows the breakdown of VC:

$$C_2H_3Cl + 2KMnO_4 + H_2O \rightarrow 2CO_2 + 2MnO_2 + KCl + KOH + 2H_2$$

Where:

 $C_2H_3Cl =$  Vinyl chloride  $KMnO_4 =$  Potassium permanganate  $H_2O =$  Water  $CO_2 =$  Carbon dioxide  $MnO_2 =$  Manganese dioxide KCl = Potassium chloride KOH = Potassium hydroxide  $H_2 =$  Hydrogen

A telephone meeting was held on November 26, 2002, between the DTSC, Navy, Shaw Environmental, Inc., and EBSI to discuss the planned oxidant change. A field modification notification letter detailing the oxidant switch from Fenton's to KMnO<sub>4</sub> was provided to the DTSC on December 6, 2002 (SWDIV, 2002).

### 6.8.1 KMnO<sub>4</sub> Bench Test

A bench test was performed by Pelorus for EBSI to evaluate the efficiency of  $KMnO_4$  in reducing site groundwater VOC concentrations through chemical oxidation. The following sections detail bench test methods and results.

#### 6.8.1.1 KMnO<sub>4</sub> Bench Test Methods

The KMnO<sub>4</sub> bench testing for the site was finalized on November 21, 2002. Bench testing was performed by creating a slurry of VOC-contaminated soil (collected from S5-MW-37 for the initial site bench test) and groundwater (collected from S5-MW-21 on November 11, 2002) that consisted of approximately 40 percent solids by weight. The resulting mixture was then placed in separate test vessels for treatment by selected chemicals and as a control sample that was not treated. Four KMnO<sub>4</sub> bench test treatments were performed. A 1 percent KMnO<sub>4</sub> solution was applied for the first two treatments, and a 0.25 percent solution was applied for the last two treatments. KMnO<sub>4</sub> bench testing activities are detailed in the Pelorus (November 21, 2002) chemical oxidation bench test report provided in Appendix G (G-2).

#### 6.8.1.2 KMnO<sub>4</sub> Bench Test Results

 $KMnO_4$  bench test results relative to the control sample indicated a 96 and 94 percent reduction of VC and DCE, respectively. Consumption of  $KMnO_4$  in the bench test was significantly higher then the theoretical requirements for complete oxidation.

Elevated KMnO<sub>4</sub> consumption suggests that the natural oxidant demand of site soil will likely reduce the effectiveness of injected chemicals. Graphs and tables presenting VC and DCE bench text results are provided in the Pelorus KMnO<sub>4</sub> bench test report provided in Appendix G (G-2).

#### 6.8.2 Third Groundwater Treatment

The third groundwater treatment cycle at the site was conducted from December 9 through December 19, 2002. The first half of the third treatment cycle consisted of the injection of 1,540 pounds of KMnO<sub>4</sub>, throughout the treatment area, for a total injected volume of approximately 4,300 gallons of a 4 percent KMnO<sub>4</sub> solution. Because the desired distribution of KMnO<sub>4</sub> was not observed in site monitoring wells following the first KMnO<sub>4</sub> injection, a groundwater treatment pilot study targeting monitoring well S5-MW-21 was performed.

The pilot study, performed on December 18 and 19, 2002, consisted of treating groundwater surrounding monitoring well S5-MW-21 using 660 pounds of KMnO<sub>4</sub> (injected through propagation injection wells S5-PIW-04, -07, and -09), while at the same time extracting groundwater from S5-MW-21 a low flow rate (approximately 1 gpm) to distribute chemicals from the injection points to the monitoring point. Groundwater extracted from S5-MW-21 was treated with KMnO<sub>4</sub> and then injected, as allowed under RCRA Section 3020 (EPA, 2000), into the two adjacent upgradient propagations (S5-PIW-04 and -07) as part of the pilot study. A total of approximately 1,600 gallons of a 4 percent KMnO<sub>4</sub> solution was injected during the pilot study. Of that volume, approximately one-third was groundwater (approximately 580 gallons) that was extracted from S5-MW-21, treated, and returned to the aquifer. KMnO<sub>4</sub> was not identified in monitoring well S5-MW-21 either during or after the pilot study.

A total of approximately 5,900 gallons of a 4 percent  $KMnO_4$  solution was injected into the site aquifer during the third groundwater treatment cycle. That volume of liquid delivered 2,200 pounds of  $KMnO_4$  for the continued reduction of source area groundwater VOCs.

#### 6.8.2.1 Third Interim Groundwater Sampling

The third interim posttreatment groundwater sampling was performed on January 7, 2003. Because the third groundwater treatment cycle did not result in the evidence of KMnO<sub>4</sub> migrating from injection points to site monitoring wells, only three treatment area monitoring wells were sampled to assess results of the third treatment cycle. The samples were collected from site monitoring wells S5-MW-21, -26, and -34 (Figure 7), which continued to indicate elevated site VOC concentrations compared with other treatment area monitoring wells. Interim groundwater sampling was initiated 18 days after the completion of the third chemical treatment cycle. Groundwater samples were collected using the same sample collection procedures as used during baseline groundwater sampling. Interim groundwater samples were analyzed for VOCs using EPA Method 8260B by the NAS North Island PWC laboratory.

### 6.8.2.2 Third Interim Groundwater Sampling Results

A comparison of the results for the third and second interim posttreatment groundwater samples indicated a total VOC concentration increase of 25, 118, and 210 percent in monitoring wells S5-MW-21, -26, and -34, respectively. Baseline and interim posttreatment treatment area VOC groundwater sample results are listed in Table 8 and are shown in Figure 13. Laboratory analytical results are provided in Appendix C.

### 6.8.2.3 Discussion of Third Interim Groundwater Sampling Results

KMnO<sub>4</sub> was not observed in S5-MW-21 during or following the mini-groundwater treatment pilot study, suggesting that the chemical was consumed before reaching the well. Mini-pilot study results indicated that the quantity of KMnO<sub>4</sub> needed to treat impacted groundwater at the site is much greater than the initial estimated field quantities calculated by EBSI.

### 6.8.3 Additional Vertical Injection Well Installation

Six additional vertical injection wells (S5-VIW-06 through -11) were installed at the site on January 29, 2003, using a hollow-stem auger drill rig. Additional vertical injection wells were installed to permit a more focused treatment of the VOC source area groundwater plume where elevated contaminant concentrations continued to persist (demarcated by monitoring wells S5-MW-21, -26, and -34 [Figure 13]). Additional vertical injection well locations are shown in Figure 6, and well construction diagrams are provided in the EBSI report (Appendix G [G-3]). Location survey data for the additional vertical injection wells are provided in Appendix B.

#### 6.8.4 Fourth Groundwater Treatment

The fourth and final groundwater treatment cycle began on January 30 and was completed February 19, 2003. The fourth treatment cycle consisted of the injection of 13,228 pounds of KMnO<sub>4</sub> throughout the VOC source area groundwater plume where elevated contaminant concentrations continued to persist, for a total injected volume of approximately 34,900 gallons of a 4 percent KMnO<sub>4</sub> solution.

Of the approximately 34,900 gallons of 4 percent KMnO<sub>4</sub> solution that was injected into the site aquifer during the fourth treatment cycle, approximately 295 gallons was groundwater extracted from monitoring wells S5-MW-21, -24, -27, -28, and -30. Groundwater extracted from these wells was treated with KMnO<sub>4</sub> and then injected into adjacent vertical injection wells.

# 6.9 Initial Posttreatment Groundwater Sampling

Initial posttreatment groundwater sampling of treatment area monitoring wells was conducted to quantify VOC reduction resulting from the multiple chemical oxidation groundwater treatments 30 and 48-days subsequent to the last site chemical injection. Groundwater testing was also performed following treatment activities to assess groundwater VOC concentrations in boundary and perimeter monitoring wells. The following sections summarize initial posttreatment groundwater sampling activities and results.

### 6.9.1 Initial Posttreatment Groundwater Sampling Activities

The 30-day posttreatment groundwater samples were collected March 24 through 26, 2003, from treatment area monitoring wells S5-MW-21, -25, -26, -28, -30, -32, -34, -35, -37, and -38. Confirmation 48-day posttreatment groundwater samples were collected from the same monitoring wells, excluding S5-MW-26, -34, and -37 on April 8 and 9, 2003. Initial posttreatment groundwater samples were collected from boundary and perimeter monitoring wells S5-MW-10 through -20, -22, -23, -31, -33, -36, -39, and -40 from April 23 through April 25, 2003.

Initial posttreatment groundwater samples were analyzed for VOCs using EPA Method 8260B, and selected wells (S5-MW-10, -21, -30, -36, and -37) were analyzed for TOC (EPA Method 415.0); sulfide (EPA Method 376.0); hardness (Standard Method 2340B); chloride, nitrate, and sulfate (EPA Method 300.0); and ethane, ethene, and methane (RSK 175M) to evaluate the effects of the full-scale ISCO treatment on the natural attenuation of the residual VOCs. Groundwater samples were collected using the same sample collection procedures used during baseline groundwater sampling and subsequent interim sampling events.

#### 6.9.2 Initial Posttreatment Groundwater Sampling Results

A comparison of analytical results from the baseline and 30-day posttreatment treatment area samples indicated that an 83.4 percent concentration increase of total VOCs in groundwater had occurred relative to baseline data. The significant increase in groundwater VOC concentrations was found to occur predominantly in monitoring wells S5-MW-25, -28, and -32 (Figure 13). Total VOC concentrations for S5-MW-25 increased from the second interim posttreatment sample concentration of 2,486  $\mu$ g/L to a concentration of 210,800  $\mu$ g/L, almost twice the highest site baseline groundwater concentration (114,460  $\mu$ g/L detected in source area monitoring well S5-MW-21).

Because of the elevated posttreatment treatment area VOC groundwater results, confirmation samples were collected from treatment area monitoring wells, except for monitoring wells S5-MW-26, -34, and -37. Samples were not collected from S5-MW-37, since the posttreatment total VOC result for that upgradient monitoring well was very low. Samples were not collected from S5-MW-26 and -34 because visible evidence indicated that KMnO<sub>4</sub> was still present in groundwater (i.e., purple color resulting from dissolved unreacted KMnO<sub>4</sub>). The continued presence of KMnO<sub>4</sub> in groundwater indicates that the injected oxidant is available to oxidize existing organic compounds including dissolved phase and sorbed phase contaminants.

The 48-day confirmation sample results indicated that a 57.1 percent concentration increase of total VOCs in groundwater had occurred with respect to baseline data (Figure 13); representing an approximate 26.3 percent decrease in total groundwater VOC concentrations relative to 30-day posttreatment sample results (verifying the expected continuation of oxidation of desorbed contaminants in the aqueous phase). Although the 48-day posttreatment analytical results suggest that groundwater VOC concentrations are decreasing, significant VOC concentration increases (43,510 to 149,200  $\mu$ g/L) were observed for the source area monitoring well S5-MW-21. These concentrations exceeded the baseline concentration for that monitoring well (Figure 13), indicating that desorption of sorbed contaminants was still occurring at the time of sampling.

A comparison of boundary well baseline and initial posttreatment groundwater results (Table 9 and Figure 14) indicated that total VOC concentrations in boundary wells have decreased by 26.6 percent since ISCO treatments were initiated. Groundwater concentrations in boundary wells have predominantly displayed a decreasing VOC concentration and have remained below baseline levels, with the exception of monitoring well S5-MW-20, where initial posttreatment results were observed to increase to just above detected baseline groundwater concentrations.

Treatment area and boundary pretreatment and posttreatment VOC groundwater sample results are listed in Tables 8 and 9, and are shown in Figures 8 through 10, 13, and 14. Perimeter monitoring well VOC data are listed in Table 12. Laboratory analytical results are provided in Appendix C.

### 6.9.3 Discussion of Initial Posttreatment Groundwater Sampling Results

The analytical results for 30-day posttreatment groundwater samples indicated that chemical oxidation via KMnO<sub>4</sub> had reduced aqueous-phase VOC concentrations in portions of the source area plume where the focused treatment had occurred, as illustrated by the decrease in VOC concentrations observed for S5-MW-21 and the continued presence of dissolved KMnO<sub>4</sub> in S5-MW-26 and -34. In contrast, the remaining 30-day analytical results for other treatment area monitoring wells showed an increase in aqueous-phase VOC concentrations, indicating that the KMnO<sub>4</sub>, in addition to oxidizing aqueous phase contaminants, had fostered the release of a significant quantity of sorbed contaminants from the aquifer matrix.

The analytical results for 48-day posttreatment groundwater samples showed that within the 18-day period between the first and second posttreatment sampling events, groundwater VOC concentrations were beginning to decrease, significantly in monitoring wells S5-MW-25 and -32, suggesting that oxidation of aqueous-phase contaminants was continuing. The results from the second 48-day posttreatment samples also indicated that groundwater concentrations in source area monitoring well S5-MW-21 had rebounded to concentrations exceeding baseline concentrations, further suggesting that the KMnO<sub>4</sub> treatment of the source area released sorbed contaminants from aquifer matrices to the aqueous phase for continued oxidation. Increases in aqueous phase *cis*-1,2-DCE and VC were most predominant; other compounds exhibiting increased concentrations in the aqueous phase posttreatment samples include 1,2,3-trichloropropane, acetone, and toluene.

The continued decreasing concentration trend in boundary well groundwater data demonstrates that ISCO treatment of the source area is not mobilizing site contaminants outward from the source area plume. The observed groundwater VOC concentration increase in boundary monitoring well S5-MW-20 is believed to be unrelated to ISCO activities because of the location of that well and the correlation that groundwater concentrations in S5-MW-20 appear to be related to a former secondary VOC source location (Sections 5.4 and 6.3.1 and Figure 10) that is unrelated to the primary VOC source.

# 6.10 Posttreatment Soil Sampling

On March 27, 2003, posttreatment soil samples were collected from six soil borings (S5-B-01P through -06P) within the boundary of the VOC groundwater source area (Figure 12) using the same procedures as baseline soil sampling. Posttreatment soil samples were collected from

locations approximately 1 foot from baseline soil samples and at approximately the same depth as baseline soil samples (samples were collected from the vertical center of the aquifer at about 7.5 feet bgs in each boring, with an additional sample collected at 4.4 [capillary fringe] and 11.6 feet bgs [confining layer below the aquifer] in soil boring S5-B-02P). Soil samples were collected using a direct-push drill rig and were analyzed for VOCs by EPA Method 8260B.

### 6.10.1 Posttreatment Soil Sampling Results

Posttreatment soil analytical data showed similar or increased VOC concentrations relative to baseline soil sample results in four (S5-B-02 through -05) of the six samples that were collected from the center of the site aquifer. Decreasing and increasing trends for the capillary fringe and confining layer samples, respectively, were observed for those samples collected in soil boring S5-B-02 (Figure 15). Primary contaminants that contributed to the increase in VOC concentrations in posttreatment soil samples were 1,2,3-trichloropropane, *cis*-1,2-DCE, toluene, TCE, and xylenes. Baseline and posttreatment soil analytical results are presented in Table 11 and are shown in Figures 12 and 15. Analytical reports for posttreatment soil samples are provided in Appendix C.

### 6.10.2 Discussion of Posttreatment Soil Sampling Results

A decreasing trend in soil VOC concentrations is expected in areas where groundwater is being treated by ISCO, although that trend was not observed within the limited sample set collected at the site. Of the six posttreatment soil samples collected, VOC concentration decreases were only observed in the two soil samples that were collected upgradient and lateral to the excavated source area. The greatest VOC concentration increases were reported for soil samples that were collected downgradient and laterally downgradient of the former source area. The apparent contaminant concentration increases observed may be the result of soil and contaminant heterogeneities, the limited number of soil samples collected may not be representative of the site, and/or possibly due to the influx of impacted groundwater resulting from contaminant desorption following the last KMnO<sub>4</sub> treatment.

### 6.11 Groundwater Level Measurements

Groundwater levels were measured in site monitoring wells on April 21, 2003. Contoured groundwater levels are shown in Figure 16 and indicate that groundwater flow through the center of the site VOC plume it to the southwest. Posttreatment groundwater contours and flow direction correlate well with the groundwater contours and flow direction identified for the site on April 16, 1998, by Parsons (1999).

# 6.12 Injection Well and Vapor Monitoring Point Abandonment

Twenty-nine injection wells (S5-PIW-01 to -19 and S5-VIW-02 to -11) and three pilot study vapor monitoring points (S5-SG-01 to -03) were abandoned during the period of June 10 through June 13, 2003. Abandonment was performed to remove temporary vertical injection wells from the site and to ensure that subsurface voids produced by chemical injections were properly closed. Pilot study vapor monitoring points were abandoned because they were no longer needed.

Well abandonment consisted of removing the surface completion, extracting the well casing/propagation conduit, filling the resultant void to above the level of groundwater with #2/16 well sand, excavating the immediate vicinity of the well using a backhoe to just above the level of groundwater and outward to the extent of any voids, backfilling the excavation to 4 feet below grade with the excavator providing compaction of soil using excavator bucket, and backfilling the excavation from 4 feet to surface using the excavator and a hand-operated compactor to compact excavated soil to a consistency denser than the surrounding soil. Abandonment was performed in this fashion to ensure that the aquifer is maintained as a continuous body (using #2/16 sand), to prevent the formation of sinkholes, and to ensure that manmade conduits to the subsurface do not exist.

Surface completions for the three site horizontal wells S5-HIW-01 to -03 were removed to ensure that they did not present a trip hazard and to protect the wells from vehicular traffic. Horizontal well conduit pipes were cut off at approximately 1.5 to 2 feet below ground surface and secured with a locking well cap. The ends of the cut-off piping extend approximately 3.5 feet from the edge of Sherman Road asphalt, and can be located using survey data for each well location (Appendix B). Horizontal injection wells were left in place for potential future source area treatment activities. If it is decided that the horizontal injection wells are no longer needed they should be abandoned in place.

# 6.13 Final Posttreatment Groundwater Sampling

Final posttreatment groundwater sampling of treatment area and boundary monitoring wells was conducted to quantify groundwater VOC reduction following a limited aquifer stabilization period of approximately 4 months. The following sections summarize final posttreatment groundwater sampling activities and results.

# 6.13.1 Final Posttreatment Groundwater Sampling Activities

Final posttreatment groundwater sampling consisted of an initial screening sampling event of four treatment area wells followed by a final posttreatment sampling event of treatment area and boundary monitoring wells. Screening 106-day posttreatment groundwater samples were collected from treatment area monitoring wells S5-MW-21, -25, -28, and -30 on June 5, 2003.

Final 138-day posttreatment groundwater samples were collected on July 7 through 9, 2003, from treatment area monitoring wells S5-MW-21, -25, -28, -30, -32, -35, -37, and -38 and boundary monitoring wells S5-MW-10, -20, -31, -33, -36, and -40. Groundwater samples were not collected from treatment area monitoring wells S5-MW-26 and -34 because visible evidence indicated that KMnO<sub>4</sub> was still present in groundwater (i.e., purple color resulting from dissolved unreacted KMnO<sub>4</sub>), suggesting that VOCs are no longer present at those locations. Monitoring well S5-MW-39 was not sampled due to golf course construction activities that prevented access to that monitoring well.

Screening final posttreatment and final posttreatment groundwater samples were analyzed for VOCs using EPA Method 8260B, and selected wells (S5-MW-10, -21, -30, -36, and -37) were analyzed for TOC (EPA Method 415.0); sulfide (EPA Method 376.0); hardness (Standard Method 2340B); chloride, nitrate, and sulfate (EPA Method 300.0); and ethane, ethene, and methane (RSK 175M). Groundwater samples were collected using the same sample collection procedures used during baseline groundwater sampling and subsequent sampling events.

#### 6.13.2 Final Posttreatment Groundwater Sampling Results

A comparison of analytical results for baseline and 138-day final posttreatment treatment area samples indicated that an approximate 8.6 percent concentration decrease of total VOCs in groundwater has occurred relative to baseline data (Figure 17). Identified total VOC reduction relative to 30-day and 40-day sample data is predominantly related to decreasing groundwater contaminant concentrations observed for monitoring wells S5-MW-25, -28, -32, and -35 (Figure 13). Groundwater VOC concentrations in S5-MW-21 have oscillated from significantly below baseline (30-day), to above baseline (48-day), to just below baseline (106-day), to again above baseline concentrations at approximately 125,200  $\mu$ g/L. Groundwater concentrations in monitoring well S5-MW-30 have displayed an increasing trend since initial posttreatment sampling began. Baseline and final posttreatment treatment area VOC groundwater sample results are listed in Table 8 and are displayed in Figures 8, 13, and 17. Baseline and final posttreatment analytical results for *cis*-1,2-DCE and VC and for toluene and naphthalene are shown in Figures 9 and 10, respectively. Laboratory analytical results are provided in Appendix C.

An assessment of final posttreatment groundwater sample analytical results indicates that the majority of the remaining site contaminant mass in treatment area groundwater at the site continues to be VC and *cis*-1,2-DCE (Table 8). Combined VC and *cis*-1,2-DCE concentrations represent approximately 96.5 percent of the total VOC concentrations that were reported for final posttreatment treatment area groundwater samples.

A comparison of baseline and final posttreatment groundwater results for boundary wells (Table 9 and Figure 14) indicated that a 45.8 percent reduction of total VOCs occurred in the groundwater surrounding the source area plume since groundwater chemical treatment was initiated, although groundwater was not directly treated in the vicinity of the boundary wells (Figure 7).

### 6.13.3 Discussion of Final Posttreatment Groundwater Sampling Results

Groundwater analytical results suggest that contaminant concentrations have generally stabilized in six (S5-MW-25, -26, -28, -32, -34, and -35) of the 10 treatment area monitoring wells (Figure 13). The four remaining treatment area monitoring wells (S5-MW-21, -30, -37, and -38) display either an oscillating VOC concentration (S5-MW-21), an elevated increasing trend (S5-MW-30), or a slight increasing trend (S5-MW-37 and -38). The elevated increasing concentration observed in S5-MW-30 is believed to be related to its proximity to KMnO<sub>4</sub>saturated groundwater present in and surrounding S5-MW-26. Based upon treatment area monitoring well data (Figure 17), the majority of the contaminant mass remaining in the saturated zone at the site is localized in the vicinity of S5-MW-21 (adjacent to source area) and S5-MW-30. The continued presence of KMnO<sub>4</sub>-saturated groundwater in the vicinity of S5-MW-25 and -34 after approximately 4.5 months strongly suggests that both dissolved and adsorbed contaminants no longer exist within the aquifer at those two locations.

The approximately 50 percent decrease in total VOC concentrations in boundary monitoring wells clearly demonstrates that ISCO activities have not resulted in outward migration of VOC-impacted groundwater and that the site VOC plume is shrinking as a result of the TCRA. The reduction of VC and *cis*-1,2-DCE groundwater concentrations in the majority of treatment area monitoring wells, as shown in Figures 8, 9, and 17, demonstrates that the plume and contaminant concentrations within the plume have been reduced. Concentrations of toluene and naphthalene, which are beneficial to microbial degradation of contaminants, remain relatively unchanged compared to pretreatment groundwater concentrations (Figure 10).

### 6.14 Groundwater Water Quality Objectives

The effectiveness assessment of ISCO treatment for the TCRA is based upon regulatory water-quality objectives (WQOs) for groundwater and a calculated residual source area VC groundwater concentration that is protective of the nearest natural (nonintrusive) pathway to potential ecological and human receptors.

### 6.14.1 TCRA WQOS

The WQOs used for site groundwater data evaluation include RWQCB interim cleanup goals for sites located within 1,000 feet of a marine surface water for BTEX and PAHs (RWQCB, 1996) and California Ocean Plan numerical water quality values (Human Health [30-day Average]

aquatic organism consumption only) that were supplemented by Acute Saltwater Aquatic Life Protection values (RWQCB, 2000). Table 13 presents site WQOs for the EPA Method 8260B VOC analyte list.

Final posttreatment VOC analytical results indicate that VC and 1,4-dichlorobenzene are the only detected site groundwater contaminants that exceed the project VOC WQOs listed in Table 13. Elevated VC concentrations, ranging from 75  $\mu$ g/L to 30,000  $\mu$ g/L, were detected in seven of the ten treatment area monitoring wells (Table 8) at concentrations that exceed the 36  $\mu$ g/L Ocean Plan WQO for VC. A single 1,4-dichlorobenzene detection in S5-MW-39 at 22  $\mu$ g/L was reported, which exceeded the 18  $\mu$ g/L Ocean Plan WQO for this compound (Tables 9 and 14).

### 6.14.2 Upper VC Contaminant Limit

TCRA decision rules provided to guide the full-scale ISCO groundwater treatment process require that a maximum allowable residual source area groundwater (target) concentration be derived using the EPA developed BIOCHLOR model. The model-derived target concentration would be used to assess source-area groundwater concentrations in the event that ISCO does not achieve WQOs in the source-area. BIOCHLOR modeling was performed for VC (primary site contaminant of concern), assuming baseline site conditions, and monitoring well S5-MW-13 (adjacent to slough [the nearest nonintrusive receptor pathway]) as the point of compliance location where groundwater concentrations should not exceed the WQO for VC.

BIOCHLOR modeling, based on site-specific biotransformation rates, determined that VC concentrations at the point of compliance will exceed the VC WQO only if the source area VC concentration is greater than 5,000,000  $\mu$ g/L. Because that concentration exceeds the solubility limit of VC, the lower solubility limit for VC of 1,100,000  $\mu$ g/L is selected as the target VC groundwater concentration for the source area that would be protective of the nearest nonintrusive receptor.

# 6.15 ISCO Groundwater Contaminant Mass Reduction

Contaminant mass reduction estimates for the site were calculated using the total mass of injected oxidants and site soil and groundwater oxidant demand ratios derived for each oxidant during bench testing. Bench testing identified that an estimated 15 pounds of KMnO<sub>4</sub> and 712 pounds of 15 percent hydrogen peroxide solution were required to destroy 1 pound of VOCs. Therefore, the VOC mass reduction resulting from the injection of 13,200 gallons (110,088 pounds) of 15 percent hydrogen peroxide and 15,428 pounds of KMnO<sub>4</sub> would be approximately 155 pounds and 1,028 pounds, respectively. Because KMnO<sub>4</sub> still persists in groundwater in the vicinity of monitoring wells S5-MW-26 and -34, a 30 percent adjustment was applied to the KMnO<sub>4</sub> VOC reduction estimate (1,028 pounds) to account for the unreacted oxidant; producing

an estimated VOC reduction of 720 pounds for  $KMnO_4$  injected at the site. Based upon these calculations, it is estimated that approximately 875 pounds of VOCs were removed from the site through ISCO. This estimate is considered an upper bound because bench tests are performed under ideal conditions and have less variability than field conditions.

Estimating contaminant mass reduction through the lessening of VOC groundwater concentrations resulting from ISCO was the planned method to gauge the effectiveness of groundwater treatments at the site. Because of continued contaminant desorption that resulted following ISCO (Figure 13), it was found that depending solely on groundwater results to gauge the effectiveness of site groundwater treatments was not effective. The limited pre- and posttreatment soil data collected at the site also was found to be an ineffective method to gauge ISCO mass reduction. Of the six soil samples collected from the center of the aquifer (about 7.5 feet bgs), four displayed net increases in VOC concentrations (Section 6.10.2 and Figure 15) instead of the expected reductions. However, heterogeneities in the distribution of VOCs may lead to large sample-to-sample variability and prevent accurate estimates of VOC mass reduction by re-sampling soil over time, unless a large number of samples are obtained.

Based upon project analytical results, an accurate method to gauge site contaminant mass reduction is not available due to the desorption of adsorbed contaminants, the localized mobilization of contaminants, and the heterogeneities (contaminant concentration and lithology) of the site. Large scale baseline and posttreatment soil sampling following a sufficient aquifer stabilization period in conjunction with groundwater sampling is likely to be the most accurate method available to directly account for contaminant mass reduction at ISCO sites. Groundwater sampling and analysis were performed at the site to assess and document baseline site conditions and to gauge the effect of ISCO on the natural attenuation of residual VOCs. Monitoring included conducting pretreatment and posttreatment microbial sampling and evaluating posttreatment groundwater monitoring data.

# 7.1 Baseline Microbial Characterization

Baseline microbial sampling and analysis were performed to identify and quantify whether dehalorespiring bacteria are present in site groundwater. Microbial assessment activities were performed as a joint effort by BNI and Shaw Environmental, Inc. The following sections detail microbial sampling activities and results.

# 7.1.1 Baseline Microbial Sampling Activities

Pretreatment microbial groundwater sampling was performed on July 11, 2002, three days prior to the initiation of full-scale groundwater treatment. Groundwater samples were collected from monitoring wells S5-MW-20, -21, -30, -36, and -38 (Figure 7) by Shaw Environmental, Inc., using low-flow groundwater sampling procedures. BNI processed, packaged, and transported the extracted groundwater samples to Microbial Insights, Inc., and SiREM Laboratory (SiREM) for analyses. Analyses performed included phospholipid fatty acid content (PLFA) and deoxyribonucleic acid (DNA) at the Microbial Insights laboratory and denaturing gradient gel electrophoresis (DGGE) and Gene-Trac analyses at the SiREM laboratory.

### 7.1.2 Baseline Microbial Sampling Results

Baseline microbial sampling and analysis determined that *Dehalococcoides ethenogenes* (DHE), the only isolated microorganism capable of the complete dechlorination of toxic chlorinated hydrocarbons (e.g., PCE, TCE, and VC) into harmless ethene (SiREM, 2002), is present in site groundwater. DNA testing identified DHE in each of the five groundwater samples collected and established that DHE levels at Site 5 are relatively high compared with other sites. Baseline DHE intensity or relative abundance was high for monitoring wells S5-MW-20, -21, -30, and -38, and low for S5-MW-36 (upgradient well).

The highest detected microbe biomass level (total concentration of PLFA) was detected in the sample collected from monitoring well S5-MW-30, which is located within the downgradient portion of the source area plume (Figure 8). Moderate biomass levels were detected in source area monitoring well S5-MW-21 and outside the primary source area plume within an adjacent suspected secondary source plume (Section 6.3.1) in monitoring well S5-MW-20. Low and very

low biomass levels were reported for cross-gradient well S5-MW-38 and upgradient well S5-MW-36, respectively.

PLFA profiles reveal a moderately diverse microbe community in groundwater samples collected from monitoring wells S5-MW-20, -21, and -30. Identified microbes in those samples and other site groundwater samples mainly consist of Gram-negative bacteria, which have the ability to use a wide range of carbon sources and adapt quickly to changing environmental conditions. Baseline microbial laboratory analytical reports are provided as Appendix H (H-1 and H-2).

# 7.2 Posttreatment Microbial Assessment

Posttreatment microbial sampling and analysis were performed to assess the fate of treatment area microbes following groundwater treatment activities. The following sections detail posttreatment microbial sampling activities and results.

### 7.2.1 Posttreatment Microbial Sampling Activities

Posttreatment microbial groundwater sampling was conducted on April 2, April 30, June 5, and July 9, 2003. During the four sampling events, groundwater samples were collected from monitoring wells S5-MW-21 and -30 (Figure 7) using low-flow groundwater sampling procedures. Microbial sample analyses were performed by Microbial Insights, Inc., and included PLFA and DNA testing.

# 7.2.2 Posttreatment Microbial Sampling Results

Posttreatment DHE intensity or relative abundance for monitoring well S5-MW-21 was not detected in groundwater during the first posttreatment microbial sampling; it was detected at moderate levels during the second and third sampling event, and was detected at high intensity similar to baseline during the fourth and final sampling event. Posttreatment DHE intensity for monitoring well S5-MW-30 was detected in groundwater during the first posttreatment microbial sampling at high levels, was not detected during the second sampling event, was detected at low levels during the third sampling event, and was detected at high intensity similar to baseline during the third sampling event, and was detected at high intensity similar to baseline during the last microbial sampling event (Appendix H [H1 and H-3]).

Posttreatment microbe biomass levels (total concentration of PLFA) relative to baseline increased in both monitoring wells S5-MW-21 and S5-MW-30. PLFA levels detected in S5-MW-21 during microbial sampling varied from approximately 8 picomoles (pmoles), to 1,680 pmoles, to 275 pmoles, to 342 pmoles, to 2,740 pmoles for baseline and first, second, third, and fourth posttreatment sampling events, respectively. PLFA levels detected in S5-MW-30 during microbial sampling varied from approximately 31 pmoles (averaged with duplicate sample), to 137 pmoles, to 192 pmoles, to 93 pmoles, to 127 pmoles for baseline and first, second, third, and fourth posttreatment sampling events, respectively. The baseline and

posttreatment summary microbial laboratory analytical reports are provided in Appendix H (H-1 and H-3).

### 7.2.3 Discussion of Posttreatment Microbial Sampling Results

Microbial sampling performed subsequent to groundwater treatment indicates that the site microbial population was only minimally affected by the resultant changes due to chemical oxidation. Microbe biomass levels indicated that a microbial bloom occurred in the heavily treated vicinity of the source area monitoring well (S5-MW-21) subsequent to the completion of ISCO (first posttreatment sampling), while at the same time DHE was not observed at that Subsequent sampling at S5-MW-21 indicated that DHE returned at a moderate location. intensity and then increased to high intensity. A second elevated microbial bloom was observed for groundwater samples from S5-MW-21. The initial lack of detectable DHE during initial posttreatment sampling followed by increasing DHE levels and the observed microbial blooms indicated that the microbe population in S5-MW-21 was impacted as a result of ISCO, and site conditions are still in the process returning to normal after about 3 months of recovery. Microbial blooms are believed to be related to the continued desorption of adsorbed VOC contaminants as contaminants in saturated soil and groundwater progress towards equilibrium. In addition, partial oxidation of some fraction of the naturally occurring organic carbon, which resulted in increased TOC concentrations after treatment, may have acted to stimulate the microbes.

Microbe biomass levels in monitoring well S5-MW-30 have generally increased and remained above baseline levels since the completion of ISCO. The presence of DHE for the initial posttreatment sample and then its lack of presence followed by increasing DHE levels indicate that the aquifer in the immediate vicinity of S5-MW-30 was affected only after the completion of ISCO and only for a brief period. This observed phenomenon is associated with the continued presence of KMnO<sub>4</sub> in the adjacent upgradient monitoring well S5-MW-26. It is suspected that the KMnO<sub>4</sub>-saturated groundwater observed in S5-MW-26 extends to the immediate vicinity of monitoring well S5-MW-30 and that the continued presence of the KMnO<sub>4</sub> in groundwater at that location is producing increased levels of microbe biomass through desorption of VOCs and had temporarily removed DHE from that location.

# 7.3 Posttreatment Evaluation of Groundwater Monitoring Data

An evaluation was performed for the site that focused on determining if aquifer conditions are favorable for continued microbial degradation of CAH and predicting the effectiveness of the remedial treatments that have been performed. The evaluation, presented as Appendix I, considers direct evidence based on observations of the changes in contaminant concentrations, and indirect evidence based on natural attenuation parameters.

#### 7.3.1 Natural Attenuation Parameters Assessment

An assessment of site natural attenuation parameters in selected monitoring wells concluded that the oxidation-reduction potential (ORP) as well as concentrations of methane and TOC have returned to baseline values, and that VC/DCE ratios indicate that reductive dechlorination is continuing (Appendix I). Evidence supporting dechlorination includes the increasing ethene concentrations and a general upward trend in the VC/DCE ratios. Indications that reducing anaerobic conditions also exist at the site include the return of ORP to pretreatment levels, the presence of detectable sulfide, and the presence of methane at concentrations that are similar to baseline concentrations. Total organic carbon concentrations as a result of ISCO treatments have increased to above pretreatment concentrations, which were already in excess of the 20 milligrams per liter necessary to drive reductive dechlorination reactions (EPA, 1998). General chemistry laboratory analytical reports are provided in Appendix C.

#### 7.3.2 MNA Assessment

The time remaining until VC concentrations decrease to below the project WQO of 36 µg/L was estimated for two treatment area monitoring wells (S5-MW-25 and -28) in which contaminant concentration appear to have stabilized. The estimate was performed using previously determined VC degradation rates (Parsons, 1999) that were applied to final posttreatment VC groundwater sample concentrations. Based upon the high and low degradation rates calculated by Parsons (1999), concentrations of VC at S5-MW-25 are predicted to reach the regulatory limit between 43 and 212 days, and concentrations of VC at S5-MW-28 are predicted to reach the regulatory limit between 83 and 405 days (Appendix I).

The time required for attenuation of VC for the site cannot be estimated because contaminant concentrations have not stabilized in site monitoring wells with the highest posttreatment contaminant concentrations (S5-MW-21 and -30). It is recommended that these estimates be calculated for the site once site groundwater VOC concentrations have stabilized. Application of the Parsons 1999 degradation rates to posttreatment site concentrations is valid only if conditions have completely stabilized and current chemical and microbiological conditions are similar to the pre-treatment conditions that existed when the degradation rates were developed.

The following sections detail decision rules and removal action objectives for the TCRA.

# 8.1 TCRA Decision Rules

Decision rules for the TCRA were provided in the RAW (IT, 2001) to guide/evaluate full-scale groundwater ISCO activities and to evaluate site conditions. The following sections discuss the decision rules followed for full-scale ISCO treatment and detail the site evaluation for site soil, vapor, and posttreatment groundwater as directed using decision rules.

### 8.1.1 Full-Scale ISCO Process

Decision rules provided to guide the full-scale ISCO groundwater treatment process were based on the project groundwater WQO for VC and the target concentration derived from BIOCHLOR modeling. The following describes the sequence of events based on TCRA decision rules that occurred to fulfill full-scale ISCO.

- *Start:* Complete two ISCO treatments and determine if VOC groundwater concentrations are below WQOs, between WQOs and the target concentration, or greater than target concentrations in all site monitoring wells.
- *Result:* VOC concentrations are between WQOs and target concentrations in the majority of treatment area monitoring wells.
- *Evaluation rule:* If VOC concentrations are greater than WQOs but below target concentrations, determine economic and technical feasibility of continuing treatment.
- *Decision:* Continue ISCO treatment because it is economically feasible, but switch the oxidant to KMnO<sub>4</sub> because the technical assessment determined that the Fenton's-type treatment had stalled at the site.

Two additional ISCO treatments were performed at the site following the above decision rule process for each treatment. Based on the assessment performed after the first KMnO<sub>4</sub> treatment, it was determined that it was still economically feasible to continue but additional injection points were required. Additional injection wells were installed and a second KMnO<sub>4</sub> treatment was performed. After the second KMnO<sub>4</sub> treatment, it was determined that it was still technically feasible to continue ISCO groundwater treatment but no longer economically feasible due to contract limitations.

#### 8.1.2 Evaluation of Site Soil

Decision rules provided for the evaluation of posttreatment soil data were based on soil concentrations being either below Residential EPA Region 9 primary remediation goals (PRGs), below Industrial PRGs, or above Industrial PRGs. Residential (0.053 mg/kg) and Industrial (0.11 mg/kg) TCE PRGs were used to evaluate soil risk at the site (EPA, 2002). Evaluating site soil risk using source area delineation soil sample data (Figure 4) indicate that soil concentrations in the vadose soil surrounding the location of the source-area excavation are above Industrial PRGs. South of the former excavation two delineated locations exist with elevated TCE concentrations (S5-B-49 [160 mg/kg at 1.5 feet] and S5-B-46 [89 mg/kg at 3 feet]) that exceed Industrial PRGs. Samples from the majority of remaining soil borings that surround the excavation also contained TCE above Industrial PRGs (ranging from 0.11 to 11 mg/kg). Based on these finding, as directed by TCRA decision rules, it is recommended that a soil risk assessment be conducted with respect to current site uses.

### 8.1.3 Evaluation of Site Vapor

Decision rules provided for the evaluation of site inhalation risk with respect to soil and groundwater were based on excess cancer risk levels of less than  $10^{-6}$ , levels between  $10^{-4}$  and  $10^{-6}$ , and levels above  $10^{-4}$ . Modeling performed to assess inhalation risk was performed using the San Diego County Department of Environmental Health (2003) Vapor Risk 2000 Excel 97 Spreadsheet Model. A Level 1 assessment was performed using the conservative default values of the model and an attenuation factor of 1.0 (dirt floor) to represent current site conditions. Contaminant concentration inputs included both soil (TCE at 160 mg/kg [S5-B-49]) and groundwater (VC at 14,000 µg/L [S5-MW-21]) with resultant inhalation risk values of 6.95 x  $10^{-3}$  and 7.07 x  $10^{-2}$ , respectively. Based on these findings, as directed by TCRA decision rules, it is recommended that a focused inhalation risk assessment be conducted for the site.

Although vapor modeling indicates an elevated inhalation risk, this result is not representative of the actual risk posed by current site conditions. The model is based on an exposure duration at the test location of 12 hours a day, for 250 days per year, for 25 years. This scenario is unimaginable under current site conditions.

# 8.1.4 Evaluation of Site Groundwater

Decision rules provided for the evaluation of site groundwater data were based on groundwater concentrations that are below the WQO for VC ( $36 \mu g/L$ ), between the WQO and the site target concentration for VC ( $1,100,000 \mu g/L$ ), or above the target VC concentration. The highest posttreatment VC concentration detected at the site is  $14,000 \mu g/L$  (S5-MW-21), which is greater than the WQO and less than the site target concentration for that compound. Based on this finding, as directed by TCRA decision rules, it is recommended that groundwater MNA be performed at the site to assess plume variation.

# 8.2 TCRA Project Objectives Assessment

The primary project objectives of the TCRA were to achieve significant reduction of source area CAHs, to reduce the risk to human health and the environment, and to expedite site cleanup. Other supporting TCRA activities performed to achieve project objectives included assessing the feasibility of ISCO, remediation system design and construction, aquifer contaminant reduction through ISCO (dissolved and adsorbed), and removal action reporting. The TCRA proceeded dynamically, in that remedial activities were adjusted to address unforeseen site conditions to ensure that removal action goals were achieved.

Additional project objectives that were incorporated into the TCRA to ensure removal action goals were realized included performing a supplemental site assessment to delineate the nature and extent of VOC contaminants, vadose zone source area soil removal (to prevent recontamination of site groundwater following ISCO), exploratory trenching and removal of secondary sources related to metallic objects, and an assessment of the site microbial population (to document population and to assess the effects of ISCO).

TCRA project objectives are listed and detailed in Table 14. Project objectives for the site were either completely realized or the predominant component of each objective was achieved. The final outcome of the TCRA cannot be fully quantified until site conditions have reached steady state (adsorbed and dissolved contaminants reach equilibrium, degradation rates stabilize, remaining KMnO<sub>4</sub> is consumed, and microbial population returns to normal levels), and an MNA assessment is performed using steady state values.

# 9.0 Summary and Cost

The following sections provide a summary of the TCRA, detail the total cost of the removal action, and provide recommendations for subsequent remedial activities.

### 9.1 TCRA Summary

The following sections summarize site contaminant delineation, the extensive effort put forth to reduce site VOC contaminant mass, natural attenuation assessment results, and future plans for the site.

### 9.1.1 Site Contaminant Delineation

Assessment activities included the completion of 93 soil borings (MIP and soil sample) and the installation of an additional 17 monitoring wells at the site. Resultant data from those borings demonstrated that groundwater contaminants at the site originated from impacted vadose zone soil located beneath Sherman Road that was likely acting as an ongoing source. The delineated source area is identified as the former eastern liquid waste disposal pit that once existed at the site.

Waste characterization samples collected to characterize excavated source area soil provided a means to catalog contaminants that were disposed of in the former eastern liquid waste disposal pit. Identified site contaminants in the excavated vadose zone source area soil include VOCs, PCB, SVOCs, and metals. Pesticides were not detected. Aroclor-1260 was the only PCB detected, with a maximum reported concentration of 2.10 mg/kg.

Because drums were discovered during the excavation of the vadose zone source area, a site assessment was performed to determine if other EM anomalies present at the site were related to the disposal of hydrocarbons that might pose a risk to site groundwater. Exploratory trenching was used to identify that 4 of 34 EM anomalies south of Sherman Road and east of Rogers Road contained material (including rusted and crushed drum fragments, rags, gloves, and a complete drum without lid) related to hydrocarbon waste. Of those four locations, only two locations (Anomalies X and Y) were identified as possible secondary sources that may have contributed to impacting groundwater.

Groundwater at the site is predominantly impacted by *cis*-1,2-DCE and VC, with only a very limited quantity of parent compounds (TCE and PCE) present. Other VOC compounds detected in groundwater with concentrations at or greater than 100  $\mu$ g/L include toluene, *trans*-1,2-DCE, naphthalene, total xylenes, 1,2,4-trimethylbenzene, benzene, ethylbenzene, p-isopropyltoluene, and 1,2-dichlorobenzene. The only detected groundwater contaminants that exceed site WQOs (Table 13) are VC and 1,4-dichlorobenzene with TCRA WQOs of 36  $\mu$ g/L and 18  $\mu$ g/L, respectively. Posttreatment VC concentrations detected in seven of the ten treatment area

monitoring wells range from 75  $\mu$ g/L to 30,000  $\mu$ g/L. 1,4-dichlorobenzene was detected during posttreatment sampling in a single monitoring well (S5-MW-39) at 22  $\mu$ g/L.

Contouring of groundwater toluene and naphthalene concentrations shows that two other minor secondary sources may have existed at the site, and that both appear to be unrelated to the primary VOC plume source. The two delineated potential secondary groundwater plumes are situated within the main VOC plume (Figure 10) and are located just northwest and to the south-southwest of the former eastern disposal pit. The secondary groundwater plumes are believed to be related to the former western liquid waste disposal pit and a buried drum that was uncovered during exploratory trenching (Anomaly Y), respectively. Groundwater contaminant concentrations of the two secondary groundwater plumes are insignificant relative to the main plume.

### 9.1.2 Site Contaminant Mass Reduction

A significant effort was put forth to reduce contaminant mass at the site. Site contaminant mass removal included pilot study testing, vadose zone source removal, and ISCO groundwater treatment. The estimated VOC masses removed for each of these activities are 76 pounds, 3,050 pounds, and 875 pounds, respectively, for an estimated total VOC mass removed from the site of approximately 4,000 pounds or 2 tons.

Vadose zone source removal included the excavation of the primary site contaminant source (former eastern liquid waste disposal pit) and exploratory trenching of four potential secondary vadose zone sources (metallic debris locations). Full-scale ISCO groundwater treatment made use of approximately 13,200 gallons of 15 percent hydrogen peroxide and 15,428 pounds of KMnO<sub>4</sub> to reduce VOCs to harmless compounds.

Groundwater containing residual  $KMnO_4$  is still present in two portions of the site (near S5-MW-26 and -34), suggesting that dissolved and adsorbed VOCs no longer exist within the source area groundwater plume at those locations. The presence of  $KMnO_4$  at those locations will continue to reduce site VOCs as desorption and groundwater migration occurs and reactions between contaminant and oxidants proceed toward equilibrium.

First interim, initial posttreatment, and final posttreatment sample results indicated that total VOC concentrations in boundary monitoring wells relative to baseline concentrations had decreased by 28.4 percent, 26.6 percent, and 45.8, respectively. The almost 50 percent decrease in total VOC concentrations in boundary monitoring wells demonstrates that ISCO activities have not resulted in the outward migration of VOC-impacted groundwater and, in fact, clearly demonstrates that the site VOC groundwater plume has begun to shrink.

### 9.1.3 Natural Attenuation Assessment

Assessment of the microbial community at the site indicates that the site microbe population:

- Is moderately diverse
- Consists mainly of gram-negative bacteria that have the ability to use a wide range of carbon sources
- Can adapt quickly to changing environmental conditions
- Includes DHE, the only documented microorganisms possessing necessary enzymes for the complete dechlorination of toxic chlorinated hydrocarbons into harmless ethene, at relatively high levels
- Appears to have been stimulated by KMnO<sub>4</sub> ISCO, through desorption of adsorbed VOCs and partial oxidation of some fraction of TOC, likely resulting in increased contaminant reduction
- Is in the process of re-establishing itself (evidenced by posttreatment microbial sample results) and that DHE was only temporarily impacted by the ISCO treatment

Based on the results of the natural attenuation parameters evaluation, it was determined that aquifer conditions are favorable for continued microbial degradation of CAHs and that reductive dechlorination is continuing at the site. It has also been determined that total organic carbon concentrations at the site exceed the desired greater than 20 milligrams per liter necessary to drive reductive dechlorination reactions.

The time remaining until VC concentrations decrease to below the project WQO of 36  $\mu$ g/L was estimated for two portions of the treatment area (S5-MW-25 and -28), where contaminant concentrations appear to have stabilized. The estimates suggest that VC at S5-MW-25 should reach the regulatory limit between 43 and 212 days and at S5-MW-28 should require between 83 and 405 days. Contaminant concentrations have not stabilized in site monitoring wells with the highest posttreatment contaminant concentrations (S5-MW-21 and -30) and, therefore, time estimates to reach WQOs cannot be calculated. It is recommended that time remaining MNA estimates be calculated once site groundwater VOC concentrations have stabilized.

## 9.2 Cost of TCRA

The costs required to perform TCRA activities are summarized below.

### **Chemical Oxidation Pilot Test**

Preconstruction Submittals

Action Memo	\$	30,400.
Removal Action Work Plan	\$	19,800.
Fact Sheet and Communication Plan	\$	4,500
Chemical Oxidation Bench and Pilot Test	\$	199,900.
Pre-Treatment Investigation	\$	129,900.
Project Management	\$	79,100.
Subt	otal: \$	463,600.

### Full-Scale Treatment

Preconstruction Submittals

• Technical Memo (Pre-treatment Investigation)		.\$ 4,800.
Removal Action Work Plan Addendum		\$ 75,800.
Excavation of Former Hazardous Waste Pit		\$ 530,500.
In Situ Chemical Oxidation Treatment		\$ 594,500.
Data Analysis and Closeout Report		\$ 52,000.
Project Management	_ <u></u>	<u>\$ 313,500</u> .
	Subtotal:	<b>\$1,571,100</b> .
	Total Cost:	\$2,034,700.

### 9.3 Site Recommendations

Based on TCRA decision rules, the following recommendations are put forth:

- A soil risk assessment should be conducted at the site with respect to current site uses (Section 8.1.2).
- A focused inhalation risk assessment with respect to impacted soil and groundwater should be conducted for the site (Section 8.1.3).
- A groundwater MNA study should be performed at the site to monitor and assess variations of the site VOC groundwater plume (Section 8.1.4).

Additional recommendations for the site include the following:

- Horizontal injection wells S5-MW-01 through S5-MW-03 should be abandoned if they are no longer required for potential future treatment activities (i.e., injection wells may be lost if not tracked properly).
- If site land uses change, the potential human health risks associated with exposure to site contaminants should be reevaluated.
- This TCRA closeout report provides useful information pertinent to future site activities and, as such, this document should be provided to those who will perform the Feasibility Study or other follow-on evaluations.

## 10.0 TCRA Conclusions

The TCRA objective of reducing the potential risk to public health and the environment posed by site contaminants was accomplished at the site through contaminant mass reduction including vadose source removal of shallow contaminated soil and ISCO groundwater treatment. An estimated 2 tons of VOCs were removed from the site during the TCRA.

Site conditions indicate RNA will be an effective remedy for residual groundwater CAHs. The identification and verification that DHE are present in site groundwater and these microbes were not adversely affected by ISCO will ensure that RNA will effectively reduce the remaining aquifer VOC contaminants.

Recommended follow-up evaluations based on TCRA decision rules include performing a soil risk assessment, an inhalation risk assessment, and a groundwater MNA evaluation. These tasks are expected to occur either during a site Feasibility Study or other follow-up site evaluation.

This TCRA was performed as an interim measure by the Navy for the protection of human health and the environment and in an effort to reduce long-term environmental management costs. Based on the quantity of mass removed and identified posttreatment site conditions, this goal has been achieved. Adams, Ron, 2002, personal communication, November.

Bechtel National, Inc, 1998, Final Remedial Investigation/RCRA Facility Investigation Report, Site 5 -Golf Course Garbage Disposal Area, Naval Air Station, North Island, Coronado, California, April.

California Regional Water Quality Control Board, Central Valley Region, 2000, A Compilation of Water Quality Goals, August.

California Regional Water Quality Control Board, San Diego Region, 1996, *Revised Table 1 to San Diego Regional Water Quality Control Board "Interim Guidance on Required Cleanup at Low-Risk Fuel Contaminated Sites*," July 24.

EPA, see U.S. Environmental Protection Agency

Henn, Keith, 2002, personal communication, November.

IT Corporation, 2001, *Remedial Action Work Plan Addendum, Time-Critical Removal Action, Installation Restoration Site 5, Unit 2, Naval Air Station North Island, California,* CTO-0027, DCN 1441, Revision 1, November 19.

OHM Remediation Services Corp., 2001, *Remedial Action Work Plan, Time-Critical Removal Action, Installation Restoration Site 5, Unit 2, Naval Air Station North Island, San Diego, California,* Delivery Order No. 0141, DCN SW6838, Revision 3, June 8.

Parsons Engineering Science, Inc., 1999, Evaluation of Monitored Natural Attenuation for Groundwater at Site 5 (Area of VOC Contamination) Golf Course Disposal Area, Naval Air Station North Island, California, May.

RWQCB, see California Regional Water Quality Control Board.

San Diego County Department of Environmental Health, 2003, *Site Assessment and Mitigation (SAM) Manual.* 

SiREM, 2002, Test Results for Gene-Trac<sup>™</sup> Dehalococcoides Assay for IR Site 5 – Unit 2, Time Critical Removal Action, Naval Air Station North Island, California, July 26.

Southwest Division Naval Facilities Engineering Command, 2002, Summary Letter Describing the Planned Oxidant Change for IR Site 5 – Unit 2, Time Critical Removal Action, Naval Air Station North Island, California, December 4.

SWDIV, see Southwest Division, Naval Facilities Engineering Command.

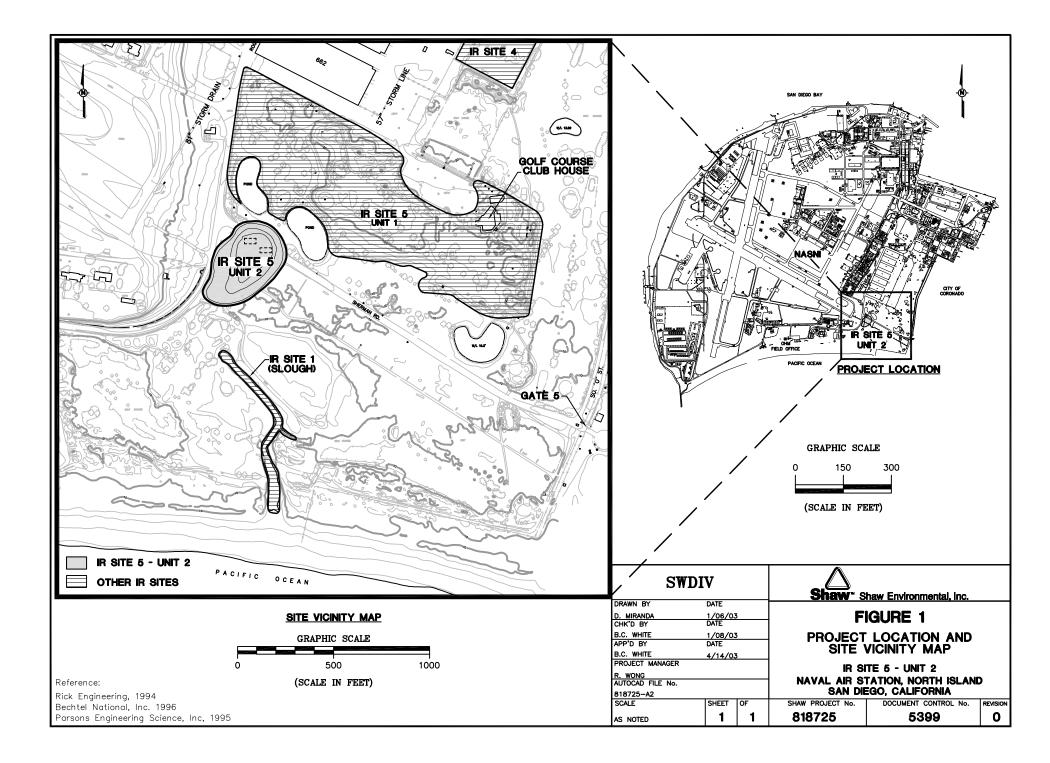
U.S. Department of the Navy, 1999, Action Memorandum, Time-Critical Removal Action for Installation Restoration Site 5 – Unit 2, Naval Air Station North Island, San Diego County, California, December 9.

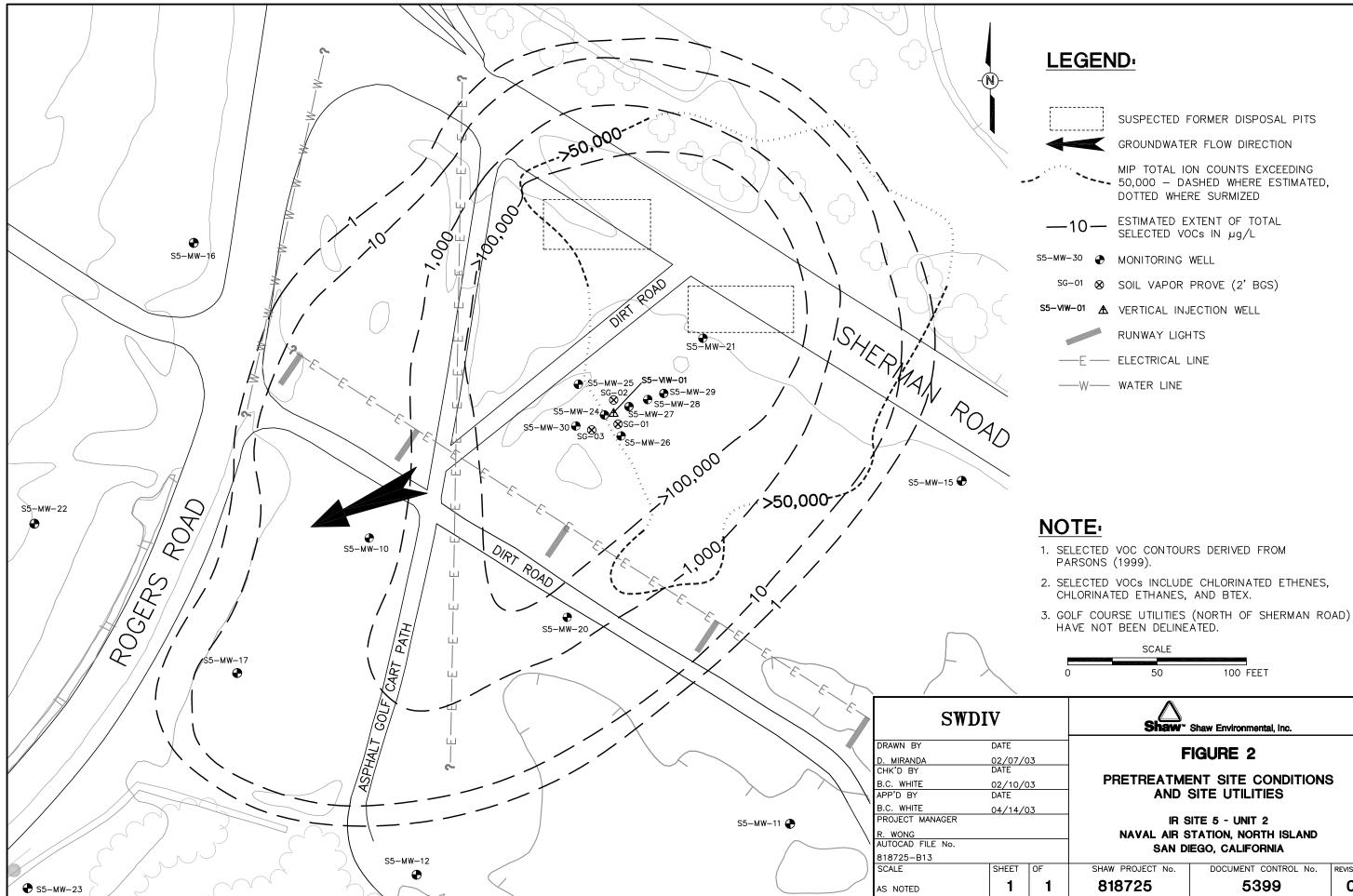
U.S. Environmental Protection Agency, 1998, *Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water*, United States Environmental Protection Agency, Office of Research and Development, Washington, DC 20460, EPA/600/R-98/128, September.

U.S. Environmental Protection Agency, 2000, *Memorandum: Applicability of RCRA Section 3020 to In-Situ Treatment of Ground Water*, United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC 20460, December 27.

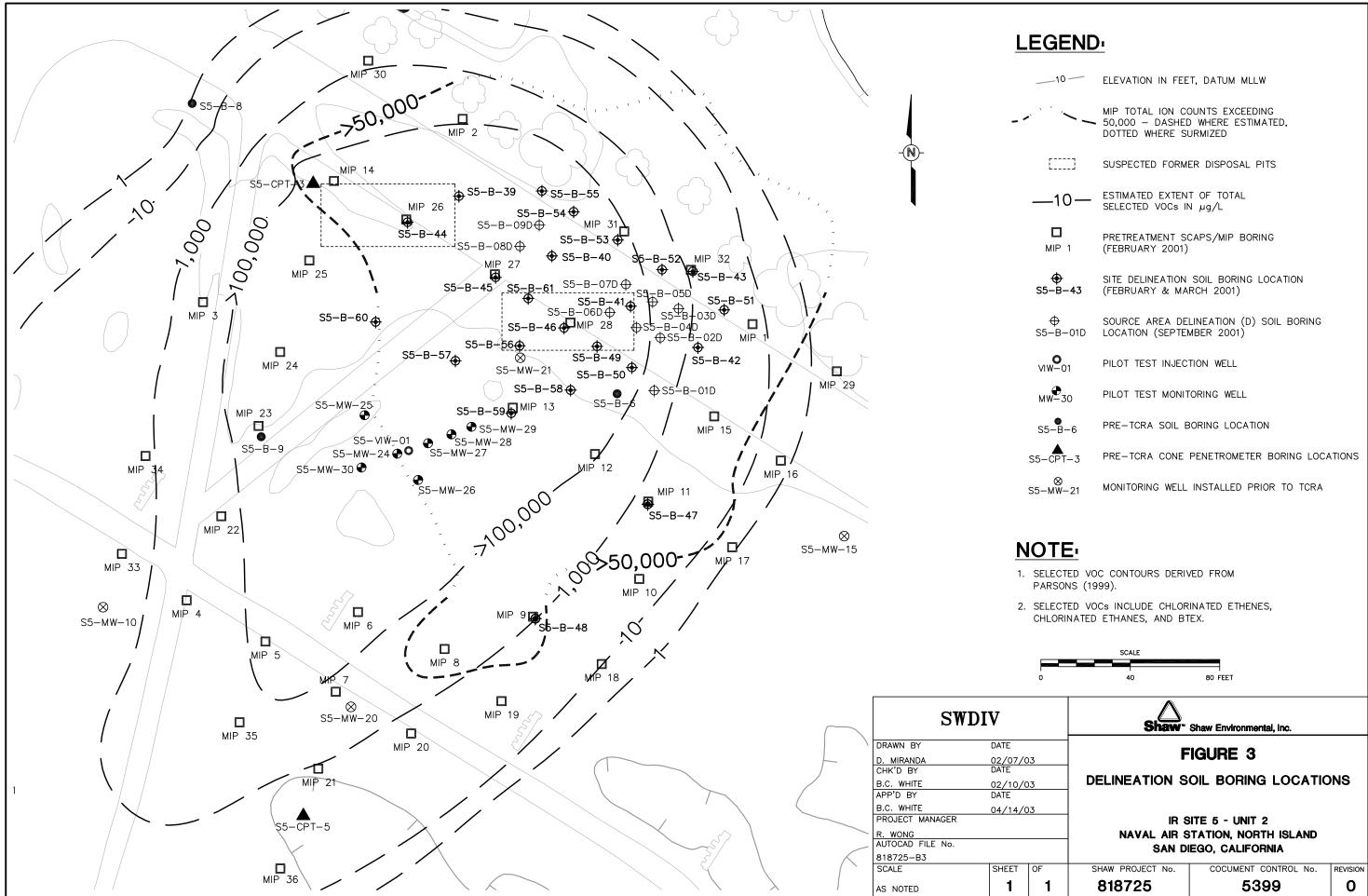
U.S. Environmental Protection Agency, 2002, *EPA Region 9: Preliminary Remediation Goals* (*PRGs*) *Summary Tables*, http://www.epa.gov/region09/waste/sfund/prg/index.htm, accessed September 2.

## **Figures**

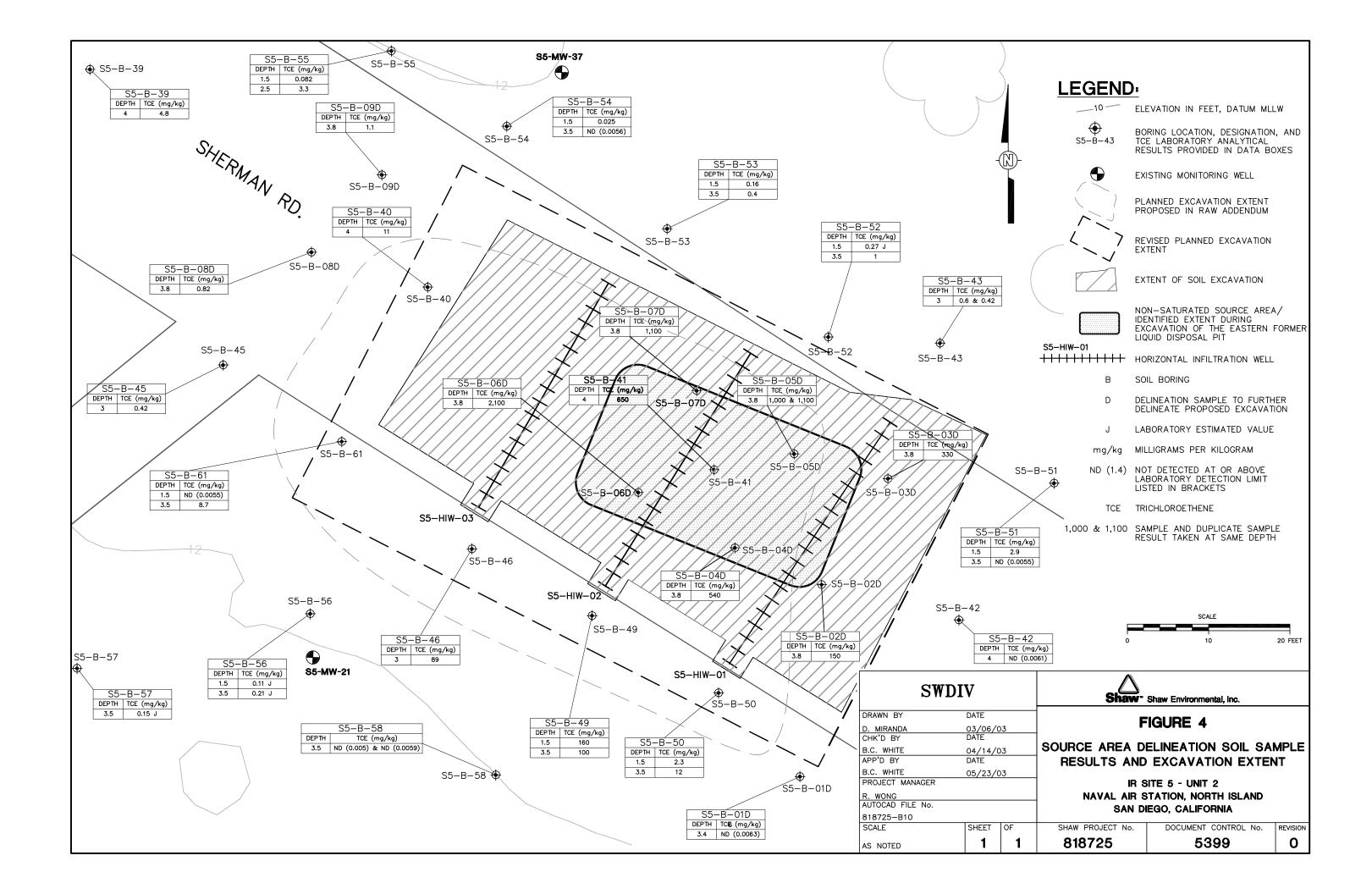


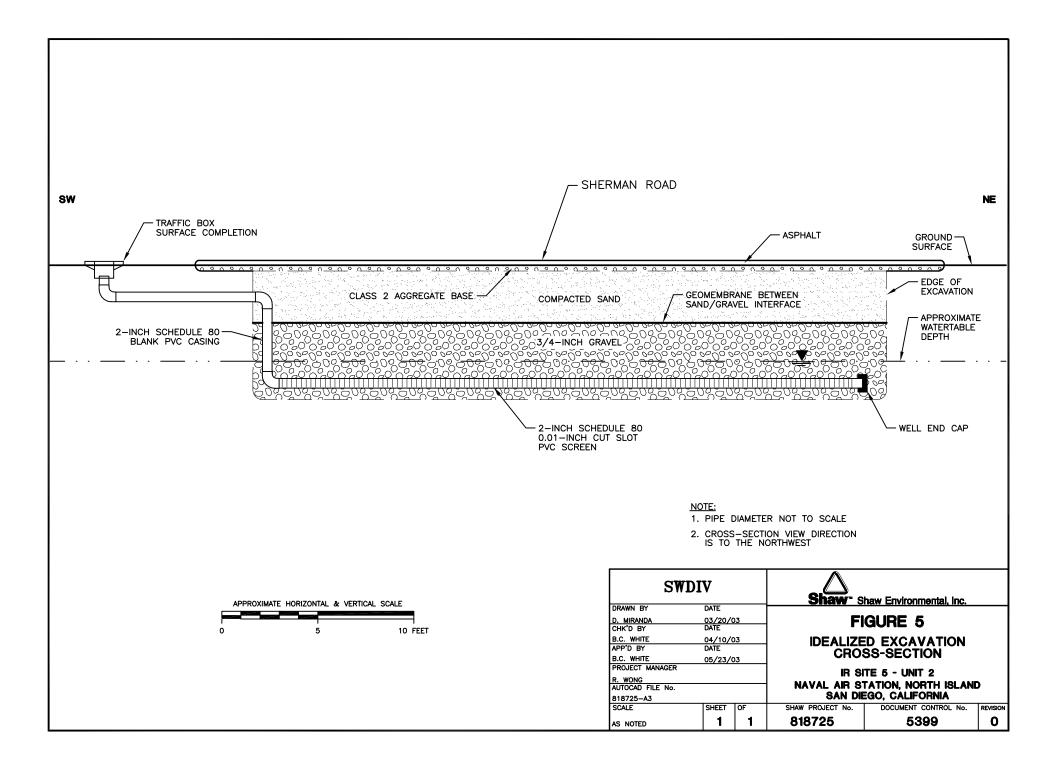


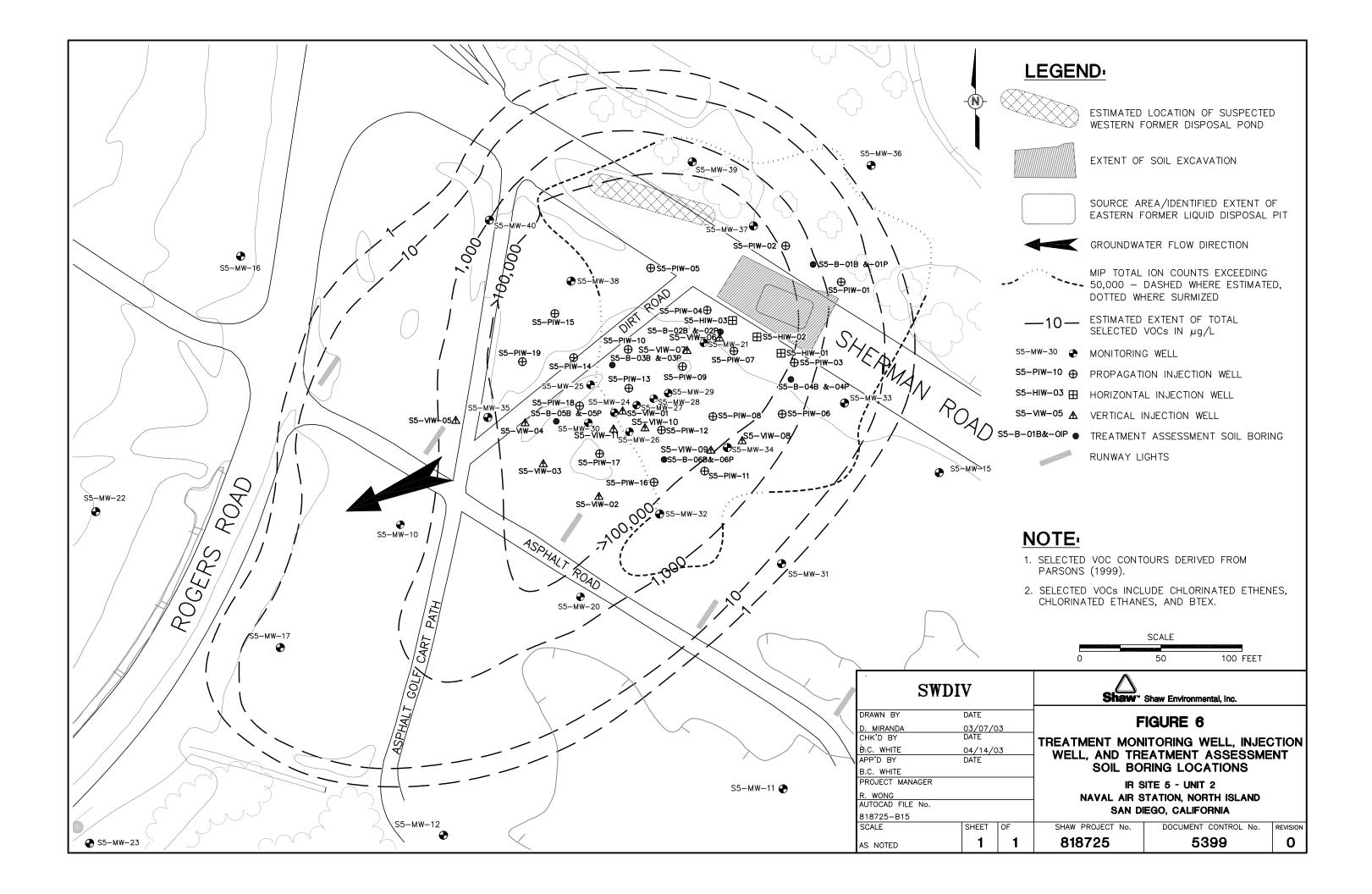
	SCALE												
C	) 50	100 FEET											
	Shaw <sup>-</sup>	Shaw Environmental, Inc.											
	FIGURE 2												
		ENT SITE CONDITIONS SITE UTILITIES	5										
	NAVAL AIR S	SITE 5 - UNIT 2 STATION, NORTH ISLAND EGO, CALIFORNIA											
	SHAW PROJECT No.	DOCUMENT CONTROL No.	REVISION										
1	818725	5399	0										

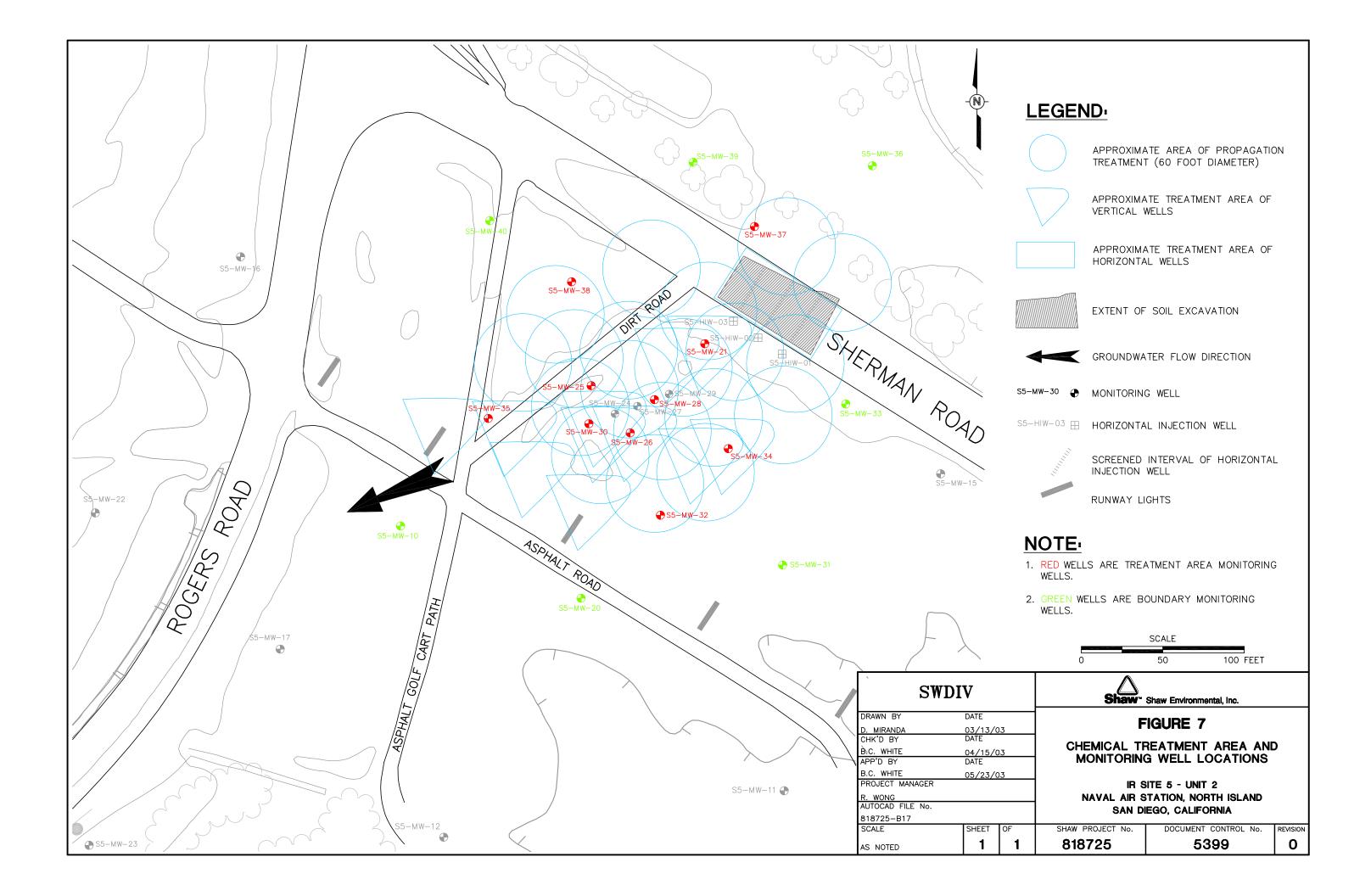


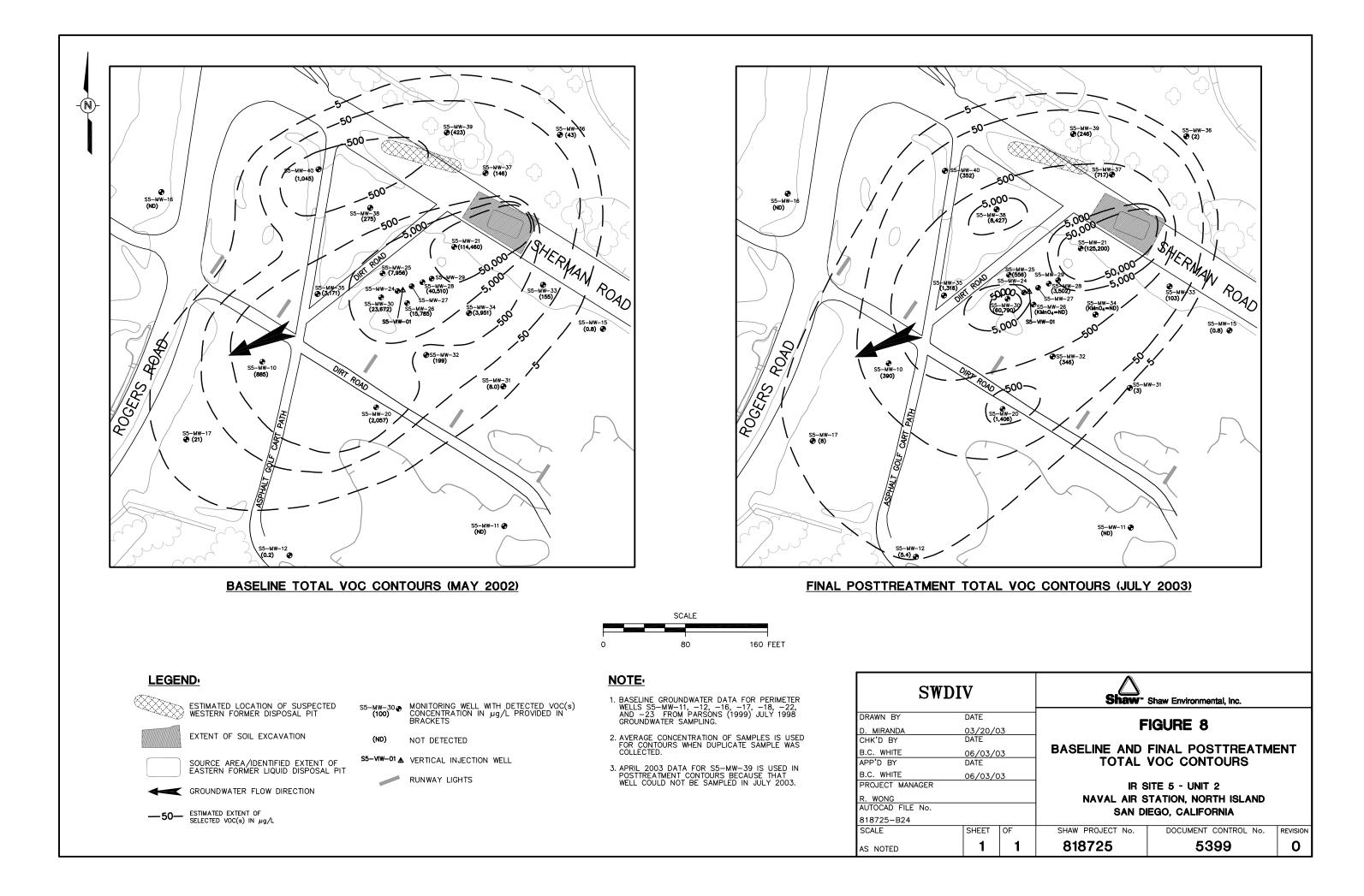
10	ELEVATION IN FEET, DATUM MLLW
· · · -	MIP TOTAL ION COUNTS EXCEEDING 50,000 — DASHED WHERE ESTIMATED, DOTTED WHERE SURMIZED
[]	SUSPECTED FORMER DISPOSAL PITS
_10—	ESTIMATED EXTENT OF TOTAL SELECTED VOCs IN μg/L
D MIP 1	PRETREATMENT SCAPS/MIP BORING (FEBRUARY 2001)
⊕ 5-В-43	SITE DELINEATION SOIL BORING LOCATION (FEBRUARY & MARCH 2001)
⊕ 5−B−01D	SOURCE AREA DELINEATION (D) SOIL BORING LOCATION (SEPTEMBER 2001)
<b>0</b> /IW-01	PILOT TEST INJECTION WELL
w₩_30	PILOT TEST MONITORING WELL
● 5-B-6	PRE-TCRA SOIL BORING LOCATION
-CPT-3	PRE-TCRA CONE PENETROMETER BORING LOCATIONS
⊗ −MW−21	MONITORING WELL INSTALLED PRIOR TO TCRA

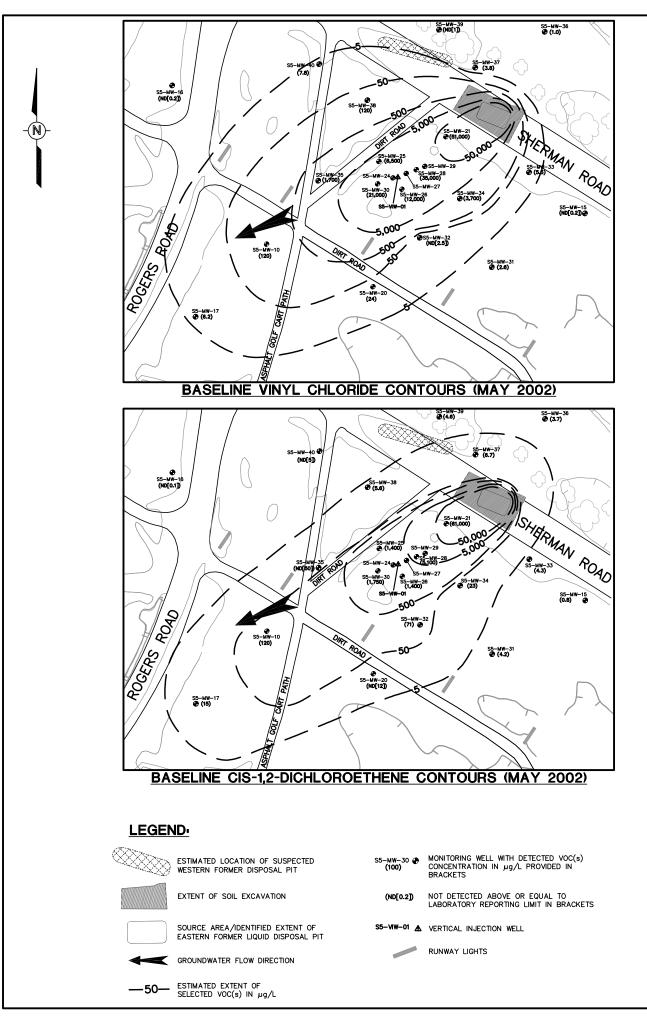


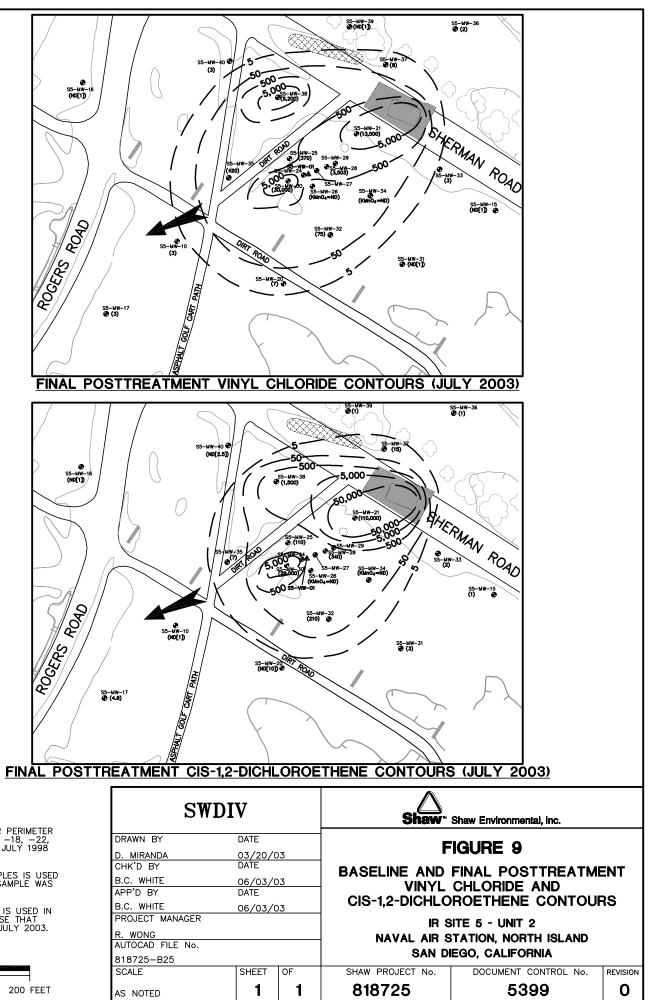












DRAWN BY	DATE
D. MIRANDA	03/20/
CHK'D BY	DATE
B.C. WHITE	06/03/
APP'D BY	DATE
B.C. WHITE	06/03/
PROJECT MANAGER	
R. WONG	
AUTOCAD FILE No.	
818725-B25	
SCALE	SHEET
AS NOTED	1

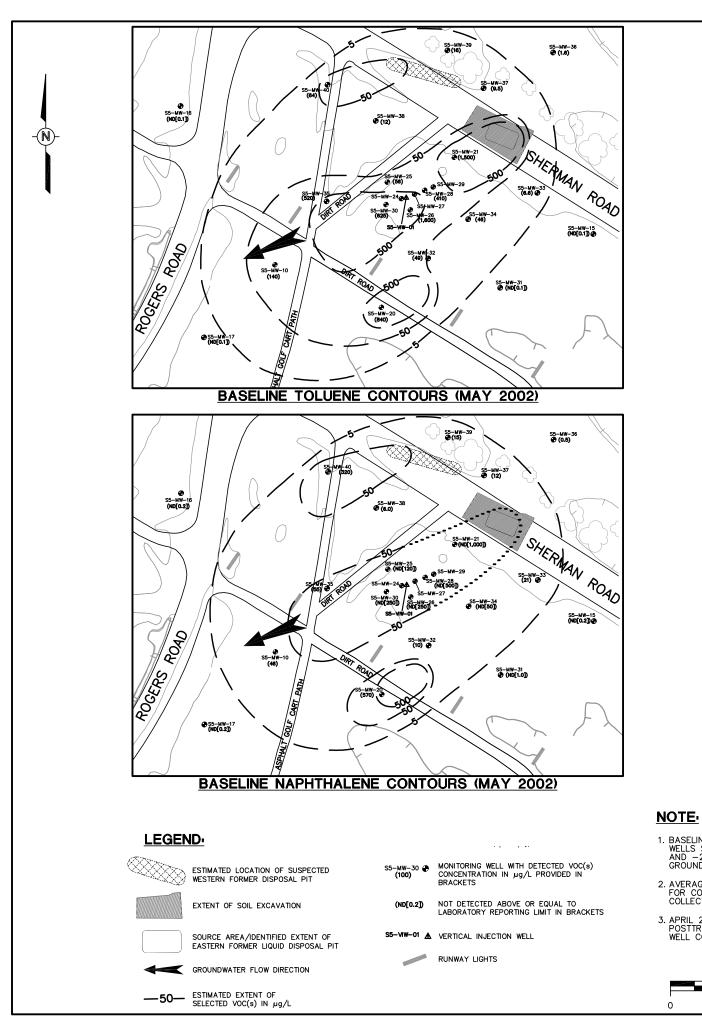
### NOTE:

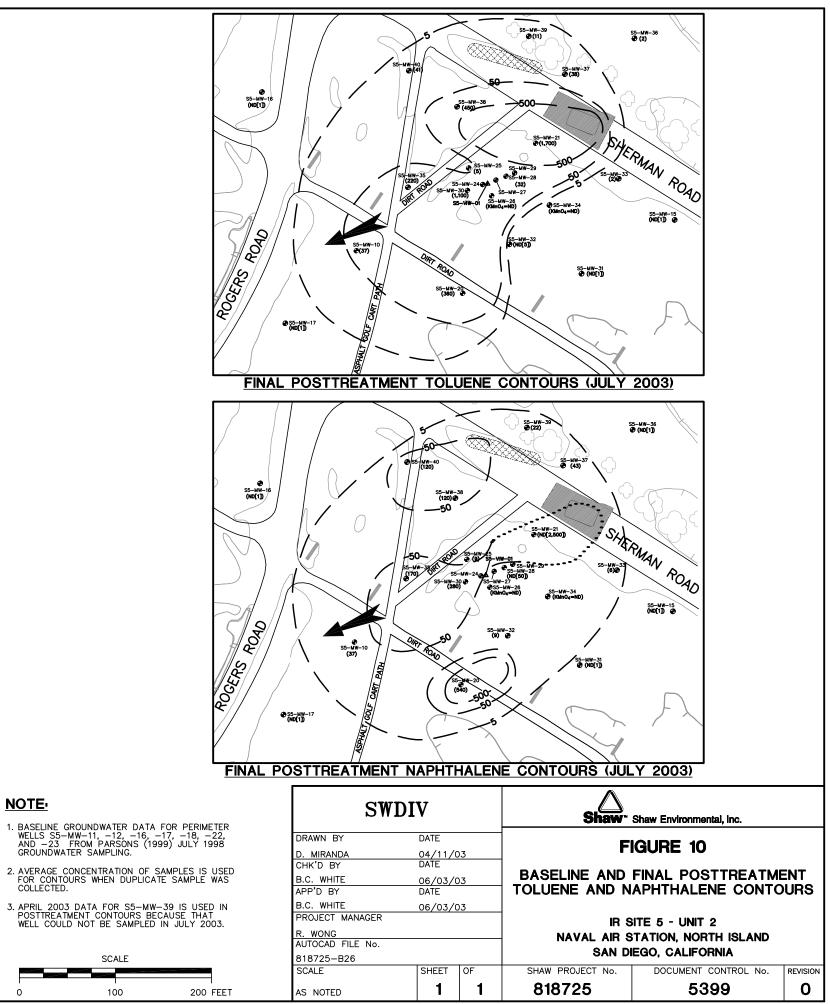
0

- 1. BASELINE GROUNDWATER DATA FOR PERIMETER WELLS S5-MW-11, -12, -16, -17, -18, -22, AND -23 FROM PARSONS (1999) JULY 1998 GROUNDWATER SAMPLING.
- 2. AVERAGE CONCENTRATION OF SAMPLES IS USED FOR CONTOURS WHEN DUPLICATE SAMPLE WAS COLLECTED.
- APRIL 2003 DATA FOR S5-MW-39 IS USED IN POSTTREATMENT CONTOURS BECAUSE THAT WELL COULD NOT BE SAMPLED IN JULY 2003.

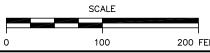
SCALE

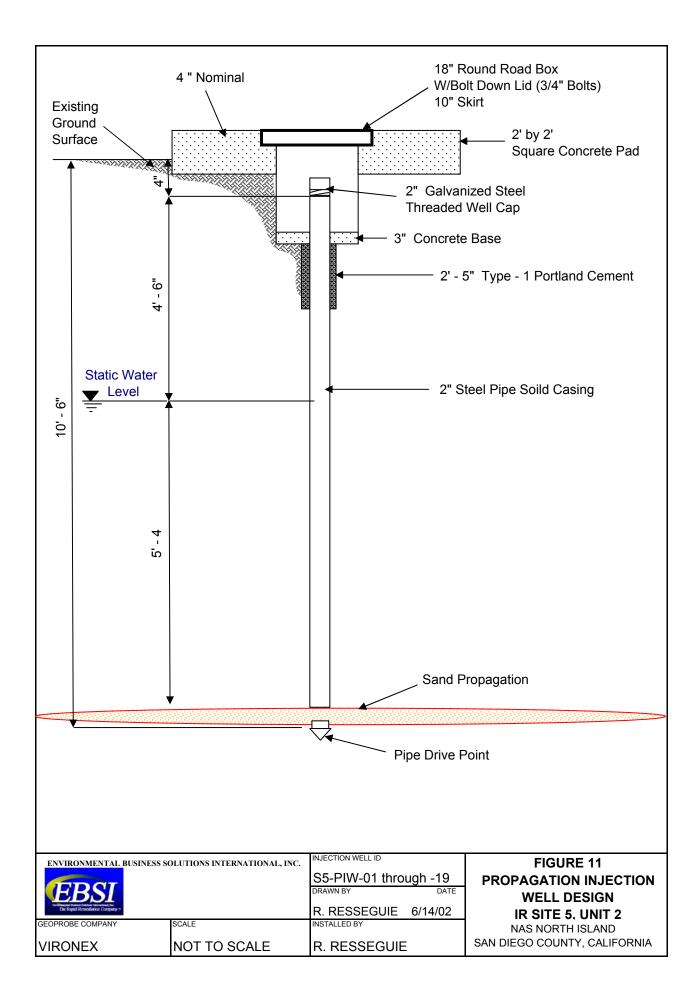
100

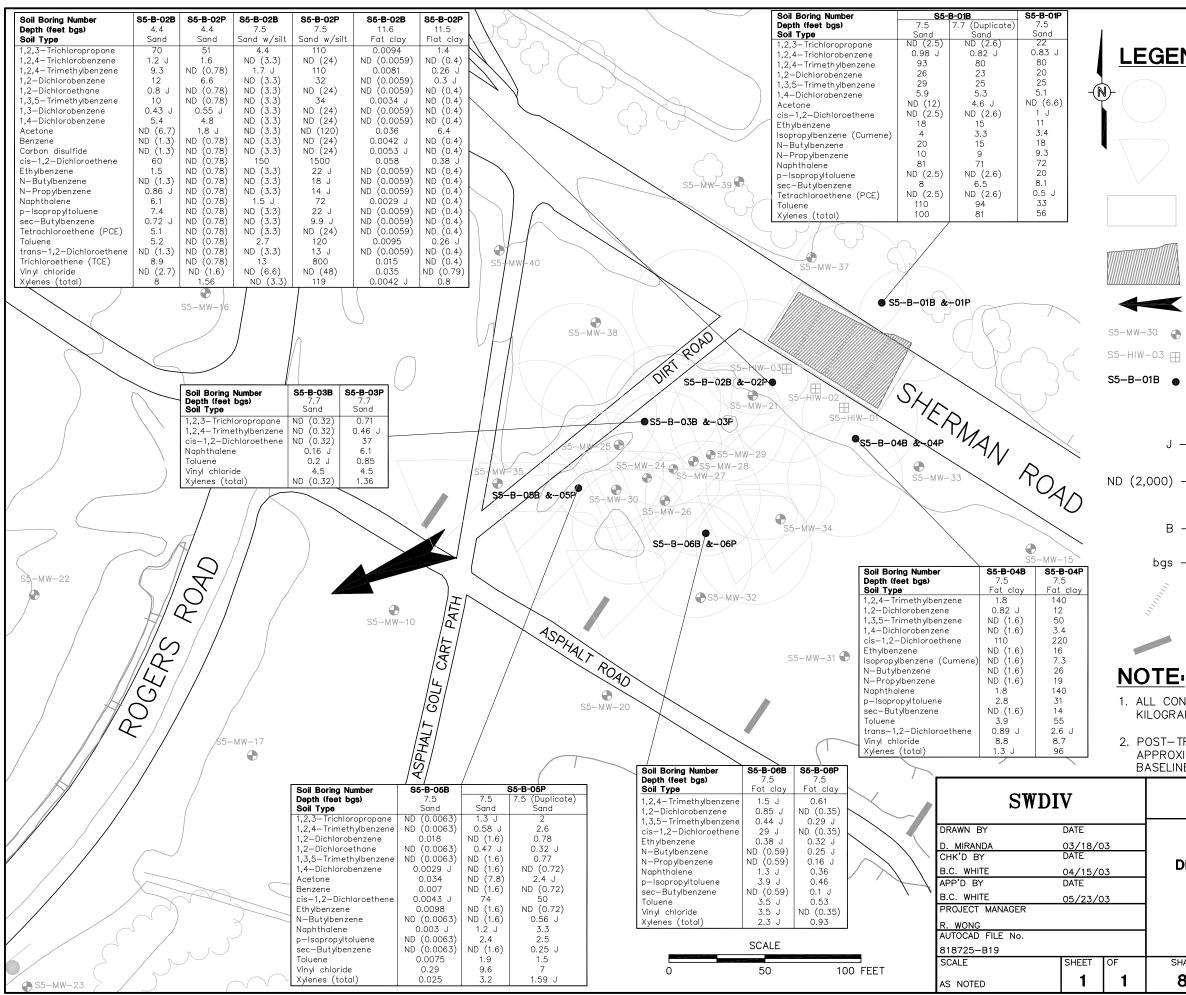




3. APRIL 2003 DATA FOR S5-MW-39 IS USED IN POSTTREATMENT CONTOURS BECAUSE THAT WELL COULD NOT BE SAMPLED IN JULY 2003.



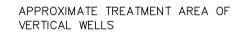




## LEGEND.



APPROXIMATE AREA OF PROPAGATION TREATMENT (60 FOOT DIAMETER)





APPROXIMATE TREATMENT AREA OF HORIZONTAL WELLS



EXTENT OF SOIL EXCAVATION

- GROUNDWATER FLOW DIRECTION
- MONITORING WELL
- S5-HIW-03 ⊞ HORIZONTAL INJECTION WELL
  - SOIL BORING LOCATION FOR BASELINE (B) 0 AND POST-TREATMENT (P) SOIL SAMPLES COLLECTED ON JUNE 27, 2002 AND MARCH 27, 2003, RESPECTIVELY
  - J DATE QUALIFIER INDICATING ESTIMATED CONCENTRATION
- ND (2,000) COMPOUND NOT DETECTED AT/ABOVE THE MEAN DETECTION LIMIT, REPORTING LIMIT IS PROVIDED IN BRACKETS
  - B BACKGROUND, ALSO IDENTIFIED IN LABORATORY BLANK
  - BELOW GROUND SURFACE bqs





1. ALL CONCENTRATIONS ARE MILLIGRAMS PER KILOGRAM (mg/kg).

2. POST-TREATMENT SOIL BORINGS WERE LOCATED APPROXIMATELY 1-FOOT FROM THE SURVEYED BASELINE SOIL BORING LOCATIONS.



## FIGURE 12

DETECTED VOCs IN BASELINE AND POSTTREATMENT SOIL SAMPLES

IR SITE 5 - UNIT 2 NAVAL AIR STATION, NORTH ISLAND SAN DIEGO, CALIFORNIA

SHAW PROJECT No.	DOCUMENT CONTROL No.	REVISION
818725	5399	0

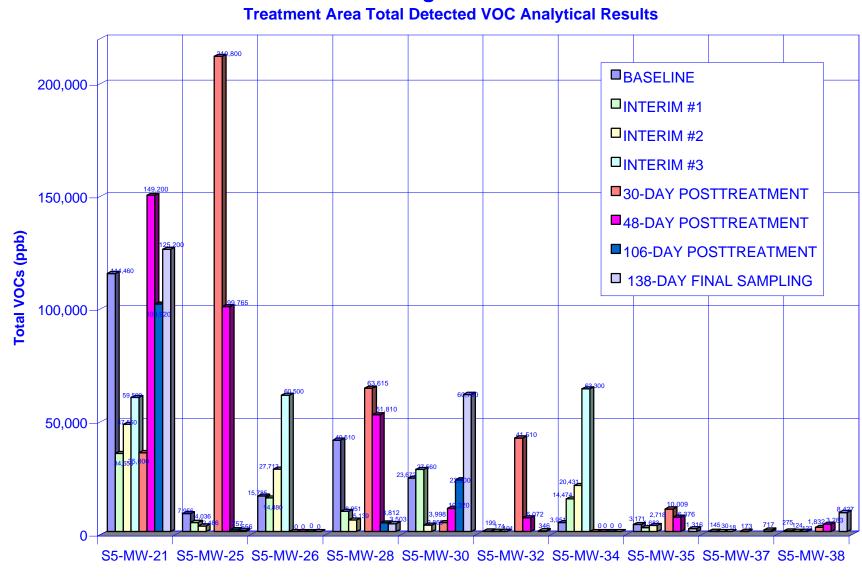
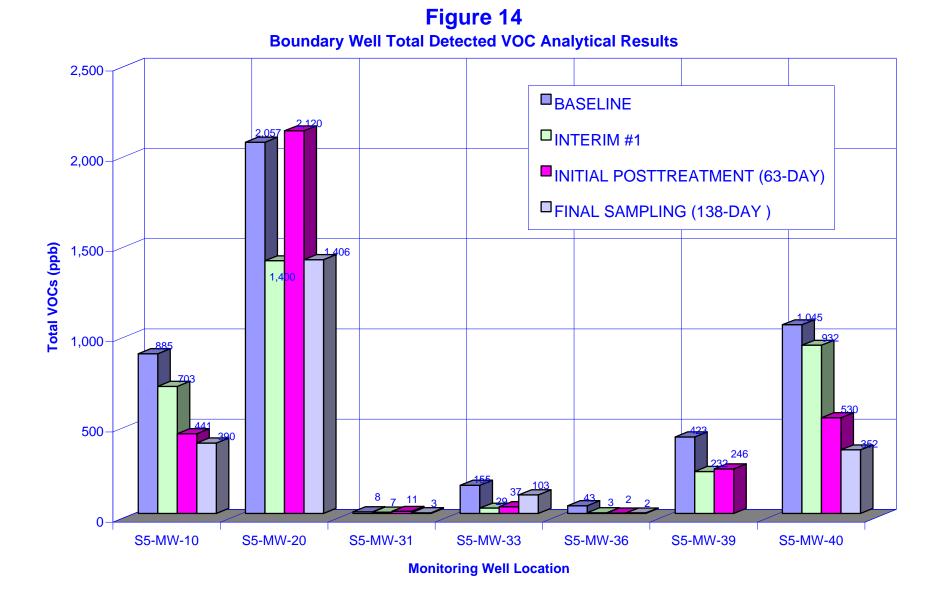


Figure 13 Treatment Area Total Detected VOC Analytical Results

**Monitoring Well Location** 



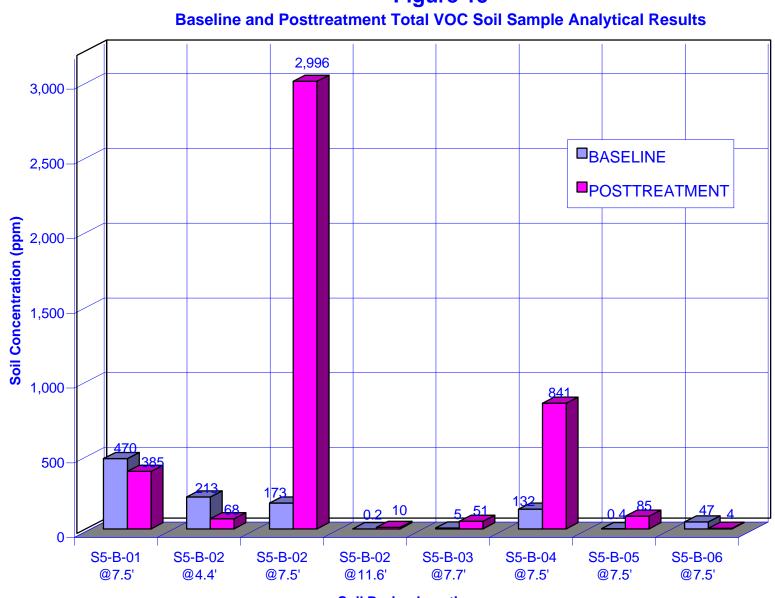
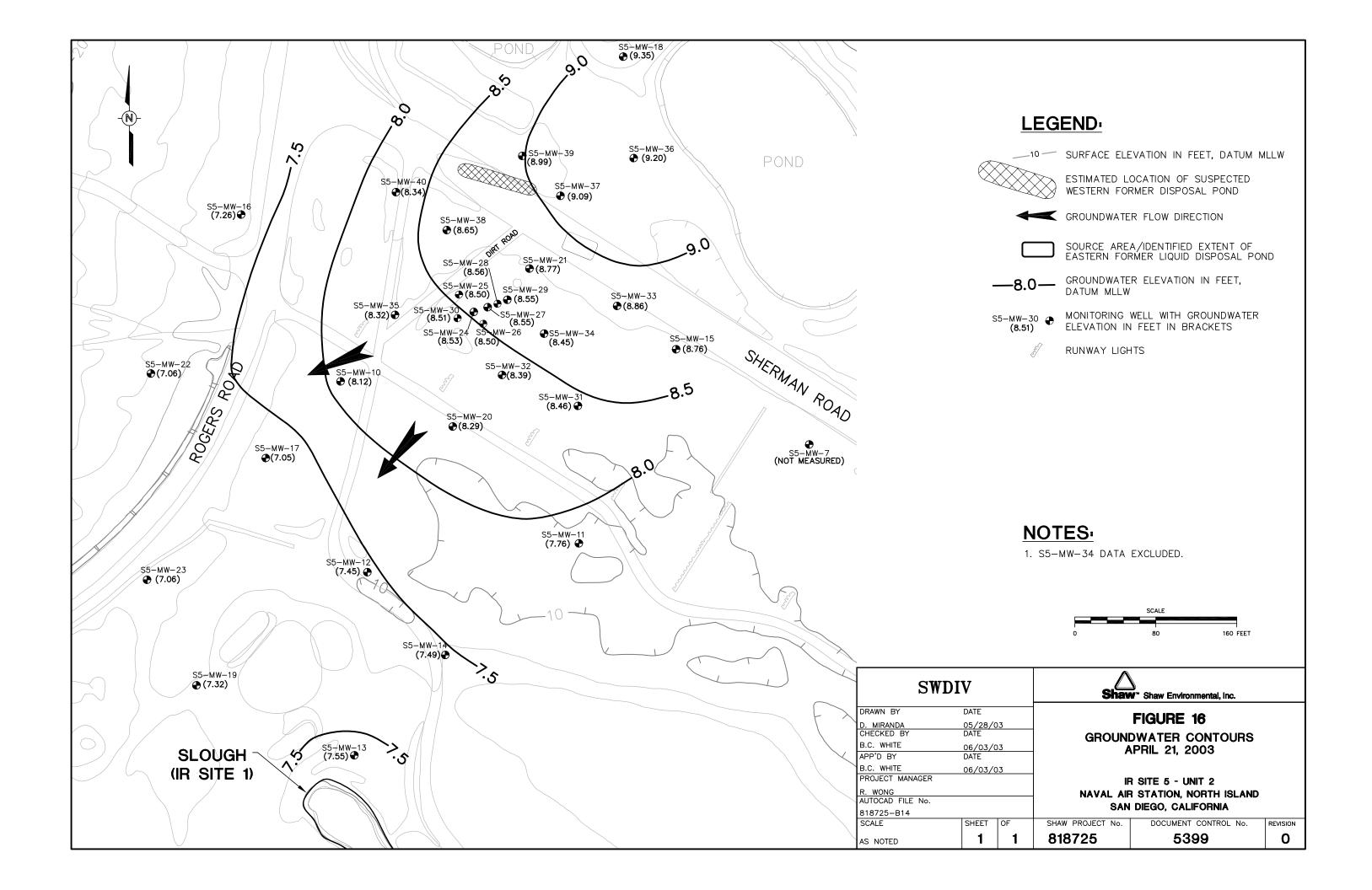


Figure 15

**Soil Boring Location** 



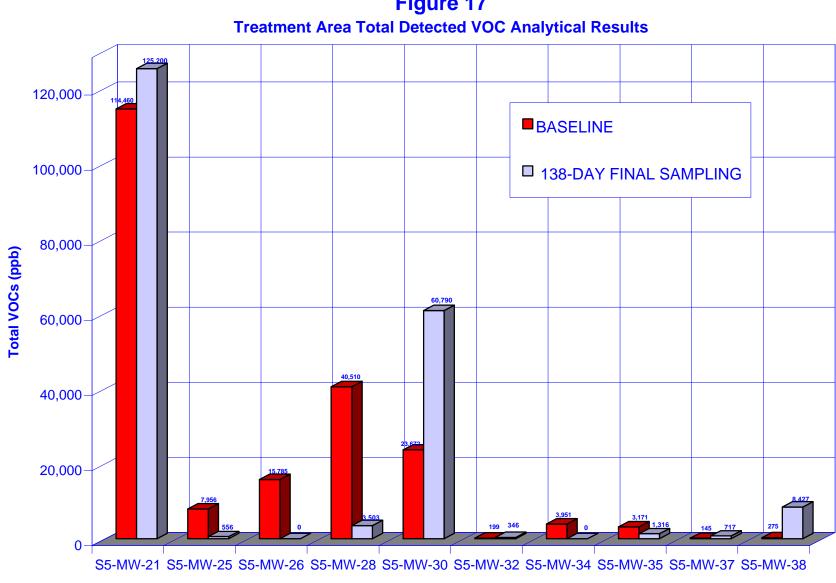


Figure 17

**Monitoring Well Location** 

## **Tables**

### Table 1 Source Area Delineation Soil Sample Analytical Results

Sample Identification		818725-013 \$5 B 01D	818725-008 85 B 02D	818725-007	818725-009 S5 B 04D	818725-005	818725-006 (Dup)	818725-010 S5 B 06D	818725-004 S5 B 07D	818725-002	818725-003
Location Code Date Sampled		S5-B-01D 09/06/01	S5-B-02D 09/06/01	S5-B-03D 09/06/01	S5-B-04D 09/06/01	S5-B-05D 09/06/01	S5-B-05D 09/06/01	S5-B-06D 09/06/01	S5-B-07D 09/06/01	S5-B-08D 09/06/01	S5-B-09D 09/06/01
Depth (feet below ground surface)		3.4	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Depin (reet below ground surface)	Unit	5.4	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
SW8260B											
1,1,1,2-Tetrachloroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,1,1-Trichloroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,1,2,2-Tetrachloroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,1,2-Trichloroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,1-Dichloroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,1-Dichloroethene 1,1-Dichloropropene	mg/kg	0.0058 U 0.0058 U	2.5 U 2.5 U	5.7 U 5.7 U	6.2 U 6.2 U	53 U 53 U	55 U 55 U	31 U 31 U	21 U 21 U	0.58 U 0.58 U	0.63 U 0.63 U
1,2,3-Trichlorobenzene	mg/kg mg/kg	0.0058 U	2.5 U 2.5 U	5.7 U	6.2 U	53 U	55 U	31 U 31 U	21 U 21 U	0.58 U	0.63 U
1,2,3-Trichloropropane	mg/kg	0.12	<b>40</b>	5.7	72	220	210	210	21 0	17	16
1,2,4-Trichlorobenzene	mg/kg	0.0058 U	2.5 U	2.4 J	6.2 U	53 U	55 U	31 U	21 U	1.6	2.1
1,2,4-Trimethylbenzene	mg/kg	0.0058 U	3.5	62	13	42 J	48 J	160	71	0.58 U	0.63 U
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	0.012 U	5 U	11 U	12 U	110 U	110 U	62 U	42 U	1.2 U	1.3 U
1,2-Dibromoethane (EDB)	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,2-Dichlorobenzene	mg/kg	0.0058 U	8.4	52	14	30 J	28 J	43	28	22	16
1,2-Dichloroethane	mg/kg	0.0058 U	2.5 U	16	4.1 J	19 J	18 J	36	29	0.58 U	0.63 U
1,2-Dichloropropane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,3,5-Trimethylbenzene	mg/kg	0.0058 U	1.6 J	19	4.9 J	53 U	55 U	47	21	0.58 U	0.63 U
1,3-Dichlorobenzene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,3-Dichloropropane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
1,4-Dichlorobenzene	mg/kg	0.0058 U	3.1	12	4.2 J	53 U	55 U	31 U	21 U	4.8	5.3
1-Bromo-2-Chloroethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
2,2-Dichloropropane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
2-Butanone (MEK) 2-Chlorotoluene	mg/kg	0.029 U 0.0058 U	13 U	29 U	31 U	270 U	270 U	160 U	110 U	2.9 U	3.1 U 0.63 U
2-Hexanone	mg/kg	0.0058 U 0.029 U	2.5 U 13 U	5.7 U 29 U	6.2 U 31 U	53 U 270 U	55 U 270 U	31 U 160 U	21 U 110 U	0.58 U 2.9 U	0.65 U 3.1 U
4-Chlorotoluene	mg/kg mg/kg	0.029 U 0.0058 U	2.5 U	29 U 5.7 U	6.2 U	270 U 53 U	270 U 55 U	31 U	21 U	0.58 U	0.63 U
4-Methyl-2-pentanone (MIBK)	mg/kg	0.0038 U 0.029 U	2.5 U 13 U	29 U	0.2 U 31 U	270 U	270 U	160 U	110 U	2.9 U	3.1 U
Acetone	mg/kg	0.029 U	13 U	29 U 29 U	31 U	270 U	270 U	160 U	110 U	2.9 U	3.1 U
Benzene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Bromobenzene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Bromochloromethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Bromodichloromethane	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Bromoform	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Bromomethane	mg/kg	0.012 U	5 U	11 U	12 U	110 U	110 U	62 U	42 U	1.2 U	1.3 U
Carbon disulfide	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Carbon tetrachloride	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Chlorobenzene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Chloroethane	mg/kg	0.012 U	5 U	11 U	12 U	110 U	110 U	62 U	42 U	1.2 U	1.3 U
Chloroform	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Chloromethane	mg/kg	0.012 U	5 U	11 U	12 U	110 U	110 U	62 U	42 U	1.2 U	1.3 U
cis-1,2-Dichloroethene	mg/kg	0.0058 U	17	340	47	54	53 J	130	330	1.5	1.2
cis-1,3-Dichloropropene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Dibromochloromethane Dibromomethane	mg/kg	0.0058 U 0.0058 U	2.5 U 2.5 U	5.7 U 5.7 U	6.2 U 6.2 U	53 U 53 U	55 U 55 U	31 U 31 U	21 U 21 U	0.58 U 0.58 U	0.63 U 0.63 U
Dichlorodifluoromethane	mg/kg mg/kg	0.0058 U 0.012 U	2.5 U 5 U	5.7 U 11 U	6.2 U 12 U	55 U 110 U	55 U 110 U	51 U 62 U	21 U 42 U	0.58 U 1.2 U	0.63 U 1.3 U
Ethylbenzene	mg/kg mg/kg	0.0058 U	2.5 U	11 U 12	3.5 J	53 U	55 U	24 J	42 0 15 J	0.58 U	0.63 U
Hexachlorobutadiene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Isopropylbenzene (Cumene)	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
m/p-Xylene	mg/kg	0.0058 U	2.5 U	49	8.4	37 J	55 U	97	56	0.58 U	0.63 U
Methyl tert-butyl ether (MTBE)	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Methylene chloride	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	4.6 J	0.58 U	0.63 U
N-Butylbenzene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
N-Propylbenzene	mg/kg	0.0058 U	2.5 U	5.6 J	3 J	53 U	55 U	17 J	21 U	0.58 U	0.63 U
Naphthalene	mg/kg	0.0058 U	1.3 J	87	7.5	60	57	120	120	0.69	0.63 U
o-Xylene	mg/kg	0.0058 U	2.5 U	22	4.6 J	53 U	55 U	43	24	0.58 U	0.63 U
p-Isopropyltoluene	mg/kg	0.0058 U	1.6 J	5.7 U	6.2	53 U	55 U	31 U	21	0.44 J	0.63 U
sec-Butylbenzene	mg/kg	0.0058 U	2.5 U	5.3 J	3.4 J	53 U	55 U	13 J	7.2 J	0.58 U	0.63 U
Styrene	mg/kg	0.012 U	5 U	11 U	12 U	110 U	110 U	62 U	42 U	1.2 U	1.3 U
tert-Butylbenzene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Tetrachloroethene (PCE)	mg/kg	0.0058 U	47	4.5 J	160	3,700	4,200	320	21 U	0.43 J	0.59 J
Toluene	mg/kg	0.0058 U	1.3 J	65	15	63	66	130	86	0.58 U	0.63 U
trans-1,2-Dichloroethene	mg/kg	0.0058 U	2.5 U	4.4 J	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
trans-1,3-Dichloropropene	mg/kg	0.0058 U	2.5 U	5.7 U	6.2 U	53 U	55 U	31 U	21 U	0.58 U	0.63 U
Trichloroethene (TCE)	mg/kg	0.0058 U	130	310	490	<b>910</b>	1,000	2,100	990 42 U	0.75	<b>0.97</b>
Vinyl chloride	mg/kg	0.012 U	5 U	11 U	12 U	110 U	110 U	62 U	42 U	1.2 U	1.3 U

Explanation: J - estimated value

Shaw Environmental, Inc.

U - not detected at or above the stated reporting limit mg/kg - miligrams per kilogram

# Table 2Excavated Soil VOC Waste Characterization Analytical Results

Sample Identification		818725-015	818725-016	818725-017	818725-018	818725-019	818725-020	818725-021	818725-022	818725-023	818725-024	818725-025	818725-026	818725-027	818725-028
Location Code		Bin 4873	Bin 4961	Bin 4938	Bin 5060	Bin 5001	Bin 89360	Bin 5326	Bin 5320	Bin 5325	Bin 5324	Bin 5303	Bin 5321	Bin 89304	Bin 5328
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01
EPA 8260B	Unit														
1,1,1,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloropropene	mg/kg	5 U	5 U	5 U 5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene 1,2,3-Trichloropropane	mg/kg	5 U 5 U	5 U 9	5 U 10	5 U 5 U	5 U 5 U	5 U 5 U	5 U <b>17</b>	5 U 5 U	5 U 22	5 U <b>56</b>	5 U 44	5 U 5 U	5 U <b>45</b>	5 U 57
1,2,3-Trichlorobenzene	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	17 5 U	5 U	22 5 U	50 5 U	5 U	5 U	45 5 U	5 U
1,2,4-Trimethylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	11	23	19	99	38	26
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (EDB)	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	8	12	18	31	15	19
1,2-Dichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	15	5 U	5 U	6	5 U
1,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene 1,3-Dichlorobenzene	mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	6 5 U	11 5 U	26 5 U	11 5 U	9 5 U						
1,3-Dichloropropane	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	8	10	5 U	7
2,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone (MEK)	mg/kg	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U						
2-Chlorotoluene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U						
4-Chlorotoluene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	mg/kg	10 U 25 U	10 U 25 U	10 U 25 U	10 U 25 U	10 U 25 U	10 U 25 U	10 U 25 U	10 U 25 U						
Acetone Benzene	mg/kg mg/kg	23 U 5 U	25 U 5 U	23 U 5 U	23 U 5 U	23 U 5 U	23 U 5 U	25 U 5 U	23 U 5 U	23 U 5 U	25 U 5 U	25 U 5 U	23 U 5 U	23 U 5 U	23 U 5 U
Bromobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U						
Carbon disulfide	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U						
Carbon tetrachloride Chlorobenzene	mg/kg mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U						
Chloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	16	5 U	17	29	36	5 U	114	11
cis-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromomethane Dichlorodifluoromethane	mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U						
Ethylbenzene	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	14	5 U 6	5 U
Hexachlorobutadiene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
m/p-Xylene	mg/kg	10 U	10 U	10 U	17	10 U	54	24	16						
Methylene chloride	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Butylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	6	9
N-Propylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	10	5 U	5 U
Naphthalene	mg/kg	15 U	15 U	15 U	39	15 U	<b>99</b>	39	19						
o-Xylene p-Isopropyltoluene	mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	7 5 U	6 10	28 5 U	11 8	8 5 U						
sec-Butylbenzene	mg/kg mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U	10	• 5 U	5 U
Styrene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
tert-Butylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	mg/kg	5 U	6	6	5 U	24	5 U	8	5	18	41	27	5 U	57	147
Toluene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	7	32	8	27	37	21
trans-1,2-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE) Trichlorofluoromethane	mg/kg	5 U	12 5 U	19 5 U	5 U	14 5 U	5 U 5 U	22 5 U	22 5 U	124	441 5 U	<b>79</b> 5 U	9 5 U	690	209
Vinyl chloride	mg/kg mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U						
+ myi chionuc	шу ку	30	30	30	30	30	50	30	30	30	30	30	30	50	30

Та	ble 2
Ex	cavated Soil VOC Waste Characterization Analytical Results, Site 5 - Unit 2, NAS North Island

Sample Identification		818725-029	818725-030	818725-031	2, NAS North 818725-032	818725-033	818725-034	818725-035	818725-036	818725-037	818725-038	818725-039	818725-040	818725-041	818725-042
Location Code		Bin 5329	Bin 89303	Bin 89298	Bin 89300	Bin 89302	Bin 89301	Bin 3165	Bin 3167	Bin 3164	Bin 3166	Bin 3162	Bin 5331	Bin 89364	Bin 89306
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01
	Unit														
EPA 8260B				<b>5</b> 11	5.11		<b>5</b> 11		<b>5</b> 11	5 T.		<b>5</b> TT		5.11	<b>5</b> 11
1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane	mg/kg	5 U 5 U	5 U 5 U	5 U	5 U	5 U	5 U	5 U 5 U	5 U	5 U 5 U	5 U	5 U	5 U	5 U	5 U 5 U
1,1,2,2-Tetrachloroethane	mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U
1,1,2,2-Trichloroethane	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	mg/kg	453	62	48	5 U	31	5 U	139	81	39	94	16	14	5	36
1,2,4-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	mg/kg	149	29	10	5 U	24	5 U	78	73	28	67	18	14	5 U	34
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (EDB)	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	mg/kg	60	14	11	5 U	6	5 U	32	25	10	22	7	5 U	5 U	12
1,2-Dichloroethane	mg/kg	107	5 U	6 U	5 U	6 U	5 U	25	6	10	17	7	5 U	5 U	6
1,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene	mg/kg	44	9	5 U	5 U	6.5	5 U	23	24	8	21	5 U	5 U	5 U	10
1,3-Dichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	mg/kg	15	5 U	5 U	5 U	5 U	5 U	7	7	5 U	5 U	5 U	5 U	5 U	5 U
2,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone (MEK)	mg/kg	25 U	25 U	25 U	25 U	25 U	25 U	132	25 U						
2-Chlorotoluene 2-Hexanone	mg/kg	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U	5 U 10 U
4-Chlorotoluene	mg/kg mg/kg	10 U 5 U	5 U	10 U 5 U	10 U 5 U	5 U	10 U 5 U	10 U 5 U	5 U	5 U	5 U	10 U 5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	mg/kg	18	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	mg/kg	87	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	mg/kg	8	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	5 U
Bromobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	mg/kg	132	14	25	5 U	13	5 U	23	17	16	9	6	9	5 U	21
cis-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromomethane Dichlorodifluoromethane	mg/kg	5 U 5 U	5 U	5 U 5 U	5 U	5 U 5 U	5 U 5 U	5 U	5 U 5 U	5 U	5 U 5 U	5 U	5 U	5 U	5 U
	mg/kg	30 39	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 21		5 U 5		5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U
Ethylbenzene Hexachlorobutadiene	mg/kg mg/kg	39 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	21 5 U	11 5 U	5 5 U	11 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U
Isopropylbenzene	mg/kg	8	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
m/p-Xylene	mg/kg	0 127	16	10 U	10 U	17	10 U	71	42	21	46	12	12	10 U	19
Methylene chloride	mg/kg	130	5 U	10 U	5 U	5 U	10 U	42	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Butylbenzene	mg/kg	25	9	5 U	5 U	5 U	5 U	10	22	5	16	5 U	5 U	5 U	11
N-Propylbenzene	mg/kg	18	5 U	5 U	5 U	5 U	5 U	9	8	5 U	7	5 U	5 U	5 U	5 U
Naphthalene	mg/kg	157	29	15 U	15	20	15 U	82	82	38	81	25	18	15 U	64
o-Xylene	mg/kg	56	9	5 U	5 U	7	5 U	31	20	9	20	5	5	5 U	8
p-Isopropyltoluene	mg/kg	30	5 U	5 U	5 U	6	5 U	17	5 U	6	5 U	5 U	5 U	5 U	5 U
sec-Butylbenzene	mg/kg	15	5 U	5 U	5 U	5 U	5 U	7	8	5 U	6	5 U	5 U	5 U	5 U
Styrene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
tert-Butylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	mg/kg	6427	246	237	21	36	16	1230	179 D	533	140	11	6	5 U	41
Toluene	mg/kg	472	24	13	5 U	22	5 U	285	5 U	38	71	16	11	5 U	21
trans-1,2-Dichloroethene	mg/kg	14	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE)	mg/kg	NA	434	384	11	125	10	1160	505 D	517	504	140	45	5	128
Trichlorofluoromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Table 2
Excavated Soil VOC Waste Characterization Analytical Results, Site 5 - Unit 2, NAS North Island

Sample Identification		818725-043	818725-044	818725-045	818725-046	818725-047	818725-048	818725-049	818725-050	818725-051	818725-052	818725-053	818725-054	818725-055	818725-056
Location Code		Bin 89363	Bin 5074	Bin 89305	Bin 5042	Bin 3163	Bin 3140	Bin 5037	Bin 5034	Bin 3168	Bin R1808ML	Bin R1882ML	Bin R1949ML	Bin 4996	Bin 4604
Date Sampled		12/14/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01
	Unit														
EPA 8260B	а	<b>5</b> 11	6 TI	6 TI	<b>5</b> 11	5 TT	6 H	<b>5</b> 11	<b>5</b> 11	5 H	5 H	5 H	5.11	5 H	<b>5</b> 11
1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane	mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U
1,1,2,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U 7	5 U
1,1-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	, 5 U	5 U
1,1-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	mg/kg	72	8	129	189	396	62	60	43	22	44	49	195	367	65
1,2,4-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	mg/kg	74	21	75	98	376	10	45	5 U	6	5 U	70	113	328	52
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (EDB)	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	mg/kg	20	8	30	45	76	10	28	16	23	15	27	49	101	20
1,2-Dichloroethane	mg/kg	7	5 U	37	50	51	5 U	5 U	5 U	5 U	5 U	5 U	22	108	5 U
1,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene	mg/kg	22	6	22	33	70	5 U	14	5 U	5 U	5 U	23	40	80	17
1,3-Dichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	mg/kg	5	5 U	7	9	20	5 U	8	6	8	5	7	11	28	5 U
2,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone (MEK)	mg/kg	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2-Chlorotoluene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Hexanone	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	11	10 U
Acetone	mg/kg	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	15	5 U
Bromobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane Bromodichloromethane	mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U
Bromoform	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	mg/kg	10 U	10 U 10 U	10 U	10 U 10 U	10 U	10 U	10 U	10 U 10 U	10 U	10 U 10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	mg/kg	5 U	5 U	10 U	5 U	5 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	mg/kg	20	10	29	64	700	24	28	5 U	11	8	37	370	909	33
cis-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromomethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	mg/kg	11	5 U	14	22	47	5 U	8	5 U	5 U	5 U	11	24	63	9
Hexachlorobutadiene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	mg/kg	5 U	5 U	5 U	5 U	12	5 U	5 U	5 U	5 U	5 U	5 U	6	14	5 U
m/p-Xylene	mg/kg	46	14	56	83	162	10 U	29	10 U	10 U	10 U	41	92	217	36
Methylene chloride	mg/kg	5 U	5 U	6	10	7	5 U	5 U	5 U	5 U	5 U	5 U	5 U	49	5 U
N-Butylbenzene	mg/kg	11	6	12	5 U	25	5 U	7	5 U	5 U	5 U	15	24	40	12
N-Propylbenzene	mg/kg	7	5 U	8	11	29	5 U	5 U	5 U	5 U	5 U	7	14	33	5
Naphthalene	mg/kg	60	43	119	158	246	15 U	45	15 U	15 U	15 U	76	167	271	52
o-Xylene	mg/kg	21	6	24	38	70	5 U	15	5 U	5 U	5 U	19	43	88	17
p-Isopropyltoluene	mg/kg	17	5 U	15	5 U	42	5 U	10	5 U	5 U	5 U	14	5 U	51	5 U
sec-Butylbenzene	mg/kg	7	5 U	7	10	20	5 U	5 U	5 U	5 U	5 U	6 5 U	10 5 U	24	5 U
Styrene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
tert-Butylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	86
Tetrachloroethene (PCE)	mg/kg	123	5 U	130	105	378	45	34	36	10	24	23	103	2027	5 U
Toluene	mg/kg	51 5 U	15	88 5 TT	144	449	14 5 U	30 5 U	5 U	5 U	5 U	45 5 U	158 U	613	52 U
trans-1,2-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	18 5 U	5 U
trans-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U 2050 F	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE) Trichlorofluoromethane	mg/kg	445 5 U	107	1570	2050 E	6170	220	151 5 U	110 5 U	26	63 5 U	500	1474	8664	<b>361</b>
	mg/kg	5 U	5 U	5 U	5 U 5 U	5 U	5 U	5 U	5 U 5 U	5 U 5 U	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Та	ble 2
Ex	cavated Soil VOC Waste Characterization Analytical Results, Site 5 - Unit 2, NAS North Island

Location Code				818725-059		818725-061	818725-062	818725-063	818725-064	818725-065	818725-066	818725-067	818725-068	818725-069	818725-070
		Bin 5256	Bin R1939ML	Bin 4636	Bin 3149	Bin R1914ML	Bin 274787	Bin 89362	Bin R18291ML	Bin 5187	Bin 5042	Bin 3140	Bin 5034	Bin R1808ML	Bin R1949ML
Date Sampled		12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	01/04/02	01/04/02	01/04/02	01/04/02	01/04/02
EPA 8260B	Unit														
1,1,1,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane 1,2,4-Trichlorobenzene	mg/kg	102 5 U	128 5 U	77 5 U	106 5 U	140 5 U	27 5 U	109 5 U	88 5 U	71 5 U	317 5 U	102 5 U	11 5 U	26 5 U	141 5 U
1,2,4-Trimethylbenzene	mg/kg mg/kg	83	105	76	111	125	13		24	62	125	110	5 U	22	<b>220</b>
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	5 U	5 U	70 5 U	5 U	5 U	13 5 U	5 U	24 5 U	5 U	5 U	5 U	5 U	22 5 U	5 U
1,2-Dibromo-5-emotopropane (DDer)	mg/kg	5 U	5 U	8	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	mg/kg	28	34	28	31	42	7	24	18	25	65	45	6	11	56
1,2-Dichloroethane	mg/kg	12	16	5 U	6	9	5 U	18	5 U	5 U	6	5 U	5 U	5 U	5 U
1,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene	mg/kg	26	37	24	35	37	5 U	22	8	20	34	31	5 U	7	48
1,3-Dichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	mg/kg	7	9	7	9 5 II	11	5 U	6	6	6	12	10	5 U	5	13
2,2-Dichloropropane	mg/kg	5 U 25 U	5 U 25 U	5 U 25 U	5 U	5 U	5 U 25 U	5 U	5 U	5 U	5 U 25 U	5 U 25 U	5 U	5 U	5 U
2-Butanone (MEK) 2-Chlorotoluene	mg/kg	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U
2-Hexanone	mg/kg mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	mg/kg	5 U	10 U	5 U	5 U	10 U	10 U	5 U	5 U	5 U	10 U	10 U	10 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	mg/kg	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Benzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	mg/kg	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U 10 U	10 U	10 U	10 U	10 U
Carbon disulfide Carbon tetrachloride	mg/kg	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U	10 U 5 U
Chlorobenzene	mg/kg mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	mg/kg	116	1523	52	152	<b>100</b> J	5 U	84	82	41	6	5	5 U	5 U	50
cis-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromomethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene Hexachlorobutadiene	mg/kg	16 5 U	20 5 U	14 5 U	16 5 U	19 5 U	5 U 5 U	13 5 U	5 U 5 U	12 5 U	11 5 U	10 5 U	5 U 5 U	5 U 5 U	19 5 U
Isopropylbenzene	mg/kg mg/kg	5 U	5 0	5 U	5 U	50	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U 6
m/p-Xylene	mg/kg	57	78	51	58	69 69	10 U	<b>49</b>	10 U	<b>46</b>	46	44	10 U	10 U	77
Methylene chloride	mg/kg	5 U	5 U	5 U	5 U	5 U	10 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
N-Butylbenzene	mg/kg	12	27	12	25	20	5 U	10	6	10	20	19	5 U	5 U	24
N-Propylbenzene	mg/kg	10	13	8	12	12	5 U	7	5 U	6	11	11	5 U	5 U	18
Naphthalene	mg/kg	78	116	69	80	121	15 U	94	18	65	330	141	15 U	19	196
o-Xylene	mg/kg	25	37	23	29	33	5 U	22	6	21	25	21	5 U	5	37
p-Isopropyltoluene	mg/kg	17	5 U	16	23	30	5 U	5 U	9	5	30	25	5 U	5 U	35
sec-Butylbenzene	mg/kg	8	10	7	10	12	5 U	6	5 U	6	13	11	5 U	5 U	15
Styrene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
tert-Butylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE) Toluene	mg/kg	146 93	3697 137	143 73	1848 86	151 J 104	38 7	320 78	88 15	89 40	47 34	39 32	5 5 U	8 8	58 86
trans-1,2-Dichloroethene	mg/kg mg/kg	93 5 U	137 5 U	73 5 U	86 5 U	104 5 U	7 5 U	<b>78</b> 5 U	15 5 U	40 5 U	34 5 U	32 5 U	5 U 5 U	8 5 U	86 5 U
trans-1,2-Dichloropropene	mg/kg mg/kg	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U	5 U 5 U
Trichloroethene (TCE)	mg/kg	1166	15585	<b>649</b>	<b>11500</b>	833	81	<b>1690</b>	98	478	362	240	9	50	<b>668</b>
Trichlorofluoromethane	mg/kg	5 U	13385 5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	502 5 U	5 U	5 U	5 U	5 U
Vinyl chloride	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U

Table 2						
<b>Excavated Soil VOC Waste</b>	e Charac	terization An	alytical Result	s, Site 5 - Unit	2, NAS North	n Island
Sample Identification		818725-071	818725-072	818725-073	818725-074	818725-075
Location Code		Bin 4604	Bin R1939ML	Bin 3149	Bin 274787	Bin R18291ML
Date Sampled		01/04/02	01/04/02	01/04/02	01/04/02	01/04/02
	Unit					

Date Sampled		01/04/02	01/04/02	01/04/02	01/04/02	01/04/02
	Unit					
EPA 8260B						
1,1,1,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	mg/kg	5 U	5 U	5 U	5 U	5 U
1,1-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane	mg/kg	25	79	109	34	33
1,2,4-Trichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	mg/kg	42	83	80	25	13
1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane (EDB)	mg/kg	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	mg/kg	15	26	29	9	9
1,2-Dichloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U
1,3,5-Trimethylbenzene	mg/kg	11	5 U	25	8	5 U
1,3-Dichlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
1,3-Dichloropropane	mg/kg	5 U	5 U	5 U	5 U	5 U 5 U
1,4-Dichlorobenzene	mg/kg	5 U 5 U	6 5 U	<b>8</b> 5 U	5 U 5 U	5 U 5 U
2,2-Dichloropropane 2-Butanone (MEK)	mg/kg	5 U 25 U	5 U 25 U	5 U 25 U	5 U 25 U	5 U 25 U
2-Butanone (MEK) 2-Chlorotoluene	mg/kg	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U	25 U 5 U
2-Hexanone	mg/kg mg/kg	10 U	10 U	10 U	10 U	10 U
4-Chlorotoluene	mg/kg	5 U	10 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	mg/kg	10 U	10 U	10 U	10 U	10 U
Acetone	mg/kg	25 U	25 U	25 U	25 U	25 U
Benzene	mg/kg	25 U	5 U	23 U	25 U	25 U
Bromobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
Bromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Bromoform	mg/kg	5 U	5 U	5 U	5 U	5 U
Bromomethane	mg/kg	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	mg/kg	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	mg/kg	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
Chloroethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Chloroform	mg/kg	5 U	5 U	5 U	5 U	5 U
Chloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene	mg/kg	5 U	8	9	5 U	5 U
cis-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Dibromomethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	mg/kg	5 U	9	9	5 U	5 U
Hexachlorobutadiene	mg/kg	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
m/p-Xylene Methylene chloride	mg/kg	10 5 U	38 5 U	38 5 U	10 U 5 U	10 U 5 U
	mg/kg				5 U 5 U	
N-Butylbenzene	mg/kg	<b>8</b> 5 U	15 9	10		5 U
N-Propylbenzene Naphthalene	mg/kg	5 U 77	9 77	8 67	5 U 27	5 U 19
o-Xylene	mg/kg mg/kg	5 U	18	07 18	27 5 U	5 U
p-Isopropyltoluene		11	20	18	6	6
sec-Butylbenzene	mg/kg mg/kg	11 5 U	20	18	5 U	5 U
Styrene	mg/kg	5 U	5 U	5 U	5 U	5 U
tert-Butylbenzene	mg/kg	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene (PCE)	mg/kg	29	151	109	33	22
Toluene	mg/kg	7	33	43	8	5 U
trans-1,2-Dichloroethene	mg/kg	, 5 U	5 U	-5 5 U	5 U	5 U
trans-1,3-Dichloropropene	mg/kg	5 U	5 U	5 U	5 U	5 U
Trichloroethene (TCE)	mg/kg	63	270	284	77	15
Trichlorofluoromethane	mg/kg	5 U	5 U	5 U	5 U	5 U
Vinyl chloride	mg/kg	5 U	5 U	5 U	5 U	5 U

<u>Explanation</u>: D - dilution E - estimated value over calibration range EPA - United States Environmental Protection Agency J - estimated value mg/kg - milligrams per kilogram U - not detected at or above the stated reporting limit VOC - volatile organic compound

<u>Notes</u>:
Because 10 of the initial waste characterization samples were not analyzed for TCLP within their analysis holding time (even sample numbers 818725-46 through -64), related roll-off bins were resampled and analyzed again for VOCs and TCLP (sample numbers 818725-066 through -075).

Shaw Environmental, Inc.

Shaw Environmental, Inc.

## Table 3Excavated Soil TCLP Waste Characterization Analytical Results

Sample Identification		818725-015	818725-016	818725-017	818725-018	818725-019	818725-020	818725-021	818725-022	818725-023
Location Code		Bin 4873	Bin 4961	Bin 4938	Bin 5060	Bin 5001	Bin 89360	Bin 5326	Bin 5320	Bin 5325
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01
	Unit									
EPA 1311/6010B										
Cadmium	mg/L	0.2	0.5	0.4	0.6	0.5	0.1	2.7	0.8	4.8
Chromium	mg/L	0.1 U	0.1	0.1 U						
Lead	mg/L	1.1	0.3	0.2	0.2	0.6	0.1 U	6.0	4.6	72.7
EPA 1311/8260A										
1,1-Dichloroethene	μg/L	NA	5 U	5 U	NA	5 U	NA	5 U	500 U	25 U
1,2-Dichloroethane	μg/L	NA	2 J	5 U	NA	5 U	NA	0.9 J	41 J	25 U
1,4-Dichlorobenzene	μg/L	NA	14	8	NA	3 J	NA	7	56 J	12 J
2-Butanone (MEK)	μg/L	NA	100 U	100 U	NA	100 U	NA	100 U	10000 U	500 U
Benzene	μg/L	NA	5 U	5 U	NA	5 U	NA	5 U	500 U	25 U
Carbon tetrachloride	μg/L	NA	5 U	5 U	NA	5 U	NA	5 U	500 U	25 U
Chlorobenzene	μg/L	NA	5 U	5 U	NA	5 U	NA	5 U	500 U	25 U
Chloroform	μg/L	NA	5 U	5 U	NA	5 U	NA	5 U	500 U	25 U
Tetrachloroethene (PCE)	μg/L	NA	105	37	NA	85	NA	56	360 J	130
Trichloroethene (TCE)	μg/L	NA	259	36	NA	10	NA	88	4600	110
Vinyl chloride	μg/L	NA	10 U	10 U	NA	10 U	NA	10 U	1000 U	50 U

Sample Identification		818725-024	818725-025	818725-026	818725-027	818725-028	818725-029	818725-030	818725-031	818725-032
Location Code		Bin 5324	Bin 5303	Bin 5321	Bin 89304	Bin 5328	Bin 5329	Bin 89303	Bin 89298	Bin 89300
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01
	Unit									
EPA 1311/6010B										
Cadmium	mg/L	NA	0.1	0.2	NA	NA	NA	NA	NA	0.1 U
Chromium	mg/L	NA	0.1 U	0.1 U	NA	NA	NA	NA	NA	0.1 U
Lead	mg/L	NA	7.4	4.5	NA	NA	NA	NA	NA	0.1 U
EPA 1311/8260A										
1,1-Dichloroethene	μg/L	500 U	130 U	NA	130 U	50 U	130 U	500 U	130 U	5 U
1,2-Dichloroethane	μg/L	1600	130 U	NA	200	50 U	900	39 J	82 J	2 J
1,4-Dichlorobenzene	μg/L	41 J	56 J	NA	68 J	34 J	77 J	48 J	57 J	17
2-Butanone (MEK)	μg/L	10000 U	2500 U	NA	2500 U	1000 U	2200 J	10000 U	64 J	100 U
Benzene	μg/L	500 U	130 U	NA	130 U	50 U	84 J	500 U	130 U	5 U
Carbon tetrachloride	μg/L	500 U	130 U	NA	130 U	50 U	130 U	500 U	130 U	5 U
Chlorobenzene	μg/L	500 U	130 U	NA	130 U	50 U	130 U	500 U	130 U	5 U
Chloroform	μg/L	500 U	130 U	NA	130 U	50 U	130 U	500 U	130 U	5 U
Tetrachloroethene (PCE)	μg/L	430 J	200	NA	1200	1100	7100	4100	3880	70
Trichloroethene (TCE)	μg/L	31400	480	NA	15900	1290	18100	8900	7210	6
Vinyl chloride	μg/L	1000 U	250 U	NA	250 U	100 U	250 U	1000 U	250 U	10 U

# Table 3Excavated Soil TCLP Waste Characterization Analytical Results, Site 5 - Unit 2, NAS North Island

Linea, area bon 10		ve onaraete		ally field flest		<b>• m• - y • m•</b>				
Sample Identification		818725-033	818725-034	818725-035	818725-036	818725-037	818725-038	818725-039	818725-040	818725-041
Location Code		Bin 89302	Bin 89301	Bin 3165	Bin 3167	Bin 3164	Bin 3166	Bin 3162	Bin 5331	Bin 89364
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01	12/14/01
	Unit									
EPA 1311/6010B										
Cadmium	mg/L	NA	0.8	NA	NA	NA	NA	NA	1.1	0.3
Chromium	mg/L	NA	0.1 U	NA	NA	NA	NA	NA	0.1 U	0.1 U
Lead	mg/L	NA	0.5	NA	NA	NA	NA	NA	2.6	0.6
EPA 1311/8260A										
1,1-Dichloroethene	μg/L	250 U	50 U	130 U	500 U	130 U	500 U	130 U	50 U	NA
1,2-Dichloroethane	μg/L	120 J	50 U	2640	160 J	290	800	630	41 J	NA
1,4-Dichlorobenzene	μg/L	250 U	10 J	38 J	65 J	27 J	41 J	40 J	10 J	NA
2-Butanone (MEK)	μg/L	230 J	47 J	11000	10000 U	670 J	670 J	540 J	140 J	NA
Benzene	μg/L	250 U	50 U	85 J	500 U	15 J	500 U	13 J	50 U	NA
Carbon tetrachloride	μg/L	250 U	50 U	130 U	500 U	130 U	500 U	130 U	50 U	NA
Chlorobenzene	μg/L	250 U	50 U	130 U	500 U	130 U	500 U	130 U	50 U	NA
Chloroform	μg/L	250 U	50 U	130 U	500 U	130 U	500 U	130 U	50 U	NA
Tetrachloroethene (PCE)	μg/L	510	730	12200	3000	5290	4200	680	100	NA
Trichloroethene (TCE)	μg/L	3500	240	30300	14800	9090	21600	11200	690	NA
Vinyl chloride	μg/L	500 U	100 U	250 U	1000 U	250 U	1000 U	250 U	100 U	NA

Sample Identification		818725-042	818725-043	818725-044	818725-045	818725-046	818725-047	818725-048	818725-049	818725-050
Location Code		Bin 89306	Bin 89363	Bin 5074	Bin 89305	Bin 5042	Bin 3163	Bin 3140	Bin 5037	Bin 5034
Date Sampled		12/14/01	12/14/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01
	Unit									
EPA 1311/6010B										
Cadmium	mg/L	NA	0.4	NA	NA	NA	NA	NA	NA	0.3
Chromium	mg/L	NA	0.1 U	NA	NA	NA	NA	NA	NA	0.1 U
Lead	mg/L	NA	1.8	NA	NA	NA	NA	NA	NA	1.9
EPA 1311/8260A										
1,1-Dichloroethene	μg/L	500 U	130 U	500 U	130 U	RS	500 U	RS	130 U	RS
1,2-Dichloroethane	μg/L	1500	130 U	210 J	560	RS	1300	RS	64 J	RS
1,4-Dichlorobenzene	μg/L	54 J	31 J	31 J	41 J	RS	65 J	RS	76 J	RS
2-Butanone (MEK)	μg/L	10000 U	2500 U	10000 U	220 J	RS	10000 U	RS	2500 U	RS
Benzene	μg/L	500 U	130 U	500 U	130 U	RS	500 U	RS	130 U	RS
Carbon tetrachloride	μg/L	500 U	130 U	500 U	130 U	RS	500 U	RS	130 U	RS
Chlorobenzene	μg/L	500 U	130 U	500 U	130 U	RS	500 U	RS	130 U	RS
Chloroform	μg/L	500 U	130 U	500 U	130 U	RS	500 U	RS	130 U	RS
Tetrachloroethene (PCE)	μg/L	1000	310	64 J	1100	RS	1300	RS	350	RS
Trichloroethene (TCE)	μg/L	27900	200	3500	23700	RS	69300	RS	3830	RS
Vinyl chloride	μg/L	1000 U	250 U	1000 U	250 U	RS	1000 U	RS	250 U	RS

# Table 3 Excavated Soil TCLP Waste Characterization Analytical Results, Site 5 - Unit 2, NAS North Island

Sample Identification		818725-051	818725-052	818725-053	818725-054	818725-055	818725-056	818725-057	818725-058	818725-059
Location Code		Bin 3168	Bin R1808ML	Bin R1882ML	Bin R1949ML	Bin 4996	Bin 4604	Bin 5256	Bin R1939ML	Bin 4636
Date Sampled		12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01
	Unit									
EPA 1311/6010B										
Cadmium	mg/L	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	0.1 U	NA	NA	NA	NA	NA	NA	NA	NA
Lead	mg/L	4.7	NA	NA	NA	NA	NA	NA	NA	NA
EPA 1311/8260A										
1,1-Dichloroethene	μg/L	130 U	RS	130 U	RS	2500 U	RS	2500 U	RS	1300 U
1,2-Dichloroethane	μg/L	130 U	RS	130 U	RS	740 J	RS	1300 J	RS	250 J
1,4-Dichlorobenzene	μg/L	95 J	RS	61 J	RS	2500 U	RS	2500 U	RS	1300 U
2-Butanone (MEK)	μg/L	2500 U	RS	2500 U	RS	50000 U	RS	50000 U	RS	25000 U
Benzene	μg/L	130 U	RS	130 U	RS	2500 U	RS	2500 U	RS	1300 U
Carbon tetrachloride	μg/L	130 U	RS	130 U	RS	2500 U	RS	2500 U	RS	1300 U
Chlorobenzene	μg/L	130 U	RS	130 U	RS	2500 U	RS	2500 U	RS	1300 U
Chloroform	μg/L	130 U	RS	130 U	RS	2500 U	RS	2500 U	RS	1300 U
Tetrachloroethene (PCE)	μg/L	100 J	RS	200	RS	5000	RS	2500 J	RS	3400
Trichloroethene (TCE)	μg/L	200	RS	1800	RS	47000	RS	65700	RS	23000
Vinyl chloride	μg/L	250 U	RS	250 U	RS	5000 U	RS	5000 U	RS	2500 U

Sample Identification		818725-060	818725-061	818725-062	818725-063	818725-064	818725-065	818725-066	818725-067	818725-068
Location Code		Bin 3149	Bin R1914ML	Bin 274787	Bin 89362	Bin R18291ML	Bin 5187	Bin 5042	Bin 3140	Bin 5034
Date Sampled		12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	12/15/01	01/04/02	01/04/02	01/04/02
	Unit									
EPA 1311/6010B										
Cadmium	mg/L	NA	NA	NA	NA	0.3	NA	NA	NA	NA
Chromium	mg/L	NA	NA	NA	NA	0.1 U	NA	NA	NA	NA
Lead	mg/L	NA	NA	NA	NA	2.2	NA	NA	NA	NA
EPA 1311/8260A										
1,1-Dichloroethene	μg/L	RS	500 U	RS	1300 U	RS	1000 U	500 U	500 U	25 U
1,2-Dichloroethane	μg/L	RS	53 J	RS	250 J	RS	150 J	240 J	500 U	25 U
1,4-Dichlorobenzene	μg/L	RS	77 J	RS	210 J	RS	1000 U	50 J	57 J	30
2-Butanone (MEK)	μg/L	RS	10000 U	RS	25000 U	RS	20000 U	10000 U	10000 U	500 U
Benzene	μg/L	RS	500 U	RS	1300 U	RS	1000 U	500 U	500 U	25 U
Carbon tetrachloride	μg/L	RS	500 U	RS	1300 U	RS	1000 U	500 U	500 U	25 U
Chlorobenzene	μg/L	RS	500 U	RS	1300 U	RS	1000 U	500 U	500 U	25 U
Chloroform	μg/L	RS	500 U	RS	1300 U	RS	1000 U	500 U	500 U	25 U
Tetrachloroethene (PCE)	μg/L	RS	1400	RS	9000	RS	1000	300 J	220 J	63
Trichloroethene (TCE)	μg/L	RS	7000	RS	32400	RS	17000	7100	4800	120
Vinyl chloride	μg/L	RS	1000 U	RS	2500 U	RS	2000 U	1000 U	1000 U	50 U

## Table 3Excavated Soil TCLP Waste Characterization Analytical Results

Sample Identification		818725-069	818725-070	818725-071	818725-072	818725-073	818725-074	818725-075
Location Code		Bin R1808ML	Bin R1949ML	Bin 4604	Bin R1939	Bin 3149	Bin 274787	Bin R18291ML
Date Sampled		01/04/02	01/04/02	01/04/02	01/04/02	01/04/02	01/04/02	01/04/02
	Unit							
EPA 1311/6010B								
Cadmium	mg/L	NA	NA	NA	NA	NA	NA	NA
Chromium	mg/L	NA	NA	NA	NA	NA	NA	NA
Lead	mg/L	NA	NA	NA	NA	NA	NA	NA
EPA 1311/8260A								
1,1-Dichloroethene	μg/L	100 U	500 U	500 U	500 U	500 U	50 U	100 U
1,2-Dichloroethane	μg/L	26 J	160 J	500 U	500 U	500 U	11 J	100 U
1,4-Dichlorobenzene	μg/L	55 J	83 J	98 J	76 J	120 J	26 J	40 J
2-Butanone (MEK)	μg/L	2000 U	10000 U	10000 U	10000 U	10000 U	1000 U	2000 U
Benzene	μg/L	100 U	500 U	500 U	500 U	500 U	50 U	100 U
Carbon tetrachloride	μg/L	100 U	500 U	500 U	500 U	500 U	50 U	100 U
Chlorobenzene	μg/L	100 U	500 U	500 U	500 U	500 U	50 U	100 U
Chloroform	μg/L	100 U	500 U	500 U	500 U	500 U	50 U	100 U
Tetrachloroethene (PCE)	μg/L	210	440 J	1300	1800	1300	410	270
Trichloroethene (TCE)	μg/L	3000	9900	5200	9600	6500	1490	430
Vinyl chloride	μg/L	200 U	1000 U	1000 U	1000 U	1000 U	100 U	200 U

### Explanation :

EPA - United States Environmental Protection Agency

J - estimated value

mg/L - milligrams per liter

NA - not analyzed

RS - resampled because laboratory holding time exceeded

TCLP - toxicity characteristic leaching procedure

U - not detected at or above the stated reporting limit

 $\mu$ g/L - micrograms per liter

### Notes :

1. Because 10 of the initial waste characterization samples were not analyzed for TCLP within their analysis holding time (even sample numbers 818725-46 through -64), related roll-off bins were resampled and analyzed again for VOCs and TCLP (sample numbers 818725-066 through -075).

Shaw Environmental, Inc.

# Table 4Excavated Soil Pesticides Screening Analytical Results

Sample Identification		818725-015	818725-025	818725-035	818725-043	818725-047	818725-053	818725-055	818725-061	818725-072
Location Code		Bin 4873	Bin 5303	Bin 3165	Bin 89363	Bin 3163	Bin R1882ML	Bin 4996	Bin R1914ML	Bin R1939
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/15/01	12/15/01	12/15/01	12/15/01	01/04/02
	Unit									
EPA 8081										
4,4'-DDD	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
4,4'-DDE	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
4,4'-DDT	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
Aldrin	µg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
alpha-BHC	µg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
alpha-Chlordane	µg/kg	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U
Beta-BHC	µg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
Delta-BHC	µg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
Dieldrin	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
Endosulfan I	µg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
Endosulfan II	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
Endosulfan sulfate	µg/kg	50 U	500 U	50 U	50 U	50 U	50 U	50 U	50 U	500 U
Endrin	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
Endrin aldehyde	µg/kg	30 U	300 U	30 U	30 U	30 U	30 U	30 U	30 U	300 U
Endrin ketone	µg/kg	20 U	200 U	20 U	20 U	20 U	20 U	20 U	20 U	200 U
gamma-BHC	µg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
gamma-Chlordane	µg/kg	10 U	100 U	10 U	10 U	10 U	10 U	10 U	10 U	100 U
Heptachlor	μg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
Heptachlor epoxide	μg/kg	17 U	170 U	17 U	17 U	17 U	17 U	17 U	17 U	170 U
Methoxychlor	μg/kg	100 U	1000 U	100 U	100 U	100 U	100 U	100 U	100 U	1000 U
Toxaphene	μg/kg	1000 U	10000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	10000 U

### Explanation :

EPA - United States Environmental Protection Agency

U - not detected at or above the stated reporting limit

µg/kg - micrograms per kilogram

Shaw Environmental, Inc.

# Table 5Excavated Soil PCB Screening Analytical Results

Sample Identification		818725-015	818725-025	818725-035	818725-043	818725-047	818725-053	818725-055	818725-061	818725-072
Location Code		Bin 4873	Bin 5303	Bin 3165	Bin 89363	Bin 3163	Bin R1882ML	Bin 4996	Bin R1914ML	Bin R1939
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/15/01	12/15/01	12/15/01	12/15/01	01/04/02
	Unit									
EPA 8082										
Aroclor-1016	mg/kg	0.033 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	3.3 U
Aroclor-1221	mg/kg	0.066 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	0.66 U	6.6 U
Aroclor-1232	mg/kg	0.033 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	3.3 U
Aroclor-1242	mg/kg	0.033 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	3.3 U
Aroclor-1248	mg/kg	0.033 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	3.3 U
Aroclor-1254	mg/kg	0.033 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	0.33 U	3.3 U
Aroclor-1260	mg/kg	0.067	0.85	1.7	0.8	0.2 J	0.59	0.41	0.95	2.1 J

#### **Explanation**:

EPA - United States Environmental Protection Agency

J - estimated value

PCB - polychlorinated biphenyl

U - not detected at or above the stated reporting limit

µg/kg - micrograms per kilogram

### Table 6Excavated Soil SVOC Screening Analytical Results

Sample Identification Location Code		818725-015 Bin 4873	818725-025 Bin 5303	818725-035 Bin 3165	818725-043 Bin 89363	818725-047 Bin 3163	818725-049 Bin 5037	818725-053 Bin R1882ML
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/15/01	12/15/01	12/15/01
EPA 8270	Unit							
1,2,4-Trichlorobenzene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
1,2-Dichlorobenzene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
1,3-Dichlorobenzene	mg/kg	4.5 U	45 U	90 U 90 U	45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
1,4-Dichlorobenzene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
2,4,5-Trichlorophenol	mg/kg	4.5 U	45 U	90 U	45 U	49.95 U	49.95 U	45 U
2,4,6-Trichlorophenol	mg/kg	4.5 U	45 U	90 U	45 U	49.95 U	49.95 U	45 U
2,4-Dichlorophenol	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
2,4-Dimethylphenol	mg/kg	4.5 U	45 U	240	45 U	158	130	45 U
2,4-Dinitrophenol	mg/kg	4.5 U	45 U	90 U	45 U	49.95 U	49.95 U	45 U
2,4-Dinitrotoluene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
2,6-Dinitrotoluene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
2-Chloronaphthalene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
2-Chlorophenol	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
2-Methylnaphthalene	mg/kg	4.5 U	128	240	<b>87</b>	248	234	74
2-Methylphenol	mg/kg	4.5 U	45 U	210	58	240	170	45 U
2-Nitroaniline	mg/kg	4.5 U	45 U	90 U	45 U	49.95 U	49.95 U	45 U
2-Nitrophenol	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
3,3'-Dichlorobenzidine	mg/kg	4.5 U	45 U	90 U 90 U	45 U	9.99 U	9.99 U 9.99 U	45 U
3-Nitroaniline	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	9.99 U 49.95 U	49.95 U	45 U
4,6-Dinitro-2-Methylphenol	mg/kg	4.5 U	45 U	90 U 90 U	45 U	49.95 U	49.95 U	45 U
4-Bromophenyl phenyl ether	mg/kg	4.5 U 4.5 U	43 U 45 U	90 U 90 U	43 U 45 U	49.93 U 9.99 U	49.93 U 9.99 U	43 U 45 U
4-Chloro-3-Methylphenol	mg/kg	4.5 U	45 U	90 U 90 U	45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
4-Chloroaniline	mg/kg	4.5 U	45 U	90 U 90 U	45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
4-Chlorophenyl phenyl ether	mg/kg	4.5 U	45 U	90 U 90 U	45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
4-Methylphenol		4.5 U	45 U	90 0 120	45 U 45 U	313	9.99 0 272	45 U
4-Nitroaniline	mg/kg mg/kg	4.5 U	45 U	90 U	45 U	49.95 U	49.95 U	45 U
4-Nitrophenol	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	49.95 U	49.95 U 49.95 U	45 U
Acenaphthene	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	49.95 U 9.99 U	49.95 U 9.99 U	45 U
Acenaphthylene	mg/kg	4.5 U 4.5 U	43 U 45 U	90 U 90 U	43 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	43 U 45 U
Aniline	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
Anthracene	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
Benzidine	mg/kg	4.5 U	45 U	90 U 90 U	45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
Benzo[a]anthracene	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U
		4.5 U 4.5 U	43 U 45 U	90 U 90 U	43 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	43 U 45 U
Benzo[a]pyrene	mg/kg			90 U 90 U	43 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	43 U 45 U
Benzo[b]fluoranthene	mg/kg	4.5 U	45 U 45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
Benzo[ghi]perylene	mg/kg	4.5 U 4.5 U		90 U 90 U		9.99 U 9.99 U	9.99 U 9.99 U	43 U 45 U
Benzo[k]fluoranthene	mg/kg		45 U		45 U			
Benzoic acid	mg/kg	4.5 U	45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
Benzyl alcohol	mg/kg	4.5 U	45 U	90 U 90 U		9.99 U 9.99 U		43 U 45 U
Bis (2-chloroethoxy)methane	mg/kg	4.5 U	45 U		45 U	9.99 U 9.99 U	9.99 U 9.99 U	
Bis (2-chloroethyl)ether	mg/kg	4.5 U 4.5 U	45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
Bis (2-chloroisopropyl)ether	mg/kg		45 U	90 U 90 U			9.99 U 9.99 U	43 U 45 U
Bis (2-ethylhexyl)phthalate	mg/kg	4.5 U	45 U		45 U	25.6		
Butyl benzyl phthalate	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U 9.99 U	45 U
Chrysene Dia batal abthalata	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U		45 U
Di-n-butyl phthalate	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Di-n-octyl phthalate	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
Dibenz[a,h]anthracene Dibenzofuran	mg/kg	4.5 U	45 U 45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
Dibenzofuran Diethyl phthalate	mg/kg	4.5 U 4.5 U	45 U 45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
2.1	mg/kg							
Dimethyl phthalate Fluoranthene	mg/kg	4.5 U 4.5 U	45 U 45 U	90 U 90 U	45 U 45 U	9.99 U 9.99 U	9.99 U 9.99 U	45 U 45 U
	mg/kg							
Fluorene	mg/kg	4.5 U	45 U	90 U	45 U	61.6	40.4	45 U
Hexachlorobenzene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Hexachlorobutadiene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Hexachlorocyclopentadiene	mg/kg	4.5 U	45 U	90 U	45 U 45 U	9.99 U	9.99 U 9.99 U	45 U
Hexachloroethane	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U		45 U
Indeno[1,2,3-cd]pyrene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Isophorone	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
N-Nitrosodi-n-propylamine	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
N-Nitrosodimethylamine	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
N-Nitrosodiphenylamine	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Naphthalene	mg/kg	4.5 U	58	90 U	45 U	<b>197</b>	<b>199</b>	80 45 JJ
Nitrobenzene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Pentachlorophenol	mg/kg	4.5 U	45 U	90 U	45 U	49.95 U	49.95 U	45 U
Phenanthrene	mg/kg	4.5 U	45 U	90 U	45 U	48.4	25.6	45 U
Phenol	mg/kg	4.5 U	45 U	147	45 U	67.2	132	45 U
Pyrene	mg/kg	4.5 U	45 U	90 U	45 U	9.99 U	9.99 U	45 U
Pyridine	mg/kg	30 U	300 U	600 U	300 U	9.99 U	9.99 U	300 U

#### Shaw Environmental, Inc.

### Table 6Excavated Soil SVOC Screening Analytical Results

Excuvated Son SVOC S		-	
Sample Identification		818725-061	818725-072
Location Code		Bin R1914ML	Bin R1939
Date Sampled	Unit	12/15/01	01/04/02
EPA 8270	Unit		
1,2,4-Trichlorobenzene	mg/kg	45 U	5 U
1,2-Dichlorobenzene	mg/kg	45 U	14
1,3-Dichlorobenzene	mg/kg	45 U	5 U
1,4-Dichlorobenzene	mg/kg	45 U	5 U
2,4,5-Trichlorophenol	mg/kg	45 U	5 U
2,4,6-Trichlorophenol	mg/kg	45 U	5 U
2,4-Dichlorophenol	mg/kg	45 U	5 U
2,4-Dimethylphenol	mg/kg	45 U	5 U
2,4-Dinitrophenol	mg/kg	45 U	5 U
2,4-Dinitrotoluene 2,6-Dinitrotoluene	mg/kg	45 U 45 U	5 U 5 U
2-Chloronaphthalene	mg/kg mg/kg	43 U 45 U	5 U
2-Chlorophenol	mg/kg	45 U	5 U
2-Methylnaphthalene	mg/kg	<b>59</b>	112
2-Methylphenol	mg/kg	45 U	18
2-Nitroaniline	mg/kg	45 U	5 U
2-Nitrophenol	mg/kg	45 U	5 U
3,3'-Dichlorobenzidine	mg/kg	45 U	5 U
3-Nitroaniline	mg/kg	45 U	5 U
4,6-Dinitro-2-Methylphenol	mg/kg	45 U	5 U
4-Bromophenyl phenyl ether	mg/kg	45 U	5 U
4-Chloro-3-Methylphenol	mg/kg	45 U	5 U
4-Chloroaniline	mg/kg	45 U	5 U
4-Chlorophenyl phenyl ether	mg/kg	45 U	5 U
4-Methylphenol 4-Nitroaniline	mg/kg mg/kg	45 U 45 U	19 5 U
4-Nitrophenol	mg/kg	43 U 45 U	5 U
Acenaphthene	mg/kg	45 U	18
Acenaphthylene	mg/kg	45 U	5 U
Aniline	mg/kg	45 U	5 U
Anthracene	mg/kg	45 U	5 U
Benzidine	mg/kg	45 U	5 U
Benzo[a]anthracene	mg/kg	45 U	5 U
Benzo[a]pyrene	mg/kg	45 U	5 U
Benzo[b]fluoranthene	mg/kg	45 U	5 U
Benzo[ghi]perylene	mg/kg	45 U	5 U
Benzo[k]fluoranthene	mg/kg	45 U	5 U
Benzoic acid Benzyl alcohol	mg/kg	45 U 45 U	5 U 5 U
Bis (2-chloroethoxy)methane	mg/kg mg/kg	45 U	5 U
Bis (2-chloroethyl)ether	mg/kg	45 U	5 U
Bis (2-chloroisopropyl)ether	mg/kg	45 U	5 U
Bis (2-ethylhexyl)phthalate	mg/kg	45 U	5 U
Butyl benzyl phthalate	mg/kg	45 U	5 U
Chrysene	mg/kg	45 U	5 U
Di-n-butyl phthalate	mg/kg	45 U	10 U
Di-n-octyl phthalate	mg/kg	45 U	5 U
Dibenz[a,h]anthracene	mg/kg	45 U	5 U
Dibenzofuran	mg/kg	45 U	14
Diethyl phthalate	mg/kg	45 U	5 U
Dimethyl phthalate Fluoranthene	mg/kg	45 U	5 U 5 U
Fluorene	mg/kg mg/kg	45 U 45 U	8
Hexachlorobenzene	mg/kg	45 U	5 U
Hexachlorobutadiene	mg/kg	45 U	5 U
Hexachlorocyclopentadiene	mg/kg	45 U	5 U
Hexachloroethane	mg/kg	45 U	5 U
Indeno[1,2,3-cd]pyrene	mg/kg	45 U	5 U
Isophorone	mg/kg	45 U	5 U
N-Nitrosodi-n-propylamine	mg/kg	45 U	5 U
N-Nitrosodimethylamine	mg/kg	45 U	5 U
N-Nitrosodiphenylamine	mg/kg	45 U	5 U
Naphthalene	mg/kg	45 U	45
Nitrobenzene	mg/kg	45 U	5 U
Pentachlorophenol	mg/kg	45 U 45 U	5 U
Phenanthrene Phenol	mg/kg	45 U 45 U	5 10
Pyrene	mg/kg mg/kg	43 U 45 U	10 5 U
Pyridine	mg/kg	45 U 300 U	20 U
	mg/ng	500 0	20 0

EPA - United States Environmental Protection Agency mg/kg - milligrams per kilogram SVOC - semivolatile organic compound U - not detected at or above the stated reporting limit

Shaw Environmental, Inc.

# Table 7Exacavated Soil Metals Screening Analytical Results

Sample Identification		818725-015	818725-025	818725-035	818725-043	818725-047	818725-053	818725-055	818725-061	818725-072
Location Code		Bin 4873	Bin 5303	Bin 3165	Bin 89363	Bin 3163	Bin R1882ML	Bin 4996	Bin R1914ML	Bin R1939
Date Sampled		12/14/01	12/14/01	12/14/01	12/14/01	12/15/01	12/15/01	12/15/01	12/15/01	01/04/02
	Unit									
EPA 6010										
Antimony	mg/kg	5 U	5 U	5 U	5 U	89	5 U	5 U	5 U	5 U
Arsenic	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Barium	mg/kg	90	24	49	18	<b>97</b>	41	52	25	28
Beryllium	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Cadmium	mg/kg	8	5 U	96	12	77	21	56	15	22
Chromium	mg/kg	27	21	172	25	<b>487</b>	177	229	38	72
Cobalt	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Copper	mg/kg	98	39	163	32	272	143	481	33	49
Lead	mg/kg	178	284	862	129	1510	632	662	198	272
Molybdenum	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	6	5 U	5 U
Nickel	mg/kg	16	5 U	21	5 U	25	14	14	6	8
Selenium	mg/kg	10 U	10 U	10 U	10 U					
Silver	mg/kg	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Thallium	mg/kg	10 U	10 U	10 U	10 U					
Vanadium	mg/kg	22	11	12	10	11	11	15	12	12
Zinc	mg/kg	264	36	483	66	693	221	587	125	156
<b>EPA 7471A</b>										
Mercury	mg/kg	0.1	0.1 U	0.1	0.1 U	0.3	0.1 U	0.1 U	0.1	0.3

#### Explanation :

EPA - United States Environmental Protection Agency

mg/kg - milligrams per kilogram

U - not detected at or above the stated reporting limit

### Table 8 Groundwater VOC Analytical Results for Treatment Area Monitoring Wells

Sample Event		Baseline		rim #1	Interim #2	Interim #3	30-Da	ay Post	48-Day Post	MNA Post #3	Fi	nal	Baseline	Interim #1	Interim #2	Interim #3
ample Identification		818725-96	818725-129	818725-130 (Dup)	818725-154	818725-157	818725-171	818725-172 (Dup)	818725-196	818725-223	818725-242	818725-243 (Dup)	818725-80	818725-139	818725-148	
ocation Code		S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-25	S5-MW-25	S5-MW-25	S5-MW-25
ate Sampled	TT-14	05/20/02	08/13/02	08/13/02	10/24/02	01/07/03	03/26/03	03/26/03	04/09/03	06/05/03	07/09/03	07/09/03	05/14/02	08/14/02	10/23/02	
SW8260B	Unit															
1,1,2-Tetrachloroethane	μg/L	1.000 U	500 U	500 U	500 U	10,000 U	1.000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS <sup>1</sup>
,1,1-Trichloroethane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS <sup>1</sup>
1,2,2-Tetrachloroethane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS <sup>1</sup>
1,2-Trichloro-1,2,2-trifluoroethane	μg/L	1,000 U	500 U	500 U	500 U	NA	1,000 U	500 UJ	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS <sup>1</sup>
,2-Trichloroethane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
1-Dichloroethane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
I-Dichloroethene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
I-Dichloropropene 2,3-Trichlorobenzene	μg/L	1,000 U 1,000 U	500 U 500 U	500 U 500 U	500 U 500 U	10,000 U 20,000 U	1,000 U 1,000 U	500 U 500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	NS
2,3-Trichloropropane	μg/L μg/L	1,000 U 1,000 U	500 U	500 U	500 U	10,000 U	<b>3,300</b>	2,200	5,900 U	2,500 U 1,900 J	2,500 U 2,500 U	2,500 U	120 U	100 U 100 U	25 U 25 U	NS NS
2.4-Trichlorobenzene	μg/L μg/L	1,000 U	500 U	500 U	500 U	20,000 U	1.000 U	500 U	2,500 U	2.500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
2,4-Trimethylbenzene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
2-Dibromo-3-chloropropane (DBCP)	μg/L	2,000 U	1,000 U	1,000 U	1,000 U	20,000 U	2,000 U	1,000 U	5,000 U	5,000 U	5,000 U	5,000 U	250 U	200 U	50 U	NS
2-Dibromoethane (EDB)	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
-Dichlorobenzene	μg/L	1,000 U	500 U	170 J	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	19 J	NS
2-Dichloroethane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
-Dichloropropane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
5,5-Trimethylbenzene	μg/L	1,000 U 1,000 U	500 U 500 U	500 U 500 U	500 U 500 U	10,000 U 10,000 U	1,000 U 1,000 U	500 U 500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	NS
3-Dichloropropane	μg/L μg/L	1,000 U 1,000 U	500 U 500 U	500 U 500 U	500 U 500 U	10,000 U 10,000 U	1,000 U 1.000 U	500 U 500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	NS
4-Dichlorobenzene	μg/L μg/L	1,000 U 1.000 U	500 U	500 U	500 U	10,000 U 10,000 U	1,000 U	500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U	2,500 U	120 U	100 U 100 U	25 U 25 U	NS NS
2-Dichloropropane	μg/L μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS NS
Butanone (MEK)	μg/L	5,000 R	2,500 U	2,500 U	2,500 U	200,000 U	5,000 U	2,500 UJ	12,000 U	12,000 U	12,000 U	12,000 U	620 R	500 U	120 U	NS
Chlorotoluene	µg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
Hexanone	μg/L	5,000 U	2,500 U	2,500 U	2,500 U	20,000 U	5,000 U	2,500 U	12,000 U	12,000 U	12,000 U	12,000 U	620 U	500 U	120 U	NS
Chlorotoluene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
Methyl-2-pentanone (MIBK)	μg/L	5,000 U	2,500 U	2,500 U	2,500 U	20,000 U	5,000 U	2,500 U	12,000 U	12,000 U	12,000 U	12,000 U	620 U	500 U	120 U	NS
etone	μg/L	10,000 R	5,000 U	5,000 U	5,000 U 500 U	200,000 U	15,000	9,000 J	<b>31,000</b>	9,600 J	25,000 U 2,500 U	25,000 U	1,200 R	1,000 U	250 U	NS
nzene omobenzene	μg/L μg/L	1,000 U 1,000 U	500 U 500 U	500 U 500 U	500 U 500 U	10,000 U 10,000 U	1,000 U 1.000 U	500 U 500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	NS
omochloromethane	μg/L μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U 2,500 U	2,500 U	2,500 U	120 U	100 U 100 U	25 U	NS NS
omodichloromethane	μg/L μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
omoform	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
omomethane	µg/L	2,000 UJ	1,000 U	1,000 U	1,000 U	20,000 U	2,000 U	1,000 U	5,000 U	5,000 U	5,000 U	5,000 U	250 UJ	200 U	50 U	NS
rbon disulfide	μg/L	1,000 U	500 U	500 U	500 U	20,000 U	1,000 U	500 UJ	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
rbon tetrachloride	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
lorobenzene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
hloroethane	μg/L	2,000 U	1,000 U	1,000 U	1,000 U	10,000 U	2,000 U	1,000 U	5,000 U	5,000 U	5,000 U	5,000 U	250 U	200 U	50 U	NS
lloroform lloromethane	μg/L μg/L	1,000 U 2,000 UJ	500 U 1,000 U	500 U 1,000 U	500 U 1,000 U	10,000 U 10,000 U	1,000 U 2.000 U	500 U 1,000 U	2,500 U 5,000 U	2,500 U 5,000 U	2,500 U 5,000 U	2,500 U 5,000 U	120 U 250 UJ	100 U 200 U	25 U 50 U	NS <sup>1</sup>
s-1,2-Dichloroethene	μg/L μg/L	61,000 CJ	12,000 C	13,000 0	27,000	27,300	2,000 0 23,000	1,000 0 14,000	110,000	82.000	110,000 U	110,000 C	1,400	350	67	NS <sup>1</sup> NS <sup>1</sup>
-1,3-Dichloropropene	μg/L μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
promochloromethane	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
promomethane	µg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
chlorodifluoromethane	μg/L	2,000 U	1,000 U	1,000 U	1,000 U	10,000 U	2,000 U	1,000 UJ	5,000 U	5,000 U	5,000 U	5,000 U	250 U	200 U	50 U	NS
lylbenzene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
xachlorobutadiene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
propylbenzene (Cumene)	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
p-Xylene http://tert-butyl.ether (MTBE)	μg/L μg/I	1,000 U 1,000 U	500 U 500 U	500 U 500 U	500 U 500 U	20,000 U NA	1,000 U 1,000 U	500 U 500 UJ	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	NS
thylene chloride	μg/L μg/L	1,000 U 1,000 U	500 U 500 U	500 U 500 U	500 U 500 U	NA 10,000 U	1,000 U 1,000 U	500 UJ 500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	NS NS
Butylbenzene	μg/L μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U 2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS NS
Propylbenzene	μg/L	1,000 U	500 U	500 U	500 U	20,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
bhthalene	μg/L	1,000 U	410 J	500 U	250 J	30,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	150	25 U	NS
ylene	μg/L	1,000 U	100 J	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	N
opropyltoluene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	N
Butylbenzene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	N
rene D ( II	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	NS
-Butylbenzene	μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	N
rachloroethene (PCE) luene	μg/L ug/I	1,000 U <b>1,500</b>	500 U <b>730</b>	500 U 740	500 U <b>1,100</b>	10,000 U 10,000 U	1,000 U <b>600 J</b>	500 U 330 J	2,500 U 2,500 U	2,500 U <b>920 J</b>	2,500 U <b>1,600 J</b>	2,500 U <b>1,800 J</b>	120 U 56 J	100 U <b>36 J</b>	25 U 25 U	N
uene 1s-1,2-Dichloroethene	μg/L μg/I	1,500 960 J	730 500 U	740 160 J	1,100 200 J	10,000 U 10,000 U	600 J 510 J	330 J 300 J	2,500 U 2,500 U	920 J 2,500 U	1,600 J 2,500 U	1,800 J 2,500 U	56 J 120 U	<b>36 J</b> 100 U	25 U 25 U	N
ns-1,2-Dichloropropene	μg/L μg/L	1,000 U	500 U	500 U	200 J 500 U	10,000 U 10,000 U	1,000 U	500 J 500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	2,500 U 2,500 U	120 U 120 U	100 U 100 U	25 U 25 U	N: N:
chloroethene (TCE)	μg/L μg/L	1,000 U	500 U	500 U	500 U	10,000 U	1,000 U	500 U	2,500 U	2,500 U	2,500 U	2,500 U	120 U	100 U	25 U	IN: N
ichlorofluoromethane	μg/L	2,000 U	1,000 U	1,000 U	1,000 U	10,000 U	2,000 U	1,000 U	5,000 U	5,000 U	5,000 U	5,000 U	250 U	200 U	50 U	NS
nyl chloride	μg/L	51,000	20,000	22,000	19,000	32,200	1,100	660	2,300 J	6,500	13,000	14,000	6,500	3,500	2,400	NS
otal Detected VOCs		114,460	33,240	36,070	47,550	59,500	43,510	26,490	149,200	100,920	124,600	125,800	7,956	4,036	2,486	N/.

Table 8
Groundwater VOC Analytical Results for Treatment Area Monitoring Wells, Site 5 - Unit 2, NAS North Island

Sample Event		30-Day Post	48-Da	ay Post	MNA Post #3	Final	Baseline	Interim #1	Interim #2	Interim #3	30-Day Post	48-Day Post	Final	Baseline		rim #1
Sample Identification		818725-170	818725-194	818725-195 (Dup)	818725-221	818725-237	818725-78	818725-135	818725-143	818725-156	818725-169			818725-79	818725-136	818725-137 (Dup
ocation Code		S5-MW-25	S5-MW-25	S5-MW-25	S5-MW-25	S5-MW-25	S5-MW-26	S5-MW-26	S5-MW-26	S5-MW-26	S5-MW-26	S5-MW-26	S5-MW-26	S5-MW-28	S5-MW-28	S5-MW-28
Date Sampled	<b>T</b> T 14	03/26/03	04/09/03	04/09/03	06/05/03	07/08/03	05/14/02	08/14/02	10/23/02	01/07/03	03/25/03			05/14/02	08/14/02	08/14/02
SW8260B	Unit															
,1,1,2-Tetrachloroethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10.000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
1,1,1-Trichloroethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,1,2,2-Tetrachloroethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,1,2-Trichloro-1,2,2-trifluoroethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	NA	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,1,2-Trichloroethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,1-Dichloroethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,1-Dichloroethene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,1-Dichloropropene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,2,3-Trichlorobenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	20,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,2,3-Trichloropropane	μg/L	1,000 J	930 J	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
,2,4-Trichlorobenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	20,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
1,2,4-Trimethylbenzene	μg/L	2,500 U 5,000 U	1,200 U 2,500 U	1,200 U	12 U	6.2 U 12 U	<b>90 J</b> 500 U	500 U 1.000 U	250 U	10,000 U 20,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U 500 U
1,2-Dibromo-3-chloropropane (DBCP) 1,2-Dibromoethane (EDB)	μg/L	2,500 U	2,300 U 1,200 U	2,500 R 1,200 U	25 U 12 U	6.2 U	250 U	1,000 U 500 U	500 U 250 U	20,000 U 10,000 U	3,000 μg/kg U G 1,500 μg/kg U G	$NS^2$	NS <sup>2</sup>	1,000 U 500 U	500 U 250 U	250 U
1,2-Dichlorobenzene	μg/L μg/L	2,500 U 2,500 U	1,200 U	1,200 U	12 0	0.2 U 10	250 U 250 U	500 U	230 U 93 J	10,000 U	1,500 µg/kg U G	$NS^2$	NS <sup>2</sup>	500 U	250 U	250 U 250 U
,2-Dichloroethane	μg/L μg/L	2,500 U	1,200 U	1,200 U 1,200 UJ	13 12 U	2.7 J	250 U 250 U	500 U	250 U	10,000 U 10.000 U	1,500 µg/kg U G	$NS^2$	NS <sup>2</sup> NS <sup>2</sup>	500 U	250 U	250 U
1,2-Dichloropropane	μg/L μg/L	2,500 U 2,500 U	1,200 U	1,200 UJ 1,200 U	12 U 12 U	6.2 U	250 U 250 U	500 U	250 U 250 U	10,000 U	1,500 μg/kg U G	NS <sup>2</sup> NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U 250 U
1,3,5-Trimethylbenzene	μg/L μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	56 J	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS NS <sup>2</sup>	500 U	250 U	250 U
1,3-Dichlorobenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
1,3-Dichloropropane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
I,4-Dichlorobenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	1.9 J	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
2,2-Dichloropropane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
2-Butanone (MEK)	μg/L	12,000 U	6,200 U	6,200 R	62 U	31 U	1,200 R	2,500 U	1,200 U	200,000 U	7,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	2,500 R	1,200 U	1,200 U
2-Chlorotoluene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
2-Hexanone	μg/L	12,000 U	6,200 U	6,200 U	62 U	31 U	1,200 U	2,500 U	1,200 U	20,000 U	7,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	2,500 U	1,200 U	1,200 U
l-Chlorotoluene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
-Methyl-2-pentanone (MIBK)	μg/L	12,000 U	6,200 U	6,200 UJ	62 U	31 U	1,200 U	2,500 U	1,200 U	20,000 U	7,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	2,500 U	1,200 U	1,200 U
Acetone	μg/L	25,000 U	12,000 U	12,000 R	120 U	62 U	2,500 R	5,000 U	2,500 U	200,000 U	8,100 μg/kg B G P	NS <sup>2</sup>	NS <sup>2</sup>	5,000 R	2,500 U	2,500 U
Benzene	μg/L	2,500 U	1,200 U	1,200 U	4.5 J	4 J	120 J	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Bromobenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Bromochloromethane Bromodichloromethane	μg/L	2,500 U 2,500 U	1,200 U 1,200 U	1,200 U 1,200 U	12 U 12 U	6.2 U 6.2 U	250 U 250 U	500 U 500 U	250 U 250 U	10,000 U 10,000 U	1,500 μg/kg U G 1,500 μg/kg U G	$NS^2$	NS <sup>2</sup>	500 U 500 U	250 U 250 U	250 U 250 U
Bromoform	μg/L μg/L	2,500 U 2,500 U	1,200 U	1,200 U	12 U 12 U	6.2 U	250 U 250 U	500 U	250 U 250 U	10,000 U	1,500 µg/kg U G	$NS^2$	NS <sup>2</sup> NS <sup>2</sup>	500 U	250 U	250 U 250 U
Bromomethane	μg/L μg/L	5,000 U	2,500 U	2,500 U	25 U	12 U	500 U	1.000 U	500 U	20,000 U	3,000 µg/kg U G	NS <sup>2</sup> NS <sup>2</sup>	NS NS <sup>2</sup>	1,000 UJ	500 U	500 U
Carbon disulfide	μg/L μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	20,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Carbon tetrachloride	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Chlorobenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	1.9 J	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Chloroethane	μg/L	5,000 U	2,500 U	2,500 U	18 J	27	500 U	1,000 U	500 U	10,000 U	3,000 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	1,000 U	500 U	500 U
Chloroform	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Chloromethane	μg/L	5,000 U	2,500 U	2,500 U	25 U	3.7 J	500 U	1,000 U	500 U	10,000 U	3,000 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	1,000 UJ	500 U	500 U
cis-1,2-Dichloroethene	μg/L	130,000	58,000	62,000	250	110	1,400	980	2,200	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	5,100	1,000	710
cis-1,3-Dichloropropene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Dibromochloromethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Dibromomethane	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Dichlorodifluoromethane	μg/L	5,000 U 2,500 U	2,500 U	2,500 UJ	25 U	12 U 1.2 J	500 U <b>99 J</b>	1,000 U	500 U	10,000 U 10,000 U	1,500 µg/kg U G	$NS^2$	NS <sup>2</sup>	1,000 U 500 U	500 U	500 U
Ethylbenzene Hexachlorobutadiene	μg/L μg/I	2,500 U 2,500 U	1,200 U 1,200 U	1,200 U 1,200 U	12 U 12 U	1.2 J 6.2 U	250 U	500 U 500 U	250 U 250 U	10,000 U 10,000 U	1,500 µg/kg U G 1,500 µg/kg U G	$NS^2$	NS <sup>2</sup>	500 U 500 U	250 U 250 U	250 U 250 U
sopropylbenzene (Cumene)	μg/L μg/L	2,500 U 2,500 U	1,200 U 1,200 U	1,200 U 1,200 U	12 U 12 U	6.2 U 6.2 U	250 U 250 U	500 U 500 U	250 U 250 U	10,000 U 10,000 U	1,500 µg/kg U G	$NS^2$	NS <sup>2</sup>	500 U 500 U	250 U 250 U	250 U 250 U
n/p-Xylene	μg/L μg/L	2,500 U	1,200 U	1,200 U	12 U 12 U	3.2 J	230 U 240 J	500 U	250 U 160 J	20,000 U	1,500 µg/kg U G	NS <sup>2</sup> NS <sup>2</sup>	NS <sup>2</sup> NS <sup>2</sup>	500 U	250 U	250 U
Methyl tert-butyl ether (MTBE)	μg/L μg/L	2,500 U	1,200 U	1,200 UJ	12 U	6.2 U	250 U	500 U	250 U	20,000 C NA	1,500 µg/kg U G	NS <sup>2</sup>	NS NS <sup>2</sup>	500 U	250 U	250 U
Aethylene chloride	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
N-Butylbenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
N-Propylbenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	20,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Japhthalene	μg/L	1,300 J	1,200 U	1,200 U	12 U	8.5	250 U	500 U	250 U	30,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
-Xylene	μg/L	2,500 U	1,200 U	1,200 U	3.1 J	2.9 J	180 J	500 U	160 J	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Isopropyltoluene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
ec-Butylbenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Styrene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
ert-Butylbenzene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
etrachloroethene (PCE)	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
Coluene	μg/L	1,500 J	1,700	1,900	6.8 J	5.1 J	1,600	900	1,100	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	410 J	92 J	250 U
rans-1,2-Dichloroethene	μg/L	2,500 U	1,200 U	1,200 U	12 U	6.2 U	250 U	500 U	250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>	NS <sup>2</sup>	500 U	250 U	250 U
rans-1,3-Dichloropropene Frichloroethene (TCE)	μg/L	2,500 U 2,500 U	1,200 U	1,200 U	12 U	6.2 U <b>4.3 J</b>	250 U	500 U 500 U	250 U 250 U	10,000 U	1,500 µg/kg U G	$NS^2$	NS <sup>2</sup>	500 U	250 U 250 U	250 U 250 U
richloroethene (TCE)	μg/L μg/I	2,500 U 5,000 U	1,200 U 2,500 U	1,200 U 2,500 U	12 U 25 U	<b>4.3 J</b> 12 U	250 U 500 U	500 U 1,000 U	250 U 500 U	10,000 U 10,000 U	1,500 µg/kg U G 1,500 µg/kg U G	$NS^2$	NS <sup>2</sup>	500 U 1,000 U	250 U 500 U	250 U 500 U
/inyl chloride	μg/L μg/L	5,000 U 77,000	2,500 U 36.000	2,500 U 39,000	<b>460</b>	370	<b>12,000</b>	1,000 U 13,000	<b>24,000</b>	60.500	1,500 μg/kg U G 3,000 μg/kg U G	NS <sup>2</sup> NS <sup>2</sup>	NS <sup>2</sup> NS <sup>2</sup>	35,000 U	9,400	6,700
Fotal Detected VOCs	µg/L	210,800	96,630	102,900	757	556.4	12,000	13,000	27,713	60,500	8,100 μg/kg U G	NS <sup>2</sup> N/A	NS <sup>2</sup> N/A	40,510	9,400	7,410

Table 8
Groundwater VOC Analytical Results for Treatment Area Monitoring Wells, Site 5 - Unit 2, NAS North Island

Sample Event		Interim #2	Interim #3		ay Post	48-Day Post	MNA Post #3		nal	- ***	seline	Interim #1	Interim #2	Interim #3	30-Day Post	48-Day Post
Sample Identification		818725-144		818725-165	818725-166 (Dup)	818725-192	818725-222	818725-239	818725-240 (Dup)	818725-97	818725-98 (Dup)	818725-138	818725-147		818725-168	818725-189
Location Code		S5-MW-28	S5-MW-28	S5-MW-28	S5-MW-28	S5-MW-28	S5-MW-28	S5-MW-28	S5-MW-28	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30
Date Sampled	Unit	10/23/02		03/25/03	03/25/03	04/08/03	06/05/03	07/09/03	07/09/03	05/20/02	05/20/02	08/14/02	10/23/02		03/25/03	04/08/03
SW8260B	Um															
1,1,1,2-Tetrachloroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1,1-Trichloroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1,2,2-Tetrachloroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1,2-Trichloro-1,2,2-trifluoroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 UJ	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1,2-Trichloroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1-Dichloroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1-Dichloroethene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,1-Dichloropropene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,2,3-Trichlorobenzene	μg/L	50 U	NS	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS	50 U	250 U
1,2,3-Trichloropropane	μg/L	50 U 50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U 50 U	250 U 250 U	250 U 250 U	500 U	50 U 50 U	NS <sup>1</sup>	110 50 U	250 U 250 U
l,2,4-Trichlorobenzene l,2,4-Trimethylbenzene	μg/L μg/I	50 U 50 U	NS <sup>1</sup>	1,200 U 1,200 U	1,200 U 1,200 U	1,000 U 1.000 U	120 U 120 U	50 U 50 U	50 U 50 U	250 U 250 U	250 U 250 U	500 U 500 U	50 U 50 U	NS <sup>1</sup>	50 U 50 U	250 U 250 U
1,2-Dibromo-3-chloropropane (DBCP)	μg/L μg/L	100 U	NS <sup>1</sup> NS <sup>1</sup>	2,500 U	2,500 U	2,000 U	250 U	100 U	100 U	500 U	500 U	1,000 U	100 U	NS <sup>1</sup> NS <sup>1</sup>	100 U	500 U
1,2-Dibromoethane (EDB)	μg/L μg/L	50 U	NS NS <sup>1</sup>	1,200 U	1,200 U	1.000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS NS <sup>1</sup>	50 U	250 U
1,2-Dichlorobenzene	μg/L μg/L	33 J	NS NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	30 J	30 0 31 J	250 C 91 J	100 J	500 U	50 U	NS <sup>1</sup>	50 U	250 U
,2-Dichloroethane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	29 J	250 U
l,2-Dichloropropane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,3,5-Trimethylbenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,3-Dichlorobenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,3-Dichloropropane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
1,4-Dichlorobenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
2,2-Dichloropropane	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
2-Butanone (MEK)	μg/L	250 U	NS <sup>1</sup>	6,200 U	6,200 UJ	5,000 U	620 U	250 U	250 U	1,200 R	1,200 R	2,500 U	250 U	NS <sup>1</sup>	250 U	1,200 U
2-Chlorotoluene	μg/L	50 U	NS	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS	50 U	250 U
2-Hexanone	μg/L	250 U	NS	6,200 U	6,200 U	5,000 U	620 U	250 U	250 U	1,200 U	1,200 U	2,500 U	250 U	NS <sup>1</sup>	250 U	1,200 U
4-Chlorotoluene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
4-Methyl-2-pentanone (MIBK)	μg/L	250 U 500 U	NS <sup>1</sup>	6,200 U 12,000 U	6,200 U 12,000 UJ	5,000 U 10,000 U	620 U 1,200 U	250 U 500 U	250 U 500 U	1,200 U 2,500 R	1,200 U 2,500 R	2,500 U 5,000 U	250 U 500 U	NS <sup>1</sup>	250 U	1,200 U 2,500 U
Acetone Benzene	μg/L	50 U	NS <sup>1</sup>	12,000 U 1,200 U	12,000 UJ 1,200 U	1,000 U	1,200 U 120 U	50 U	50 U 50 U	2,500 R 250 U	2,300 R 250 U	5,000 U 500 U	50 U	NS <sup>1</sup>	150 J 19 J	2,300 U 250 U
Bromobenzene	μg/L μg/L	50 U	NS <sup>1</sup> NS <sup>1</sup>	1,200 U	1,200 U 1,200 U	1,000 U 1,000 U	120 U	50 U	50 U	250 U	250 U 250 U	500 U	50 U	NS <sup>1</sup> NS <sup>1</sup>	50 U	250 U 250 U
Bromochloromethane	μg/L μg/L	50 U	NS NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS NS <sup>1</sup>	50 U	250 U
Bromodichloromethane	μg/L μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Bromoform	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Bromomethane	μg/L	100 U	NS <sup>1</sup>	2,500 U	2,500 U	2,000 U	250 U	100 U	100 U	500 UJ	500 UJ	1,000 U	100 U	NS <sup>1</sup>	100 U	500 U
Carbon disulfide	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 UJ	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Carbon tetrachloride	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Chlorobenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Chloroethane	μg/L	100 U	NS <sup>1</sup>	2,500 U	2,500 U	2,000 U	250 U	100 U	100 U	500 U	500 U	1,000 U	100 U	NS <sup>1</sup>	100 U	500 U
Chloroform	μg/L	50 U	NS	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Chloromethane	μg/L	100 U	NS	2,500 U	2,500 U	2,000 U	250 U	100 U	100 U	500 UJ	500 UJ	1,000 U	100 U	NS <sup>1</sup>	100 U	500 U
cis-1,2-Dichloroethene	μg/L	180	NS <sup>1</sup>	36,000	24,000	27,000	370	320	360	1,800	1,700	3,700	480	NS <sup>1</sup>	1,500	3,400
cis-1,3-Dichloropropene	µg/L	50 U	NS	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS	50 U	250 U
Dibromochloromethane Dibromomethane	μg/L	50 U 50 U	NS <sup>1</sup>	1,200 U 1,200 U	1,200 U 1,200 U	1,000 U 1,000 U	120 U 120 U	50 U 50 U	50 U 50 U	250 U 250 U	250 U 250 U	500 U 500 U	50 U 50 U	NS <sup>1</sup>	50 U 50 U	250 U 250 U
Dichlorodifluoromethane	μg/L μg/L	100 U	NS <sup>1</sup> NS <sup>1</sup>	2,500 U	2,500 UJ	2,000 U	250 U	100 U	100 U	500 U	500 U	1,000 U	100 U	NS <sup>1</sup> NS <sup>1</sup>	100 U	230 U 500 U
Ethylbenzene	μg/L μg/L	50 U	NS NS <sup>1</sup>	1,200 U	1,200 U	1.000 U	120 U	50 U	50 U	73 J	89 J	500 U	50 U	NS NS <sup>1</sup>	50 U	250 U
Hexachlorobutadiene	μg/L μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
(sopropylbenzene (Cumene)	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
m/p-Xylene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	51	250 U
Methyl tert-butyl ether (MTBE)	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 UJ	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Methylene chloride	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
J-Butylbenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
N-Propylbenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Japhthalene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	70	140 J
-Xylene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	120 J	120 J	100 J	13 J	NS <sup>1</sup>	36 J	70 J
Isopropyltoluene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
ec-Butylbenzene	μg/L	50 U	NS	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Styrene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
ert-Butylbenzene	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Fetrachloroethene (PCE)	μg/L	50 U	NS <sup>1</sup>	1,200 U	1,200 U	1,000 U	120 U	50 U	50 U	250 U	250 U	500 U	50 U	NS <sup>1</sup>	50 U	250 U
Foluene	μg/L	26 J	NS <sup>1</sup>	1,100 J	730 J	810 J	42 J	29 J	35 J 50 U	620	630 250 U	760	72 50 U	NS <sup>1</sup>	300 32 J	410 250 U
rans-1,2-Dichloroethene rans-1,3-Dichloropropene	μg/L μg/I	50 U 50 U	NS <sup>1</sup>	<b>400 J</b> 1,200 U	1,200 U 1,200 U	1,000 U 1,000 U	120 U 120 U	50 U 50 U	50 U 50 U	250 U 250 U	250 U 250 U	500 U 500 U	50 U 50 U	NS <sup>1</sup>	<b>33 J</b> 50 U	250 U 250 U
rans-1,3-Dichloropropene	μg/L μg/I	50 U 50 U	NS <sup>1</sup>	1,200 U	1,200 U 1,200 U	1,000 U 1,000 U	120 U 120 U	50 U 50 U	50 U 50 U	250 U 250 U	250 U 250 U	500 U 500 U	50 U 50 U	NS <sup>1</sup>	50 U 50 U	250 U 250 U
Trichlorofluoromethane	μg/L μg/L	100 U	NS <sup>1</sup> NS <sup>1</sup>	2,500 U	2,500 U	2,000 U	250 U	100 U	100 U	230 U 500 U	230 U 500 U	1,000 U	100 U	NS <sup>1</sup> NS <sup>1</sup>	100 U	230 U 500 U
Vinyl chloride	μg/L μg/L	<b>4,900</b>	NS <sup>-</sup> NS <sup>1</sup>	36,000	2,300 0 29,000	2,000 U 24,000	3,400	<b>3,000</b>	<b>3,200</b>	<b>21,000</b>	<b>21,000</b>	<b>23,000</b>	<b>2,300</b>	NS <sup>1</sup>	1,700	6,300 0
Fotal Detected VOCs	μ <u></u> ξ/12	5,139	N/A	73,500	53,730	51,810	3,812	3,379	3,626	23,704	23,639	23,000	2,865	N/A	3,998	10,320

Table 8
Groundwater VOC Analytical Results for Treatment Area Monitoring Wells, Site 5 - Unit 2, NAS North Island

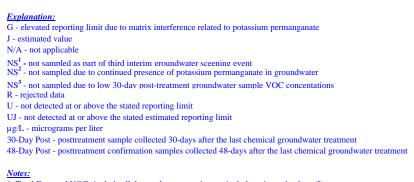
	Sample Event Sample Identification		MNA Post #3 818725-224	Final 818725-241	Baseline 818725-81	Interim #1 818725-121	Interim #2 818725-146	Interim #3	30-Day Post 818725-162	48-Day Post 818725-191	<b>Final</b> 818725-233	<b>Baseline</b> 818725-84	Interim #1 818725-134	Interim #2 818725-145	Interim #3 818725-155	30-Day Post 818725-164	48-Day Post
	Sample Identification							S5-MW-32									S5-MW-34
Description         Description <thdescription< th=""> <thdescription< th=""></thdescription<></thdescription<>	Date Sampled		06/05/03	07/09/03	05/14/02	08/12/02	10/23/02		03/25/03	04/08/03	07/08/03	05/15/02	08/14/02	10/23/02	01/07/03	03/25/03	
Addit         Addit <t< td=""><td>SWOZOD</td><td>Unit</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	SWOZOD	Unit															
informationinfo <td>,1,1,2-Tetrachloroethane</td> <td>μg/L</td> <td>500 U</td> <td>500 U</td> <td>3 U</td> <td>1 U</td> <td>1 U</td> <td>NS<sup>1</sup></td> <td>500 U</td> <td>120 U</td> <td>5.0 U</td> <td>50 U</td> <td>250 U</td> <td>120 U</td> <td>10,000 U</td> <td>1,500 µg/kg U G</td> <td>NS<sup>2</sup></td>	,1,1,2-Tetrachloroethane	μg/L	500 U	500 U	3 U	1 U	1 U	NS <sup>1</sup>	500 U	120 U	5.0 U	50 U	250 U	120 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>
Displacization         Displacicon         Displacization         Displaciza	,1,1-Trichloroethane		500 U	500 U	3 U	1 U	1 U		500 U	120 U	5.0 U	50 U	250 U	120 U	10,000 U		NS <sup>2</sup>
Anderson         Math         Sole	,1,2,2-Tetrachloroethane														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
interm         i         No.0																	NS <sup>2</sup>
Shahada         Solit         <						-									· · · · · · · · · · · · · · · · · · ·		
black         black         SOU         SO	,1-Dichloroethene																NS <sup>2</sup>
Schulgenger         Spi         MUT         Spi         Mut         Spi         Mut         Spi         Mut         Mut <th< td=""><td>,1-Dichloropropene</td><td></td><td>500 U</td><td>500 U</td><td></td><td>1 U</td><td>1 U</td><td></td><td>500 U</td><td>120 U</td><td>5.0 U</td><td>50 U</td><td>250 U</td><td>120 U</td><td>10,000 U</td><td></td><td>NS<sup>2</sup></td></th<>	,1-Dichloropropene		500 U	500 U		1 U	1 U		500 U	120 U	5.0 U	50 U	250 U	120 U	10,000 U		NS <sup>2</sup>
π.π.l. solve         π.M.	1,2,3-Trichlorobenzene					-											NS <sup>2</sup>
Samelen method         Samele						-			1						· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
James-Augery         James-Augery<						-											
bitscheding         jub         jub <th< td=""><td>1,2-Dibromo-3-chloropropane (DBCP)</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>NS<sup>2</sup></td></th<>	1,2-Dibromo-3-chloropropane (DBCP)					-											NS <sup>2</sup>
blackbook         bla	1,2-Dibromoethane (EDB)		500 U	500 U	3 U	1 U	1 U		500 U	120 U	5.0 U	50 U	250 U	120 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>
bich-space         join         Sort	1,2-Dichlorobenzene				-	6	-								· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
Theory         ipic         S01         S010         S010 </td <td>1,2-Dichloroethane</td> <td></td> <td></td> <td></td> <td></td> <td>2</td> <td></td> <td>NS<sup>2</sup></td>	1,2-Dichloroethane					2											NS <sup>2</sup>
blacksensen         ip3         901         9011         9011         9011         9011         9010         90001         90						-									· · · · · · · · · · · · · · · · · · ·		$NS^2$
balaspange         pic.         Status         Statu	1,3-Dichlorobenzene					~	-								· · · · · · · · · · · · · · · · · · ·	, , , , , , , , , , , , , , , , , , , ,	NS <sup>2</sup> NS <sup>2</sup>
balleshear         ppl         600         600         610         610         610         610         6100	1,3-Dichloropropane					-											NS <sup>2</sup>
name hilfs)         pish         12.001         2.001         13.01         13.01         13.01         13.01         13.00         13.001        13.001	1,4-Dichlorobenzene	μg/L				-		NS <sup>1</sup>								1,500 µg/kg U G	NS <sup>2</sup>
bandmannemph markSubtS	2,2-Dichloropropane					-									· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
ansme         inf         2.00 <th2.00< th="">         2.00         2.00         <th2< td=""><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td><td></td><td>1</td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td><math>NS^2</math></td></th2<></th2.00<>			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·				1		· · · · · · · · · · · · · · · · · · ·		$NS^2$
index         ight         Statu	2-Hexanone					-											
bite 2-second	4-Chlorotoluene		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·				1		· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
ose         ipcl.         SOU         SOU         The         The </td <td>4-Methyl-2-pentanone (MIBK)</td> <td></td> <td>2,500 U</td> <td>2,500 U</td> <td>12 U</td> <td>5 U</td> <td>5 U</td> <td></td> <td>2,500 U</td> <td>620 U</td> <td>25 U</td> <td>250 U</td> <td>1,200 U</td> <td>620 U</td> <td>20,000 U</td> <td>7,500 µg/kg U G</td> <td>NS<sup>2</sup></td>	4-Methyl-2-pentanone (MIBK)		2,500 U	2,500 U	12 U	5 U	5 U		2,500 U	620 U	25 U	250 U	1,200 U	620 U	20,000 U	7,500 µg/kg U G	NS <sup>2</sup>
observe         pp1         Sol U         Sol U <th< td=""><td>Acetone</td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td><td></td><td></td><td>1</td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td><td>1</td><td><i>´</i></td><td>· · · · · · · · · · · · · · · · · · ·</td><td>/ .0.0</td><td>NS<sup>2</sup></td></th<>	Acetone		· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					1	· · · · · · · · · · · · · · · · · · ·			1	<i>´</i>	· · · · · · · · · · · · · · · · · · ·	/ .0.0	NS <sup>2</sup>
machemembene bosichonertane stationardiane applshouShou <t< td=""><td>Benzene</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td>NS<sup>2</sup></td></t<>	Benzene														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
model         model <th< td=""><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td></td></th<>						-									· · · · · · · · · · · · · · · · · · ·		
media         pp1         Sort         Sort <th< td=""><td>Bromodichloromethane</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>NS<sup>2</sup></td></th<>	Bromodichloromethane																NS <sup>2</sup>
ondusifiéé         ipt         Sol ()	Bromoform		500 U	500 U		1 U	1 U		500 U	120 U	5.0 U	50 U	250 U	120 U	10,000 U		NS <sup>2</sup>
onetrachesisheis         pril         Sort         Sort <td>Bromomethane</td> <td></td> <td>,</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>/</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>NS<sup>2</sup></td>	Bromomethane		,						/								NS <sup>2</sup>
networe         np1         S00 U         S00 U <th< td=""><td>Carbon disulfide</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td>NS<sup>2</sup></td></th<>	Carbon disulfide														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
indepare						-											$NS^2$
indem         index         index <th< td=""><td>Chloroethane</td><td></td><td></td><td></td><td></td><td>~</td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>NS NS<sup>2</sup></td></th<>	Chloroethane					~	-										NS NS <sup>2</sup>
nomehane         μpL         1.000 U         1.000 U         5.000         2.00         NS <sup>4</sup> 2.000         3.800         2.00         3.800         7.800         11.500         1.500	Chloroform		500 U	500 U	3 U	1 U	1 U		500 U		5.0 U	50 U	250 U	120 U	10,000 U		NS <sup>2</sup>
3-Dichloproprineup L500 U500 U500 U500 U500 U500 U120 U120 U1000 U1500 $\frac{1}{120} \frac{1}{120} \frac{1}{120} U$ 1000 U1500 $\frac{1}{120} \frac{1}{120} \frac{1}{120} U$ 1000 U1500 $\frac{1}{120} U$ 1000 U1500 $\frac{1}{120} U$ 1000 U<	Chloromethane	μg/L	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·					· · · · · · · · · · · · · · · · · · ·						· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
omechanementene         µgL         500         500         500         500         500         1200     <	cis-1,2-Dichloroethene		1				-		1				1		1		NS <sup>2</sup>
nonmethane         μpL         500 U						-											$NS^2$
boodimomenhane         ypl         1,000 U         1,000 U         5 U         2 U         2 U         ypl         1,000 U         250 U         1,000 U         1,500 ypls U G         NS           binazine         ypl         500 U         500 U         500 U         30 U         1,500 ypls U G         NS           chordmandene         ypl         500 U         500 U         30 U         30 U         1,500 ypls U G         NS           opplemene (Linnene)         ypl         500 U         500 U         2 U         NS         500 U         2 U U         1,000 U         1,500 ypls U G         NS           splenchondene         ypl         500 U         500 U         2 U         2 U         NS         500 U         2 U U         1,000 U         1,500 ypls U G         NS           splenchonden         ypl         500 U         500 U         2 U U         NS         500 U         2 U U         1,000 U         1,500 ypls U G         NS           splenchonden         ypl         500 U         30 U         3 U         U U         NS         500 U         30 U         20 U         1,000 U         1,500 ypls U G         NS           splenchonden         ypl         500 U         300	Dibromomethane														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
benzeneµgl500 U500 U80 U997Ns <sup>1</sup> 500 U120 U6.827 J250 U39 J10,00 U1,50 µg/kg UGMs MSopylenzene (unene)µgl500 U500 U500 U2 J2Ns <sup>1</sup> 500 U120 U21 J500 U200 U120 U1000 U1,50 µg/kg UGMs MSopylenzene (unene)µgl500 U500 U500 U2 J2Ns <sup>1</sup> 500 U120 U2 J500 U200 U120 U1000 U1,50 µg/kg UGMs MSMs MS500 U120 U2 JU100 U1,50 µg/kg UGMs MSMs MS500 U120 U50 U2 JU120 U120 U <th< td=""><td>Dichlorodifluoromethane</td><td></td><td></td><td></td><td></td><td>-</td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>NS<sup>2</sup></td></th<>	Dichlorodifluoromethane					-	-										NS <sup>2</sup>
y y v v v v v v v v v v v v v v v v v v	Ethylbenzene	μg/L			8	-		NS <sup>1</sup>							· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
Xylee         ygL         500 U         500 U         11         8         6 $NS^4$ 500 U         120 U         4.4 J         50 U         250 U         75 J         20.00 U         1500 µg/k U G         NS           ylert-buyleher (MTBE)         µgL         500 U         500 U         500 U         500 U         500 U         500 U         250 U         120 U         NA         1500 µg/k U G         NS           ylert-buyleher (MTBE)         µgL         500 U         500 U         30 U         1 U         1 U         NS         500 U         250 U         120 U         100 U         1500 µg/k U G         NS           ylenchoide         µgL         500 U         500 U         300 U         1 J         1 U         NS         500 U         250 U         250 U         120 U         1500 µg/k U G         NS           thalene         µgL         500 U         280 U         120 U         50 U         250 U         120 U         1500 µg/k U G         NS           tene         µgL         500 U         280 U         120 U         50 U         250 U         120 U         1500 µg/k U G         NS           tene         µgL         500 U         30 U	Hexachlorobutadiene																NS <sup>2</sup>
pip dre hurly elher (MTBE) $\mu_{0L}$ 500 U500 U500 U500 U500 U250 U120 UNA1500 $\mu_{0}\mu_{0}U$ GNSylene chloride $\mu_{gL}$ 500 U500 U500 U500 U500 U500 U250 U120 UNA1500 $\mu_{0}\mu_{0}U$ GNSylene chloride $\mu_{gL}$ 500 U500 U500 U500 U500 U500 U500 U250 U120 U1000 U1500 $\mu_{0}\mu_{0}U$ GNSop/lene chloride $\mu_{gL}$ 500 U500 U500 U500 U500 U500 U500 U250 U120 U1500 $\mu_{0}\mu_{0}U$ GNSop/lene chloride $\mu_{gL}$ 500 U500 U500 U120 U1500 $\mu_{0}\mu_{0}U$ GNSinhene $\mu_{gL}$ 500 U250 U120 U100 U1500 $\mu_{0}\mu_{0}U$ GNSinhene $\mu_{gL}$ 500 U250 U250 U120 U300 U1500 $\mu_{0}\mu_{0}U$ GNSinhene $\mu_{gL}$ 500 U250 U120 U300 U1500 $\mu_{0}\mu_{0}U$ GNSinhene $\mu_{gL}$ 500 U500 U30 U10NS500 U120 U50 U250 U120 U1000 U1500 $\mu_{0}\mu_{0}U$ GNSinhene $\mu_{gL}$ 500 U500 U30 U30 U10 UNS500 U120 U50 U250 U250 U1000 U1500 $\mu_{0}\mu_{0}U$ GNSinhene $\mu_{gL}$ 500 U500 U30 U30 U10 UNS500 U </td <td>IsopropyIbenzene (Cumene) m/p-Xylene</td> <td></td> <td></td> <td></td> <td></td> <td>_</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td> <td><math>NS^2</math></td>	IsopropyIbenzene (Cumene) m/p-Xylene					_	2								· · · · · · · · · · · · · · · · · · ·		$NS^2$
spece chloride $\mu gL$ 500 U500 U500 U300 U10 U10 U $NS^4$ 500 U120 U500 U50 U250 U120 U1000 U1,500 $\mu gk U G$ NS $\mu gL$ 500 U500 U500 U500 U500 U250 U120 U500 U250 U120 U1000 U1,500 $\mu gk U G$ NS $\mu gL$ 500 U250 U250 U250 U250 U120 U500 U50 U250 U120 U1000 U1,500 $\mu gk U G$ NS $\mu gL$ 500 U250 U250 U250 U250 U250 U120 U550 U250 U120 U1500 $\mu gk U G$ NS $\mu gL$ 500 U250 U250 U250 U120 U500 U250 U120 U1500 $\mu gk U G$ NS $\mu gL$ 500 U500 U500 U500 U500 U250 U120 U1600 U1500 $\mu gk U G$ NS $\mu gL$ 500 U500 U500 U500 U500 U500 U250 U120 U1600 U1500 $\mu gk U G$ NS $\mu gL$ 500 U500 U500 U500 U500 U500 U120 U500 U500 U250 U120 U1600 U1500 $\mu gk U G$ NS $\mu gL$ 500 U500 U500 U30 U30 U10 UNg <sup>4</sup> 500 U120 U500 U50 U120 U1600 U1500 $\mu gk U G$ NS $\mu gL$ 500 U500 U500 U30 U30 U10 UNg <sup>4</sup> 500 U120	Methyl tert-butyl ether (MTBE)					~	1 U										NS <sup>2</sup>
hyphenzeneµg/L500 U500 U500 U100 U1,500 µg/kg UGNSopyhenzeneµg/L500 U500 U250 U250 U120 U250 U120 U20,00 U1500 µg/kg UGNSopyhenzeneµg/L500 U260 U280 U100 U130 U11NS <sup>1</sup> 500 U620 U50 U50 U250 U120 U20,00 U1500 µg/kg UGNSleneµg/L120 J170 J131311NS <sup>1</sup> 500 U20 U7.527 J54 J68 J10,00 U1500 µg/kg UGNSpropyholneneµg/L500 U500 U500 U500 U500 U500 U500 U250 U120 U1,500 µg/kg UGNSpropholneneµg/L500 U500 U500 U500 U500 U500 U250 U120 U1,600 µg/kg UGNSauyhbenzeneµg/L500 U500 U500 U500 U500 U250 U120 U1,600 µg/kg UGNSauyhbenzeneµg/L500 U500 U500 U300 U100 U1,500 µg/kg UGNSauyhbenzeneµg/L500 U500 U500 U300 U300 U10UNs <sup>1</sup> 500 U120 U500 U500 U250 U120 U1,600 µg/kg UGauyhbenzeneµg/L500 U500 U500 U500 U500 U500 U120 U1,600 µg/kg UGNSauyhbenzeneµg/L500 U500 U300 U1	Methylene chloride																NS <sup>2</sup>
$n_{1}$ $n_{2}$ $5,000$ $280$ $10$ $11$ $8$ $NS^1$ $500$ $62$ $9.1$ $50$ $250$ $120$ $35,400$ $1,500$ $100$ $100$ $1500$ $100$ $1000$ $1500$ $10000$ $1500$ $1500$ $10000$ $1500$ $1500$ $10000$ $1500$ $10000$ $1500$ $1500$ $10000$ $1500$ $1500$ $10000$ $1500$ $1500$ $100000$ $1500$ $1500$ $100000$ $1500$ $1500$ $100000$ $1500$ $1500$ $100000$ $1500$ $1500$ $100000$ $1500$ $1500$ $100000$ $1500$ $1500$ $1000000$ $1500$ $1500$ $100000$ $1500$ $1500$ $1000000$ $1500$ $1500$ $1000000$ $1500$ $10000000$ $1500$ $1500$ $100000000$ $1500$ $1500$ $10000000000000$ $1500$ $1500$ $1000000000000000000000000000000000000$	N-Butylbenzene				3 U	1 U	1 U								· · · · · · · · · · · · · · · · · · ·	1,500 µg/kg U G	NS <sup>2</sup>
henehg/L120 J170 J131311 $NS^1$ 500 U120 U7.527 J54 J68 J10,000 U1,500 $\mu g/k g U G$ NS NSpropriduene $\mu g/L$ 500 U500 U3 U0 J1 U $NS^1$ 500 U50 U50 U250 U120 U1000 U1,500 $\mu g/k g U G$ NS NSaut/benzene $\mu g/L$ 500 U500 U500 U3 U0 J1 U $NS^1$ 500 U50 U50 U250 U120 U1000 U1,500 $\mu g/k g U G$ NS NSaut/benzene $\mu g/L$ 500 U500 U3 U1 U1 U $NS^1$ 500 U50 U50 U250 U120 U1000 U1,500 $\mu g/k g U G$ NS NSaut/benzene $\mu g/L$ 500 U500 U3 U1 U1 U $NS^1$ 500 U50 U250 U120 U1000 U1,500 $\mu g/k g U G$ NS NSaut/benzene $\mu g/L$ 500 U500 U3 U1 U1 U $NS^1$ 500 U50 U250 U120 U1000 U1,500 $\mu g/k g U G$ NS NSaut/benzene $\mu g/L$ 500 U500 U3 U1 U1 U $NS^1$ 500 U50 U250 U120 U1000 U1,500 $\mu g/k g U G$ NS NSaut/benzene $\mu g/L$ 500 U500 U3 U1 U $NS^1$ 500 U120 U50 U250 U120 U1,500 $\mu g/k g U G$ NSaut/benzene $\mu g/L$ 500 U40 J	N-Propylbenzene					1	1								· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
ppropyloluene $\mu g/L$ 500 U500 U500 U3 U0 J1 U $NS^4$ 500 U120 U5.0 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U500 U3 U0 J1 U $NS^4$ 500 U120 U5.0 U50 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U500 U3 U1 U1 U $NS^4$ 500 U120 U5.0 U50 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U500 U3 U1 U1 U $NS^4$ 500 U5.0 U5.0 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U500 U3 U1 U $NS^4$ 500 U120 U5.0 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U500 U3 U1 U $NS^4$ 500 U120 U5.0 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U40 J2 J1 J1 U $NS^4$ 500 U100 U50 U250 U120 U1,000 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U240 J2 J1 J1 U $NS^4$ 500 U100 U50 U250 U100 U1,500 $\mu g/k U G$ NS $u g/L$ 500 U500 U3 U1 U $NS^4$ 500 U120 U <td< td=""><td>Vaphthalene</td><td></td><td><i>´</i></td><td></td><td></td><td></td><td>8</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td><math>NS^2</math></td></td<>	Vaphthalene		<i>´</i>				8										$NS^2$
Name $\mu_g/L$ 500 U500 U500 U3 U0 J1 U $NS^1$ 500 U120 U5.0 U50 U250 U120 U1,000 U1,500 $\mu_g/L$ UNSene $\mu_g/L$ 500 U500 U500 U3 U1 U1 UNS^1500 U120 U5.0 U50 U250 U120 U1,000 U1,500 $\mu_g/L$ UNSNSsuthence $\mu_g/L$ 500 U500 U500 U3 U1 U1 UNS^1500 U120 U5.0 U50 U250 U120 U1,000 U1,500 $\mu_g/L$ UNSsuthence $\mu_g/L$ 500 U500 U500 U3 U1 U1 UNS^1500 U120 U5.0 U500 U250 U120 U1,000 U1,500 $\mu_g/L$ UNSsuthence $\mu_g/L$ 500 U500 U500 U3 U1 UNS^1500 U120 U5.0 U500 U250 U120 U1,000 U1,500 $\mu_g/L$ UNSsuthence $\mu_g/L$ 680 J1,100493611NS^1590110 J5.0 U46 J520 U200 U1,000 U1,500 $\mu_g/L$ UNS $-1,2$ -Dichlorochene $\mu_g/L$ 500 U240 J240 J2 J1 J1 UNS^1620 U120 U5.0 U56 J10,000 U1,500 $\mu_g/L$ UNS $-1,2$ -Dichlorochene (TCE) $\mu_g/L$ 500 U200 U500 U300 U300 U3 U1 UNS^1500 U120 U5.0 U	-Xylene -Isopropyltoluene														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup> NS <sup>2</sup>
$\mu g/L$ $500 U$ $500 U$ $500 U$ $3 U$ $1 U$ $1 U$ $NS^1$ $500 U$ $120 U$ $50 U$ $250 U$ $120 U$ $10,000 U$ $1,500 \mu g/k U G$ $NS^1$ Butylbenzee $\mu g/L$ $500 U$ $500 U$ $500 U$ $3 U$ $1 U$ $1 U$ $NS^1$ $500 U$ $50 U$ $50 U$ $250 U$ $120 U$ $10,000 U$ $1,500 \mu g/k U G$ $NS^1$ chloroethene (PCE) $\mu g/L$ $500 U$ $500 U$ $500 U$ $3 U$ $1 U$ $1 U$ $NS^1$ $500 U$ $50 U$ $250 U$ $120 U$ $10,000 U$ $1,500 \mu g/k U G$ $NS^1$ ene $\mu g/L$ $680 J$ $1,100$ $49$ $36$ $11$ $NS^1$ $590$ $110 J$ $5.0 U$ $46 J$ $520$ $620$ $10,000 U$ $1,500 \mu g/k U G$ $NS^1$ $1,2-Dichloroethene\mu g/L500 U240 J2 J1 J1 UNS^1620120 U5.0 U250 U62010,000 U1,500 \mu g/k U GNS^11,3-Dichloroptopene\mu g/L500 U500 U3 U1 UNS^1620120 U5.0 U50 U250 U10,000 U1,500 \mu g/k U GNS^11,3-Dichloroptonene\mu g/L500 U500 U3 U1 UNS^1500 U120 U5.0 U50 U120 U10,000 U1,500 \mu g/k U GNS^11,3-Dichloroptonentene (TCE)\mu g/L500 U500 U3 U1 U$	ec-Butylbenzene														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
$\mu_g/L$ $500 U$ $500 U$ $500 U$ $30 U$ $1U$ $1U$ $NS^1$ $500 U$ $50 U$ $50 U$ $250 U$ $120 U$ $1,000 U$ $1,500 \mu_g/kg U G$ $NS^1$ ene $\mu_g/L$ $680 J$ $1,00$ $49$ $36$ $11$ $NS^1$ $590$ $110 J$ $5.0 U$ $46 J$ $520$ $620$ $10,000 U$ $1,500 \mu_g/kg U G$ $NS^1$ $1,2$ Dichlorothene $\mu_g/L$ $500 U$ $240 J$ $2 J$ $1 J$ $1 U$ $NS^1$ $500 U$ $5.0 U$ $46 J$ $520$ $620$ $10,000 U$ $1,500 \mu_g/kg U G$ $NS^1$ $1,2$ Dichlorothene $\mu_g/L$ $500 U$ $200 U$ $500 U$ $300 U$ $1U$ $NS^1$ $620$ $120 U$ $56 J$ $500 U$ $56 J$ $10,000 U$ $1,500 \mu_g/kg U G$ $NS^1$ $1,30$ ip/de M $3U$ $1U$ $NS^1$ $500 U$ $120 U$ $500 U$ $250 U$ $100,00 U$ $1500 \mu_g/kg U G$ $NS^1$ $10$ ordenthane $\mu_g/L$ $500 U$ $500 U$ $3U$ $1U$ <th< td=""><td>styrene</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>50 U</td><td></td><td></td><td>· · · · · · · · · · · · · · · · · · ·</td><td></td><td>NS<sup>2</sup></td></th<>	styrene											50 U			· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
ene $\mu g/L$ 680 J       1,100       49       36       11       NS <sup>1</sup> 590       110 J       5.0 U       46 J       520       620       10,000 U       1,500 $\mu g/k$ g U G       NS         1.2-Dichlorochene $\mu g/L$ 500 U       240 J       2 J       1 J       1 U       NS <sup>1</sup> 620       120 U       5.6       50 U       250 U       56 J       10,000 U       1,500 $\mu g/k$ g U G       NS         1.3-Dichloropropene $\mu g/L$ 500 U       500 U       3 U       1 U       1 U       NS <sup>1</sup> 500 U       5.0 U       250 U       56 J       10,000 U       1,500 $\mu g/k$ g U G       NS         1.1-1,2-Dichloropropene $\mu g/L$ 500 U       500 U       3 U       1 U       1 U       NS <sup>1</sup> 500 U       50 U       250 U       120 U       1,500 $\mu g/k$ g U G       NS         alorochene(TCE) $\mu g/L$ 1,000 U       500 U       3 U       1 U       3 U       1 U       3 U       120 U       50 U       50 U       120 U       10,000 U       1,500 $\mu g/k$ g U G       NS         alorochene(TCE) $\mu g/L$ 1,000 U       50 U       3 U U       1,000 U       1,500 $\mu g/k$ U O       NS	ert-Butylbenzene							NS							· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Cetrachloroethene (PCE)														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Coluene														· · · · · · · · · · · · · · · · · · ·		$NS^2$
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	rans-1,2-Dichloropropene														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup> NS <sup>2</sup>
$\frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{10000} \frac{1}{100000} \frac{1}{100000} \frac{1}{100000} \frac{1}{1000000} \frac{1}{1000000} \frac{1}{10000000} \frac{1}{100000000} \frac{1}{1000000000} \frac{1}{10000000000000000000000000000000000$	Trichloroethene (TCE)														· · · · · · · · · · · · · · · · · · ·		NS <sup>2</sup>
	richlorofluoromethane	μg/L	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	5 U			NS <sup>1</sup>	· · · · · · · · · · · · · · · · · · ·	250 U	10 U	100 U		250 U	10,000 U	1,500 µg/kg U G	NS <sup>2</sup>
<i>I Detected VOCs</i> 22,900 60,790 19 174 101 N/A 41,510 6,072 346.2 3,951 14,474 20,431 63,300 5,900 µg/kg J B N/A	/inyl chloride	μg/L	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·						í.			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			NS <sup>2</sup>
	Total Detected VOCs		22,900	60,790	199	174	101	N/A	41,510	6,072	346.2	3,951	14,474	20,431	63,300	5,900 μg/kg <b>J B</b>	

Table 8
Groundwater VOC Analytical Results for Treatment Area Monitoring Wells, Site 5 - Unit 2, NAS North Island

Sample Event		Final	Baseline	Interim #1	Interim #2	Interim #3	30-Day Post	48-Day Post	Final		eline	Interim #1	Interim #2	Interim #3	30-Day Post	48-Day Post
Sample Identification			818725-90	818725-140	818725-150		818725-160	818725-190	818725-228	818725-94	818725-95 (Dup)	818725-125	818725-152		818725-159	
ocation Code ate Sampled		S5-MW-34	S5-MW-35 05/16/02	S5-MW-35 08/14/02	S5-MW-35 10/24/02	S5-MW-35	S5-MW-35 03/24/03	S5-MW-35 04/08/03	S5-MW-35 07/07/03	S5-MW-37 05/20/02	S5-MW-37 05/20/02	S5-MW-37 08/13/02	S5-MW-37 10/24/02	S5-MW-37	S5-MW-37 03/24/03	S5-MW-37
ate Sampleu	Unit		03/10/02	08/14/02	10/24/02		03/24/03	04/08/03	07/07/03	03/20/02	03/20/02	08/13/02	10/24/02		03/24/03	
SW8260B																
,1,1,2-Tetrachloroethane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,1,1-Trichloroethane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS	3 U	NS <sup>3</sup>
,1,2,2-Tetrachloroethane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,1,2-Trichloro-1,2,2-trifluoroethane ,1,2-Trichloroethane	μg/L μg/I	NS <sup>2</sup>	50 U 50 U	25 U 25 U	10 U 10 U	NS <sup>1</sup>	250 U 250 U	250 U 250 U	6.2 U 6.2 U	1 U 1 U	1 U 1 U	1 U 1 U	1 U 1 U	NS <sup>1</sup>	3 U 3 U	NS <sup>3</sup>
,1-Dichloroethane	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup> NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup> NS <sup>1</sup>	3 U	NS <sup>3</sup> NS <sup>3</sup>
,1-Dichloroethene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	1 J	NS <sup>3</sup>
,1-Dichloropropene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
2,3-Trichlorobenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,2,3-Trichloropropane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	86	NS <sup>3</sup>
,2,4-Trichlorobenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 J	0.61 J	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,2,4-Trimethylbenzene	μg/L	NS <sup>2</sup>	<b>120</b> 100 U	120 50 U	280 20 U	NS <sup>1</sup>	<b>130 J</b> 500 U	<b>130 J</b> 500 U	100	27 2 U	27 2 U	0.4 J 2 U	1 U 2 U	NS <sup>1</sup>	3 U 5 U	NS <sup>3</sup>
,2-Dibromo-3-chloropropane (DBCP) ,2-Dibromoethane (EDB)	μg/L μg/L	NS <sup>2</sup>	50 U	50 U 25 U	20 U 10 U	NS <sup>1</sup>	250 U	250 U	12 U 6.2 U	2 U 1 U	2 U 1 U	2 U 1 U	2 U 1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,2-Dichlorobenzene	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	69	25 0 80	82	NS <sup>1</sup> NS <sup>1</sup>	250 U	250 U	41	8	8.3	4	3	NS <sup>1</sup> NS <sup>1</sup>	6	NS <sup>3</sup> NS <sup>3</sup>
,2-Dichloroethane	μg/L μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	2	2.1	2	1	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,2-Dichloropropane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	0.4 J	- 1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,3,5-Trimethylbenzene	μg/L	NS <sup>2</sup>	70	64	92	NS <sup>1</sup>	250 U	250 U	33	11	11	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
,3-Dichlorobenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	0.45 J	1 U	1 U	NS	3 U	NS <sup>3</sup>
,3-Dichloropropane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS	3 U	NS <sup>3</sup>
,4-Dichlorobenzene 2,2-Dichloropropane	μg/L μg/I	NS <sup>2</sup>	58 50 U	10 J 25 U	10 U 10 U	NS <sup>1</sup>	250 U 250 U	250 U 250 U	<b>7.2</b> 6.2 U	4 1 U	<b>4</b> 1 U	2 1 U	2 1 U	NS <sup>1</sup>	2 J 3 U	NS <sup>3</sup>
2-2-Dichloropropane 2-Butanone (MEK)	μg/L μg/L	NS <sup>2</sup>	250 R	25 U 120 U	50 U	NS <sup>1</sup>	1,200 U	1,200 U	6.2 U 31 U	5 R	5 R	5 U	5 U	NS <sup>1</sup>	12 U	NS <sup>3</sup>
2-Chlorotoluene	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup> NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup> NS <sup>1</sup>	3 U	NS <sup>3</sup> NS <sup>3</sup>
-Hexanone	μg/L μg/L	NS <sup>2</sup>	250 U	120 U	50 U	NS <sup>1</sup>	1,200 U	1,200 U	31 U	5 U	5 U	5 U	5 U	NS <sup>1</sup>	12 U	NS <sup>3</sup>
-Chlorotoluene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
-Methyl-2-pentanone (MIBK)	μg/L	NS <sup>2</sup>	250 U	120 U	50 U	NS <sup>1</sup>	1,200 U	1,200 U	31 U	5 U	5 U	5 U	5 U	NS <sup>1</sup>	12 U	NS <sup>3</sup>
Acetone	μg/L	NS <sup>2</sup>	500 R	250 U	100 U	NS <sup>1</sup>	2,500 U	2,500 U	32 J	10 R	10 R	5 J	10 U	NS <sup>1</sup>	36	NS <sup>3</sup>
Benzene	μg/L	NS <sup>2</sup>	28 J	27	34	NS <sup>1</sup>	250 U	250 U	23	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
Bromobenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS	3 U	NS <sup>3</sup>
Bromochloromethane Bromodichloromethane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U 10 U	NS <sup>1</sup>	250 U 250 U	250 U 250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
Bromoform	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	50 U 50 U	25 U 25 U	10 U 10 U	NS <sup>1</sup>	250 U 250 U	250 U 250 U	6.2 U 6.2 U	1 U 1 U	1 U 1 U	1 U 1 U	1 U 1 U	NS <sup>1</sup> NS <sup>1</sup>	3 U 3 U	NS <sup>3</sup> NS <sup>3</sup>
Bromomethane	μg/L μg/L	NS NS <sup>2</sup>	100 U	25 U 50 U	20 U	NS <sup>1</sup> NS <sup>1</sup>	500 U	500 U	0.2 U 12 U	2 UJ	2 UJ	2 U	2 U	NS NS <sup>1</sup>	5 U	NS <sup>3</sup>
Carbon disulfide	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
Carbon tetrachloride	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
Chlorobenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	9	8.8	5	2	NS <sup>1</sup>	1 J	NS <sup>3</sup>
Chloroethane	μg/L	NS <sup>2</sup>	100 U	50 U	20 U	NS <sup>1</sup>	500 U	500 U	57	2 U	2 U	2 U	2 U	NS <sup>1</sup>	5 U	NS <sup>3</sup>
Chloroform	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS	3 U	NS <sup>3</sup>
Chloromethane cis-1,2-Dichloroethene	μg/L	NS <sup>2</sup>	100 U 50 U	50 U 25 U	20 U 10 U	NS <sup>1</sup>	500 U	500 U 250 U	12 U <b>7.4</b>	2 UJ 7	2 UJ <b>6.4</b>	2 U 4	2 U 5	NS <sup>1</sup>	5 U 19	NS <sup>3</sup>
:is-1,2-Dichloropropene	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	50 U 50 U	25 U 25 U	10 U 10 U	NS <sup>1</sup> NS <sup>1</sup>	<b>200 J</b> 250 U	250 U 250 U	6.2 U	/ 1 U	0.4 1 U	4 1 U	5 1 U	NS <sup>1</sup> NS <sup>1</sup>	3 U	NS <sup>3</sup> NS <sup>3</sup>
Dibromochloromethane	μg/L μg/L	NS NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS NS <sup>1</sup>	3 U	NS NS <sup>3</sup>
Dibromomethane	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
Dichlorodifluoromethane	μg/L	NS <sup>2</sup>	100 U	50 U	20 U	NS <sup>1</sup>	500 U	500 U	12 U	2 U	2 U	2 U	2 U	NS <sup>1</sup>	5 U	NS <sup>3</sup>
Ethylbenzene	μg/L	NS <sup>2</sup>	61	58	87	NS <sup>1</sup>	250 U	250 U	42	3	2.4	0.4 J	1 U	NS <sup>1</sup>	1 J	NS <sup>3</sup>
Hexachlorobutadiene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS	3 U	NS <sup>3</sup>
sopropylbenzene (Cumene)	μg/L	NS <sup>2</sup>	50 U	25 U	16	NS <sup>1</sup>	250 U	250 U	8.3	1	1	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
n/p-Xylene	μg/L	NS <sup>2</sup>	180	190 25 U	260	NS <sup>1</sup>	250 U	250 U 250 U	<b>34</b>	7	<b>6.4</b>	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
Aethyl tert-butyl ether (MTBE) Aethylene chloride	μg/L μg/I	NS <sup>2</sup>	50 U 50 U	25 U 25 U	10 U 10 U	NS <sup>1</sup>	250 U 250 U	250 U 250 U	6.2 U 6.2 U	1 U 1 U	1 U 1 U	1 U 1 U	1 U 1 U	NS <sup>1</sup>	3 U 3 U	NS <sup>3</sup>
J-Butylbenzene	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	50 U 50 U	25 U 25 U	10 U 12	NS <sup>1</sup> NS <sup>1</sup>	250 U 250 U	250 U 250 U	6.2 U 6.3	10	10	1 U 1 J	0.4 J	NS <sup>1</sup> NS <sup>1</sup>	3 U 3 U	NS <sup>3</sup> NS <sup>3</sup>
I-Propylbenzene	μg/L μg/L	NS NS <sup>2</sup>	50 U	25 U	12	NS NS <sup>1</sup>	250 U	250 U	0.5 6 J	3	2.9	1 U	1 U	NS NS <sup>1</sup>	3 U	NS NS <sup>3</sup>
aphthalene	μg/L	NS <sup>2</sup>	55	110	200	NS <sup>1</sup>	180 J	190 J	170	12	12	1	1 U	NS <sup>1</sup>	3	NS <sup>3</sup>
Xylene	μg/L	NS <sup>2</sup>	190	250	170	NS <sup>1</sup>	99 J	76 J	90	4	3.8	0.2 J	1 U	NS <sup>1</sup>	1 J	NS <sup>3</sup>
Isopropyltoluene	μg/L	NS <sup>2</sup>	120	110	210	NS <sup>1</sup>	250 U	250 U	9.5	16	14	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
c-Butylbenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	5.1 J	5	5.7	1	1 J	NS <sup>1</sup>	3 U	NS <sup>3</sup>
tyrene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
rt-Butylbenzene	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	0 J	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
etrachloroethene (PCE)	μg/L	NS <sup>2</sup>	50 U	25 U	10 U	NS <sup>1</sup>	250 U	250 U	6.2 U	1 U	1 U	1 U	1 U	NS <sup>1</sup>	3 U	NS <sup>3</sup>
oluene ans-1,2-Dichloroethene	μg/L μg/I	NS <sup>2</sup>	<b>520</b> 50 U	630 25 U	570 7 J	NS <sup>1</sup>	<b>500</b> 250 U	<b>380</b> 250 U	220 4.6 J	10 1 J	9 0.94 J	1 U <b>1 J</b>	1 U <b>1 J</b>	NS <sup>1</sup>	1 J 2 J	NS <sup>3</sup>
ans-1,2-Dichloropropene	μg/L μg/L	NS <sup>2</sup> NS <sup>2</sup>	50 U 50 U	25 U 25 U	7 J 10 U	NS <sup>1</sup>	250 U 250 U	250 U 250 U	<b>4.6 J</b> 6.2 U	1 J 1 U	0.94 J 1 U	1 J 1 U	1 J 1 U	NS <sup>1</sup>	2 J 3 U	NS <sup>3</sup> NS <sup>3</sup>
richloroethene (TCE)	μg/L μg/L	NS <sup>2</sup>	50 U	25 U 25 U	10 U	NS <sup>1</sup> NS <sup>1</sup>	250 U	250 U	6.2 U	1 U 1 J	0.64 J	1 U	1 U 1 J	NS <sup>1</sup> NS <sup>1</sup>	3 U	NS <sup>3</sup>
richlorofluoromethane	μg/L μg/L	NS <sup>2</sup>	100 U	50 U	20 U	NS NS <sup>1</sup>	500 U	500 U	12 U	2 U	2 U	2 U	2 U	NS NS <sup>1</sup>	5 U	NS NS <sup>3</sup>
'inyl chloride	μg/L	NS <sup>2</sup>	1,700	34	680	NS <sup>1</sup>	8,900	5,600	420	4	3.5	2	3	NS <sup>1</sup>	14	NS <sup>3</sup>
otal Detected VOCs		N/A	3,171	1,683	2,718	N/A	10,009	6,376	1,316.4	147	143.94	30	18	N/A	173	N/A

Table 8
Groundwater VOC Analytical Results for Treatment Area Monitoring Wells, Site 5 - Unit 2, NAS North Island

Sample Event Sample Identification Location Code		<b>Final</b> 818725-232 S5-MW-37	<b>Baseline</b> 818725-89 S5-MW-38	Interim #1 818725-122 S5-MW-38	Interim #2 818725-151 S5-MW-38	<b>Interim #3</b> S5-MW-38	<b>30-Day Post</b> 818725-163 S5-MW-38	<b>48-Day Post</b> 818725-188 S5-MW-38	<b>Final</b> 818725-226 S5-MW-38
Date Sampled		07/08/03	05/16/02	08/12/02	10/24/02	55-WW-56	03/25/03	04/08/03	07/07/03
	Unit	01100/05	00/10/02	00,12,02	10/21/02		05/25/05	01/00/05	01101100
SW8260B									
1,1,1,2-Tetrachloroethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1,1-Trichloroethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1,2,2-Tetrachloroethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1,2-Trichloro-1,2,2-trifluoroethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1,2-Trichloroethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1-Dichloroethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1-Dichloroethene	μg/L	3.7 J	1 J	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,1-Dichloropropene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,2,3-Trichlorobenzene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,2,3-Trichloropropane	μg/L μg/L	490	3 U	2 U 2 U	3	NS <sup>1</sup>	45	51	340
,2,4-Trichlorobenzene	μg/L μg/L	6.2 U	3 U	2 U 2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,2,4-Trimethylbenzene		24	4	2 0 1 J	1		95	110	210
	μg/L	24 12 U	4 5 U	1 J 4 U	1 2 U	NS <sup>1</sup>	50 U		210 200 U
,2-Dibromo-3-chloropropane (DBCP)	μg/L					NS <sup>1</sup>		100 U	
,2-Dibromoethane (EDB)	μg/L	6.2 U	3 U	2 U	1 U	NS	25 U	50 U	100 U
,2-Dichlorobenzene	μg/L	19	13	15	18	NS <sup>1</sup>	76	90	140
,2-Dichloroethane	μg/L	6.2 U	3	2	1 U	NS <sup>1</sup>	21 J	42 J	74 J
,2-Dichloropropane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,3,5-Trimethylbenzene	μg/L	6.2 U	1 J	0.5 J	0.5 J	NS <sup>1</sup>	23 J	25 J	59 J
,3-Dichlorobenzene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,3-Dichloropropane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
,4-Dichlorobenzene	μg/L	10	5	5	5	NS <sup>1</sup>	16 J	20 J	100 U
,2-Dichloropropane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
-Butanone (MEK)	μg/L	31 U	12 R	10 U	5 U	NS <sup>1</sup>	120 U	250 U	500 U
-Chlorotoluene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
-Hexanone	μg/L	31 U	12 U	10 U	5 U	NS <sup>1</sup>	120 U	250 U	500 U
-Chlorotoluene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
-Methyl-2-pentanone (MIBK)	μg/L	31 U	12 U	10 U	5 U	NS <sup>1</sup>	120 U	250 U	500 U
Acetone	μg/L	20 J	25 R	7 J	10 U	NS <sup>1</sup>	250 U	500 U	1,000 U
enzene	μg/L	6.2 U	15	17	16	NS <sup>1</sup>	54	67	110
Bromobenzene	μg/L μg/L	6.2 U	13 3 U	2 U	1 U	NS NS <sup>1</sup>	25 U	50 U	100 U
Bromochloromethane		6.2 U	3 U	2 U 2 U	1 U		25 U	50 U	100 U 100 U
	μg/L	6.2 U 6.2 U	3 U	2 U 2 U	1 U 1 U	NS <sup>1</sup>	25 U 25 U	50 U 50 U	100 U 100 U
Bromodichloromethane	μg/L		3 U	2 U 2 U	1 U 1 U	NS <sup>1</sup>			100 U 100 U
Bromoform	μg/L α	6.2 U				NS <sup>1</sup>	25 U	50 U	
romomethane	μg/L	12 U	5 U	4 U	2 U	NS	50 U	100 U	200 U
Carbon disulfide	μg/L	6.2 U	3 U	2 U	1 U	NS	25 U	50 U	100 U
Carbon tetrachloride	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
Chlorobenzene	μg/L	6.2 U	8	5	5	NS <sup>1</sup>	25 U	50 U	100 U
hloroethane	μg/L	12 U	5 U	4 U	2 U	NS <sup>1</sup>	50 U	100 U	200 U
hloroform	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
hloromethane	μg/L	12 U	5 U	4 U	2 U	NS <sup>1</sup>	50 U	100 U	200 U
is-1,2-Dichloroethene	μg/L	15	6	2 J	1	NS <sup>1</sup>	340	660	1,500
is-1,3-Dichloropropene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
Dibromochloromethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
Dibromomethane	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
Dichlorodifluoromethane	μg/L	12 U	5 U	4 U	2 U	NS <sup>1</sup>	50 U	100 U	200 U
thylbenzene	μg/L	11	2 J	0.5 J	1 J	NS <sup>1</sup>	29	34 J	74 J
Iexachlorobutadiene	μg/L μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
opropylbenzene (Cumene)	μg/L μg/L	6.2 U	3 U	2 U 2 U	0.4 J	NS NS <sup>1</sup>	25 U	50 U	100 U
n/p-Xylene	μg/L μg/L	8.5	5	1 J	2	NS <sup>1</sup>	25 C 21 J	50 U	100 U
fethyl tert-butyl ether (MTBE)	μg/L μg/L	6.2 U	3 U	2 U	1 U	NS NS <sup>1</sup>	21 J 25 U	50 U	100 U 100 U
fethylene chloride	μg/L μg/L	6.2 U	3 U	2 U 2 U	1 U	NS <sup>1</sup>	25 U 25 U	50 U	100 U 100 U
-Butylbenzene		6.2 U 6.2 U	3 U	2 U 2 U	1 U 1 J		25 U 25 U	50 U	100 U 100 U
-Butylbenzene -Propylbenzene	μg/L μg/I	6.2 U 6.2 U	3 U	2 U 2 U	1 J 1 U	NS <sup>1</sup>	25 U 25 U	50 U 50 U	100 U 100 U
	μg/L					NS <sup>1</sup>			
aphthalene	μg/L	43	6	2	2	NS	73	82	120
Xylene	μg/L	22	3	1 J	1	NS	60	62 10 IV	150
Isopropyltoluene	μg/L	2.2 J	3 U	2 U	1 U	NS <sup>1</sup>	9 J	50 U	100 U
c-Butylbenzene	μg/L	6.2 U	1 J	1 J	1	NS <sup>1</sup>	25 U	50 U	100 U
yrene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
rt-Butylbenzene	μg/L	6.2 U	3 U	2 U	0 J	NS <sup>1</sup>	25 U	50 U	100 U
etrachloroethene (PCE)	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
oluene	μg/L	38	12	4	6	NS <sup>1</sup>	170	240	450
ans-1,2-Dichloroethene	μg/L	2.9 J	1 J	2 U	1 J	NS <sup>1</sup>	25 U	50 U	100 U
ans-1,3-Dichloropropene	μg/L	6.2 U	3 U	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
richloroethene (TCE)	μg/L	6.2 U	69	2 U	1 U	NS <sup>1</sup>	25 U	50 U	100 U
richlorofluoromethane	μg/L μg/L	12 U	5 U	4 U	2 U	NS <sup>1</sup>	50 U	100 U	200 U
inyl chloride	μg/L μg/L	7.5	120	60	58	NS NS <sup>1</sup>	800	1,800	5,200
	~~~~	716.8	1.00	00		GAT	000	2,000	



<u>Notes:</u> 1. Total Detected VOCs include all detected concentrations to include estimated values (J).

Shaw Environmental, Inc.

## Table 9Groundwater VOC Analytical Results for Boundary Monitoring Wells

ample Event		Baseline	Interim	Posttreatment	Final	Baseline	Interim	Posttreatment	Final	Baseline	Interim	Posttreatment	Final	Baseline	Interim	Posttreatment	Final
Sample Identification		818725-99 S5-MW-10	818725-131 S5-MW-10	818725-210 S5-MW-10	818725-236 S5-MW-10	818725-91 S5-MW-20	818725-132 S5-MW-20	818725-213 S5-MW-20	818725-235 S5-MW-20	818725-83 S5-MW-31	818725-119 S5-MW-31	818725-203 S5-MW-31	818725-234 S5-MW-31	818725-85 \$5-MW-33	818725-120 S5-MW-33	818725-201 S5-MW-33	818725-229 S5-MW-33
Date Sampled		05/22/02	08/13/02	04/25/03	07/08/03	05/16/02	08/13/02	04/25/03	07/08/03	05/15/02	08/12/02	04/24/03	07/08/03	05/15/02	08/12/02	04/24/03	07/07/03
CWOZOD	Unit																
SW8260B ,1,1,2-Tetrachloroethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
,1,1-Trichloroethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
,1,2,2-Tetrachloroethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
,1,2-Trichloro-1,2,2-trifluoroethane	μg/L	2 U 2 U	5 U 5 U	2.5 U 2.5 U	1.0 U 1.0 U	12 U	10 U 10 U	12 U 12 U	10 U 10 U	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U
,1,2-Trichloroethane ,1-Dichloroethane	μg/L μg/L	2 U 1.6 J	1.7 J	2.5 U 2.5	2.3	12 U 12 U	10 U 10 U	12 U 12 U	10 U 10 U	1 U	1 U	1 U 1 U	1.0 U 1.0 U	1 U 1 U	1 U	1 U 1 U	1.0 U 1.0 U
1-Dichloroethene	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
,1-Dichloropropene	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
2,3-Trichlorobenzene	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
2,3-Trichloropropane 2,4-Trichlorobenzene	μg/L μg/I	2 U 2 U	5 U 5 U	2.5 U 2.5 U	1.0 U 1.0 U	12 U 12 U	10 U 10 U	12 U 12 U	10 U 10 U	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1 U 0.72 J	1 U 1 U	1 U <b>0.3 J</b>	1.0 U 1.0 U
2,4-Trimethylbenzene	μg/L μg/L	30	33	2.5 0	8.3	12 0	100	12 0	10 0	1 U	1 U	0.47 J	1.0 U	20	0.31 J	0.5 J 1 U	0.57 J
2-Dibromo-3-chloropropane (DBCP)	μg/L	4 U	10 U	5 U	2.0 U	25 U	20 U	25 U	20 U	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U	2.0 U
,2-Dibromoethane (EDB)	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
,2-Dichlorobenzene	μg/L	24 2 H	<b>30</b>	26	<b>30</b>	12 U	10 U	7.5 J	10 U	1 U 0 45 J	1 U	1 U	1.0 U	35	7.9 0.02 J	<b>19</b>	42 0.42 J
2-Dichloroethane 2-Dichloropropane	μg/L μg/L	2 U 2 U	5 U 5 U	2.5 U 2.5 U	1.0 U 1.0 U	12 U 12 U	10 U 10 U	12 U 12 U	10 U 10 U	<b>0.45 J</b> 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1.3 1 U	0.92 J 0.53 J	1 U 1 U	0.42 J 1.0 U
3,5-Trimethylbenzene	μg/L μg/L	12	13	10	5.0	47	27	51	34	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	0.56 J
3-Dichlorobenzene	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	0.62 J	1 U	0.41 J	0.81 J
3-Dichloropropane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
4-Dichlorobenzene	μg/L	2 U	2 J	2.5	2.2	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	11	2.5	6	12 10 U
2-Dichloropropane -Butanone (MEK)	μg/L μg/L	2 U 10 R	5 U 25 U	2.5 U 12 U	1.0 U 5.0 U	12 U 62 R	10 U 50 U	12 U 62 U	10 U 50 U	1 U 5 R	1 U 5 U	1 U 5 U	1.0 U 5.0 U	1 U 5 R	1 U 5 U	1 U 5 U	1.0 U 5.0 U
-Chlorotoluene	μg/L μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
Hexanone	μg/L	10 U	25 U	12 U	5.0 U	62 U	50 U	62 U	50 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5.0 U
Chlorotoluene	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
Methyl-2-pentanone (MIBK)	μg/L	10 U	25 U	12 U	5.0 U	62 U	50 U	62 U	50 U	5 U	5 U	5 U	5.0 U	5 U	5 U	5 U	5.0 U
cetone enzene	μg/L μg/L	17 J 61	50 U 67	25 U 42	16 51	120 R 62	100 U 60	120 U 44	100 U 60	10 R 1 U	<b>3.3 J</b> 1 U	10 U 1 U	10 U 1.0 U	10 R <b>0.44 J</b>	5.2 J 1 U	10 U <b>0.34 J</b>	13 0.45 J
romobenzene	μg/L μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	0.44 J 1 U	1 U	1 U	1.0 U
omochloromethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
romodichloromethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
romoform	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
romomethane arbon disulfide	μg/L μg/L	4 UJ 2 U	10 U 5 U	5 U 2.5 U	2.0 U 1.0 U	25 U 12 U	20 U 10 U	25 U 12 U	20 U 10 U	2 U 1 U	2 U 1 U	2 U 1 U	2.0 U 1.0 U	2 U 1 U	2 U 1 U	2 U 1 U	2.0 U 1.0 U
arbon tetrachloride	μg/L μg/L	2 U 2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
hlorobenzene	μg/L	2 U	5 U	2.5 U	0.5 J	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1.2	1.2	0.58 J	0.96 J
hloroethane	μg/L	8.7	7.8 J	3.7 J	13	25 U	20 U	25 U	5.9 J	2 U	2 U	2 U	2.0 U	2 U	2 U	2 U	2.0 U
hloroform	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U 20 U	12 U	10 U 20 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
hloromethane is-1,2-Dichloroethene	μg/L μg/L	4 UJ 120	10 U 5 U	5 U 2.5 U	2.0 U 1.0 U	25 U 12 U	20 U <b>3.6 J</b>	25 U 12 U	20 U 10 U	2 U 4.2	2 U 3.1	2 U	2.0 U 2.8	2 U 4.3	2 U <b>3.1</b>	2 U 1.3	2.0 U 2.2
s-1,3-Dichloropropene	μg/L μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	4 1 U	1 U	1 U	1.0 U
ibromochloromethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
bibromomethane	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
ichlorodifluoromethane thylbenzene	μg/L ug/I	4 U 61	10 U <b>83</b>	5 U 54	2.0 U 67	25 U 43	20 U 32	25 U <b>71</b>	20 U 46	2 U 1 U	2 U 1 U	2 U <b>0.59 J</b>	2.0 U 1.0 U	2 U 8	2 U <b>0.24 J</b>	2 U 2.1	2.0 U <b>7.8</b>
exachlorobutadiene	μg/L μg/L	01 2 U	83 5 U	2.5 U	67 1.0 U	43 12 U	32 10 U	12 U	40 10 U	1 U	1 U	0.59 J 1 U	1.0 U 1.0 U	• 1 U	0.24 J 1 U	2.1 1 U	7.8 1.0 U
opropylbenzene (Cumene)	μg/L	3.7	4.4 J	3.6	4.8	9.1 J	5.7 J	11 J	8.1 J	1 U	1 U	1 U	1.0 U	0.82 J	1 U	1 U	0.9 J
/p-Xylene	μg/L	89	99	47	30	150	110	150	130	1 U	1 U	1 U	1.0 U	6.2	1 U	1 U	1.5
ethyl tert-butyl ether (MTBE)	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
ethylene chloride	μg/L	2 U	5 U 5 U	2.5 U 2.5 U	1.0 U <b>0.5 J</b>	12 U <b>3.8 J</b>	10 U 10 U	12 U 12 U	10 U 10 U	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1 U <b>0.9 J</b>	1 U 1 U	1 U 1 U	1.0 U <b>0.44 J</b>
Butylbenzene Propylbenzene	μg/L μg/L	2 U 2.9	4.2 J	3.5	2.6	5.8 J 11 J	6.5 J	12 0	9.2 J	1 U	1 U	1 U	1.0 U 1.0 U	0.9 J 1	1 U	1 U	0.44 J 0.6 J
aphthalene	μg/L	46	62	44	37	570	500	910	540	1 U	1 U	6.5	1.0 U	21	1.9	1.3	6.0
Xylene	μg/L	120	160	98	78	92	75	150	96	1 U	1 U	0.55 J	1.0 U	25	0.77 J	3.2	6.1
Isopropyltoluene	μg/L	2 U	2.5 J	2.5 U	1.0 U	51	10 10	46	10 U	1 U	1 U	1 U	1.0 U	4.3	1 U	1 U	1.0 U
-Butylbenzene	μg/L μg/I	2 U 2 U	5 U 5 U	2.5 U 2.5 U	<b>0.7 J</b> 1.0 U	12 U 12 U	10 U 10 U	12 U 12 U	10 U 10 U	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	<b>0.77 J</b> 1 U	1 U 1 U	1 U 1 U	<b>0.72 J</b> 1.0 U
rene -Butylbenzene	μg/L μg/L	2 U 2 U	5 U	2.5 0 2.8	1.0 U 1.0 U	12 U 12 U	10 U 10 U	12 U 12 U	10 U 10 U	1 U	1 U	1 U 1 U	1.0 U 1.0 U	1 U 1 U	1 U 1 U	1 U 1 U	0.36 J
rachloroethene (PCE)	μg/L μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
luene	µg/L	140	130	53	37	840	460	490	360	1 U	1 U	1 U	1.0 U	6.6	0.39 J	0.85 J	2.3
ns-1,2-Dichloroethene	μg/L	5.6	1.5 J	2.5 U	1.1	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U	1 U	1 U	1.0 U
ns-1,3-Dichloropropene	μg/L	2 U	5 U	2.5 U	1.0 U	12 U	10 U	12 U	10 U	1 U	1 U	1 U	1.0 U	1 U 0 76 J	1 U	1 U	1.0 U
ichloroethene (TCE) ichlorofluoromethane	μg/L μg/L	22 4 U	5 U 10 U	2.5 U 5 U	1.0 U 2.0 U	14 25 U	10 U 20 U	12 U 25 U	10 U 20 U	0.93 J 2 U	1 U 2 U	1 U 2 U	1.0 U 2.0 U	0.76 J 2 U	1 U 2 U	1 U 2 U	<b>0.3 J</b> 2.0 U
nyl chloride	μg/L μg/L	120	2.2 J	23	2.0 0 2.9	23 O 24	10	6.6 J	6.6 J	2.6	0.65 J	2 U 1 U	1.0 U	5.5	3.8	1.7	2.6
otal Detected VOCs					389.9	2056.9	1399.8	2120.1	1405.8	8.2	7.1	11.1	2.8	155.4		37.1	102.6

### Table 9 Groundwater VOC Analytical Results for Boundary Monitoring Wells, Site 5 - Unit 2, NAS North Island

Sample Event Sample Identification		Baseline 818725-93	Interim 818725-124	Posttreatment 818725-207	Final 818725-231	Baseline 818725-88	Interim 818725-126	Posttreatment 818725-205	Final	Baseline 818725-86	Interim 818725-127	Posttreatment 818725-204	<b>Final</b> 818725-227
Location Code		S5-MW-36	S5-MW-36	S5-MW-36	S5-MW-36	S5-MW-39	S5-MW-39	S5-MW-39	S5-MW-39	S5-MW-40	S5-MW-40	S5-MW-40	S5-MW-40
Date Sampled		05/20/02	08/13/02	04/24/03	07/08/03	05/16/02	08/13/02	04/24/03		05/15/02	08/13/02	04/24/03	07/07/03
	Unit												
SW8260B	~										10.11		0.5 M
1,1,1,2-Tetrachloroethane 1,1,1-Trichloroethane	μg/L	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1 U 1 U	2 U 2 U	1 U 1 U	NS <sup>1</sup>	5 U 5 U	10 U 10 U	2 U 2 U	2.5 U 2.5 U
1,1,2,2-Tetrachloroethane	μg/L μg/L	1 U	1 U	1 U	1.0 U 1.0 U	1 U 1 U	2 U 2 U	1 U	NS <sup>1</sup>	5 U	10 U 10 U	2 U 2 U	2.5 U 2.5 U
1,1,2-Trichloro-1,2,2-trifluoroethane	μg/L μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U 2 U	1 U	NS <sup>1</sup> NS <sup>1</sup>	5 U	10 U	2 U 2 U	2.5 U
1,1,2-Trichloroethane	μg/L μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U 2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U 2 U	2.5 U
1,1-Dichloroethane	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,1-Dichloroethene	μg/L	0.39 J	1 U	1 U	1.0 U	1.3	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,1-Dichloropropene	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,2,3-Trichlorobenzene	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS1	5 U	10 U	2 U	2.5 U
1,2,3-Trichloropropane	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	12	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,2,4-Trichlorobenzene	μg/L	1 U	1 U	1 U	1.0 U	1.3	1.2 J	1.3	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,2,4-Trimethylbenzene	μg/L	1 U	1 U	1 U	1.0 U	70	36	35	NS <sup>1</sup>	95	86	48	25
1,2-Dibromo-3-chloropropane (DBCP)	μg/L	2 U	2 U	2 U	2.0 U	2 U	4 U	2 U	NS <sup>1</sup>	10 U	20 U	4 U	5 U
1,2-Dibromoethane (EDB)	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,2-Dichlorobenzene	μg/L	1 U	1 U	1 U	1.0 U	97	79	85	NS <sup>1</sup>	48	40	26	19
1,2-Dichloroethane	μg/L	1 U	1 U	1 U	1.0 U	0.66 J	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,2-Dichloropropane	μg/L	0.37 J	0.36 J	1	0.76 J	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,3,5-Trimethylbenzene	μg/L	1 U	1 U	1 U 1 U	1.0 U	3.4 1	0.48 J	0.51 J	NS <sup>1</sup>	26	18 10 U	13	<b>4.6</b>
1,3-Dichlorobenzene	μg/L	1 U	1 U		1.0 U	-	0.94 J	1	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
1,3-Dichloropropane 1,4-Dichlorobenzene	μg/L μg/I	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1 U 25	2 U 21	1 U 22	NS <sup>1</sup>	5 U 14	10 U	2 U <b>8.6</b>	2.5 U <b>6.3</b>
2,2-Dichloropropane	μg/L μg/L	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	25 1 U	21 2 U	22 1 U	NS <sup>1</sup>	14 5 U	12 10 U	8.0 2 U	6.3 2.5 U
2-Butanone (MEK)	μg/L μg/L	5 R	5 U	5 U	5.0 U	5 R	10 U	5 U	NS <sup>1</sup>	25 R	50 U	10 U	2.5 U 12 U
2-Chlorotoluene	μg/L μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup> NS <sup>1</sup>	25 R 5 U	10 U	2 U	2.5 U
2-Hexanone	μg/L μg/L	5 U	5 U	5 U	5.0 U	5 U	10 U	5 U	NS <sup>1</sup>	25 U	50 U	10 U	12 U
4-Chlorotoluene	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
4-Methyl-2-pentanone (MIBK)	μg/L	5 U	5 U	5 U	5.0 U	5 U	10 U	5 U	NS <sup>1</sup>	25 U	50 U	10 U	12 U
Acetone	μg/L	10 R	10 U	10 U	10 U	10 R	15 J	10 U	NS <sup>1</sup>	50 R	100 U	20 U	25 U
Benzene	μg/L	1 U	1 U	1 U	1.0 U	0.43 J	2 U	1 U	NS <sup>1</sup>	2.4 J	10 U	1.4 J	2.5 U
Bromobenzene	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Bromochloromethane	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Bromodichloromethane	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Bromoform	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Bromomethane	μg/L	2 UJ	2 U	2 U	2.0 U	2 U	4 U	2 U	NS	10 U	20 U	4 U	5 U
Carbon disulfide	μg/L	1 U	1 U	1 U	1.0 U	0.92 J	2 U	1 U	NS	5 U	10 U	2 U	2.5 U
Carbon tetrachloride	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS	5 U	10 U	2 U	2.5 U
Chlorobenzene	μg/L	1 U 2 U	1 U	1 U 2 U	1.0 U	1	0.75 J	0.83 J	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Chloroethane Chloroform	µg/L	2 U 1 U	2 U 1 U	2 U 1 U	2.0 U 1.0 U	2 U	4 U 2 U	2 U	NS <sup>1</sup>	10 U 5 U	20 U 10 U	4 U 2 U	5 U 2.5 U
Chloromethane	µg/L	1 U 2 UJ	1 U 2 U	1 U 2 U	2.0 U	1 U 2 U	2 U 4 U	1 U 2 U	NS <sup>1</sup>	5 U 10 U	10 U 20 U	2 U 4 U	2.5 U 5 U
cis-1,2-Dichloroethene	μg/L μg/L	3.7	202	2.0	1.3	<b>4.6</b>	4 U 1.6 J	1	NS <sup>1</sup> NS <sup>1</sup>	5 U	20 U 10 U	4 U 2 U	2.5 U
cis-1,3-Dichloropropene	μg/L μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U 2 U	2.5 U
Dibromochloromethane	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Dibromomethane	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Dichlorodifluoromethane	μg/L	2 U	2 U	2 U	2.0 U	2 U	4 U	2 U	NS <sup>1</sup>	10 U	20 U	4 U	5 U
Ethylbenzene	μg/L	0.24 J	1 U	1 U	1.0 U	50	21	20	NS1	120	84	42	32
Hexachlorobutadiene	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Isopropylbenzene (Cumene)	μg/L	1 U	1 U	1 U	1.0 U	4.7	2.3	1.9	NS <sup>1</sup>	13	7.7 J	4.2	3.1
m/p-Xylene	μg/L	1 U	1 U	1 U	1.0 U	16	6.5	8.3	NS <sup>1</sup>	220	200	76	43
Methyl tert-butyl ether (MTBE)	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
Methylene chloride	μg/L	1 U	1 U	1 U	1.0 U	1 U	2 U	1 U	NS <sup>1</sup>	5 U	10 U	2 U	2.5 U
N-Butylbenzene	μg/L	1 U	1 U	1 U	1.0 U	3.8	1.6 J	1.1	NS <sup>1</sup>	9.2	7.9 J	3.6	2.1 J
N-Propylbenzene	μg/L	1 U	1 U	1 U	1.0 U	7.6	3.7	3	NS <sup>1</sup>	17	11	5.9	4.3
Naphthalene	μg/L	0.52 J	1 U	1 U	1.0 U	15	15	22	NS <sup>1</sup>	320	330	180	120
-Xylene	μg/L	0.34 J	1 U	1 U	1.0 U	17	13	14 0.02 J	NS <sup>1</sup>	71	67 7.4 X	61	46 0.5 U
p-Isopropyltoluene	μg/L	1 U	1 U	1 U	1.0 U	4.3	2 U	0.82 J	NS <sup>1</sup>	10	7.4 J	8.7	2.5 U
sec-Butylbenzene	μg/L μg/I	1 U	1 U	1 U	1.0 U	<b>4.9</b>	1.7 J	1.5	NS <sup>1</sup>	<b>7.8</b>	5.8 J	3 2 II	2.3 J
Styrene	μg/L μg/I	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U	1 U 1 U	2 U 2 U	1 U 1 U	NS <sup>1</sup>	5 U 5 U	10 U 10 U	2 U 2 U	2.5 U 2.5 U
tert-Butylbenzene Tetrachloroethene (PCE)	μg/L μg/I	1 U 1 U	1 U 1 U	1 U 1 U	1.0 U 1.0 U		2 U 2 U	1 U 1 U	NS <sup>1</sup>	5 U 5 U	10 U 10 U	2 U 2 U	2.5 U 2.5 U
	μg/L μg/I		1 U 1 U	1 U 1 U	1.0 U 1.0 U	0.4 J 16	2 U 8.9	1 U 11	NS <sup>1</sup>	5 U 64	10 U 47	2 U 49	2.5 U 41
Toluene trans-1,2-Dichloroethene	μg/L μg/L	1.6 0.54 J	0.34 J	1 U 1 U	1.0 U 1.0 U	16 0.64 J	8.9 2 U	11 1 U	NS <sup>1</sup>	64 5 U	47 10 U	49 2 U	41 2.5 U
trans-1,2-Dichloropropene	μg/L μg/L	0.54 J 1 U	0.34 J 1 U	1 U 1 U	1.0 U 1.0 U	0.04 J 1 U	2 U 2 U	1 U 1 U	NS <sup>1</sup>	5 U 5 U	10 U 10 U	2 U 2 U	2.5 U 2.5 U
Trichloroethene (TCE)	μg/L μg/L	34	1 U 1 U	1 U 1 U	1.0 U 1.0 U	76	0.81 J	3.8	NS <sup>1</sup> NS <sup>1</sup>	5 U 5 U	10 U 10 U	2 U 2 U	2.5 U 2.5 U
Trichlorofluoromethane	μg/L μg/L	2 U	2 U	2 U	2.0 U	2 U	4 U	2 U	NS NS <sup>1</sup>	10 U	20 U	2 U 4 U	2.5 U
Vinyl chloride	μg/L μg/L	0.96 J	2 U 1 U	1 U	1.0 U	2 U 1 U	1.8 J	2 0 1 U	NS <sup>1</sup>	7.8	7.7 J	4 U 2 U	2.8
Total Detected VOCs													
Louis Delected VOCS		42.7	2.7	2.0	2.1	423.0	232.3	246.1	NS <sup>1</sup>	1045.2	931.5	530.4	351.5

Shaw Environmental, Inc.

Explanation: J - estimated value NS<sup>1</sup> - not sampled because monitoring well could not be accessed due to golf course pond construction activities
 R - rejected data

U - not detected at or above the stated reporting limit UJ - not detected at or above the stated estimated reporting limit  $\mu g/L$  - micrograms per liter

#### Table 10 **Groundwater General Chemistry Analytical Results**

Sample Event		Baseline	Posttreat/MNA #1	Final	Baseline	Posttrea	t/MNA #1	MNA #2	MNA #3	F	inal
Sample Identification		818725-99	818725-210	818725-236	818725-96	818725-171	818725-172 (Dup)	818725-218	818725-223	818725-242	818725-243 (Dup)
Location Code		S5-MW-10	S5-MW-10	S5-MW-10	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21	S5-MW-21
Date Sampled		05/22/02	04/25/03	07/08/03	05/20/02	03/26/03	03/26/03	04/30/03	06/05/03	07/09/03	07/09/03
	Unit										
ASTM D 2340B											
Hardness as CaCO3	mg/L	823	1080	1180 J	687	351	332	257	287	184 J	183 J
EPA 300											
Chloride	mg/L	1,930 J	2280	1470 J	780	459	507	260	414	731	745
Nitrate as Nitrogen (NO3)	mg/L	0.5 G U	0.10 U	0.10 U	0.1 U	0.51	0.051 J	0.10 U	0.26 B G	0.10 U	0.10 U
Sulfate	mg/L	1 U	24.8	27.7	37.4	630	682	623	883	445	458
EPA 376											
Sulfide	mg/L	0.1 U	0.10 U	0.29	0.1 U	0.087 J	0.09 J	0.62	0.36	0.54	0.54
EPA 415											
Total Organic Carbon (TOC)	mg/L	60.8	68.1	75.4	118	748	756	1420	1780	434	446
RSKSOP-175M											
Ethane	mg/L	0.0091	0.034	0.031	0.002 U	0.0013 J	0.0013 J	0.0015 J	0.00070 J	0.0027	0.0031
Ethene	mg/L	9.3	13	7.7	6.5	0.039	0.039	0.14	0.18	1.3	1.3
Methane	mg/L	6 B	8.5 B	8.5	4.3 B	3	2.9	2.9	2.1	3.6	3.6

Sample Event		Base	line	Posttreat/MNA #1	MNA #2	MNA #3	Final	Baseline	Posttreat/MNA #1	Final
Sample Identification		818725-97	818725-98 (Dup)	818725-168	818725-219	818725-224	818725-241	818725-93	818725-207	818725-231
Location Code		S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-30	S5-MW-36	S5-MW-36	S5-MW-36
Date Sampled		05/20/02	05/20/02	03/25/03	04/30/03	06/05/03	07/09/03	05/20/02	04/24/03	07/08/03
	Unit									
ASTM D 2340B										
Hardness as CaCO3	mg/L	1110	1100	109	213	325	626 J	527	970	799 J
EPA 300										
Chloride	mg/L	2,950	2,910	1,280	1340	1360	1490	297	401	406 J
Nitrate as Nitrogen (NO3)	mg/L	2 G U	2 G U	0.1 U	0.053 B	0.50 G U	0.10 U	0.1 U	0.10 U	0.10 U
Sulfate	mg/L	369	289	773	585	623	501	299	638	504
EPA 376										
Sulfide	mg/L	0.1 U	0.1 U	0.1 U	0.10 U	0.10 U	0.10 U	0.1 U	0.10 U	0.10 U
EPA 415										
Total Organic Carbon (TOC)	mg/L	30	28.2	405	158	155	94.4	15.5	17.3	17.8
RSKSOP-175M										
Ethane	mg/L	0.012	0.012	0.031	0.050	0.037	0.037	0.002 U	0.0020 U	0.0020 U
Ethene	mg/L	9.8	19	0.3	1.8	5.0	3.7	0.002	0.0010 U	0.0010 U
Methane	mg/L	5.3 B	5.3 B	0.74	1.7	2.6	4.8	2.2 B	1.5 B	0.055

Sample Event		Bas	eline	Posttreat/MNA #1	Final	
Sample Identification		818725-94	818725-95 (Dup)	818725-159	818725-232	
Location Code		S5-MW-37	S5-MW-37	S5-MW-37	S5-MW-37	
Date Sampled		05/20/02	05/20/02	03/24/03	07/08/03	
	Unit					
ASTM D 2340B						
Hardness as CaCO3	mg/L	610	624	669	733 J	
EPA 300						
Chloride	mg/L	780	795	312	384 J	
Nitrate as Nitrogen (NO <sup>3</sup> )	mg/L	0.1 U	0.1 U	0.45 J	0.10 U	
Sulfate	mg/L	339	351	91.7 J	289	
EPA 376						
Sulfide	mg/L	0.1 U	0.1 U	23.8	12.4	
EPA 415						
Total Organic Carbon (TOC)	mg/L	22.1	21.8	68.2	162	
RSKSOP-175M						
Ethane	mg/L	0.062	0.065	0.00067 J	0.0020 U	
Ethene	mg/L	0.019	0.019	0.00093 J	0.00060 J	
Methane	mg/L	6.9 B	7.4 B	6.2	8.9	

Explanation: B - analyte was also detected in the associated blank EPA - U.S. Environmental Protection Agency G - reporting limit is elevated due to matrix interference J - estimated value mg/L - milligrams per liter MNA - monitoring natural attenuation sampling

U - not detected at or above the stated reporting limit

#### Table 11 Pretreatment and Posttreatment Soil Analytical Results

			lesults																
Sample Identification		818725-109	818725-110 (Dup)	818725-174	818725-111	818725-178	818725-112	818725-179	818725-113	818725-180	818725-108	818725-181	818725-105	818725-175	818725-107	818725-176	818725-177 (Dup)	818725-106	818725-182
Location Code		S5-B-01B 06/27/02	S5-B-01B	S5-B-01P 03/27/03	S5-B-02B 06/27/02	S5-B-02P 03/27/03	S5-B-02B	S5-B-02P 03/27/03	S5-B-02B	S5-B-02P	S5-B-03B	S5-B-03P	S5-B-04B	S5-B-04P	S5-B-05B	S5-B-05P 03/27/03	S5-B-05P 03/27/03	S5-B-06B	S5-B-06P 03/27/03
Date Sampled Depth (feet below ground surface)		7.5	06/27/02 7.7	7.5	4.4	4.4	06/27/02 7.5	7.5	06/27/02 11.6	03/27/03 11.5	06/27/02 7.7	03/27/03 7.7	06/27/02 7.5	03/27/03 7.5	06/27/02 7.5	7.5	7.5	06/27/02 7.5	7.5
Depth (reet below ground surface)	Unit	1.5	1.1	1.5	4.4	4.4	1.5	1.5	11.0	11.5	1.1	1.1	1.5	1.5	1.5	1.5	1.5	1.5	1.5
D2216	Cint																		
Percent Moisture	Percent	24.4	22.3	21.3	8.7	20.8	28.3	22.9	25	33.3	25.7	25.4	25.3	24.7	24.6	25.5	25.5	46.4	27.4
Soil Type		Sand	Sand	Sand	Sand	Sand	Sand w/silt	Sand w/silt	Fat clay	Flat clay	Sand	Sand	Fat clay	Fat clay	Sand	Sand	Sand	Fat clay	Fat clay
SW8260B	1																		
1,1,1,2-Tetrachloroethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,1,1-Trichloroethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,1,2,2-Tetrachloroethane 1,1,2-Trichloro-1,2,2-trifluoroethane	mg/kg mg/kg	2.5 U 2.5 U	2.6 U 2.6 U	1.3 U 1.3 U	1.3 U 1.3 U	0.78 U 0.78 U	3.3 U 3.3 U	24 U 24 U	0.0059 U 0.0059 U	0.4 U 0.4 U	0.32 U 0.32 U	0.68 U 0.68 U	1.6 U 1.6 U	3.1 U 3.1 U	0.0063 U 0.0063 U	1.6 U 1.6 U	0.72 U 0.72 U	0.59 UJ 0.59 UJ	0.35 U 0.35 U
1,1,2-Trichloroethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U 24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,1-Dichloroethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,1-Dichloroethene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,1-Dichloropropene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,2,3-Trichlorobenzene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,2,3-Trichloropropane	mg/kg	2.5 U	2.6 U	22	70	51	4.4	110	0.0094	1.4	0.32 U	0.71	1.6 U	3.1 U	0.0063 U	1.3 J	2	0.59 UJ	0.35 U
1,2,4-Trichlorobenzene	mg/kg	0.98 J	0.82 J 80	0.83 J 80	1.2 J 9.3	1.6	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U 140	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,2,4-Trimethylbenzene 1,2-Dibromo-3-chloropropane (DBCP)	mg/kg	93 5 U	80 5.1 U	80 2.6 U	9.3 2.7 U	0.78 U 1.6 U	<b>1.7 J</b> 6.6 U	110 48 U	<b>0.0081</b> 0.012 U	<b>0.26 J</b> 0.79 U	0.32 U 0.64 U	<b>0.46 J</b> 1.4 U	1.8 3.2 U	140 6.2 U	0.0063 U 0.013 U	0.58 J 3.1 U	<b>2.6</b> 1.4 U	1.5 J 1.2 UJ	<b>0.61</b> 0.7 U
1,2-Dibromo-5-chioropropane (DBCP) 1,2-Dibromoethane (EDB)	mg/kg mg/kg	2.5 U	5.1 U 2.6 U	2.6 U 1.3 U	2.7 U 1.3 U	0.78 U	6.6 U 3.3 U	48 U 24 U	0.012 U 0.0059 U	0.79 U 0.4 U	0.64 U 0.32 U	0.68 U	5.2 U 1.6 U	6.2 U 3.1 U	0.013 U 0.0063 U	5.1 U 1.6 U	0.72 U	0.59 UJ	0.7 U 0.35 U
1,2-Dichlorobenzene	mg/kg	2.5 0	23	20	12	6.6	3.3 U	32	0.0059 U	0.4 C	0.32 U	0.68 U	0.82 J	12	0.018	1.6 U	0.72 0	0.85 J	0.35 U
1,2-Dichloroethane	mg/kg	2.5 U	2.6 U	1.3 U	0.8 J	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	0.47 J	0.32 J	0.59 UJ	0.35 U
1,2-Dichloropropane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,3,5-Trimethylbenzene	mg/kg	29	25	25	10	0.78 U	3.3 U	34	0.0034 J	0.4 U	0.32 U	0.68 U	1.6 U	50	0.0063 U	1.6 U	0.77	0.44 J	0.29 J
1,3-Dichlorobenzene	mg/kg	2.5 U	2.6 U	1.3 U	0.43 J	0.55 J	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
1,3-Dichloropropane 1,4-Dichlorobenzene	mg/kg	2.5 U <b>5.9</b>	2.6 U <b>5.3</b>	1.3 U <b>5.1</b>	1.3 U <b>5.4</b>	0.78 U <b>4.8</b>	3.3 U 3.3 U	24 U 24 U	0.0059 U 0.0059 U	0.4 U 0.4 U	0.32 U 0.32 U	0.68 U 0.68 U	1.6 U 1.6 U	3.1 U <b>3.4</b>	0.0063 U <b>0.0029 J</b>	1.6 U 1.6 U	0.72 U 0.72 U	0.59 UJ 0.59 UJ	0.35 U 0.35 U
2,2-Dichloropropane	mg/kg mg/kg	2.5 U	5.5 2.6 U	1.3 U	5.4 1.3 U	4.0 0.78 U	3.3 U 3.3 U	24 U 24 U	0.0059 U	0.4 U 0.4 U	0.32 U 0.32 U	0.68 U	1.6 U	3.4 3.1 U	0.0029 J 0.0063 U	1.6 U	0.72 U 0.72 U	0.59 UJ	0.35 U
2-Butanone (MEK)	mg/kg	12 R	13 R	6.6 U	6.7 R	3.9 U	16 R	120 U	0.03 R	2 U	1.6 R	3.4 U	8 R	15 U	0.032 R	7.8 U	3.6 U	2.9 R	1.7 U
2-Chlorotoluene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
2-Hexanone	mg/kg	12 U	13 U	6.6 U	6.7 U	3.9 U	16 U	120 U	0.03 U	2 U	1.6 U	3.4 U	8 U	15 U	0.032 U	7.8 U	3.6 U	2.9 UJ	1.7 U
4-Chlorotoluene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
4-Methyl-2-pentanone (MIBK)	mg/kg	12 U	13 U	6.6 U	6.7 U	3.9 U	16 U	120 U	0.03 U	2 U	1.6 U	3.4 U	8 U	15 U	0.032 U	7.8 U	3.6 U	2.9 UJ	1.7 U
Acetone Benzene	mg/kg mg/kg	12 U 2.5 U	<b>4.6 J</b> 2.6 U	6.6 U 1.3 U	6.7 U 1.3 U	<b>1.8 J</b> 0.78 U	16 U 3.3 U	120 U 24 U	0.036 0.0042 J	<b>6.4</b> 0.4 U	1.6 U 0.32 U	3.4 U 0.68 U	8 U 1.6 U	15 U 3.1 U	0.034 0.007	7.8 U 1.6 U	<b>2.4 J</b> 0.72 U	2.9 UJ 0.59 UJ	1.7 U 0.35 U
Bromobenzene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U 24 U	0.0042 J 0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Bromochloromethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Bromodichloromethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Bromoform	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Bromomethane	mg/kg	5 R	5.1 R	2.6 U	2.7 R	1.6 U	6.6 R	48 U	0.012 U	0.79 U	0.64 R	1.4 U	3.2 R	6.2 U	0.013 U	3.1 U	1.4 U	1.2 R	0.7 U
Carbon disulfide	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0053 J	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Carbon tetrachloride Chlorobenzene	mg/kg	2.5 U 2.5 U	2.6 U 2.6 U	1.3 U 1.3 U	1.3 U 1.3 U	0.78 U 0.78 U	3.3 U 3.3 U	24 U 24 U	0.0059 U 0.0059 U	0.4 U 0.4 U	0.32 U 0.32 U	0.68 U 0.68 U	1.6 U 1.6 U	3.1 U 3.1 U	0.0063 U 0.0063 U	1.6 U 1.6 U	0.72 U 0.72 U	0.59 UJ 0.59 UJ	0.35 U 0.35 U
Chloroethane	mg/kg mg/kg	2.5 U	5.1 U	2.6 U	2.7 U	1.6 U	6.6 U	48 U	0.0039 U	0.4 U 0.79 U	0.52 U 0.64 U	1.4 U	3.2 U	6.2 U	0.003 U	3.1 U	1.4 U	1.2 UJ	0.55 U 0.7 U
Chloroform	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Chloromethane	mg/kg	5 U	5.1 U	2.6 U	2.7 U	1.6 U	6.6 U	48 U	0.012 U	0.79 U	0.64 U	1.4 U	3.2 U	6.2 U	0.013 U	3.1 U	1.4 U	1.2 UJ	0.7 U
cis-1,2-Dichloroethene	mg/kg	2.5 U	2.6 U	1 J	60	0.78 U	150	1500	0.058	0.38 J	0.32 U	37	110	220	0.0043 J	74	50	29 J	0.35 U
cis-1,3-Dichloropropene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Dibromochloromethane	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Dibromomethane Dichlorodifluoromethane	mg/kg mg/kg	2.5 U 5 U	2.6 U 5.1 U	1.3 U 2.6 U	1.3 U 2.7 U	0.78 U 1.6 U	3.3 U 6.6 U	24 U 48 U	0.0059 U 0.012 U	0.4 U 0.79 U	0.32 U 0.64 U	0.68 U 1.4 U	1.6 U 3.2 U	3.1 U 6.2 U	0.0063 U 0.013 U	1.6 U 3.1 U	0.72 U 1.4 U	0.59 UJ 1.2 UJ	0.35 U 0.7 U
Ethylbenzene	mg/kg	18	15	11	1.5	0.78 U	3.3 U	48 C 22 J	0.0059 U	0.4 U	0.34 U	0.68 U	1.6 U	0.2 0 16	0.015 0	1.6 U	0.72 U	0.38 J	0.32 J
Hexachlorobutadiene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Isopropylbenzene (Cumene)	mg/kg	4	3.3	3.4	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	7.3	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Methyl tert-butyl ether (MTBE)	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Methylene chloride	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
N-Butylbenzene	mg/kg	20	15	18	1.3 U	0.78 U	3.3 U	18 J	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	26	0.0063 U	1.6 U	0.56 J	0.59 UJ	0.25 J
N-Propylbenzene Naphthalene	mg/kg mg/kg	10 81	9 71	9.3 72	0.86 J 6.1	0.78 U 0.78 U	3.3 U <b>1.5 J</b>	14 J 72	0.0059 U 0.0029 J	0.4 U 0.4 U	0.32 U <b>0.16 J</b>	0.68 U <b>6.1</b>	1.6 U <b>1.8</b>	19 140	0.0063 U <b>0.003 J</b>	1.6 U <b>1.2 J</b>	0.72 U 3.3	0.59 UJ 1.3 J	0.16 J 0.36
p-Isopropyltoluene	mg/kg mg/kg	81 2.5 U	2.6 U	72 20	0.1 7.4	0.78 U 0.78 U	1.5 J 3.3 U	72 22 J	0.0029 J 0.0059 U	0.4 U 0.4 U	0.10 J 0.32 U	0.1 0.68 U	1.8 2.8	31	0.003 J 0.0063 U	1.2 J 2.4	5.5 2.5	1.5 J 3.9 J	0.36
sec-Butylbenzene	mg/kg	8	6.5	8.1	0.72 J	0.78 U	3.3 U	9.9 J	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	14	0.0063 U	1.6 U	0.25 J	0.59 UJ	0.40 0.1 J
Styrene	mg/kg	5 U	5.1 U	2.6 U	2.7 U	1.6 U	6.6 U	48 U	0.012 U	0.79 U	0.64 U	1.4 U	3.2 U	6.2 U	0.013 U	3.1 U	1.4 U	1.2 UJ	0.7 U
tert-Butylbenzene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	24 U	0.0059 UJ	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 UJ	1.6 U	0.72 U	0.59 UJ	0.35 U
Tetrachloroethene (PCE)	mg/kg	2.5 U	2.6 U	0.5 J	5.1	0.78 U	3.3 U	24 U	0.0059 U	0.4 U	0.32 U	0.68 U	1.6 U	3.1 U	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
Toluene	mg/kg	110	94 2 6 U	33	5.2	0.78 U	2.7 J	120	0.0095	0.26 J	0.2 J	0.85	3.9	55	0.0075	1.9	1.5	3.5 J	0.53
trans-1,2-Dichloroptene	mg/kg	2.5 U	2.6 U	1.3 U	1.3 U	0.78 U	3.3 U	13 J	0.0059 U	0.4 U	0.32 U	0.68 U	0.89 J	2.6 J	0.0063 U	1.6 U	0.72 U	0.59 UJ	0.35 U
trans-1,3-Dichloropropene Trichloroethene (TCE)	mg/kg mg/kg	2.5 U 2.5 U	2.6 U 2.6 U	1.3 U 1.3 U	1.3 U <b>8.9</b>	0.78 U 0.78 U	3.3 U 13	24 U 800	0.0059 U 0.015	0.4 U 0.4 U	0.32 U 0.32 U	0.68 U 0.68 U	1.6 U 1.6 U	3.1 U 3.1 U	0.0063 U 0.0063 U	1.6 U 1.6 U	0.72 U 0.72 U	0.59 UJ 0.59 UJ	0.35 U 0.35 U
Trichlorofluoromethane	mg/kg mg/kg	2.5 U 5 U	2.0 U 5.1 U	1.5 U 2.6 U	<b>6.9</b> 2.7 U	0.78 U 1.6 U	13 6.6 U	48 U	0.015 0.012 U	0.4 U 0.79 U	0.52 U 0.64 U	1.4 U	3.2 U	6.2 U	0.0005 U 0.013 U	3.1 U	0.72 U 1.4 U	1.2 UJ	0.33 U 0.7 U
Vinyl chloride	mg/kg	5 U	5.1 U	2.6 U	2.7 U	1.6 U	6.6 U	48 U	0.035	0.79 U	4.5	4.5	8.8	8.7	0.29	9.6	7	3.5 J	0.7 U
Xylenes (total)	mg/kg	100	81	56	8	1.56	3.3 U	119	0.0042 J	0.8	0.32 U	1.36	1.3 J	96	0.025	3.2	1.59 J	2.3 J	0.93
Aylelles (total)	00	505.9		385.2							4.9				0.4				

### Explanation: J - estimated value

mg/kg - milligrams per kilogram R - rejected data U - not detected at or above the stated reporting limit

### Table 12 Groundwater VOC Analytical Results for Perimeter Monitoring Wells

Detect         Normal	Sample Event Sample Identification		Posttreatment 818725-215	Posttreatment 818725-200	<b>Posttreatment</b> 818725-197	Posttreatment 818725-199	Posttreatment 818725-202	Posttreatment 818725-217	<b>Posttreatment</b> 818725-209	Posttreatment 818725-206	Posttreatment 818725-211	Posttreatment 818725-216	Posttreatment 818725-212
Data         Val.         Val. <th< th=""><th>Location Code Date Sampled</th><th></th><th>S5-MW-11 04/25/03</th><th>S5-MW-12 04/23/03</th><th>S5-MW-13 04/23/03</th><th>S5-MW-14 04/23/03</th><th>S5-MW-15 04/24/03</th><th>S5-MW-16 04/25/03</th><th>S5-MW-17 04/25/03</th><th>S5-MW-18 04/24/03</th><th>S5-MW-19 04/25/03</th><th>S5-MW-22 04/25/03</th><th>S5-MW-23 04/25/03</th></th<>	Location Code Date Sampled		S5-MW-11 04/25/03	S5-MW-12 04/23/03	S5-MW-13 04/23/03	S5-MW-14 04/23/03	S5-MW-15 04/24/03	S5-MW-16 04/25/03	S5-MW-17 04/25/03	S5-MW-18 04/24/03	S5-MW-19 04/25/03	S5-MW-22 04/25/03	S5-MW-23 04/25/03
1.1.2 Realmombe         pp.         1.1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0         1.0		Unit											
Lå - Stranssensen         spå         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1			1.17	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1 U
L1.2.5 Mathematical and analysismathematical and analysismathematical analysismathematical analysismathematical analysismathematical analysisL1.2.5 Mathematical analysismathematical analysismathematical analysismathematical analysismathematical analysismathematical analysisL1.2.5 Mathematical analysismathematical analysismathematical analysismathematical analysismathematical analysismathematical analysisL2.5 Mathematical analysismathematical analysismathematic													1 U
L2 Statemate L3 Statemate 													1 U
1.1.6.1.6.1.6.2.1.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.1.11.	1,1,2-Trichloro-1,2,2-trifluoroethane		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Libency Libency Decompositionnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetnetne<		μg/L											1 U
1.55.0         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         1.67         <													1 U
13.55         1.60         1.60         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00         1.00 </td <td></td> <td>1 U 1 U</td>													1 U 1 U
12.3.5.1.3.5.3.5.3.5.3.5.3.5.3.5.3.5.3.5.3													1 U
12.4.7.1													1 U
Libbox         Solution         Solution <thsolution< th="">         Solution         <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1 U</td></t<></thsolution<>													1 U
jabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabjabja	1,2,4-Trimethylbenzene	μg/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
12.Definitionshows 12.Definitionshows 13.Definitionshows 13.Definitionshows 	· · · · · · · · · · · · · · · · · · ·												2 U
1.3.b.Schlergergergergergergergergergergergergerge													1 U
12.00.000000000000000000000000000000000					-			-			-		1 U 1 U
1.3.5 Tech1.9.11.9.11.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.0													1 U
L3-Dakkowene L3-Dakkowene Mark100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100100					-			-			-	-	1 U
1.3-Bookspanne         upt         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U         U <thu< th="">         U         U</thu<>													1 U
22 Delament (DE)ipLiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiUiU													1 U
Shamen (MFK)         ppl         SU         SU <thsu< th="">         SU         SU</thsu<>											-	-	1 U
2         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10 </td <td></td> <td>1 U</td>													1 U
214.com constructions (MIN)9L5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U5U <td></td> <td>5 U</td>													5 U
4-Choosenee-ip11U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U <td></td> <td>1 U 5 U</td>													1 U 5 U
													1 U
BeaceuptUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUUU <td></td> <td>5 U</td>													5 U
BiomachemenhameµgL1 U1 U <th1 th="" u<="">1 U</th1>	Acetone		10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Beam Beam Beam Beam 													1 U
Biomachane Biomachane Biomachane Biomachane BiomachanejeL1 U1 U <td></td> <td>1 U</td>													1 U
Instance $pqL$ $1 \ u$ <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1 U</td></t<>													1 U
Instructureipt upt2.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.02.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.01.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1 U</td></t<>													1 U
Carbon schedheyft1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U </td <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2 U</td>					-								2 U
CharochnaceygL1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U	Carbon disulfide		1 U	1 U	1 U	1 U	1 U	1 U	0.51 J	1 U	1 U	1 U	0.75 J
Chlorodrame'pgL2 U2 U <th2 th="" u<="">2 U<!--</td--><td>Carbon tetrachloride</td><td>μg/L</td><td>1 U</td><td></td><td>-</td><td>1 U</td><td>1 U</td><td>1 U</td><td>1 U</td><td>1 U</td><td>-</td><td>1 U</td><td>1 U</td></th2>	Carbon tetrachloride	μg/L	1 U		-	1 U	1 U	1 U	1 U	1 U	-	1 U	1 U
Chlorome Chloromehane (a)C1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U													1 U
Chlorowhene cis1-2-Dehlorowhene (si-1,2-Dehlorowhene (si-1,2-Dehlorowhene)ypt1 U4 U2 U1 U												-	2 U
cis1.2-bichloophenepgL1U4.71U1U1U1U1U1U1U1U1U1UDistonachlaromethanepgL1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U<													1.4 2 U
isi.1iuiuiuiuiuiuiuiuiuiuDibromechaneggl.iuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiuiu </td <td></td> <td>2 U 1 U</td>													2 U 1 U
DibromechaneµgL1U1U1U1U1U1U1U1U1U1UDibromonethaneµgL1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U1U <td></td> <td>1 U</td>													1 U
Dibroomethane $\mu gL$ $1 U$	Dibromochloromethane		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ehlybeazee $ngL$ $1U$ <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1 U</td>					-								1 U
Hexachlorobutadiene $\mu g/L$ 1 U1 U <th1 t<="" td="" u<=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2 U</td></th1>													2 U
					-							-	1 U 1 U
mp-Xyleneµg/L1 U1 U <td></td> <td>1 U 1 U</td>													1 U 1 U
Methylene/MTBE) $\mu g/L$ $1 U$													1 U
Methylene chloride $\mu g/L$ $1 U$ <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1 U</td></t<>													1 U
N-Propylbenzene $\mu g/L$ $1 \ U$ $1 \ $	Methylene chloride												1 U
Naphthalene $\mu g L$ $1 U$													1 U
o-Xylene $\mu_g/L$ 1 U1 U<													1 U
p-Isopropyloluene $\mu_{g/L}$ $1 \ U$	•												1 U 1 U
sec-Butylenzene $\mu_{g/L}$ $1 U$ <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1 U</td></th<>													1 U
Styren $\mu g/L$ $1 U$													1 U
Tetrachoroethene (PCE) $\mu g/L$ $1 U$ <td></td> <td></td> <td></td> <td>1 U</td> <td></td> <td>1 U</td> <td></td> <td></td> <td></td> <td></td> <td>1 U</td> <td></td> <td>1 U</td>				1 U		1 U					1 U		1 U
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $													1 U
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $													1 U
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$													1 U
Trichloroethene (TCE) $\mu g/L$ 1 U1 U													1 U 1 U
Trichlorofluoromethane         μg/L         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U         2 U <td></td> <td>1 U</td>													1 U
Vinyl chloride         µg/L         1 U         0.67 J         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U         1 U													2 U
Total Datacted VOCs ND 5.27 ND ND 4.94 ND 7.04 1.79 ND ND 4.74				0.67 J	1 U								1 U
<b>1 UNU 1 DECOURT FORS TO AND SOLUTION NU NU 10.84 NU 17.91 1.78 NU NU NU 3.15</b>	Total Detected VOCs		ND	5.37	ND	ND	0.84	ND	7.91	1.78	ND	ND	3.15

Shaw Environmental, Inc.

Explanation: J - estimated value ND - not detected at or above laboratory detection limits U - not detected at or above the stated reporting limit  $\mu g/L$  - micrograms per liter

#### Table 13 **Groundwater Water Ouality Objectives**

Groundwater Water Qualit	ty Objectiv
	WQOs
SW8260B List of Analytes	( <b>mg</b> /L)
1,1,1,2-Tetrachloroethane	-
1,1,1-Trichloroethane	540,000
1,1,2,2-Tetrachloroethane	1,200
1,1,2-Trichloro-1,2,2-trifluoroethane	-
1,1,2-Trichloroethane	43,000
1,1-Dichloroethane	7,100
1,1-Dichloroethene	-
1,1-Dichloropropene	-
1,2,3-Trichlorobenzene	-
1,2,3-Trichloropropane	-
1,2,4-Trichlorobenzene	160**
1,2,4-Trimethylbenzene	-
1,2-Dibromo-3-chloropropane	-
1,2-Dibromoethane (EDB)	-
1,2-Dichlorobenzene	5,100
1,2-Dichloroethane	130
1,2-Dichloropropane	10,300**
1,3,5-Trimethylbenzene	-
1,3-Dichlorobenzene	5,100
1,3-Dichloropropane	-
1,4-Dichlorobenzene	18
2,2-Dichloropropane	-
2-Butanone (MEK)	-
2-Chlorotoluene	-
2-Hexanone	-
4-Chlorotoluene	-
4-Methyl-2-pentanone (MIBK)	-
Acetone	-
Benzene	400*
Bromobenzene	-
Bromochloromethane	12,000**
Bromodichloromethane	130
Bromoform	130
Bromomethane	130
Carbon disulfide	-
Carbon tetrachloride	0.90
	570
Chloroethane Chloroform	-
Chloromethane	130 130
cis-1,2-Dichloroethene	224,000**
cis-1,3-Dichloropropene Dibromochloromethane	-
	130
Dibromomethane	-
Dichlorodifluoromethane	12,000**
Ethylbenzene	430*
Hexachlorobutadiene	14
Isopropylbenzene (Cumene)	-
m/p-Xylene	-
Methyl tert-butyl ether (MTBE)	-
Methylene chloride	450
N-Butylbenzene	-
N-Propylbenzene	-
Naphthalene	2,350*
p-Xylene	-
o-Isopropyltoluene sec-Butylbenzene	-
	-
Styrene	-
ert-Butylbenzene	- 00
Tetrachloroethene (PCE)	99
Toluene	3,700*
trans-1,2-Dichloroethene	224,000**
trans-1,3-Dichloropropene	-
Trichloroethene (TCE)	27
	12,000**
	· · · · ·
Trichlorofluoromethane Vinyl chloride Xylenes (total)	36 10,000*

#### Notes:

1. WQO are California Ocean Plan (RWQCB, 2000) Numberical Water Quality Objectives - Human Health (30-day Average) aquatic organism consumption only values unless otherwise noted.

- Explanation: \* California Regional Water Quality Control Board interim cleanup goals (1996) for sites located within 1,000 feet of a marine surface water.
- \*\* United States Environmental Protection Agency National Recommended Ambient Water Quality Criteria for Saltwater Aquatic Life Protection values for Acute Toxicity (RWQCB, 2000).
- WQO water quality objective - WQO not provided

# Table 14Project Objectives Assessment

	Project Objective	Was Objective Achieved?	Comments
1	Remove a sufficient volume of VOCs from the soil and groundwater at the site such that MNA coupled with long term monitoring will be	Majority Achieved, with Final Outcome Pending Further Testing	• The TCRA was intended as an interim measure for the protection of human health and the environment and to expedite site cleanup.
	sufficient to document that potential receptors will not be adversely affected.		• A significant effort was put forth to reduce site contaminant mass. Site contaminant mass removal included pilot study testing (76 pounds), vadose zone source removal (3,050 pounds), and ISCO groundwater treatment (875 pounds). The total estimated VOC mass removed from the site as a result of TCRA activities is approximately 4,000 pounds or 2 tons.
			• The site contaminant plume has reduced in size as a result of ISCO.
			• VOC contaminant concentrations in the source area monitoring well (S5-MW-21) has rebounded to above pretreatment concentrations.
			• MNA assessment data, including microbial assessment and an evaluation of natural attenuation parameters, indicate that site is returning to pretreatment conditions and that ISCO has not negatively impacted the elevated natural degradation ability of the site.
			• Estimates of the remaining time required to achieve site WQOs cannot be calculated until site groundwater VOC concentrations have stabilized.
2	Feasibility assessment of ISCO	Yes	• Feasibility assessment of ISCO (including a pilot study bench testing, a pilot study, and full-scale bench testing of Fenton's reagent and KMnO <sub>4</sub> ) showed that ISCO is a viable option for the site.

# Table 14 (Continued)Project Objectives Assessment

	Project Objective	Was Objective Achieved?	Comments
3	Remove vadose source area(s)	Yes	• Vadose zone source removal included the excavation of the primary site contaminant source (former eastern liquid waste disposal pit) and exploratory trenching and removal of four potential secondary sources associated with buried metallic objects.
4	Remove vadose zone soil with TCE concentration greater than 10 mg/kg	Majority Achieved	• The former eastern liquid waste disposal pit and associated soil with elevated concentrations of TCE were excavated and disposed of off site.
			• Periphery TCE impacted soil at concentrations greater than 10 mg/kg was left in place to permit the excavation of highly impacted low permeability soil found beneath the former eastern liquid waste disposal pit.
5	Vadose zone soil contaminant delineation	Majority Achieved	• The former eastern liquid waste disposal pit source, which caused site groundwater contamination was fully delineated and assessed.
			• Exploratory trenching identified that 4 of 34 identified electromagnetic anomalies contained material related to hydrocarbon waste.
			• Vadose zone soil of the former western liquid waste disposal pit has not been assessed.

### Table 14 (Continued)Project Objectives Assessment

Project Objective	Was Objective Achieved?	Comments
Aquifer contaminant delineation	Majority Achieved	• The site VOC plume nature and extent has been determined.
		• The majority of the remaining VOC contaminant mass in groundwater at the site is cis-1,2-dichloroethene and vinyl chloride.
		• Vinyl chloride is the only detected relevant contaminant that is greater than site VOC WQOs.
		• The presence of polychlorinated biphenyls, semivolatile organic compounds, and metals in excavated source area soil suggests that these contaminants may be present in site groundwater.
		• Site contaminant groundwater contours show that two secondary groundwater VOC plumes may be located within the main site contaminant groundwater plume. Secondary plumes, with contaminant concentrations at insignificant levels relative to the main plume, are associated with the suspected location of the former western liquid waste disposal pit and electromagnetic Anomalies X and Y.
Closure of ISCO treatment apparatus	Majority Achieved	• All injection wells installed at the site were abandoned with the exception of S5-VIW-01 and S5-HIW-01 through S5-HIW-03. These wells require abandonment for complete closure of the treatment apparatus.
		• Horizontal wells were cut off below surface, capped, and surface completions removed for pedestrian safety and to protect the well casings.
	Aquifer contaminant delineation	Project Objective     Achieved?       Aquifer contaminant delineation     Majority Achieved

### Table 14 (Continued)Project Objectives Assessment

Comments
of the site microbial community indicates ately diverse, it consists mainly of gram- ia that have the ability to use a wide range of and it can adapt quickly to changing conditions.
ommunity includes DHE (the only croorganisms possessing necessary enzymes e dechlorination of toxic chlorinated nto harmless ethene) at relatively high levels.
ults confirmed that DHE were only pacted as a result of ISCO.
y appears to have been stimulated by (through desorption of adsorbed VOCs and n of some fraction of total organic carbon), sulted in increased contaminant reduction.
ave been provided in this report.
sulted

*Explanation*:

DHE - Dehalococcoides ethenogenes

ISCO - in situ chemical oxidation

mg/kg - milligrams per kilogram

MNA - monitored natural attenuation

KMnO4 - potassium permanganate

TCRA - time-critical removal action

TCE - trichloroethene

VOCs - volatile organic compounds

WQOs - water quality objectives

### Appendix A Geophysical Reports

- (1) Geophysical Survey to Locate Utilities (April 24, 2000)
- (2) Geophysical Survey to Locate Utilities (February 20, 2001)
- (3) Geophysical Survey to Locate Secondary Sources (June 5, 2002)

A-1 Geophysical Survey to Locate Utilities (April 24, 2000)



215 So. Highway 101, Suite 203 P.O. Box 1152 Solana Beach, CA 92075 Telephone: (858) 481-8949 Facsimile: (858) 481-8998 E mail: geop@subsurfacesurveys.com

April 24, 2000

OHM Remediation Services Naval Air Station North Island 100 yards west of Bldg. 710 San Diego, CA 92135 Project Number: 00-091

Attn: Judy Shiple

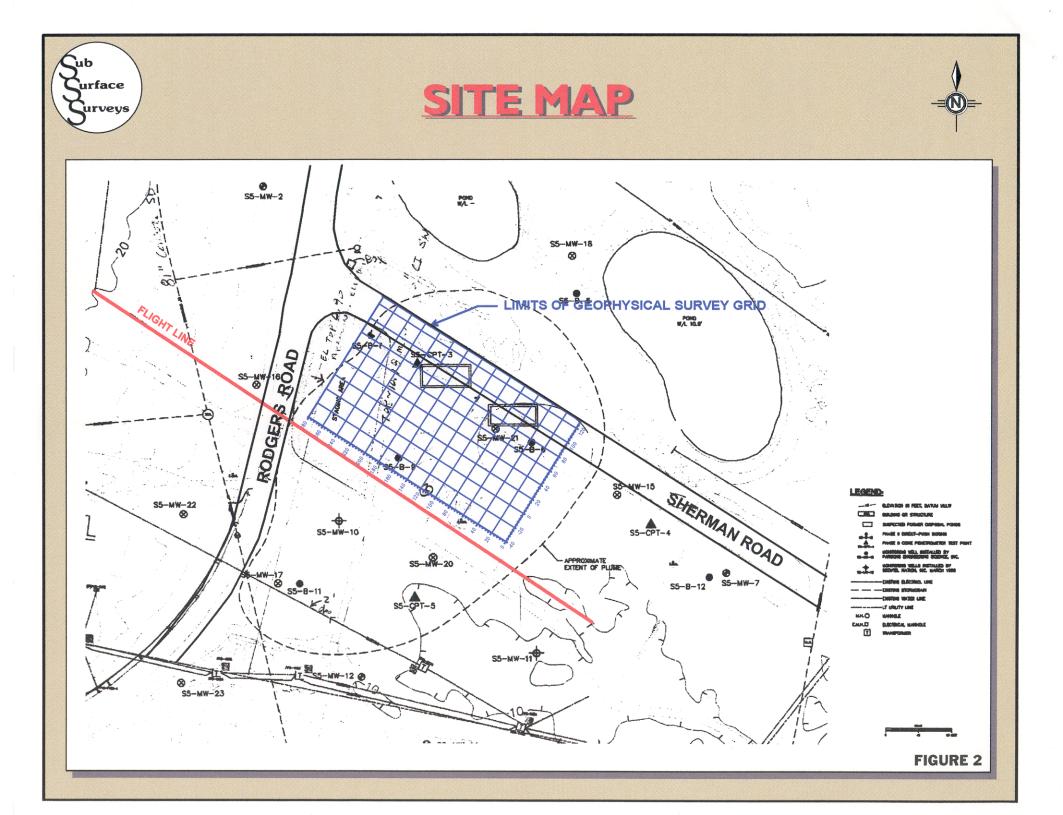
#### Re: Geophysical Investigation at the Naval Air Station North Island, Coronado, CA.

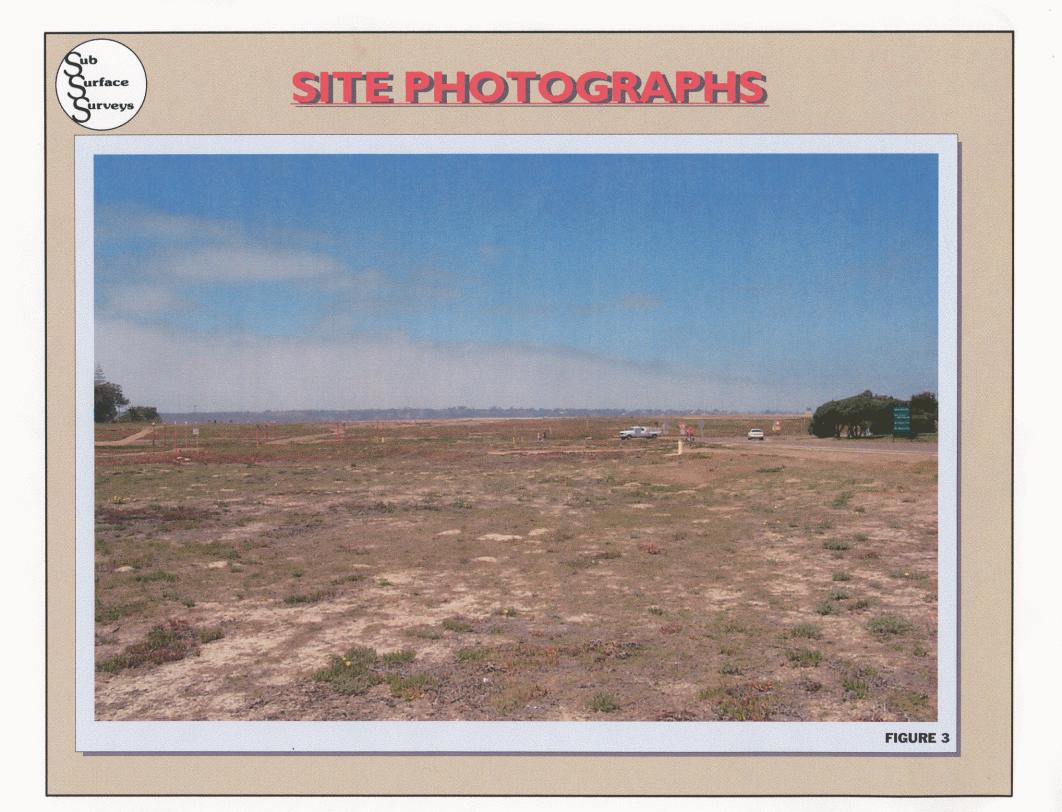
This brief letter report is to present the findings of our geophysical surveys conducted at the North Island Naval Air Station former disposal pit sites at the south corner of Rodgers Road and Sherman Road in Coronado, California (Fig. 1) on April 5, 2000. Purpose of the surveys was to locate and identify, insofar as possible, two former disposal pits, piping, conduit, and other buried features that may exist on the site with particular emphasis in the immediate vicinity of proposed drill sites. A combination of ground penetrating radar, (GPR), magnetometer, magnetic gradiometer, and electromagnetic induction, (EM) were applied to the search.

Multiple methods were utilized because each instrument senses different material properties of the ground and buried objects. At any given site, the situation, geologic and cultural, may be such that one or two of the instruments may record excessive "noise", the ground may not provide sufficient contrasts with installations or discards, or there may be overlapping anomalies, and those instruments may not be definitive. Generally, however, the interpretation is based on the best reconciliation of the several data sets acquired.

<u>Survey Design</u> - The area to be searched was predetermined by the client and included a 280 foot section of Sherman Road and the adjacent grass lot just north of the flight line (Figs. 2 and 3). One formal rectilinear grid measuring 160X280 feet was established to guide data acquisition over the site. Enough of the grid is painted on the ground for recovery, if needs be, in follow up work. EM61 and EM31 data was collected at stations every 5 feet along southeast-to-northwest oriented survey lines spaced five feet apart and monitored continuously. The magnetic gradiometer and M-scope were traversed along the same survey lines and monitored continuously. Radar traverses were also referenced to these grids. GPR traversing was conducted every ten feet over the survey grid and in two orthogonal directions for detailing and confirmation when anomalous conditions were found.







Additionally, A total of 10 proposed boring locations were investigated with the geophysical instrumentation. To the extent that access permitted, the planned boring locations were to be cleared by traversing with geophysical instruments along the eight lines of the standard search pattern (Fig. A), wherein, there are two sets of three parallel lines, mutually orthogonal, and two diagonals, all centered on and extending in a 40 foot radius around the central drill location. Other traverses were taken, access permitting, for detailing and confirmation where anomalous conditions were found.

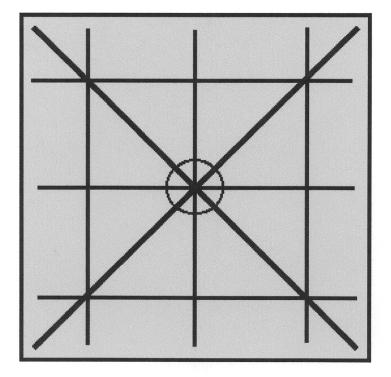


Figure A: Standard search pattern around borehole

Hard copy of the Mscope and magnetic gradient data was not acquired, that is, discrete readings on the nodes of a grid were not recorded. Rather, the instrument's meter was monitored continuously during traverses to detect excursions of the readouts that might have meaning in terms of buried objects. The lack of hard copy for these data sets does not degrade the quality of the survey in any way. The GPR output, of course, is in hard copy form, and position and direction of traverses were noted on the records as they were produced.

Geonics models EM-31 and EM-61 instruments were used for the EM sampling. A Sensors & Software Noggin Ground Penetrating Radar unit produced the radar images, the magnetic gradiometer was a Schonstedt, model GA-52C, and the line tracer used was a Metrotech 9860.

Brief Description of the Geophysical Methods Applied - The EM-31 and M-scope TW-6 devices

energize the ground by producing an alternating primary magnetic field with ac current in the transmitting coil. If conducting materials are within the area of influence of the primary field, ac eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response to a meter in the form of ground conductivity values in the case of the EM-31. The strength of the secondary field is a function of the conductivity of the object; say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 18 feet for the EM31 and 10 feet for the M-scope, are sensed. Also the devices are somewhat focused, that is, they are more sensitive to conductors below (and above) the instrument, than to conductors off to the side.

The EM-61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets. Conductive objects, to a depth of approximately 11 feet can be detected.

The magnetic gradiometer has two fluxgate magnetic fixed sensors that are passed closely to and over the ground. When not in close proximity to a magnetic object, that is, only in the earth's field, the instrument emits a sound signal at a low frequency. When the instrument passes over a buried iron or steel object, so that the field is significantly different at the two sensors, and locally magnetic gradient, the frequency of the emitted sound increases. Frequency is a function of the gradient between the two sensors.

Where risers are present, the utility locator transmitter can be connected to the object, and a current with a sharp frequency, 82 kHz in this instance, is impressed on the conductor, pipe conduit, etc. The receiver unit is tuned to this same frequency, and it is used to trace the pipe's surface projection away from the riser.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic waves. A portion of this energy is reflected back to the antenna at any boundary in the subsurface across which there is an electrical contrast. The recorder continuously makes a record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The EM wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, or closely estimated from ground conductivity values and other information, two-way travel times can be converted to depth.

Penetration into the ground and resolution of the GPR images produced are a function of ground electrical conductivity and dielectric constant. Images tend to be graphic, even at considerable

depth, in sandy soils, but penetration and resolution may be limited in drastically more conductive clayey moist ground.

<u>Interpretation</u> - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were marked on the ground, reported to the client's representative at the completion of the field survey, and detailed on an Interpretation Map (Fig. 4). The EM61 and EM31 data were transferred to a computer in the field and are presented in contoured map format in figures 5 and 6. The intent of this document is to demonstrate the procedure, and report the findings of the work.

EM61 data collected at the site indicates a number of anomalies, which represent buried metallic material centered at [(X -5, Y 100), (X 40, Y 0 to 75), and (X 120, Y 40)]. Of these anomalies, the two centered at (X 40, Y 0 to 75), and (X 120, Y 40), appear to be the effect of abandoned pipes or utilities. The anomaly centered at (X -5, Y 100) appears to be the effect of buried metallic debris and corresponds to a topographic high (a berm of beach sand) and one sinkhole.

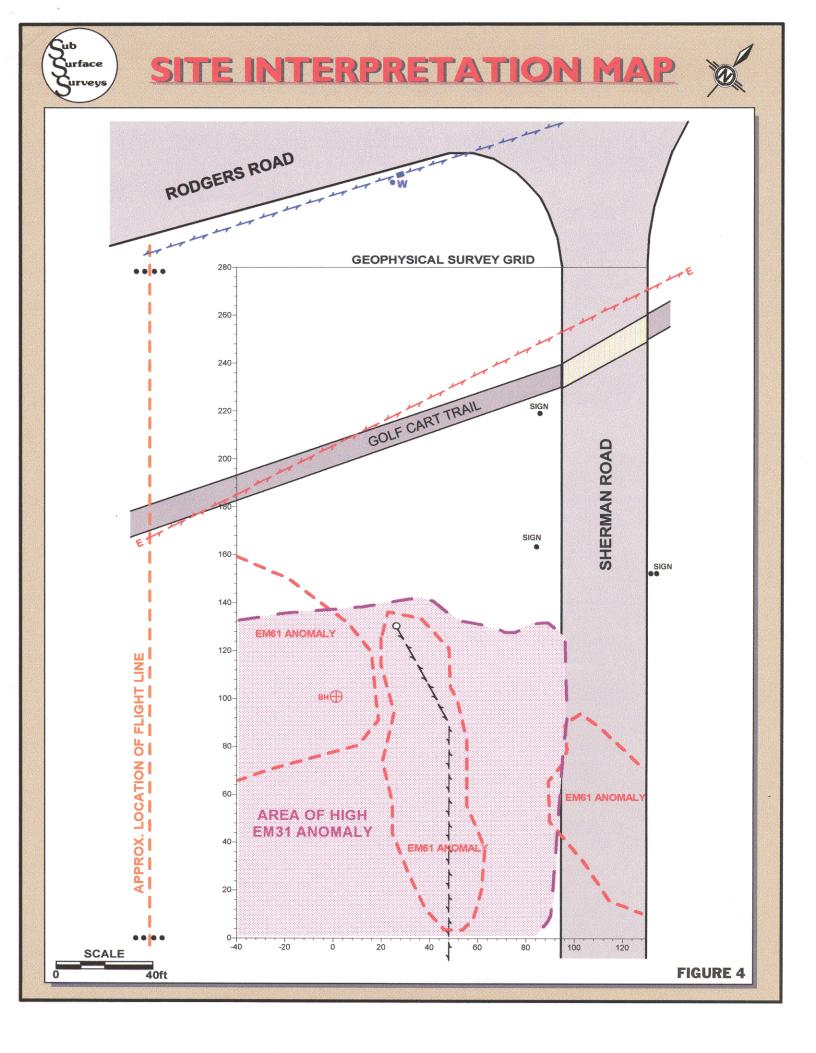
EM31 data collected at the site indicates one anomalous zone extending from the southeast end of the grid and tapering of at (Y 140). This anomalous region represents an area of higher soil conductivity, which may be the effect of buried metallic debris, soil contaminants, and seawater. The northwest end of the grid appears to be much less conductive and has one large linear anomaly, which represents an electric line transecting the grid.

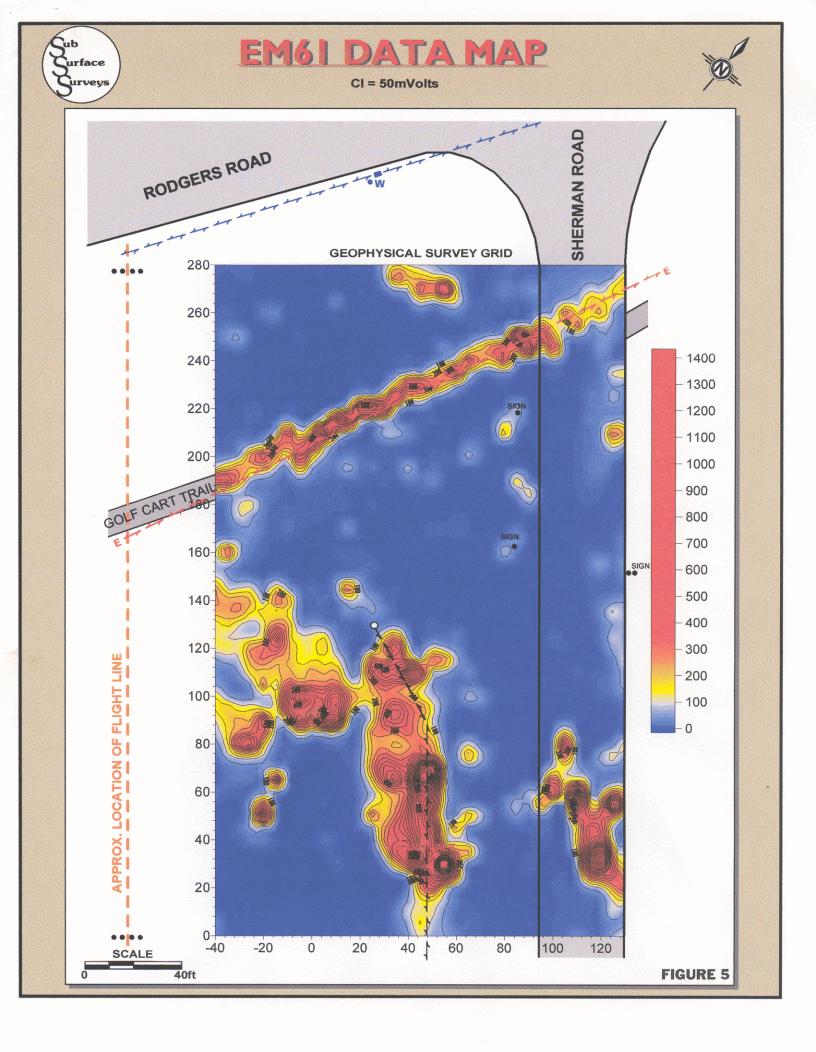
Each of the geophysical instruments utilized were effective at detecting and delineating structures/objects constructed of metallic materials. GPR was useful in that it is the only instrument applied that is capable of producing high definition/resolution profile images of the shallow subsurface. According to theory, radar penetration is a function of soil conductivity and dielectric constant. At this site local conditions were reasonably favorable due to the sandy beach sediment type soil. Resulting in radar penetration down to between 4 and 5 feet.

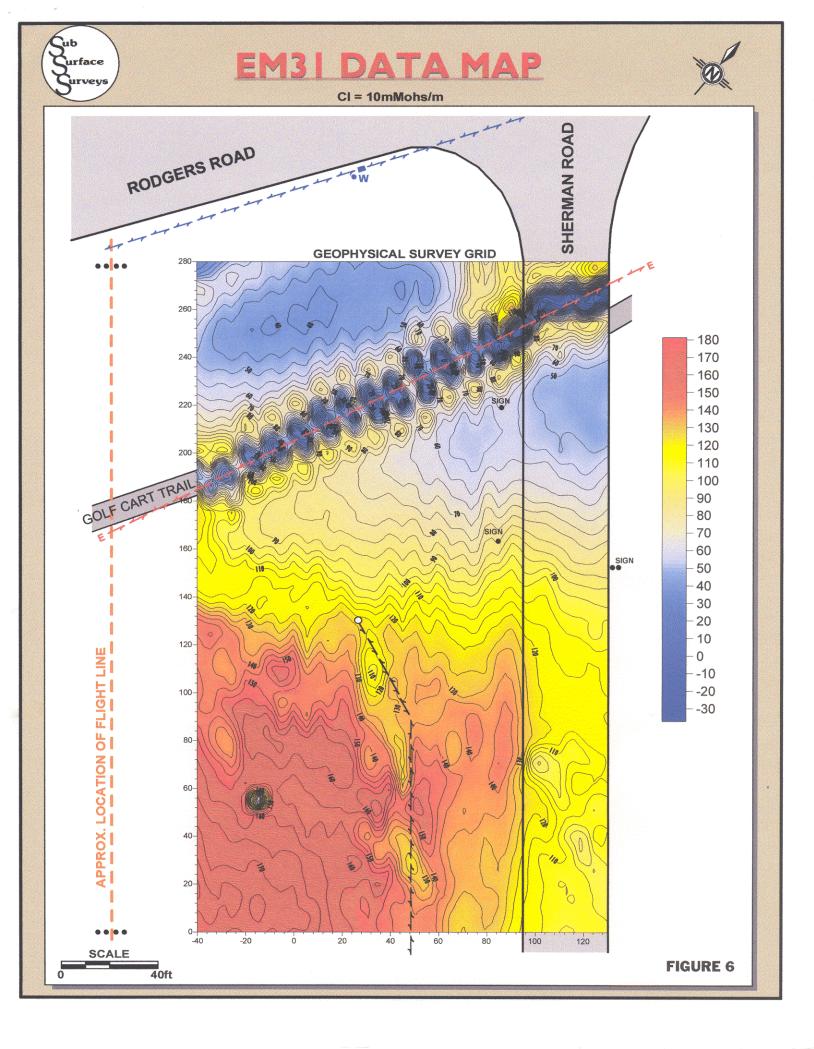
Radar traverses for the area appear to have produced images, which suggest one backfilled excavation type image associated with the EM61 anomaly at (X - 5, Y 100) (Figs. 7 and 8). Additionally, the electric line transecting the site was imaged, and appears to be at a depth of approximately one foot (Fig. 9).

In searching the area, utilities and anomalies detected were marked on the ground surface with paint and pin flags. Figures 10, 11, and 12 are presented to illustrate the EM61, EM31, and ground penetrating radar in use at the site.

<u>Conclusions</u> - Geophysical data acquired over the site appears to indicate a number of anomalies located in the southeastern half of the grid and one electric line crossing the northwestern half of the grid. EM61 data indicates a number of anomalies, two apparently associated with abandoned pipes or utilities, and one that appears to be some buried metallic debris at (X -5,Y 100) that has a corresponding topographic high and radar anomaly. EM31 data indicates a conductivity increase in the southeastern half of the grid possibly caused by buried metallic debris, conductive contaminants or the effect of seawater.







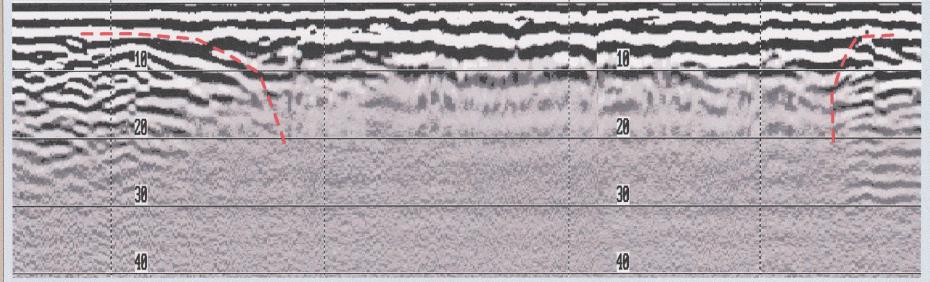


#### SOUTHEAST - NORTHWEST

Cub

Surface Curveys

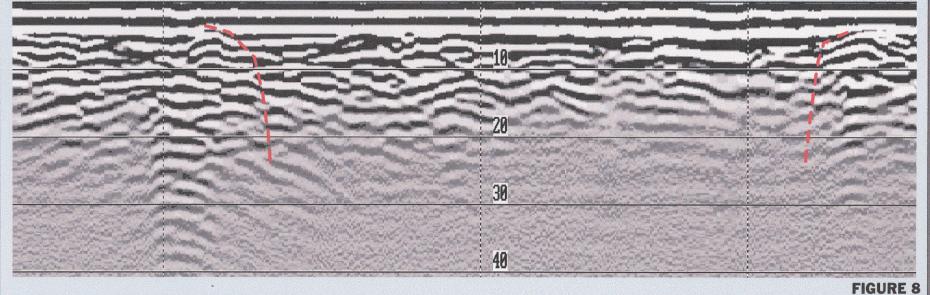
#### **POSSIBLE BACKFILLED EXCAVATION**



#### **FIGURE 7**

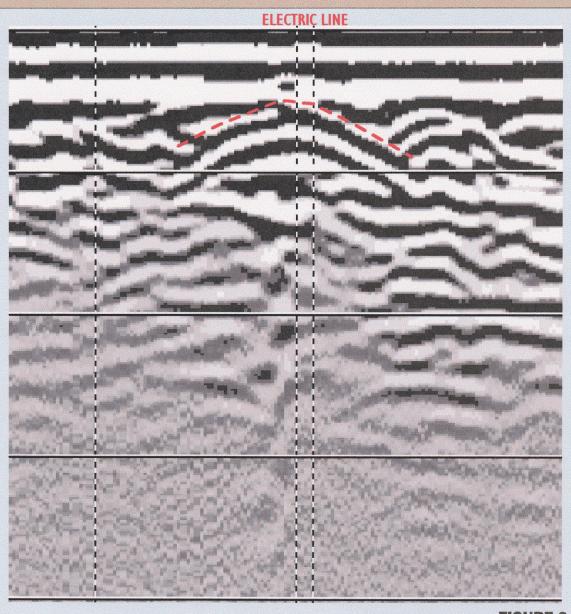
#### **SOUTHEAST - NORTHWEST**

### **POSSIBLE BACKFILLED EXCAVATION**



Sub Surface Surveys

# **RADAR INITERPRETATION**



**FIGURE 9** 





Cub

Surface Curveys

**FIGURE 11** 







Based on the findings of the geophysical surveys, definitive responses indicating the position of the former disposal ponds were not acquired, however, it appears as though the anomalies expressed may be associated with the ponds targeted.

All data generated on this project are in confidential file in this office, and are available for review by authorized persons at any time. The opportunity to participate in this investigation is very much appreciated. Please call, if there are questions.

Patrick F. Lehrmann Staff Geol/Geophysicist

Lawrence J. Favilla, GP969 Senior Geophysicist

A-2 Geophysical Survey to Locate Utilities (February 20, 2001)



215 So. Highway 101, Suite 203 P.O. Box 1152 Solana Beach, CA 92075 Telephone: (858) 481-8949 Facsimile: (858) 481-8998 E mail: geop@subsurfacesurveys.com

February 20th, 2001

**OHM Remediation Services** 1230 Columbia Street, Suite 1200 San Diego, CA 92101 Project Number: 01-049

Attn: Judy Shiple

# Re: Geophysical Investigation at the Naval Air Station North Island, Coronado, CA.

This brief letter report is to present the findings of our geophysical surveys conducted at the North Island Naval Air Station former disposal pit sites at the south corner of Rodgers Road and Sherman Road in Coronado, California (Fig. 1) on February 2<sup>nd</sup>, 2001. Purpose of the surveys was to locate and identify, insofar as possible, piping, conduit, and other buried features that may exist on the site with particular emphasis in the immediate vicinity of proposed drill sites.

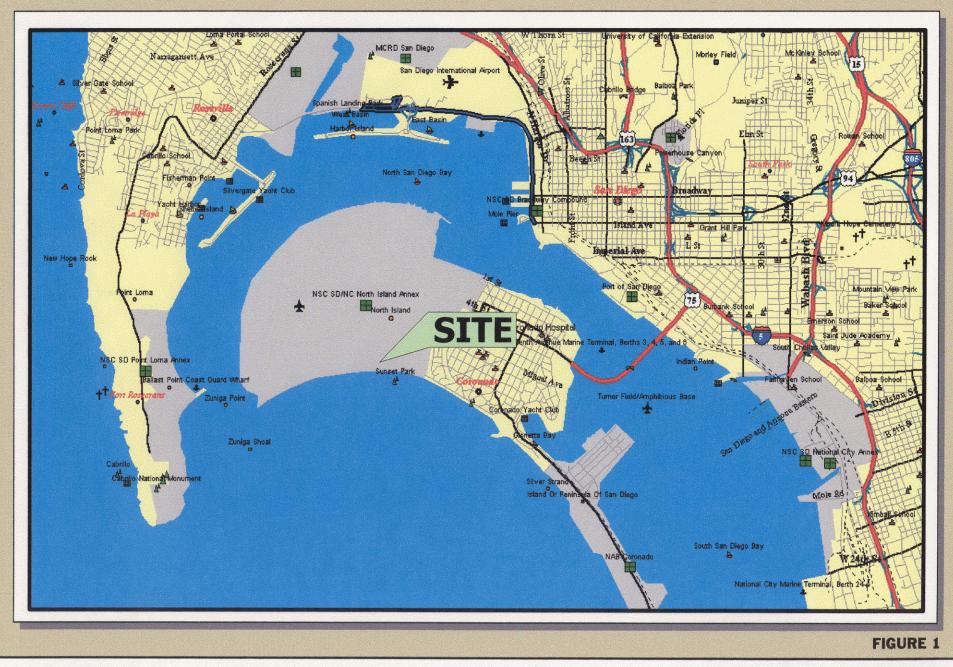
A combination of electromagnetic induction, EM, magnetometry, and ground penetrating radar, GPR, were applied to the search. A utility locator with line tracing capabilities was also brought to the field and used where risers existed onto which a signal could be impressed and traced. Figure 2 is presented to illustrate the line tracer and the radar in use at the site. Multiple methods were utilized because each instrument senses different material properties of the ground and buried objects. At any given site the situation, geologic and cultural, may be such that one or two of the instruments may record excessive "noise", the ground may not provide sufficient contrasts, or there may be overlapping anomalies, for a given instrument to be effective. Generally, however, the interpretation is based on the best reconciliation of the several data sets.

<u>Survey Design</u> - Seventeen borehole locations were pre-selected and marked by the client. One formal rectilinear grid measuring 160X180 feet was established to encompass these boreholes and to guide data acquisition over the area (Fig. 3). Enough of the grid is painted on the ground for recovery, if needs be, in follow up work. EM-61 data were collected at stations every 0.6-foot along north-south oriented survey lines spaced five feet apart. The magnetic gradiometer and M-scope were traversed along the same survey lines and monitored continuously. Radar traverses were also referenced to these grids. GPR traversing was conducted for detailing and confirmation when anomalous conditions were found. Site Photographs area included as figure 4.

A Geonics model EM61 instrument, and a Fischer M-Scope, was used for the EM sampling. A GSSI SIR-2 Ground Penetrating Radar unit produced the radar images. The magnetic gradiometer was a Schonstedt GA-52, and a Metrotech 9890 utility locator rounded out the tools applied.

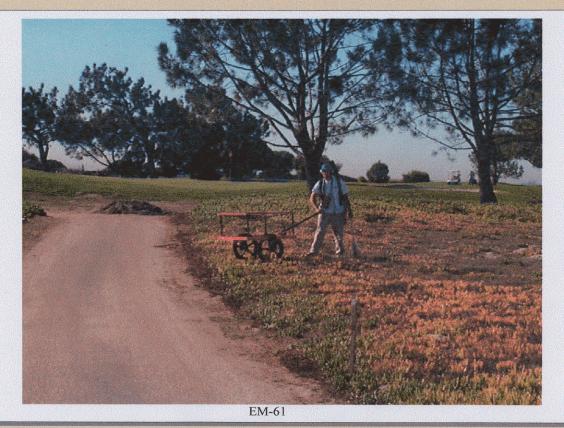


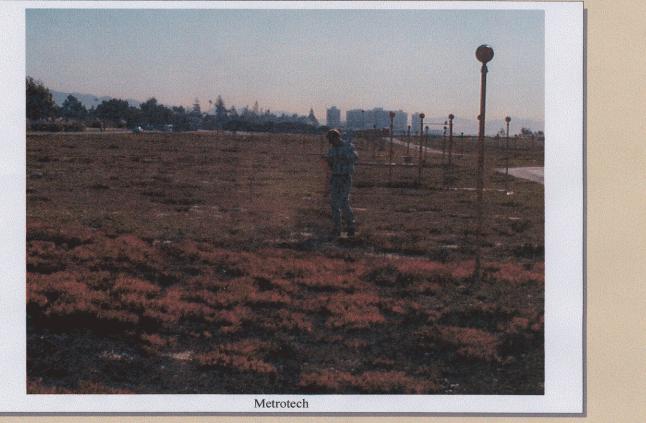
# SITE LOCATION MAP

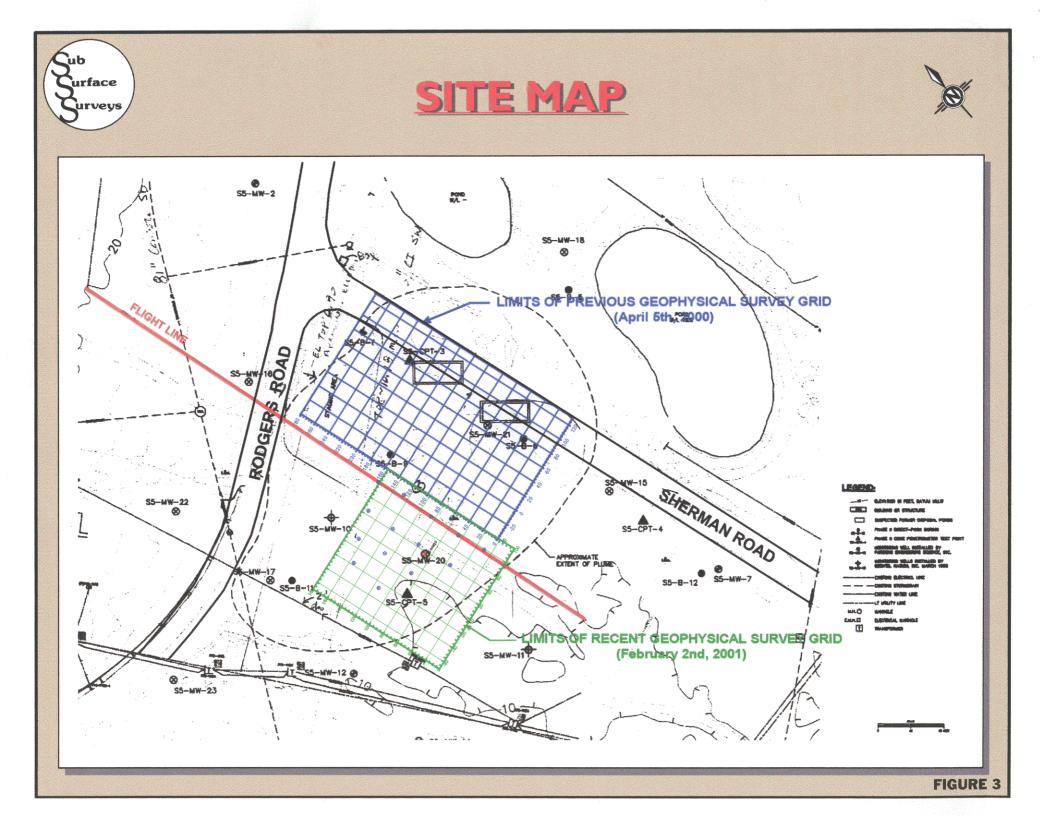




# **SITE PHOTOGRAPHS**









# **SITE PHOTOGRAPHS**





**Brief Description of the Geophysical Methods Applied** - The EM-31 and the M-scope TW-6 devices energize the ground by producing an alternating primary magnetic field with ac current in the transmitting coil. If conducting materials are within the area of influence of the primary field, ac eddy currents are induced to flow in the conductors. A receiving coil senses the secondary magnetic field produced by these eddy currents, and outputs the response to a meter in the form of ground conductivity values in the case of the EM-31. The strength of the secondary field is a function of the conductivity of the object, say a pipe, tank or cluster of drums, its size, and its depth and position relative to the instrument's two coils. Conductive objects, to a depth of approximately 18 feet for the EM31 and 10 feet for the M-scope, are sensed. Also the devices are somewhat focused, that is, they are more sensitive to conductors below (and above) the instrument, than to conductors off to the side.

The EM61 instrument is a high resolution, time-domain device for detecting buried conductive objects. It consists of a powerful transmitter that generates a pulsed primary magnetic field when its coils are energized, which induces eddy currents in nearby conductive objects. The decay of the eddy currents, following the input pulse, is measured by the coils, which in turn serve as receiver coils. The decay rate is measured for two coils, mounted concentrically, one above the other. By making the measurements at a relatively long time interval (measured in milliseconds) after termination of the primary pulse, the response is nearly independent of the electrical conductivity of the ground. Thus, the instrument is a super-sensitive metal detector. Due to its unique coil arrangement, the response curve is a single well-defined positive peak directly over a buried conductive object. This facilitates quick and accurate location of targets. Conductive objects, to a depth of approximately 11 feet can be detected.

The magnetic gradiometer has two flux gate magnetic fixed sensors that are passed closely to and over the ground. When not in close proximity to a magnetic object, that is, only in the earth's field, the instrument emits a sound signal at a low frequency. When the instrument passes over a buried iron or steel object, so that locally there is a high magnetic gradient, the frequency of the emitted sound increases. The frequency is a function of the gradient between the two sensors.

The line locator is used to passively detect energized high voltage electric lines and electrical conduit (50-60 Hz), VLF signals (14-22 kHz), as well as to actively trace other utilities. Where risers are present, the utility locator transmitter can be connected directly to the object, and a signal (9.8-82 kHz) is sent traveling along the conductor, pipe, conduit, etc. In the absence of a riser, the transmitter can be used to impress an input signal on the utility by induction. In either case, the receiver unit is tuned to the input signal, and is used to actively trace the signal along the pipe's surface projection.

The GPR instrument beams energy into the ground from its transducer/antenna, in the form of electromagnetic waves. A portion of this energy is reflected back to the antenna at a boundary in the subsurface across which there is an electrical contrast. The instrument produces a continuous record of the reflected energy as the antenna is traversed across the ground surface. The greater the electrical contrast, the higher the amplitude of the returned energy. The radar wave travels at a velocity unique to the material properties of the ground being investigated, and when these velocities are known, the two-way travel times can be converted to depth. The depth of penetration and image resolution produced are a function of ground electrical conductivity and dielectric constant.

<u>Interpretation</u> - The interpretation took place in real time as the survey progressed, and accordingly, the findings of our investigation were marked on the ground and reported to the client's representative at the completion of the field survey. The EM61 data collected on February 2<sup>nd</sup>, 2001 was combined with the EM61 data that was collected on April 5<sup>th</sup>, 2000 and are presented in contoured map format with interpretation (Fig. 5). The intent of this document is to demonstrate the procedure, and report the findings of the work.

The EM61 data collected on February  $2^{nd}$ , 2001 indicates a number of anomalies, which represent buried metallic material centered at [(X 45,Y 110), (X 80,Y 120), and (X 95,Y 15)]. These anomalies appear to be the effect of buried metallic debris. There was also one long linear anomaly transecting the grid trending northeast southwest, which represents a piping/utility line. In addition, an electric line was detected with the line tracer that connects the flight-line light standards. In essence, the EM-61 data map delineates the effect of metal either on the surface or buried in the shallow subsurface. Therefore, the data in contour format can be used as a map indicating the position of all the metal buried beneath the site.

Each of the geophysical instruments utilized were effective at detecting and delineating structures/objects constructed of metallic materials. GPR was useful in that it is the only instrument applied that is capable of producing high definition/resolution profile images of the shallow subsurface. According to theory, radar penetration is a function of soil conductivity and dielectric constant. At this site local conditions were reasonably favorable due to the sandy beach sediment type soil. Resulting in radar penetration down to between 4 and 5 feet.

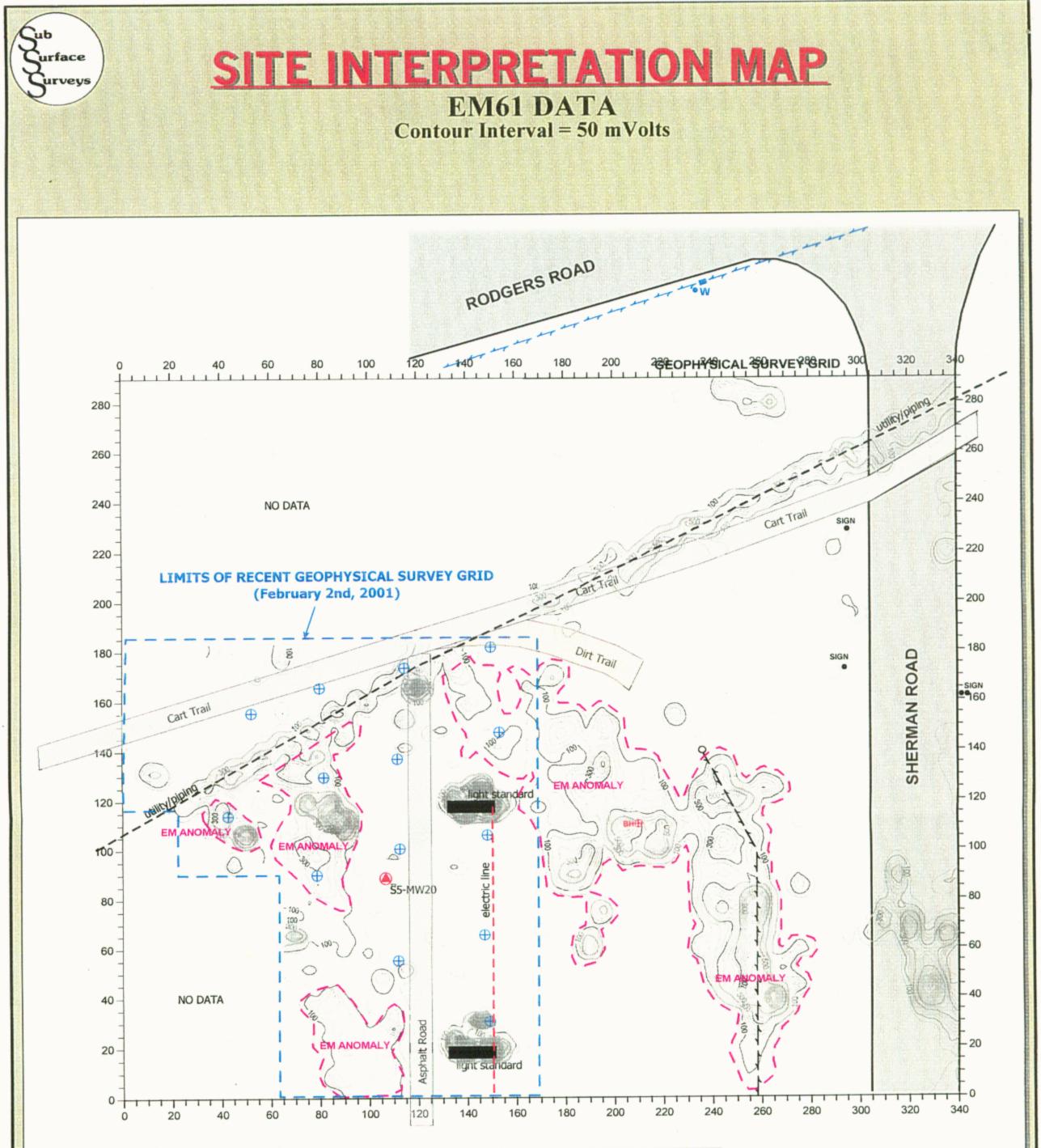
In searching the area, utilities and anomalies detected were marked on the ground surface with paint and pin flags.

<u>Conclusions</u> - Geophysical data acquired over the site appears to indicate a number of anomalies located within the grid, one piping/utility line transecting the grid, and an electric line that connects the flight-line light standards. Seventeen planned drill sites were investigated and appear to be free of piping/utilities as marked by the client, or they were moved a short distance by Subsurface Surveys to areas that appeared clear.

All data generated on this project are in confidential file in this office, and are available for review by authorized persons at any time. The opportunity to participate in this investigation is very much appreciated. Please call, if there are questions.

George E. Herman IV Staff geophysicist/geologist

Lawrence J. Favilla, GP 969 Senior Geophysicist



		<u>LEGEND</u>	
	undetermined line	Proposed Boring Location     Existing Monitoring Well	
SCALE	40ft	Coronado, CA	FIGURE 5

A-3 Geophysical Survey to Locate Secondary Sources (June 5, 2002)

# C R M **GEOPHYSICS**

I220 Destree Rd. Escondido, CA 92027 760-738-8561 www.spectrum-geophysics.com

Los Angeles-Irvine-San Diego

# **Results of Geophysical Investigation**

IR Site 5 - Unit 2 Naval Air Station, North Island San Diego, California

Prepared for: Shaw Environmental San Diego, California

Date of Investigation: June 5, 2002

**Prepared by:** 

mpfoser

Jim Pfoser V Project Manager Spectrum Geophysics 1220 Destree Road Escondido, CA 92027



# Warranty:

Spectrum Geophysics was retained to conduct a geophysical investigation of the above facility to characterize the shallow subsurface. Our findings are subject to certain limitations due to site conditions and the instruments employed. We conducted this investigation in a manner consistent with our profession using similar methods. No other warranty as to the performance or deliverables is expressed or implied.

San Diego

go Los Angeles Irvine www.spectrum-geophysics.com

# **Contents:**

Introduction Methods Results and Conclusions

Plate 1	Area of Geophysical Investigation, IR Site 5 - Unit 2, Naval Air Station, North Island, San Diego, California
Plate 2	Contour Map of EM-61 Top Coil Data, IR Site 5 - Unit 2, Naval Air Station, North Island, San Diego, California

Results of Geophysical Investigation IR Site 5 - Unit 2 Naval Air Station, North Island San Diego, California

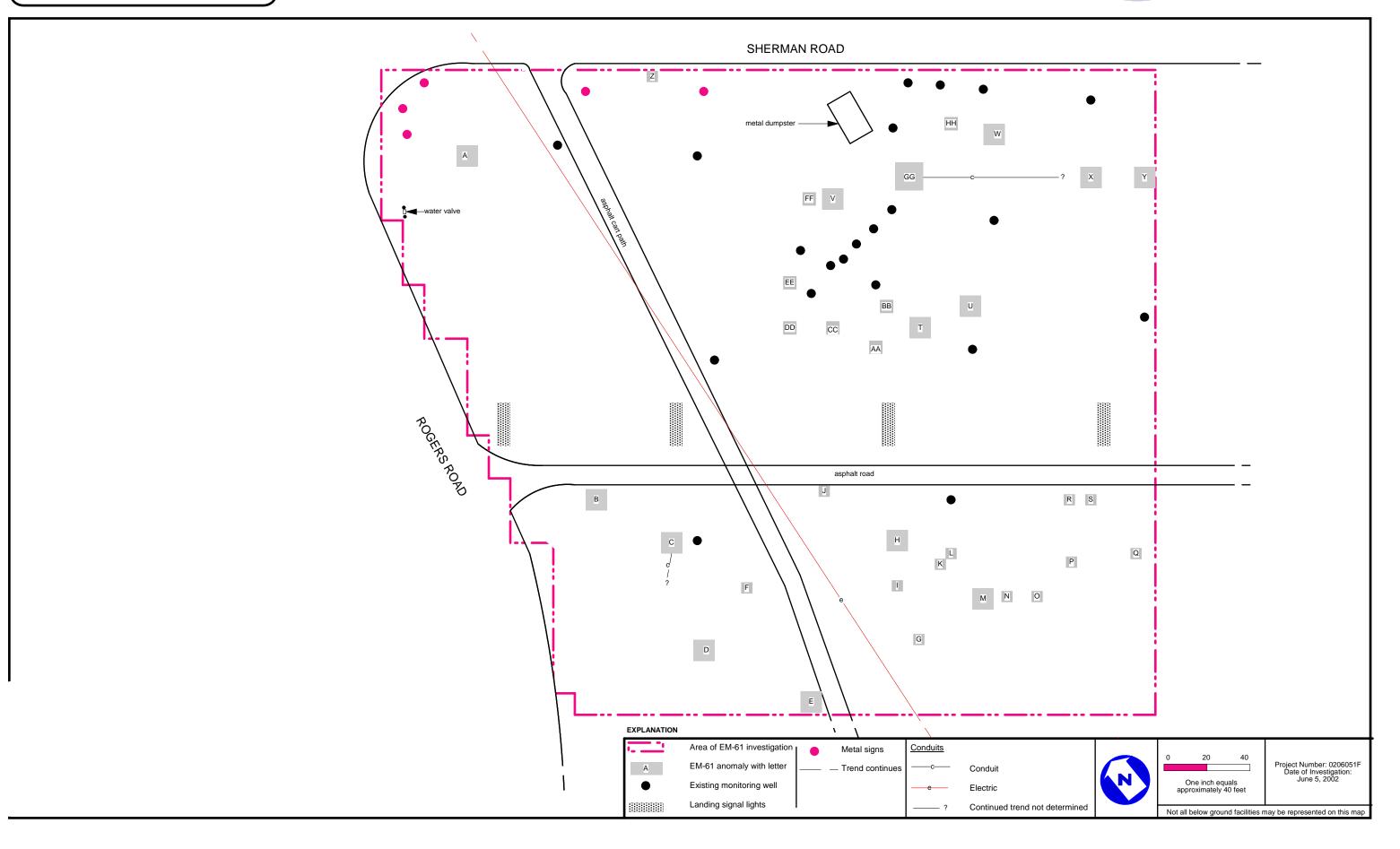
Introduction On June 5, 2002 Spectrum Geophysics conducted a geophysical investigation on a portion of IR Site 5 - Unit 2 at North Island Naval Air Station in San Diego, California. The purpose was to delineate the surface trace of detectable buried drums and other metallic subsurface features in an area approximately 300 by 360 feet in size. **Methods** The equipment used in this investigation consisted of a Geonics EM-61 high-sensitivity metal detector and electromagnetic (EM) utilitylocating equipment. The EM-61 was used in an effort to delineate areas where large metallic objects (such as steel drums) may be buried. The EM-61 transmitter generates short pulses of electromagnetic energy which travel downward and outward and have a primary field associated with them. This energy becomes "trapped" in conductive materials and causes a secondary magnetic field to be generated in these materials. The receiver measures the voltage of the decay curve of this secondary magnetic field, which is proportional to the conductivity of the subsurface materials. EM-61 voltage readings were taken, recorded and stored in a digital polycorder at 5-foot intervals along north-south lines spaced 5 feet apart within a grid established by the geophysics crew. These data were processed in the field and used to generate contour maps to assist in identifying anomalous areas that may represent drums. EM utility-locating methods were used in the areas of interest to investigate EM-61 anomalies in an effort to determine their source. **Results and Conclusions** A site map with geophysical interpretation is presented in Plate 1 and a contour map of the EM-61 top coil data is presented in Plate 2. Thirty-four anomalies, referred to in this report as Anomalies A-Z and AA-HH, were identified which could not be explained by aboveground cultural features (see Plate 1 and Table 1). A shallow-focus terrain conductivity meter indicated these anomalies are most likely caused by near-surface metallic debris although the exact sources of these anomalies are unknown. It is recommended that they be further investigated through excavation.

Thirty-four anomalies, referred to in this report as Anomalies A-Z and AA-HH, were identified which could not be explained by aboveground cultural features (see Plate 1 and Table 1). A shallow-focus terrain conductivity meter indicated these anomalies are most likely caused by near-surface metallic debris although the exact sources of these anomalies are unknown. It is recommended that they be further investigated through excavation.

Anomaly	Location	Magnitude	Anomaly	Location	Magnitude
А	Line 40, Station 260	360 millivolts	AA	Line 230, Station 170	180 millivolts
В	Line 100, Station 100	360 millivolts	BB	Line 235, Station 190	360 millivolts
С	Line 135, Station 80	600 millivolts	СС	Line 210, Station 180	300 millivolts
D	Line 150, Station 30	600 millivolts	DD	Line 190, Station 180	180 millivolts
E	Line 200, Station 10	300 millivolts	EE	Line 190, Station 200	240 millivolts
F	Line 170, Station 60	120 millivolts	FF	Line 200, Station 240	480 millivolts
G	Line 250, Station 35	720 millivolts	GG	Line 245, Station 250	900 millivolts
Н	Line 240, Station 80	900 millivolts	НН	Line 265, Station 275	360 millivolts
1	Line 240, Station 60	360 millivolts			
J	Line 205, Station 105	240 millivolts			
к	Line 260, Station 70	120 millivolts			
L	Line 270, Station 75	120 millivolts			
М	Line 275, Station 60	120 millivolts			
Ν	Line 290, Station 55	180 millivolts			
0	Line 305, Station 55	120 millivolts			
Р	Line 320, Station 70	180 millivolts			
Q	Line 350, Station 70	180 millivolts			
R	Line 320, Station 100	120 millivolts			
S	Line 330, Station 100	120 millivolts			
Т	Line 250, Station 180	600 millivolts			
U	Line 275, Station 190	720 millivolts			
v	Line 210, Station 240	600 millivolts			
W	Line 285, Station 270	900 millivolts			
х	Line 330, Station 250	300 millivolts			
Y	Line 355, Station 250	360 millivolts			
Z	Line 125, Station 295	240 millivolts			

Table 1 Anomalies Identified in the EM-61 Data

PLATE 1 AREA OF GEOPHYSICAL INVESTIGATION IR SITE 5 - UNIT 2 NAVAL AIR STATION, NORTH ISLAND SAN DIEGO, CALIFORNIA

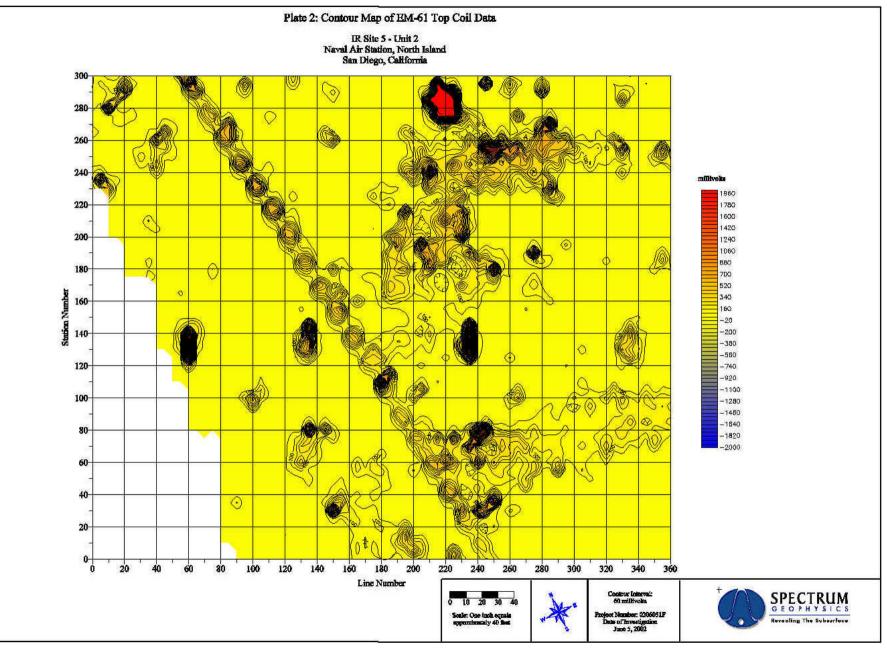




SPECTRUM

GEOPHYSICS

Revealing The Subsurface



Appendix B Location Survey Data

# Soil Boring, Injection Well, and Monitoring Well Survey Data IR Site 5 - Unit 2 Time Critical Removal Action

# SOIL BORINGS

<u>North</u>	<u>East</u>	<u>MSL Elev.</u>	<u>MLLW Elev.</u>	Location Description
1832372.22	6269806.90	7.69	10.58	S5-B-14
1832366.11	6269855.96	7.32	10.21	S5-B-15
1832380.41	6269839.47	8.58	11.47	S5-B-23
1832381.65	6269830.02	8.50	11.39	S5-B-24
1832375.57	6269827.58	8.64	11.53	S5-B-25
1832373.96	6269817.86	8.64	11.53	S5-B-26
1832364.65	6269818.15	8.54	11.43	S5-B-27
1832364.74	6269829.68	8.58	11.47	S5-B-28
1832360.95	6269838.61	8.45	11.34	S5-B-29
1832369.81	6269835.65	8.37	11.26	S5-B-30
1832361.74	6269838.99	8.22	11.11	S5-B-31
1832369.11	6269836.21	8.33	11.22	S5-B-32
1832380.52	6269837.86	8.60	11.49	S5-B-33
1832382.43	6269829.51	8.46	11.35	S5-B-34
1832376.51	6269826.56	8.41	11.30	S5-B-35
1832373.25	6269818.90	8.50	11.39	S5-B-36
1832364.03	6269817.13	8.31	11.20	S5-B-37
1832364.60	6269828.78	8.40	11.29	S5-B-38
1832486.60	6269853.49	10.00	12.89	S5-B-39
1832459.87	6269894.81	10.35	13.24	S5-B-40
1832437.39	6269930.05	10.54	13.43	S5-B-41
1832418.92	6269960.18	10.74	13.63	S5-B-42
1832452.97	6269957.86	9.86	12.75	S5-B-43
1832474.95	6269830.24	9.37	12.26	S5-B-44
1832450.29	6269869.65	9.58	12.47	S5-B-45
1832427.66	6269900.25	9.53	12.42	S5-B-46
1832348.79	6269937.71	8.57	11.46	S5-B-47
1832297.60	6269887.43	8.15	11.04	S5-B-48
1832419.45	6269915.03	9.60	12.49	S5-B-49
1832409.96	6269930.61	9.82	12.71	S5-B-50
1832435.75	6269971.89	9.86	12.75	S5-B-51
1832453.73	6269944.11	9.85	12.74	S5-B-52
1832467.05	6269924.27	9.78	12.67	S5-B-53
1832479.65	6269904.54	9.51	12.40	S5-B-54
1832488.93	6269890.34	9.37	12.26	S5-B-55
1832419.69	6269880.36	8.34	11.23	S5-B-56
1832412.97	6269851.66	9.09	11.98	S5-B-57
1832399.86	6269903.19	9.24	12.13	S5-B-58
1832389.47	6269876.63	8.49	11.38	S5-B-59
1832430.33	6269815.98	9.53	12.42	S5-B-60
1832440.87	6269884.24	9.52	12.41	S5-B-61
1832399.65	6269940.62	9.75	12.64	S5-B-01D
1832423.27	6269943.28	10.73	13.62	S5-B-02D
1832436.30	6269951.44	10.54	13.43	S5-B-03D
1832427.80	6269932.61	10.64	13.53	S5-B-03D
1832439.35	6269939.90	10.52	13.41	S5-B-05D
1832434.60	6269920.72	10.52	13.41	S5-B-06D
1832447.13	6269927.91	10.32	13.34	S5-B-07D
1832464.16	6269880.52	10.45	13.17	S5-B-07D
1832473.68	6269889.17	10.20	13.13	S5-B-00D
1832462.61	6269947.92	9.64	12.53	S5-B-09D
1832402.01	6269890.94	9.04	12.04	S5-B-01B
1832421.15	6269824.43	8.67	11.56	S5-B-02B
1832391.88	6269934.31	9.79	12.68	S5-B-03B
1832366.08	6269789.93	8.32	12.00	S5-B-04B
	UZUZU 0M M.)	0.37	1 1.21	00-0-000

# **MONITORING WELLS**

<u>North</u>	East	MSL Elev.	MLLW Elev.	Location Description
1832708.01	6269606.17	12.58	15.47	S5-MW-02
1831967.93	6270579.34	10.01	12.90	S5-MW-06
1832240.32	6270157.38	10.84	13.73	S5-MW-07
1832302.41	6269694.15	10.13	13.02	S5-MW-10
1832142.22	6269929.53	9.91	12.80	S5-MW-11
1832114.07	6269720.51	9.61	12.50	S5-MW-12
1831932.90	6269707.79	11.47	14.36	S5-MW-13
1832032.21	6269797.74	11.41	14.30	S5-MW-14
1832334.45	6270025.68	11.35	14.24	S5-MW-15
1832467.94	6269595.89	11.69	14.58	S5-MW-16
1832227.01	6269620.34	11.66	14.55	S5-MW-17
1832623.86	6269973.22	14.08	16.97	S5-MW-18
1832002.10	6269551.56	9.84	12.73	S5-MW-19
1832258.14	6269804.82	10.00	12.89*	S5-MW-20
1832414.35	6269880.77	11.66	14.55*	S5-MW-21
1832310.35	6269506.90	12.46	15.35	S5-MW-22
1832106.33	6269502.88	10.64	13.53	S5-MW-23
1832371.40	6269825.65	11.19	14.08	S5-MW-24
1832388.59	6269811.01	11.40	14.29	S5-MW-25
1832359.43	6269835.12	11.20	14.09	S5-MW-26
1832376.03	6269839.39	11.42	14.31	S5-MW-27
1832380.02	6269849.88	11.30	14.19	S5-MW-28
1832383.44	6269858.85	11.64	14.53	S5-MW-29
1832365.21	6269809.63	10.62	13.51	S5-MW-30
1832278.51	6269928.57	10.21	13.10	S5-MW-31
1832309.09	6269853.57	10.23	13.12	S5-MW-32
1832377.35	6269967.29	11.86	14.75	S5-MW-33
1832349.95	6269895.22	10.29	13.18	S5-MW-34
1832368.50	6269747.85	10.93	13.82	S5-MW-35
1832523.54	6269983.66	9.85	12.74	S5-MW-36
1832486.27	6269911.30	9.13	12.02	S5-MW-37
1832452.35	6269799.01	11.97	14.86	S5-MW-38
1832525.74	6269873.60	8.66	11.55	S5-MW-39
1832489.88	6269748.78	11.29	14.18	S5-MW-40

# **PROPAGATION INJECTION WELLS**

<u>North</u>	<u>East</u>	<u>MSL Elev.</u>	<u>MLLW Elev.</u>	Location Description
1832451.79	6269965.27	10.23	13.12	S5-PIW-01
1832474.03	6269931.08	9.77	12.66	S5-PIW-02
1832402.17	6269936.41	10.22	13.11	S5-PIW-03
1832434.48	6269882.79	9.55	12.44	S5-PIW-04
1832460.39	6269848.02	9.66	12.55	S5-PIW-05
1832370.60	6269928.95	9.20	12.09	S5-PIW-06
1832409.37	6269899.24	9.65	12.54	S5-PIW-07
1832369.08	6269886.31	8.78	11.67	S5-PIW-08
1832399.81	6269867.65	8.89	11.78	S5-PIW-09
1832410.38	6269834.15	9.18	12.07	S5-PIW-10
1832335.49	6269881.25	8.07	10.96	S5-PIW-11
1832360.73	6269854.69	8.64	11.53	S5-PIW-12
1832386.43	6269834.60	9.08	11.97	S5-PIW-13
1832405.25	6269800.66	9.41	12.30	S5-PIW-14
1832432.36	6269789.05	10.07	12.96	S5-PIW-15
1832328.59	6269850.12	8.50	11.39	S5-PIW-16
1832346.16	6269816.60	8.91	11.80	S5-PIW-17
1832375.60	6269804.30	8.97	11.86	S5-PIW-18
1832402.75	6269769.12	9.64	12.53	S5-PIW-19

### HORIZONTAL INJECTION WELLS

<u>North</u>	<u>East</u>	<u>MSL Elev.</u>	<u>MLLW Elev.</u>	Location Description
1832407.98	6269928.25	10.18	13.07	S5-HIW-01
1832417.99	6269913.44	10.00	12.89	S5-HIW-02
1832428.13	6269898.40	9.98	12.87	S5-HIW-03

# **VERTICAL INJECTION WELLS**

<u>North</u>	<u>East</u>	<u>MSL Elev.</u>	<u>MLLW Elev.</u>	Location Description
1832372.78	6269830.77	11.05	13.94	S5-VIW-01
1832320.21	6269816.17	9.05	11.94	S5-VIW-02
1832340.36	6269781.91	9.42	12.31	S5-VIW-03
1832365.52	6269770.79	9.44	12.33	S5-VIW-04
1832366.99	6269728.11	8.74	11.63	S5-VIW-05
1832417.66	6269890.43	9.74	12.63	S5-VIW-06
1832410.01	6269870.43	9.35	12.24	S5-VIW-07
1832354.47	6269904.37	8.57	11.46	S5-VIW-08
1832348.70	6269885.10	8.36	11.25	S5-VIW-09
1832362.42	6269844.55	8.86	11.75	S5-VIW-10
1832361.68	6269825.18	9.08	11.97	S5-VIW-11

### Explanation:

-B- - soil boring

HIW - horizontal injection well IR - Installation Restoration

MLLW Elev. - mean lower low water per station 9410169 North Island Navy Wharf North San Diego Bay (2.89 feet below mean sea level) MSL Elev. - mean sea level elevation (United States Geological Survey, 1955)

MW - monitoring well

PIW - propagation injection well

S5 - Site 5

VIW - vertical injection well

-\_\_\_B - baseline soil sample boring

-\_\_D - delineation soil sample boring

Notes: 1. Land survey activities were performed by Advanced Survey Technologies, Inc., Alpine, California

2. Survey activities were performed by a State of California registered land surveyor using Third-order Class I accuracy. Horizontal control points were tied to the State Plane Coordinate System based on the North American Datum of 1983 (NAD 83) and vertical control points were based on the NAD 83 Geodetic Reference System of 1980. Horizontal and vertical accuracy was surveyed to at least 0.01 foot.

3. Soil boring elevations are top center of ground surface.

4. Monitoring well elevations are top of well casing measuring point.

5. Injection well elevations are top center of traffic box cover.

# Appendix D Site 5 – Unit 2 Public Fact Sheet and Communication Plan

- (1) August 2001 Fact Sheet
- (2) December 2001 Communication Plan

D-1 August 2001 Fact Sheet



# NAVAL AIR STATION

Fact Sheet No. 13

August 2001



# **Removal Action at Site 5, Unit 2**

This fact sheet will tell you about . . .

- removal of volatile organic compounds (VOCs) from the soil and groundwater at Site 5, Unit 2,
- how you can review the Removal Action Work Plan (RAW) and RAW Addendum for this removal, and
- how to obtain more information.

# Introduction

This fact sheet updates the status of the cleanup program and environmental restoration ongoing at NAS North Island (Figure 1). Since 1917, Naval Air Station (NAS) North Island has supported aviation activities of the Naval operating forces. During the operation and maintenance of aircraft at NAS North Island, hazardous substances have been generated. These include paint, used oil, scrap metal, solvents, and contaminated rinsewater. Past disposal practices, although acceptable at the time, often resulted in contamination of soil and groundwater at various locations on NAS North Island.

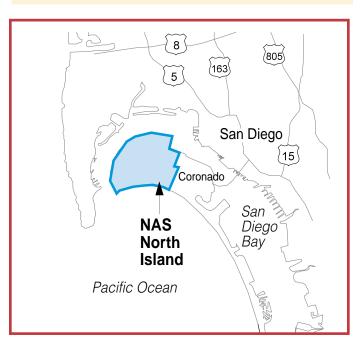


Figure 1 — Vicinity Map

# BACKGROUND

he Navy is inviting the public to review and comment on a Removal Action Work Plan (RAW) and a RAW Addendum about a proposed removal action at Installation Restoration Site 5, Unit 2 at Naval Air Station (NAS) North Island. This removal action is being taken under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. The objective of this removal action is to reduce the risk associated with volatile organic compound (VOC)-impacted soil and groundwater to comply with contaminant levels mandated by the U.S. Environmental Protection Agency and the state of California. VOCs are chemicals (many of which are carcinogenic) that readily evaporate at room temperature. This action will substantially eliminate the potential for exposure to VOCs. The removal action is expected to take place from September through December 2001. The public review and comment period is August 13 to September 12, 2001 (see page 3, Public Comment Period).

# Site 5, Unit 2

Site 5, Unit 2 is located in the southeast portion of NAS North Island, south of Site 5, Unit 1 (Figure 2). Site 5, Unit 1 is a former landfill that has been converted into a golf course. The golf course borders Site 5, Unit 2 to the north and south, and golf cart paths are located adjacent to the site. The nearest residential area is approximately 1,800 feet east of the site, in the city of Coronado.

During operation of the former landfill, two small disposal pits were located at Site 5, Unit 2 (Figure 2). Disposed waste included VOCs and petroleum hydrocarbons, which have impacted soil and groundwater at Site 5, Unit 2.

The VOC-impacted groundwater (the Site 5, Unit 2 groundwater plume) is shown on Figure 2 as the site outline. The southern end of the plume terminates within 200 feet of a slough that conveys stormwater runoff to the Pacific Ocean. The plume has the potential to migrate to the slough in the future.

# You Are Invited to Attend



To learn more about the proposed removal action, the public is invited to attend the Restoration Advisory Board meeting on August 23, 2001, at 6:30 p.m. in the Winn Room of the Coronado Public Library, 620 Orange Avenue, Coronado.

# REMOVAL ACTION

he Action Memorandum, published in December 1999, stated that the contaminants at Site 5, Unit 2 might endanger public health or the environment in the future if a removal action is not conducted. Published in February 2001, the RAW concluded that, based on a pilot study (or test run) conducted at the site, *in situ* chemical oxidation would effectively reduce the mass of VOCs in the soil and groundwater, thereby reducing future threats to public health and the environment.

Oxidation is a rapid and heat-producing reaction. Contaminants are oxidized to carbon dioxide, water, and chloride and do not adversely affect groundwater. *In situ* chemical oxidation is accomplished by creating a reaction in the subsurface by injecting hydrogen peroxide (an oxidizer), ferrous sulfate (a catalyst), and hydrochloric acid (for pH treatment) into the contaminated groundwater.

During the removal action, approximately 45 injection wells will be installed, covering the majority of Site 5, Unit 2. The area of treatment will be divided into two areas (Figure 3). Area 1 will encompass the former disposal pits, which make up the estimated source area. Area 2, the plume extent outside of Area 1, will be used to monitor the treatment progress and will be used for treatment injections, as needed, based on the monitoring results.

The RAW Addendum, published in June 2001, recommended excavation of approximately 600 cubic yards of VOC-contaminated soil under the easternmost former disposal pit (Figure 3), in addition to *in situ* chemical oxidation, to further reduce future threats to public health and the environment. The work

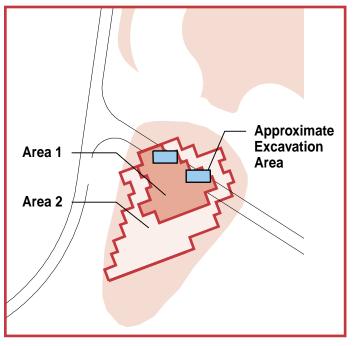
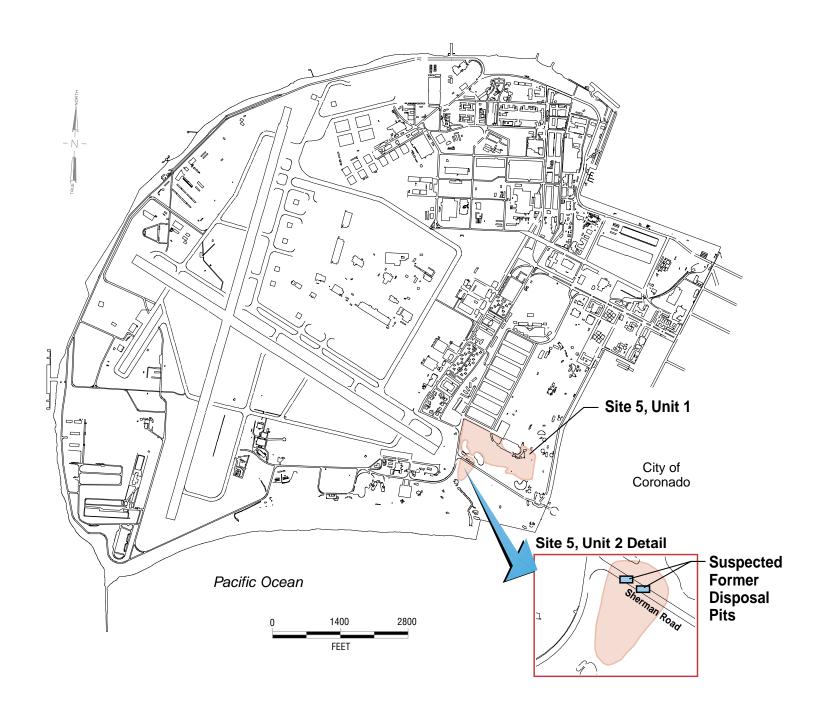


Figure 3 — Site 5, Unit 2 Removal Areas





(excavation and subsequent backfilling with clean soil) will take place on a Friday night, in order to limit human exposure. Sherman Road will be closed during the weekend and on the following Monday, while it is repayed. Traffic will be diverted through the main entrance during that time.

Dust-control measures and air-monitoring equipment will be used to assure strict compliance with state and federal requirements and protect public health. Vapors will be kept to a minimum by keeping the excavation area moist and by placing the excavated soil directly into storage bins, which will then be sealed. Work will be conducted at night to minimize production of vapors. Although vapors are not expected to migrate to nearby residential areas, the NAS North Island/city of Coronado boundary and other perimeter locations will be monitored to assure safe conditions. Noise levels will also be monitored. Safety will be the top priority during the removal action. The site will be fenced and warning signs will be posted to keep unauthorized persons from entering the cleanup area.

The sealed bins of material will be stored near the contractor's staging area in the south-central portion of NAS North Island. The sealed bins will be incrementally hauled off the base to an

appropriate, permitted disposal facility. Material will be transported at a rate of approximately five trucks per day, during a 3-week period, in order to limit truck traffic. All trucks will carry placards signifying the type of material being hauled. The trucks will exit the base via the main gate and will be routed through the city of Coronado via Fourth Street, across the Coronado Bridge to Interstate 5. The Navy will notify and implement requirements of state and local highway, transportation, and public safety authorities.

The California Environmental Protection Agency Department of Toxic Substances Control (DTSC) is responsible for enforcing both the federal and state hazardous waste regulations associated with this removal action. All aspects of the removal action will comply with applicable laws and requirements, including the Endangered Species Act (concerning bird species at NAS North Island), land disposal restrictions, and Air Pollution Control District requirements.

# PUBLIC COMMENT PERIOD

he RAW and RAW Addendum will be available at the information repository at the Coronado Public Library for public review and comment from August 13 to September 12, 2001. Written comments on the documents may be sent to John Locke, Navy Region Southwest, Environmental Department – N4512.JL, 33000 Nixie Way, Building 50, Suite 326, San Diego, CA 92147-5110, (619) 524-6405 or his e-mail address: <u>locke.john.b@asw.cnrsw.navy.mil</u>. **Comments must be postmarked by September 12, 2001.** 

DTSC has proposed a negative declaration, pursuant to the California Environmental Quality Act, for the removal action. The proposed negative declaration indicates that the removal action will not have a significant effect on the environment as defined in the Public Resources Code, Section 21068. The negative declaration is available for public review at the information repository at the Coronado Public Library from August 13 to September 12, 2001. Comments on the negative declaration can be sent to Daniel Cordero, DTSC Project Manager, 5796 Corporate Avenue, Cypress, CA 90630, (714) 484-5428, or his e-mail address: dcordero@dtsc.ca.gov.

The information repository is a publicly accessible location where Navy Installation Restoration Program-related documents and information are kept. It is located at the Coronado Public Library, 620 Orange Avenue, in the city of Coronado. Library hours are:

> Monday – Thursday: 10:00 a.m. – 9:00 p.m. Friday – Saturday: 10:00 a.m. – 6:00 p.m. Sunday: 1:00 p.m. – 5:00 p.m.

John Locke Navy Region Southwest Environmental Department – N4512.JL 33000 Nixie Way, Building 50, Suite 326 San Diego, CA 92147-5110

# **Inside:**

Information on Removal of Volatile Organic Compounds NAS North Island

# **For More Information**

For more information on the Installation Restoration Program underway at NAS North Island, or to find out more about the Restoration Advisory Board, please contact:

John Locke Navy Region Southwest Environmental Department – N4512.JL 33000 Nixie Way, Building 50, Suite 326 San Diego, CA 92147-5110 (619) 524-6405 <u>e-mail: locke.john.b@asw.cnrsw.navy.mil</u> Leticia Hernandez Public Participation Specialist Department of Toxic Substances Control 5796 Corporate Avenue Cypress, CA 90630 (714) 484-5488 e-mail: <u>Ihernand@dtsc.ca.gov</u>

Also visit the Navy's Web Sites: http://nelp.navy.mil or http://www.efdsw.navfac.navy.mil/pages/Environmental/EnvHome.htm

MAILING LIST							
If you did not receive this fact sheet in the mail, then you are not on our mailing list. If you wish to be placed on the NAS North Island mailing list, please complete this form, clip, and mail to: John Locke, Navy Region Southwest, Environmental Department – N4512.JL, 33000 Nixie Way, Building 50, Suite 326, San Diego, CA 92147-5110, (619) 524-6405, e-mail: locke.john.b@asw.cnrsw.navy.mil							
Name							
Address							
City	State	Zip					
Phone ( )							
Affiliation (optional)							
E-mail address							

D-2 December 2001 Communication Plan



# NAVAL AIR STATION



December 2001

# **Communications Plan**

for Removal Action at Site 5, Unit 2

# Introduction

A removal action is currently being performed at Installation Restoration Site 5, Unit 2 (see Figure 1) on Naval Air Station (NAS) North Island. This Communications Plan provides information on the activities, a schedule for the removal action, answers to frequently asked questions, and persons to contact for further information.

The objective of the action is to remove approximately 700 cubic yards of contaminated soil from the site, and then to treat impacted groundwater, in order to protect human health and the environment. The contaminants of concern at this site are volatile organic compounds (VOCs).

The removal action involves two major field activities: excavation and groundwater treatment.

Excavation: During this phase, the contaminated soil will be excavated (dug up) and placed in large, sealed bins. These bins of excavated soil will be tested and then transported off-site, by truck, to a permitted disposal facility. The excavation area will subsequently be filled in (or "backfilled") with clean soil.

Heavy construction equipment and trucks will be used throughout this phase. The actual digging work, however, will occur during only one 12-hour period (December 14th-15th). After the excavation and backfilling, use of Sherman Road will be limited for approximately one week in order to repave the area. The road will be made passable for missionessential traffic. Once repaved, Sherman Road will be fully reopened.

Groundwater treatment: The groundwater will be treated with a process known as *in situ* chemical oxidation. This is a process that breaks down contaminants into smaller, naturally occurring compounds that do not adversely affect groundwater. Chemical oxidation is accomplished by injecting "oxidizing agents" (e.g., hydrogen peroxide) into the subsurface.

Common site activities during groundwater treatment will include: drill rigs at various locations, pipes being installed and pipes sticking out of the ground, a staging area with drums and equipment, various light vehicles, and project personnel working in the Site 5, Unit 2 area.

# **Frequently Asked Questions**

# VOLATILE ORGANIC COMPOUNDS (VOCs)

# What are VOCs?

VOCs are chemicals (many of which are cancer-causing) that readily evaporate at room temperature. VOCs are found in everything from paints and coatings to underarm deodorant and cleaning fluids. The presence of VOCs at this site resulted from the historic disposal of waste solvents and fuels.

### VAPORS

# Will vapors be present during the excavation of contaminated soil?

Some VOC vapors are likely to be present during excavation activities. However, the work will be performed in the best manner possible to minimize vapor emissions. Project engineers calculated the potential vapor migration and concluded that the work poses no health risk to residents of the city of Coronado and NAS North Island.

continued inside

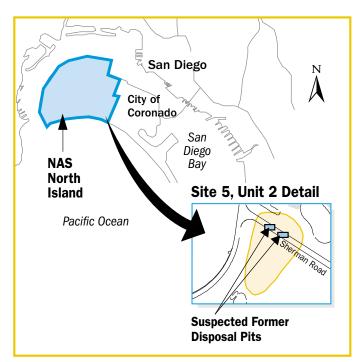


Figure 1 — Vicinity Map

# **Schedule**

# Activity

- Soil excavation
- Backfill and compaction of clean soil
- Sherman Road repairs (limited access)
- Re-open Sherman Road
- Transportation of bins of excavated soil from site to permitted disposal facility
- Groundwater treatment

# **Expected Duration**

6:00 p.m., December 14 -6:00 a.m., December 15, 2001 (12 hours only)

December 15 - December 16, 2001

December 14 - December 21, 2001

December 21, 2001

January 11 - January 31, 2002

February 12 - May 20, 2002

# **FAQS** continued from page 1

The following vapor emission controls were developed for this project and will be in place during excavation activities:

- The perimeter of the work area, the NAS North Island/city of Coronado boundary, and other perimeter locations will be continually monitored to assure safe conditions.
- Excavation activities will be performed during evening hours.
- Full-time health and safety professionals will stop the excavation and the site will be secured to minimize the release of vapors if perimeter monitoring justifies this action.
- Excavated soil will be placed in sealable, closed-top bins.
- The soil will be kept moist for the duration of the work.

# O D O R S

Residents may detect nuisance odors during the course of the excavation activities (the night of December 14th, 2001).

### If I smell something what should I do?

If strong odors are detected, we ask that you contact the Command Duty Officer. If desired, a technician will be sent to your location, take readings – to assure the odors are not harmful – and provide surfactants and other ways to suppress undesired odors.

# Why don't you put a tent over the site?

Tenting the site was considered. The height restriction of 20 feet imposed by NAS North Island flight operations precludes the use of a tent. Additionally, construction activities involving heavy earth moving equipment and laborers in the confined space of a tent is inherently dangerous.

# Will this activity pollute the air?

Excavation activities will be completed within a very short time frame (12 hours to excavate, then fill operations will begin immediately) and vapors potentially present during excavation activities will be minimized through engineering controls, as necessary. Project engineers have calculated the potential for air pollution from the site and concluded that the amount of pollution released to the air will be negligible.

### Is there a risk of cancer?

Carcinogenic health effects are generally not of concern for one-day exposures since the risk of cancer from VOCs is associated with the lifetime average exposure.

# NOISE

# What noise can be expected during excavation activities?

The heavy construction equipment will have backup alarms as required by OSHA (Occupational Safety and Health Administration). These alarms are mandatory in order to protect the safety of the workers. In addition, the track-mounted excavator will create noise when it is operating on the asphalt pavement. The excavation work will not take longer than 12 hours (see above Schedule), and site restoration activities will be performed during regular work hours. For the 12-hour period (starting December 14th and concluding December 15th) residents in Coronado near the North Island property line, and North Island residents next to the runway, can expect to hear typical construction site noise, such as large engines, scraping, banging, and backup alarms.

# December 2001

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4	5	6	7	8
	Start Novemb	oer 21, 2001, Transj	portation and Stagin	ng of Bins		
9	10	11	12	13	14	15 Excavation Finish 6:00 a.m.
					Excavation Start 6:00 p.m.	Backfill and Compaction
16	17	18	19	20	21	22
Backfill and Compaction	Restoration of Sherman Road Re-open Sherman Rd.					
23	24	25	26	27	28	29
30	31					

# January 2002

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9	10	11	12
					Transportation of Soil Bins	
13	14	15	16	17	18	19
	Transportation of Soil Bins					
20	21	22	23	24	25	26
	Transportation of Soil Bins					
27	28	29	30	31		
	Transportation of Soil Bins					

# February 2002

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
		Start Groundwater Treatment				
17	18	19	20	21	22	23
	Groundwater Treatment					
24	25	26	27	28		
	Groundwater Treatment		Groundwater Treat	ment Continues to	May 20, 2002 🕨	

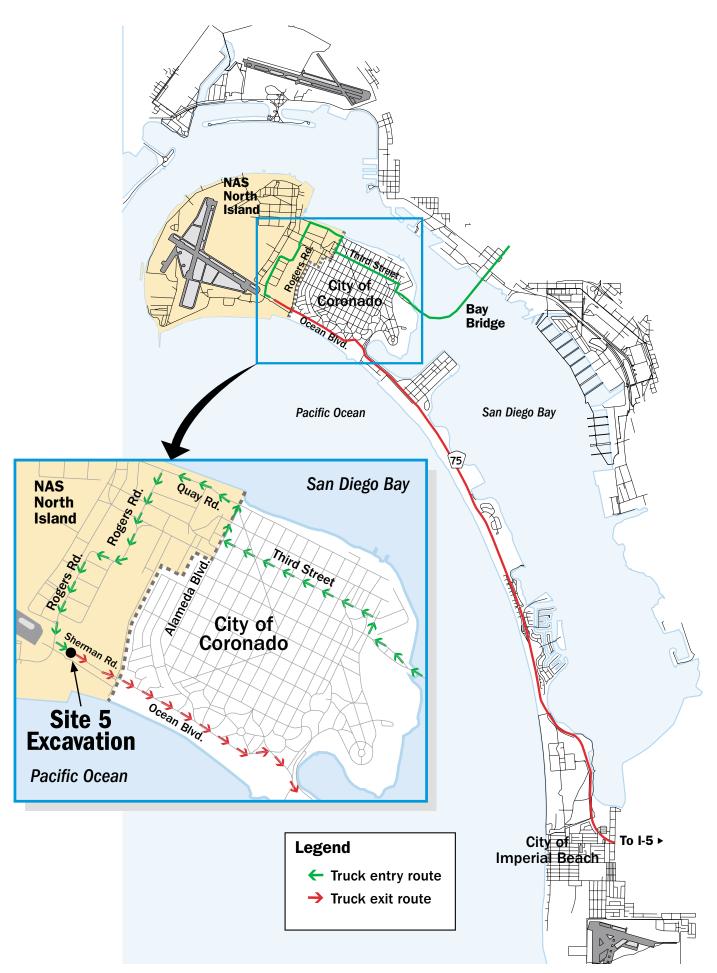


Figure 2 — Truck Route

# Who do I call to complain about the noise?

First, we ask that you be as patient and understanding as possible. The construction aspect of the project was condensed to one night in order to minimize the impact on surrounding activities and communities. Shutting doors and windows will likely eliminate any noise. If you still wish to speak to someone about noise levels, contact the Command Duty Officer. The Command Duty Officer will relay all calls about noise to the Site Superintendent.

# TRANSPORTATION

### What is the impact to traffic?

The Navy is aware that the city of Coronado is very sensitive to the amount and type of truck traffic that may be used to support this removal action. The following impacts to vehicle traffic are expected:

Access to Sherman Road will be limited at certain times.

The following traffic management controls have been developed and will be implemented:

- Barricades and signs will be used to prevent traffic from entering the vicinity of the planned excavation.
- NAS North Island traffic that ordinarily uses Gate 5 will be re-routed to Gate 1 (the Main Gate) and Gate 2.
- Trucks will use identified routes that have been established by the city of Coronado, the Navy, and the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) to transport construction materials and excavated soil (see Figure 2.)
- Trucks will be scheduled to arrive and depart NAS North Island during non-peak traffic hours (9:00 a.m. to 3:00 p.m.).
- For this project, the Navy will minimize the impact of truck traffic by scheduling no more than five trucks per day entering or exiting the base.

# Has the Navy considered barging the waste off of North Island?

The Navy has considered barging; however, barges will not be used. Barging creates new potential significant impacts that disqualify it as a viable means of transporting excavated soil. Barging would only reduce the ground transportation through the city of Coronado, as trucks would still be required to transport the soil bins to the waste disposal facilities. Relative to trucking, barging would require handling the bins more times, thereby increasing the probability for an accident and injury to the workers. In addition, an accident during barging (e.g., barge upset or ship collision with bins falling into the San Diego Bay) would result in a more difficult cleanup response and greater impact to the environment than if the soil were released during ground transportation.

# What happens if one of the trucks gets in an accident while on the road?

The soil excavated from the site will be contained in closed bins during transport to the disposal facility. Therefore, it is unlikely for the soil to be spilled in the event of an accident. The transport of bins containing excavated soil will comply with all appropriate U.S. Department of Transportation regulations and local and state traffic laws. Trucks and bins will be inspected for safety and cleanliness prior to leaving NAS North Island. In the unlikely event of a leak or spill during transportation, the truck driver will notify the appropriate civilian authorities at the earliest practical moment. The civilian incident commander will have full control of all facets of the emergency response and cleanup. The Navy has a cleanup crew on call 24 hours a day. If needed, this team will be dispatched.

### REGULATION

### Who is regulating this work?

The Navy is working closely with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). In June 2001, the Navy completed a detailed work plan for cleanup of this site. This plan received approval from DTSC — the lead state regulatory agency for the site. DTSC completed a review of the project for compliance with the California Environmental Quality Act (CEQA) and has issued a negative declaration (approval of the project in CEQA terms). The negative declaration contained the following statements:

"DTSC has determined that the project will not have a significant effect on the environment as defined in the Public Resources Code Section 21068."

"... there is no evidence before DTSC that the proposed project will have potential for an adverse effect on wildlife resources or the habitat upon which the wildlife depends."

# **Information Repository**

The information repository is a publicly accessible location where Navy Installation Restoration Program-related documents and information are kept. Previous fact sheets regarding NAS North Island sites (including Site 5, Unit 2) can be viewed there. The information repository for NAS North Island is located at the Coronado Public Library, 620 Orange Avenue, in the city of Coronado.

### Library hours are:

Monday – Thursday:	10:00 a.m
Friday – Saturday:	10:00 a.m
Sunday:	1:00 p.m.

10:00 a.m. - 9:00 p.m. 10:00 a.m. - 6:00 p.m. 1:00 p.m. - 5:00 p.m.

You can also find more information about the Navy's Installation Restoration Program at the following web site: http://www.efdsw.navfac.navy.mil/environmental/envhome.htm

John Locke Navy Region Southwest Environmental Department - N4512.JL 33000 Nixie Way, Building 50, Suite 326 San Diego, CA 92147-5110

# **Contact Information**

If you urgently need to speak with someone about the activities, please call the Command Duty Officer (CDO) first. The CDO will log the call, then contact the appropriate parties.

### For Specific Information During the Excavation Work:

On call 24 hours a day: Command Duty Officer (CDO), Naval Air Station North Island	(619) 545-8123
To contact the on-site superintendent for the Site 5, Unit 2 removal action: Richard Wong, Project Manager, IT Corporation email: <u>rwong@theITgroup.com</u>	(619) 778-6122 (mobile) (619) 437-6328 (office)
For General Information During Regular Working Hours:	
Questions regarding the Navy's Installation Restoration Program: John Locke, Environmental Engineer, Navy Region Southwest email: <u>locke.john.b@asw.cnrsw.navy.mil</u>	(619) 524- 6405
Questions regarding the Site 5, Unit 2 removal action: Mark Bonsavage, Remedial Project Manager Naval Facilities Engineering Command, Southwest Division email: <u>BonsavageMJ@efdsw.navfac.navy.mil</u>	(619) 556-7315
For general questions regarding NAS North Island Public Affairs: Ken Mitchell, Public Affairs Officer (PAO), Naval Station North Island email: <u>KMitchell@emh.nasni.navy.mil</u>	(619) 545-8167
NAS North Island construction activities: Donald Hough, Assistant Resident Officer In Charge of Construction (AROICC) Naval Facilities Engineering Command email: <u>HoughDC@efdsw.navfac.navy.mil</u>	(619) 545-4904

# Appendix E Excavation Subcontractor Reports and Waste Disposal Manifests

- (1) GC/MS Air Monitoring Report
- (2) Compaction Testing Report
- (3) Excavated Soil Waste Disposal Manifests

E-1 GC/MS Air Monitoring Report



**Field-Portable Analytical, Inc.** 3330 Cameron Park Drive, Suite 850, Cameron Park, CA 95682

(530) 676-6620

# IR Site 5 – Unit 2 Perimeter Air Monitoring Report Naval Air Station North Island, California December 14<sup>th</sup> and 15<sup>th</sup>, 2001

### Introduction

IT Corporation contracted Field-Portable Analytical, Inc. (*FPA*) to provide perimeter monitoring during a soil excavation project at the North Island Naval Air Station. During the excavation process, real time analysis along the Naval Base fence line and fixed points around the site were conducted to determine if any compounds were migrating away from the excavation or off site.

Direct ambient air analyses were conducted using 2 separate Field-Portable GC/MS systems. This report presents the results obtained during this event.

Craig Crume and Dave Curtis of FPA conducted the sampling and analysis for the event.

Seven compounds (listed in Table 1) were monitored around the area of excavation. The detection limits for all compounds listed in the table was 0.2 ppmv.

### Table 1

Methylene Chloride Benzene Toluene Vinyl Chloride Tetrachloroethene Trichloroethene 1,1-Dichloroethane

# **Technical Approach**

Sample Collection

Sample locations were determined by IT personnel. The ambient air samples were collected by placing the instrument's sample probe at the specified locations and directly acquiring the sample. The fence line locations started at the guard shack and then every 400 feet to the North for a total of 7 locations. The perimeter monitoring followed a grid that expanded in a circle determined by IT personnel in a pattern away from the excavation site. In addition, several samples were collected directly at the excavation site.

# **GC/MS** Analysis

### Analytical System

For this project *FPA* utilized two Inficon Hapsite GC/MS systems. A portable GC/MS designed specifically for the analysis of volatile compounds. The Hapsite is a full featured quadrupole GC/MS capable of meeting all of the EPA's stringent SW-846 QC criteria even though it weighs only 37 pounds and can be carried over the shoulder.

The Hapsite GC/MS uses a sampling wand with an internal pump to collect the sample. The sample is pulled into a sample loop with variable injection capabilities. The column is

FPA-IT Corporation North Island - Report

a 30 meter OV-1 with a 3 meter backflush column. The backflush column allows the volatile organic target compounds to get onto the column, then backflushes off the non-target semivolatile compounds. This keeps the instrument free of contamination and eliminates the need to 'bake out' the contamination between analyses. This backflush feature also allows for the analysis of Vinyl Chloride at the normal detection limit even in the presence of high concentrations of other compounds. The interface between the GC and MS is a methyl silicone membrane. This membrane allows organics to migrate through to the MS while sweeping most non-organics out through the vent.

By minimizing what gets into the MS, this instrument is able to utilize a chemical 'getter' pump rather than a mechanical pump. The getter pump maintains adequate vacuum for weeks at a time. It is very compact and allows the GC/MS to be used in a portable mode without the need to drag heavy mechanical pumps around.

In addition to target compounds, the Hapsite GC/MS produces standard NIST searchable spectra to identify and semi-quantitate unknown compounds. The Hapsite GC/MS co-injects 2 compounds as internal standards with every analysis. These compounds are used for semi-quantitation of any unknowns and as additional QA/QC for each analysis.

# Quality Assurance/Quality Control

• Five Point Calibration

The GC/MS systems were calibrated for the VOC's listed in Table 1. The standard were prepared from neat liquids. A five point calibration was performed. The five concentration levels spanned the linear range of the instrument. The calibration had a relative standard deviation (RSD) of less than or equal to 25%.

• Mass Spectral Ion Intensity Verification

The mass spectral ion intensities were verified at the beginning each day of analyses using 4-Bromofluorobenzene (BFB). Criteria set forth in Method 8260B were used for acceptance.

• Method Blanks

A method blank was analyzed prior to analysis of any samples. The acceptance criteria for the blank samples were that there are no compounds above the quantitation limits. Corrective action will be to determine the source of the contamination, eliminate it and reanalyze the blank.

• End Check

There was a mid-level calibration check standard analyzed on each GC/MS at the end of each day of analyses. The acceptance criteria for the calibration check standards were  $\pm$ 

IT Corporation North Island - Report 30% difference from the expected concentration for 90% of the target compounds. Corrective action will be to reprepare and analyze the end check. If criteria are still not met, any targets that are flagged will be flagged on the sample results as well for that day.

• Internal Standards / Surrogates

An internal standard was co-injected with every sample. Acceptance for the internal standard recovery was –50% to 200%.

A surrogate was co-injected with every sample. The acceptance criteria for the surrogate were 70% to 130% recovery.

• Tentatively Identified Compounds (TIC's)

Each sample chromatogram was scanned for unknown compounds. No unknowns were detected.

### Conclusions

The data produced for this monitoring event are of useable quality. See the attached tables: Fenceline Analysis, Perimeter Analysis, Hand Held Readings - Outer Perimeter, and Hand Held Readings - Inner Perimeter for GC/MS air monitoring results.





3330 Cameron Park Drive, Suite 850, Cameron Park, CA 95682

(530) 676-6620

# IT North Island

#### **Fenceline Analysis**

14-Dec-01 thru 15-Dec-01 Vinyl Chloride Methylene Chloride Toluene Tris FID (OVA) Location Benzene Trichloroethene Tetrachloroethene (Surrogate) and Time Concentration Concentration Concentration Concentration Concentration Concentration Recovery Concentration Round (%) (ppmv) (ppmv) (ppmv) (ppmv) (ppmv) (ppmv) (ppmv) GS-1 19:06 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 101 < 1.0 F1-1 19:19 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 101 < 1.0 F2-1 19:26 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 108 < 1.0 F3-1 19:39 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 111 < 1.0 F4-1 19:48 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 113 < 1.0 F5-1 19:58 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 109 < 1.0 F6-1 20:07 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 1.0 F7-1 20:16 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 103 < 1.0 GS-2 20:25 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 111 <10 F1-2 20:35 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 111 < 1.0 F2-2 20:44 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 116 < 1.0 F3-2 20:53 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 114 < 0.2 < 1.0 F4-2 21:02 < 0.2 < 0.2 < 0.2 < 0.2 108 < 0.2 < 0.2 < 1.0 F5-2 21:12 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 102 < 1.0 F6-2 21:22 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 109 < 1.0 F7-2 21:35 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 106 < 1.0 GS-3 22:29 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 141 Q < 1.0 F1-3 22:43 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 125 < 1.0 F2-3 22:53 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 112 < 1.0 F3-3 23:01 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 111 < 1.0 F4-3 23:15 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 107 < 1.0 F5-3 23:28 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 102 < 1.0 F6-3 23:42 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 102 < 1.0 F7-3 23:52 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 102 < 1.0 GS-4 0:08 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 112 < 1.0 F1-4 0:18 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 102 < 1.0 F2-4 0:28 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 101 < 1.0 F3-4 0:37 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 99.6 < 1.0 F4-4 0:45 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 98.2 < 1.0 F5-4 0:56 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 97.3 < 1.0 F6-4 1:06 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 99.3 < 1.0 F7-4 1:15 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 95.4 < 1.0 GS-5 2:07 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 117 < 1.0 F1-5 2:19 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 120 < 1.0 F2-5 2:29 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 107 < 1.0 F3-5 2:38 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 106 < 1.0 F4-5 2:47 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 105 < 1.0 2:56 < 0.2 < 0.2 < 0.2 < 0.2 105 < 0.2 < 0.2 < 1.0 F6-5 3:06 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 98.6 < 1.0 F7-5 3:15 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 101 < 1.0 GS-6 4:27 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 130 < 1.0 4:37 F1-6 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 116 < 1.0 F2-6 4:47 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 102 < 1.0 F3-6 4:57 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 92.9 < 1.0 F4-6 5:08 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 98.3 < 1.0 F5-6 5:18 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 90.6 < 1.0 F6-6 5:27 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 88.9 < 1.0 F7-6 5:36 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 < 0.2 82.6 < 1.0

Q = Outside Established Acceptance Limits of 70 - 130 %



(530) 676-6620

# IT North Island

Perimeter Analysis

14-Dec-01 thru 15-Dec-01

Location	Time	Vinyl Chloride Concentration (ppmv)	Methylene Chloride Concentration (ppmv)	1,1-Dichloroethane Concentration (ppmv)	Benzene Concentration (ppmv)	Trichloroethene Concentration (ppmv)	Toluene Concentration (ppmv)	Tetrachloroethene Concentration (ppmv)	Tris (Surrogate) Recovery (%)
Directly Downwind (East) ~30 ft from Pit	20:20	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	86.8%
Directly Downwind (East) ~11 ft from Pit	20:31	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	79.9%
Directly Downwind (East) ~11 ft from Pit	20:39	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	90.0%
OP# 5 - Admirals Quarters	21:21	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	88.8%
North of Pit - At Car Wash	21:29	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	80,7%
IP# 4	21:36	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	75.6%
12' East of Pit - During Exposed Drum	22:11	< 0.2	0.32	< 0.2	< 0.2	2.3	0.25	< 0.2	72.2%
12' East of Pit - After Exposed Drum	22:19	< 0.2	< 0.2	< 0.2	< 0.2	0.57	< 0.2	< 0.2	89.8%
12' East of Pit - After Exposed Drum	22:27	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	83.1%
12' East of Pit - No Excavation (Shift Change)	23:09	< 0.2	< 0.2	< 0.2	< 0.2	0.64	< 0.2	< 0.2	83.1%
12' East of Pit - Excavation Resumed	23:19	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	74.7%
OP# 5 - Admirals Quarters	23:31	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	75.4%
12' East of Pit - During Excavation	23:42	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	69.4% Q
12' East of Pit - During Excavation	0:16	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	78.8%
12' East of Pit - During Excavation	0:24	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	74.2%
Corner of J and Wright	0:34	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	80.8%
12' East of Pit - During Excavation	0:41	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	69.0% Q
12' East of Pit - During Excavation	0:49	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	66.7% Q
12' East of Pit - During Excavation	1:11	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	77.5%
IP# 4	1:23	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	77.3%
Corner of J and Wright	1:42	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	67.9%
OP# 5 - Admirals Quarters	1:50	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	70.0%
12' East of Pit - During Excavation	2:00	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	88.1%
12' East of Pit - During Excavation	2:08	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	92.9%
12' East of Pit - During Excavation	2:16	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	96.2%
North Edge of Pit - During Excavation	2:26	< 0.2	0.25	3.0	< 0.2	20	1.6	0.89	108%
OP# 5 - Admirals Quarters	2:35	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	105%
OP# 5 - Admirals Quarters	2:43	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	101%
IP# 5 - Direct Line with Admirals Quarters	2:51	< 0.2	< 0.2	< 0.2	< 0.2	0.37	< 0.2	< 0.2	98.9%
Corner of J and Wright	3:01	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	93.6%
12' East of Pit - No Excavation	3:29	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	101%
12' East of Pit - During Excavation	3:39	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	98.6%
12' East of Pit - During Backfill	3:54	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	109%
12' East of Pit - During Backfill	4:07	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	111%
OP# 5 - Admirals Quarters	4:37	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	93.0%
Corner of J and Wright	4:44	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	81.9%
12' East of Pit - During Backfill	5:06	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	89.3%
12' East of Pit - During Backfill	5:19	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	91.6%
12' East of Pit - During Backfill	5:30	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	98.8%
OP# 5 - Admirals Quarters	5:43	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	95.6%
Corner of J and Wright	5:51	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	95.4%
IP# 5 - Direct Line with Admirals Quarters	5:59	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	101%
12' East of Pit - During Backfill	6:36	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	99.4%
12' East of Pit - During Backfill	6:46	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	97.2%

Q = Outside Established Acceptance Limits of 70 - 130 %

# **IT - North Island**

### Hand Held Readings Outer Perimeter

# 14-Dec-01 thru 15-Dec-01

OF	P# 1	OF	P# 2	OF	P# 3	OF	9#4	OF	P# 5	OF	P#6	OF	P# 7	OF	P# 8
Time	Conc. (ppmv)	Time	Conc. (ppmv)	Time	Conc. (ppmv)	Time	Conc. (ppmv)	Time	Conc. (ppmv)	Time	Conc. (ppmv)	Time	Conc. (ppm∨)	Time	Conc. (ppmv)
20:01	0.0	19:57	0.0	19:55	0.0	NA	NA	20:10	0.0	20:07	0.0	20:06	0.0	20:01	0.0
21:00	0.0	20:58	0.0	20:57	0.0	NA	NA	21:07	0.0	21:03	0.0	21:02	0.0	21:01	0.0
21:58	0.0	21:55	0.0	21:54	0.0	NA	NA	22:05	0.0	22:02	0.0	22:01	0.0	21:59	0.0
23:02	0.0	23:00	0.0	22:58	0.0	NA	NA	23:13	0.0	23:05	0.0	23:08	0.0	23:04	0.0
23:59	0.0	23:56	0.0	23:54	0.0	NA	NA	0:07	0.0	0:04	0.0	0:03	0.0	0:00	0.0
2:09	0.0	2:06	0.0	2:04	0.0	NA	NA	2:26	0.0	2:23	0.0	2:21	0.0	2:18	0.0
3:57	0.0	3:55	0.0	3:55	0.0	NA	NA	4:05	0.0	4:01	0.0	4:00	0.0	3:58	0.0
5:28	0.0	5:25	0.0	5:23	0.0	NA	NA	5:35	0.0	5:32	0.0	5:31	0.0	5:29	0.0

# **IT - North Island**

### Hand Held Readings Inner Perimeter

### 14-Dec-01 thru 15-Dec-01

IP	# 1	IP	# 2	IP	#3	IP	# 4	IP	# 5	IP	#6	IP	#7	IP	# 8
Time	Conc. (ppmv)														
20:00	0.0	19:58	0.0	19:54	0.0	20:11	0.0	20:09	0.0	20:08	0.0	20:05	0.0	20:02	0.0
21:00	0.0	20:59	0.0	20:57	0.0	21:08	0.0	21:06	0.0	21:05	0.0	21:02	0.0	21:01	0.0
21:57	0.0	21:56	0.0	21:53	0.0	22:07	0.0	22:04	0.0	22:03	0.0	22:00	0.0	21:59	0.0
23:01	0.0	23:00	0.0	22:56	0.0	23:15	0.0	23:12	0.0	23:07	0.0	23:06	0.0	23:05	0.0
23:58	0.0	23:57	0.0	23:53	0.0	0:09	0.0	0:06	0.0	0:05	0.0	0:02	0.0	0:01	0.0
2:08	0.0	2:07	0.0	2:04	0.0	2:27	0.0	2:24	0.0	2:24	0.0	2:20	0.0	2:19	0.0
3:56	0.0	3:56	0.0	3:54	0.0	4:00	0.0	4:03	0.0	4:06	0.0	3:59	0.0	3:59	0.0
5:27	0.0	5:26	0.0	5:22	0.0	5:36	0.0	5:34	0.0	5:33	0.0	5:30	0.0	5:30	0.0

E-2 Compaction Testing Report



www.keantanlabs.com email: keantanlab@aol.com

June 27, 2002

IT Corporation P.O.Box 182137 Coronado, CA 92718

Attn: Brian White

Subject: Final Compaction Report Naval Air Station North Island San Diego, California KTL Project No.: 01-057-003

Gentlemen:

Representatives of Keantan Laboratories visited the project site and performed compaction testing for backfill and trenches for the abovementioned site on 12/15/01 and 12/17/01.

The site was overexcavated to competent layer and recompacted to finish grade as specified in the grading and foundation plans.

Testing was performed in general accordance with testing procedures as follows:

TYPE OF TEST Modified Proctor In-place Density TEST PROCEDURE ASTM D 1557 ASTM D 1556

Compaction of fill for various backfill and trenches have been tested and certified to be at least 90% of maximum dry density determined using ASTM procedures described above and for base and asphalt at least 95%.

Compaction test results are presented in the attached Table 1. Test Nos. 1 through 4 represent compaction tests for recompacted backfill and Nos. 5 through 6 for base and 7 through 10 for pavement. (Also see attached daily reports)

We appreciate the opportunity to provide geotechnical services to IT Corporation. If you have any questions regarding our reports, please contact us at (714)535-7616.

Very truly yours, Keantan Laboratories

Kean Tan, PE Principal



720 North Valley Street, Suite B, Anaheim, CA 92801 • Tel.: (714) 535-7616 • Fax: (714) 535-7568



www.keantanlabs.com email: keantanlab@aol.com

### TABLE NO. 1 COMPACTION TEST RESULTS

PROJECT NAME: Naval Air Station North Island

KTL NO.: 01-057-003

PROJECT NO.: 1847590P

CLIENT: IT Corporation

SUMMARIZED BY: K. Tan

DATE:

	5	1	2	G	
0-27-02	12	-(	21	0	

TEST	DEPTH	MOISTURE	DRY	MAX	RELATIVE	PURPOSE OF	REMARKS
NO.	BELOW	CONTENT	DENSITY	.DRY	COMPACTION	FILL	
	SURFACE	(%)	(pcf)	DENSITY	(%)		
	(ft)	14 - 267		(pcf)			
1	2.5	14.6	96.6	104.5	92.5	RECOMPACT	PASS
2	2.5	13.9	96.3	104.5	92.2	RECOMPACT	PASS
3	6"	12.0	97.9	104.5	93.7	RECOMPACT	PASS
4	- 6"	14.8	96.5	104.5	92.4	RECOMPACT	PASS
5	base	5.0	129.2	133	97.2	BASE	PASS
6	base	5.8	128.7	133	96.8	BASE	PASS
7	asphalt	n/a	136.2	143	95.2	ASPHALT	PASS
8	asphalt	n/a	136.9	143	95.7	ASPHALT	PASS
9	asphalt	n/a	137.8	143	96.4	ASPHALT	PASS
10	asphalt	n/a	138.1	143	96.6	ASPHALT	PASS

720 North Valley Street, Suite B, Anaheim, CA 92801 • Tel.: (714) 535-7616 • Fax: (714) 535-7568

E-3 Excavated Soil Waste Disposal Manifests

# CTO-027 Manifest List and Bin Disposal Summary

Manifest		IT D'			Dente	
Manifest # (993875 )	Bin Number	IT Bin #	Waste Type	DOT Description	Departure Date	Destination
32	4873	1	California	Non-RCRA hazarcous waste solid	03/01/02	Safety Kleen - Buttonwillow, CA
33	4875 R18291ML	50	California	Non-RCRA hazarcous waste solid	03/01/02	Safety Kleen - Buttonwillow, CA
34	4961	2	California	Non-RCRA hazarcous waste solid	03/01/02	Safety Kleen - Buttonwillow, CA
35	89363	29	California	Non-RCRA hazarcous waste solid	03/01/02	Safety Kleen - Buttonwillow, CA
36	4938	3	California	Non-RCRA hazarcous waste solid	03/01/02	Safety Kleen - Buttonwillow, CA
37	5001	5	California	Non-RCRA hazarcous waste solid	03/02/02	Safety Kleen - Buttonwillow, CA
38	5321	12	California	Non-RCRA hazarcous waste solid	03/02/02	Safety Kleen - Buttonwillow, CA
39	3168	37	California	Non-RCRA hazarcous waste solid	03/02/02	Safety Kleen - Buttonwillow, CA
40	5060	4	California	Non-RCRA hazarcous waste solid	03/02/02	Safety Kleen - Buttonwillow, CA
41	89300	18	California	Non-RCRA hazarcous waste solid	03/02/02	Safety Kleen - Buttonwillow, CA
42	5034	36	California	Non-RCRA hazarcous waste solid	03/02/02	Safety Kleen - Buttonwillow, CA
43	89364	27	California	Non-RCRA hazarcous waste solid	03/04/02	Safety Kleen - Buttonwillow, CA
44	89360	6	California	Non-RCRA hazarcous waste solid	03/04/02	Safety Kleen - Buttonwillow, CA
Calif	fornia Hazardou	s Count:	13			· · · ·
45	5320	8	RCRA Direct	Hazardous waste, solid, n.o.s. (tetrachloroethylene, trichloroethylene)	03/04/02	Safety Kleen - Buttonwillow, CA
46	89301	20	RCRA Direct	Hazardous waste, solid, n.o.s. (tetrachloroethylene, trichloroethylene	03/04/02	Safety Kleen - Buttonwillow, CA
	RCRA Direc	et Count:	2			•
47	5326	7	RCRA Stabilization	Hazardous waste, solid, n.o.s. (lead, cadmium, tetrachloroethylene)	03/04/02	Safety Kleen - Buttonwillow, CA
48	5331	26	RCRA Stabilization	Hazardous waste, solid, n.o.s. (lead, cadmium, tetrachloroethylene	03/04/02	Safety Kleen - Buttonwillow, CA
RCI	RA Stabilization	n Count:	2			•
61	3165	21	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/19/02	Safety Kleen - Aragonite, UT
62	3163	33	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)		Safety Kleen - Aragonite, UT
63	4996	41	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/19/02	Safety Kleen - Aragonite, UT
64	89302	19	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/19/02	Safety Kleen - Aragonite, UT
65	3140	34	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/20/02	Safety Kleen - Aragonite, UT
66	3167	22	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/20/02	Safety Kleen - Aragonite, UT
67	5037	35	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/20/02	Safety Kleen - Aragonite, UT
68	3164	23	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/20/02	Safety Kleen - Aragonite, UT
69	3166	24	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/20/02	Safety Kleen - Aragonite, UT
70	5042	32	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/21/02	Safety Kleen - Aragonite, UT
71	3162	25	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/21/02	Safety Kleen - Aragonite, UT
72	5074	30	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/21/02	Safety Kleen - Aragonite, UT
73	89306	28	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/21/02	Safety Kleen - Aragonite, UT
74	89305	31	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/21/02	Safety Kleen - Aragonite, UT
78	R1939ML	44	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/14/02	Safety Kleen - Aragonite, UT
79	4604	42	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/14/02	Safety Kleen - Aragonite, UT
80	4636	45	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/14/02	Safety Kleen - Aragonite, UT
81	5256	43	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/14/02	Safety Kleen - Aragonite, UT
82	3149	46	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/14/02	Safety Kleen - Aragonite, UT
83	R1808ML	38	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/19/02	Safety Kleen - Aragonite, UT
84	R1914ML	47	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/15/02	Safety Kleen - Aragonite, UT
85	R1882ML	39	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/15/02	Safety Kleen - Aragonite, UT
86	274787	48	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/15/02	Safety Kleen - Aragonite, UT
87	R1949ML	40	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/15/02	Safety Kleen - Aragonite, UT
88 89	89362	49	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/13/02	Safety Kleen - Aragonite, UT
89 90	5187 5303	51 11	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/13/02	Safety Kleen - Aragonite, UT
90 91	5303	11	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/13/02 02/13/02	Safety Kleen - Aragonite, UT
91	5324	9	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/13/02	Safety Kleen - Aragonite, UT
92	5325 89298	9	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/13/02	Safety Kleen - Aragonite, UT
93	89298 5329	17	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/12/02	Safety Kleen - Aragonite, UT
94	89303	15	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead) Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/12/02	Safety Kleen - Aragonite, UT Safety Kleen - Aragonite, UT
95	5328	16	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead) Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/12/02	Safety Kleen - Aragonite, UT
96	89304	14	RCRA Incineration	Hazardous waste, solid, n.o.s. (trichloroethylene, perchloroethene, lead)	02/12/02	Safety Kleen - Aragonite, UT
	CRA Incineratio	-	34	manages waste, some, n.o.s. (memoroentyrene, peremoroentene, read	02/12/02	Sarety Ricen - Magointe, 01
I.C.	Total Bi		51			
	rotar DI	. count.	51			

m Ap ose p	California—Environmental Protection Agency proved OMB No. 2050-0039 (Expires 9-30-99) Fint or type. Form designed for use on elite (12-pitch) typewriter.	See Instructions on back o	f page 6.	Department of Toxic Substan Sacromento, Califor
1	WASTE MANIFEST CAT17	A ID No. Monifest Document	No. 2, Page 1	Information in the shadad are is not required by Federal law
	3. Generator's Name and Mailing Address Navy Public Works Center	ė	A State Manifest Document N	993875
		sfest Desk		6943249
		. US EPA ID Number	C. Alete Transcouler's D. ( <u>Rese</u>	rved ]
	M P Environmental	MIVVVVLAC	D. Transporter's Phone F. Store Transporter's ID (Rese	(800) 458-30:
	Y		2. Transporter's Phone	1001
	9. Designated Facility Name and Site Address 10 Safety Kleen (Lokern) ) 2500 Lokern Road P.O. Box 787	. US EPA ID Number	6. Stare Epsility 7.10 <b>C A D 7 1</b>	10175E1716E
	Buttom/Bow.CA 93206	AD980675276		805-782-7372
	11. US DOT Description (including Proper Shipping Name, Hazard Class,	and ID Number) 12. Centre No.	oiners 13. Total Type Quantity	14. Unit Wt/Vol 1. Waste Number
GENERATOR	Non-RCRA hazardous waste solid		CM	State
GE	2 	601	60020	Y EPA/Other
N E			1	State
RA			selected at the	EPA/Other
Ť	°.			Slute
R			A TITL	LPA/OiFer
	an a			State
				SPA /Other
	<ul> <li>A till og berger og ist berger i her i 2000 0000000000000000000000000000000</li></ul>	, Stata 200, Irvina, CA 32612	99.80	1
an a	Sile pick up address: NASNI, San Diego Site 5	ITE BIN	and the second state of the second	1-193/54
	16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of marked, and labeled, and are in all respects in proper condition for If I am a large quantity generator, I certify that I have a program in practicable and that I have selected the practicable method of treatm and the environment; OR, if I am a small quantity generator, I have available to me and that I can afford.	place to reduce the volume and taxicity of wast	te generated to the degree 1 ho	ve determined to be aconomic
<b>♦</b>	Printed Typed Name DAVIS A, BUERESSER 17. Transporter 1 Acknowledgement of Receipt of Materials	Signoture		UBUIC
	Printed Typed Name MAKID PASSA 18. Transporter 2 Acknowledgement of Receipt of Materials	Signat Mano us asp	ling	Month Doy 030100
RIL	Printed/Typed Name	Signature	)	Month Day
FACL	19. Discrepancy Indication Space *			
L   T	20. Facility Owner or Operator Certification of receipt of hazordous moter Printpd/Typed Name	ials covered by this manifest except as noted in II Signature	tem 19.	Marsh Day
Y	TEIH NOR	pilo 8	••••••	0301410
				AND DESCRIPTION OF A DE

State of California ental Protection Agency -Enviro See Instructions on back of page 6.

	UNIFORM HAZARDOUS	Manifest Document No.	2. Page 1	Information in the shaded area is not required by Federal law
	WASTE MANIFEST	10014 0 87522	of a	
	3. Generator's Name and Mailing Address	A A A A A A A A A A A A A A A A A A A	ate Mondest Document P	993875
	Navy Public Works Center	-	a'e Ganarakar's ID	333010
	2730 McKean Street, San Diego, CA 22136 4. Generator's Phone (		的子列为人们会议	80412/9
	- <u>1919) 545-8520</u> 스럽지 Maridavi ( 5. Transporter 1 Company Name 6. US EPA	ND Number C S	ale Transporter's ID TRes	3443649-
	M.P. Enviroistivential 7. Transporter 2 Company Name 8. US EP		arsporter's Phone an Transporter o ID- <mark>(Ree</mark>	(800) <del>458-30</del> ;
	9. Designated Facility Name and Site Address     10. US EP/		ansporter's Poone are Facility's ID	
	Safety Kleen (Loker)		ICHING IS I	W. ElstelyKi
	2500 Lokern Road P.O. Box 787		roluty's there	
	Buttometilone. CA 932C6 11. US DOT Description (including Proper Shipping Name; Hazard Class, and ID	9 8 0 6 7 5 2 7 6 Number)		14. Unit
	Non-RCRA hazardous waste solid	No. Typ	e Quantity	Wt/Vol Waste Number State
GENERATOR		O NOI	MORRER	Y Bray Lifter
Ň	b.			Side
R			TILL	TPA AU mer
A T	C.			Sight
R			Lair	EPA/Other
1	d.			State State
				PA/Ober
	7 Editional Descriptions for Note fulls Light Above		milling Sodes for Warte	
	the model of the BDC - Oneal,	Contract of the second s	and the second second	b.
	Foll containing with trace organics Search photocopy of CSDP signed manifest, except leaser a	29.90708	05	
			<b>这些事,也就是你能找这个事</b> 。	d.
	Elever Charler, IT Corporation, 3347 Michelson Dr., Suff	1200, 1990 - US 02012		
	<ul> <li>Electer Chiender, IT Conjuntation, 3347 Michelson Dr., Soft</li> <li>15. Special Handling Instructions and Additional Information</li> </ul>			
	<ul> <li>Biese Chances, IT Corporation, 3047 Michelson Dr., Soft</li> <li>15. Special Handling Instructions and Additional Information</li> <li>Caution: Wear appropriate protective clothing and respirate</li> </ul>			
	Cheve Cheviter, IT Corporation, 2047 Alicheteon Dr., Soft 15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respirate Site pick up address;	by protection when handling. $T = F$	018291	MI
	Close Character, IT Corporation, 2047 Alicheteon Dr., Soft 15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respirate Site pick up address; NASNI Sen Diego Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this contents	bry protection when handling. $7 \pm 50$ Bin f igniment are fully and accurately described ab	218291	ML ame and are classified, packed,
	Consistent IT Corporation, 2047 All checkson Dr., Soft      Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing and respirate     Site pick up address;      NASNI Sen Diego Site 5      16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cons     marked, and labeled, and are in all respects in proper condition for transport	by protection when handling $(7 \# 50) Bin p$ igniment are fully and accurately described ab by highway according to applicable internal	ional and national gover	nment régulations.
	Close Character, IT Corporation, 2017 Alichetech Dr., Soft 15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respirate Site pick up address: <u>NASNI San Diego Site 5</u> 16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cons marked, and labeled, and are in all respects in proper condition for transpor If I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor	bry protection when handling. 7 # 50 Bin p igniment are fully and accurately described ab by highway according to applicable internal produce the volume and toxicity of waste ge acc. or discosal currently available to me wi	ional and national gover nerated to the degree I h ich minimizes the preser	nment régulations. ave determined to be economic it and future threat to human he
	Close Chercer, IT Corporation, 2017 Alicheter, 17, Soft 15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clocking and respirate Site pick up address: <u>NASNI San Diego Site 5</u> 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this cons marked, and labeled, and are in all respects in proper condition for transpor If I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offerd.	by protection when handling. $7 \pm 50$ Bin ignment are fully and accurately described ab by highway according to applicable internal preduce the volume and toxicity of waste gen- age, or disposal currently available to me will good faith effort to minimize my waste gene	ional and national gover nerated to the degree I h ich minimizes the preser	nment régulations. lave determined to be economic tt and future threat to human he t waste management method th
	Site pick up address:     NASNI San Diego Site 5     Section and labeled, and are in all respirately declare that the contents of this cans     If I am a large quantity generator, I certify that I have a program in place the     practicable and that I have selected the practicable method of treatment, stor     and the environment; OR, if I am a small quantity generator, I have made a     available to me and that I can afford.     Printgd/Typed Name     Signal	by protection when handling. $7 \pm 50$ Bin ignment are fully and accurately described ab by highway according to applicable internal preduce the volume and toxicity of waste gen- age, or disposal currently available to me will good faith effort to minimize my waste gene	ional and national gover nerated to the degree I h ich minimizes the preser	nment régulations. lave determined to be economie t and future threat to human he t waste management method th Month Day
	Scherer Character, H. Corporation, 2047, Alectedeon Dr. Soft      15. Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing and respirate     Site pick up address: <u>NASNI Sen Diego Site 5</u> 16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cons     marked, and labeled, and are in all respects in proper condition for transpor      If I am a large quantity generator, I certify that I have a program in place to     practicable and that I have selected the practicable method of treatment, stor     available to me and that I can offerd.      Printed/Typed Name     Signet      17. Transporter 1 Acknowledgement of Receipt of Materials	by protection when handling. $7 \pm 50$ Bin ignment are fully and accurately described ab by highway according to applicable internal preduce the volume and toxicity of waste gen- age, or disposal currently available to me will good faith effort to minimize my waste gene	ional and national gover nerated to the degree I h ich minimizes the preser	nment régulations. lave determined to be economic ti and future threat to human he t waste management method th Month Day 2301010
	Closes Cherror II Corporation 2017 Alicheter Dr. Soft 15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respirate Site pick up address: <u>NASNI Sen Diego Site 5</u> 16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cans marked, and labeled, and are in all respects in proper condition for transpor IF I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can afford.  Printed/Typed Name SAVID L. SUCASTER	by protection when handling. $7 \pm 50$ Bin frighted about the fully and accurately described about the highway according to applicable internation of the solution of the sol	ional and national gover nerated to the degree I h ich minimizes the preser	nment régulations. lave determined to be economie t and future threat to human he t waste management method th Month Day
T R A HISP	Stepson Constructions and Additional Information         15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cansmarked, and labeled, and are in all respects in proper condition for transport         IF I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offord.         Printed/Typed Name       Signet         17. Transporter 1 Acknowledgement of Receipt of Materials       Signet         18. Transporter 2 Acknowledgement of Receipt of Materials       Signet	by protection when handling. $7 \pm 50$ Bin frighted about the fully and accurately described about the highway according to applicable internation of the solution of the sol	ional and national gover nerated to the degree I h ich minimizes the preser	ment régulations. ave determined to be economic trand future threat to human he t waste management method th Month Day Month Day Month Day
T R A H S P O R	Special Handling Instructions and Additional Information         15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cans marked, and labeled, and are in all respects in proper condition for transpor         If I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can efford.         Printed/Typed Name       Signation         17. Transporter 1 Acknowledgement of Receipt of Materials       Signation         Printed/Typed Name       Signation	by protection when handling $7 \pm 50$ Bin igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture	ional and national gover nerated to the degree I h ich minimizes the preser	nment régulations. lave determined to be economi et and future threat to human he t waste management method th Month Day
T R A N S PO R T E R	Stepson Constructions and Additional Information         15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cansmarked, and labeled, and are in all respects in proper condition for transport         IF I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offord.         Printed/Typed Name       Signet         17. Transporter 1 Acknowledgement of Receipt of Materials       Signet         18. Transporter 2 Acknowledgement of Receipt of Materials       Signet	by protection when handling $7 \pm 50$ Bin igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture	ional and national gover nerated to the degree I h ich minimizes the preser	ment régulations. ave determined to be economic trand future threat to human he t waste management method th Month Day Month Day Month Day
T R A HSPORTER	Special Handling Instructions and Additional Information         15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cons marked, and labeled, and are in all respects in proper condition for transport         If I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offord.         Printed/Typed Name       Signation         18. Transporter 1 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation	by protection when handling $7 \pm 50$ Bin igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture	ional and national gover nerated to the degree I h ich minimizes the preser	ment régulations. ave determined to be economic trand future threat to human he t waste management method th Month Day Month Day Month Day
TRANSPORTER FACI	Steepe Construct 11 Corporations and Additional Information         15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this const marked, and labeled, and are in all respects in proper condition for transport         If I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offord.         Printed/Typed Name       Signation         17. Transporter 1 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation	by protection when handling $7 \pm 50$ Bin igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture	ional and national gover nerated to the degree I h ich minimizes the preser	ment régulations. ave determined to be economic trand future threat to human he t waste management method th Month Day Month Day Month Day
TRANSPORTER FACIL	Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASSNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consmarked, and labeled, and are in all respects in proper condition for transport         If I am a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offord.         Printed/Typed Name       Signation         17. Transporter 1 Acknowledgement of Receipt of Materials       Signation         Printed/Typed Name       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         19. Discrepancy Indication Space       Signation         20. Facility Owner or Operator Certification of receipt of hazardous materials cover       Signation	any protection when handling T & D B M A igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture tur	ienal and national gaver nerated to the degree I h ich minimizes the preser ration and select the bes	nment régulations. tave determined to be economic t and future threat to human he t waste management method th Month Day Month Day Month Day
TRANSPORTER FACI	15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Dispo Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this const marked, and labeled, and are in all respects in proper condition for transport and the environment; OR, if I am a small quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor and the environment; OR, if I am a small quantity generator, I have made a available to me and that I can offord.         Printed/Typed Name       Signet         17. Transporter 1 Acknowledgement of Receipt of Materials       Signet         18. Transporter 2 Acknowledgement of Receipt of Materials       Signet         19. Discrepancy Indication Space       Signet	any protection when handling T & D B M A igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture tur	ienal and national gaver nerated to the degree I h ich minimizes the preser ration and select the bes	ment régulations. ave determined to be economic trand future threat to human he t waste management method th Month Day Month Day Month Day
C I L I T	15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respirate         Site pick up address:         NASNI San Diego Site 5         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this cons marked, and labeled, and are in all respects in proper condition for transport in a large quantity generator, I certify that I have a program in place to practicable and that I have selected the practicable method of treatment, stor available to me and that I can efford.         Printed/Typed Name       Signation         17. Transporter 1 Acknowledgement of Receipt of Materials       Signation         Printed/Typed Name       Signation         18. Transporter 2 Acknowledgement of Receipt of Materials       Signation         19. Discrepancy Indication Space       Signation         20. Facility Owner or Operator Certification of receipt of hazardous materials cow Printed/Typed Name       Signation         20. Facility Owner or Operator Certification of receipt of hazardous materials cow       Signation	any protection when handling T & D B M A igniment are fully and accurately described ab by highway according to applicable internal or reduce the volume and toxicity of waste generation age, or disposal currently available to me will good faith effort to minimize my waste generation ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture ture tur	ienal and national gaver nerated to the degree I h ich minimizes the preser ration and select the bes	nment régulations. tave determined to be economic t and future threat to human he t waste management method th Month Day Month Day Month Day

	UNIFORM AZARDOUS	1. Generator's US EPA ID	No.	Manifest Document	No. 2.	Page 1	Sacramento, Col Information in the shaded
	WAST MANIFEST	CA71700	salalalala	RYSRA		of 🥡	is not required by Federal
	3. Generato : Name and Mailing Address	- 1971 देन हेन हेन हेन हैन है	1.21.61.13.13.13		A. State Monitest		tomber to a company
	Navy Public Works Center			2			99387
	2730 McKean Street, San Diego 4. Generolor's Phone (	CA 92136			8 State Generate	a chail	
	5. Transporter 1 Company Name	0 Adin Montes	EPA ID Number		HAI	103	8043245
					D. Transporter's	10000	
	7. Transporter 2 Company Name	ÇA	TOOOS	2 A 3 A 7	E. State Fransport	1	(800) 458-3
			LIX IN HOMBE			Antestan	e van t
	9. Designated Facility Name and Site Address	10 US	EPA ID Number		. Jidnsparter's P 7. State Carality s	and the state of the	A STATE OF STATE
	Safety Kleen (Lokern)		>		् विक	Contraction of the second	10.170 17 1975
	2500 Lokern Road P.O. Box 78				H. Facility's Phon		
	Buttonuillow CA 93206		09806	7 5 2 7 6 12. Contr	inerr 12	Total	805.767.73
1	11. US DOT Description (including Proper Ship		ID Number)	No.	and the second se	uantity	14. Unit W1/Vol 1 Waste Murr
1	Non-RCRA hazardous wash	e solid J					S de g
G	1			GON	CMKIO	0000	Y EFA/Other
Ň	ь.						Sidio A to Se
R						1.1	EPA/Oil af 2 .
A	с.					<u> </u>	S ofe
0 P							DFA/Office
I	d						
							SIGIE
				- Lil	1 11	TT I	EPA: Other
	Additional Descriptions for Manager Lined A	10-02021			. Handbog Coop	far Worke	Unted Atorie Inc.
	<ul> <li>Soll contervinated with frace orga</li> </ul>	mic9			03		
	Send placeochy of I SOF signed Sleve Chandler, 17 Corporation,	momfest, weight Roled 2347 Micheleon President	, and certificato	of choices all her	A. Las		A TATA AND AND AND AND AND AND AND AND AND AN
	15. Special Handling Instructions and Additiona	したというないないないないというというなどもの	NAL ASSA STREET	warnes and			and the second s
	Caution. Wear appropriate protect	live clothing and respin	atory protection	when handling		W.J.	Caster
	Site pick up address;		#	-	4. 11	G/ I	
	NASNI, San	Diego Site 5 -	11 0	SIN	12 1	141	
H	<ol> <li>GENERATOR'S CERTIFICATION: Thereby d marked, and labeled, and are in all respect</li> </ol>	eclare that the contents of this or s in proper condition for transp	onsignment are fully an port by highway accord	d accurately described	l above by proper	shipping no	ime and are classified, packe
						1	
	If I am a large quantity generator, I certify practicable and that I have selected the pra and the environment; OR, if I am a small q available to me and that I can afferd	cticable method of treatment, s	e to reduce the volume torage, or disposal cu	and toxicity of waste rently available to m	generated to the which minimizes	degree I he the present	ave determined to be econor I and future threat to human
		summy generator, i nove made	d good idim error lo	minimize my were g	eneration and set	ect the best	waste management method
*	Printed/Typed Name	Sig	andure (D)	-	Station of the second se	•	Month Doy
I.	17. Transporter 1 Acknowledgement of Receipt of		10- 7	-			0301
ANS	Printed/Typed Name	Sig	inclure	N			Month Day
0	18. Transporter 2 Acknowledgement of Receipt of	f Materials	Mr. Land				0301
TH	Printed/Typed Name	Sig	anature				Month Day
R	19. Discrepancy Indication Space						
F A							
c							
	20. Facility Owner or Operator Certification of n	eceipt of hazardous materials c	overed by this manifest	except as noted in Its	m 19.		
T T	Printed/Typed Name		noture /	AL			Month Day
	ACTEA GIVE MAN		1 1 1 16 1	111			10.21.01

A	ifornia—Environmental Protection Agency ved OM& No. 2050–0039 (Expires 9-30-99) or type. Form designed for use on elite (12				Department of Toxic Subs Socramento, Coli
Î .	UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1	Information in the shaded o is not required by Federal I
	3. Generator's Name and Mailing Address	CA/1/009001	5 87 838 AS	ate Maailes! Decument	
	Navy Public Works Center				99387
	2730 McKean Street San Diego	CA 92136	B. 51	rie Generator s ID	
	5. Transporter 1 Company Name	20 Adm Manifester Thumber	C, S		160 <del>4324</del> 5
		Laura	1.1.1	ardparter's Plessa	
	33 D Environmental 7. Transporter 2 Company Name	S. USER IDNOR OF	324247	de Homoorter's ID (Re	<del>(800) 458-3</del>
	<ol> <li>Designated Facility Name and Site Addres</li> </ol>	s 10. US EPA ID Number	22.505	insporter's Phone ate Pocifite sup	
	Safety Kleen (Lokem)			K101812	PTKRM6
	2500 Lokem Road P.O. Box 78	37		diffly's Phone	and the second
1	Bottonwillow CA 93206	pping Name, Hazard Class, and ID Number)	5 7 5 2 7 5 12. Containers	. 13. Total	14. Unit 762.73
F	Non-RCRA hazardous was		No. Тур		Wt/Vol 4 WesterNett
G	THORFTON AN INSIZE HOUS YES	IO SOIG	0	1.8	EPA/Citie
E -	ь.		001	NORDER	Y PRAYOR
E					a suide
R A	c				BRADBAR S
D					Stole
	*d.				EPA / Criha)
	α.				ð tir
					at A., Onitra
	Active opt Descriptions for Materia's Earch 11a. Phoness 25124 - 81	x 102021	К На	ndhing Colles for Wash	s usted Aboar. Fit
	一方口口 口口用我开始的过去式 地口用 拉拉口袋 化拉拉	HINE AND THE REAL PROPERTY OF		02	
	Steve Chandler, IT Corporation,	d mention, weight schel, and contribut 3347 Michalson Dr., Sone 200, Irvine	e of dispession in the second		4
	5. Special Handling Instructions and Addition	al Information			9 1 5. 7. 7
	Caution: Wear appropriate prote	ctive clothing and respiratory protectio	n when handling.	A. S.	-1.1.2.2.4.2.4.
	Site pick up address:	JT	29 BIN	89363	110
16	CENERALOR'S CERTIFICATION: Thereby	n Diego Site 5 declare that the contents of this consignment are fully cts in proper condition for transport by highway acc	and mainstall, down the Later		me and are classified, packe
		,	erang is oppressed memory	and and national gover	mment regulations.
	It I am a large quantity generator, I certif practicable and that I have selected the pr and the environments OP it I am a	y that I have a program in place to reduce the volu acticable method of treatment, storage, or disposal	me and taxicity of waste gen currently available to me whi	crated to the degree I i ch minimizes the preser	nave determined to be econor at and future threat to human
	available to me and that I can offord.	quantity generator, I have made a good faith effart	to minimize my waste genero	ation and select the bes	t waste management method
Pri	inted/Typed Name	Signature	no manufarman		Month Day
17	Transporter 1 Acknowledgement of Receipt	of Materials	12		0301
	nted/Typed Name	Signature	20		Month Day
7	Transporter Z Acknowledgement of Receipt	al Materials	Je		0301
Pri	nted/Typed Name	Signature			Month Day
19	Discrepancy Indication Space				
20	. Facility Owner or Operator Certification of njed∕Typed Name	receipt of hozordous materials covered by this mani	fest except as noted in Item 19		
	The Bran I territe	Signature, /			Month Day

State of California—Environmental Protection Agency Form Approved OMB No. 2050–0039 [Expires 9-30-99] See Instructions on back of page 6.

at of Tauta Culut De

4	2 2 2 1 1 Car	nerator's US EPA ID No.	Manifest Docum	ent No	2. Page 1	Information in		fornia
	UNIFORM HAZARDOUS	7 1 7 0 0 9 0 0 1			of 1	is not required		
	3. Generator's Name and Mailing Address Navy Public Works Center	.i - 54		A. State	Manifest Occurrent 1		387	5.0
	2730 McKean Strept, San Diego, CA 921 4. Generator's Phone ( (\$19) 545-6520	36 Alth: Manifest Desk	*		A HQ 3	See Ster		1010
	5. Transporter 1 Company Name	6. US EPA ID Number		Provide Providence and and	Incomporter y ID, Rev	Control and the control of the second second	4.4	-
	M P Environmental		8.2.4.2.4.		icerer's Place		458-3	
	7. Transporter 2 Company Name	C A T O O O	42424		ronsporter's ID (Ros	CONTRACTOR AND A STORE OF A STORE AND A	1.00.00	9.99
					orter's Phone			
	9. Designated Facility Name and Site Address "Safety Kleen (Lokern)	10. US EPA ID Number		A COLORADOR OF THE REAL PROPERTY OF	For the sign			
	2500 Lokem Road P.O. Box 787	C.A.D.9.6.A	£ 7. 5. 9. 7.	H. Facilie	cialdialark	至1973年,前的6月	782-73	1946
	Butterwillow.CA 93206 11. US DOT Description (including Proper Shipping Name,			Containers	13. Total	14. Unit		3
t	Non-RCRA hazardous waste solid		No.	Туре	Quantity	6453	Waste Num late	ver,
G			00	CM	00020	V	PA/Other	
E N	b.						loie	
R							A. Ollier	
A	с.						die 👘 🖓	
O R				1.1		E	A./Othar	
	d.			·		\$	ule	
		1			ILT.		A/Officer 12	
	<ul> <li>Anteropological and a provide state of the second sta</li></ul>	02021 (998	0709)	K Handl	ng Codas tar Waste	s listed Attack		
	<ul> <li>Send photocopy of TSOF signed menter</li> </ul>	st, weight loket, and define	en of dispessed	6	03		14	
	Eleve Chandler, IT Corporation, 3347 wh			C.		d.,		
	<sup>15</sup> Caution. Wear appropriate protective cloud	Ning and respiratory protect	ion when handlin	ıç.				
		-	11020					
	Site pick up address.	cine IT . Pro					11 A. A. A. A. A. A.	
	NASNI, San Diego	the contents of this consignment are fu	lly and accurately des	cribed above b	y proper shipping no	ame and are cla	ssified, packe	d,
	Sile pick up address. NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and lobeled, and are in all respects in proper	the contents of this consignment are fu	lly and accurately des according to applicable	cribed above b e internationa	y proper shipping no I and national gover	ame and are cla nment regulatio	ssified, packe ns.	ιd,
	NASNI. San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and lobeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quentity gen	the contents of this consignment are fu r condition for transport by highway o a program in place to reduce the v	olume and taxicity of	waste general	I and national gover	nment regulation	ns. fo be econo	mically
	NASNI. San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and labeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen available to me and that I can afford. Printed/Typed Name	the contents of this consignment are fu r condition for transport by highway o a program in place to reduce the v	olume and taxicity of	waste general	I and national gover	nment regulation	ns. fo be econo	mically
TR	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and labeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen available to me and that I can afford. Printed/Typed Name DAVID I. BUERCORE 17. Transporter 1 Acknowledgement of Receipt of Material:	the cantents of this cansignment are fu r condition for transport by highway of a a program in place to reduce the v ethod of treatment, storage, or dispos rerator, I have made a good faith eff Signature	olume and taxicity of	waste general	I and national gover	nment regulation	ns. fo be econo	mically health that is
TRANSD	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and lobeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen avoilable to me and that I can afford. Printed/Typed Name DAVID 1. BURGEDED	the cantents of this cansignment are fu r condition for transport by highway of a a program in place to reduce the v ethod of treatment, storage, or dispos rerator, I have made a good faith eff Signature	olume and taxicity of	waste general	I and national gover	nment regulation	ns. fo be econo	mically health that is
TRANSPORT	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and labeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen available to me and that I can afford. Printed/Typed Name DAVID I. BUERCORE 17. Transporter 1 Acknowledgement of Receipt of Material:	the contents of this consignment are fu r condition for transport by highway of a o program in place to reduce the w withod of treatment, storage, or dispos herator, I have made a good faith eff Signature S	olume and taxicity of	waste general	I and national gover	nment regulation ave determined t and future thin t waste manage Months Guardia	to be econo ecot to human iment method	Yee
TRANSPORTER	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and lobeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen available to me and that I can afford. Printed/Typed Name 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	the cantents of this cansignment are fu r condition for transport by highway of a a program in place to reduce the v sthod of treatment, storage, or dispos serator, I have made a good faith eff Signature Signature	olume and taxicity of	waste general	I and national gover	nment regulation	ns. fo be econo	Yee
MSPORTER FA	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and labeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen avoilable to me and that I can afford. Printed/Typed Name 17. Transporter 1 Acknowledgement of Receipt of Materials 18. Transporter 2 Acknowledgement of Receipt of Materials	the contents of this consignment are fu r condition for transport by highway of a o program in place to reduce the w withod of treatment, storage, or dispos herator, I have made a good faith eff Signature S	olume and taxicity of	waste general	I and national gover	nment regulation ave determined t and future thin t waste manage Months Guardia	to be econo ecot to human iment method	mically health that is
FACI	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and lobeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen available to me and that I can afford. Printed/Typed Name 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	the contents of this consignment are fu r condition for transport by highway of a o program in place to reduce the w withod of treatment, storage, or dispos herator, I have made a good faith eff Signature S	olume and taxicity of	waste general	I and national gover	nment regulation ave determined t and future thin t waste manage Months Guardia	to be econo ecot to human iment method	Yee
MSPORTER FAC	NASNI, San Diego 16. GENERATOR'S CERTIFICATION: I hereby declare that marked, and lobeled, and are in all respects in proper If I am a large quantity generator, I certify that I have practicable and that I have selected the practicable me and the environment; OR, if I am a small quantity gen available to me and that I can afford. Printed/Typed Name 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	the contents of this consignment are fur r condition for transport by highway c e a program in place to reduce the v sthod at treatment, storage, or dispos nerator, I have made a good faith eff Signature S Signature Signature	ccording to applicable	e internationa waste general to me which i tope generation	I and national gover	nment regulation ave determined t and future thin t waste manage Months Guardia	to be econo ecot to human iment method	Yee

 $\frac{1}{2}$ 

<b>A</b> .		1. Generator's US EPA ID No.	Monifest Document No.	2. Page 1	Information in the sha	ded an
T	UNIFORM HAZARDOUS WASTE MANIFEST		1 .	2	is not required by Fea	
		100000000000000000000000000000000000000		of		
	<ol><li>Generator's Name and Mailing Address</li></ol>		A. State	Monifest Document	Number 9936	171
13	Nevy Public Works Center				~~~	
	4. Generator's Phone ( )			Serendaria ID		
	5. Transporter 1 Company Name	Aitn Manifest Dock 6. US EPA ID Number		HALL OF		ą (p.
	M P Eavimental	CATOOO	2 A 7 A 7 BEE	porter's Phone -	(ROO) AS	1.20
	7. Transporter 2 Company Name	8. US EPA ID Number	E Side	Transporter's ID (Re	served P	8.49
			E. Farm	orler's Phone		
	9. Designated Facility Name and Site Address	10. US EPA ID Number	- C State	Facility's IC		
	Safety Kieen (Lokern)		H. Fast	ry's Phone		
	2500 Loken Road P.O. Box 737	CARSE	10 10 10 10 10 10 10 10 10 10 10 10 10 1		895-762	-
	2xthorwillow, CA 93206 11. US DOT Description (including Proper Shipping		12. Containers	13. Total	14. Unit	
			No. Type	Quantity	Wt/Vol 1. Wash	North
	Non-RCRA hazardous waste s	plid	-		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
G			ODIUN	000020	Y EPA CH	er in
E N	b.				State	
E					EA/SH	a da de designa
A						
T O	¢.			1.1.1.1.1.1.1	Sidio	
R				TTTT	E'A OP	
	d.			<u></u>	State	
	이 같은 것 같은				5P 4//01	
	<ol> <li>Additional Descriptions for Materials Used Abov 11a Profile# 29124 - Conc</li> </ol>	-0000 (9980	1773 & Band	ing Codes for West	as listed Above	
	Sol contan Instel with trace organic	B. The second second	and the second second			
	<ul> <li>Cend photocopy of TSUF aloned m Steve Chandler, IT Corporation, 33-</li> </ul>	adiest, weight ficket, and certificat	te of disposal lo		d	
	15. Special Handling Instructions and Additional In		- MARKEN AND A STATE			
	Caution: Wear appropriate protective		n when handling 7	7 25	BIN SOGI	1.14
1						
	Site pick up address.		Hang Jit Zu	and and	LUNX AI	92
	16. GENERATOR'S CERTIFICATION: Thereby decla	re 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 ac	cording to applicable internation	i and national gove	ernment regulations.	
	If I am a large quantity generator, I certify that practicable and that I have selected the practic	I have a program in place to reduce the vol	ume and toxicity of waste genera	ted to the degree l	have determined to be	econom
	and the environment; OR, if I am a small quan available to me and that I can afford.	able method of freatment, storage, or disposa tity generator, I have made a good faith effor	t to minimize my waste generation	minimizes the prese in and select the be	ent and tuture threat to it ist waste management m	numan i hethod I
	Printed/Jyped Name	Signature	4		Month D	ay
¥	DAVID 6. BUERS	nep 11 k	a to	÷.	0 8 0	12
R	17. Transporter 1 Acknowledgement of Receipt of M					
AN	Printed/Typed Nome	Signature .	Ing I Man		Month C	l T
P	18. Transporter 2 Acknowledgement of Receipt of M	laterials	- Cliff	2	61310	
R T	Printed/Typed Name	Signature	1		Month D	ay I
Ř.	19 Dissempsory Indication Course	Y Y				
F	19. Discrepancy Indication Space					
ĉ	동안 영양 방송 이 집에 있는 것이 없다.					
L						
Ĩ	20. Facility Owner or Operator Certification of rece Printed/Typed Name	ipt of hazardaus materials covered by this man Signature	ifest except as noted in Item 19.		Month D	boy
Ý		Signatore	1 0	And Andrew Strengtheren		La I
						1.000

A		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1	· Information in the shaded a
T.	UNIFORM HAZARDOUS WASTE MANIFEST	CIA 7117009900116		-1 of *1	is not required by Federal la
	3. Generator's Name and Mailing Address	UM1210050010		Store Manifest Deciment	Nin ale
	Navy Public Works Center	** *			99387
	2730 McKean Street, San Diege		B	Stofe Generator's Un	6043249
	4. Generator's Phone ( (619) 545-65 5. Transporter 1 Company Name	20 Altn: Manifest Desk 6. US EPA ID Number	e	State Transporter will Re-	SERVICE ALL VOIL ALL VALUE ALL
	a company company come			Transporter & Paone	
	M P Environments 7. Transporter 2 Company Name	C   A  T 0  0 0 6  8. US EPA ID Number	24247	alote Transporter's ID ( <u>Res</u>	(800) 458-3
	7. Transporter 2 Company Name	e. US EPA ID Number			<u>erved</u> i
	9. Designated Facility Name and Site Addre	10. US EPA ID Number	10.53	Frampierter's Phone State Facility - ID	
	Safety Kleen (Lokem)			The second second in the second second second second	0 6 7 6 2 8 6
	2500 Lokern Road P.O. Box 7	37		Edulaty's Phone	
	Eutonwillow-CA 93206	CAD9808	1 0 4 1 0	ers 13. Total	605-762-73
	11. US DOT Description (including Proper Sh		the second se	ype Quantity	Wt/Vol Wasts Num
	Non-RCRA hazardous was	te solid	6	M	Shate
Ģ		성격 전 10년 노력 방법을 받는다.	OKI	100026	Y PAONS
N	b				Some second
R					EZAZÓHA-
Â	¢.				Sofel -
ò					TEA Chief
R					
	d.	전 이상 같이 같이 다 같이 않는			Stille 2
			i i i i	FILTER	EPA Zoth as 22
	J. Additional Associations for Materials Lyster	assesses 19	TACLES	Handling Codes for Wash	es listed Above
19 P.,	Cos contemanted with trace or	1 / •		1.2 × 1	Deres and the second second
	Size Charger U Conceptor	of maralest, weight licest, and castilicate 19847 Machelson Dr., Skille 200, Indoe, 1	01 0100000 NO		a the second
	Caution, Wear appropriate profi	nol information schwe clothing and respiratory protection	when handling.		
	Site pick up address	180714 40 TTH		F 7 31	
	NASNI, S	an Diego Site 5	12 5.	N 5321	
	<ul> <li>16. GENERATOR'S CERTIFICATION: I hereb morked, and labeled, and are in all resp</li> </ul>	declare that the contents of this consignment are fully a ects in proper condition for transport by highway acco	nd accurately described a rding to applicable interr	above by proper shipping r ational and national gove	name and are classified, packe imment regulations.
			i i i i i i i i i i i i i i i i i i i		
	practicable and that I have selected the	ify that I have a program in place to reduce the volum practicable method of treatment, storage, or disposal c I quantity generator, I have made a good faith effort t	urrently available to me	which minimizes the prese	int and future threat to human
	available to me and that I can afford.		7	/	
¥	Printed/Typed Name JUEES	Signature	V.T		Month Day
Ţ	17. Transporter 1 Acknowledgement of Recei	1 "			
ÅN	Printed/Typed Name	Signatüra	Citit	· · · · · · · · · · · · · · · · · · ·	Month Day
P	18. Transporter 2 Acknowledgement of Recei		1		
T E	Printed/Typed Name	Signature			Month Day
R	19. Discrepancy Indication Space				
A					
C					
L		of receipt of hazardous, insterials covered by this manife	est except as noted in Iten	n 19.	
T Y	Printed/Typed Name	Signature	17. 5	Zummingen.	Month Day
	HANIOA SIAN	119.10	61 12		2020.4

ŕ

Ť	UNIFORM HAZARDOUS See Instruction UNIFORM HAZARDOUS See Instruction UNIFORM HAZARDOUS	nifest Document	No.	2. Page 1	Information in the is not required by	
	NUMBER MANUFET	27520	1	of	is not required by	recei al raw
ł	3. Generator's Nome and Mailing Address	31.99A	A, State A	Kanliest Document N		
	Navy Public Works Center				993	664
			10000	n na atoris ID		
	2736 McKean Street, San Diego, CA 92136 4. Generator's Phone ( (61) 545-6520 Attn: Marillest Deck 5. Transporter I Company Name 6. US EPA ID Number			AH03	8.9431	249
ſ	5. Transporter 1 Company Name 6. US EPA ID Number		1.1.1	onsocille, «10) Para	eved.	
	naraala ala	13 17	D: Transb	orter o Phone		58.38
ł	7. Transporter 2 Company Name B. US EPA ID Number	an Breach	E. Stole I	ronsporter's ferfices	ived.1	
			F. Transp	orter's Phone		
ł	9. Designated Facility Name and Site Address 10. US EPA ID Number	- to	C2 -	Fareilly's (D		
	Safety Kicen (Lokern)			ADASI	2012 15 12	12121
	25001 align David D O Dov 787	# Alma	H Fadili	A Produkt Statistics	000.76	
	Buttonwillow, CA 93206	12. Con	loiners	13. Total	14: Unit	
	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	No.	Туре	Quantity	Wt/Vol 1 W	ine Niebi
	Non-RCRA hazardous waste solid	1	A			
;		001	CM	000000	Y CPAY	Checker
	ь.				Sicta	
			÷		EPA	Otres
2					Stole	
				a star for parties		
ž			Т.	TIT	EPA	a dhar
ŀ	d.				Stere	1. A. J.
1					ELA.	Calieran
		ALL STATES OF SAME	A Hored	ing Codes for Waste	s listed Above	
	J Additional Descriptions for interiors Little Also is $\frac{1}{2}$ is Prior basis of $\frac{1}{2} \leq 1 \leq $	arts and are	0.1.1		ь.	
	The Profiled 251 241 - FOC the Con-	and the second second		42		
	Send photocopy of TSDF signed mented, receipts holds, and certainste of Steve Chandler, I7 Corporation, 3347 Mithelison Dr. Suite 253, 19465, CA	87512			······	
	15. Special Handling Instructions and Additional Information			encomposition and the P	Loni	764
2	Caution. Wear appropriate protective clothing and respiratory protection w	hen handling		WOR	4.	
L.	Site pick up address.					1 2 14 . 26
	NASHI San Franci Site 5		the second se	3168		
	16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and marked, and labeled, and are in all respects in proper condition for transport by highway according.	accurately descri ng to applicable i	bed above internations	by proper shipping n al and national gove	ame and are classif roment regulations.	hed, packed
	비행은 집중에서 집중에서 집중에 가지 않는 것이 같아요. 그는 것 같아요. 그는 것	· · · · · · · · · · · · · · · · · · ·				· · · · · ·
ŀ	If I am a large quantity generator, I certify that I have a program in place to reduce the volume of practicable and that I have selected the practicable method of treatment, storage, or disposal curr and the environment; OR, if I am a small quantity generator, I have made a good faith effort to re					
	and the environment; OR, if I am a small quantity generator, I have made a good ratin error to a available to me and that I can afford.		- ganeran	and server me be		2
ŀ	Printed/Typed Name Signature	14			Month	Doy
T	17. Transporter 1 Acknowledgement of Receipt of Moterials	L			16/13 1	16
R	Printed/Typed Name Signature	69.3			Month	Day
SP	MULE FOUTCH	<u>.</u>	· · · ·		03	0 2
0 R	18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name Signature				Month	Day
E						11
F	19. Discrepancy Indication Space					
Å C	방법 성태 방문에 집에 가슴을 가지 않는 것이 집에 많이 많이 했다.					6 1
i	이 같은 것은 것은 것은 것은 것은 것이 같다. 그는 것은 것은 것을 수 있다.					
i	20. Facility Owner or Operator Certification of receipt of hazardous insterials covered by this manifest Printed/Typed Name	except as noted j	h Item 19.		Month	Day
Ϋ́	Printed/Typed Name Signature	AL			101	115
			and the second se		1 1 -5	in I am

State of California-E	nvironmental Protection Adency.
Form Approved QMB	No. 2050-0039 (Expires 9-30-99)
Please grint or type.	Form designed for use on elite (12-pitch) th

٩.

See Instructions on back of page 6.

Department of Toxic e. I. .

RTE	18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	Signature			Month Day Year
R-4 2000-0	Printed/Typed Name TIM Golden	Signature A	0		Month Doy Year
V	Printed/Typed Nome DAVID L. BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials	Signature	at	Y	Month Doy Yea
	If I am a large quantity generator, I certify that I have a progr practicable and that I have selected the practicable method of and the environment; OR, if I am a small quantity generator, I available to me and that I can afford.	ram in place to reduce the volume freatment, storage, or disposal cur have made a good faith effort to	and foxicity of wast rently available to m minimize my waste	e generated to the degree I is which minimizes the prese generation and select the be	have determined to be economically nt and future threat to human health st waste management method that is
	<ol> <li>GENERATOR'S CERTIFICATION: 1 hereby declare that the conte marked, and labeled, and are in all respects in proper condition</li> </ol>	an for transport by highway accord	ing to applicable info	ernational and national gave	rnment regulations.
	Site pick up address. MASNI San Diego Site 5		ZIN 3to	F / N8	17521
	Caution: Wear appropriate protective clothing as	nd respiratory protection v	when handling.	0400 1	JAN CONTRACT
	Sand chickology of TSDF algebra manifest, well Stave Churdler, IT Opportion, 3347 Michalso 15. Special Handling Instructions and Additional Information	(pt licher, and certhopte ( in Cit., Belle 200, train, C	X (Aspesal to) A 12812		4
	and Additional Decomptions for Materials Histed Above 1.1 a. Provident $\frac{1}{2} \frac{1}{2} \frac{3}{2} \frac{3}{2} = \frac{1}{2} \frac{3}{2} $		21000	03	в
	un Additional Development for Motorick (Bud Share			C. Hendling Codes for Weig	BFA /OdEn 14
R	d.				9 ans
TOP	c,				Store BIA/Other
E R A					Peak Since
GENERATOR	b.		OKI	CMODERE	Y EPA/Olber
	Non-RCRA hazardous waste solid	seess, and to homoery	No.	Type Quantity	Wt/Vol Ware Number
	2500 Lokem Road P.O. Box 787 Dullos willow, CA 93206 11. US DOT Description (including Proper Shipping Name, Hazard		7 5 2 7 6 12. Conte	ainers 13. Total	14. Unit
	9. Designated Facility Name and Site Address Safety Kleen (Lokern)	10. US EPA ID Number		development of the second second	RIGHTERIE
				P. J. cosponer's Phane	
	7. Transporter 2 Company Name	CATOOS:	24247	D. Datapartic's Planae L. Stole Leasancher's ID (Re	(800) 458-3036
	5. Transporter 1 Company Name	Marting PBK		C. State Hanspell 9	10043249
	Navy Public Works Center 4.2730 McKean Street, San Diego, CA 92136			5 Stote Ganerator's IB	
1.1	3. Generator's Name and Mailing Address		01 10 10	A. State Manifest Document	Number 9938754

7. Transporter 2 Company Name     8. US EPA ID Number     E. Sinte Transporter 3. D. Reversed A.       9. Designated Facility Name and Site Address     10. US EPA ID Number     5. State Facility's B.       Safety Kleen (Lokern)     2500 Lokern Road P.O. Box 787     5. State Facility's B.       Buttonwillow CA 03205     CIA D G SI 0 6 7 5 2 7 8     10. US EPA ID Number       11. US DOT Description [including Proper Shipping Name, Hazard Class, and ID Number]     12. Containers     13. Totel       Non-RCRA hazardous waste solid     V       b.     6.       d.     d.	93875		la Generator - ID	B. Shifta				CA 92436	tic Works Center (ean Street Sec Dieno		
M. P. Epudosciprended       C. M. T. O. O. O. B. 244 24 24 7       In the resumption of the second s	3249	2 <u>,3                                    </u>	HAHQ	C. State			NE US EPA ID Numb	Attn: Me	Phone (S19) 545 652 1 Company Name	4. Generator's 5. Transporter 1	
9. Designated Facility Name and Site Address       10. US EPA ID Number <ul> <li>Statety Kissen (Lakern)</li> <li< th=""><th>) 458-30</th><th>FROM</th><th>a start and the second</th><th></th><th>247</th><th>624</th><th></th><th>k</th><th><u>xmmental</u> 2 Company Name</th><th>7. Transporter 2</th><th></th></li<></ul>	) 458-30	FROM	a start and the second		247	624		k	<u>xmmental</u> 2 Company Name	7. Transporter 2	
Safety Kleen (Lokern) 2500 Lokern Road P.O. Box 787 Butterwillow CA 93205 11. US DOT Description linduding Proper Shipping Name, Hozard Class, and ID Number) Non-RCRA hazardous waste solid b. b. c. d. d. d. d. d. d. d. d. d. d				2012/06/06/06				1	- 10. AL - 1.00. A.1.1		
Solution       Solution <td< td=""><td>121210</td><td>BDBB.</td><td>10 10 18 1 ST</td><td></td><td></td><td></td><td>U. US EPA ID Numb</td><td></td><td>sen (Lokem)</td><td>Safety Kle</td><td></td></td<>	121210	BDBB.	10 10 18 1 ST				U. US EPA ID Numb		sen (Lokem)	Safety Kle	
11. 05 001 Description (including Proper Shipping Name, Hazard Cless, and ID Number)       No.       Type       Quantity       W/Vol         Non-RCRA hazardous waste solid       Skill       CM       CM       CM       CM       V/Vol         B.       Skill       CM       CM       CM       CM       V/Vol       V/Vol         B.       Skill       CM       CM       CM       V/Vol       V/Vol       V/Vol         C       Skill       CM       CM       CM       Vol       V/Vol       V/Vol         C       Skill       CM       CM       CM       Vol       V/Vol       V/Vol         d       d       Skill       CM       CM       Vol       Vol<       Vol       Vol<	752-737			10/2	278	675			ow CA 93205	Buttonwills	
Additional Discussions for transmission and Answer (19) Answe	Waste Noraber State	y Wi/Vol A.	and the second se				s, and ID Number)			Summer and the second s	1
Additional Discussions for many defined Above     Subset of Control of the above of the abo	EPA/Other	aki Y	Malok B	CM	alalı						
Additional Discussions for many defined Above     Subset of Control of the above of the abo	Slans EPA-Cather									b.	Ň
d.         d.         4.         4.         5. Additional Discription for where the listed Above Scal Contominate Treats Theore on partice creats protocome on the two energinations creats on the two energinations and additional Information Caution: West appropriate protocolive clothing and respiratory protocolion when handling.         15. Special Handling Instructions and Additional Information Caution: West appropriate protocolive clothing and respiratory protocolion when handling.         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consignment are fully and accurately described above by profer shipping name and are clot marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and patienal government regulation of the an using ensenter, I certify the I have a program in place to reduce the values and toxicity of waste generated to the degree I have determine and the environment, OR, If I am a small quantity generator, I have made a good faith affort to minimize my waste generated to the degree I have determine and the environment, OR, If I am a small quantity generator, I have made a good faith affort to minimize my waste generation and select the best waste manage avaliable to me and thato I con öfford.	Share									с.	
Addition of Descriptions for Nouscold Lined Above     (1a Choice)     Addition of Descriptions for Nouscold Lined Above     (1a Choice)     Addition of Descriptions     Social Constantinuities and Proce organics     ausial productory of TSDEF secret anothers, weight fictors, and cutfillings of decressal to     Defined and the secret of Constantinuities and Additional Information     Caution: Wear appropriate protective coolitions and Additional Information     Caution: Wear appropriate protective coolitions and respiratory protection when handling.     Site pick up address:	EPA/Objer				1.1						R
Additional Discussions for many defined Above     Subset of Control of the above of the abo	State EPA/OH-2					2				d.	
Socie Contention Partice Frequencies         Serve Chardes of Concerning 247 Antonicos D1, Suite 200 rivine, CA 92012         15. Special Handling Instructions and Additional Information         Caution: Wear appropriate protective clothing and respiratory protection when handling.         Site pick up address:         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consignment are fully and accurately described above by profer shipping name and are clothing and respiratory protection when handling.         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consignment are fully and accurately described above by profer shipping name and are clothing and labeled, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and pational government regulation the environment; CR, if I am a small 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 determine protectable and that I have a small 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 determine protectable and that I have a small quantity generator, I have made a good faith effort to minimize my waste generated to the degree I have determine and the environment; CR, if I am a small 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 determine and the environment; CR, if I am a small 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 determine and the environment; CR, if I am a small quantity generator, I have made a good faith effort to minim			ioling Codes lat Wo	K. Haio	1	2000					
15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respiratory protection when handling. Site pick up address: 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 clothing and respiratory by highway according to applicable international and pational government regulated and he 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 manage available to me and that I can afford. Printed/Typed Name 17. Transporter 1 Acknowledgement of Receipt of Materials		9	03.					Pics .	minated with trace and	Cical Contai	
Site pick up address:       77478 B1N \$97300       7         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consignment are fully and accurately described above by profer shipping name and are down marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and gational government regulational for transport by highway according to applicable international and gational government regulational and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future the 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 manage available to me and that I can afford.       Month         Printed/Typed Name       Signature       Month         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature       Month	-	合于 力学之下			M2	e, CAN	., Sult 200, h	1347 Micheleosi D	socies of Concordion.	Stove Che	
NASNI, San Diego. Site 5       51N \$9306         16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are clemarked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and patienal government regulation in a large quantity generator, I certify that I have a program in place to reduce the volume and taxicity of waste generated to the degree I have determine practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future the 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 manage available to me and that I can afford.         Printed/Typed Name       Signature         II.7. Transporter 1 Acknowledgement of Receipt of Materials	21 70	wide			handling	ion when	espiratory prot			1	
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 determine procticable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future th 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 manage available to me and that I can afford.     Printed/Typed Name     JA/JD 4. BURR STRK     JA 10						18	77	Diego Site 5	NASNI BR		
Printed/Typed Name     A/10 4. Butter Strack     If I are specified and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future the and the environment; OR, if I are a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste manage available to me and that I can offord,     Printed/Typed Name     A/10 4. Butter STRAC     If I are specified of the practicable method of treatment, I have made a good faith effort to minimize my waste generation and select the best waste manage available to me and that I can offord,     Printed/Typed Name     If I are specified of the practicable of Materials	lassified, packed, ions.	ping name and are clas I government regulation	ve by proper shippin and and pational go g	nternation	ately descri applicable i	lly and accu according to	f this consignment of transport by highw	ectare that the contents o in proper condition fo	R'S CERTIFICATION: I hereby a d labeled, and are in all respec	16. GENERATOR marked, and	
▼ DA/ID L. BUERSTER DI DE CONSTRA DI DE CON	preat to human be	present and future three	ch minimizes the ore	me which	available to	al currently	ment, storage, or di	cticable method of treat	and that I have selected the province of the p	and the envir	
	30x	Month C.3	and the second	6.	8	10	Signature		D.L. BUERSTR	DAVIN	•
B TB. Transporter 2 Acknowledgement of Receipt of Materials	Doy	Month C 3	0	140	le.	"A"	Signature		Biuliett	Printed/Typed No	RANSPO
Printed/Typed Name Signature Month	Doy	Month					Signature				R
F A 19. Discrepancy Indication Space									Indication Space	19. Discrepancy	
							т. <u>н</u>				

 $\frac{1}{2}$ 

	UNIFORM HAZARDOUS	1. Generator's US EPA	ID No.	Manifest Document	No.	2. Poge 1	Information in th	
	WASTE MANIFEST	CIA 7 170	IN A IN IN IN IN	87542	1	of 📲	is not required b	y Federal law
	3. Generator's Name and Mailing Address	NO PO DE CONTRA		477 427189	A. Store	Vanifies Document 1	Number .	20.98
	Navy Public Works Center			그 말을 한 것	1.	And the second	33.	3618
	2730 McKean Street, San Diego,				Contraction of the	Benerato/SID	1. 1. 1. 1.	
	4. Generator's Phone ( (619) 545-652 5. Transporter 1 Company Name		est Desk US EPA ID Number		and the second se	LAHQ 3	and the second	6.6 8
	5. Heinsperier i Company Neme	o.	US EPA ID NOMBER		17. 12.381	CARLAND ALL THE	<u>ervea</u> j	
	M P Environmental	CI	ATOOOS	24247	D. Eransj	orter s Phone	(800)	158-30
	7. Transporter 2 Company Name	8. 1	US EPA ID Number		E. State I	cansoc lar s D ( <u>kes</u>	erved f	
			11111	1111	🕴 Iransp	orter's Phone		
	9. Designated Facility Name and Site Address	10.	US EPA ID Number		STATES and Share	facility's (D		1
	Safety Klean (Lokem) 2500 Lokem Road, P.O. Box 787	,			H. tot in	40140 I	N N N N T	
	Buttonwillow CA 93206		A D 9 8 0 6	7 5 2 7 8			806-76	2.737
	11. US DOT Description (including Proper Ship		-	12. Con		13. Total	14. Unit	
	Non-RCRA hazardous wast		¢	No,	Туре	Quantity	Wt/Vol t-W Sbrit	atte Numher
	The start of the second the second	2 1510 MU			CM		Y DPA	Clines and
G				ODI	- 141	00020	j una	- Critices
N.	b.						Stat	
R				51.11	1.1		EPA	/Oli er 👾
A -	c.		N.				Stat	
0							+ R	(Oli an 2
R								
	d.				1.1		Stat	
11				1 I I I	1		EPA	/Oliver 1997
10	A school Descriptions for Water of a study	borg			K. datel	ng Codes for Waste	s fisted Above	
	boli contaminated with trace orga	66 - 0202				03	$\mathbf{D} = \{\mathbf{r}_{i}^{\mathbf{T}}, \dots, \mathbf{r}_{i}^{\mathbf{T}}\}$	
	Gend abcrocopy of TSOF signed Serve Chandler, IT Corporation	i manifest, weight bo	ket, and certificate	of disposed to			4	
			CARLES JULY, RIVERS, I	AN 82612			10 and the	and the second
	<ol> <li>Special Handling Instructions and Additional Caution. Wear appropriate protoc</li> </ol>	l Information tive clothing and res	piratory protection	when handling.		W	5 K 99%	8 7 7 6 3
	Site pick up address:	Diego Site 5	17#36	Bin	50	sent		1944
	6. GENERATOR'S CERTIFICATION: I hereby d		is consignment are fully a				ame and are classi	fied, packed,
	marked, and labeled, and are in all respec	ts in proper candition for tre	ansport by highway acco	rding to applicable in	ternationa	and national gover	mment regulations	
	If I am a large quantity generator, I certify practicable and that I have selected the pro-	that I have a program in p	lace to reduce the volum	e and taxicity of wa	ste genera	ted to the degree I h	nave determined to	be economic
	and the environment; OR, if I am a small a available to me and that I can afford.	pantity generator, I have m	ade a good faith effort t	o minimize my waste	generatio	n and select the bes	t and tuture threa I waste manageme	ant method the
	Printed Vyoed Name		Signature /	1	1-		Month	Day
	DAVIS L. BUERS	7812	de	19 CZ		an 34 * 7 * *	03	PPK
	17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name	of Materials	Sinnahura -	AC			Hacil	Day
H	Koy Alan K	unit	Signature	LIX	÷		03	0216
	18. Transporter 2 Acknowledgement of Receipt	of Materials		-0				
E F	Printed/Typed Name		Signature				Month	Day
R 1	9. Discrepancy Indication Space							
FA								
C I								
iL	20. Facility Owner or Operator Certification of	receipt of harardow materia	als covered by this manife	st except as noted in	Item 19			
1 12								
1 2	Printed/Typed Name	receipt of hozordoos moteric	Signature / //	1			Month	Day

4	proved OMB No. 2050-0039 (Expires 9, 30-99) int or type. Form designed for use on ellife (12-pitch) typewriter. UNIFORM HAZARDOUS	s US EPA ID No. Mo	nifest Documer	it No.	2. Page 1	Sacromento, California Information in the shaded areas
	WACTE MANIEECT		27542	1.1.1	of	is not required by Federal low.
	3. Generator's Name and Mailing Address	1-1-19-19-19-19-19-19-1	<del>) ( () () (</del>	A, Store	Monitest Decument )	
	Navy Public Works Center			Sole d	Senerator's ID.	0000
	2730 McKean Street, San Diego, CA 82136 4. Generator's Phone (619) 545-6520 Alth;	-Manifest Desk			Rely of t	444444
	5. Transporter 1 Company Name	6. US EPA ID Number	1.00	C. State	ranspolier's lu <u> Res</u>	etzed
	M P Environmental 7. Transporter 2 Company Name		4247		sonar's Prione rensporter's ID 1 <u>Res</u>	02.8351 (0120)
			A to Pa	and the second hims	orier's L'ione	
	9. Designated Facility Name and Site Address	10. US EPA ID Number		Contraction of the	Epediny's (D STAF IN La Ter I	Instantial States
	Safety Kleen (Lokern) 2500 Lokern Road P.O. Box 787	an an Anna Anna Anna Anna Anna Anna Anna	and the second	H. Farili	CONCRETE AN ADDRESS AND ADDRESS AN	
	Buttonuttow.CA 93208	CAD980617		ntainers i	13. Totol	H1751752.17
	11. US DOT Description (including Proper Shipping Name, Hazar	d Class, and ID Number)	No.	Type	Quantity	WI/Vol 11, Waste Militian
1000	Non-RCRA hazardous waste solid					Side
3			OUN	CM	000000	Y PRATOMAK
N.	b.			and the second		361
		n an		and a		ERANDING
	<b>ć</b> .					Slate
-						TPA: Sitial
and a	d			1 25 Cart		Shate
28 SE			i de la companya La companya		ana ana amin'ny fanisa dia kaodim-paositra dia kaoka amin'ny fanisa dia mampika dia kaoka dia kaoka dia kaoka Ny fanisa dia kaoka di	602NOV
10208	C Additional Descriptions for Material Listed Above			a filmult	ing Codes for Waste	
Sec. Sec.	the Problem 521/21/- BDC - 52	00		S		
12.00	<ul> <li>South the property of TELF signed material, and</li> </ul>	ight-licket, and costinuate of	Canged and No	22.0	13	
1000		an Dr., Such 200, Indus, SA	12512			
	<ol> <li>Special Handling Instructions and Additional Information Coultion: Wear appropriate protective clothing a</li> </ol>	and respiratory protection wh	en handling		Baka selendar ser e Kildan	
	Site pick up eddress;		anagina dinana pinan	and the second second		
18 A	NASNI Sen Diego Site		and the second se	and the second	9364	(1-193655
10000	<ol> <li>GENERATOR'S CERTIFICATION: 1 heraby declare that the can marked, and labeled, and are in all respects in proper condit</li> </ol>	tents of this consignment are fully and a ion for transport by highway according	courdtely descri to applicable.	bed above l Internationa	by proper shipping n I and national gove	ame and are classified, packed, mment regulations.
	If I am a large quantity generator. Logrify that I have a pro-	aram in clace to reduce the volume or	d taxicity of w	aste genera	fed to the degree [ ]	ave determined to be economically
10.00	If I am a large quantity generator, I certify that I have a propracticable and that I have selected the practicable method a and the environment: OR, if I am a small quantity generator,	f treatment, storage, or disposal currer I have made a good faith effort to mi	tly available to nimize my was	me which le generatio	minimizes the presen n and select the bes	it and future threat to human health t waste management method that is
Set.	available to me and that I can afford. PrintedsTyped Name	Signature		ク		Month Day Ye
7	DAVIS L. BURRSTER	alo	172	5		03040
	17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name	Signalare	<u> </u>		Recipiente de la composición de la comp De la composición de l	Month Day Ye
	MARIO VELASALEZ	Mario	W	Ala	<b>.</b>	03040
init init	18. Thousporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	Signalure	1	1 1	/	Month Day Ye
	A CONTRACTOR OF	Contra Antabalahan		1		
1	19. Discreponcy Indication Space					
	이 않았는 것 같은 것 같은 것 같이 없는 것 같이 많이 많이 많이 많이 많이 많이 했다.					이 이것 이 같아.
	20. Facility Owner or Operator Certification of receipt of hazardo	us materials covered by this manifest ex	cept as noted i	n Item 19.		1
	Printed/Typed/Nome	Signature Lin S	¥			Month Day Yes
(	En del Ilaka	1 /10 4				1 1 1 1 1 1 1 1 1 1

į

Ť.	UNIFORM HAZARDOUS	1. Generator's US EPA ID	No.	Manifest Document	No.	2. Page 1	Information in the is not required to	he shaded areas by Federal law,
	WASTE MANIFEST	CA71700	plololiti	87544	-	of		
	3. Generator's Name and Mailing Address				A Slote	Me all ast Document i		38754
	Navy Public Works Center 2730 McKeep Street San Droco	CA 97128			8. State	Severator • ID		<u></u>
	2730 MicKeah Street, San Drogo 4. Generator's Phone (1619) 545 652 5. Transporter I Company Name	() <u>APPIN</u> REORDIDE	st Desk SEPA ID Number		1	AHO 3	6043	249
	5. Transporter I Company Name	a. Us	S EPA ID Number		1.00	ransporter s lus pres	STOP 2.	
	M D Environmental 7. Transporter 2 Company Name	S. 05	PA ID NUMBER	24247		ronagagier's ID <u>(Res</u>	(800)	458 3030
					1.1.1.1.1.1	orter's Phone		
	9. Designated Facility Name and Site Address	10. US	SEPA ID Number		NUMBER OF STREET, STRE	1712-952	21/34 71 51	1. 7.6
	Safety Kleen (Lokern) 2500 Lokern Road P.O. Box 78	7				y's Phone		
	Buttonwillow.CA 92206	~ * * *		7 5 2 7 S	tainers -	13, Total	14. Unit	52.7372
	11. US DOT Description (including Proper Ship	•	d ID Number)	No.	Туре	Quantity	Wt/Vol E Sta	Voste Number -
l	Non-RCRA hazardous wast	e solid			CAA			VOlher
G				OPI	181	OVIDAD	1	
NE	ь.						Sta	Treads
R							. EP/	o Ciller
Ť	с.						Sto	a
R				1.1		1111	27	
	d.						Se	
			• • . • . •	T T			1597	aCillar (Cillar)
	Additional Descriptions for Monories Indes 14 PIOLET 25 124-130	ibove	1000000	V4001 month	S. Haodi	ng Codes for Wasie	Tisled Above	ta parti di Bala Ç
	End contentional of white bace on		807150		the set	23		
	<ul> <li>Send photocopy of TGDF signal Gleve Chevaler, IT Comprando</li> </ul>				<		d.	
	15J Special Handling Instructions and Addition		ore providence				Marke State	
	Caulion: Wear appropriate protection		ratory protectio	n when handling.	· · · ·		i di sala	
h	Site pick up address:		781	13IN 89	31.1		. Saide	an a
	NASNI, Sa 16. GENERATOR'S CERTIFICATION: I hereby	CARE CAPERIA F					me and are class	ified packed
	marked, and labeled, and are in all respe	its in proper condition for tran	sport by highway acc	ording to applicable in	nternationa	and national gover	nment regulation	5.
	If I am a large quantity generator, I certify practicable and that I have selected the pr and the environment; OR, if I am a small available to me and that I can afford.	acticable method of treatment,	storage, or disposal	currently available to	me which i	minimizes the preser	it and future three	at to human healt?
T	Printed/Typed Nome	s	Signature /	1	2		Month	Day Ye
<u>v</u>		STER	a	OK/	$\mathcal{P}$		03	040
RAN	17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name		signature	No to	1		Month	Day Ye
SP.	18. Transporter 2 Acknowledgement of Receipt	of Matariala	1160	Entre	the:		03	0110
R	Printed/Typed Name		signature				Month	Day Ye
Ř	19. Discrepancy Indication Space		· · · · · · · · · · · · · · · · · · ·					·
F								
c								
l	20. Facility Owner or Operator Certification of	All second and a second s	A DECEMBER OF THE OWNER O	fest except as noted in	ltem 19.		1 11 1	Deu Va
T	Printed/Typed Nome Neith Note	5	bignature	1.2			Month	Day Ye

	roved OMB No. 2050–0039 (Expires 9-30-99) int or Type. Form designed for use on elife (12-pitch) typewriter.	1. A.		1.0.0.1	Sacramento, California
Ì	UNIFORM HAZARDOUS	EPAID No.	Anifest Document No.	2. Poge-1 of at	Information in the shaded areas is not required by Federal law.
	3. Generator's Name and Mailing Address CPA 7 1 7 Navy Public Works Center	0030015	0/940 / 9	nte Martifest Doatiment i	9938754!
	2730 McKean Strest, San Diego, CA 92136	amilant Pank		un Generator's ID	4043940
	5. Transporter 1 Company Name	274 USEPA D Number		até Archispon di N ID ( <u>Ref</u> onsporter's Phone	elved )
	NA D Erverbargersental 7. Transporter 2 Company Name		4247	ile Transporter's ID <u> Res</u> impose 's Phone	(900) 455 2038
	9. Designated Facility Name and Site Address Safety Kloen (Lokern) 2500 Lokern Road P.O. Box 787	10. US EPA ID Number	H. Fr	nte Facility's ID 17 12 14 14 17 1 icility's Chone	105 K 15 15 10 15
	Builton willow CA 95200 11. US DOT Description (including Proper Shipping Name, Hazard Cl		12. Containers No. Typ		14. Unit Wt/Vol 1. Woste Nunicer
G	Hazardous waste, solid, n.o.s. (tetrachloro trichloroethylene), 9 NA3077, III	ethyleno,		Morphar	Y C sterr S
EN	b. sec.				Sete 90
RA					Strat Office
T O R				EFT T	EPA/Cifiar
Î	d				Siale
				1.111	EP.//Cd-3/
	<ol> <li>Additional Decorptions for Monetals from A control</li> <li>Provide 8 25/9/- BDA - Control</li> </ol>		u .	anding Codes for West	C Instead Above
T	Sol contamination efforted, for action efforted in Fast coopy of TSDF segment manifest to Sove Car (949) 474-8300	inder, IT Corporation at	felomention		a geographic and the
	15. Special Handling Intervations and Additional Information	V06-30			
	Caution: Wear appropriate protective clothing and IN CASE OF EMERGENCY CONTAC			55-3924	
	Site pick up address: NASMI, Coronado, San Dia 16. GENERATOR'S CERTIFICATION: Thereby declare that the conten	a state densing mant and fully on	d occurately described of	310 5320 ove by proper shipping i	nome and are classified, packed,
	marked, and labeled, and are in all respects in proper condition	for transport by highway accord	ling to applicable interno	tional and national gove	rnment regulations.
212 8.2	If I am a large quantity generator, I certify that I have a progra- practicable and that I have selected the practicable method of tr and the environment; OR, if I am a small quantity generator, I	m in place to reduce the volume eatment, storage, or disposal cu have made a good faith effort to	and toxicity of waste ge mently available to me w minimize my waste gen	nerated to the degree I hich minimizes the prese rotion and select the be	have determined to be economically nt and future threat to human health st waste management method that is
	In the second s second second se second second s second second s second second se		and the second of the second second		
	available to me and that I can afford. Printed Typed Name	Signature	A		Month Doy, Yes
V	Printed Typed Name DAVID L BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials	I dl.	a A		03040
Rezon	Printed Typed Name NAVID L. BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Printed/Typed Name	Signature	a		Month Day Yes 03040 Month Day Yes 0704
	Printed/Typed Name AVID L. BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name	I dl.	a <del>R</del> 9. hr. co		03040 Month Doy Yee 33242
	Printed Typed Name NUTD L BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Nitratt 1. LJ R. Ham 18. Transporter 2 Acknowledgement of Receipt of Materials	Signotore	a		03040 Month Doy Yes 30242
TRANSPORTER FAC	Printed/Typed Name AVID L. BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	Signotore	a <del>A</del> 9. hora		03040 Month Doy Yes 30242
F A	Printed/Typed Name AVID BUEDSTER 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 19. Discrepancy Indication Space	Signetüre Signature	a A Q. K. in terms st akcept as noted in item		OI3 OI4 O           Menth         Day         Yec           Dial         P         P           Menth         Day         Yec
FACIL	Printed/Typed Name AVID L. BUERSTER 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	Signetüre Signature	A Contractor 9. 5 miles st except as noted in them MH	19.	OI3 OI4 O           Menth         Day         Yes           D D         Yes         Yes           Month         Day         Yes
F A C I L I T	Printed Typed Name Printed Typed Name 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 19. Discrepancy Indication Space 20. Facility Owner or Operator Certification of receipt of hazardous Printed/Typed Name Printed/Typed Name ACCIPHA NOBIO	Signature Signature	m	19.	OI3 OI4 O           Menth         Day         Yec           Dial         P         P           Menth         Day         Yec

A.	UNIFORM HAZARDOUS	1. Generator's US EPA ID No.		Manifest Documen	No.	2. Page 1	Information in the s	
L	WASTE MANIFEST	CIA 7 17 009	0010110	STAAS	is i	of A	is not required by F	ederal I
	3. Generator's Name and Mailing Address	154 PS 8 3 3 2 34 38 52	112/112/12 113	UI UTU	AL-SIGH A	daalfest Documen	Number AAA	1
L	Navy Public Works Center				and the	A Constant	993	8 I.
	2730 McKean Street, San Diego 4. Generator's Phone ( (619) 545-652				1. S. S. S. S.	incontect ID		
L	5. Transporter 1 Company Name	O Aitn: Manifest De 6. US EPA I			C Selet	Turis offer's ID IR	160432	
L					1-42 Sta	orial S Plione		
	M P Environmental 7. Transporter 2 Company Name	CAT 8. US EPA		24247	1.1	rdospacier's 10 18	(600) 48	
	7. Transporter 2 Company Name	b. US EPAT	D Number		e s per de		in vin j	
	9. Designated Facility Name and Site Address	10. US EPA 1			C. Statel	orier's Picne		
L	Safety Kieen (Lokern)	10. 05 EPA1	ID Number		Contrast of the last	C. SMARTH R. C. S. A. P. (2012)	21.128 81	
ŀ	2500 Lokem Road P.O. Box 78				H. Roule	A Phone		
	Etatomations.CA 93206	CAD	9806	7 5 2 7 6			805-762	<u> </u>
	11. US DOT Description (including Proper Ship			12. Cor No.	Type	13. Total Quantity	14. Unit Wt/Vol	dia Muri
GENERATOR	Hazardous waste, solid, n.o.		1		~ ~ ~		Y, State	
G	trichloroethylene), 9 NA3077	(, 10)		001	CM	0002	o Por GAIG	uner .
E	b.							0
E					1.1		EPA/C	
R					1.1			
T O					1. 13. 1		Sichel	
R				i line	1.1	1.1.1.1	57A.0	line
	d.				1.1.1.1.1.1		Setter	
L	승규는 것이 아파 문제가 많이 많이 했다.						EPA C	ili ne statisti Ili ne statisti
L			AND A AND AND		No. of Concession	ng Codes hav Was		
		\$6-07C2		a the second	6	Contrast of the	-  I.	
ŀ	The Profest #	to Steve Chandler, IT C	yacız Zerocellor u	t fax tax (2)es		A		
	(949) 474 5009 ( 99 9 %	nach Iver a		1. A. 1994	The second second		d	
	15. Special Handling Instructions and Addition	al Information	and a shi and	ada ana ka a atlia a				an and a start of the
L	Caution: Wear appropriate protect IN CASE OF EMERGEN				0.258	-3924	C20191	10
L	Sile pick up address:		and the second second	7#2	and to		007-1	
	and the second sec	ronado, San Diego, CA Sa	80				89301	1 2 2 2 1 2
	<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respectively.</li> </ol>	tectore that the contents of this consigned in proper condition for transport b	nment are fully at by highway accor	ding to applicable i	nternational	and national gov	ernment regulations.	а, раске
L	If I am a large quantity generator, I certify	that I have a program in place to	reduce the volum	and taxicity of we	iste generat	ed to the degree	have determined to b	e econo
	practicable and that I have selected the pr and the environment; OR, if I am a small	acticable method of treatment, storag	ae, or disposal cu	rrently available to	me which n	ninimizes the pres	ent and future threat to	o human
Ľ	available to me and that I can afford.			$z \rightarrow x$	2			
¥	Printed Typed Name L. BUEA	STER	1100	154			03C	24
TR	17. Transporter 1 Acknowledgement of Receipt	of Materials	and the second	Sec. 1				
ANS	PrinterTyped Nome MAULAD	Signatu	Paral	na	a faither		Month 3	Day/
p i	Tä. Transporte 2 Acknowledgement of Receipt	of Materials	a warry	11/000	Librar			10
R T E	Printed/Typed Name	Signatu	ire /				Month	Day
R	19. Discrepancy Indication Space							· .
FA								
c								
Ĺ.	20. Facility Owner or Operator Certification of	receipt of hazardous materials cover	ed by this manife	st except as noted in	Item 19.			
	Printed/Typed/Name ;	i		11/10-			Month	Day
I T Y	1 1 1 1 1 1 1 1	0	VIIN	008				

	print or type." Form designed for use on elite (12-pitch) typewriter.				Sacramento, Colifo
	UNIFORM HAZARDOUS WASTE MANIFEST	tanifest Documen	T NO.	2. Page 1	Information in the shaded ar is not required by Federal la
	3. Generator's Name and Mailing Address	87547		of Anilest Document h	
			AL DIDLE D	Gentest Locurtery i	99387
	Navy Public Works Center		8. Stole C	nemotor's ID	00001
	2730 McKean Street, San Diego, CA 92136 4. Generator's Phone ( 1919) 545-6520 Altr. Manifest Desk			ALLAA	SALLANS
	5. Transporter 1 Company Nome Attr: Martinet Dante 5. Transporter 1 Company Nome		C State 1	动机物应	<u> </u>
	M C Environmental 7. Transporter 2 Company Name 8. US EPA ID NUmber	A 2 4 7	E State T	arler's Phona Chaporter's 10 ( <u>Res</u> arler's Phone	(800) 458-30
	9. Designated Facility Name and Site Address 10. US EPA ID Number		G. State F	ocility's ID	
	Safety Kleen (Loitem)		k	1104131	州在古法上主任
	2500 Lokern Road P.O. Box 787	العد المع المع	H. Faellin	's Phone	
	Builtorwilliow, CA 93200 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Cor	ntainers	T3. Total	14. Unit
		No.	Туре	Quantity	WI/Vol T. Woste Num Fe
GENERATOR	Hazardous waste, solid, n.o.s. (lead, cadmium, tetrachloroethylene), 9, NA3077, Ili	601	СМ	0001210	P CH
N	ь.				06.03
R					EM/OBES.
A	c.				5.1e
ò	그는 것은 것은 것이 같은 것이 같은 것이 같은 것이 없는 것이 같이 했다.				EPA/OIEar S
R			1		
					Sfare
	전화 방법은 것 같은 것 같아요. 것 같아요. 여름 가지 않는 것 같아?	Thi		LELL	EPA CINE
	J. Additional Data matters log Materials Listed Above		K. Hoadii	ig Codes for Wester	Lister Above
	116, Profile # 25123 + 87X - 0203. soft contaminated with carbinaria and chlomasted organics.	Tel servert		5/03	6
	Fail cupy of TSDF signed manifest for shove Chandler. IT Corporation at t	an matters	c		
	1949/114-500 (49 20793) UDC39-				
	15. Special Handling Instructions and Additional Information Certificity. Wear appropriate protective clothing and respiratory protection with	an haarfling			
1	IN CASE OF EMERGENCY CONTACT: Chem -Tel, In		0-255	-3924	
	Site pick up address:			5326	
	16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and	111	ed above b	v proper shipping no	me and are classified, packed,
	The second and shaled and one in all everyth in promotions or his consignment are folly and in	accurately descrit			
	marked, and loaeled, and are in all respects in proper condition for transport by highway accordin	g to applicable i			
	marked, and lobeled, and are in all respects in proper condition for transport by highway according If I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi
	marked, and lobeled, and are in all respects in proper candition for transport by highway accordin If I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford. Printed Typed Name Signature	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi
V	marked, and lobeled, and are in all respects in proper condition for transport by highway according If I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th
TRAN	marked, and lobeled, and are in all respects in proper candition for transport by highway according if I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.         Printed Typed Name       Signature	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th
TRANSPO	marked, and lobeled, and are in all respects in proper candition for transport by highway according if I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         18. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th Month Day
TRANSPORT	marked, and lobeled, and are in all respects in proper candition for transport by highway according to the produce of the produce of the produce of the volume of the produce of the prod	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th Month Day
T R A M S P O R T E R	marked, and lobeled, and are in all respects in proper candition for transport by highway according if I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         18. Transporter 2 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th Month Day Month Day 0 3 0 4
F A C I	marked, and lobeled, and are in all respects in proper candition for transport by highway according if I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         18. Transporter 2 Acknowledgement of Receipt of Materials       Signature	ig to applicable i and toxicity of we	iste generate	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th Month Day Month Day 0 3 0 4
TRANSPORTER FACIL	marked, and lobeled, and are in all respects in proper candition for transport by highway accordin If I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials         Printed/Typed Name       Signature         18. Transporter 2 Acknowledgement of Receipt of Materials         Printed/Typed Name         18. Transporter 2 Acknowledgement of Receipt of Materials         Printed/Typed Name         19. Discrepancy Indication Space         20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest etc.	in to applicable i and toxicity of wa inimize my wash	iste generate me which m e generation	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th Month Day Month Day 0 3 0 4 4 Month Day
TRANSPORTER FACIL	marked, and lobeled, and are in all respects in proper candition for transport by highway according if I am a large quantity generator, I certify that I have a program in place to reduce the volume a practicable and that I have selected the practicable method of treatment, storage, or disposal curre and the environment; OR, if I am a small quantity generator, I have made a good faith effort to m available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         18. Transporter 2 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         19. Discrepancy Indication Space       Signature	in to applicable i and toxicity of wa inimize my wash	iste generate me which m e generation	ed to the degree I h	ave determined to be economi t and future threat to human h waste management method th Month Day Month Day 0 3 0 4

	UNIFORM HAZARDOUS	1. Generator's US EPA ID No.	Manifest Documen	t No.	2. Page 1	Information in the shaded or
	WASTE MANIFEST	CIA 7 1 7 0 0 9 0	DHE STRAS		of 4	is not required by Federal la
	3. Generator's Name and Mailing Address	B-0 8-3 8 8 8 8 138 38 39 13	UID OI OF OPPU	A state	Apailest Document	Vimber.
	Navy Public Works Center					3338/1
	2730 McKean Street, San Diego 4. Generator's Phone ( sead) para and			B. State C	sunderation's JD.	
	4. Generator's Phone ( 6. Transporter 1 Company Name	0 Altn: Manifest Desk 6. US EPA ID N	lumbar.		AH G	200 A 100
		0. 03 274 10 14	unider	1912		ervita,
	M P Environmentat		00624247		orie 's Phone	(800) 458-30
	7. Transporter 2 Company Name	8. US EPA ID N	umber	LaStated	amparter's ID <u>(Res</u>	<u>erved</u> .
10	~	a constant in participant	141111	103030303030	ner's Phone	
	9. Designoted Facility Name and Site Address Safety Kleen (Lakern)	10. US EPA ID N	umber	CONTRACTOR AND IN CONTRACTOR		0675276
	2500 Lokem Road P.O. Box 78	7		Halfadibr		- PICPANEN
	Bidlonzillow.CA 93206		8 0 8 7 5 2 7 6			805-762-782
	11. US DOT Description (including Proper Ship	ping Name, Hazard Class, and ID Numb	er) 12. Cor No.	tainers Type	13. Total Quantity	14, Unit Wt/Vol 1, Waste Neares
	Hazardous waste, solid, n.o.					V Gre Sidie
G	tetrachloroethylene), 9, NA3	077, 组	0.01	CM	0 0 0 2 0	R FPA/Qiear
E	and a second		001	Maria States	O a O a O	Coool Do
E		물지 않는 것은 나람이				Contraction of the second
RA		and an an an an an an				EPA/Orban
Т		1999년 1997년 - 1997년 1998년 1998년 1999년 - 1997년 - 1997년 - 1998년 1998년 1997년 199		de Berg		Stele
O R						EPA/Other
1	d.					Sigle
	n server and a server the server of the serv	말 알 안 있는 물 것 같은 것을 가 말았다. 1988년 - 1996년 - 1997년 -				
		alisto contra la social de la sur esta entre de la seconda de la seconda de la seconda de la seconda de la sec Esta de la seconda de la se		line of the line o		- ENA/Olika
62 82	Additional Seconditions for Materials Littlen A	A REAL PROPERTY AND A REAL	A REAL PROPERTY AND A REAL	K. Jandi	O Cones lot Worth	s Listed Above
5 B	100 HT0000 # 2051 8 8 ~ B	86-0303		and the second		L. C.
	and contactinated with declared	and independent organics . It		15	- 63	
	100 HT0000 # 2051 8 8 ~ B	and independent organics . It	oration at foculation	15		
	All Finally if     South and a state of the second state     South and a state of the second state     South and a state     South and a state     South and a state of the second state	Head of Action and Act	35		- 03	ь 4
	15. Special Handling Instructions and Additional	tind machines engetade statuture Chernise II Cep 2079() 1/0 Unicommercial type clothing and respiratory pr	35 rotection when handling.	20	-03	e 1308)
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENC	tind machines engetade statuture Chernise II Cep 2079() 1/0 Unicommercial type clothing and respiratory pr	35 rotection when handling.	20	-03	a DIDV8)
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Corr	and manifested extension and manifested extension (Anti-Anti-Anti-Anti-Anti-Anti-Anti-Anti-	SS rotection when handling -Tel, Inc. at 1-80 エアダ コム	く n 10-255 月ル	-03 10422 -3924 5331	
	15. Special Handling Instructions and Abdition Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con-	And contraction and engineers and contract Chernelist IT Out and Chernelist IT Out and Chernelist IT Out and respiratory pr and respiratory p	Tel, Inc. at 1-80	く 10 10-255 月に	-03 10422 -3924 5331	
	15. Special Handling Instructions and Addinese Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con 16. GENERATOR'S CERTIFICATION: Thereby c marked; and labeled; and are in all respect	And control of the detact and control of the detact and control of the detact the dothing and respiratory pr and respirato	Tel, Inc. at 1-80 Tel, Inc. at 1-80 <u>JT</u> <sup>JJ</sup> <u>36</u> at one fully and accurately describ ghowy according to applicable in	2 A 10-255 /3 i.L net above b	- 03 10 4 2 2 -3924 5331 y proper shipping no and national gover	ame and are clossified, packed, nment regulations
	15. Special Handling Instructions and Addingen Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con 16. GENERATOR'S CERTIFICATION: Thereby of marked, and labeled, and are in all respec- if 1 am a large quantity generator, I certify protectable and that I have selected the action	And the second s	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are clossified, packed, nment regulations. iave determined to be economi
	15. Special Handling Instructions and Abdition Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con-	And the second s	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are clossified, packed, nment regulations. iave determined to be economi
	15. Special Handling Instructions and Abbieved Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con de GENERATOR'S CERTIFICATION: Thereby a marked, and lobeled, and are in all respect of the am a large quantity generator, I certify practicable and that I have selected the part and the environment; OR, if I am a small of	And the second s	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, nment regulations. ave determined to be economi and future threat to humon h t waste management method th Month Day
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con definition of the protect of the pro- marked, and lobeled, and are in all respect H I am a lorge quantity generator, I certify practicable and that I have selected the pro- and the environment; OR, if I am a small of available to me and that I can afford. Printed/Typed Name	Additional and respirators Additional of the second of th	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, nment regulations. iave determined to be economi it and future threat to humon h t waste management method th
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENO Site pick up address: NASNI, Con demarked, and lobeled, and are in all respect in a lorge quantity generator, I certify procticable and that I have selected the pro- and the environment; OR, if I am a small o available to me and that I can afford.	Additional and respirators Additional of the second of th	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, nment regulations. ave determined to be economi and future threat to humon h t waste management method th Month Day
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con 16. GENERATOR'S CERTIFICATION: Thereby of marked, and lobeled, and are in all respect H I am a lorge quantity generator, I certify practicable and that I have selected the pro- and the environment; OR, if I am a small of available to me and that I can afford. Printed/Typed Name ALIS L. Supple 17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name	Additional and respirators Additional and respirators of the clothing and respiratory of CONTACT: Cheme CONTACT: Cheme Conado, San Diego, CA Site S lectore that the contents of this consignment is in proper condition for transport by high that I have a program in place to reduce scricable method of treatment, storage, and uponity generator. I have made a good Signature of Materials Signature	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are clossified, packed, nment regulations. ave determined to be economi at and future threat to humon h t waste management method th Manth Day 0 3 0 4 4
	15. Special Handling Instructions and Addinese Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up ackress: NASNI, Con Marked, and lobeled, and are in all respect Marked, and lobeled, and are in all respect H I am a lorge quantity generator, I certify procticable and that I can afford. Printed/Typed Name ALIS L. BUSC.	Additional and respirators Additional and respirators of the clothing and respiratory of CONTACT: Cheme CONTACT: Cheme Conado, San Diego, CA Site S lectore that the contents of this consignment is in proper condition for transport by high that I have a program in place to reduce scricable method of treatment, storage, and uponity generator. I have made a good Signature of Materials Signature	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are clossified, packed, nment regulations. ave determined to be economi at and future threat to humon h t waste management method th Manth Day 0 3 0 4 4
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENCE Site pick up ackress: NASNI, Con Marked, and lobeled, and are in all respect of GENERATOR'S CERTIFICATION: Hereby of marked, and lobeled, and are in all respect H I am a lorge quantity generator, I certify procticable and that I have selected the pro- and the environment; OR, if I am a small of available to me and that I can afford. Printed/Typed Name DATID L. BUST 17. Transporter I Acknowledgement of Receipt Printed/Typed Name Case Market 18. Transporter Acknowledgement of Receipt Printed/Typed Name	And an and respiratory provided in the content of t	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, mment regulations. The second se
F	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENC Site pick up address: NASNI, Con de GENERATOR'S CERTIFICATION: Thereby of marked, and lobeled, and are in all respect H I am a lorge quantity generator, I certify practicable and that I have selected the pro- and the environment; OR, if I am a small of available to me and that I can afford. Printed/Typed Name Aria L. Bust 17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name Case, Massac	And an and respiratory provided in the content of t	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, mment regulations. The second se
	15. Special Handling Instructions and Additional Caution: Wear appropriate protect IN CASE OF EMERGENCE Site pick up ackress: NASNI, Con Marked, and lobeled, and are in all respect of GENERATOR'S CERTIFICATION: Hereby of marked, and lobeled, and are in all respect H I am a lorge quantity generator, I certify procticable and that I have selected the pro- and the environment; OR, if I am a small of available to me and that I can afford. Printed/Typed Name DATID L. BUST 17. Transporter I Acknowledgement of Receipt Printed/Typed Name Case Market 18. Transporter Acknowledgement of Receipt Printed/Typed Name	And an and respiratory provided in the content of t	Tel, Inc. at 1-80 JT J JC to ore fully and accurately describ physical	C h 10-255 B iL red above b alernotional	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, mment regulations. The second se
F A C I	15. Special Handling Instructions and Address Caution: Wear appropriate protection IN CASE OF EMERGENCE Site pick up actress: NASNI, Con 16. GENERATOR'S CERTIFICATION: Thereby c marked, and labeled, and are in all respect If 1 am a large quantity generator, I certify procticable and that 1 have selected the pro- available to me and that 1 can althord. Printed/Typed Name Case, Massac 17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name Case, Massac 18. Transporter 4 Acknowledgement of Receipt Printed/Typed Name	And an and the set of	totection when handling -Tel, Inc. at 1-80 IT I and accurately descrit showsy according to applicable in the volume and texicity of we relisposed currently available to laith effort to minimize my waster when the volume of the texicity of the relisposed currently available to authorize the volume of the texicity of the relisposed currently available to authorize the volume of the texicity of the relisposed currently available to authorize the texicity of the texicity of the texicity of the texicity of the texicity of the texicity of texicity of the texicity of texicity of the texicity of the texicity of the texicity of the texicity of texicity of tex	A 10-255	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, mment regulations. The second se
F A C I L I	<ul> <li>15. Special Handling Instructions and Addinese Caution: Wear appropriate protection in CASE OF EMERGENCE Site pick up address: NASNI, Control of Caution: Wear appropriate protection of the pick up address: NASNI, Control of GENERATOR'S CERTIFICATION: Thereby control of the environment; OR, if I am a large quantity generator, I certify proclicable on that I have selected the procordiable to me and that I can afford.</li> <li>Printed/Typed Name Case Massace</li> <li>Transporter 1 Acknowledgement of Receipt Printed/Typed Name</li> <li>I. Transporter 2 Acknowledgement of Receipt Printed/Typed Name</li> <li>Printed/Typed Name</li> <li>Discrepancy Indication Space</li> <li>20. Facility Øwner or Operator Certification of the space o</li></ul>	A contraction of the defense A contract of the defense A contract of the defense A contract of the contents of this consignment is in proper condition for transport by his that I have a program in place to reduce that I have a program in place to reduce triccible method of treatment, storage, a upon thy generator, I have made a good I of Materials signature signature Signature Signature Signature	totection when handling -Tel, Inc. at 1-80 IT I and accurately descrit showsy according to applicable in the volume and texicity of we relisposed currently available to laith effort to minimize my waster when the volume of the texicity of the relisposed currently available to authorize the volume of the texicity of the relisposed currently available to authorize the volume of the texicity of the relisposed currently available to authorize the texicity of the texicity of the texicity of the texicity of the texicity of the texicity of texicity of the texicity of texicity of the texicity of the texicity of the texicity of the texicity of texicity of tex	A 10-255	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are clossified, packed, mment regulations. ave determined to be economi and future threat to humon hi t waste management method th Month Day Month Day Month Day
F A C I L	15. Special Handling Instructions and Address Caution: Wear appropriate protection IN CASE OF EMERGENCE Site pick up actress: NASNI, Con 16. GENERATOR'S CERTIFICATION: Thereby c marked, and labeled, and are in all respect If 1 am a large quantity generator, I certify procticable and that 1 have selected the pro- available to me and that 1 can althord. Printed/Typed Name Case, Massac 17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name Case, Massac 18. Transporter 4 Acknowledgement of Receipt Printed/Typed Name	And an and the set of	totection when handling -Tel, Inc. at 1-80 IT I and accurately descrit showsy according to applicable in the volume and texicity of we relisposed currently available to laith effort to minimize my waster when the volume of the texicity of the relisposed currently available to authorize the volume of the texicity of the relisposed currently available to authorize the volume of the texicity of the relisposed currently available to authorize the texicity of the texicity of the texicity of the texicity of the texicity of the texicity of texicity of the texicity of texicity of the texicity of the texicity of the texicity of the texicity of texicity of tex	A 10-255	-03 104 22 -3924 5331 y proper shipping ne and actional gover	ame and are classified, packed, mment regulations. The second se

5 732.0

	UNIFORM HAZARDOUS	Senerator's US EPA ID No.	Manifest Docume	nt No.	2. Page 1	Sacrobento, Colil Information in the shaded a
1		AI 7 1 1 7 0 0 9 0 0 1 16	87561	1.1	of 1	is not required by Federal I
1	3. Generator's Name and Mailing Address	-al-a-1 a 1 a 1 an 1 an 1 an 1 an 1 an 1 an	el serie serie 36	A Store Mo	alfest Document I	Sumber 99387
Ş.	Navy Public Works Center 2730 McKean Street, San Diego, CA 92	1120		B. Stole Ger		33301
i a	4. Generator's Phone ( (\$19) 545-8520	Alth Manifest Desk	1.1.1.1.1.1	b, prote vier	AIN O 3	8043249
1	5. Transporter 1 Company Name	6. US EPA ID Number		C. State Tra	esporter's ID [Res	and the second se
	M P Environmental	CIA TI00006	24247	0. Transpor	ler's Phone	(800) 458-31
-	7. Transporter 2 Company Name	8. US EPA ID Number	1		isporter's ID ( <u>Res</u>	structure of the second s
				P. Transport		
	9. Designated Facility Name and Site Address Safety Kleen (Aragonite), Inc. 11600 North Aplus Road Aragonite.UT 84029	10. US EPA ID Number	5 2 1 7 7	G. State Fac H. Facility's	1111	(601) 323-8
	11. US DOT Description (including Proper Shipping Non	ne, Hazard Class, and ID Number)	12. Co No.	ntainers Type	13. Total Quantity	14. Unit Wt/Vol   Waste Numb
	Hazardous waste, solid, n.o.s. (tre	chioroethene, perchioroethr	ene,	1706	Goddiniy	Shate
Contraction of the second	lead), 9, NA3077, 11		001	CM		Y 10008
[	ь.					366-01003
				1	1111	EPA/Other
ł	¢.	an and a second s				Stole
			1.0			EPA/Other
F	ď					Slate
					a zarozan targan ya Kuta sa bata ing	EPA/Other
	1. Andrional Descriptions far Moterials Leves Abaverne	and the second se		K. Hapdling	Codes for Waste	Listed Abree
Company of the	count plattocopy of 190F septed ments	est to Steve (Transfer, 3347 M	cheaca Gr.,	0.		Ь.
Distantion of the local distance of the loca	Suite 200, Irvana, CA 92812			L.C.	1	d
Total I	272 21 114 311					
State of the Area of the	Special Hopding Instructions and Additional Information     West appropriate protective of     IN CASE OF EMERGENCY CO Site pick up address:     NAS North Island     16: GENERATOR'S CERTIFICATION: 1 hereby declare the     marked, and labeled, and are in all respects in prop	ONTACT: Chem -Tel, Site 5	Inc. at 1-8	00-255-	roper shipping no	RG #171
	If I am a large quantity generator, I certify that I he	ive a program in place to reduce the volur	ne and taxicity of w	aste generated	to the degree I h	ave determined to be econor
	If 1 am a large quantity generator, 1 certify that 1 has practicable and that 1 have selected the practicable and the environment; OR, if 1 am a small quantity g available to me and that 1 can alford.	method of treatment, storage, or disposal a anarator, I have made a good faith effort (	urrently available to to minimize my was	me which min e generation a	imizes the presen nd select the bas	I and future threat to human waste management method
	Printed/Typed Nome	Signature /	12	2		Month Day
	17. Transporter 1 Acknowledgement of Receipt of Materi	The second se	FRE	~		0019
	Printed/Typed Name	Signature				Month . Day
1	Allen Cogo / 18. Transporter 2 Acknowledgement of Receipt of Moteri	ols and the second s	Z	•	<u>Can baile ann ann a</u>	0218
	Printed/Typed Name	Signature	<ul> <li>A state of the second se</li></ul>	te ja prijek je je se s Se je je je je je je se	يې د به دورو ورو ورو د م تورو د کرو ورو ورو	Month Doy
Total Section	19. Discrepancy Indication Space			No Constant		
	創始하 <u>시 말 하나 봐</u> 말 하나 다	1908			한 옷을 물고	
	1월 27일 AN 2011년 1월 21일 - 1921년 1월 2					
A PARTICIPATION OF A PARTICIPATIONO OF A PART				he- 10	7.1. N. 7. 7. 7.	De De La Calificación Pragas Crastigación
	20. Facility Owner or Operator Certification of receipt of Printed/Typed Nome		est except as noted it	1 IIgm 17.		Marth
	20. Facility Owner or Operator Certification of receipt of Printed/Typed Nome	hazardous materials covered by this manifi	est except as noted in	1/1201	vin	Month Day
	20. Facility Owner or Operator Certification of receipt of Printed/Typed Nome		sie-	11	40	Month Day
	20. Facility Owner or Operator Certification of receipt of Printed/Typed Nome	omas Signature	sie-	11	40	Month Day

	UNIFORM HAZARDOUS	s US EPA ID No.	Manifest Document No	p.	2. Page 1	Information in the	81 TH COULDED TO T				
- L-	MACTE MANUEFET	170101910101116	87562	4.5	of	is not required by	r Federal Is				
1	3. Generator's Name and Mailing Address		and the second state of th	State M	landest Doctorent N	tomber					
	Navy Public Works Center					393	387.				
	2730 McKean Street, San Diego, CA 92136		В.	Slote G	enerator's 1D						
	4. Generator's Phone [ (619) 545-6520 Allay: 5. Transporter 1 Campany Name	6, US EPA ID Number		State T	nosporter's ID (Res	5043	143				
	a, mansporter i company reame	o, us craits romber				ived 1	with free				
	M P Environmental	CIAIT0000812	4247	-	orter's Phone	(800) 4	158/31				
	7. Transporter 2 Company Name	8. US EPA ID Number		State Tr	onsporter's ID [ <u>Rese</u>	<u>rved</u> .]					
					inter's Phone						
	9. Designated Facility Name and Site Address Safety Kleen (Aragonite), Inc.	10. US EPA ID Number		State F	acility's (D	11111	1 1 1				
	11600 North Aptus Road		H.	Facility	's Phone		<u></u> .				
L	Aragonite.UT 84029	UTD 9 8 1 5 5	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -			(801)3	123-8				
1	11. US DOT Description (including Proper Shipping Name, Hazar	d Class, and ID Number)	12. Contair No.	iers Type	13. Total Quantity	14. Unit Wt/Vol I W	aste Nomi				
	Hazardous waste, solid, n.o.s. (Irichloro	ethene, perchloroethen	18,			Stote					
	lead), 9, NA3077, III		Dista C	M	5-LAKE 740	YEPA	<sup>000009</sup>				
ł	Barrier and the second s	<ol> <li>S. M. Bernstein and S. S. Sterrer and S. Sarrer and S. S Sarrer and S. Sarrer and S. Sarr Sarrer and S. Sarrer and</li></ol>			and the second	OSI2	8 003				
						5PA	Other				
				1							
			ela contesta el	a de la caracia		Stole					
					1411	EPA)	Other				
	9					Stote					
	andre se traine de la companya de la Recentra de la companya de la company				1.1.1.1	EPA.	Other				
	Add bood Descriptions for Materials Listed & Dave			Handlie	ig Codes for Waster	listed above					
	Additional Descriptions for Materials Listed Aboxs	ith shionnated expenses and	d metols	tioncar	ig Codes fer Waster	Listen Above					
	Sensi photocopy of TSDF signed meeterst to Easter 200, avine: CA 92512	Stove Charder, 3547 Mid	alson Dr.	C	) <u> </u>						
	AND A LINE A PINE , WILLCOMPTE					d. Constant					
2 2540			and the second second second second second								
	15. Special Handling Instructions and Additional Information		15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respiratory protection when handling.								
1					0004						
1	IN CASE OF EMERGENCY CONTA		hen handling. Ic. at 1-800	-255	-3924 <sub>E</sub>	RG Ø171					
1				op fi Sen	-3924 <sub>E</sub>	RG #171					
	IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5 6 GENERATOR'S CERTIFICATION: The pick distors that the case	CT: Chem -Tel, Ir	ic. at 1-800 8/14 <sup>+</sup> 3/6-3	abave b	e proper shipping pe	ame and are classi	fied, packe				
	IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5 AS North Island Site 5 6. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit	CT: Chem -Tel, Ir 27 <sup>4</sup> 332 tents of this consignment ore fully and ion for transport by highway occord	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations.					
	IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5 AS North Island Site 5 6. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit	CT: Chem -Tel, Ir 27 <sup>4</sup> 332 tents of this consignment ore fully and ion for transport by highway occord	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations.					
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: 1 hereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovailable to me and that I can afford.	ACT: Chern -Tel, Ir 27733 tents of this consignment are fully and ion for transport by highway accord gram in place to reduce the volume i treatment, storage, or disposal cur I have made a good faith effort to	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations.					
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovailable to me and that I can afford. PrintedProped Name	CT: Chem -Tel, Ir 27 <sup>4</sup> 332 tents of this consignment ore fully and ion for transport by highway occord	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations.					
76	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: 1 hereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovailable to me and that I can afford.	ACT: Chern -Tel, Ir 27733 tents of this consignment are fully and ion for transport by highway accord gram in place to reduce the volume i treatment, storage, or disposal cur I have made a good faith effort to	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations, ave determined to t and future threat t waste manageme	be econo I to human int method				
1	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovaliable to me and that I can afford. Printed/Syzed Name BUALIS L. BUELSTEEL	ACT: Chern -Tel, Ir 27733 tents of this consignment are fully and ion for transport by highway accord gram in place to reduce the volume i treatment, storage, or disposal cur I have made a good faith effort to	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi inment regulations. ave determined to t and future thread t woste manageme Month 2	be econo to human ent method Day Day				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: 1 hereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment, OR, if I am a small quantity generator, ovailable to me and that I can afford. Printed/Signed Name BULLIS L. BULLISEL 17. Transporter 1 Acknowledgement of Receipt of Materials	CT: Chem -Tel, Ir 27 <sup>-3</sup> 33 tents of this consignment are fully and ion for transport by highway accord gram in place to reduce the volume i treatment, storage, or disposal cur T have made a good faith effort to Signature	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations. ave determined to t and future threat waste manageme Month	be econo to human ni method				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovailable to me and that I can afford. Printed/Syped Name DALIES 4. BUSINES 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name TIME (Selection)	CT: Chem -Tel, Ir 27733 Tents of this consignment are fully and ion for transport by highway occord gram in place to reduce the volume treatment, storage, or disposal cur Those made a good faith effort to Signature Signature Signature Signature	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi inment regulations. ave determined to t and future thread t woste manageme Month 2	be econo to human ent method Day Day				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Theraby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovaliable to me and that I can afford. Printed/Stoed Name Case Address 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Material State Address 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	CT: Chem -Tel, Ir 27733 Tents of this consignment are fully and ion for transport by highway occord gram in place to reduce the volume t treatment, storage, ar disposal cur T have made a good faith effort to Signature Signature Signature Signature Signature	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations. ave determined to t and future thread t woste manageme Month Month Month	be econo to human ent method				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: 1 hereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method of and the environment; OR, if I am a small quantity generator, available to me and that I can afford. Printed/Suped Name 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials	CT: Chem -Tel, Ir 27733 Tents of this consignment are fully and ion for transport by highway occord gram in place to reduce the volume t treatment, storage, ar disposal cur T have made a good faith effort to Signature Signature Signature Signature Signature	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations. ave determined to t and future thread t woste manageme Month Month Month	be econo to human ent method				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Theraby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovaliable to me and that I can afford. Printed/Stoed Name Case Address 17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Material State Address 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	CT: Chem -Tel, Ir 27733 Tents of this consignment are fully and ion for transport by highway occord gram in place to reduce the volume treatment, storage, or disposal cur Those made a good faith effort to Signature Signature Signature Signature	IC. at 1-800 <u>8/4</u> 3/43 I accurately described ing to applicable inter	abave by national	y proper shipping no and national gover	ame and are classi nment regulations. ave determined to t and future thread t woste manageme Month Month Month	be econo to human ent method				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, ovailable to me and that I can afford. 27. Transporter 1 Acknowledgement of Receipt of Materials 28. Transporter 2 Acknowledgement of Receipt of Materials 29. Inted/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials 29. Inted/Typed Name 19. Discrepancy Indication Space	CT: Chem -Tel, Ir	IC. at 1-800 S/4 3/63 I accurately described ing to applicable inter- and toxicity of waster rently available to me perfinize my wasteger	above by national generate which n meration	y proper shipping no and national gover	ame and are classi nment regulations. ave determined to t and future thread t woste manageme Month Month Month	be econo to human ent method				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator. I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, available to me and that I can afford. 20. Transporter 1 Acknowledgement of Receipt of Materials 21. Transporter 2 Acknowledgement of Receipt of Materials 22. Transporter 2 Acknowledgement of Receipt of Materials 23. Transporter 2 Acknowledgement of Receipt of Materials 24. Transporter 2 Acknowledgement of Receipt of Materials 25. Transporter 2 Acknowledgement of Receipt of Materials 26. Facility Owner or Operator Certification of receipt of hazardo 20. Facility Owner or Operator Certification of receipt of hazardo	CT: Chem -Tel, Ir 27733 tents of this consignment are fully and ion for transport by highway occord gram in place to reduce the volume theatment, storage, or disposal cur those made a good faith effort to Signature Signature Signature Note us materials covered by this manifest Signature	IC. at 1-800 S/4 3/63 I accurately described ing to applicable inter- and toxicity of waster rently available to me perfinize my wasteger	above by national generate which n meration	y proper shipping no and national gover	ame and are classi nment regulations. ave determined to t and future thread t woste manageme Month Month Month	be econo to human ent method				
	IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator. I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, if I am a small quantity generator, available to me and that I can afford. 20. Transporter 1 Acknowledgement of Receipt of Materials 21. Transporter 2 Acknowledgement of Receipt of Materials 21. Transporter 2 Acknowledgement of Receipt of Materials 22. Printed/Typed Name 23. Transporter 2 Acknowledgement of Receipt of Materials 24. Transporter 2 Acknowledgement of Receipt of Materials 25. Transporter 2 Acknowledgement of Receipt of Materials 26. Facility Owner or Operator Certification of receipt of hazardo	CT: Chem -Tel, Ir 27733 tents of this consignment are fully and ion for transport by highway occord gram in place to reduce the volume theatment, storage, or disposal cur those made a good faith effort to Signature Signature Signature Note us materials covered by this manifest Signature	IC. at 1-800 S/4 3/63 I accurately described ing to applicable inter- and toxicity of waster rently available to me perfinize my wasteger	above by national generate which n meration	y proper shipping no and national gover	ame and are classi inment regulations. ave determined to t and future threat woste manageme Month Month Month	be econo to human int method Day Day / 9 Day				

UNIFORM HAZARDOUS		ifest Documen	rNo.	2." Poge 1	Information in the shaded is not required by Federa
3. Generator's Name and Mailing Address	70090016	7563	.A. State (	Monifest Document N	unber QQZQ
Navy Public Works Center 42730 McKean Street, San Diego , CA 92136			CALCER .	Deserator's ID	
5. Transporter 1 Company Name	Monitoria Dentis CUS EPA ID Number		C. State 1	ransporter's ID ( <u>Rese</u> orter's Phone	<u></u>
34 D Environmental 7. Transporter 2 Company Name		4247	E. Stale 1	ransporter's ID <u>(Rese</u>	wed. (800) 458 -
9. Designated Facility Name and Site Address	10. US EPA ID Number		1	orter's Phone Facility's ID	
Safety Kleen (Aragonite), Inc. 11600 North Aplus Road Aragonite.UT 34929	UTDSSIS	2477	H. Facility	/s Phone	11111
11. US DOT Description (including Proper Shipping Name, Hozard	the second s	12. Cor No.	tainers Type	13. Total Quantity	14. Unit Wt/Vol 1. Waste No
Hazardous wasta, solid, n.o.s. (trichloros lead), 9, NA3077, Ill	sthene, perchloroethene,	6 KUIK	CM	010101210	Y PASher
b.		C) QIV			10005 00
				TITI	EPA/Other
					EPA/Other
d					Store
		11			EPA/Other
<ol> <li>Additional Descriptions for Materials Listed Above 16. Profiles BAP2401477, and concentrational edu Sand problem of 75DF signed marshest for 5</li> </ol>			K. Handli	ng Codes for Wastes	b.
Suite 200 Irvine, CA 92612	0.00/240	Carlo and	c.	- Andrews	d
15. Special Handling Instructions and Additional Information	CZUNIU				
Caulion: Wear appropriate protective clothing an IN CASE OF EMERGENCY CONTAC	Contract and Contractional and Contraction Contraction and Contract an	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	10.1. Control 10.1. April 10.1.	5-3924 <sub>F</sub>	RG #171
Site pick up address: NAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the conte	ents of this consignment are fully and ac	curately describ	oed above b	y proper shipping no	me and are classified, pac
marked, and labeled, and are in all respects in proper condition	on for transport by highway according	to applicable i	nternationa	and national govern	iment regulations.
If I am a large quantity generator, I certify that I have a prographicable and that I have selected the practicable method of and the environment; OR, if I am a small quantity generator, I available to me and that I can afford.	ram (n place to reduce the volume and treatment, storage, or disposal current have made a good faith effort to min	variable to mize my wash	iste generat me which r generatio	ed to the degree I he ninimizes the present n and select the best	and future threat to be econ waste management metho
Printed/Typed Nome: DAVID L. BUERSTER	Signature	19			Month Day
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name	Signature 100				Month Day
A Transporter 2 Acknowledgement of Receipt of Materials	Milly n.	UTT	le .		02/19
Printed/Typed <sup>®</sup> Name	Signature UNIO				Month Day
19. Discrepancy Indication Space	uner.				
	s materials covered by this manifest exe Signature	ept as noted in	(tem 19.		Month Doy
20. Facility Owner or Operator Certification of meetpt of hazardou: Printed/Typed Name			10 9 2	10.001	1210011
Printed/Typed Name Qarrie Thomas	O NOT WRITE BELOW T		1001	nuzy	101.21.215

UNIFORM HAZARDOUS		Manifest Document No.	2. Page 1	Information in the shaded and is not required by Federal law
WASTE MANIFEST	CA711700900116	87564	of	and the second
. Generator's Name and Mailing Address. Navy Public Works Center		A	State Manifest Cocument	Number 993871
2730 McKean Street, San Diego		В.	State Generator's 10	
. Generator's Phone ( (619) 545-65)	20 Altin: Manifest Desk 6. US EPA ID Number		State Transporter's ID iRt	66943249
5. Transporter 1 Company Name	이 이 가 같은 것을 가 같아? 것을 가 못 못 물었다.		Transcorter's Phone	
M P Environmental Transporter 2 Company Name	C A T 0 0 0 6 2 8. US EPA ID Number	64241	State Transporter's Pilone	(800) 455-30 served 1
	1 T 1 T 1 1 1 1		Transporter's Phone	
<ol> <li>Designated Facility Name and Site Address Safety Klean (Aragonite), Inc.</li> </ol>	10. US EPA ID Number	G.	State Facility's ID	111111
11500 North Aptus Road Aragonite.UT 84029	UT D9815	5 2 1 7 7	Facility's Phone	(801) 323-81
1. US DOT Description (including Proper Shi	pping Name, Hazard Class, and ID Number)	12. Containe	ype Quantity	14. Unit Wt/VoF 1. Waste Nuclb
Hazardous waste, solid, n.e	o.s. (Inchloroethene, perchloroether			State
lead), 9, NA3077, III		0010	M M M	Y PA/868
b:			To a start	0,0,2,8 0,0,3
				EPA/Other
				Store
	1		1 1111	EPA/Oliter
d				Stole
				EPA/Office
all definition of the providence of the providence of the second s	and the state of a state of the Region of the state of the			the state of the s
	Abreaded with chariteded organics an	and an a second s	Handling Codes for Was	b.
Sala procespy of 1 SLAP repr Sala 200, Invan, CA 92612	ed memorest to: Steve Chendler, 3347 Mic	and the second s	OT	
J7# 19 8	99762	1	and the second second	j.
	Pailor Bolfling and respiratory protection (	duen haudling		
Canich West appropriate prote	ICY CONTACT: Chem -Tel, I	nei neiung. no at 1.800	.255-3974	ERG #171
Site pick up address:	OT CONTROL: SHOIL TELE		O one de la ferral de la composition de	ERO FITA
NAS Not	h Island Site 5		en example for the particular p	
6. GENERATOR'S CERTIFICATION: "I hereby	y declare that the contents of this consignment are fully an tects in proper condition for transport by highway accord	d accurately described ling to applicable inter-	above by proper shipping notional and national ap	name and are classified, packe ernment regulations.
	and the second			
	그는 그의 가슴 집에 가지도 않는 것이 있는 것 같은 것 같은 것 같은 것 같은 것 같은 것 같이 많을까? 정말 것 같은 것 같	200 명소, SIGTA 등 등 200 위험을 가지 않는 것이다.	cenerated to the deared	
(F1 om a lorge quantity generator; I cert	ify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal cu			ark used to memory some the back
(F1 om a lorge quantity generator; I cert	ify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal cu Il quantity generator, I have made a good faith effort to			est waste management method
(I I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. rimed/Typed Name	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature			Month Day
I I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name DAVID & BUSAST	I quantity generator, I have made a good faith effort to			est waste management interiou
(I I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. rimed/Typed Name	I quantity generator, I have made a good faith effort to			est waste management interiou
I I om a large quantity generator, I cert practicable and that I have selected the and the environment; OR, If I am a smal available to me and that I can afford.	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature pt of Materials			Month Day U 3 1 9
I I om a large quantity generator. I cert practicable and that I have selected the and the environment; OR. If I am a smal available to me and that I can afford. Trimed/Typed Name Auto L. Buckss 7. Transporter 1 Acknowledgement of Recei trinted/Typed Name	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature pt of Materials			Month Day U 3 1 9
I I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford.	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature pt of Materials pt of Materials			Month Day 0 3 1 9 Month Day 0 2 1 9
I I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford.	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature pt of Materials pt of Materials Signature Signature Ol			Month Day 0 3 1 9 Month Day 0 2 1 9
If I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Timed/Typed Name DAVID L. BUERST 7. Transporter 1 Acknowledgement of Recei Finted/Typed Name B. Transporter 2 Acknowledgement of Recei Frinted/Typed Name	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature pt of Materials ipt of Materials Signature Signature			Month Day 0 3 1 9 Month Day 0 2 1 9
If I am a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Timed/Typed Name DAVID L. BUERST 7. Transporter 1 Acknowledgement of Recei Finted/Typed Name B. Transporter 2 Acknowledgement of Recei Frinted/Typed Name	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good faith effort to Signature pt of Materials pt of Materials Signature Signature Ol			Month Day 0 3 1 9 Month Day 0 2 1 9
(F) om a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am o smal available to me and that I can afford. Timted/Typed Name DATIO L. BUSRST 7. Transporter 1 Acknowledgement of Recei Trinted/Typed Name B. Transporter 2 Acknowledgement of Recei Trinted/Typed Name P. Discrepancy Indication Space 20. Facility Owner-or Operator Certification	practicable method of freetment, storage, ar disposal cu Il quantity generator, I have made a good faith effort to pt of Materials pt of Materials pt of Materials Signature (all signature (all (all (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all))) (all)) (all))) (all)	ninimize my westerge	which minimizes the b	Month Day 0 3 1 9 Month Day 0 2 1 9 Month Day
(FI om a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Timed/Typed Name DATION A. BUCKST 7. Transporter 1 Acknowledgement of Recei- trinted/Typed Name B. Transporter 2 Acknowledgement of Recei- trinted/Typed Name 8. Transporter 2 Acknowledgement of Recei- trinted/Typed Name 9. Discrepancy Indication Space	practicable method of freetment, storage, ar disparal cu Il quantity generator, I have made a good failth effort to Signature pt of Materials pt of Materials Signature Signature Official Signature Official Signature Official Signature Official Signature Official Signature Official Signature Official Signature	ninimize my westerge	which minimizes the b	Month Day 0 3 1 9 Month Day 0 2 1 9
(F) om a large quantity generator, I cert practicable and that I have selected the and the environment; OR, if I am o smal available to me and that I can afford. Timted/Typed Name DATIO L. BUSRST 7. Transporter 1 Acknowledgement of Recei Trinted/Typed Name B. Transporter 2 Acknowledgement of Recei Trinted/Typed Name P. Discrepancy Indication Space 20. Facility Owner-or Operator Certification	practicable method of freetment, storage, ar disposal cu Il quantity generator, I have made a good faith effort to pt of Materials pt of Materials pt of Materials Signature (all signature (all (all (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all)) (all))) (all)) (all))) (all)	st except as noted in life	which minimizes the b	Month Day 0 3 1 9 Month Day 0 2 1 9 Month Day

UNIFERM HAZARDOUS	7's US EPA ID No.	Aonifest Docume	nt No.	2. Rage 1		in the shaded are ed by Federal law
WASTE MANIFEST	170000000000	RTERE	18.6k	of	a de la sectoria de l Sectoria de la sectoria de la sectori	so cy receici ic
3. Generator's Name and Mailing Address		~ · · · · · · · · · · · · · · · · · · ·	A, Stato	Manifest Document N	lumber O	00071
Navy Public WorkS Center 2730 McKean Street, San Diago, CA 92136			B. State	Generator's ID		32011
4. Generator's Phone (* 649) 545 6520 5. Transporter I Compony (649) 545 6520 Add	C. Manifest Class S. US EPA ID Number	-		ilalii d	d d d	1 1 d d
o. numpuna i company Name	<ol> <li>US EPA ID Number</li> </ol>		1-14	Fransborter's 10 <sup>5</sup> [Res.	erved Jee	
M D Environmental 7. Tronsporter 2 Company Name	CATOOS2	4247		oorler's Phone	(20)	1) 458.30
	b. 03 CFR ID: Noniber			consporter s 12 <u>LKese</u>	nved. p	
9. Designated Facility Name and Site Address	10. US EPA ID Number		- Contractor	Facility's ID		
Safety Kleen (Aragonite), Inc.			H. Facili		111	1111
11600 North Aplus Road Aragonita-UT 84929	MITINGSISS	2477	Distant Road	y's riidhe	ten	1 9 99 04
11. US DOT Description (including Proper Shipping Name, Haza	100 B 2000 MP 200 B 100 B	12. Co	ntainers Type	13, Total Quantity	14. Unit Wt/Val	L. Waste Numbe
Hazardous waste, solid, n.o.s. (trichlore	oethene, perchloroethen	Instruction of the second second				State
lead), 9, NA3077, 8		hhi	CM	dololale	Y	EPA/OBECOS
B and the second se		-001		CARA		<u> 26128</u> 003
	<sup>10</sup> A. S.			1-1-1-1		EPA/Other
<b>4</b> .			and the second			Stare
		1.1				EPA/Olher
d						State
		en e			eter angelen Glassie des se	EPA/Orber
L. Additional Descriptions for Materials Lated Above			K. Handli	ng Codes for Wasres	Listed Alsave	
<ul> <li>U.e. Frank #AF2401477, so8 contempoted v Sent choloropy of TSOF signed manifest to</li> </ul>	with chiconalist organics and Share Consults (2067 Mich	metale.	a,,	1-1	2.	
State 230 syme CA 92612	A SPACE TO A SHARE AND AND AND A SPACE AND		C. C.		d	
15. Special Handling Instructions and Additional Information						
Caution: Wear appropriate protective clothing	and respiratory protection wi	ion handling				
IN CASE OF EMERGENCY CONT/ Site pick up address:	ACT: Chem -Tel, In	c. at 1-81	30-258	5-3924	ERG #1)	1
16. GENERATOR'S CERTIFICATION: Thereby declare that the cost	atents of this considerment are fully and	iccurately describ	ned above b			
marked, and labeled, and are in all respects in proper condi	tion for transport by highway accordin	g to applicable i	nternational	and national govern	ment regulat	ons.
If I am a large quantity generator, I certify that I have a pro practicable and that I have splected the practicable method a and the anyingenet. OR if I are and a work the method splected to the splected t	gram in place to reduce the volume of treatment, storage, or disposal curre	nd taxicity of wa ntly available to	iste generat me which n	ed to the degree I ha	ave determine and future t	d to be economic treat to human be
and the environment, OR, if I am a small quantity generator available to me and that I con afford.	, I have made a good faith effort to m	inimize my wash	a generation	s and select the best	waste manag	ement method th
Printed Agond Name DAJID L. BUERSTER	Signature	1	×		Month	Day
17. Transporter 1 Acknowledgement of Receipt of Materials	- or l					2200
Printed/Typed Name	Signature	1 11	11		Month	Doy 11
18. Transporter Z Acknowledgement of Receipt of Materials Printed/Typed Nome	Signature to DID	the				فالقليميات
<ul> <li>Internet of endowing provide the state of th</li></ul>	Ast)	an a			Month	Day
19. Discrepancy Indication Space	Auc.	이번원				
요즘 사람이 망렬히 많은 가슴을	UNICS	이 방송 가격	8. N	신간하네		
20. Facility Owner or Operator Certification of receipt of hozarda	us materials covered by this minuters -	cent os noted in	Item 10			
NAME OF THE OWNER OWNER OWNER OWNER OWNER OWNER	Signature	X.			Month	Doy
rined/ lyped Name		11	Amina	at a	nu	2111
Carrie Thomas	- Carrie	- money	WIL	10	1012	101/16
Printed/Typed Name Carrie Thomas	DO NOT WRITE BELOW	THIS LINE.	Con	4V	104	101/16

the state state is a state state and	1. Generator's US EPA	1D NO.	Manifest Document	No:	2. Page 1		in the shaded an red by Federal la
WASTE MANIFEST	CA71170	0 9 0 0 1 6	87566	1.51	of 1		
<ol> <li>Generator's Noñe end Mailing Address Navy Public Works Center</li> </ol>					Annüest Document N	9	93871
2730 McKean Street, Ser Diep	· ·	Land Provide Control		Score of Sciences	ianerotor's ID	G D A	2740
<ol> <li>Generator's Phone [ (619) 545-65</li> <li>Transporter 1 Company Name</li> </ol>		US EPA ID Number		SPIRITURE DESCRIPTION	ronsporter's ID (Rese	1	<u>****</u>
a, manapanar r company rianna					orter's Phone	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
M P Environmental	Ç	<u>A  T  0  0  6  2</u>	24247		ronsporter's ID [Rose	and the second second	0) 458-30
<ol> <li>Transporter 2 Company Name</li> </ol>	ο.	US EPA ID Nomber		1.2 M			
A REAL FROM THE REAL FROM THE FILL		US EPA ID Number			acility's ID		
<ol> <li>Designated Facility Nome and Site Addre Safety Kleen (Aragonite), Inc. 11600 North Aptus Road Aragonite LIT 84029</li> </ol>		T D 9 8 1 5	5 2 1 7 7	H. Focibly	1111	111	1 1 1 1
) 1. US DOT Description (including Proper Sh			12. Con	and the second second	13. Total	14. Unit Wt/Vol	1. Waste Numb
Hazardous wasta, solid, n.	Construction and the Market of the Construction of the		No.	Туре	Quantity	WI/Vol	State
lead), 9, NA3077, III			bbii	CM	GUCAR	Y	EFA/OGOS
b.							Slote
							EPA/Other
с. - с.							State
							EPA/Other
							Sigte
a hereitettette internetettettettettettettettettettettettette						Company of the	and the second second second
	2016년 2017년 201 1917년 2017년 2017		and the second	No. 4 19	1 151 1		EPA/Other
	ndikszaństa procijy dzie przekletnie k pró zaczy storem Ace	and the second		State Barrie		ALC STREET	
Additional Descriptions for Materials Lived	Abrangingted with chic	nineleti organica an	d melata	K. Haridi	ng Cades for Waster	Ested Aboy	•
Additional Section of Statements Lived Serve production of 1 Statements	Abersonneted with chick ed manifest to: Steve	xinaled organica an Chander, 3347 Mich	d metat. heison Dr.,	K. Handl	ng Cades for Waster	Listed Abov	•
Additional Descriptions for Materials Japan Densi photosopy of ToD/Forgan Shirts 200, evine, CA 92512	ed manifest to: Steve	Chandler, 3347 Aduci	d metat: heison Dr.,	K. Handl «. C.	ng Codes for Waster	Disted Abov b	•
Sens photocopy of TSDK sign Suits 200 Evine, CA 92512 27 2 23	BIN 311	Chancier 3347 Milel	velson Dr.	«. c.	ng Codes for Woster	p.	e f
Serie 230 Invine CA 32512 27 - 27 Serie 24 Adding Serie 24 Adding Serie 25 Adding Instructions and Adding IN CASE OF EMERGEN Site 260 Up addresse	and manifest to. Steve BIN 311. and information and too	- 7 piratory protection v	vhen handling	«. (	57	p.	
Surte 200 Evine CA 97512 27 2 23 5 Searcial Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address NAS North 6. GENERATOR'S CERTIFICATION: Thereby	and manifest to. Shared and information active pointing and res ICY CONTACT: h Island Site 5 y declare that the contents of th	paretory protection v Chem -Tel, is is consignment are fully and	when handling the handling the at 1-80	*. ( c. 00-26:	5-3924	e. ERG /1	71
Stepsic photoestay of Total Signa State 200 evine CA 82512 27 2 23 5 Sectol House Instructions and Addite IN CASE OF EMERGEN Site pick up address: NAS North	and manifest to. Shared and information active pointing and res ICY CONTACT: h Island Site 5 y declare that the contents of th	paretory protection v Chem -Tel, is is consignment are fully and	when handling	*. ( c. 00-26:	5-3924	e. ERG /1	71
Surte 200 Evine CA 97512 3 7 2 2 3 5 Sectol Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address: NAS North 6. GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If 1 am a large quantity generalar, 1 cert arriticable and that 1 have substrate the	and manifest to Steen <u>B</u> / <u>J</u> / <u>3</u> / <u>J</u> and information and result <b>ICY CONTACT:</b> <b>I Island Site 5</b> y declare that the contents of the sects in proper condition for the tity that I have a program in s	paratory protection v Chem -Tel, is is consignment are fully and ansport by highway accord	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /1 ume and are noment regula ave determint t and future	71 classified, packet tions.
Special Plant Bound CA 37512 27 2 23 5 Special Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address: NAS North 6. GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp	and manifest to Steen <u>B</u> / <u>J</u> / <u>3</u> / <u>J</u> and information and result <b>ICY CONTACT:</b> <b>I Island Site 5</b> y declare that the contents of the sects in proper condition for the tity that I have a program in s	paratory protection v Chem -Tel, is is consignment are fully and ansport by highway accord	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /1 ume and are noment regula ave determint t and future	71 classified, packet tions.
5. Searcial Handling Instructions and Addition 5. Searcial Handling Instructions and Addition 5. Searcial Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address: NAS North 6. GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If I am a large quantity generalar, I cart practicable and that I have selected the ond the environment; OR, if I am a small available to me and that I can afferd. Trintes Typed Name	and international to Started and Information and Information and result icy contract: h Island Site 5 y declare that the contents of the sects in proper condition for the tify that I have a program in a practicable method of treatment I quantity generator, I have m	paratory protection v Chem -Tel, is is consignment are fully and ansport by highway accord	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /1 ume and are noment regula ave determint t and future	71 classified, packet stions. Threat to be econom threat to human agament method
5. Special Handling Instructions and Addition 5. Special Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address: NAS North 6. GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If I am a large quantity generator. I can practicable and that I have selected the ord the environment; OR, if I am a small available to me and that I can afford. rintee Typed Name Interview A. BUER	B 10 31/ anglinformation B 10 31/ anglinformation B 20 31/ B	paratory protection v Chem -Tel, is consignment are fully and ansport by highway accord slace to reduce the volume ni, storage, or disposal cur ade a good faith effort to	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /1 Ime and are noment regula ave datermit t and future t waste man	71 classified, packet stions. ned to be econom threat to human segment method
5. Searcial Handling Instructions and Addition 5. Searcial Handling Instructions and Addition 5. Searcial Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address: NAS North 6. GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If I am a large quantity generalar, I cart practicable and that I have selected the ond the environment; OR, if I am a small available to me and that I can afferd. Trintes Typed Name	B 10 31/ anglinformation B 10 31/ anglinformation B 20 31/ B	paratory protection v Chem -Tel, is consignment are fully and ansport by highway accord slace to reduce the volume ni, storage, or disposal cur ade a good faith effort to	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /1 Ime and are noment regula ave datermit t and future t waste man	71 classified, packet trions. and to be econom threat to human sgement method h Day
Special Haading Instructions and Addition     Special Haading Instructions and Addition     Special Haading Instructions and Addition     IN CASE OF EMERGEN     Site pick up address:     NAS North     GENERATOR'S CERTIFICATION: Thereby     morked, and labeled, and are in all resp     If I am a large quantity generator, I cart     practicable and that I have selected the     ond the environment; OR, if I am a smal     available to me and that I can afford.     Transporter I Acknowledgement of Recei     rinted/Typed Name     Low M Heckey	Anglinformation anglinformation Serve Solitons and res- ICY CONTACT: In Island Site 5 y declare that the contents of the sects in proper condition for the infy that I have a program in a practicable method of treatment I quantity generator, I have m STRER pt of Materials	Directory protection v Chern -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume in, storage, or disposal cur hade a good faith effort to Signature	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	ERS /1 ume and are noment regula ave determint t and future waste man	71 classified, packed tions. need to be econom threat to human agament method
5. Special Handling Instructions and Addition 5. Special Handling Instructions and Addition IN CASE OF EMERGEN Site pick up address: NAS North 6. GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If I am a large quantity generator. I cert practicable and that I have selected the ond the environment; OR, if I am a smal available to me and that I can afford. Trintes Typed Name 7. Transporter I Acknowledgement of Recei rinted/Typed Name	Anglinformation anglinformation Serve Solitons and res- ICY CONTACT: In Island Site 5 y declare that the contents of the sects in proper condition for the infy that I have a program in a practicable method of treatment I quantity generator, I have m STRER pt of Materials	Directory protection v Chern -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume in, storage, or disposal cur hade a good faith effort to Signature	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	ERS /1 ume and are noment regula ave determint t and future waste man	71 classified, packed tions. and to be econom threat to human agament method h Day h Day
Special Hadding Instructions and Adding Special Hadding Instructions and Adding IN CASE OF EMERGEN Site pick up address MAS North GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If L am a large quantity generator, I cart practicable and that I have selected the ord the environment; OR, if L am a smal available to me and that I can afford. Transparter I Acknowledgement of Recei rinted/Typed Name E. Trahsparter 2 Acknowledgement of Recei rinted/Typed Name E. Trahsparter 2 Acknowledgement of Recei rinted/Typed Name	Anglinformation anglinformation Serve Solitons and res- ICY CONTACT: In Island Site 5 y declare that the contents of the sects in proper condition for the infy that I have a program in a practicable method of treatment I quantity generator, I have m STRER pt of Materials	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume n, storage, or disposal cur nade a good faith effort to Signature	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /11 une and cre nment regula ave determin waste man Want Mant	71 classified, packed tions. and to be econom threat to human agament method h Day h Day
Special Handling Instructions and Addition     Sector Handling Instructions and Addition     IN CASE OF EINERGEN     Site Frick up address:     NAS North     GENERATOR'S CERTIFICATION: Thereby     morked, and labeled, and are in all resp     If I am a large quantity generator. I cert     practicable and that I have selected the     ond the environment; OR, if I am a smol     available to me and that I can afford.     Transporter I Acknowledgement of Recei     rinted/Typed Name     Transporter I Acknowledgement of Recei     Transporter I Acknowledgement of Recei	Anglinformation anglinformation Serve Solitons and res- ICY CONTACT: In Island Site 5 y declare that the contents of the sects in proper condition for the infy that I have a program in a practicable method of treatment I quantity generator, I have m STRER pt of Materials	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord blace to reduce the volume nt, storage, or dispasal cur nade a good faith effort to Signature Signature Signature Signature Signature Signature Signature Signature	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /11 une and cre nment regula ave determin waste man Want Mant	71 classified, packed tions. and to be econom threat to human agament method h Day h Day
Special Hadding Instructions and Adding Special Hadding Instructions and Adding IN CASE OF EMERGEN Site pick up address MAS North GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If L am a large quantity generator, I cart practicable and that I have selected the ord the environment; OR, if L am a smal available to me and that I can afford. Transparter I Acknowledgement of Recei rinted/Typed Name E. Trahsparter 2 Acknowledgement of Recei rinted/Typed Name E. Trahsparter 2 Acknowledgement of Recei rinted/Typed Name	Anglinformation anglinformation Serve Solitons and res- ICY CONTACT: In Island Site 5 y declare that the contents of the sects in proper condition for the infy that I have a program in a practicable method of treatment I quantity generator, I have m STRER pt of Materials	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume n, storage, or disposal cur nade a good faith effort to Signature	when handing the handing the and to applicable is and toxicity of we rently available to	c. 00-25: nternations uste generat me which r	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /11 une and cre nment regula ave determin waste man Want Mant	71 classified, packed tions. and to be econom threat to human agament method h Day h Day
Second Hadling Instructions and Addition     Second Hadling Instructions and Addition     Second Hadling Instructions and Addition     IN CASE OF EMERGEN     MAS North     MAS North     Second Hadling Control     Market and labeled, and are in all resp     If I am a large quantity generator. I carr     practicable and that I have selected the     and hadling instructions and are in all resp     If I am a large quantity generator. I carr     practicable and that I have selected the     and hadling instructions. I carr     practicable and that I have selected the     and hadling instructions.     If I am a large quantity generator. I carr     practicable and that I have selected the     and hadling instructions.     If I am a large quantity generator.     If I am a selected the     and that I have selected the     and that I have selected the     and the environment.     OR, if I am a selected     If I am a large quantity generator.     If I am a selected the     If I am	And Information And Information Correct Contracts ICY CONTACT: h Island Site 5 y declars that the contents of the sects in proper condition for the infy that I have a program int p practicable method of treatment I quantity generator, I have m STESC pt of Materials	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume ni, storoge, or dispased cur hade a good faith effort to Signature Signature Signature Signature Chain - Tel, is and a good faith effort to Signature Chain - Tel, is and a good faith effort to Signature	when handing tc. at 1-80 d accurately describ ing to applicable it and toxicity of we rently available to minimize my wash	a 2 2 2 2 2 2 2 2 2 2 2 2 2	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /11 une and cre nment regula ave determin waste man Want Mant	71 classified, packed tions. and to be econom threat to human agament method h Day h Day
Special Hadding Instructions and Adding Special Hadding Instructions and Adding IN CASE OF EMERGEN Site pick up address MAS North GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If L am a large quantity generator, I cart practicable and that I have selected the ord the environment; OR, if L am a smal available to me and that I can afford. Transparter I Acknowledgement of Recei rinted/Typed Name E. Trahsparter 2 Acknowledgement of Recei rinted/Typed Name E. Trahsparter 2 Acknowledgement of Recei rinted/Typed Name	And Information and Information Serve Softening and res- ICY CONTACT: h Island Site 5 y declars that the contents of the sects in proper condition for the infy that I have a program int p practicable method of treatment I quantity generator, I have m STESC pt of Materials	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume ni, storoge, or dispased cur hade a good faith effort to Signature Signature Signature Signature Chain - Tel, is and a good faith effort to Signature Chain - Tel, is and a good faith effort to Signature	when handing tc. at 1-80 d accurately describ ing to applicable it and toxicity of we rently available to minimize my wash	a 2 2 2 2 2 2 2 2 2 2 2 2 2	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	d. ERG /11 une and cre nment regula ave determin waste man Want Mant	71 classified, packed ations.  red to be econom threat to human agament method
Special Hadding Instructions and Adding Special Hadding Instructions and Adding IN CASE OF EMERGEN Site pick up address MAS North GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If L am a large quantity generator, I cart practicable and that I have selected the ond the environment; OR, if L am a smal available to me and that I can afford. Transparter I Acknowledgement of Recei rintes/Typed Name Transparter I Acknowledgement of Recei rinted/Typed Name Discreptore Methodion Space Discreptore of Operator Certification	And Information and Information Serve Softening and res- ICY CONTACT: h Island Site 5 y declars that the contents of the sects in proper condition for the infy that I have a program int p practicable method of treatment I quantity generator, I have m STESC pt of Materials	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume nt, storage, or disposal cur hade a good faith effort to Signature Signature Signature UNO MOS als covered by this monifes	when handing tc. at 1-80 d accurately describ ing to applicable it and toxicity of we rently available to minimize my wash	a 2 2 2 2 2 2 2 2 2 2 2 2 2	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	a. ERG /11 ame and are nment regula ave determine t and future t waste mann Monn Monn	71 classified, packed ations.  red to be econom threat to human agament method
Special Hadding Instructions and Adding Special Hadding Instructions and Adding IN CASE OF EMERGEN Site pick up address MAS North GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all resp If L am a large quantity generator, I cart practicable and that I have selected the ond the environment; OR, if L am a smal available to me and that I can afford. Transparter I Acknowledgement of Recei rintes/Typed Name Transparter I Acknowledgement of Recei rinted/Typed Name Discreptore Methodion Space Discreptore of Operator Certification	of receipt of hazardous materi and information CY CONTACT: h Island Site 5 y declars that the contents of the information for the information for the practiceble method of treatment of receipt of hazardous materi MomaS	paratory protection v Chain -Tel, is is consignment are fully and ansport by highway accord slace to reduce the volume nt, storage, or disposal cur hade a good faith effort to Signature Signature Signature UNO MOS als covered by this monifes	And the second of the second o	a 2 2 2 2 2 2 2 2 2 2 2 2 2	5-3924 y proper shipping no and national gover ed to the degree I h njajmizes the preser I h	a. ERG /11 ame and are nment regula ave determine t and future t waste mann Monn Monn	71 classified, packed ations.  red to be econom threat to human agament method

のフカカ

		Manifest Documer	ar i so	2. Poge 1	Information in the shade
WASTE MANIFEST	a stalalalala e la	07267	1-1-	of	is not required by Federi
3. Generator's Name and Mailing Address	1110030010	01000	A State	Monifast Document	Number 9338
Navy Public Works Center		af.		Generator's 10	0000
2730 Mickson Street, San Diego, CA 521: 4. Generator's Phone	36		Contraction and	alatul A 4	LEFE F.
5. Transporter 1 Company Name	Atta: Marstagi Desk o US EPA ID Number	and the second		Transporter's ID <u> Re</u>	served. ]
M.P.Environmental		ما ما ما م	D. Transp	porter's Phone	a stand the sea
7. Transporter 2 Company Name	8. US EPA ID Number	24241	E State	ronsporter's ID ( <u>Res</u>	1900) 468. erved.)
	1111111	1111	F. Transp	kortec's Phone	
<ol> <li>Designated Facility Name and Site Address</li> </ol>	10. US EPA ID Number		G. State	Foicility's ID	and a second
Safety Kleen (Anagonite), Inc. 11800 North Aptus Road			H. Foold	y's Fhone	
Aragonite.UT 84029	UTDSSIS				18011323.
11. US DOT Description (including Proper Shipping Name,	Hazard Class, and ID Number)	12. Co No.	ntainers Type	13. Total Quantity	14. Unit Wt/Vol 1. Waste No
Hazardous waste, solid, n.o.s. (trich	loroethene, perchloroether	18,			State
lead), 9, NA3077, III		OKI	CM	000000	Y EPA/QUE
b.				DEILENS	Ustated DC
					EPA/Othas
<ul> <li>Second and the second se Second second secon</li></ul>					State
			1		EPA/Officer
<u>d</u> .					and the second se
					Stolle
		111	-1-	1111	EPA/Other
Stind cholococy of TEDF signed manifes Suite 200, Imme, CA 92812 グナギ オター おんし うらまつ		e meriels selection		<u>1</u>	в. d.
5. Special Handling Instructions and Additional Information Catation: Wear appropriate protective cloth IN CASE OF EMERGENCY CON Site pick up address:	Ing and respiratory protection w NING and respiratory protection w NTACT: Chem -Tel, Ir	neison (St.		7 5-3924 E	
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protocilive cicit     IN CASE OF EMERGENCY CON     Site pick up address:     NAS North Island SP     GENERATOR'S CERTIFICATION: hereby declars that if	n Ing and respiratory protection w NTACT: Chem -Tel, Ir In 5	when handling nc. at 1-81	30-254	v proper shipping a	a RG #171
Special Handling Instructions and Additional Information Causton: Wear appropriate protective cicil IN CASE OF EMERGENCY CON Site pick up actives: NAS North Island SP     GENERATOR'S CERTIFICATION: Theraby declore that if marked, and labeled, and are in all respects in proper	n Ing and respiratory protection w ITACT: Chem -Tel, Ir In 5 In contents of this consignment are fully and condition for transport by highway accord	when handling toc. at 1-81	00-254 oed obove b	y proper shipping no and national gover	RG #171
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protective clob     IN CASE OF EMERGENCY CON     Site pick up address:         NAS North Island Site         GENERATOR'S CERTIFICATION: hereby declore that if         marked, and labeled, and are in all respects in proper         If I am a large quantity generator, I certify that I have         procleable and that I have selected the arcalizable met	n Ing and respiratory protection w ITACT: Chem -Tel, Ir In 5 Ins contents of this consignment are fully and condition for transport by highway according a program in place to reduce the volume that of transment stores or diversity or a program in place to reduce the volume	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	d IRG \$171 ame and are classified, pac niment regulations.
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protective cicil     IN CASE OF EMERGENCY CON     Ste pick up address:     NAS North Island SR     GENERATOR'S CERTIFICATION: Increby declare that If     marked, and labeled, and are in all respects in proper     If I am a lorge quantity generator, I certify that I have     practicable and that I have accessible. I certify that I have     practicable and that I have accessible and that I have     practicable and that I have a practicable and that I have     practicable and that I have accessible and that I have     practicable and that I have a practicable and that I have     practicable and that I have accessible and that I have     practicable and that I have a form a small quantity gene     available to me and that I can afford.	n Ing and respiratory protection w ITACT: Chem -Tel, Ir In 5 Ins contents of this consignment are fully and condition for transport by highway according a program in place to reduce the volume that of transment stores or diversity or a program in place to reduce the volume	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	d IRG \$171 ame and are classified, pac niment regulations.
Special Handling Instructions and Additional Information     Causton, Wear appropriate protective ctoth     IN CASE OF EMERGENCY CO     Site pick up address:         NAS North Island SR     GENERATOR'S CERTIFICATION: hereby declore that If     marked, and labeled, and are in all respects in proper     H I am a longe quantity generator, I certify that I have     practicable and that I have selected the productible met     and the environment, OR, If I am a small quantity gene     available to me and that I can alford     available to me and that I can alford	n Ing and respiratory protection w ITACT: Chem -Tel, Ir In 5 Ins contents of this consignment are fully and condition for transport by highway according a program in place to reduce the volume that of transment stores or diversity or a program in place to reduce the volume	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	d IRG \$171 ame and are classified, pac niment regulations.
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protective cicil     IN CASE OF EMERGENCY COT     Steppick up address:     NAS North Island SR      GENERATOR'S CERTIFICATION: Increby declare that I     marked, and labeled, and are in all respects in proper     H I am a lorge quantity generator, I certify that I have     practicable and that I have accepted to me and that I can afford     readiable to me and that I can afford.     Transporter 1 Acknowledgement of Receipt of Materials	n Ing and respiratory protection v STACT: Chem -Tel, In Ing and respiratory protection v STACT: Chem -Tel, In Ing S Ing contents of this consignment are fully and condition for transport by highway accords o program in place to seduce the volume thad of treatment, storage, or disposal cur- erator, I have made a good faith effort to Signature	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. Tave determined to be econt and future threat to hum t waste management methon Month Day
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protective cicil     IN CASE OF EMERGENCY COT     Steppick up address:     NAS North Island SR      GENERATOR'S CERTIFICATION: Increby declare that I     marked, and labeled, and are in all respects in proper     H I am a lorge quantity generator, I certify that I have     practicable and that I have accepted to me and that I can afford     readiable to me and that I can afford.     Transporter 1 Acknowledgement of Receipt of Materials	n Ing and respiratory protection v ITACT: Chem -Tel, Ir In S Instantion for transport by highway accords on program in place to seduce the volume had of treatment, storage, or disposed curre erator, I have made a good taith effort to Signature	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	d RG #171 ame and are classified, pac nment regulations. ave determined to be eco t and future threat to hum t waste management metho
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protective cicil     IN CASE OF EMERGENCY COT     Steepick up address:     NAS North Island I Re     GENERATOR'S CERTIFICATION: Increby declare that I     marked, and labeled, and are in all respects in proper     If I am a lorge quantity generator, I certify that I have     practicable and that I have selected the practicable me     practicable and that I have     practicable and that I have     practicable and that I have     practicable and that I can afford     Transporter 1 Acknowledgement of Receipt of Materials     Transporter 2 Acknowledgement of Receipt of Materials	n Ing and respiratory protection v ITACT: Chem -Tel, Ir Ing and respiratory protection v ITACT: Chem -Tel, Ir Ing S Ins contents of this consignment are fully and condition for transport by highway accordin a program in place to seduce the volume thed of treatment, storage, or disposal cur- stater, I have made a good faith effort te Signature Signature Signature	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. Toye determined to be econ in and future threat to hum t waste management metho Month Day Month Day
Special Handling Instructions and Additional Information     Catation: Wear appropriate protective cicit     IN CASE OF EMERGENCY CON     Steepick up address:     NAS North Island I Re     GENERATOR'S CERTIFICATION: Increby declore that If     marked, and labeled, and are in all respects in proper     If I am a lorge quantity generator, I certify that I have     practicable and that I have accenter, I certify that I have     practicable and that I have accenter, I certify that I have     practicable and that I have accenter, I certify that I have     practicable and that I have accenter, I certify that I have     practicable and that I have accenter, I certify that I have     practicable and that I can afford.     Transporter I Acknowledgement of Receipt of Materials     interd Apped Name     Apped N	n Ing and respiratory protection w ITACT: Chem -Tel, Ir Ing and respiratory protection w ITACT: Chem -Tel, Ir Ing 5 Ing contents of this consignment are fully and condition for transport by highway accord a program in place to seduce the volume thed of treatment, storage, or disposal cur errator, I have made a good toth effort to Signature Signature	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. Tave determined to be econt and future threat to hum t waste management methon Month Day
Special Handling Instructions and Additional Information     Catalon: Wear appropriate protective cicil     IN CASE OF EMERGENCY COT     Steepick up address:     NAS North Island I Re     GENERATOR'S CERTIFICATION: Increby declare that I     marked, and labeled, and are in all respects in proper     If I am a lorge quantity generator, I certify that I have     practicable and that I have selected the practicable me     practicable and that I have     practicable and that I have     practicable and that I have     practicable and that I can afford     Transporter 1 Acknowledgement of Receipt of Materials     Transporter 2 Acknowledgement of Receipt of Materials	n Ing and respiratory protection w ITACT: Chem -Tel, Ir in 5 he contents of firs consignment are fully and condition for transport by highway accord no program in place to sedues the volume hed of treatment, storage, or disposed curr erator, I have made a good toth effort to Signature Signature Signature Million	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. have determined to be econt and future threat to hum t waste management methon Month Day Month Day
Special Handling Instructions and Additional Information     Catation: Wear appropriate protective cicil     IN CASE OF EMERGENCY CON     Stee pick up witherse:         NAS North Island SR      GENERATOR'S CERTIFICATION: hereby declare that If     marked, and labeled, and are in all respects in proper     If 1 am a large quantity generator, I certify that I have     practicable and that I have selected the prodicable met     and the anvironment; OR, If 1 am a small quantity gene     praviable to me and that I can alford.     Transporter T Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter 2, Acknowledgement of Receipt of Materials     inted/Typed Name	n Ing and respiratory protection v ITACT: Chem -Tel, I: Ing and respiratory protection v ITACT: Chem -Tel, I: Ing 5 Ing contents of this consignment are fully and condition for transport by highway accord o program in place to seduce the volume thead of treatment, storage, or disposed cur- retary, I have made a good faith affort to Signature Si	when handling to. at 1-80 decourately describing to applicable to and toxicity of wo	00-254 and above b nternationa	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. have determined to be econt and future threat to hum t waste management methon Month Day Month Day
Special Handling Instructions and Additional Information     Caston: Wear eporopriate protocility cicit     IN CASE OF EMERGENCY CON     Steppick up actives:         NAS North Island SP      GENERATOR'S CERTIFICATION: Thereby declore that if     marked, and labeled, and are in all respects in proper      H I am a large quantity generator. I certify that I have     practicable and that I have selected the practicable met     and tabeled, and are in all respects in proper      H I am a large quantity generator. I certify that I have     practicable and that I have selected the practicable met     and the any ommany. OR, If I am a small quantity gene     available to me and that I can afford      Transporter T Acknowledgement of Receipt of Materials     inted/Typed Name      Transporter 2 Acknowledgement of Receipt of Materials     inted/Typed Name      Discrepancy Indication Space	n Ing and respiratory protection v ITACT: Chem -Tel, I: Ing and respiratory protection v ITACT: Chem -Tel, I: Ing S Ing contents of this consignment are fully and condition for transport by highway accord o program in place to seduce the volume thed of treatment, storage, or disposed cur- rector, I have made a good faith effort to Signature Signature Signature Signature Lao <sup>15</sup>	Anish handing toc. at 1-84 I accurately describ- ing to applicable i and toxicity of wo minimize my work	oed obove b niernationa aste generat ne which n a pereption	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. have determined to be econt and future threat to hum t waste management methon Month Day Month Day
Special Handling Instructions and Additional Information     Catation: Wear appropriate protective cicil     IN CASE OF EMERGENCY CON     Stee pick up witherse:         NAS North Island SR      GENERATOR'S CERTIFICATION: hereby declare that If     marked, and labeled, and are in all respects in proper     If 1 am a large quantity generator, I certify that I have     practicable and that I have selected the prodicable met     and the anvironment; OR, If 1 am a small quantity gene     praviable to me and that I can alford.     Transporter T Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter 2, Acknowledgement of Receipt of Materials     inted/Typed Name	n Ing and respiratory protection v ITACT: Chem -Tel, I: Ing and respiratory protection v ITACT: Chem -Tel, I: Ing S Ing contents of this consignment are fully and condition for transport by highway accord o program in place to seduce the volume thed of treatment, storage, or disposed cur- rector, I have made a good faith effort to Signature Signature Signature Signature Lao <sup>15</sup>	Anish handing toc. at 1-84 I accurately describ- ing to applicable i and toxicity of wo minimize my work	oed obove b niernationa aste generat ne which n a pereption	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pao nment regulations. have determined to be econt and future threat to hum t waste management methon Month Day Month Day
Secial Handling Instructions and Additional Information     Caston: Wear eporopriate protective cloth     IN CASE OF EMERGENCY CO     Site pick up address     MAS North Island, SH     GENERATOR'S CERTIFICATION: Thereby declare that If     marked, and labeled, and are in all respects in proper     H I am a large quantity generator. I certify that I have     practicable and that I have selected the producable met     and the environment; OR, If I am a small quantity gene     available to me and that I can alford.     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Descreponcy Indication Space	n Ing and respiratory protection v ITACT: Chem -Tel, I: Ing and respiratory protection v ITACT: Chem -Tel, I: Ing a free contents of this consignment are fully and condition for transport by highway accord o program in place to seduce the volume thed of treatment, storage, or disposed cur- retary, I have made a good faith affort to Signature Signature Signature Signature Lao <sup>55</sup> zordous materials covered by this manifest	then handing to at 1-80 Inc. at	oed obove b niernationa aste generat ne which n a pereption	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pac meet regulations. have determined to be econ t and future threat to hum t waste management methon Month Day DIZIZIZIO Month Day
Secial Handling Instructions and Additional Information     Caston: Wear eporopriate protective cloth     IN CASE OF EMERGENCY CO     Site pick up address     MAS North Island, SH     GENERATOR'S CERTIFICATION: Thereby declare that If     marked, and labeled, and are in all respects in proper     H I am a large quantity generator. I certify that I have     practicable and that I have selected the producable met     and the environment; OR, If I am a small quantity gene     available to me and that I can alford.     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Descreponcy Indication Space	n Ing and respiratory protection of ITACT: Chem -Tel, Ir In a S Ne contents of firis consignment are fully and condition for transport by highway accords a program in place to seduce the volume thad of treatment, storage, or disposal cur- serior, I have made a good faith effort to Signature Signature Signature July Ladif zardous materials covered by this pranifiest Signature	except as noted in	oed obove b niernationa aste generat ne which n a pereption	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pac meet regulations. have determined to be econ t and future threat to hum t waste management methon Month Day DIZIZIZIO Month Day
Secial Handling Instructions and Additional Information     Caston: Wear eporopriate protective cloth     IN CASE OF EMERGENCY CO     Site pick up address     MAS North Island, SH     GENERATOR'S CERTIFICATION: Thereby declare that If     marked, and labeled, and are in all respects in proper     H I am a large quantity generator. I certify that I have     practicable and that I have selected the producable met     and the environment; OR, If I am a small quantity gene     available to me and that I can alford.     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Transporter I Acknowledgement of Receipt of Materials     inted/Typed Name     Descreponcy Indication Space	And respiratory protection with the second s	except as noted in	oed obove b niernationa aste generat ne which n a pereption	y proper shipping no and national gover ad to the degree I h	RG #171 ame and are classified, pac meet regulations. have determined to be econ t and future threat to hum t waste management methon Month Day DIZIZIZIO Month Day

DISC	5 80	224	A.[].	/99]	
EPA.	870	0-	22		

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA	0 0 9 0 0 1 6	Nonifest Document	No.	2. Page 1		in the shaded area ad by Federal law.
3. Generator's Name and Mailing Address Navy Public Works Center	<u>                                      </u>	999999	91.944	A. Store M	kanifast Document N	lumber Q	93875
2730 McKean Street, San Diego	CA 92136			B. State G	enerator's IQ		
4. Generator's Phone [ (\$19) 545-652	20 Altr: Mani	the second se		ADDRESS OF TAXABLE PARTY.	AHQ 3	\$ 0 4	3749
5. Transporter 1 Company Name	6.	US EPA ID Number			roasporter's ID ( <u>Res</u>		
M P Environmental	C	A T 0 0 0 8 2	14247		orter's Phone	A CONTRACTOR OF THE OWNER OF THE	1) 458-303
7. Transporter 2 Company Name	ə. 1	US EPA ID Number	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	C. State of C.	arter's Phone		
9. Designated Facility Name and Site Address	s 10.	US EPA ID Number		G. State h			
Safety Kleen (Aragonite), Inc.				H. Facility	2 Phone		
11600 North Aptus Road Aragonita.UT 84029	U	TO 98 1 5	52177			(80	1) 323-810
11. US DOT Description (including Proper Ship	pping Name, Hazard Class,	and ID-Number]	12. Cor No.	ntainers Type	13, Total Quantity	14. Unit Wt/Vol	1. Waste Number
Hazardous waste, solid, n.c	).s. (trichloroether	ne, perchloroether	18,	C 8.4	e plan		Stole
lead), 9, NA3077, III	en de la compañía Sector Malana Angla		OKI		000020	Y	EPA/9508
b							ISIER UUSU
and files a statistical statistical statistical statistical statistical statistical statistical statistical st	ale ta seren este e			and and Chiefe			'EPA/Other
e /			- in the strength	Constanting of	nin este unter la		State
er en en ander ander en er e		Sec. 19 States States	14		+111		EPA/Other
d	and the second sec		Lips of South		and the second		State
1.6 pp. 6. Control and the design of the second statement of the second sta		an a			1111		EPA/Other
15 Special Handling Instructions and Addition Caution: Weet appropriate protections IN CASE OF EMERGEN	nal Information Netwo closeling and re	Chem -Tel, l	nc. at 1-8	00-254	COMPANY AND A SHORE SHOP AND A SH	ERG #1	71
and the second	h Island Site 5		10#20	to a second s	And the second se		<u> </u>
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all responses at the second second</li></ol>	ects in proper condition for .	transpart by highway accord	and to obbiscopie	mendion	il one itanonai geve	1.00000000	
If I am a large quantity generator, I certi- practicable and that I have selected the p and the environment, OR, if I am a small available to me and that I can afford.	rracticable method of freatm quantity generator, I have	and the state of the	rrently available to minimize my was	o me which te generatio	minimizes the prese in and select the be	nt and future st waste man Man	(in the start of the second start)
Dallo L. Buers	A STATE OF A	Signolure	an	×		01	200
17. Transporter 1 Acknowledgement of Receip Printed/Typed Name Steve 7	TSON	Signature	Ince		fered to a control of control for	) O ja	12 2 0 1
<ol> <li>Transporter 2 Acknowledgement of Receip Printed/Typed Nome</li> </ol>	or materials	Signature		Estables (1977) S		Mon	rh Doy
19. Discrepancy Indication Space		196 <sup>8</sup>					
						1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	1011224020102045211012
20. Facility Ownemor Operator Certification Printed/Typed Name	of receipt of hozardous mote	arials covered by this manife Signature	st except as noted	In tem 19.	nat	Mor	11h Day 21211 (

1	UNIFORM HAZARDOUS WASTE MANIFEST	Generator's USTEPA ID No5	Manifest Dogunient No.	2. Page 1	Information in the shaded is not required by Federal
1	3. Generator's Name and Mailing Address.	A7170090015	87569	e Manifest Document	
	Nevy Public Works Center				99387
	2730 McKean Street, San Diago, CA 9 4. Generator's Phone (	2136		Generator's 10	*****
	5. Transporter 1 Compony Name	Altr: Manifest Desk 6. US EPA ID Number		Trausporter's ID [Re]	
	M P Environmentel		24247	sporter's Phone	(800) 458-3
	7. Transporter 2 Company Name	8. US EPA IO Number		Transporter's ID [Res	erved J
	9. Designated Facility Name and Sife Address	O US/EPA ID Number	a start and a start as	+ Facility's ID.	1941
	Safety Kleen (Aragonite), Inc. /11600 North Aptus Road	14 Autres		by's Phone	
15	Aragonite UT 84029	UTOSATS	5 2 1 7 7 12. Containers	13. Total	(201) 323-3
1	1. US DOT Description (including Proper Shipping No.	and the second to go a	No Type	Quantity	Wt/Val 1, Waste Num
	Hazardous waste, solid, n.o.s. (tri lead), 9, NA3077, III	ichloroethene, perchloroether	CK	1 -trig 1	V EPA/Qtipy
	b		COIL ON	"ORPISO	1 0008 0028 00
	2.70				EPA/Other
	San mon	2-21			State
	TSP Le	036			EPA/Oliter
	d. 2	314			State
101				EL PEL	EPA/Other
-	Additional Descriptions for Materials Exted Aliave 11a, Provide 1942 2401477, actil combern	nated with chicknesser course is an		lling Codes for Woste	tisted Above
	Send pluctocopy of TETTF agreet mana plute 300, shape, CA 92812				4
	IT# 24 B	in 3161.			
	5. Special Handling Instructions and Additional Inform Caution: Wear appropriate protective of	lothing and respiratory protection v			
	IN CASE OF EMERGENCY C	ONTACT: Chem -Tel, I	nc. at 1-800-25	is-3924 (	ERG #171
	SHE DICK UD RUDIESS'		l occurately described above	by proper shipping n	ame and are classified, pack
1	Site pick up attoress: NAS North Island 6. GENERATOR'S CERTIFICATION: Thereby declare to	hat the contents of this consignment are fully on		al and national gove	rnment regulations.
1	NAS North Island 6. GENERATOR'S CERTIFICATION: I hereby declare if marked, and labeled, and are in all respects in pro	per condition for transport by highway accord	ing to applicable internation		
	NAS North Island 6. GENERATOR'S CERTIFICATION: I hereby declare if marked, and labeled, and are in all respects in pro	per condition for transport by highway accord tave a program in place to reduce the volume method of treatment, storage, or disposal cur generator, I have made a good faith effort to	ing to applicable internation	ated to the degree I l minimizes the preset on and select the bes	have determined to be econo nt and future threat to humar at waste management method
	NAS North Island 6. GENERATOR'S CERTIFICATION: I hereby declare to marked, and labeled, and are in all respects in pro	per condition for transport by highway accord	ing to applicable internation	ated to the degree [ ] minimizes the preset on and select the bes	have determined to be econo nt and future threat to human at waste management method Month Day
P	NAS North Island 6. GENERATOR'S CERTIFICATION: Thereby declare if marked, and labeled, and are in all respects in pro If I am a large quantity generator, I certify that I h practicable and that I have selected the practicable and the environment; OR, if I am a small quantity available to me and that I can offord. Trinted/Typed Name DAULD A. Buckstore	per condition for transport by highway accord ave a program in place to reduce the valume i method of treatment, storage, or disposal cur generator. I have made a good faith effort to Restrict the storage of the stor	ing to applicable internation	ated to the degree [ ] minimizes the preset on and select the bes	nt and future threat to humar it waste management method
P1	NAS North Island 6. GENERATOR'S CERTIFICATION: I hereby declare if marked, and labeled, and are in all respects in pro if I am a large quantity generator. I certify that I here practicable and that I have selected the practicable and the environment: OR, if I am a small quantity available to me and that I can offord.	per condition for transport by highway accord ave a program in place to reduce the valume i method of treatment, storage, or disposal cur generator. I have made a good faith effort to Restrict the storage of the stor	ing to applicable internation	ated to the degree [ ] minimizes the preset on and select the bes	Month Day Month Day
P. 1	NAS North Island 6. GENERATOR'S CERTIFICATION: Thereby declare if marked, and labeled, and are in all respects in pro If I am a large quantity generator. I certify that I h practicable and that I have selected the practicable and the environment; OR, if I am a small quantity available to me and that I can afford. Trinted/Typed Name 7. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name 8. Transporter 1 Acknowledgement of Receipt of Mater	per condition for transport by highway accord inve a program in place to reduce the volume method of treatment, storage, or disposal ou generator, I have made a good faith effort to Signature Tials	ing to applicable internation	ated to the degree [ ] minimizes the preset on and select the bes	Month Day Month Day
P 1 P	NAS North Island MAS North Island GENERATOR'S CERTIFICATION: Thereby declare if marked, and labeled, and are in all respects in pro if I am a large quantity generator. I certify that I h practicable and that I have selected the practicable and the environment; OR, if I am a small quantity available to me and that I can offord. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name B. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name B. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name	per condition for transport by highway accord rave a program in place to reduce the volume method of treatment, storage, or disposal cur generator, I have made a good faith effort to Signature	ing to applicable internation	ated to the degree [ ] minimizes the preset on and select the bes	Month Day Month Day
P 1 P	NAS North Island 6. GENERATOR'S CERTIFICATION: Thereby declare if marked, and labeled, and are in all respects in pro If I am a large quantity generator. I certify that I h practicable and that I have selected the practicable and the environment; OR, if I am a small quantity available to me and that I can afford. Trinted/Typed Name 7. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name 8. Transporter 1 Acknowledgement of Receipt of Mater	per condition for transport by highway accord rave a program in place to reduce the volume method of treatment, storage, or disposal cur generator. I have made a good faith effort to Signature rials Signature Signature Control Signature Signature Control Signature Signature Control Signature Signature Control Signature	ing to applicable internation	ated to the degree [ ] minimizes the preset on and select the bes	Month Day Month Day
P 1 P	NAS North Island MAS North Island GENERATOR'S CERTIFICATION: Thereby declare if marked, and labeled, and are in all respects in pro if I am a large quantity generator. I certify that I h practicable and that I have selected the practicable and the environment; OR, if I am a small quantity available to me and that I can offord. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name B. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name B. Transporter I Acknowledgement of Receipt of Mater rinted/Typed Name	per condition for transport by highway accord inve a program in place to reduce the volume method of treatment, storage, or disposal ou generator, I have made a good faith effort to Signature Tials	ing to applicable internation	ated to the degree I i minimizes the preset on and select the best	Month Day Month Day
P 1 P 1 P 1 P 1 P 1 P 1 P 1 P 1 P 1 P 1	NAS North Island     MAS North Island     GENERATOR'S CERTIFICATION: Thereby declare if     marked, and labeled, and are in all respects in pro     If I am a large quantity generator, I certify that I h     practicable and that I have selected the practicable     and the environment; OR, If I am a small quantity     available to me and that I can offerd.     Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement	per condition for transport by highway accord rave a program in place to reduce the volume method of treatment, storage, or disposal cur generator. I have made a good faith effort to Signature tials Signature Color Color Color Color Color Color Color Color Color Color Color Color Color	ing to applicable internation and taxicity of waste generative minimize my waste generative applicable to me which minimize the waste generative applicable to me which applicable to me applicable to me applicable applicable to me applicable to me applicable to me applicable applicable to me applicable to me a	ated to the degree [] minimizes the preset on and select the bes	Month Doy Month Doy 12 2 2 0 Month Doy 12 2 0 Month Doy
P) 1	NAS North Island     MAS North     Mas North Island     Mas North Island     Mas North Island     Mas North Island     Mas North     Mas North Island     Mas North     Mas	per condition for transport by highway accord method of trachment, storage, or disposal cur generator. I have made a good fails effort to Signature tials Signature Conditional Signature Conditional Signature	ing to applicable internation and taxicity of waste generative minimize my waste generative applicable to me which minimize the waste generative applicable to me which applicable to me applicable to me applicable applicable to me applicable to me applicable to me applicable applicable to me applicable to me a	ated to the degree I I minimizes the preset on and select the bes	Month Day Month Day
P) 1	NAS North Island     MAS North Island     GENERATOR'S CERTIFICATION: Thereby declare if     marked, and labeled, and are in all respects in pro     If I am a large quantity generator, I certify that I h     practicable and that I have selected the practicable     and the environment; OR, If I am a small quantity     available to me and that I can offerd.     Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement of Receipt of Matter     rinted/Typed Name     G. Transporter I Acknowledgement	per condition for transport by highway accord rave a program in place to reduce the volume method of treatment, storage, or disposal cur generator. I have made a good faith effort to Signature tials Signature Color Color Color Color Color Color Color Color Color Color Color Color	except as noted in Irefo 19.	ated to the degree [] minimizes the preset on and select the bes ,	Month Doy Month Doy 12 2 2 0 Month Doy 12 2 0 Month Doy

	UNIFORM HAZARDOUS	US EPA ID No.	Monifest Document	i No.	2. Porge 1	Information in the shaded is not required by Federa
ŀ	3. Generator's Name and Mailing Address	70090016	01010	A. State	or <b>a</b> Manifesi Document N	omber 99387
	Navy Public Works Center 2730 McKean Street, San Diego, CA 92136			3 State	Generator's (D	33301
		Manifest Desk		and the second	and the second second second second second	604334
	5. Transporter 1 Company Name	6. US EPA JD Number	- 1914	C. Stole	Transporter's ID (Res.	nved.)
	M P Environmental	CAT0006	24247		porter's Phone	(800) 458-3
	7. Transporter 2 Company Name	8. US EPA ID Number		1	Transporter's ID <u>(Rese</u>	rved 1
	9. Designated Facility Name and Site Address	10. US EPA ID Number		ESERCE STOLE	porter's Phone Pacificy's ID	
	Safety Kleen (Aragonite), Inc. 11600 North Aplus Road Aragonite UT 84029	UTD9815	5 2 1 7 7		ity s Phone	(801) 323-
	1). US DOT Description (including Proper Shipping Name, Hozard		12. Cor No.	Type	13, Total Quantity	14. Unit Wt/Vol 1. Waste No
A STATE OF STATE	Hazardous waste, solid, n.o.s. (trichloros lead), 9, NA3077, III	athene, perchloroethe		CN	0,00,20	Y EPA/OthER)
10		ine. 21 - 22 - 22 - 22 - 22 - 22 - 22 - 22 -				Bare D
CONCEL I					LI III	EPA/Other
1000	e e e e e e e e e e e e e e e e e e e					State
100 AN					TIL	EPA/Other
	đ	on the structure of the				State
	Additional Derariations for Materials Listed Abase out attact us		E L		ing Codes for Waste	EPA/Other
いたいときたいのです。	tiend photocopy of TSOF signed manifest to 1 Suite 200, invine, CA 92612	Seve Charler, 3347 Mic	artsion Di	ð,	7	d.
のないので、これである	<sup>15</sup> Caution: West approximate protocol information a IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5	the second se	nc. at 1-8(	30-25	5-3924	RG #171
No.	<ol> <li>GENERATOR'S CERTIFICATION: I hereby declare that the cont marked, and labeled, and are in all respects in proper conditi</li> </ol>	<ul> <li>Set and the set of t</li></ul>			by proper shipping n	ame and are classified, pac pment regulations
10000	a na ser a ser					
「たい」ない	If I am a large quantity generator, I certify that I have a prog practicable and that I have selected the practicable method of and the environment; OR, if I am a small quantity generator,	treatment, storage, or disposal cu I have made a good faith effort to	rrently available to minimize my wast	me which g generati	minimizes the preser on and select the bes	it and future threat to hum waste management metho
	available to me and that I can afford. Printed/Typed Name	Signature	1 th			Month Day
6	DAVID L. DAMESTRE	a.	nu			0021
	17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name	Signature 6010	211		1.	Month Day
	CRARY O. HOWARA. 18. Transporter 2 Acknowledgement of Receipt of Materials	-stang	0 1. 102	dere	e	0451
101	Printed/Typed Name	Signature NO	ner met et de la comme de la mais Allegende part de la gent de la de Anne Allegender et de la mais de la de		anger af der som en en er er er Litter i statig at er er er er er er Litter i statig at er	Month Day
100	19. Discrepancy Indication Space	CONTRACTOR OF A CONTRACT OF A	Render in der Richtenen der	c" (PDa	<u>en andre der der der der der der der der der </u>	
	그는 방법가 집에서 가지 않을 때 집에 다 가지 않는 것을 못했다.	6903	상도망함			
	상태는 이번 영국에서 영국에 있는다.			14.14		
「「「「「「」」」」「「」」」」」	20 Entities Outline or Operator Cratification of equator of boundary	is motorials covered by this mention	t except as parad in	OI moth a		
	20 Excility Owner or Operator Certification of receipt of hazardau Frinted Typed Name	us materials covered by this manifes	it except as noted in	<u>n ltem 19.</u>	M	And Low
	Printed Typed Name	and the second sec	X	n ltem 19.	n	Morth Son

UNIFORM HAZARDOUS	Generator's US-EFALD No.	Manifest Document No		Information in the shade is not required by Federa
3. Generator's Name and Milling Address	A 7 1 7 0 0 9 0 0 1 6	87571	State Monifest Document	4 All Annual
Navy Public Works Center			dance provide a seconde of a	9938
2730 McKean Street, San Diego , CA I	92136	1 8	State Generator's 10	
4. Generator's Phone ( (619) 545-6520	Attn: Manifest Desk		HAHQI	Construction of the second s
5. Transporter 1 Company Name	6, US EPA ID Number	C.	State Temsporter's iD [Res	erved.)
M P Environmental	CATAGAS	24247	Transporter's Phone	12001 459-
7. Transporter 2 Company Name	8. US EPA ID Number	·	State Transporter's ID [ <u>Res</u>	erved I
			Transporter's Phone	
9. Designated Facility Name and Site Address	10. US EPA ID Number	-6.	State Facility's ID	
Safety Kleen (Aragonite), Inc. 11600 North Aptus Road	and the second secon	N. S. S. S. S. S. M.	Facility's Phone	
Aragonite.UT 64029	UTD 9815	CENTER/MANDOR CONSTRUCTION OF STRUCTURE		(801) 323-
11. US DOT Description (including Proper Shipping N	ame, Hazard Class, and ID Number)	12. Contain No. 1	ers 13. Total ype Quantity	14. Unit Wt/Vol 1. Waste No
Hazardous waste, solid, n.o.s. (b	richloroethene, perchloroeth	contract and the product of the off stands of the second	7 Country	Stote
lead), 9, NA3077, fll			M	Y EPA/Olhes
ь		- 1001 -	Molorala	L Baas D
동법 이 같은 것이 같아요. 것이 같아?				
		The Part of the	TTELL	EPA/Other
		a set at a start a set		Stute
				EPA/Other
d	rai distri data da anti-			State
an inina hasar ini karpak menerikan menerikan kerala kar Tari di berta dalam yang karpangan karpangan dari kar	and the second	<ul> <li>Stellighter Concept all digit</li> </ul>		EPA/Othar
			E E E E E	1-1 Contraction
<ol> <li>Additional Descriptions for Materials Listed Abave the Prome Rev 2401477 acti constant</li> </ol>	meted with observated originates	and metals.	Handling Codes for Waste	s Listed Above b
Send photocopy of TSDF signed men Date 200, invine, CA 92812	icest to: Meve Chandler, 3347 he	chekson Dr.	DI.	
		1	- J	d.
<ol> <li>Special Handling Instructions and Additional Inform Caustion. Wear appropriate protectives</li> </ol>		without the second second		
IN CASE OF EMERGENCY C	CONTACT: Chem -Tel	hoc. at 1-800-	255-3924	ERG #171
Colling and take your in the second s	Compared where the second s	N 3162	1	>
PRACE PROFILE SIGNA 16. GENERATOR'S CERTIFICATION: I hereby declare			bove by proper shipping n	ame and are clossified for
<ol> <li>GENERATOR'S CERTIFICATION: I hereby declare marked, and labeled, and are in all respects in pr</li> </ol>	oper condition for transport by highway acco	rding to applicable interr	ational and national gover	nment regulations.
If I am a large quantity generator, I certify that I practicable and that I have selected the practicable	have a program in place to reduce the valur	ne and toxicity of waste ;	generated to the degree ( )	ave determined to be eco
and the reaction of the selected me prochedol	re memod of fredment, storage, of disposal o v generator, I have made a good faitli effort	to minimize my waste ge	teration and select the bes	t waste monagement meth
available to me and that I can afford.		11 11	1	Month Day
and the environment; OK, it i am a small quantity available to me and that I can afford. Printed/Typed Name	Signature	1 manuting		Month Day
Printed/Typed Name	za 1/	at	<u> </u>	022
available to me and that I can afford.	za 1/	at	2	Month Day
Printed/Typed Name Printed/Typed Name 17. Transporter: 1 Acknowledgement of Receipt of Mate Printed/Typed Name CRCA MixaRc	erials Signature	More	2	022
Printed/Typed Name DA112 L JUELSTR 17. Transporter 1 Acknowledgement of Receipt of Mate	erials Signature	More	<u> </u>	022
available to me and that I can afford.  Printed/Typed Name  T7. Transporter 1 Acknowledgement of Receipt of Mate Printed/Typed Name  I8. Transporter 2 Acknowledgement of Receipt of Mate Printed/Typed Name	erials Signature	Mone	<u> </u>	Month Day
available to me and that I can afford. Printed/Typed Name T7. Transporter 1 Acknowledgement of Receipt of Mate Printed/Typed Name CRCA Market 18. Transporter 2 Acknowledgement of Receipt of Mate	erials Signature	More	2	Month Day
available to me and that I can afford.  Printed/Typed Name  T7. Transporter 1 Acknowledgement of Receipt of Mate Printed/Typed Name  I8. Transporter 2 Acknowledgement of Receipt of Mate Printed/Typed Name	erials Signature	Morra		Month Day
available to me and that I can affard.  Printed/Typed Name  T7. Transporter: I Acknowledgement of Receipt of Mate Printed/Typed Name  T8. Transporter 2 Acknowledgement of Receipt of Mate Printed/Typed Name  T9. Discrepancy Indication Space	erials erials Signature Signature UNO UNO UNO	More	<u> </u>	Month Day Month Day
available to me and that I can afford.  Printed/Typed Name  T7. Transporter 1 Acknowledgement of Receipt of Mate Printed/Typed Name  I8. Transporter 2 Acknowledgement of Receipt of Mate Printed/Typed Name	erials erials Signature Signature UNO UNO UNO	Mone Mone	119.	Month Day
available to me and that I can affard.  Printed/Typed Name  T7. Transporter: I Acknowledgement of Receipt of Mate Printed/Typed Name  T8. Transporter 2 Acknowledgement of Receipt of Mate Printed/Typed Name  T9. Discrepancy Indication Space  20. Facility Owner or Operator Certification of receipt	erials erials Signature Signature UNO UNO UNO	Mone est except as noted in Iten	<u></u>	Month Day Month Day Month Day
available to me and that I can affard.  Printed/Typed Name  T7. Transporter: I Acknowledgement of Receipt of Mate Printed/Typed Name  T8. Transporter 2 Acknowledgement of Receipt of Mate Printed/Typed Name  T9. Discrepancy Indication Space  20. Facility Owner or Operator Certification of receipt	erials erials Signature Signature UNO UNO UNO	An	119. AA	Month Day Month Day Month Day

n ala deleta e deleta del contra la contra contra contra contra del del deleta del del del contra del del contr

	UNIFORM HAZARDOUS WASTE MANIFEST		ifest Document	1	2. Page 1	Information is not requi	red by Federal law
	3. Generator's Name and Mailing Address	13 13 13 13 13 13 15 O	1012	A. Store A	Aanifast Document N	lumber O	93875
	Navy Public Works Center 2730 Mickean Street, San Diago, CA 92136	고 분용한 것이 없		B. Sicle C	enerator's ID	3	99015
		nifest Dask 6. US EPA ID Number			ronsporter's ID   Res		3249
	M P Environmental 7. Transporter 2 Company Name	1 A T 0 0 0 6 2 4 8. US EPA ID Number	8247		orter's Phone desporter's ID [ <u>Rase</u>		0) <u>368-</u> 30
		1 + + + + + + +	111		onter's Phone		
	Safety Kleen (Aragonite), Inc. 11600 North Aptus Roed	0. US EPA ID Number	2111717	H. Focility	11111	111	1111
	Aragonite UT 94029 8 11. US DOT Description (including Proper Shipping Nome, Hazard Cla		12. Con	lainers Type	13. Total Quantity	14. Unit Wt/Vol	1. Waste Numbe
	Hazardous waste, solid, n.o.s. (trichloroethe	ene, perchloroethene,	140.		Goodiniy	117 101	State
	lead), 9, NA3077, III	an a	opr	CM	600000	Y	PA/0608
1	na Prana ana amin'ny fisiana						Stole EPA/Other
-							State
2					1111		EPA/Othar
	e e e e e e e e e e e e e e e e e e e						State
	Strist photocopy of TSUF signed trianities & Ster State 200, Invite: CA 22012 15. Special Handling Instructions and Additional Information			= ()	1	d.	
	State 200, Invine: CA 22012     Special Handling Instructions and Additional Information     Caution: Wear expropriate protective clothing and (     IN CASE OF EMERGENCY CONTACT     Discours) up additions:	espiratory protection whe : Chem -Tel, Inc.	n handling, , at 1-80	0-255	-3924	e ERG #1	71
	State 200, Innee, CA 22012 15. Special Handling Instructions and Additional Information Caution: Wear exproportists protective clothing and ( IN CASE OF EMERGENCY CONTACT Site pick up address: NAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Linersby declare that the contents (	espiratory protection whe Chem -Tel, Inc. 27 <sup>4</sup> 30 B of this consignment are fully and acc	n handling , at 1-80 14 50	0-255	C.20	ERG #1 1911	classified, packed,
	200, Innec. CA 22012     15. Special Handling Instructions and Additional Information     Control: West exproportists protective clothing and a     IN CASE OF EMERGENCY CONTACT     Othe pick up address:         NAS North Island Site 5     16. GENERATOR'S CERTIFICATION: Thereby declare that the contents a         morked, and labeled, and are in all respects in proper condition for         If I am a large quantity generator, I certify that I have a program         practicable and that I have selected the practicable method of treat         and the environment; OR, if I am a small quantity generator, I have	espiratory protection whe Chem -Tel, Inc. 27 30 B of this consignment are fully and acc r transport by highway according to	n handling. . at 1-80 14 50 two spoles in two applicable in	10-25 74 red above b	y proper shipping no and national gover	ERG #1 1911 ame and are: nment regula	classified, packed, stions.
	<ol> <li>Special Handling Instructions and Additional Information Caution: West experiportists protective clothing and a IN CASE OF EMERGENCY CONTACT One pick up address: NAS North Island Site 5</li> <li>GENERATOR'S CERTIFICATION: I hereby declare that the contents morked, and labeled, and are in all respects in proper condition for If I am a large quantity generator, I certify that I have a program practicable and that I have selected the practicable method of treat and the environment; OR, if I am a small quantity generator, I have available to me and that I can afford.</li> <li>Printed/Typed Name</li> </ol>	espiratory protection whe Chem -Tel, Inc. 27 30 B of this consignment are fully and acc r transport by highway according to	n handling. . at 1-80 14 50 two spoles in two applicable in	10-25 74 red above b	y proper shipping no and national gover	ERG #1 1911 1911 ament regula nave determin t and future t westermans	classified, packed, itions. ned to be econom threat to human h agement method th
7	15. Special Handling Instructions and Additional Information Caution: West experipoints to protective clothing and a IN CASE OF EMERGENCY CONTACT One pick up address: NAS North Island Site 5  16. GENERATOR'S CERTIFICATION: I hereby declare that the contents morked, and labeled, and are in all respects in proper condition fo If I am a large quantity generator, I certify that I have a program practicable and that I have selected the protective deprogram practicable and that I have selected the protective deprogram practicable and that I have selected the protective deprogram practicable and that I have selected the protective deprogram practicable and that I can afford.  Printed/Typed Name I. J.	contractory protection whe Chem -Tel, Inc. 27 30 3 of this consignment are fully and acc r transport by highway according 1 in place to reduce the volume and ment, storage, or disposal current re made a good faith effort to mini Signature Signature Signature	n handling. . at 1-80 14 50 two spoles in two applicable in	10-25 74 red above b	y proper shipping no and national gover	ERG 01 1911 ame and are- nment regula tore determine towestermans Ment 0 s 0 s	classified, packed, itions. red to be econom threat to humon h rgement method th b Day 2 2 1 $($
	<ul> <li>Special Handling Instructions and Additional Information Cantion: West appropriate protective clothing and a IN CASE OF EMERGENCY CONTACT Site pick up address: NAS North Island Site 5</li> <li>GENERATOR'S CERTIFICATION: I hereby declare that the contents of marked, and labeled, and are in all respects in proper condition for practicable and that I have selected the practicable method of treat and the environment; OR, if I am a small quantify generator, I have available to me and that I can afford.</li> <li>Printed/Typed Name</li> <li>Transporter 1 Acknowledgement of Receipt of Materials</li> <li>Printed/Typed Name</li> <li>Transporter 2 Acknowledgement of Receipt of Materials</li> <li>Printed/Typed Name</li> </ul>	contractory protection when Chem -Tel, Inc. 27 30 3 of this consignment are fully and acc r transport by highway according to in place to reduce the volume and ment, storage, or disposal current re made a good faith effort to mini- Signature Signature	n handling. . at 1-80 14 50 two spoles in two applicable in	10-25 74 red above b	y proper shipping no and national gover	ERG #1 1911 1911 name and are- nament regula nave determin t and future t westermans twestermans	classified, packed, itions. red to be econom threat to humon h rgement method th b Day 2 2 1 $($
	15. Special Handling Instructions and Additional Information Caution: West experipoints to protective clothing and a IN CASE OF EMERGENCY CONTACT One pick up address: NAS North Island Site 5  16. GENERATOR'S CERTIFICATION: I hereby declare that the contents morked, and labeled, and are in all respects in proper condition fo If I am a large quantity generator, I certify that I have a program practicable and that I have selected the protective deprogram practicable and that I have selected the protective deprogram practicable and that I have selected the protective deprogram practicable and that I have selected the protective deprogram practicable and that I can afford.  Printed/Typed Name I. J.	contractory protection when Chem -Tel, Inc. 27 30 3 of this consignment are fully and acc r transport by highway according 1 in place to reduce the volume and ment, storage or disposal current re made a good faith effort to mini Signature Signature Signature	n handling. . at 1-80 14 50 two spoles in two applicable in	10-25 74 red above b	y proper shipping no and national gover	ERG 01 1911 ame and are- nment regula tore determine towestermans Ment 0 s 0 s	classified, packed, itions. red to be econom threat to humon h rgement method th b Day 2 2 1 $($
	<ul> <li>Special Handling Instructions and Additional Information Cantion: West appropriate protective clothing and a IN CASE OF EMERGENCY CONTACT Site pick up address: NAS North Island Site 5</li> <li>GENERATOR'S CERTIFICATION: I hereby declare that the contents of marked, and labeled, and are in all respects in proper condition for practicable and that I have selected the practicable method of treat and the environment; OR, if I am a small quantify generator, I have available to me and that I can afford.</li> <li>Printed/Typed Name</li> <li>Transporter 1 Acknowledgement of Receipt of Materials</li> <li>Printed/Typed Name</li> <li>Transporter 2 Acknowledgement of Receipt of Materials</li> <li>Printed/Typed Name</li> </ul>	espiratory protection whe Chem -Tel, Inc. 277 30 3 of this consignment are fully and acc r transport by highway according to in place to reduce the volume and ment, storage, or disposal current re made a good faith effort to mini- Signature Signature Signature AQS	n handling at 1-80 12 50 surately describ to applicable in y available to mize my wosts	10-25 74 red above b sterrational ste generation generation	y proper shipping no and national gover	ERG 01 1911 ame and are- nment regula tore determine towestermans Ment 0 s 0 s	classified, packed, itions. red to be econom threat to humon h rgement method th b Day 2 2 1 $($
TRANSPORTER	20. Special Handling Instructions and Additional Information Cantion: West appropriate protective clothing and a IN CASE OF EMERGENCY CONTACT Site pack up address: NAS North Island Site 5 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of marked, and labeled, and are in all respects in proper condition for If I am a large quantity generator. I certify that I have a program practicable and that I have selected the practicable method of treat and the environment; OR, if I am a small quantity generator. I have available to me and that I can afford. Printed/Typed Name I. Transporter I Acknowledgement of Receipt of Materials Printed/Typed Name I. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name I. Discreption Space 20. Feelly Owner or Operator Certification of receipt of hazardous mo finited/Typed Name	espiratory protection whe Chem -Tel, Inc. 27 30 3 of this consignment are fully and acc r transport by highway according to in place to reduce the volume and ment, storage, or disposal current re made a good faith effort to mini- Signature Signature Signature AOS feriods covered by this magifest exc	n handling at 1-80 IN 50 writely describ to applicable in toxicity of wa y available to inize my woste	10-25 74 red above b sterrational ste generation generation	y proper shipping no and national gover	ERG 01 1911 ame and are- nment regula tore determine towestermans Ment 0 s 0 s	classified, packed, itions. red to be econom threat to humon h rgement method th b Day 2 2 1 $($

UNIFORM HAZARDOUS	1	Fest Document	t No.	2. Poge 1	Information in is not required	
3. Generator's Name and Mailing Address	<u>17117009900115</u> 8	1913	A. Stole M	Aonifest Document N	lumber Q O	387
Navy Public Works Center	400	1	R. Stote G	enerator's ID		<u>~~</u>
2730 McKean Street, San Diego, CA 92 4. Generator's Phone ( (619) 545-6520 5. Transporter 1 Company Name	Attn: Manifeol Deck 6. US EPA ID Number					249
5. Transporter T Company Name	6. 03 EPA ID Number			oper's Phone	1	
M P Environmental 7. Transporter 2 Company Name	8. US EPA ID Number	247	E. Stole h	ansporter's ID ( <u>Res</u> e	Contraction of the local distance of the loc	<u>458 9</u>
			210000000000000000000000000000000000000	orter's Phone		
P. Designated Facility Name and Site Address     Safety Kleen (Aragonite), fro.     11600 North Aptus Road     Aragonite, UT 84029	10. US EPA ID Number	141717	G, State F	11111	1.1.1	11
11. US DOT Description (including Proper Shipping Name	s, Hazard Class, and ID Number]	12. Con No.	toiners Type	13. Total Quantity	14. Unit Wt/Vol L	Waste Num
Hazardous waste, solid, n.o.s. (tric lead), 9, NA3077, III	hioroethene, perchloroethene,	01011	СМ	ଠାରାବାର୍ଣ୍ଣ		A/OttoO(
Б,					Sh	stern seur
				TIT		A/Oshar
					St	ate A/Othar
				<b>HEAL</b>		ite
						A/Other
3. Additional Descriptions for Moteriols Criticit Above			K. Handlin	ng Codes for Waster		
118, Profile #AP2401477, soil conternin Sent shotocopy of TSDF signed manife Softe 320, Irvine, CA \$2512			0. c.		b. d	
<ol> <li>Special Handling Instructions and Additional Informat Caution: Wear appropriate protective do IN CASE OF EMERGENCY CO Site pick up address: <u>MAS Month Island 1</u></li> <li>GENERATOR'S CERTIFICATION: Thereby declare the marked, and labeled, and are in all respects in proper if 1 om a large quantity generator, I certify that I hav practicable and that I have selected the practicable in and the environment; OR, if 1 om a small quantity generation</li> </ol>	thing and respiratory protection when <b>INTACT:</b> Chem -Tel, Inc. Site 5 $7 \neq 205$ I the contents of this consignment are fully and acc are condition for transport by highway according to	at 1-80 310 urotely descri o opplicable i	00-258 79.3 of bed above b international	y proper shipping n and national gover	1	ssified, packs ns.
evailable to me and that I can afford. Printed/Typed Name	Signature 11 12 or	4			Month	Day
17. Transporter 1 Acknowledgement of Receipt of Materia		Y	<u></u>		00	01/
Printed Myped Name	Signatura	TX			Month D A	Day 1211
18. Transporter 2 Acknowledgement of Receipt of Materia Printed/Typed Name	signature	17	)		Month	Day
19. Discrepancy Indication Space	0 NA					
	CAD8					
20. Facility Owner or Operator Certification of receipt of Printed/Typed Name	hazardous materials covered by this manifest exc Signature	ept as noted i	n Item 19.		Month	Day
	ten in state in the state of the					
	The second s	1				
	DO NOT WRITE BELOW TH	HIS LINÉ.				

the second second

	87574		of 🦧	is not required	by rederal la
3, Generator's Name and Mailing Address		A. State A	tooifest Document N	<sup>mbor</sup> 99	3875
Navy Public Works Center 2730 McKean Street, San Diego, CA 92136 4. Generator's Phone Lucy to the second Attent Martificat Candi	1	200	enerator's D	444	
2. Generator's Phone ( <u>6153) 545-6520</u> Alter: Marificent Deck     S. US EPA ID Number     S. US EPA ID Number			rensporter's D Rese	wed ;	5 <u>김 </u> 원 원
M P Environmental 7. Transporter 2 Company Name 8. 05 EPA ID Number	624247		orter's Phone ransporter's ID [ <u>Rese</u> t		458 4
		A State State	orter's Phone		
9. Designated Facility Name and Site Address 10. US EPA ID Number Cafforty Kleen (Aragonite), Inc.			1111	111	
11600 North Aptus Road sultrin of el el	5 5 2 4 7 7	H. Facilit		A 754 107 100	323-8
As a gangle UT 84029 11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Co No.	ntainers Type	13. Total Quantity		Waste North
Hazardous waste, solid, n.o.s. (trichloroethene, perchloro lead). 9, NA3077, III	ethene, k QK/4	CM	000020		PA/Other
and in a construction of the second se					Add BO
					indite
					PA/Other
d.					Store
a Fallen en Stranden en Standigeren en Standigeren er en Standigeren Standigeren er en Standigeren er en Standig En som er en Standigeren Standigeren Standigeren Standigeren Standigeren Standigeren er en Standigeren Standige En som er en Standigeren Standigeren Standigeren Standigeren Standigeren Standigeren Standigeren Standigeren St	na na serieta da banda Series en geleta bandaria La Ancesa de Carlos da da	n Stealainean Thistean Colt	111		PA/Other
Send photocopy of TOD' signed marsfest to Otive CharsAs, 334 Cause 200, avenue, CA 32512 15. Special Hendling Instructions and Additional Information Caustion: West appropriate protective clothing and respiratory protective	clion when handlin			d	
	el, inc. at 1-8		5-3924	ERG #17	1
IN CASE OF EMERGENCY CONTACT: Chem -T					
Site pick up address NAS North Island Site 5 37 4 31 B	IN 89305	chad above	by proper shipping n al and national gove	ame and are a roment regulat	lassified, pack ions.
Site pick up address: <u>MAR North Island Site 5</u> <b>374 31</b> B 16. GENERATOR'S CERTIFICATION: I hareby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and		
Site Dick up address MAS North Island Site 5 374 31 B 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highwa If I am a large quantity generator, I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis and the environment' OR, if I am a small augustity generator. I have made a good faith	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and		
Site pick up address MAS Month Joland Site 5 27 4 31 B 16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway If I am a large quantity generator, I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis and the environment; OR, if I am a small quantity generator. I have made a good faith available to me and that I can afford. Printed (Turned Name	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and		ed to be econo hreat to huma gement methor
Site pick up address       MAS Month Island Site 5       7 * 4       31       B         16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway if 1 am a large quantity generator. I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis ond the environment? OR, if 1 am a small quantity generator. I have made a good faith available to me and that I can afford.         Printed/Typed Name       Signature         DA // D L .       BUBLES TERC         17. Transporter 1 Acknowledgement of Receipt of Materials       In a staff	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and	have determin ni and future t st waste mona Month	ed to be econo hreat to huma gement metho Day
Site pick up address       MAS Month Island Site 5       7 * 4       31       B         16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway if 1 am a large quantity generator. I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis ond the environment? OR, if 1 am a small quantity generator. I have made a good faith available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         DAVID       E. RUGLADESCHER       Signature	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and	have determin ni ond future t st waste mono Monti Monti	ed to be econo hreat to huma gement metho Doy 2 2 1 0 0ay 2 2 2
Site pick up address       MAS Month Island Site 5       7 * 4       31       B         16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway if 1 am a large quantity generator. I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis ond the environment? OR, if 1 am a small quantity generator. I have made a good faith available to me and that I can afford.         Printed/Typed Name       Signature         DA // D L .       BUBLES TERC         17. Transporter 1 Acknowledgement of Receipt of Materials       In a staff	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and	have determin ni and future t st waste mono	ed to be econo hreat to huma gement metho Doy 2 2 1 0 0ay 2 2 2
Site pick up address       MAS Month Island Site 5       7 * 4 31       B         16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway if 1 am a large quantity generator. I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis ond the environment, OR, if 1 am a small quantity generator. I have made a good faith available to me and that I can afford.         Printed/Typed Name       Signature         DAVID & BUERSTER       Signature         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         DAVID & RUBERSTER       Signature	IN 89305 stully and accurately desc by according to applicable	ribed above internation	energy an enclosed and	have determin ni ond future t st waste mono Monti Monti	ed to be econo hreat to huma gement metho Doy 2 2 1 0 0ay 2 2 2
Site pick up address       MAS Month Island Site 5       7 4 31       B         16. GENERATOR'S CERTIFICATION: I hareby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway in the practicable and that I have selected the practicable method of treatment, storage, or dis ond the environment, OR, if I am a small quantity generator. I have made a good faith available to me and that I can afford.         Printed/Typed Name       Signature         DAVID 6       RUBLESTER         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         DAVID 6       RUBLESTER         18. Transporter 2 Acknowledgement of Receipt of Materials         Printed/Typed Name         DAVID 6       RUBLESTER         19. Discrepancy Indication Space	tully and accurately desc y according to applicable e volume and texicity of posal currently available effort to minimize my well affort to minimize my well affort to minimize the well affort to min	ribed above a internation to me which the beneration	energy an enclosed and	have determin ni ond future t st waste mono Monti Monti	ed to be econo hreat to huma gement metho Doy 2 2 1 0 0ay 2 2 2
Site pick up address       MAS Month Island Site 5       7 4 31       B         16. GENERATOR'S CERTIFICATION: I hareby declare that the contents of this consignment are marked, and labeled, and are in all respects in proper condition for transport by highway if 1 am a large quantity generator. I certify that I have a program in place to reduce the practicable and that I have selected the practicable method of treatment, storage, or dis ond the environment, OR, if I am a small quantity generator. I have made a good faith available to me and that I can afford.         Printed/Typed Name       Signature         DA //D C       RUBLESTER         17. Transporter 1 Acknowledgement of Receipt of Materials       Signature         Printed/Typed Name       Signature         DA //D C       RUBLESTER         18. Transporter 2 Acknowledgement of Receipt of Materials         Printed/Typed Name       Signature         DA //D C       RUBLESTER         18. Transporter 2 Acknowledgement of Receipt of Materials       Signature         MAX       Signature	tully and accurately desc y according to applicable e volume and texicity of posal currently available effort to minimize my well affort to minimize my well affort to minimize the well affort to min	ribed above a internation to me which the beneration	energy an enclosed and	have determin ni ond future t st waste mono Monti Monti	ed to be econo hreat to huma gement metho Doy 2 2 1 0 0ay 2 2 2

WASTE MANIFEST	요즘 같은 이 가지 않는 것이 같이 많이 많이 많이 했다. 나는	Nanifest Document No 87578	o.* 2. Page 1	Information in the sheded is not required by Federal
3. Generator's Name and Mailing Address Navy Public Works Center			State Manifest Document	Nomber 99387
2730 McKean Street, San Dieg	50. CA 92136	B	State Generator's ID	33301
4. Generator's Phone ( (613) 545-8			HAHQI	6943241
5. Transporter 1 Company Name	6. US EPA ID Number		State Transporter's ID [Re	erved.]
M P Environmental	C A T Q 0 0 6 2	20 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Transporter's Phone	(800) 452-3
7. Transporter 2 Company Name	8. US EPA ID Number		State Transporter's ID [Res	erved.)
9. Designated Facility Name and Site Add	ress 10, US EPA ID Number	1. 1. S. A. M. 1993	Transporter's Phone State Facility's ID	
Salety Kleen (Aragonite), Inc. 11600 North Aplus Road			Facility's Phone	11111
Aragonite UT 84029	U <sub>1</sub> T <sub>1</sub> D 9 8 1 5 5	2177	edenity's Fridha	(801) 323-8
	hipping Name, Hazard Class, and ID Number)	12. Contair No.	ters 13. Total Type Quantity	14. Unit Wt/Vol I. Waste Nur
Hazardous waste, solid, n lead), 9, NA3077, Ill	o.s. (inchloroethene, perchloroethene	e, (	IM I	State
		COPT	1 ODIORC	1 Uo(Ster
Ъ				\$1682.8 DA
		177 (2000) 200 (2000) 177 (2000) 200 (2000) 200 (2000)		EPA/Other
				Stote
			TITE	EPA/Other
°d. ⊸			a na ann an Annail	Stote
•			1 1111	EPA/Orbac
	<ul> <li>Abtenuanced with chloatwards organics also and manifest to: Store Chandler, 3347 Michael</li> </ul>		Handling Codes for Wast	s Listed Above
State 200, Invite, CA 82312	and indicate \$1.50, there are the same to the same		Of i	
	and the second s	C. Constant	and the state of the	d
774 444 3	SIN, R1739 ML		and the second se	Contraction of the second seco
15 Seasial Handling Instruction and Addi	1991/1973/01/11/11 and respiratory protection wi			
1 Cansol "wear approximate toto IN CASE OF EMERGES	iseliveresting and respiratory protection with NCY CONTACT: Chem -Tel, In	c. at 1-800	-255-3924	ERG #171
I Carsol Webs appropriate for IN CASE OF EMERGED Site pick up address. NAS Not	isedivercioning and respiratory protection with NCY CONTACT: Chem -Tel, In this land Site 5	c. at 1-800 1P#20	0659	
Categori, Walke appropriate Addo     IN CASE OF EMERGED     Site pick up address.     NAS Not	iseliveresting and respiratory protection with NCY CONTACT: Chem -Tel, In	c. at 1-800 1P# 20 accurately described	0659 above by proper shipping (	ame and are classified, pack
15 STREED HUNDER ENTERIOR AND ADD IN CASE OF EMERGED Site pick up address. NAS Not 16. GENERATOR'S CERTIFICATION: There marked, and labeled, and are in all re-	is a line of the second	c. at 1-800 <u>1P#20</u> accurately described inter inter	0659 above by proper shipping a national and national gove	ame and are classified, pack roment regulations.
<ol> <li>Special Heading Instruction and Add IN CASE OF EMERGED Site pick up address: NAS Not</li> <li>GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re- ingricable and that Lague selected the practicable and that Lague selected the</li> </ol>	ISON DEFINITION OF THE PROPERTY STATES OF THE PROPERTY OF THE	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack roment regulations. have determined to be econ at and future threat to huma
<ol> <li>Strasol Hendling Instruction and Addo IN CASE OF EMERGED Site pick up address. NAS Not</li> <li>GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re if i am a lorge quantity generated in practicable and that I have selected the end the environment; OR, if I am b sm</li> </ol>	INCY CONTACT: Chem -Tel, In MCY CONTACT: Chem -Tel, In th Island Site 5	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack roment regulations. have determined to be econ at and future threat to huma
Streich Handling Instructions and Addi IN CASE OF EMERGEN Site pick up ackiness: NAS Not 16. GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re- If i am a longe quantity generation. I be practicable and that I have selected the end the environment; OR, if I am b sm evaluable to me and that I can afford. Printed/Typed Name Journal Additional Selected Transporter 1 Acknowlindgement of Rec	In the second se	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack rement regulations. have determined to be econ and future threat to huma st waste management metho Manth Day 0 2 1 4
Streich Handling Instructions and Addo     IN CASE OF EMERGED     Site pick up ackiness.     NAS Not      (6 GENERATOR'S CERTIFICATION: There     marked, and lobeled, and are in all re     If i am a lorge quantity generation. I ce     practicable and that I have selected the     and the environment; OR, if I am b sm     available to me and that I can afferd.  Printed/Typed Name	INCLOSE CONTACT: Chem -Tel, In MCY CONTACT: Chem -Tel, In th Island Site 5 by declare that the contents of this consignment are fully and spects in proper condition for transport by highway accordin will that I have a program in place to reduce the volume of practicable method of treatment, storage, or disposal curre all quantity generator, I have made a good faith elfort to n Signature	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack roment regulations. have determined to be econ at and future threat to huma st waste management metho
15 Streigh Handling Instructions and Addi IN CASE OF EMERGED Site pick up address NAS Not 16. GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re- If i om a lorge quantity generating. I ce practicable and that I have selected the and the environment; OR, if I om b sim ovalable to me and that I can afferd. Printed/Typed Name 17. Transporter 1 Acknowledgement of Rec. Printed/Typed Name 18. Transporter 2 Acknowledgement of Rec.	ISPENDIPTERSIMING and respiratory protection with NCY CONTACT: Chem -Tel, In the Island Site 5 with declare that the contents of this consignment are fully and spects in proper condition for transport by highway accordination for transport by highway accordination and quantity generator, I have made a good faith effort to a Signature	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack mment regulations. have determined to be econ int and future threat to huma it waste management metho Manth Day 0 2 1 4 Manth Day
15 Streigh Handling Instructions and Addi IN CASE OF EMERGEN Site pick up address: NAS Not 16 GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re- If i am a longe quantity generator. I ce practicable and that I have selected the and the environment; OR, if I om b sm available to me pind that I can afferd. Printed/Typed Name 17. Transporter 1 Acknowlindgement of Rec Printed/Typed Name 18. Transporter 2 Acknowledgement of Rec Printed/Typed Name	In Island Site 5 by declare that the contents of this consignment are fully and spects in proper condition for transport by highway accordin artify that I have a program in place to reduce the volume of practicable method of theatment, storage, or disposal current all quantity generator, I have made a good faith elfort to a Signature Signature Signature	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack mment regulations. have determined to be econ int and future threat to huma it waste management metho Manth Day 0 2 1 4 Manth Day
15 Streigh Handling Instructions and Addi IN CASE OF EMERGED Site pick up address NAS Not 16. GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re- If i om a lorge quantity generating. I ce practicable and that I have selected the and the environment; OR, if I om b sim ovalable to me and that I can afferd. Printed/Typed Name 17. Transporter 1 Acknowledgement of Rec. Printed/Typed Name 18. Transporter 2 Acknowledgement of Rec.	ISPENDIPTERSIMING and respiratory protection with NCY CONTACT: Chem -Tel, In the Island Site 5 with declare that the contents of this consignment are fully and spects in proper condition for transport by highway accordination for transport by highway accordination and quantity generator, I have made a good faith effort to a Signature	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack mment regulations. have determined to be econ int and future threat to huma it waste management metho Manth Day 0 2 1 4 Manth Day
15 Streigh Handling Instructions and Addi IN CASE OF EMERGEN Site pick up address: NAS Not 16 GENERATOR'S CERTIFICATION: There marked, and lobeled, and are in all re- If i am a longe quantity generator. I ce practicable and that I have selected the and the environment; OR, if I om b sm available to me pind that I can afferd. Printed/Typed Name 17. Transporter 1 Acknowlindgement of Rec Printed/Typed Name 18. Transporter 2 Acknowledgement of Rec Printed/Typed Name	ISPENDIPTERSIMING and respiratory protection with NCY CONTACT: Chem -Tel, In the Island Site 5 with declare that the contents of this consignment are fully and spects in proper condition for transport by highway accordination for transport by highway accordination and quantity generator, I have made a good faith effort to a Signature	c. at 1-800 <u>P</u> +# 20 occurately described ing to applicable inter and taxicity of waste ently grailable to me	0659 above by proper shipping r national and national gove generated to the degree 1 which minimizes the prese	ame and are classified, pack mment regulations. have determined to be econ int and future threat to huma it waste management metho Manth Day 0 2 1 4 Manth Day
Streich Handling Instructions and Addi IN CASE OF EMERGEN Site pick up address. NAS Not Site pick up address. Site pick up address. NAS Not Site pick up address. Site pick	In of receipt of hazardous materials covered by this manifest	c. at 1-800 <u>1P#20</u> accurately described ing to applicable inter and taxicity of waste- ently available to me- ingenize my waste gr <u>June</u>	OGS9 above by proper shipping r national and national gove generated to the degree 1 which minimizes the press provision and select the be	ame and are classified, pack mment regulations. have determined to be econ int and future threat to huma it waste management metho Manth Day 0 2 1 4 Manth Day
Streich Handling Instructions and Addi IN CASE OF EMERGEN Site pick up address. NAS Not 16. GENERATOR'S CERTIFICATION: There marked, and labeled, and are not in re- If 1 am a large quantity generated. I ce practicable and that I have selected the and that I have selected the morable to me and that I can afferd. Printed/Typed Name 17. Transporter 1 Acknowledgement of Rec Printed/Typed Name 18. Transporter 2 Acknowledgement of Rec Printed/Typed Name 19. Discrepancy Indication Space	In Island Site 5 In Island Site 5 Interview I	c. at 1-800 <u>1P#20</u> accurately described ing to applicable inter and taxicity of waste- ently available to me- ingenize my waste gr <u>June</u>	OGS9 above by proper shipping r national and national gove generated to the degree 1 which minimizes the press provision and select the be	ame and are classified, pack mment regulations. have determined to be econ int and future threat to huma it waste management metho Manth Day 0 2 1 4 Manth Day

	WASTE MANIFEST	이번 것이 좋는 것이 같아?	nifest Document	No.	2. Polige V		d by Federal la
- 3	Generator's Name and Mailing Address	000000116	31.21.2	A. State M	Agnifest Document N	umber O	2 20 7
÷	Navy Public Works Center		1		S.F	0	9387
	2790 Melfan Street, San Diego , GA 02126		. ¥		enerolor's ID 1 181 2 4 12 5 140	the state of	9 -16 d 13
	The start of the second start of the second	6. US EPA ID Number		C. State T	ransporter's (D (Res)	20 28 46 rved.)	9 4 4 8
ių.				D. Transp	orter's Phone	201 5 10	1 400 0
		C A T O O O 6 2	4247	E. State T	ronsporter's ID (Rese		1458-3
-	in the second			and the state	orter's Phone		
\$	Designated Facility Name and Site Address	0. US EPA ID Number		.G. Stole i	ocility's ID		
g i	Safety Kleen (Aragonite), Inc.				1 1 1 1 1		1.1.1
ĺ.	11600 Noith Aplus Road	J T D 9 8 1 5 5	21177	H. facility	/s Prone	1901	1323-8
1	Araconste UT 84029 1. US DOT Description (including Proper Shipping Name, Hazard Class		12. Con		13. Total Quantity	14. Unit Wt/Val	Waste Num
	Hazardous waste, solid, n.o.s. (trichloroethe		No.	Туре	Guantity	and the second se	State
100	tead), 9, NA3077, III			CM		Y	EPA/Othe
i Pi			001	ALLER TO DE	000000		DOOS Sinto Bo
							0028 DO
時間	an da anna an tarairte an t		a ababa	1	FILE	and the second	
							Stale
					THE		EPA/Olher
	d						Stato
517 (1)	na minana ing pangangan na sa	<ul> <li>A start of the second se</li></ul>			<b>FIT</b>		EPA/Other
1	Additional Descriptions for Materials Ested Above			K. Handl	ing Codes for Woste	s Listed Above	
	Additional Descriptions for Materials sited Above 116: Profile (APPOInt 177, sold containformed with a Send plicitocoppy of TSOV signed materials to Sher	ve Chancillor, 3347 Mixtor	sson De.	ġ	n7.	b.	
	Caste XXX, hydre, CA 92612			c	$\Theta =$	d. :	
	77 # 10 Ens Ellacid						assesses of
	<ol> <li>Special Handling Instructions and Additional Information Catalion. Wear appropriate protective clubbing and</li> </ol>	respiratory protection wh	nen hending				
	IN CASE OF EMERGENCY CONTACT	r: Chem -Tel, In	c. at 1-8	00-25	0-3924	Elle	# 17
STATES OF	Site pick up address: NAS North Island Site 5		esere y du sere e		n di se	1.14	1
1	<ol> <li>GENERATOR'S CERTIFICATION: Thereby declare that the contents marked, and labeled, and are in all respects in proper condition for</li> </ol>	of this consignment are tully and a or transport by highway accordin	g to applicable	bed above internations	by proper shipping n al and national gover	ome and are a mment regula	lassified, pack tions:
100	If I am a large quantity generator, I certify that I have a program	in place to reduce the volume a	nd toxicity of w	aste genero	ited to the degree I I	nave determin	ed to be econ
100 A 10	and the environment; OR; if I am a small quantity generator, I have						
	evailable to me and that I can afford.	Signature	1	$\mathcal{V}^{-}$		Month	1 Doy
	Maria 1. Lucesse	pl	NRS	1		01	2/14
12	17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name	Signature				. Mont	n Day
-	Sector Track	1 West					2114
-	T8. Transporter 2 Acknowledgement of Receipt at Materials Printed/Typed Name	Signature V	n in the state of the state The state of the state of the state State of the state of			Mont	n Day
The second		1,010	i Serie (1997) (1998) (1998) (1997) La conserie (1998) (1999) The other conservation (1997)			- []]	
the second	19. Discrepancy Indication Space						
1 2 - C	방법이 집을 다 못한 것이 없는 것 같아. 그는 것	1.11		ė.			
1 2 - C	잘 없는 것 같은 것 같아. 같아.	1908					COLUMN AND A STREET
The second se				1		2	Ref. 1
The second se	20. Facility Owner or Operator Certification of receipt of hazardous m Perman(Typed Name		except as noted	in Item 19.		Mont	nu oth
The second se		aterials covered by this monifest e	except as noted	in Item 19.	N	Mor	21/15
	Permitivy pod Nama	aterials covered by this monifest e	A	2	N	Mont	213

UNIFORM HAZARDOUS WASTE MANIFEST	, Manifest Docu	1.1.1	Z. Pogel	Information in the shaded is not required by Federal
3. Generator's Name and Mailing Address	016 8758		ot 🐴	lumbar
New Public Works Center				99387
		8. State (	Senerator's ID	
2730 McKean Street, San Diego, CA 92136 4. Generator's Phone (1990) 545-6520 Alton: Manifest Desk				604824
5. Transporter 1 Company Name 6. US EPA ID Nur	nber	C State	ronsporter's ID ( <u>Res</u>	erved.1
T Transporter 2 Company Name 8. US EPA ID Nur	0082424	17	iarter's Phane ransporter's ID ( <u>Res</u> e	(800) 458-
LILL.	LILLI	F. Jeansp	octor's Phone	
9. Designated Facility Name and Site Address 10. US EPA ID Nur	mber	G. State	Facility's ID	
Safety Kleen (Aragonite), Inc.	· · · · · · · · ·			
11600 North Aptus Road	8155217	H. Facilit	y's Phone	(801) 323-
Are gonite UT 84029 1. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number	12	Containers	13, Total	14. Unit
and the second	140,	Туре	Quantity	Wt/Vol 1, Waste Nu State
Hazardous waste, solid, n.o.s. (trichloroethene, perchi	oroemene,	CA		
lead), 9, NA3077, iii	00	1 2018	000000	* Y EPA/Other
b.		· · · · · · · · ·	See Star	10 8200
방송 성상 방법에 가장 문제에 가장 사람이 많다.				EPA/Other
C				Sidle
생활량 없이는 것 같아. 이를 못했는 것 같아.				EPA/Other
에 <b>4.</b> 그는 이 방법에 이상되었습니다. 그 가지 않는 것이 가지 않는 것이 하는 것이다. 같은 이 가지 않는 것은 것을 수 없는 것 같이 같이 하는 것이 가지 않는 것이다. 것이 것이다.	19년 11년 11년 11년 11년 11년 11년 11년 11년 11년			State
물건 물건에 가장을 잘 수 있는 것이 많을 것 같아?	가는 문화가	1	BOFF	EPA/Other
I. Additional Descriptions for Materials Usted Above		K. Haadi	ng Codes for Waste	s Listed Above
11a. Froße #AP2401477, soit containented with citizenated a bend photocopy of TSOP signed masters to: Blove Chandler.	games and metals. 3947 Mehdam Dr	Q.	$\sim$	b
Sure 200 index, CA 92612		e le		d
+ + + 3. N + 46.36				
<ol> <li>Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respiratory p IN CASE OF EMERGENCY CONTACT: Cherry</li> </ol>	rotection when han I -Tel, Inc. at '	ding. 1-800-28	5-3924	ERG #19
Site pick up address:			Arrest Contractions in the second	San Parker F 9
16: GENERATOR'S CERTIFICATION: 1 hereby declare that the contents of this consignmen marked, and labeled, and are in all respects in proper condition for transport by hig	t are fully and accurately d	lescribed above	by proper shipping n	ame and are classified, pag
marked, and labeled, and are in all respects in proper condition for transport by hig	hway according to applice	oble internation	d and national gover	rnment regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce practicable and that I have selected the practicable method of treatment, storage, or and the environment; OR, if I am a small quantity generator, I have made a good for	the volume and taxicity diseased currently	of waste genera	ted to the degree I I	have determined to be eco
and the environment; OR, if I am a small quantity generator, I have made a good for available to me and that I can afford.	sith effort to minimize my	waste generatio	in and select the bes	t waste management math
Printed/Typed Name Signature	11.12	Lange	Le.	Month Day
DAVID L. BUERSTER	ve all	dine d	1	0219
17: Transporter 1 Acknowledgement of Receipt of Materials Printed/Jyped Name Signature:	10			Month Day
Allen Coge-	1.1 200			0211
18: Transporter 2 Acknowledgement of Receipt of Materials U				Month Day
Signation (V) Signation		1111		
19. Discrepancy Indication Space		$r \in \mathcal{F}$		
방법에 가장 물건이 있는 것을 가장 같이 있는 것이다.				
				10 10 10 10 10 10 10 10 10 10 10 10 10 1
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by	this manifest except as no	oted in Item 19.		Mainth - Dure
	this manifest except as no	oted in Item 19.	1-	Month Dor
mod/Typed Name	BELOW THIS LI	L	n	- Anith Dem

US DOT Description (including Proper Shipping Name, Hazard Closs, and ID Number)     No.     Hazardous waste, solid, n.o.s. (trichloroetherie, perchloroetherie,	H. S C S D. T	itote G	renerator's ID		93875	
A CON MARK AND Street, San Diego, CA 92136  5. Transporter I Compony Mark 243-8520 Atta: Mask get Anthe Mark 1996 Anthe	С S D. T	I.	enerator's ID		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	121
	D. T	State T				
Additional Deverptions for Additional Information  Cathorn West appropriate protections exciting and responsetory protections when handling  In CASE OF EMERGENCY CONTACT: Chem -Tel, Inc. at 1-  Step to the packages  If an a large quantity generator, I certify that I have a program in place to response to mispect according to applicable  If an a large quantity generator, I certify that I have a program in place to response the dispect of the mispect in proper coalision for transport by figures decording to applicable  If an a large quantity generator, I certify that I have a program in place to reduce the volume and backity of protection when the addited in the response to proper coalision for transport by figures decording to applicable  If an a large quantity	8962039		ransporter s ID4 Ra	terbed 0	3243	
9. Designated Facility Name and Site Address       10. US EPA ID Number         Safety Kleen (Aragonite), Inc.       11600 North Aques Road         Aragonite OT 64023       UTD 0 0 1 1 5 5 2 1 7 1         10. US EPA ID Number       No.         Harante OT 64023       UTD 0 1 1 5 5 2 1 7 1         10. US DOT Description lincluding Proper Shipping Name, Hazard Closs, and ID Number!       No.         Hazardous wassle, solid, n.o.s. (trichtoroetherse, perchtoroetherse, lead), 9, NA3077, 11.       Cl 0         6.       1       1         6.       1       1         7.       1       Cl 0         7.       1       Cl 0         7.       1       Cl 0         7.       1       Cl 0         8.       1       1         8.       1       1         8.       1       1         9.       1       1         9.       1       1         9.       1       <	7 E 5	Fransp	orter's Phane			
Safety Kleen (Aragorite), Inc. 11600 North Aplus Road Aragorite UT SAU23 1. US DO Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Descriptions for Materian III and Above  Accord Description Accord Description  Accord Description Accord Description  Accord Description Accord Description  Accord Description Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord	1000	680 AS			0) 458-30	10
Safety Kleen (Aragorite), Inc. 11600 North Aplus Road Aragorite UT SAU23 1. US DO Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Description (including Proper Shipping Name, Hoxard Closs, and ID Number)  Accord Descriptions for Materian III and Above  Accord Description Accord Description  Accord Description Accord Description  Accord Description Accord Description  Accord Description Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord Description  Accord	1-20	1.15.52	orter's Phone			
11600 North Aglus Read       UIT D S 115 S 2 177         Argonite UT 84029       No.         1. US DOT Description lincluding Proper Shipping Name, Hazard Closs, and ID Number!       No.         Hazardous wastit, solid, n.o.s. (trichloroethere, perchloroethere, lead), 9, NA3077, HI       Cloud         b       III       Cloud         c       IIII       Cloud         d       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		1	1111	11	1111	
Anaporate of addody     11. US DOT Description (including Proper Shipping Name, Hazard Closs, and ID Number)     No.     Hazardous waste, solid, n.o.s. (trichloroetherse, perchloroetherse, lead), 9, NA3077, IB     b      c      d.      Additional Descriptions for Addential Little Acove     is     c      d.      Additional Descriptions for Addential Little Acove     is     c      d.      Additional Descriptions for Addential Little Acove     is     d      d.      Additional Descriptions for Addential Little Acove     is     for addential Little Acove     is     d      d.      Additional Descriptions for Addential Little Acove     is     for addential Little Acove     is     for addential Little Acove     is     d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d      d	10000	Facility	's Phone			
Hazardous waste, solid, n.o.s. (trichloroethere, perchloroethere, lead), 9, NA3077, H     COMMUNICATION (COMMUNICATION (C	ntainer Ty		13. Total Quantity	14. Unit Wt/Vol	I. Waste Number	
Head), 9, NA3077, Hitting E. C. C	12				State	
	C	M	06026	Y	EPA/Other	LYDE
d.         Additional Descriptions for Materians Lined Apoys         Tay, Provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 32-012, and a 32-012, and a soft soft soft soft and a soft a soft and a soft and a soft and a soft and a soft a soft and a soft and a soft a soft and a soft		and an al		(A) by hydron by the field of the second se second second sec	6328 D039	E DXF
d.         Additional Descriptions for Materians Lined Apoys         Tay, Provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 492-001477, soft some manufacted with alikation line or periods and metals of provide A 32-012, and a 32-012, and a soft soft soft soft and a soft a soft and a soft and a soft and a soft and a soft a soft and a soft and a soft a soft and a soft		1			EPA/Other	
Additional Descriptions for Atsteriois Littled Above         10. Provide SAP2001477 conferentiation and with additional or openios and metable send control to provide SAP2001477 conferentiation and with additional or openios and metable send to openios and Additional Information.         13. Special Handling Instructions and Additional Information.         Cause of Sap20011477 additional Information.         Cause of Sap2011477 additional Information.         Sap2011477 additional Information.		1			\$tate 1	and the
Additional Descriptions for Atsteriois Littled Above         10. Provide SAP2001477 conferentiation and with additional or openios and metable send control to provide SAP2001477 conferentiation and with additional or openios and metable send to openios and Additional Information.         13. Special Handling Instructions and Additional Information.         Cause of Sap20011477 additional Information.         Cause of Sap2011477 additional Information.         Sap2011477 additional Information.		1	1111		EPA/Other	
10 Product 5.42.2.31477 Sch contact model of Vith Shield values of equipes and models     15 Special Heindling Instructions and Additional Information     Castion: Weser appropriate protective clothing and respiratory protection when handlin     IN CASE OF ENERGENCY CONTACT: Chem -Tel, Inc. at 1-     Sile pick up address:     Control of the date of the protective date of the consignment are fully and accurately des     marked, and labeled, and are in all respects in proper condition for transport by highway according to applicab     If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of     proticeble and that I have selected the practiceble methed of treatment, storage, or disposal currently available     respective of that I have a program in place to reduce the volume and toxicity of     and the environment; OR, if I am a small quantity generator, I have made a good fulth effort to minimize my w     available to me and that I can afford.     Printed/Typed Name     Signature     Signature     Signature     Transporter 1 Acknowledgement of Receipt of Materiols					State -	
10 Product 5.42.2.31477 Sch contact model of Vith Shield values of equipes and models     15 Special Heindling Instructions and Additional Information     Castion: Weser appropriate protective clothing and respiratory protection when handlin     IN CASE OF ENERGENCY CONTACT: Chem -Tel, Inc. at 1-     Sile pick up address:     Control of the date of the protective date of the consignment are fully and accurately des     marked, and labeled, and are in all respects in proper condition for transport by highway according to applicab     If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of     proticeble and that I have selected the practiceble methed of treatment, storage, or disposal currently available     respective of that I have a program in place to reduce the volume and toxicity of     and the environment; OR, if I am a small quantity generator, I have made a good fulth effort to minimize my w     available to me and that I can afford.     Printed/Typed Name     Signature     Signature     Signature     Transporter 1 Acknowledgement of Receipt of Materiols		きたた 日本の		Sec. 2	EPA/Orther	
15. Special Handling Instructions and Additional Information. 15. Special Handling Instructions and Additional Information. 16. Special Handling Instructions and Additional Information. 17. Superior West appropriate protective cluthing and respiratory protection when handling instructions. West appropriate protective cluthing and respiratory protection when handling instructions. West appropriate protective cluthing and respiratory protection when handling instructions. West appropriate protective cluthing and respiratory protection when handling instructions. West appropriate protective cluthing and respiratory protection when handling instructions. West appropriate protective cluthing and respiratory protection when handling instructions. West appropriate protection cluthing and respiratory protection when handling instructions. West appropriate protective cluthing and respiratory protection when handling instructions. The protective cluthing and respiratory protection when handling instructions. The protection is a start of this consignment are fully and accurately desting and respiratory occurrently available is and and respiratory in proper condition for transport by highway according to applicable and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my we available to me and that I can afford. Printed/Typed Name Start Response Transporter 1 Acknowledgement of Receipt of Materials.	X. 1	landli	ng Codes for Wosh	es listed Abov	•	
15. Special Handling Instructions and Additional Information Catation: Wear appropriate protective clothing and respiratory protection when handlin IN CASE OF EMERGENCY CONTACT: Chem -Tel, Inc. at 1- Site pick up address:  16. GENERATOR'S CERTIFICATION: Thereby dec are that the contents of this consignment are fully and occurately des marked, and labeled, and are in all respects in proper condition for transport by highway according to applicab If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of proticable and that I have selected the practicable method of treatment, storage, or disposal currently available and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my w available to me and that I can afford.  Printed/Typed Name	d			P		
15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respiratory protection when handlin IN CASE OF EMERGENCY CONTACT: Chem -Tel, Inc. at 1- Site pick up address: 16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this consignment are fully and accurately des marked, and labeled, and are in all respects in proper condition for transport by highway according to applicab If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of protricable and that I have selected the practicable method of treatment, storage, or disposal currently available and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my w available to me and that I can afford. Printed/Typed Name	14			d		
IN CASE OF EMERGENCY CONTACT: Chem -Tel, Inc. at 1- Sile pick up address: CenterAtor's CertificAtion: Thereby declare that file contents of this consignment are fully and accurately des marked, and labeled, and are in all respects in proper condition for transport by highway according to applicab If I am a large quantity generator, I certify that I have a program in place to reduce the valume and toxicity of practicable and that I have selected the practicable method of treatment, storage, or disposal currently available and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my w available to me and that I can afford.  Printed/Typed Name Change Reserve.  Transporter I Acknowledgement of Receipt of Materials						
Site pick up address:         16. GENERATOR'S CERTIFICATION: Thereby dec are that the contents of this consignment are fully and accurately des marked, and labeled, and are in all respects in proper condition for transport by highway occarding to applicab.         If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of practicable and that I have selected the practicable method of treatment, storage, or disposal currently available and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my w available to me and that I can afford.         Printed/Typed Name       Signature         23.04.11       Rumesceleter of Receipt of Materials		258	-3924	cars	# 171	
marked, and labeled, and are in all respects in proper condition for transport by highway according to applicab If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of practicable and that I have selected the practicable method of treatment, storage, or disposal currently available and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my w available to me and that I can afford. Printed/Typed Name Band the environment of Receipt of Materials				suffer Car	e a ca	
eral file environment; OR, if I am a small quantity generator, I have made a good forth effort 16 minimize my w evaluable to me and that I can afford. Printed/Typed Name Receipt of Materials	ribed at interne	bave b ational	y proper shipping i I and national gave	name and are srament ragula	classified, packed, ations.	
eral file environment; OR, if I am a small quantity generator, I have made a good forth effort 16 minimize my w evaluable to me and that I can afford. Printed/Typed Name Receipt of Materials	waste ge	eneral	ed to the degree 1	have determi	ned to be economi	cally
Printed/Typed Name Signature Signature Transporter 1 Acknowledgement of Receipt of Materials	to me w ste geni	which r ieratio	minimizes the prese n and select the be	ent and follore est waste man	agement method to	allin si toi
	Y			Mon	th Doy	Year
	2	and the second s		0	2114	210
	1	1		Mon	th Day	Year
18. Transporter 2 Acknowledgement of Receipt of Materials	Com	4	nan Arrista Net Berley Arrista Net Berley	0	21/191	02
Printed/Typed Name Signature	i den jago - A	1 A.		Mon	ih Day	Year
19. Discrepancy Indication Space		ie. UN				
그는 사람은 것을 다 많은 것이 같이 많이 많이 많을 것이다. 나라 가지 않는 것을 수 있다.						
20. Facility Owner or Operator Certification of receipt of hozardous materials covered by this manifest except as note	in Item	12.				
20. Facility Owner or Operator Certification of receipt of nozaroous materials covered by this manifest except us note Printed/Typed Name		i di c	g the sector	Mon	th Day	Year
DO NOT WRITE UBELOW THIS LIN	- A 1					

WASTE MANIFEST	- Generator JU3-171010191010116	Anifest Documen 87582		2. Page 1		n the shaded ar id by Federal Ia
3. Generator's Name and Mailing Address Navy Public Works Center	1 * c * 3 * 6 * 2 * 2 * 2 * 2 * 2 * 2 * 2		A. Stole /	Achillest Drickicant N	lumbor g	9387
2730 McKean Street, San Diego, CA			- AND ADDRESS OF ADDRESS OF	Severator's 10		
4. Generator's Phone ( (619) 545-6520 5. Transporter 1 Company Name	Aitn: Marafest Desk 6. US EPA ID Number		· COLUMN DOC NOTION OF A	AHQ J	Q Q 4	1444
M P Emironmental	CAT000812	121417	D. Transp	conter's Phone	1800	) 458-3(
7. Transporter 2 Company Name	8. US EPA ID Number	1 - 1 - 1 - 1 -	F. State T	ransporter's ID [ <u>Ros</u> r	and the second se	
16 1	10. US EPA ID Number	111	a land	orter's Phone acility's ID		
9. Designated Facility Name and Site Address Safety Kleen (Aragonite), Inc.	TO, OS CENTO Number			1111		
11600 North Aplus Road Aregonite.UT 84029	UTD98155	2177	H. Facilit	/ & Phane	(801	323-81
11. US DOT Description (including Proper Shipping I		12. Col No.	Type	13, Total Quantity		Waste Naml
Hazardous waste, solid, n.o.s. ( lead), 9, NA3077, Ill	trichloroethene, perchloroeinen	0,	CM		VI	State EPA/OBCO9
	n and second a second state of the second	401		000000		1028-00
	12366	10 1.272	(Carda)			EPA/Other
<	- 103 - 103		in the second			State
	2234Q	1.10				EPA/Other
d						State
a francé in participation de la construcción de la construcción de la construcción de la construcción de la con El debien de la construcción de la c El debien de la construcción de la c	n en sen en sel a son processe en en sen en sen sen sen sen sen se		a Alega de Labor 1946 - Maria Alega 1946 - Maria Alega			EPA/Other
1. Add trans. Bescriptions for Materials Listed Above	mented with chicknets arganics are	1 melain	K Hond	op Codes for Woste	s Listed Above   b.	
Send photocopy of TSDF signed me State 200, hvine, CA \$2\$12	infiest to: Steve Chardler, 3367 Mich	aise Cr.	1	57		
27 = 116 BIN 34	19				d	
15. Special Handling Instructions and Additional Info Caution: Wear appropriate protective	ciotrang and respiratory protection v	hen handling	00 05	2 9094		1
IN CASE OF EMERGENCY Sile pick up address:	the network of the second s			Construction of the second second	MGA	171
NAS North Islas 16. GENERATOR'S CERTIFICATION: Thereby declar	a that the contents of this consignment are fully an	AIB17 accurately descr	ibed above	av proper shipping n	ame and are a	lassified, pack
	proper condition for transport by highway accord			a gran de Alexa	11. 1. 1. 1. 1. 1. 1.	
and the environment; OR, it I am a small quant	I have a program in place to reduce the volume able method of treatment, storage, or disposal cur tity generator, I have made a good faith effort to	rently available to minimize ray was	o me which rejgeneratio	minimizes the prese on and select the be	nt and future I st.waste mana	hreat to humar gement method
available to me and that I can afford.	Signature	12			Monti	31 1 11
DAVID 4 . DUGRS72 17. Transporter 1 Acknowledgement of Receipt of M					01	
Printed/Typed Nome	Signoture	10-			Month DZ	Coy
18. Transporter 2 Acknowledgement of Receipt of M Printed/Typed Name	iaterials Value Signature	and the second second second	agen La	an da santa da santa Internet da santa da s	Mont	n Day
19. Discrepancy Indication Space				Caralan San San San San		
	<sup>2</sup> 09,					
	ipt of hazardous materials covered by this manifes Signature	Lexcept as noted	in Item 19.	11	Man	2,1977
20. Facility Owner or Operator Certification of rece Printed/ typed Name		الجهر	2000 J	111	A State	4
	DO NOT WRITE BELOW	A	10	CL		

UNIFORM HAZARDOUS	<ol> <li>Generator's USTEPA ID No.</li> </ol>	anifest Document	No,	2 Poge 1		n the shaded a d by Federal k
WASTE MANIFEST		87583	A . 51.00 AA	of an of a strength of a strength of a strength of the strengt	humber	
3. Generator's Name and Mailing Address		0	A, State wia	These conconnents		9387
Navy Public Works Center	09490	4	B. Stote Gar	ierator's ID		
4. Generator's Phone (1910) 545, 6530	Alter Marifest Desk		621	alud t	004	2240
5. Transporter 1 Company Name	Altr: Warner Octov 8. US EPATD Number		1110月1日1日	hspoher's DI <u>Res</u>	erved.	
M D Endovronental	CATADAS	12117	D. Transpor	Contraction of the	1800	1468.21
7, Transporter 2 Company Name	103 EPA 10 NUMBER		E. State Tra	sporter's ID [Res	www.	
			P. Transport			
9. Designated Facility Name and Site Address.	10. US EPA ID Number		G. State Fac	ikiy's ID	1 1 1	1111
Safety Kleen (Aragonite), Inc. 11600 North Aptus Road	and the star when the star		H. Facility's	Phone	L. L. L.	
Aragonite UT 04029	UTD9811515	2177		10.7.1	100 14	1323-8
11. US DOT Description (including Proper Shipping	Name, Hazard Closs, and ID Number)	No.	Type	13. Total Quantity	Wł/Vol I	Waste Num
Hazardous waste, solid, n.o.s.	(trichloroethene, perchloroethene	ç - C				Shate.
lead), 9, NA3077, III		601	CM)	411/01	Y	EPA/Other
ь.		000	f~	NO CONT		0028 00
		1.1		1 1 1 1		EPA/Other
						State
						PA/Other
Rentine Company of the second					3-237723	State
d d	and the second state of the se				Sec. 13 Sec.	
		S DEPARTS	ne posto	TIL	and policies for the	EPA/Other
Send photocopy of TSOF signed on Suite 200, index, CA 92612	anvested with chlorinalise organics and endest for Stave Chandler, 3347 Micha	metals Ison Or	K. Hardling a. c.	Codes for Weive	s listed Above b. d.	
11s. Fromes #AP2401477, self-code     Suber 200, Index, CA 92612.     7.7.4.35     7.7.4.35     7.7.4.35     7.7.4     7.5     7.7.4     7.5     7.7.4     7.5     7.7.4     7.5     7.7	anvested with chlorinated argent + and ensitiest for Character, 3347 Miche recording e clothing and respiratory protection with	ison Or , ien handling,	аС.	1	b. d.	
1's. Proper #AP2401477, soil code     Since proceedings of 150F signed in     Sube 200, incluse, CA 92617     7 7 4 315     France CA     Special Handling Instructions and Additional In     Caution: Wear appropriate protective     IN CASE OF EMERGENCY	anvested with Moderated organics and ensities for Oteve Charolier, 3347 Miche 15 (25 11) L formation	ison Or , ien handling,	аС.	1	Ь.	
1's Prope #AP2101477 sol code     Sind processory of 150F signed an     Suite 200, Invice, CA 92612     7 # 35     Financial     Special Handling Instructions and Additional In     Caution: Wear appropriate protective     IN CASE OF EMERGENCY     Site pick up address:     JAO Node In	any stad with chicknowled organs s and enstead for Character, 3347 Michi IN CORTACT: Chem and respiratory protection with CONTACT: Chem a Tel, Inc.	en handling c. at 1-80	<u></u> 0-255-	7 3924 e	a RE 7	111
1's Prope #AP2101477 sol code     Sind processory of 150F signed an     Suite 200, Invice, CA 92612     7 # 35     Financial     Special Handling Instructions and Additional In     Caution: Wear appropriate protective     IN CASE OF EMERGENCY     Site pick up address:     JAO Node In	and a site of the Monitolist organics and ensities for Charolier, 3347 Michi formation e clothing and respiratory protection with CONTACT: Chem -Tel, Inc	en handling c. at 1-80	<u></u> 0-255-	7 3924 e	a RE 7	111
<ol> <li>France KAP2401477 and code state processing of 150F signed on Sube 200, Indus, CA 92617</li> <li>277 4 25</li> <li>Special Handling Instructions and Additional In Caution: Wear expropriate protective IN CASE OF EMERGENCY Site pick up address: <u>MAS North, Isin</u></li> <li>GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in a finance in the second sec</li></ol>	And Site 5 and Site 5 and Site 5 formation a clothing and respiratory protection with CONTACT: Chem -Tel, Ind and Site 5 are that the contents of this consignment are fully and a proper condition for transport by highway according	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	b. d. THE 7 ame and are c riment regular	4 1-71 lassified, packs
<ul> <li>1.3 Proper PAP 2001477 seel code</li> <li>Since personage of 1501 signed at Suite 200, invite: CA 32012</li> <li>2.7.4.4.05</li> <li>Special Handling Instructions and Additional Init Caution: Wear expropriate protective IN CASE OF EMERGENCY</li> <li>Site pick up address: <u>MAS North Iste</u></li> <li>1.6 CENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in all respects in fill am a large quantity generator. I certify the practicable and that I have selected the practic and the environment; OR, if I am a small quan</li> </ul>	any stad with chicknowled organs s and enstead for Character, 3347 Michi IN CORTACT: Chem and respiratory protection with CONTACT: Chem a Tel, Inc.	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	b. d. THE 7 ame and are c iniment regular	4 1-71 lassified, packs
<ol> <li>Frances #AP2401477 and costs</li> <li>State 200, Indias, CA 92617</li> <li>277 4 25</li> <li>Special Handling Instructions and Additional In Caution: Wear expiriponate protective IN CASE OF EMERGENCY Site pick up address: <u>MAS North, Isin</u></li> <li>GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in a first pacts in</li> </ol>	And Site 5 and Site 5 and Site 5 formation a clothing and respiratory protection with CONTACT: Chem -Tel, Ind and Site 5 are that the contents of this consignment are fully and a proper condition for transport by highway according	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	b. d. THE 7 ame and are c iniment regular	assified, packi ions. id to be scond pread to human gement method
<ul> <li>13. Trapis #AP:001477 sol excitations of proceedings of 15.01 signed at State 2.01, index, CA 42012</li> <li>2.7.4.018</li> <li>13. Special Handling Instructions and Additional Init Caulison: Wear appropriate protective IN CASE OF EMERGENCY Site pick up address:</li> <li>14. GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in all respects in If I am a large quantity generator, I certify the protective and the environment; OR, if I am a sinal quant available to me and that I can afford.</li> <li>Printed/Typed Name</li> </ul>	An end of the character with a second of the second of the character with a second of the second of	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	d.	assified, pocki ions. id to be scond prect to humar gement method
<ul> <li>13 Propie #AP2001477 sol rocks</li> <li>Suite 201, Invice, CA 42012</li> <li>2 7 4 35</li> <li>Special Handling Instructions and Additional Init Caulson: Wear appropriate protective IN CASE OF EMERGENCY</li> <li>Site pick up address: MAS North Isin</li> <li>16. GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in all respects in II I am a large quantity generator, I certify that practicable and that I have selected the practicable and the environment; OR, If I am a small quar available to me and that I can afford.</li> </ul>	An end of the character with a second of the second of the character with a second of the second of	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	d.	assified, pocki ions. id to be scond preci to humar gement mathor Day 2 1 1 9
<ul> <li>11 Capita PAP 2001477 and excited an State 2 of Invice, CA 42012</li> <li>2 7 4 35</li> <li>13 Special Handling Instructions and Additional Init Caulison: Wear appropriate protective IN CASE OF EMERGENCY Site pick up address:</li> <li>14 CASE OF EMERGENCY Site pick up address:</li> <li>15 GENERATOR'S CERTIFICATION: Thereby decide marked, and labeled, and are in all respects in If I am a large quantity generator, I certify the protective and the environment; OR, if I am a small quan available to me and that I can afford.</li> <li>Printed Typed Name</li> <li>17. Transporter 1 Acknowledgement of Receipt of M Printed/Typed Name</li> </ul>	Acterials	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	d. d. Control of the second	assified, pocki ions. Id to be scond preci to humar gement mathor Day 2 1 1 9
Strapps #AP2001477 sol costs      Since percentagy of SDF signed in      Sales 201, incluse, CA 92017      77 = 378      Special Handling Instructions and Additional In      Caution: Wear appropriate protective      In CASE OF EMERGENCY      Site pick up address      MAS North Iste      16. GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in all respects in      If I am a large quantity generator, I certify the produced bank of the and incluse and are in all respects in      If I am a large quantity generator, I certify the produced bank of the and incluse and are in all respects in      If I am a large quantity generator, I certify the produced bank of the and incluse and are in all respects in      If I am a large quantity generator.      Printed/Typed Name      7. Transporter 1 Acknowledgement of Receipt of M      Printed/Typed Name	Acterials	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	d. d. Control of the second	assified, pocki ions. Id to be scond gement method Day 2 1 9 Day 2 0 9
S. Proper RAP 2001477 - sol costs      Since per order of SDF signed in      Sube per invites, CA 92017      7 = 35      S. Special Handling Instructions and Additional In      Caution: Wear appropriate protective      In CASE OF EMERGENCY      Site pick up address      S. GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in all respects in      If I am a large quantity generator, I certify tha     practicable ond that I have selected the practicable and that I have selected the practicable ond that I have selected the practicable to mere      If I am a large quantity generator, I certify tha     practicable to me end that I can afford.   Printed/Typed Name      Is. Transporter 1 Acknowledgement of Receipt of M      Printed/Typed Name	Acterials	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	b. d. c. c. c. c. c. d. d. c. c. c. c. d. d. c. c. d. d. c. c. c. c. c. c. c. c. c. c. c. c. c.	assified, pocki ions. ions be scond gement method Day 2 1 9 Day 2 2 9
<ul> <li>13. France PAP 2001477 and excited an State 2 of Invice, CA 42012</li> <li>2.7.4.35</li> <li>13. Special Handling Instructions and Additional Init Caulison: Wear appropriate protective IN CASE OF EMERGENCY Site pick up address:</li> <li>14. CENERATOR'S CERTIFICATION: Thereby decider marked, and labeled, and are in all respects in If I am a large quantity generator, I certify the practicable and that I have selected the practicable in that I can afford.</li> <li>Printed/Typed Name</li> <li>17. Transporter I Acknowledgement of Receipt of M Printed/Typed Name</li> <li>18. Transporter 2 Acknowledgement of Receipt of M</li> </ul>	Acterials	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	b. d. c. c. c. c. c. d. d. c. c. c. c. d. d. c. c. d. d. c. c. c. c. c. c. c. c. c. c. c. c. c.	assified, pocki ions. ions be scond gement method Day 2 1 9 Day 2 2 9
S. Proper RAP 2001477 - sol costs      Since per order of SDF signed in      Sube per invites, CA 92017      7 = 35      S. Special Handling Instructions and Additional In      Caution: Wear appropriate protective      In CASE OF EMERGENCY      Site pick up address      S. GENERATOR'S CERTIFICATION: Thereby deck marked, and labeled, and are in all respects in      If I am a large quantity generator, I certify tha     practicable ond that I have selected the practicable and that I have selected the practicable ond that I have selected the practicable to mere      If I am a large quantity generator, I certify tha     practicable to me end that I can afford.   Printed/Typed Name      Is. Transporter 1 Acknowledgement of Receipt of M      Printed/Typed Name	Acterials Signature Signature Standard Sergers Standard Services For Character, 3347 Machine Contractor, 3347 Machine Contractor, 2347 Machine Contractor, Chern -Tel, Internet Services Contractor, Chern -Tel, Signature Contractor, Chern -Tel, Signature Contractor, Chernet Contractor, C	ren hanc <b>ang</b> c. at 1-80 pecurately describ g to applicable in	a 0-255- ed above by	3924 C	b. d. c. c. c. c. c. d. d. c. c. c. c. d. d. c. c. d. d. c. c. c. c. c. c. c. c. c. c. c. c. c.	assified, pocki ions. ions be scond gement method Day 2 1 9 Day 2 2 9
S. Proper PAP 2001477 - sol costs      Since on property of SDF signed in      Suber on index, CA 92017      7 7 4 35      S. Special Handling Instructions and Additional In      Caution: Wear appropriate protective      In CASE OF EMERGENCY      Site pick up address      Month Iste      Month Iste      S. GENERATOR'S CERTIFICATION: Thereby dock     marked, and labeled, and are in all respects in      If I am a large quantity generator. I certify tha     practicable and that I have selected the practicable and that I have selected the practicable one and that I can afford.      Printed/Typed Name <u>Accessed Constructions of Accessed Constructions     18. Transporter 1 Acknowledgement of Receipt of A     Printed/Typed Name      18. Transporter 2 Acknowledgement of Receipt of A     Printed/Typed Name      <u>Accessed Construction Space</u>      19. Discrepancy Indication Space </u>	Acterials Signature Signature Control of Signature Acterials	tern Dr. men handling c. at 1-80 securately describ g to applicable in antly available to inimize my wate Ban	a 0-255- ide above by iternational a ste generated me which min generation of the generated me which min generation of the generated the generate	3924 C	b. d. c. c. c. c. c. d. d. c. c. c. c. d. d. c. c. d. d. c. c. c. c. c. c. c. c. c. c. c. c. c.	assified, pocki ions. ions be scond gement method Day 2 1 9 Day 2 2 9
<ul> <li>13. France PAP 2001477 and excite Super processory of 15.01 signed at Super 2 at 15 and 2012 2 at 2 at 15 and 2012</li> <li>2 at 2 at 2 at 15 and 2012</li> <li>3. Special Handling Instructions and Additional Inf Caulson: Wear appropriate protective IN CASE OF EMERGENCY Site pick up address</li> <li>14. GENERATOR'S CERTIFICATION: Thereby deci- marked, and labeled, and are in all respects in if I am a large quantity generator. I certify that practicable and that I have selected the protection and the environment; OR, if I am a small quan available to me and that I can afford.</li> <li>Printed/Typed Name</li> <li>18. Transporter 1 Acknowledgement of Receipt of M Printed/Typed Name</li> <li>19. Discrepancy Indication Space</li> <li>20. Facility Owner or Operator Certification of rece Printed/Typed Name</li> </ul>	Acterials Signature Country for USA Analysis and Analysis and respiratory protection of a proper condition for transport by highway according to have a program in place to reduce the volume of a proper condition for transport by highway according to have a program in place to reduce the volume of a proper condition for transport by highway according to have a program in place to reduce the volume of the v	tern Dr. men handling c. at 1-80 securately describ g to applicable in antly available to inimize my wate Ban	a 0-255- ide above by iternational a ste generated me which min generation of the generated me which min generation of the generated the generate	3924 C	b. d. c. c. c. c. c. d. d. c. c. c. c. d. d. c. c. d. d. c. c. c. c. c. c. c. c. c. c. c. c. c.	I I III lassified, pocka ions. Indita basecond interest to human gement method Day 2 I I I G Day Day Day I I I G
S. Propie PAP 2001477 Sol code     Since per organy of SDF signed in     Since per organy of SDF signed in     Since per propiet (SDF signed in     Since per period     Since per period     Since period	Acterials Signature Country for USA Analysis and Analysis and respiratory protection of a proper condition for transport by highway according to have a program in place to reduce the volume of a proper condition for transport by highway according to have a program in place to reduce the volume of a proper condition for transport by highway according to have a program in place to reduce the volume of the v	tern Dr. men handling c. at 1-80 securately describ g to applicable in antly available to inimize my wate Ban	a 0-255- ide above by iternational a ste generated me which min generation of the generated me which min generation of the generated the generate	3924 C	b. d. Constructions of the second s	I I III lassified, pocka ions. Ind to be econo interest to human gement method Day 2 I I I I Day Day Day I I I I Day
<ul> <li>13. France PAP 2001477 and excite Super processory of 15.01 signed at Super 2 at 15 and 2012 2 at 2 at 15 and 2012</li> <li>2 at 2 at</li></ul>	Acterials Signature Country for USA Analysis and Analysis and respiratory protection of a proper condition for transport by highway according to have a program in place to reduce the volume of a proper condition for transport by highway according to have a program in place to reduce the volume of a proper condition for transport by highway according to have a program in place to reduce the volume of the v	territ II nem handling c. at 1-80 g to applicable in inly available to inly available to inly available to similar my waste Barn	a 0-255- ide above by iternational a ste generated me which min generation of the generated me which min generation of the generated the generate	3924 C	b. d. Constructions of the second s	I I III lassified, pocka ions. Ind to be econo interest to human gement method Day 2 I I I I Day Day Day I I I I Day
Stransporter 2 Acknowledgement of Receipt of A Printed/Typed Name      Tornsporter 2 Acknowledgement of Receipt of A Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name      Society Owner or Operator Certification of rece Printed/Typed Name	Acterials	territ II nem handling c. at 1-80 g to applicable in inly available to inly available to inly available to similar my waste Barn	a 0-255- ide above by iternational a ste generated me which min generation of the generated me which min generation of the generated the generate	3924 C	b. d. Constructions of the second s	I I III lassified, pocka ions. Ind to be econo interest to human gement method Day 2 I I I I Day Day Day I I I I Day

" UNIFORM, HAZARDOUS	1. Generator's US EPA ID No.	Manifest Bocument No.	is	formation in the shaded are not required by Federal law
WASTE MANIFEST 3. Generator's Name and Mailing Address	CA7117009900116		of 1 Manifest Document Nen	ber
Nevy Public Works Center				993878
2730 McKean Street, San Diego		Rental Contraction of the	Generator's ID	043249
<ol> <li>Generator's Phone ( (619) 545-652</li> <li>Transporter 1 Company Name</li> </ol>	20 Alth Menifest Desk 6. US EPA ID Number	· · · · · · · · · · · · · · · · · · ·	Transporter's ID IRevery	<u>[월 역 석 석 역 명</u> ad]
		43 . A . A . A . T. D. Tion	sporter's Phone	(800) 458-30
M P Environmental 7. Transporter 2 Company Name	8. US EPA ID Number	6 9 6 9 1	Tronsporter's ID (Reserv	A state of the second state of the second state of the
, remponent a company rome		I I I I F Tren	sporter's Phone	
9. Designated Facility Name and Site Addres	ss 10. US EPA ID Number	G. Stat	e Focility s ID	
Safety Kleen (Aragonite), Inc. 11600 North Apius Road		H For	lity's Phane	
Aregonite.UT 84029	UTD9816	52177		(801) 323-61
	pping Name, Hazard Class, and ID Number)	12. Containers No. Type		4. Unit Wt/Vol 1, Waste Numbe
	o.s. (inchloroethene, perchloroeth	iene,	8	State
lead), 9, NA3077, III	이 물건이 가지 생각을 했다.	GIGIT	0000000	Y EPA/OID/000
<b>b</b> ;		U.V.		13920 DO3
		0	1111	EPA/Other
6. <b>6</b> 1 1.				State
				EPA/Other
				State
PERSONAL SECTION AND A SECTION A		a la construcción de la construcción La construcción de la construcción de la construcción de la construcción de		EPA/Other
			dling Codes for Wastes 1	und Above
Addinghol-percention of TSDF score	Attended with originalised organics ad musclest to: Steve Chandiar, 3347 b	ANPAS 10 我特望着早,	-1 -1	
State 200 tryine, CA 92612			1	
	C 1914 MIL			
5 Special Handling Instructions and Additio Caustion. Wear appropriate prote	ective Colling and respiratory protection	in when handling	10004	
Citin minis up a diducant	ICY CONTACT: Chem -Tel		10-0024 6	mg # 17
NAS North		56268	1	and an slowified marked
<ol> <li>GENERATOR'S CERTIFICATION: 1 hereby marked, and labeled, and are in all resp</li> </ol>	ry declare that the contents of this consignment are fully pects in proper condition for transport by highway ac	cording to applicable internatio	e by proper snipping han nal and national governr	nent regulations.
	tify that I have a program in place to reduce the val	ume and toxicity of waste gene	rated to the degree I ha	ve determined to be econom
If I am a large quantity generator, I cert	practicable method of treatment, starage, or dispose Il quantity generator, I have made a good faith effo	rt to printmize my waste genera	tion and salect the best v	vaste management method l
practicable and that I have selected the and the environment; OR, if I am a small	「出こし」は「「「「」」、「「」」、「「」」、「「」」、「」」、「」」、「」、「」」、「」	MAI	Contraction and the particular of the	
practicable and that I have selected the	Signoture	hat		Menth Day
Printed/Typed Name	ester a	1200-		Manth Day
practicable and that I have selected the r and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name	ester a	1200-		Menth Day
Printed/Typed Name Printed/Typed Name DAVIS 4. BUSA Printed/Typed Name DAVIS 4. BUSA Printed/Typed Name DAVIS 4. Constant of Receiver Printed/Typed Name	ipt of Materials	No OF		0215
Printed/Typed Name DAVIS 4. BUSA 17. Transporter 1 Acknowledgement of Recei	ipt of Materials Signature ipt of Materials Signature Signature Signature	10 <del>01</del> 111		0215
prodicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name DAVIS 4. BUSA IZ. Transporter I Acknowledgement of Recei Printed/Typed Name T. D. D. U.L. 18. Transporter 2 Acknowledgement of Recei	ipt of Materials Signature Signature Signature IMO	168- NI		Menth Day 0215
prodicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name DAVID 4. BUSS 17. Transporter 1 Acknowledgement of Recei Printed/Typed Name 18. Transporter 2 Acknowledgement of Recei Printed/Typed Name	ipt of Materials Signature ipt of Materials Signature Signature Signature	1		Month Day 0215
prodicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name DAVID 4. BUSS 17. Transporter 1 Acknowledgement of Recei Printed/Typed Name 18. Transporter 2 Acknowledgement of Recei Printed/Typed Name	ipt of Materials Signature Signature Signature IMO	168-		Menth Day 0215
prodicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name DAVID L. BUERA 17. Transporter 1 Acknowledgement of Recei Printed/Typed Name 18. Transporter 2 Acknowledgement of Recei Printed/Typed Name 19. Discrepancy Indication Space 20. Facility Owner or Operator Certification	ipt of Materials  ipt of Mater	1.1 1.1		Menth Day 0215
prodicable and that I have selected the and the environment; OR, if I am a smal available to me and that I can afford. Printed/Typed Name DAVID 4. BUSS 17. Transporter 1 Acknowledgement of Recei Printed/Typed Name 18. Transporter 2 Acknowledgement of Recei Printed/Typed Name	ipt of Materials  ipt of Mater	1.1 1.1	mab	Manth Day Marth Day Month Day

	1. Generator's US EPA ID No. M	anifest Documen	t No		Information in the short is not required by Fed
3. Generator's Name and Mailing Address	CA71700900161	87585	A. State 1	of a August Namilest Document Na	9938
Navy Public Works Center			B. State C	ienerolor's D	3334
2730 Mickey Street, San Diego, Generator's Phone (1949) 545, 6530	and adamstrat ( sack			In the latest	44444
5. Transporter 1 Company Name	8. OSEPAID Number		and set and	rahspatter's ID (Rese orter's Phone	red f
M P Endroamental 7. Transporter 2 Compony Name	S. US EPA ID NUMBER 2	4247	E. Slote T	ransporter's ID ( <u>Rese</u>	ved 1800 1450
9. Designated Facility Name and Site Address	10. US EPA ID Nomber		REAL	acility's ID	
Safety Kleen (Aragonite), Inc.			H. Featlin	/ / / /	1111
11600 North Aplus Road Aragonite UT 84029	UTID 9 8 1 5 5				(801) 323
11. US DOT Description (including Proper Shipp	ping Name, Hazard Class, and ID Number)	12. Čo No.	ntainers Type	13. Total Quantity	14 Unit Wt/Vol - Waste
	s (trichloroethene, perchloroethene	7,	000		Stote
lead), 9, NA3077, II		plat	CIVI	000000	Y State 23
b	1				EPA/Orh
2					Stote
					EPA/Oib
d.					. Slate
					EPA/OI6
J. Additional Descriptions for Materials Listed A	bove		K. Hondi	my Codes for Wostes	Listed Above
Sand physicianty of TSOF stated	manumeted with chloringter province etcl I materies to Glave Chandles 2047 Affah	ananans. Second Or	P 1	57	0
Sente 200, Irvino, CA 52512	INTEALL		<b>\$</b> .		ж. Т
15. Special Handling Instructions and Addition		nen bandien			
IN CASE OF EMERGENC	CONTACT: Chem -Tel, In	c. at 1-8	00-25	5-3924	ene #
Site pick up address; NAS North	Island Site 5	occupitaly darge	ibed obove	by proper shipping to	me and are classified.
1/ CENTRATOR'S OFOTICICATION II	declare that the contents of this consignment are fully and ors in proper condition for transport by highway according	ng to applicable	Internotiono	ы ала лапоної дочег	nintan regelanaris:
the second s		and the second statements	PERCENTRAL PROPERTY AND INCOME.		
marked, and labeled, and are in all respective of the second seco	y that I have a program in place to reduce the valume of acticable method of treatment, storage, or disposal curr	and taxicity of w ently available t	o me which	and to the degree I h minimizes the present	ove determined to be t and future threat to
marked, and labeled, and are in all respect If I am a large quantity generator, I certify practicable and that I have selected the pr and the environment, OR, if I am a small i available to me and that I can afford.	quantity generator, I have made a good taith error to n	and taxicity of w ently available t ninimize my was	voste genera o me which ste generatio	ited to the degree I h minimizes the presen on and select the bes	r works includigation of
marked, and labeled, and are in all respective of the second seco	quantity generator, I have made a good faith short of Signature	and taxicity of w ently available to ninimize my was	vaste genera o me which ste generatio	ned to the degree I h minimizes the presen and select the bes	eve determined to be t and future threat to t waste management in Month 0 0 1
marked, and labeled, and are in all respect If I am a large quantity generator, I certify practicable and that I have selected the pri- and the environment, OR, if I am a small a available to me and that I can afford. Printed/Typed Name	Signature	and texicity of w ently available to ninimize my was	vosto genera o me which ste generatio	ied to the degree I h minimizes the presen on and select the bes	r works includigation of
marked, and labeled, and are in all respectively and the environment, OR, if I am a sarge quantity generator, I certify prochable and that I have selected the privanilable to me and that I can afford. Printed/Typed Name DAUID 4. BUSES 17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name	signature	and taxicity of w ently available to inisimize my was	voste generation o me which ste generation	ied to the degree i h minimizes the presen on and select the bes	Month [ O or 1
marked, and labeled, and are in all respectively and the environment, OR, if I am a sarge quantity generator, I certify practicable and that I have selected the prand the environment, OR, if I am a small a available to me and that I can afford. Printed/Typed Name DAUID 4. BUSES 17. Transporter: I Acknowladgement of Receipt	auguntify generator, I have made a good faith etfort to a	and taxicity of w ently available to ininize my was	voste genard o me which ste generatio	ned to the degree t h minimizes the present and select the bes	Month [ O or 1
marked, and labeled, and are in all respectively and the environment, OR, if I am a large quantity generator, I certify practicable and that I have selected the prand the environment, OR, if I am a small a available to me and that I can afford. Printed/Typed Name DAULD 4. BUSSES 17. Transporter I Acknowledgement of Receipt Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt	auguntify generator, I have made a good faith short to a	and taxicity of w ently available to ninimize my was	voste genard o me which ste generatio	ned to the degree t h minimizes the presen- and select the bes	Month I North I Month I O 2 1
marked, and labeled, and are in all respectively and labeled, and are in all respectively generator, I certify practicable and that I have selected the prand the environment, OR, if I am a small available to me and that I can offerd. Printed/Typed Name  DAUID L. BUELS  17. Transporter I Acknowledgement of Receipt Printed/Typed Name  18. Transporter Z Acknowledgement of Receipt Printed/Typed Name	auguntify generator, I have made a good faith etfort to a	and taxicity of w ently available to ninimize my was	voste genard o me which ste generatio	ted to the degree I h minimizes the presen on and select the bes	Month I North I Month I O 2 1
marked, and labeled, and are in all respectively and the environment, OR, if I am a large quantity generator, I certify practicable and that I have selected the prant and the environment, OR, if I am a small a wailable to me and that I can afford.  Printed/Typed Name  DAULD 4. BUSSES  17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name  18. Transporter 2 Acknowledgement of Receipt Printed/Typed Name  19. Discrepancy Indication Space	authity generator, I have made a good faith etrof to a Signature of Materials Signature Materials Signature ADS.	Animate my war	ste generous	ind to the degree I h minimizes the presen and select the bes	Month I North I Month I O 2 1
marked, and labeled, and are in all respectively and the environment, OR, if I am a large quantity generator, I certify practicable and that I have selected the prant and the environment, OR, if I am a small a wailable to me and that I can afford.  Printed/Typed Name  DAULD 4. BUSSES  17. Transporter 1 Acknowledgement of Receipt Printed/Typed Name  18. Transporter 2 Acknowledgement of Receipt Printed/Typed Name  19. Discrepancy Indication Space	auguntify generator, I have made a good faith short to a	Animate my war	ste generous	ted to the degree I h minimizes the presen- on and select the bes	Month I North I Month I O 2 1

	CIAI71117101019101011 6	Manifest Document		of 1_	information in the shaded is not required by Federa
3. Generator's Name and Mailing Address Navy Public Works Center 2730 McKean Streat, San Diag	n C4 92136			Kanifest Document h	99387
4. Generator's Phone ( (619) 545-65 5. Transporter 1 Company Name			and the second second second second		604324
M P Environmentel 7. Transporter 2 Company Name	CIA T00062 8. US EPA ID Number	4247	1.2.2	orter's Phone ransporter's ID <u>(Res</u> e	(300) 458-3
9. Designated Facility Name and Site Addr	ess 10. US EPA ID Number		2. S. S. C. S. S.	orter's Phane ecility's (D	
Safety Kleen (Aragonite), Inc. 11600 North Aptus Road	U T D 981155	2400	el Facility	11111	(801) 323-6
Aregonite UT 84029 11. US DOT Description (including Proper S	hipping Name, Hazard Class, and ID Number)	12. Con	fainers Type	13. Total Quantity	14. Unit Wt/Vol 1. V/aste Nu
Hazardous waste, solid, n. lead), 9, NA3077, III	o.s. (Inchloroethene, perchloroethen	e,	CM	dealiny	Y EPA/Olfren
Ь.		661		0 [00]3 [0	3028 D
(* 1997) 2				1111	EPA/Other
		11		1111	EPA/Other
d.		Fred Logical			State EFA/Oil-or
Suite 200, Irvins, CA 92512				And the second sec	A STATISTICS OF STATISTICS
15. Special Handling Instructions and Additi Courtour: Wear appropriate prof	ective clothing and respiratory protection w		0-255	-3924	En H
15. Special Handling Instructions and Additi Caution: Wear appropriate prof IN CASE OF EMERGEN Site pick up address NAS North 15. GENERATOR'S CERTIFICATION: There	enal Information eclive clothing and respiratory protection w ICY CONTACT: Chem -Tel, In h Island Site 5	c. at 1-80	ad císove b	v proper shipping n	ERG # 1
15. Special Handling Instructions and Additi Contion: West appropriate prot IN CASE OF EMERGEN Site pick up address NAS Note     16. GENERATOR'S CERTIFICATION: Thereit marked, and labeled, and are in all ress     If I am a large quantity generator. I can practicable and that I have selected the and the environment; OR, if I am a small	end Information ective clothing and respiratory protection w ICY CONTACT: Chem -Tel, In h Island Site 5	c. at 1-80 accurately describ ng to applicable in	sed obove b nternational	y proper shipping na and national gover	CMG # 1
15. Special Handling Instructions and Additi Caution. Wear appropriate prof IN CASE OF EMERGEN Site pick up address NAS North 16. GENERATOR'S CERTIFICATION: Therat marked, and labeled, and are in all ress If I am a large quantity generator. I can practicable and that I have selected the and the environment; OR, If I am a smo available to me and that I can afford. Printed/Typed Name DAVID L. BUERS	enal Information eclive clothing and respiratory protection w ICY CONTACT: Chem -Tel, In h Island Site 5 by declare that the contents of this consignment are fully and peets in proper condition for transport by highway according tify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal curre ill quantity generator, I have made a good faith effort to a - Signature	c. at 1-80 accurately describ ng to applicable in	sed obove b nternational	y proper shipping na and national gover	CMG # 1
15. Special Handling Instructions and Additi Countrom Week appropriate profi IN CASE OF EMERGEN Site pick up address NAS North 16. GENERATOR'S CERTIFICATION: Therat marked, and labeled, and are in all ress 17 finand large quantity generator. Lear practicable and that I have selected the and the environment; OR, If I am a smc available to me and that I can afford. Printed/Typed Name DALL & BUERS 17. Transporter I Acknowledgement of Rece Printed/Typed Name DALL & MARKOWLEDGEMENT OF Rece Printed/Typed Name DALL & MARKOWLEDGEMENT OF Rece Printed/Typed Name	enal Information eclive clothing and respiratory protection w ICY CONTACT: Chem -Tel, In h Island Site 5 by declare that the contents of this consignment are fully and peets in proper condition for transport by highway accord tify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal curre ill quantity generator, I have made a good faith effort to a signature protection of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage o	c. at 1-80 accurately describ ng to applicable in	sed obove b nternational	y proper shipping na and national gover	arme and are classified, pace nment regulations: ave determined to be eco t and future threat to hum t waste management metho Month Day
15. Special Handling Instructions and Addition Wear appropriate production and Addition Wear appropriate product of the p	enal Information eclive clothing and respiratory protection w ICY CONTACT: Chem -Tel, In h Island Site 5 by declare that the contents of this consignment are fully and peets in proper condition for transport by highway accord tify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal curre ill quantity generator, I have made a good faith effort to a signature protection of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage of the storage o	c. at 1-80 accurately describ ng to applicable in	sed obove b nternational	y proper shipping na and national gover	ame and are classified, pac meent regulations. ave determined to be eco t and future threat to hum t waste management metho Month Day
15. Special Handling Instructions and Additi Cautron: Wear appropriate prot IN CASE OF EMERGEN Site pick up address NAS North 16. GENERATOR'S CERTIFICATION: There marked, and labeled, and are in all res 17 I am a large quantity generator. I can practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can afford. Printed/Typed Name 2000 C. State C. Subjects 17. Transporter I Acknowledgement of Rece Printed/Typet Name 17. Transporter I Acknowledgement of Rece	enal Information eclive clothing and respiratory protection w ICY CONTACT: Chem -Tel, In h Island Site 5 by declare that the contents of this consignment are fully and peets in proper condition for transport by highway according tify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal curre if quantity generator, I have made a good faith effort to a signature protection of the storage of the storage of the storage of Materials	c. at 1-80 accurately describ ng to applicable in	sed obove b nternational	y proper shipping na and national gover	Month Day
Special Handling Instructions and Additi Constrom West appropriate prod IN CASE OF EMERGEN Site pick up address: MAS Nord Mass Nord Set pick up address: MAS Nord Set pick up address: MAS Nord Set pick up address: MAS Nord Set pick up address: Mass Nord Mass Nord Set pick up address: NAS Nord Set pick up address: NAS Nord Set pick up address: NAS Nord Nass Nord Set pick up address: NAS Nord Set pick up address: Set pick up address: NAS Nord Set pick up address: Nass Nord Set pick up address: Set pick up address: Set pick up address: Set pick up address: Nass Nord Set pick up address: Set pick up address:	enal Information active clothing and respiratory protection w ICY CONTACT: Chem -Tel, In In Island Site 5 by declare that the contents of this consignment are fully and beets in proper condition for transport by highway according tify that I have a program in place to reduce the volume practicable method of treatment, storage, or disposal curring a guantity generator, I have made a good faith effort to Signature prof Materials Signature Signature Signature	c. at 1-80	red obove b international site generation o generation	y proper shipping na and national gover	Month Day

· · · WASTE MANIFEST	Ŭs EPA, ID No.	Manifest Document	No.	2. Page r	Information in is not required	
Generator's Name and Mailing Address	70090016	87587	A. State N	Ionifest Document N	umber	
Navy Public Works Center			9 51010 C	enerator's ID	<u> </u>	1387
2739 McKeen Street, San Diego, CA 92136					+ 4 1 *	
Transporter 1 Company Ruling 545-8520 Allan	MagaloseRannumber		C. State h	ransporter's ID [7010	1993 Ja +4 +4	1249
M.O.C.n.jeographi	claindalala	جلهاولهاو		orter's Phone	- (820)	458-36
NE D Environmental Transporter 2 Company Name	""6, 703 EPA ID"Nomber "" *		1. <u>1. 1. 1</u> . 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	orter's Phone	(Visit) 1	-
. Designated Facility Name and Site Address	10. US EPA ID Number		G. State F			
Safety Kleen (Aragonite), Inc.			H. Facility		111	$\left  \cdot \right  = \left  \cdot \right $
11650 North Aplus Road	himdels.	20477	TI, Facility	/ 3 PROME	107141	202.0
Aragustic, UT 64029 1. US DOT Description (including Proper Shipping Name, Hazard	A 1 9 9 9 1 9 1		toiners Type	13. Total Quantity	14. Unit Wt/Vol 4.	Waste Numb
Hazardous waste, solid, n.o.s. (trichloroe	thene, perchloroethe	18,			SI	lote
lead), 9, NA3077, 8	and the second		CM	obolalu	Y	NOOD
p.						028 DC.
			iyaya dahar Marakanan		1	PA/Other
		and a second s				tala.
						PA/Other
d.		na al anna an a		A NA		tate
	n el como se contra sedención de la cipita (Chining Chini ma el contra de la cipita de la contra de la cipita programma de la contra de la cipita de la cipita de la contra					PA/Other
Additional Descriptions for Materials Listed Above 116, Profile #AFF2401477, sold coptions and an	the restances of pressions as	ri sorealo.	K Hondli a	ng Codes for Waster	Listed Above b.	
Send thotoppy of TSDF stared manifest for t	Heve Chandler, 3347 Min	botson Dr.			d.	
Bute 200, Irvine, ICA 92612						
TTHIA & 19419 mit						素がおけない
5. Special Handling Instructions and Additional Information	nd meninatory antiactics	when hending				
	nd respiratory protection CT: Chem -Tel, I	when handling nc. at 1-84	00-268	5-3924	ER6	# 1
<ol> <li>Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing at IN CASE OF EMERGENCY CONTA Site pick up address:</li> </ol>	CT: Chem -Tel, l	nc. at 1-8(	10-25			
<ol> <li>Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing as IN CASE OF EMERGENCY CONTA-</li> </ol>	CT: Chem -Tel, I	nc. at 1-84	bed obove b	ov proper shipping n	ame and are cla	assified, packe
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare that the conte marked, and labeled, and are in all respects in proper conditi      If I am a large quantity generator, I certify that I have a prog	CT: Chem -Tel, I ents of this consignment are fully or on for transport by highway accor gram in place to reduce the volum	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are all nment regulation rave determinent and future th	assified, packe ons. d to be econo real to human
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTAG     Site pick up address:     Generator's Certification: Thereby declare had the cont     marked, and labeled, and are in a respects in proper conditi	CT: Chem -Tel, I ents of this consignment are fully or on for transport by highway accor gram in place to reduce the volum	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are all nment regulation rave determinent and future th	assified, packe ons. d to be econo real to human
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA-     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare had the conte marked, and labeled, and are in all respects in proper condition     If I am a large quantity generator, I certify that I have a prog practicable and that I have selected the practicable method of and the environment; OR, if I am a small quantity generator,	CT: Chem -Tel, I ents of this consignment are fully or on for transport by highway accor gram in place to reduce the volum	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are all nment regulation rave determinent and future th	assified, packe ons. d to be econo real to human
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare had the conte marked, and labeled, and are in all respects in proper condition     If I am a large quantity generator, I certify that I have a prog prosticoble and that I have selected the practicable method of and the environment; OR, if I am a small quantity generator, available to me and that I con afford.     Transporter 1 Acknowledgement of Receipt of Materials	CT: Chem -Tei, I ents of this consignment are fully a on for transport by highway accor gram in place to reduce the volum treatment, storage, or disposal of I have made a good faith effort to Signature	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are clo nment regulation ave determined and future the t waste manage Month	assilied, packe ons. d to be econo read to human ement method
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare had the cont     marked, and labeled, and are in all respects in proper conditi      If I am a large quantity generator, I certify that I have a prop     protectorble and that I have selected the practicable method of     and the environment; OR, if I am a small quantity generator,     available to me and that I con afford     risted/Typed Name     Day J BUERSTER	CT: Chem -Tei, I ents of this consignment are fully or on for transport by highway accor- gram in place to reduce the volum treatment, storage, or disposal or I have made a good faith effort to	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are cla nment regulation ave determinent and future the twaste manag	assified, packe ons. d to be econo reat to human ement method
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare has the commarked, and labeled, and are in all respects in proper condition     If I am a large quantity generator, I certify that I have a prog     prosticable and that I have selected the practicable method of     and the environment; OR, if I am a small quantity generator,     available to me and that I con afford.     Transporter 1 Acknowledgement of Receipt of Materials     inted/Typed Name     Acknowledgement of Receipt of Materials     inted/Typed Name     Acknowledgement of Receipt of Materials	CT: Chem -Tei, I ents of this consignment are fully a on for transport by highway accor gram in place to reduce the volum treatment, storage, or disposal of I have made a good faith effort to Signature	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are clo nment regulation ave determined and future the t waste manage Month	assilied, packe ons. d to be econo read to human ement method
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare that the cont     marked, and labeled, and are in all respects in proper condition     If I am a large quantity generator. I certify that I have a prop     protectoble and that I have selected the practicable method of     and the environment; OR, if I am a small quantity generator,     available to me and that I con afford     risted/Typed Name     Transporter 1 Acknowledgement of Receipt of Materials     rinted/Typed Name     Stransporter 2 Acknowledgement of Receipt of Materials     rinted/Typed Name	CT: Chem -Tel, I ents of this consignment are fully a on for transport by highway accor gram in place to reduce the volum treatment, storage, or disposal of I have made a good faith effort to Signature Signature	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are clo nment regulation ave determined it and future the twaste manage Month Month Month	assilied, packe ons. d to be econo read to human ement method Day Day
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare has the commarked, and labeled, and are in all respects in proper condition     If I am a large quantity generator, I certify that I have a prog     prosticable and that I have selected the practicable method of     and the environment; OR, if I am a small quantity generator,     available to me and that I con afford.     Transporter 1 Acknowledgement of Receipt of Materials     inted/Typed Name     Acknowledgement of Receipt of Materials     inted/Typed Name     Acknowledgement of Receipt of Materials	CT: Chem -Tel, I ents of this consignment are fully a on for transport by highway accor- gram in place to reduce the volum treatment, storage, or disposed or I have mode a good faith effort to Signature Signature Signature Signature Gift	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are clo nment regulation ave determined it and future the twaste manage Month Month Month	assilied, packe ons. d to be econo read to human ement method Day Day
Special Handling Instructions and Additional Information     Caution: Wear appropriate protective clothing as     IN CASE OF EMERGENCY CONTA     Site pick up address:     GENERATOR'S CERTIFICATION: Thereby declare that the cont     marked, and labeled, and are in all respects in proper condition     If I am a large quantity generator. I certify that I have a prop     protectoble and that I have selected the practicable method of     and the environment; OR, if I am a small quantity generator,     available to me and that I con afford     risted/Typed Name     Transporter 1 Acknowledgement of Receipt of Materials     rinted/Typed Name     Stransporter 2 Acknowledgement of Receipt of Materials     rinted/Typed Name	CT: Chem -Tel, I ents of this consignment are fully a on for transport by highway accor gram in place to reduce the volum treatment, storage, or disposal of I have made a good faith effort to Signature Signature	nc. at 1-81 nd accurately descri ding to applicable i e and taxicity of we	bed above b internationa	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and are clo nment regulation ave determined it and future the twaste manage Month Month Month	assilied, packe ons. d to be econo read to human ement method Day Day
5. Special Handling Instructions and Additional Information Constron: Wear appropriate protective clothing as IN CASE OF EMERGENCY CONTA Site pick up address: 6. GENERATOR'S CERTIFICATION: Thereby declare hall the comm marked, and labeled, and are in all respects in proper conditi If I am a large quantity generator. I certify that I have a prog proticable ond that I have salected the practicable method of and the environment; OR, if I am a small quantity generator, available to me and that I can afford riated/Typed Name 7. Transporter 1 Acknowledgement of Receipt of Materials rinted/Typed Name 8. Transporter 2 Acknowledgement of Receipt of Materials rinted/Typed Name 9. Discrepancy Indication Space 10. Feelility Owner or Operator Certification of receipt of hazardou	CT: Chem -Tel, I ents of this consignment are fully a on for transport by highway accor- tram in place to reduce the volum treatment, storage, or disposed at 1 have made a good faith effort to Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature	nc. at 1-81	DO-250 hed above b nternationa me which i e generation A	by proper shipping n I and national gover ted to the degree I I minimizes the presen	ame and ore cla nment regulation over determined and future the waste manage Month Month Month	bay Day Day Day Day Day Day Day
5. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing as IN CASE OF EMERGENCY CONTA Site pick up address: 6. GENERATOR'S CERTIFICATION: Thereby declare has the cont marked, and labeled, and are in all respects in proper conditi 1F1 am a large quantity generator. I certify that I have a prog proticable and that I have salected the practicable method of and the environment; OR, If I am a small quantity generator, available to me and that I con afford Transporter 1 Acknowledgement of Receipt of Materials rinted/Typed Name 8. Transporter 2 Acknowledgement of Receipt of Materials rinted/Typed Name 9. Discrepancy Indication Space	CT: Chem -Tel, I ents of this consignment are fully a on for transport by highway accord tradment, storage, or disposal at 1 have mode a good faith effort s Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature Signature	nc. at 1-81	DO-250 hed above b nternationa me which i e generation A	by proper shipping n I and national gover ted to the degree I f	ame and are clo nment regulation ave determined it and future the twaste manage Month Month Month	assilied, packe ons. d to be econo read to human ement method Day Day

n

	1. Generator's US SRA ID	No. I I	Manifest Document N	o. 2. Page 1	Informationen ine shaded o is not required by Federal
WASTE MANIFEST	CA711701	190016	87588	of 1	A State of the second
3. Generator's Name and Mailing Address			A	State Manifest Cocumer	"Number 99387
Navy Public Works Center	~ 03 03/20			State Generator's ID	
2730 McKean Street, San Diege 4. Generator's Phone ( (619) 545-65		at Tunnir			38043248
5. Transporter 1 Company Name		S EPA ID Number	2	State Transporter's ID []	
	p.a	T. A. A. A. A. A.	A.D.A.7	Transporter's Phone	(800) 458-3
M P Environmental 7. Transporter 2 Company Name		TO00062		State Transporter's ID []	and the second se
2. Homponer & company round				Transporter's Phane	
9. Designated Facility Name and Site Addre	10 Ц	S EPA ID Number		State Facility's ID	
Safety Kleen (Aragonite), Inc.				THIL	111111
11600 North Aplus Road	18.7	0.0.0.4.5.1		Facility's Phone	(\$01) 323-8
Aragonite.UT 84029		D98115	12. Contai	ners 13. Totol	14, Unit
11. US DOT Description (including Proper Sh			No.	Type Quantity	Wt/Vol 1. Waste Num
Hazardous waste, solid, n. lead), 9, NA3077, Ill	o.s. (mchloroethene,	perchioroether	N9,	MC.	State
roady, o, render 1, th			10011	INI DIDDRI	O Y EFA/OIDED
Ь.	· · · · · · · · · · · · · · · · · · ·				Stots
					EPA/Other
ς.					State
<b>G</b>					
					EPA/Other
d.					State
				and a fishi	EPA/Othe/
1 Additional Descriptions for Materials Liste	d Above	and a complete of	et ensertions K	. Handling Codes for Wa	istas Listed Above
Evend photocopy of TSDF sign	ed manifest to: Stelle C	handler, 3347 Mild	CO. S. P. M. P. S.	n .	b
Sete 200, Irvine, CA 92812					d
	736.2	a State 1			
15. Special Handling Instructions and Additi Caution: Wear appropriate prot	ional Information tective clothing and resp	ratory protection	when handling.		
IN CASE OF EMERGEN	VCY CONTACT:	Chem -Tel, k	nc. at 1-800	-255-3924	en6 # 11
Site pick up address:	ih Island Site 5				ا جنامیا و س
	by declare that the contents of this	consignment are fully ar	d accurately describe	d above by proper shippin	g name and are classified, pac
16. GENERATOR'S CERTIFICATION: Thereb	pects in proper condition for tran	sport by highway accard	ling to applicable inte	rnational and national g	overnment regulations.
<ol> <li>GENERATOR'S CERTIFICATION: I hereb marked, and labeled, and are in all res</li> </ol>		1 States		generated to the degree	I have determined to be econ
marked, and labeled, and are in all res	rtify that I have a program in pla	ace to reduce the volume	and toxicity of wast	a subject minimizes the ne	
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if, I am a sma	rtify that I have a program in pl practicable method of treatment all quantity generator, I have ma	, storage, or disposal cu de a good faith effort to	and toxicity of wast rrently available to m minimize my waste s	e which minimizes the pr peneration and select the	best waste management metho
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if, I am a sma available to me and that I can afford. Printed/Typed Name		starage, or disposal cu de a good faith effort to Signature	and toxicity of wash rrently available to m minimize my waste s	e which minimizes the pro- peneration and select the	Month Day
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name DAVID L. BUSKS	TER	/	e and texicity of west rrently available to m minimize my westers	e which minimizes the pro- eneration and select the	
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name DAVID L. BUERS 17. Transporter 1 Acknowledgement of Rece	PERCENT	/	e and texicity of wast rrently available to m minimize my waste (	e which minimizes the pr generation and select the	Month Day
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name DAVID L. BUBRS 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name Avan Stanlar	eipt of Materials	Signature	e and texicity of wast rrently available to m minimize my waste s	e which minimizes the pr peneration and select the	Month Day
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name DAVID L. BUERS 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name Lynn Stanly. 18. Transporter 2 Acknowledgement of Rece	eipt of Materials	Signature Signature	e and texicity of wast rrently available to m minimize my waste s	e which minimizes the pr generation and select the	Month Day
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name DAVID L. BUBRS 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name Avan Stanlar	eipt of Materials	Signature	e and texicity of wast rently available to m minimize my waste s	e which minimizes the pr generation and select the	Month Day Month Day 0 2 1 3
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name DAVID L. BUERS 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name Lynn Stanly. 18. Transporter 2 Acknowledgement of Rece	eipt of Materials	Signature Signature LOIO Signature MIC	e and texicity of wast rrently available to m minimize my waste (	e which minimizes the pr generation and select the	Month Day Month Day 0 2 1 3
marked, and labeled, and are in all res. If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can afford. Printed/Typed Name DAVID L. BUSKS 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name Lyan Stanlay 18. Transporter 2 Acknowledgement of Rece Printed/Typed Name	eipt of Materials	Signature	e and texicity of wast rently available to m minimize my waste (	e which minimizes the pr generation and select the	Month Day Month Day 0 2 1 3
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name <u>Lysic</u> <u>Stants</u> 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name <u>Lysic</u> <u>Stants</u> 18. Transporter 2 Acknowledgement of Rece Printed/Typed Name 19. Discrepancy Indication Space	eipt of Materials	Signature	- lt	andley	Month Day Month Day 0 2 1 3
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can afford. Printed/Typed Name <u>Ayra Stants</u> 18. Transporter 1 Acknowledgement of Rece Printed/Typed Name <u>I year Stants</u> 18. Transporter 2 Acknowledgement of Rece Printed/Typed Name 19. Discrepancy Indication Space 20Equility Owner or Operator Certification	eipt of Materials eipt of Materials	Signature Signature LOTO Signature MTC LOTO Signature MTC	- lt	andley	Month Day Month Day 0 2 1 3
marked, and labeled, and are in all res If I am a large quantity generator, I cen practicable and that I have selected the and the environment; OR, if I am a sma available to me and that I can offord. Printed/Typed Name <u>Lysic</u> <u>Stants</u> 17. Transporter 1 Acknowledgement of Rece Printed/Typed Name <u>Lysic</u> <u>Stants</u> 18. Transporter 2 Acknowledgement of Rece Printed/Typed Name 19. Discrepancy Indication Space	eipt of Materials eipt of Materials	Signature	- lt	andley	Month Day Month Day 2 2 1 3 Month Day

	anifest Document	No.	2. Page 1	Information to the strad
3. Generator's Name and Mailing Address	87589	A. State A	of Aonitest Document N	lunber
Navy Public Works Center				9338
2730 McKean Street, San Diego, CA 92136		102.5.7.40	lated at a	
5. Transporter 1 Company Name Alton Masters Deck		Sector y Sector Providence	ransporter's The <u>Res</u>	nved P 4 3 2 4
الما ما ما ما ما ما ما ما	4047	D Tronsp	ortar's Phone	10001 450
7. Transporter 2 Company Name 8. US EPA ID Number	19 6 19 I	1. 1. 1.	ransporter's 40 <u>(Res</u> r	and Joon James
Presignated Facility Name and Site Address     10. US EPA ID Number		10. C.	orter's Phone	
9. Designated Facility Name and Site Address 10. US EPA ID Number Safety Kleen (Aragonite), Inc.			1111	11111
11800 North Aplus Roed	2377	H. Facility	r's Phone	200041 0000
Araguetto JT 84629 1. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Cor No.	tainers Type	13. Total Quantity	14. Unif Wt/Vol 1. Waste 1
Hazardous waste, solid, n.o.s. (trichlorcethene, perchloroethene	1	1100		Stote
load); 9, NA3077, II	ololi	CM	alobialo	Y EPA/OIL
ь. ь				6628
	1912년 1912년 - 1912년 1912년 - 1912년 - 1 1912년 - 1912년 -		111	c, EPA/Othe
	a da jara koje su goja	an an the second		State
			1111	EPA/Othe
d and a second se				State
สุขารสารที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาว พ.ศ. 1997 - มีสาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สาวที่สา				EPA/Otha
Additional Descriptions for Materials Listed Above     11a, Papelide EAP2001477, soil conternamical with chickinated organization and	relation	K. Hondii	ng Codes for Waste	s Listed Above
Send photocopy of TSOF signed member to. Shave Cheralter, 3347 Middle	elson Dr.	Ò-	)	
State 200, bytes CA 92612		C.		d
15. Special Handling Instructions and Additional Information Caution: Wear appropriate protective clothing and respiratory protection wi	hen handlind			
IN CASE OF EMERGENCY CONTACT: Chem -Tel, In	c. at 1-8	00-25	5-3924	ERG #
Site pick up address:	weeks is not a subject		an elister d'alt d'alt	
16. GENERATOR'S CERTIFICATION: Thereby declare that the cantents of this consignment are fully and marked, and labeled, and are in all respects in proper condition for transport by highway according	accurately descri ng to applicable	internationa	y proper snipping n I and national gove	nment regulations.
	and taxicity of w ently available to	aste genera me which i	ted to the degree I i minimizes the prese	have determined to be e at and future threat to b
If I am a large quantity generator, I certify that I have a program in place to reduce the volume or practicable and that I have selected the practicable method of treatment, storage, or disposal curr		le generatio	n and select the be	t waste management m
If I am a large quantity generator, I certify that I have a program in place to reduce the volume or practicable and that I have selected the practicable method of treatment, storage, or disposal curr and the environment; OR, if I am a small quantity generator, I have made a good faith effort to n available to me and that I can afford.	ninimize my was	the strate for the second	and the second se	
and the environment. UK, it I am a small avantity generator. I have made a good faith effort to the	ninimize my wos	Spining		Month De
ord the environment, OK, if I am a small guantity generator, I have made a good faith straft to a available to me and that I can afford.       Printed/Typed Name     Signature       DA //15 L     Bucchs and the straft of Malerials       17. Transporter 1 Acknowledgement of Receipt of Malerials	ninimize my was	<u> </u>		021
ord the environment; OK, if I am a small guantity generator, I have made a good faith straft for a ovailable to me and that I can afford.     Signature       Printed/Typed Name     Signature       17. Transporter 1 Acknowledgement of Receipt of Molitificits     Signature       Printed/Typed Name     Signature	ninimize my was 199	Hor		Month De 0 2 1 Month De 0 2 1
ond the environment, OK, if I am a small guantity generator, I have made a good faith straft to a available to me and that I can afford.       Printed/Typed Name     Signature       DA //15 L     Bucchson       17. Transporter 1 Acknowledgement of Receipt of Malerials	ninimize my was III E	) Hor	<u> </u>	021
ord the environment; OK, if I am a small guantity generator, I have mode a good faith strait to a original between the strain of the strain	ninimize my wos 112	flor	<u></u>	021 d21
ord the environment, OK, if I am a small guantity generator, I have made a good faith strait to a ovailable to me and that I can afford.  Printed/Typed Name  I7. Transporter I Acknowledgement of Receipt of Materials  Printed/Typed Name  I8. Isombotilit & Acknowledgement of Receipt of Materials  Printed/Typed Name  Signature  IAIC  19. Discrepancy Indication Space	ninimize my was	fler.		021 d21
ord the environment; OK, if I am a small guantity generator, I have mode a good faith strait to a original between the strain of the strain	ninimize my was	Hor		021 d21
ond the environment; OK, if I am a small guantity generator, I have mode a good faith strait for available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter I Acknowledgement of Receipt of Materials       Signature         18. Insemporter I Acknowledgement of Receipt of Materials       Signature         18. Insemporter I Acknowledgement of Receipt of Materials       Signature         19. Discrepancy Indication Space       Igo 5         20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest				021 d21
ord the environment, OK, if I am a small guantity generator, I have mode a good faith strain to a ovailable to me and that I can afford. Printed/Typed Name I7. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name I8. Insembolities 2 Acknowledgement of Receipt of Materials I7. Discrepancy Indication Space I9. Discrepancy Indication I9. Discrepancy I9. Discrepa		Ho Ho in Item 19.	<u></u>	Month Dr d21
ond the environment; OK, if I am a small guantity generator, I have mode a good faith strait for available to me and that I can afford.         Printed/Typed Name       Signature         17. Transporter I Acknowledgement of Receipt of Materials       Signature         18. Insemporter I Acknowledgement of Receipt of Materials       Signature         18. Insemporter I Acknowledgement of Receipt of Materials       Signature         19. Discrepancy Indication Space       Igo 5         20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest		Here 19.		Month Dr d21

	700900011	87590	1	of 📲	is not required b	y rederai io
3. Generator's Name and Mailing Address Navy Public Works Center			A. Stote A	tanilas Document N	99.	337
2730 McKean Street, San Diego, CA 92136 4. Generator's Phone ( (619) 545-6520 Altra:	4 Monifest Desk		Charles and the	AIN Q J	6043	249
5. Transporter 1 Company Name	6. US EPA ID Number		the party of the p	ronsporter's ID [Rese	rynd.]	
M P Environmental	and the second se	24247		orter's Phone	(800)	458-34
7. Transporter 2 Company Name	8. US EPA ID Number	1 1 1 1 1	1 State	ransporter's ID ( <u>Rese</u> orter's Phone	(VIBO)	
9. Designated Facility Name and Site Address	10. US EPA ID Number		G. Stole 8	eolity's 10	1 1 2 1	f 1
Safety Kleen (Aragonste), Inc. 11600 North Aplus Road			P. Facility	s Phone	1 1 1 1	323-8
Aragonite UT 84029 11, US DOT Description (including Proper Shipping Name, Hozard	UTD98115	12, Con	tainers	13. Total	14. Unit	
Hazardous waste, solid, n.o.s. (inchloroe		iene,	Туре	Quantity	W1/Vol E V Sto	Waste Nord te
lead), 9, NA3077, III		001	CM	000000	Y ==/	V01000
b				0	510 Sto	N 190
				<u>illi</u>		VOther
				1000	Sta	10 N/Otkar
d.	1		1		Sia	
					EP	A/Cither
1. Additional Descriptions for Notaria stated Aparet and an	th chloricaled organics	and matain	K. Handh	ing Codes for Waste	Listed Above	
Coest abcocopy of TSD5 segred memories to 1 Subs 200 Indiae CA 92512	Shave Chandler, 334? 9	Bunelson Dr.,	a. (	2	b. A Company of State	
77#11 5303(BIN)			•		đ,	
		we when handlost				
	nd respiratory protectic			0 1000 A	The second second second	1.
Caution: Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA				5-3924	enc i	4 17
Caution: Wear appropriate protective obtains a IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5	CT: Chem -Tel	, Inc. at 1-80	00-251	by proper shipping n	ome and are clas	sified, pack
Caution: Wear appropriate protective obstand a IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper conditi	CT: Chem -Tel	, Inc. at 1-80	bed above	by proper shipping i I and national gove	ame and are clas niment regulation	sified, pack 15
Caution Wear appropriate protective costant a IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the cont marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pre- practicable and that I have selected the procticable method o and the environment; OR, if I am a small quantity generator,	CT: Chem -Tel	y and accurately descri coording to applicable i	bed above international asle generic	by proper shipping n al and national gover ted to the degree I I mic plans the press	ome and are clos nment regulation ave determined and future three	sified, pack is to be econi at to huma
Caution Wear appropriate protective costant a IN CASE OF EMERGENCY CONTA Site pack up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit of 1 an a large quantity generator, I certify that I have a pre-	CT: Chem -Tel	y and accurately descri coording to applicable i	bed above international asle generic	by proper shipping n al and national gover ted to the degree I I mic plans the press	ome and are clos nment regulation ave determined and future three	sified, pack is to be econi at to huma
Caution Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5 16. GENERATOR'S CERTIFICATION: I have by declare that the con morked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedXIyped Name DATIS I. Busel STEEK 17. transporter 1 Acknowledgement of Receipt of Materials	CT: Chem -Tel tents of this consignment are full on for transport by highway as aram in place to reduce the va treatment, storage, or dispose I have made a good faith effo Signature	y and accurately descri coording to applicable i	bed above international asle generic	by proper shipping n al and national gover ted to the degree I I mic plans the press	ame and are clos niment regulation rave determined and future three t waste manager Month	sified, pack is at to be econt at to huma ment methor Day
Caution Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pick up address MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- morked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedXTyped Name DATID I. Buse Sites 17. Transporter 1 Acknowledgement of Receipt of Materiols Printed/Typed Name DACK, Work Ag	CT: Chem -Tel tents of this consignment are full on for transport by highway as aram in place to reduce the va freetment, storage, or dispose I have made a good faith effo	y and accurately descri coording to applicable i	bed above international asle generic	by proper shipping n al and national gover ted to the degree I I mic plans the press	ome and are clos niment regulation ave determined it and futore ibre t waste manager	sified, pack is to be econi iai to huma ment method
Caution Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pick up address: NAS North Island Site 5 16. GENERATOR'S CERTIFICATION: I have by declare that the con morked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a pro- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedXIyped Name DATIS I. Busel STEEK 17. transporter 1 Acknowledgement of Receipt of Materials	CT: Chem -Tel tents of this consignment are full on for transport by highway as aram in place to reduce the va treatment, storage, or dispose I have made a good faith effo Signature	y and accurately descri coording to applicable i	bed above international asle generations	by proper shipping n al and national gover ted to the degree I I mic plans the press	ame and are clos niment regulation rave determined and future three t waste manager Month	sified, pack is at to be econt at to huma ment methor Day
Caution Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: I have by declare that the con- morked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have a proc- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedX[yped Name DATID A. Buse Sitest 17. transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Datid I and I approved to the second of th	CT: Chem -Tel	y and accurately descri coording to applicable i	bed above international asle generations	by proper shipping n al and national gover ted to the degree I I mic plans the press	me and are closeneers regulation reverse determined at and future three twoste manager Month Month Month CP 2	sified, pack is sit to be econt soli to huma ment method Day 1 3 Day
Capition Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pick up address MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: Thereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have s pro- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedXTyped Name If. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name IS. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	CT: Chem -Tel	y and accurately descri coording to applicable i	bed above international asle generations	by proper shipping n al and national gover ted to the degree I I mic plans the press	me and are closeneers regulation reverse determined at and future three twoste manager Month Month Month CP 2	sified, pack is sit to be econt soli to huma ment method Day 1 3 Day
Capition Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pack up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: I hereby declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have is pro- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedXIyped Name IT. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name IS. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 19. Discrepancy Indication Space 20. Excility Owner or Operator Certification of receipt of hazardo	CT: Chem -Tel tents of this consignment are bulk on for transport by highway are triestment, storage, or dispose I have made a good faith effor Signature Signature Signature	, Inc. at 1-80	bed above internations asle generations the generation of the generation of the generation of the generation of the generation of the generation of the generation of the generation of the generation of the gene	by proper shipping n al and national gover ted to the degree I I mic plans the press	me and are closeneers regulation reverse determined at and future three twoste manager Month Month Month CP 2	sified, pack is sit to be econt soli to huma ment method Day 1 3 Day
Capition Wear appropriate protective contains a IN CASE OF EMERGENCY CONTA Site pick up address: MAS North Island Site 5 16. GENERATOR'S CERTIFICATION: I have by declare that the con- marked, and labeled, and are in all respects in proper condit If I am a large quantity generator, I certify that I have 5 pro- practicable and that I have selected the practicable method o and the environment; OR, If I am a small quantity generator, available to me and that I can afford. PrintedXIyped Name IT. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name I. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name 19. Discrepancy Indication Space	CT: Chem -Tel	, Inc. at 1-80	bed above internations asle generations the generation of the generation of the generation of the generation of the generation of the generation of the generation of the generation of the generation of the gene	by proper shipping n al and national gover ted to the degree I I mic plans the press	me and are closeneers regulation reverse determined at and future three twoste manager Month Month Month CP 2	sified, pack is sit to be econt soli to huma ment method Day 1 3 Day

a provident and stranger of the second

UNIFORM HAZARDOUS	ns on back o		2. Page 1	Information of is not required	the s) adal area by Federal law
3. Generator's Name and Mailing Address CA7170090016	87591	A, Stofe M	of	<sup>umbor</sup> QC	3875
Navy Public Works Center 42988-886Kelan-Street, San Diego, CA 92136			exervator s ID	111	ŢŢŢ
5. Transporter I Compony (Siche) 545-6520 Alth: Manifest Basiliumber	1111	S PROPERTY.	anter's these		
7.Mr.En spanner 200 me CA EN OD O O	4247		ansporter's ID Reso atter's Phone	(008) <u>bev</u>	458-30
9. Designated Facility Name and Site Address 10. US EPA 10 Number		G State F	and the second second second second		111
Safety Kleen (Aragonite), Inc. 11600 North Actus Road 11/03/927/Description Monang Proper Shipping Name, Hazard Class, and ID Number	2 1 7 2	H. Facility	13. Tota	14.(60)	323-81
a.	No.	Туре	Guanfity	and the second se	Waste Nambe ate
Hazardous waste, solid, n.o.s. (trichloroethene, perchloroether lead), 9, NA3077, ili	dol	CM	olololalo	Y	A/Odier DODS
<b>b</b> .			1111		928 D03: A/Other
					ole
d.			1111		PA /Ofiner
	1		1111	F	A/Other
<ol> <li>Additional Descriptions for Muterials Sved Above</li> <li>The Structure gas 572:001477, and considerationsheld with chird anabari programs a sur-</li> </ol>	of metada	K. Hord a	ng Codes far Waste	s Listed Above D	
Send paraeloopy of TSOF signed paralled to Stave Chandral 3347 Mic Bara 200, Rytes, CA 92612	ikizon (2	<b>c</b>	O+	d.	
15. Special Handling Instructions and Additional Information					
Caution. Wear appropriate protective clothing and respiratory protection IN CASE OF EMERGENCY CONTACT: Chem -Tel, I	eneo nancing. nc. at 1-80	10-251	5-3924	enc	#171
Site pick up address: 16. GENERATOR'S CERTIFICATION: Hostins do late that the Antents of this consignment are fully an marked, and labeled, and are in all respects in proper condition for transport by highway accor	d accurately describ ding to applicable i	bod above l nternationa	y proper shipping n I and national gove	ame and are clo roment regulation	nsified, packed
If I am a large quantity generator, I certify that I have a program in place to reduce the volumi practicable and that I have selected the practicable method of treatment, storage, or disposal cu and the environment; OR, if I am a small quantity generator. I have made a good faith effort to					
and the environment; OR, H I am a small quantity generator, I have made a good raim error to available to me and that I can afford. Printed/Typed Name	246	Y	The first first second	Month	Doy
17 Aransporter Acknowledgement of Receipt of Materials	X A			0 0	Day
Prod/Juped Name Signalure Signalure	Jamo			0 3	113
Printed/Typee-Name Signature Signature				Menth	Day
19. Discrepancy Indication Space					
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manife	est excent os octadé	n Item 19			
	14	2		Month	цů́ц
alenna Canvence Al	TTHE INT	$\nabla$	$\sim$ $\sim$		1 / 1
gene ausrence Do Not Write Below	THIS LINE.	$\bigcirc$	$\sim$ $\sim$	$\sim$	· / ·

につうわ

	UNIFORM HAZARDOUS	ifest Documen 7592	t No.	2. Page 1	Information in the shaded ar is not required by Federal la
-	WASTE MANIFEST         C   A   7   1   7   0   0   9   0   0   1   6   3           3. Generator's Name and Mailing Address	1046	A. State /	Manifest Document N	umber ano an
	Navy Public Works Center				99387
	2730 McKean Street, San Diego, CA 92136		APPY The large particular the	Severator's (D 18.153 (D. 7.	6043249
	4. Generator's Phone ( (615) 545-6520 Alth: Manifest Desk     5. Transporter 1. Compony Name     6. US EPA ID Number		Consequences and the second	ransporter's ID (Read	and an and the second of the second
	방법 생각 이 이 이 것 같아. 이 가지 않는 것 같아요. 그는 것 같아요. 한 것 같아요.	0.6.27	D. Transp	orter's Phone	(800) 488-30
	M P Environmental         C  A  T  0  0  0  8  2 4           7. Transporter 2 Company Name         8. US EPA ID Number	6 <u>66</u> 68 8	E. State 3	ransporter's ID [Rese	Contract to be a state of the s
		1.1.4		orter's Phone	
	9. Designated Facility Name and Site Address 10. US EPA ID Number		10000	Pecifity's ID	
	Safety Kisen (Aragonite), Inc. 11800 North Aplus Road		H. Facilit		
ł	Aragonite.UT 84029 UTD 98 1 5 2	2177	D. ISIGOR	y Tridid	(801) 323-81
la l	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)	12. Co No.	ntainers Type	13, Total Quantity	14, Unit Wt/Vol I, Waste Numb
il and it	Hazardous waste, solid, n.o.s. (trichloroethene, perchloroethene,		din. 15 - 25		State
Î	lead), 9, NA3077, III	001	CM	10020	Y 6PA/010009
	С	ppi			CO23 DOS
					EPA/Other
	<ul> <li>c</li></ul>				State
					EPA/Other
			12		
	<b>d</b>			a de la construir de la constru La construir de la construir de	Stote
	sela na na information de la sela de la seconda de la s Manadem entremente entre seconda de la sec				EPA/Other
and so its owned	1. Additional Descriptions for More was Littled Above most of with cheorinativel corrections and it	vetatu	K. Hariel	ing Codes for Waste	s Listed Above
<b>NNNN</b>	Senil photocopy of TSCF signed mentiles to: Stave Chandler, 3347 Michell Skille 200, Inane, CA 52612.	oon Dr.	1 (	57	and the state of the
	and the second		¢,		d. Second and
	15. Special Hardling Instructions and Additional Information Catation: Wear appropriate protective clothing and respiratory protection whe	m handline			
	IN CASE OF EMERGENCY CONTACT: Chem -Tel, Inc	. at 1-8	00-25	5-3924	ERG # 17
	Site pick up address: NAS North Island Site 5	e des labora quasimpera nucedoria ante espectedar	an na shekara Sanggan na s	n andre soneren en e	
	14 OFNED LTOP'S CERTIFICATION, I have be dealers that the contract of this considerment over hilly and as	curately descr	ibed abave	by proper shipping n	ame and are classified, packe
	marked, and labeled, and are in all respects in proper condition for transport by highway according	to applicable	internation	al and national gover	riment regulations.
	If I am a large quantity generator. I certify that I have a program in place to reduce the volume any practicable and that I have selected the practicable method of treatment, storage, or disposal curren	d toxicity of w thy available t	aste genera o me which	ited to the degree I I minimizes the preser	have determined to be econo nt and future threat to human
	and the environment; OR, if I am a small quantity generator, I have made a good faith effort to mir available to me and that I can afford.	nimize my wor	te generatio }	an and select the bes	it waste management method
-	Printed/Typed Name Signature	74	datemport		Month Day
	OATID L. BUERSTER     IT Transporter 1 Acknowledgement of Receipt of Materials	Y.	2		
	Printed/Typed Name	nl	1 17		Month Day
	18. Transporter 2 Acknowledgement of Receipt of Materials	110	yex	na di seria da da Matak dalak da	W 13-17-12.
1	Printed/Typed Nome Signature		a de la companya de l Companya de la companya de la company		Month Day
	19. Discrepancy Indication Space		1		
		1997 (H 1997 (H			1
0				1. 200	
9	20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest ex	cept as noted	in Item 19.		Month Doya
NOV NOT N	Printed/Typed Name	->	٢.	1.1.	ROVIC
STRANSON A LONG	And the contract the	HIS LINE			USA T
	DO NOT WRITE BELOW				
STEWNORT AND A STORE AND A STO	DO NOT WRITE BELOW T	105 61146			

UNIFORM HAZARDOUS WASTE MANIFEST	pitchi typewriter 0075	· · ·	est Document No.		Page	information is not requir	methe shaded ar ed by Federal la
3. Generator's Name and Mailing Address	CA747009	0016 87	593 A	State Manife	it Document N	umber 🗸 👝	Ja
Nevy Public Works Center						9	9387
2730 McKeen Street Sen Diego	CA 92136		B	Stote Genero			
4. Generator's Phone ( 5. Transporter 1 Campany Name	Aitn Magifester	10 <sup>°</sup> Number	c	State Techsbe	and the Rese	204	1 1 1 A A
5. Transporter T Company Nome	0. 00 LTM	10 Trumber		Transporter			
M D Environmental	CAT	000624	2 A 7 0		rier's ID (Rese		468-30
7. Transporter 2 Company Name	"8, "US EPA	ID Nümber				<u>wea</u> 1	
	10, US EPA		·	Fransporter's State Facility	and share the set		
9. Designated Facility Name and Site Addres	s 10. US EPA	ID Number		1		1 1 1	1111
Safety Kleen (Anagonite), Inc. 11660 North Aplus Road			and the second second second	Facility's Pho	ine -		
Aresonite UT 84029	549 9 420	9811552	12. Contain	ers / 1/1	3. Total	14. Unit	1323-81
11. US DOT Description (including Proper Shi	pping Name, Hazard Class, and ID N	4umber)	and the second se		Quantity	Wi/Vol	1. Woste Numi
Hazardous waste, solid, n.o	s. (trichloroethene, pe	rchloroethene,					Stote
lead), 9, NA3077, III	1000		00110	Mor	020	Y	EPA/Orber 000
, b	- CB				ani , i sârd, pri V		9928 DO
			1.00		1.1.1		EPA/Other
1				1	direction and		Stole
		이 아이 아이 한 것					EPA/Other
						1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	State
d.							
				er	and in the	NAL AND	EPA/Other
3. Additional Descriptions for Materials Listed			and the second se	Handling Co	des for Westas	Listed Abox 5.	e in the second
1 to Profile #AP2401477, solid Generative copy of TECF signo	d matilied for Stove Chan	fer, 3347 Michelac	x3 Q1	2-	7		
Subu 200, Inanie, CA 82612			5	$\sim$		ď	
15. Special Handling Instructions and Additio	nal Information	-					
Caution: Wear appropriate prote				-			4100
IN CASE OF EMERGEN	and a second	NEL DIALEMENTA CALLER DE DE MORENDE DE RE			124	CRG	,#17
Site pick up address: NAS North 16. GENERATOR'S CERTIFICATION: Thereby		ZIT RIN	89398		er shinning p	me and are	classified, pack
marked, and labeled, and are in all resp	ects in proper condition for transport	t by highway according to	applicable inter	notional and	national gover	nment regula	itions.
If I am a large quantity generator, I cert practicable and that I have selected the	ify that I have a program in place to	o reduce the valume and	toxicity of waste	generated to	the degree I h	ove determi	ned to be scand
practicable and that I have selected the p and the environment; OR, if I am a smal available to me and that I can afford:	practicable method of treatment, store quantity generator, I have made a	good faith effort to minir	nize my wasle g	energtion and	select the bes	t waste man	agament method
Printed (Typed Name	Signo	sture 7	/man	/		Mon	th Day
DAVID & BUE	ASTER	el A	AZ	Party Construction	Marx.	0	012
17. Transporter 1 Acknowledgement of Recei Printed/Typed Name	pt of Materials Signa	ature	v			Mon	ih Day
Allen (caar		- 1 Z	Supervised and the second s			Q	2112
18. Transporter 2 Acknowledgement of Recei Printed/Typed Name	pt of Materials Signa	ature				Mon	th Day
/		(A10	1	11. 11. j. j.			
		- 15					
19. Discrepancy Indication Space		690%					1. A. 1. A.
19. Discrepancy Indication Space							
		11 .1		- 10			
20. Facility Owner or Operator Certification	of receipt of hazardous materials cay		ept as noted in IN	am 19.		Mon	th Day
			ept as noted in IN	em 19.	1	Mon	th Day

UNIFORM HAZARDOUS		onifest Document I	No.	2, tage 1	information in the international internation	e shaded ar y Federal la
3. Generator's Name and Mailing Address	CIAI711700900116	87594	A Stole N	of 🦿	umber 👝 👝	A 0 7
Nevy Public Works Center					33	387
2730 McKean Street, San Diego, 4. Generator's Phone (			8 State G	IAIU 33	a n 1 2.	a za
4. Generator's Phone ( (619) 545-652 5. Transporter I Company Name	0 Aitm bitanifest Desk 6. US EPA ID Number		C. State T	onsporter's ID Rese		XCO
M P Environmental 7. Transporter 2 Company Name	CIAITIOIOI062 8. US EPA ID Number	4247		arter's Phone unsporter's ID/ <u>Rese</u>	(800) - rved-1	458-30
	<u> </u>	Carl and the state of the	and the second second	acility's ID		
<ol> <li>Designated Facility Name and Site Address Safety Kleen (Aragonite), Inc.</li> </ol>	10. US EPA ID Number			1111	1111	114
11600 North Aplus Road	UTD9811515	21177	H. Feellity	A Phone	(301)	323-81
Aragonite UT 84029 11. US DOT Description (including Proper Ship	pping Name, Hazard Class, and ID Number)	12. Cont No.	ainers Type	13. Total Quantity	14. Unit Wt/Vol I. V	Waste Nomb
Hazardous waste, solid, n.o.	s. (trichloroethene, perchloroethen				510	to
(lead), 9, NA3077, III	• 🔿	OPE	CM	0 90 00		"theos
b	3				Dsia	
				THE		A/Other
C.				1	Sto	1. S. S.
			1	1111		A/Olber
d.					S-o	4./Other
C. Additional Descriptions for Moterfals Listed -				ng Codes for Waste		
State 200, Invite: CA B2512 15. Special Handling Instructions and Addition Gaution: Wear appropriate prote	ctive clothing and respiratory protection w	hen handling.	Sec. 6 are - 19 - 23	15- BI	, 5329 ERG	#10
Site nick un address:	CY CONTACT: Chem -Tel, In			3-3324	C/20	
there is a second to be a second to	declare that the contents of this consignment are fully and	20190 accurately describ	ad about h	by proper shipping n	ame and are clas	sified, pack
	acts in proper condition for fronsport by highway accord	ng to opprication in		그 지수는 것 같아 봐.		100 B
<ol> <li>GENERATOR'S CERTIFICATION: 1 hereby marked, and labeled, and are in all respectively.</li> </ol>		مسأ لمعاداته بمؤ	sta conerci			eat to human
16. GENERATOR'S CERTIFICATION: I hereby marked, and labeled, and are in all respe- in the second statistic second statistics of the practicable and that I have selected the p and the environment; OR, if I am a small	fy that I have a program in place to reduce the volume	and toxicity of wa ently available to minimize my wast	iste genera me which e generatio	minimizes the prese on and select the be	nt and future thre it waste manage	ment method
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respective in the second secon</li></ol>	for the sector of the sector of the sector of	and toxicity of wa ently available to minimize my wash	iste genera me which e generatio	minimizes the prese in and select the ba	t waste monage Month	ment method
16. GENERATOR'S CERTIFICATION: I hereby marked, and labeled, and are in all respective in the second sec	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, I have made a good faith effort to Signature	and texicity of wa ently available to minimize my wath	iste genera me which e generatio	na in the cogress minimizes the prese in and select the be	it waste monage	cient method
16. GENERATOR'S CERTIFICATION: I hereby marked, and labeled, and are in all respective of the second second second second second second practicable and that I have selected the p and the environment; OR, if I am a small available to me and that I can afford. Printschilvped Name	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, I have made a good faith effort to Signature	and texicity of wa ently available to minimize my wast	iste genera me which e generatio	ind a fine cogrege minimizes the prese in and select the be	t waste monage Month	cient method
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respering to the selected the practicable and that I have selected the part the environment; OR, if I am a small available to me and that I can afford.</li> <li>Printschilvped Name Construction of Receip Printed/Typed Name Transporter 1 Acknowledgement of Receip Printed/Typed Name Transporter 2 Acknowledgement of Receip T8, T7, T7, T7, T7, T7, T7, T7, T7, T7, T7</li></ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, 4 have made a good faith effort to Signature of of Materials	and texicity of wa ently available to minimize my wath	iste genera me which a generation	ind a fine cogrege minimizes the prese in and select the be	Month	Day
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respectively marked, and labeled, and are in all respectively and the environment, or a selected the pand the environment; OR. If I am a small available to me and that I can afford.</li> <li>Printest Styped Name</li> <li>Transporter 1 Acknowledgement of Receip Pointed/Typed Name</li> <li>Transporter 2 Acknowledgement of Receip Printed/Typed Name</li> </ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, 4 have made a good faith effort to Signature of Materials Signature Signature	and texicity of wa ently available to minimize my wate	iste genera me which e generatio	ind the cogress the prese in initializes the prese in and select the be	$\begin{array}{c c} & \text{Month} \\ & \text{O} & \text{O} \\ & \text{Month} \\ & \text{O} & \text{O} \\ & \text{O} & \text{O} \\ \end{array}$	Day   -
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respering to the selected the practicable and that I have selected the part the environment; OR, if I am a small available to me and that I can afford.</li> <li>Printschilvped Name Construction of Receip Printed/Typed Name Transporter 1 Acknowledgement of Receip Printed/Typed Name Transporter 2 Acknowledgement of Receip T8, T7, T7, T7, T7, T7, T7, T7, T7, T7, T7</li></ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, 4 have made a good faith effort to Signature at of Materials Signature at of Materials Signature LAIC	and texicity of wa entry available to entry available to water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water water wat		ind the cogress the prese in initializes the prese in and select the be	t waste monoge Month O   C Month O   2.	Day Pay Day Day
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respectively marked, and labeled, and are in all respectively and the environment, or a selected the pand the environment; OR. If I am a small available to me and that I can afford.</li> <li>Printest Styped Name</li> <li>Transporter 1 Acknowledgement of Receip Pointed/Typed Name</li> <li>Transporter 2 Acknowledgement of Receip Printed/Typed Name</li> </ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, I have made a good faith effort to Signature at of Materials Signature Signature Signature	and toxicity of wa ently available to minimize my wath		and to the conjects the prese in minimizes the prese in and select the be	t waste monoge Month O   C Month O   2.	Day Pay Day Day Day
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respective practicoble and that I have selected the p and the environment; OR, if I am a small available to me and that I can offord.</li> <li>Printed/Typed Name</li> <li>Transporter 1 Acknowledgement of Receip Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip</li> <li>Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip</li> <li>Printed/Typed Name</li> <li>Discrepancy Indication Space</li> <li>20. Facility Owner or Operator Certification of the space of the spac</li></ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, 4 have made a good faith effort to staf Materials st of Materials st of Materials signature part of Materials signature part of Materials signature part of Materials			and the conjects the prese in initializes the prese in and select the be	t waste monoge Month O   C Month O   2.	Day Pay Day Day Day
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respective protricable and that I have selected the p and the environment; OR. If I am a small available to me and that I can afford.</li> <li>Printsd/Typed Name</li> <li>Transporter 1 Acknowledgement of Receip Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip</li> <li>Printed/Typed Name</li> <li>Discrepancy Indication Space</li> </ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, 4 have made a good faith effort to Signature at of Materials Signature bt of Materials Signature LANCE			and the contract the present in micro the present in the present in and select the best in and select the best in and select the best in a select the best i	t waste monoge Month O   C Month O   2.	Day Pay Day Day Day
<ol> <li>GENERATOR'S CERTIFICATION: Thereby marked, and labeled, and are in all respective practicoble and that I have selected the p and the environment; OR, if I am a small available to me and that I can offord.</li> <li>Printed/Typed Name</li> <li>Transporter 1 Acknowledgement of Receip Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip</li> <li>Printed/Typed Name</li> <li>Transporter 2/Acknowledgement of Receip</li> <li>Printed/Typed Name</li> <li>Discrepancy Indication Space</li> <li>20. Facility Owner or Operator Certification of the space of the spac</li></ol>	fy that I have a program in place to reduce the volume racticable method of treatment, storage, or disposal cur quantity generator, 4 have made a good faith effort to staf Materials st of Materials st of Materials signature part of Materials signature part of Materials signature part of Materials	encept as noted		and the cogress minimizes the prese on and select the be	t waste monoge Month O   C Month O   2.	Day Pay Day Day Day

UNIFORM HAZARDOUS WASTE MANIFEST	5		Manifest Document	No.	2, Nage T	is not required by	
3. Generator's Name and Mailing Add	TOSS CA71	700900010	; SY595	A. State M	anifest Document N		107
Navy Public Works Center				B. State Gr	enerator's ID	993	201
4.2730 McKean Street, San D	iego, CA 92136	Identifient Destr		ky	a Hd	6.641	14
5. Transporter 1 Company Name	Presidente - Presidente	Magalost PAID Number			ansporter's 'D' <u>(Ress</u> cler's Phone	uveo.1	
68 C Environmental 7. Transporter 2 Company Name		CATONOMO S	24247		onsporter's ID ( <u>Res</u> e		800 A
	· · · · · · · · · · · · · · · · · · ·				rtar's Phone		
9. Designated Facility Name and Site A		10. US EPA ID Number		G. State Fr	acility's ID	1111	11
Safety Kleen (Aragonite), In 11600 North Aplus Road	<b>c</b> .	realization of constra		H. Facility	s Phone		
Aragonito UT 84029 11. US DOT Description (including Prop	or Shipping Name, Hazara	100 8 der 10 10 . 1 W	52577 12. Con		13, Total Quantity	14. Unit Wt/Vol 1 W	aste Nor
Hazardous waste, solid			No.	Type	Quantity	State	Cave 1901
lead), 9, NA3077, II	,	entering provide south	00	CM	alahlah	YEPA	orthou
b. 27 11 610			<u>SOI</u>		<u>م الم الم الم من الم من الم</u>	3kana	8 D.
S. est a statistic statistic					1111	EPA	Other
a c. National de la constant			Cont advanta			Slate	
		1.1	A PIC		1111		'Other
d		2/13/0.	2-			Slote	
	ar ing a pagan basar a santan ba ga basar ng shina sa ing barar 19 ng santan santan sa sa sa sa sa sa sa	1					'Otber
<ol> <li>Additional Descriptions for Materials 11a, Protein 3AP 24(11277)</li> </ol>		the reconstant exclusion	priel contails	K, Pandlir a	ig Codes for Waste	. Listed Above	
Bend shotocopy of TSDF	signed mentions los	Steve Chondry, 3347 M	schelson Dr.	()	1 1	d	
Sate 200, Indue, CA 92612			- H	S		0. 	
15. Special Handling Instructions and A Ceution: Wear appropriate (	12 10 14 20 1- C. J. 20 240 10 10 10 10 10	and respiratory protectic	n when handling				al.
IN CASE OF EMERG	ENCY CONTA	CT: Chem -Tel	Inc. at 1-80	00-255	-3924	ERGi	4 /
A A A A A A A A A A A A A A A A A A A	North Island Site 5	the stand of the second s	and occurately descri	h M ohowe b	v proper shipping r	ame and are clossi	fied, pac
16. GENERATOR'S CERTIFICATION: 1 marked, and labeled, and are in a	Il respects in proper condit	tion for transport by highway ac	cording to opplicable i	mernanona	and nonenar gove		
	I certify that I have a pro d the practicable method o	grom in place to reduce the vol if treatment, storage, or disposa	ume and toxicity of we currently available to	aste generat me which r	ed to the degree I ninimizes the prese	have determined to of and future threa at waste managemu	be eco t to hum ent meth
If I am a large quantity generator, practicable and that I have selected		, I have made a good tonin entor	r to minimize my mys				Day
and the environment; OR, it I am a ovailable to me and that I can affa	rd.	and an alternation to be added	1 13		27620347338-25 X	Month	10
and the environment; OR, if I am a ovailable to me and that I can offor Printed/Typed Name	suessae	Signature	alt	to		Month	
and the environment; OR, it I am a ovailable to me and that I can offe	suessae	and an alternation to be added	10	5		Month D 2 Month	Day
and the environment; OR, it I am a ovailable to me and that I can affor Printed/Typed Name 17. Transporter 1 Acknowledgement of Printed/Typed Name	rd. <u>Receipt of Materials</u> + <u>1</u>	Signature	100	5		Month	/ 13
ord the environment; OR, it I am o ovailable to me and that I can offor Printed/Typed Name	rd. <u>Receipt of Materials</u> + <u>1</u>	Signature Signature Signature	1.5	<u> </u> 	1997 - 1997 1994 - 1997 1997 - 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	00	Day 13 Day
and the environment; OR, it 1 am a ovailable to me and that I can affect Printed/Typed Name 17. Transporter 1 Acknowledgement of Printed/Typed Name 18. Transporter 2 Acknowledgement of	rd. <u>Receipt of Materials</u> + <u>1</u>	Signature Signature	1.2.12	5	2000 - 200 	Month	/ 13
and the environment; OR, it 1 am a ovailable to me and that I can offer Printed/Typed Name 17. Transporter 1 Acknowledgement of Printed/Typed Name 18. Transporter 2 Acknowledgement of Printed/Typed Name	rd. <u>Receipt of Materials</u> + <u>1</u>	Signature Signature Signature	1	<u>&gt;</u> 	2007 (M) 2008 (M) 200	Month	/ 13
ord the environment; OR, it 1 am c ovailable to me and that I can offer Printed/Typed Name 17. Transporter 1 Acknowledgement of Printed/Typed Name 18. Transporter 2 Acknowledgement of Printed/Typed Name 19. Discreponcy Indication Space	rd. <u>Receipt of Materials</u> <u>+ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>	Signature Signature Signature CND L908	hifest except as noted i	n liem 19.	2000 2000 2000 2000 2000 2000	Month	/ 13
and the environment; OR, it 1 am a ovailable to me and that I can offer Printed/Typed Name 17. Transporter 1 Acknowledgement of Printed/Typed Name 18. Transporter 2 Acknowledgement of Printed/Typed Name	rd. <u>Receipt of Materials</u> <u>+ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</u>	Signature Signature Signature CND L908	nifest except as noted i	<u>n ltem 19.</u>		Month	/ 13
and the environment; OK, it 1 am a ovailable to me and that I can offer Printed/Typed Name 17. Transporter 1 Acknowledgement of Printed/Typed Name 18. Transporter 2 Acknowledgement of Printed/Typed Name 19. Discreponcy Indication Space	rd.	Signature Signature Signature (A10 (A10 (A10 (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A10) (A1	AL	n Item 19.		Moath C 2 Month	/ 13 Day

	UNIFORM HAZARDOUS WASTE MANIFEST	18.	fest Documen	l No.	2. Page 1		ation in the shaded are required by Federal low			
+	3. Generator's Name and Mailing Address	0 0 1 16 0	7596	A State	Vianifest Docum	ent Number	993875			
	Navy Public Works Center			5. State (	Senerator's ID		000010			
1	2730 McKean Street, San Diego, CA 92136 4. Generator's Phone ( 1619) 545-6520 Alth: Manifest Des	sk.	101				43348			
	5. Transporter 1 Company Name 6. US EPA ID	) Number		Second Sec	Fransporter s ID					
and the	M P Environmental C A T I 7. Transporter 2 Company Name 8. US EPA ID	0 0 0 6 2 4 Number	247	E. State 1	ransporter's ID		800) 458-30			
	9. Designated Facility Name and Site Address 10. US EPA ID	D Number		1 Alexander	Facility's ID					
State State	Safety Kless (Aragonite), Inc. 11600 Math Anius Road	9 8 1 5 6 2	21177	H. Fecifii	y's Phone		<u>         </u> 801) 323-81			
Ī	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Nu	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Type	13, Total Quantity	14, U Wt/V				
	Hazardous waste, solid, n.o.s. (trichloroethene, percilead), 9, NA3077, III	chloroethene,	0011	CM	0002	? Y	State EPA/OtherOB			
	b.		1 POIL	and the second	311	the second	Sfore UNION			
2							5PA/Other			
	c.		- Secondaria	-	and the second		Stote			
					111		EPA/Other			
	d.				NP-10-10-10-10-10-10-10-10-10-10-10-10-10-		State			
	a de la companya de La companya de la comp La companya de la com	a da anti-francia a su da Angela. A series política de Arcide Survivo (1996) A de actividades de Arcide Survivo (1996)		9 44 85241 853 6 Rely(158 85468 6 Rely(158 85468			/EPA/Other			
1000	<ol> <li>Additional Descriptions for Monorals Listed Above The Product Additional Conference and International Conference and Internationand Conference and I</li></ol>	) engivièrs and t	ofals.	K. Hand	ing Codes for V	/astes Listed b	Alcowe			
	Gend photocopy of TSDF signed mentions to, Sleve Charact Suite 270, Invice, CA 92512	et, 3347 Michai	kon Er.		$\underline{O}$					
				4	in grant i	a				
	<ol> <li>Special Handling Instructions and Additional Information Condition: Wear appropriate protective clothing and respirator</li> </ol>	y protection whe	n handling				dini			
	IN CASE OF EMERGENCY CONTACT: Che	em -Tel, inc	. at 1-8	00-25	5-3924	EN	26#171			
	Site pick up address. NAS North Island Site 5 /	7 14 8	1453	28	hu exerce shinn	ina nome do	d are classified, packe			
	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 occording to applicable international and national government regulations.									
1.861-2.885	If I am a large quantity generator, I certify that I have a program in place to a practicable and that I have selected the practicable method of treatment, storag and the environment; OR, if I am a small quantity generator, I have made a g available to me and that I can afford.	reduce the volume an ge, or disposal curren ood faith effort to min	d taxicity of v Ily available t Imize my wa	aste gener o me which te generati	ated to the degr minimizes the p on and select th	ee I have de resent and l e best waste	termined to be econor future threat to human a management method			
1.	Printed/Typed Nome Signatu	"all ~	1/2	d -			Manth Day			
ł	17. Transporter I Acknowledgement of Receipt of Materials						Month Day			
日本の	Printed/Typed Name Signal	Carris 2	1/10	1002			0212			
1997	18. Transporter & Acknowledgement of Receipt of Materials Printed/Typed Name Signate	ure VOIT	n an ann an a	an a			Month Day			
	the Area in the Area and a second	110	nazejan beneje Lita ana S							
10 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1		90 <sup>9</sup>								
1.1.1	20 Socility Owner or Operator Certification of receipt of hazardous materials cave	red by this manifest e	cept as noted	in Item 19.			Month Dox			
(	Printer/Typed Name PRANCE REVIENCE DO NOT W	Au	HIS LINE	Ľ	A	L	DIB			
	J	2	THV LINE							
							TRANSPORTER RE			

1	California-Environmental Protection Agency proved OMB Mo. 2000-0039 (Expires 9-30-99) rint or type. formidesigned for the onfelite (1/2-pitch) typewrifer. UNIFORM HAZARDOUS	No. 7 June Mar	nifest Documen	No.	2. Poge 1	Information in the	
	WASTE MANIFEST	alpholete g	7697		of		
1	3. Generator's Name and Mailing Address			A. Stote	Manifest Document N	<sup>humber</sup> 99.	3875
	Navy Public Works Center			B. State (	Semerator's ID		
	4. Generator's Phone   (C10) 545-0520     Attn. Manifest     5. Transporter 1 Company Name	t.Dask	$\langle \Sigma_{i} \rangle$	4	uality a	\$ \$ 4 4 3	244
	5. Transporter I Company Name 6. US	EPA ID Number		1.2.2.2.2.2	fransporter's 10 ( <u>Res</u> parter's Phane	irved.f	Contract of
	7. Transporter 2 Company Name 8, 05	TODOGZ	1247	1.2.1	ransparter's ID [Rese	(800)	158-502
	7. Indisperier 2 compony Nome			Construction of	orter's Phone	1 1 1	
	9. Designated Facility Name and Site Address 10. US	EPA ID Number	1.1.26	and the second second	Facility's ID		
	Safety Kleen (Aragonite), Inc.		・最大調	1	1111		111
	11600 North Aptus Road	ndalalala	2 4 7 7	ti. Facilit	Y Y FROME	18031	193.010
	Aragonite UT 04029 11. US DOT Description (including Proper Shipping Name, Hazard Class, and	Sec. 10 10 10 10 10 10	12. Con	rainers Type	. 13. Total Quantity	14. Unit Wt/Vol I. W	oste Number -
	Hazardous waste, solid, n.o.s. (trichloroethene,	perchloroethene	2 Contraction	112		Stab	Contraction of the second
3	tead), 9, NA3077, III		talaku	CM	10/01/2/2	Y EPA	Other DOOS 1
E			21-	1	goox o	Epp	28 0039
E R			0			EPA	/Other
A T	Сана (р. 1997) Спорта (р. 1997)		and the second	and the second		Stab	
2		and the second				EPA	Other
Ì	d d					State	5
		na sherar qiraye ka si farayet Mariye na qirayet ka si sherayet	in har e de dere pa Series verschigt og		ener versender Mangeligen	Section State EPA	Other
100	2. Additional Descriptions for Materia's Listed Above			K Handli	ng Cades for Waste	Listed Above	
	Tac Profile #AP2401477, self conformated with check			a.	-	ь.	
	Send photosopy of TSOF signed rearefest bit. Silder Ch Single 2135, insing: CA 92612	entres" 35er officien	ana ca	$z \in C$	\$1	d.	
	15. Special Handling Instructions and Additional Information						
	Caution: Wear appropriate protective clothing and respir					ERG	4 101
	IN CASE OF EMERGENCY CONTACT: 0	Appending and the spectra for the second	. at 1-81	Contract and the state	and the state of the state of the state	ERE'	-171
1	Site pick up address. IAS North Jeberd, Site 8 27 16. GENERATOR'S CERTIFICATION: Thereby declare that the contents of this of	#Bin 13 B	curately descri	hed above b		me and are closs	Hed, pocked,
	marked, and labeled, and are in all respects in proper condition for trans	part by highway according	to applicable i	nternotiono	l and national gover	nment regulations	-
	If I am a large quantity generator, I certify that I have a program in plac practicable and that I have selected the practicable method of treatment, and the environment, OR, if I am a small quantity generator, I have mad	e to reduce the volume and storage, or disposal curren	d toxicity of wo	ste genero me which	ted to the degree 1 h minimizes the preser	ave determined to t and future threa	be economica t to humon hea
	and the environment; OR, if I am a small quantity generator, I have mad available to me and that I can afford.	e a good faith effort to min	imize my wost	e generatio	n and select the bes	t woste monogein	snt method that
•	[2] 약은 바람이 같은 가슴을 걸고 있는 것은 것은 것이 가슴이 있는 것이 가슴을 다. 가슴 것이 가슴을 다. 가슴 다. 가는 다. 가는 다. 가슴 다. 가는 다. 가는 다. 가슴 다. 가는 가 가 가 다. 가는 다. 가슴 다. 가슴 다. 가는 다. 가는 다. 가슴 다. 가는 다. 가 가 가 다. 가 가 가 다. 가 가 가 다. 가 가 가 가 가	gnature	· F	K		Month	Day
Į.	17. Transporter 1 Acknowledgement of Receipt of Materials	gue 1	1 Anna	-C		10101	1 102 103
k N S	Printed/Typed Name	anatura 12		-		Month	Day
P O R	18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name	gnoture				Month	Day
E		unic					
F	19. Discrepancy Indication Space	1,90%		÷:		1.1	
Ċ							
5	20. Facility Owner or Operator Certification of receipt of hazardous materials	covored by this manifest ex	cept as noted in	n Item 19.			
ŀ.		gnature / /	/	7		Month	Day
	KILONDA LAWAMA	YA	$ \rightarrow $	$\checkmark$	t	OP	1 BC
	TOVA LOWARD	MURLE RECOM/ T	HISCINE.	-		and the second sec	
-	DO NOT	VIKINE BELOW I		:			- 24 문화
	D22A (1/99) D0-22	WRITE BELOW I			~	een: TRANSP	ORTER RETAIN

Appendix F Boring Logs

Descrip					STEM (USCS) (ASTM D2488-8 Soils (Visual-Manual Procedure)		COLOR															
MAJ	R DIVISIONS		GROUP	GRAPHI	GROUP NAME	1	MUNSELL CHART															
		CLEAN	GW		Well-graded gravel Well-graded gravel with sand	1 L	ex: BROWN (10YR 5/3)															
		GRAVELS	GP	3 * * * * 7 * * * *	Poorly graded gravel Poorly graded gravel with sand	v	VATER LEVEL SYMBOLS															
			GW-GM		Well—graded gravel with silt Well—graded gravel with silt and sand	_																
	GRAVELS		GM-GC		Well-graded gravel with clay Well-graded gravel with clay and sand	<u> </u>	IDENTIFIED GROUNDWATER DEPTH DURING DRILLING															
		GRAVELS WITH	GP-GM		Poorly graded gravel with silt Poorly graded gravel with silt and sand		STATIC GROUNDWATER LEVEL															
		FINES	GP-GC		Poorly graded gravel with clay Poorly graded gravel with clay and sand		STATIC GROONDWATER LEVEL															
COARSE-			GM		Sity gravel Sity gravel with sand	G	RAIN-SIZE DESCRIPTIONS															
GRAINED SOILS			GC	HH.	Clayey gravel Clayey gravel with sand	<u> </u>	(PER ASTM D2488-90)															
<50% Passing #200 Sieve		CLEAN	SW		: Well-graded sand ; Well-graded sand with gravel																	
#200 51646		SANDS	SP		Poorly graded sand Poorly graded sand with gravel	BOULDER	S-Particles of rock that will not pass a 12-inch square opening															
			SW-SM		Well-graded sand with silt Well-graded sand with silt and gravel		-Particles of rock that will pass															
	SANDS		sw-sc	<u> </u>	Well-graded sand with clay Well-graded sand with clay and gravel		12-inch square opening and c be retained on a 3-inch sieve															
		SANDS WITH	SP-SM		Poorly graded sand with silt Poorly graded sand with silt and gravel		be retained on a 3-inch sieve															
		FINES																SP-SC		े Poorly graded sand with clay S Poorly graded sand with clay and gravel	GRAVEL	<ul> <li>Particles of rock that will pass</li> <li>3-inch sieve and can be retain</li> </ul>
								Silty sand Silty sand with gravel		on a No. 4 (4.75 mm) sieve.												
							Clayey sand Clayey sand with gravel	SAND	-Particles of rock that will pass No. 4 sieve and can be retain													
			CL		Lean clay Lean clay with sand or gravel Sandy lean clay Sandy lean clay with gravel Gravelly lean clay Gravelly lean clay with sand		No. 4 sieve and can be retain on a No. 200 (75 µm) sieve.															
FINE-GRAINED					Silt Silt with sand or gravel Sandy silt Sandy silt with gravel Gravelly silt Gravelly silt with sand	SILT	-Soil passing a No. 200 sieve t															
Solls	SILTS CLAY				Fat clay · Fat clay with sand or gravel Sandy fat clay · Sandy fat clay with gravel Gravelly fat clay · Gravelly fat clay with sand		is nonplastic or very slightly plastic and that exhibits little of no strength when air dry.															
#200 Sieve					Eastic silt - Elostic silt with sand or gravel Sandy elastic silt - Sandy elastic silt with gravel Gravelly elastic silt - Gravelly elastic silt with sand	CLAY																
			OL/OH		I Organic soil · Organic soil with sand or gravel     Sandy organic soil · Sandy organic soil with gravel     Gravelly organic soil · Gravelly organic soil with sand		-Soil passing a No. 200 sieve t can be made to exhibit plastic within a range of water conten															

ADAPTED FROM: 1990 ANNUAL BOOK OF ASTM STANDARDS, SECTION 4, VOLUME 04.08

#### DENSITY/CONSISTENCY CLASSIFICATION

DENSITY OF COARSE-GRAINED SOILS

DENSITY

LOOSE MEDIUM DENSE

DENSE

VERY DENSE

BLOWS PER FOOT\*

0-4 5-10

11-30

31-50 OVER 50

#### CONSISTENCY OF FINE-GRAINED SOILS

CONS	SISTENCY	BLOWS PER FOOT*
VERY SOFT	-Thumb penetrates > 1 in.	<4
SOFT	-Thumb penetrates = 1 in.	4-8
FIRM	-Thumb penetrates >.25in.	9-15
HARD	—Thumbnail indents soil	15—30
VERY HARD	-Thumbnail won't indent soil	>30

\*Blows with a 140-pound hammer falling 30 inches required to drive the designated sampler 12 inches into undisturbed materials.

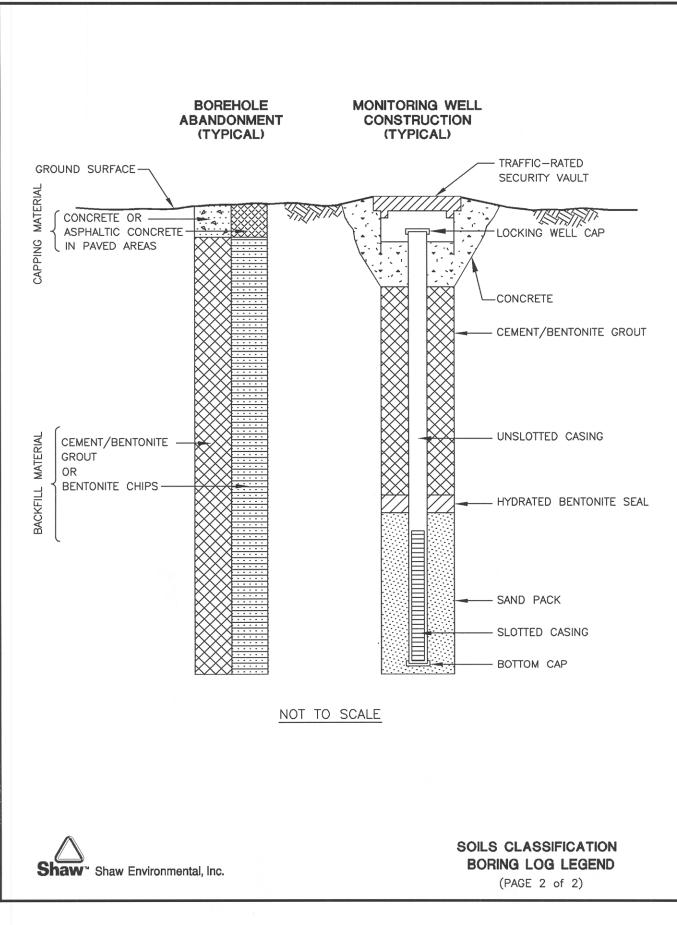
#### CONTACTS

CONTACT (Observed) APPROXIMATE (<u>+</u>2 Feet) INFERRED (±5 Feet)

SOILS CLASSIFICATION BORING LOG LEGEND (PAGE 1 of 2)

Shaw " Shaw Environmental, Inc.

AUTOCAD FILE NAME: B18725-Boring Log Legend p2of2.dwg





# Soil Boring S5-B-01B

Page: 1 of 1

Site Name IR Site 5 - Unit 2	Date Boring Began <u>6/27/02</u> Finished <u>6/27/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project Name	Surface Elevation12.53 feet Mean Lower Low Water
Project Number <u>818725</u>	Coordinates N <u>1832462.61 feet</u> E <u>6269947.92 feet</u>
Drilling CompanyBC <sup>2</sup> Environmental Corp	

	Depth (feet)	(mqq) CIq	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
_	- 0						
	- 5		818725-10	09			Sand, black (2.5/0), poorly graded, ~4-5% silt, strong solvent type odor, oil
-	- 10	115	818725-1 <sup>2</sup> 60%			SP	sheen when water added to soil, 7.9 to 8.0 ~ 0.1 foot layer of fat clay. Total boring depth is 10 feet below grade
-	- 15 -						Drilling Details:
5/7/03							<ol> <li>Borehole drilled with direct push drill rig.</li> <li>Soil samples collected using a 4-foot long piston sampler to collect soil from discrete intervals.</li> </ol>
J SITE-5.GDT	- 20 -						<ol> <li>Boreholes abandoned by filling void with grannular bentonite that was then hydrated.</li> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> </ol>
SOIL BORING LOG Rev: 5/7/03 MONITORING WELLS.GPJ SITE-5.GDT 5/7/03	- 25 -						
77/03 MONITOF							
IG LOG Rev: 5	- 30						
SOIL BORIN	- 35 -						



### Soil Boring S5-B-02B

Page: 1 of 1

Site NameIR Site 5 - Unit 2	Date Boring Began6/27/02 Finished6/27/02
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
ClientUSN SWDIV	Log Checked By <i>Richard Wong</i>
Project Name	Surface Elevation 12.04 feet Mean Lower Low Water
Project Number <u>818725</u>	Coordinates N <u>1832421.15 feet</u> E <u>6269890.94 feet</u>
Drilling CompanyBC <sup>2</sup> Environmental Corp	

	Depth (feet)	(mqq) CIG	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 0	33.5 882	85%	1		SP	Sand, olive gray (5Y 5/2), poorly graded, very fine grained, dry, becomes moist at ~ 1.5 feet. Sand, dark grayish brown (2.5Y 4/2), poorly graded, very fine grained, moist,
	- 5 - - 10	286	45% 818725-112 75% 818725-113 20%			SP SM	becoming very moist to wet, at 4.4 feet, solvent type odor and oil sheen when water added to soil. Sand with silt, black (2.5Y /1), poorly graded, very fine grained, wet ~7-8% silt, solvent type odor.
	- 15 —		50%			СН	Fat clay, very dark gray (3/0), very soft, very moist, organic black color.         Total boring depth is 13 feet below grade         Drilling Details:
2) SITE-5.GDT 5/7/03	- 20 -						<ol> <li>Borehole drilled with direct push drill rig.</li> <li>Soil samples collected using a 4-foot long piston sampler to collect soil from discrete intervals.</li> <li>Boreholes abandoned by filling void with grannular bentonite that was then hydrated.</li> </ol>
SOIL BORING LOG Rev: 5/7/03 MONITORING WELLS.GPJ SITE-5.GDT	- 25 —						<ol> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> </ol>
RING LOG Rev: 5/7/03	- 30 —						
SOIL BO	- 35 —						



## Soil Boring S5-B-03B

Page: 1 of 1

Site Name IR Site 5 - Unit 2	Date Boring Began <u>6/27/02</u> Finished <u>6/27/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By <i>Richard Wong</i>
Project NameCTO-027	Surface Elevation 11.56 feet Mean Lower Low Water
Project Number818725	Coordinates N <u>1832400.75 feet</u> E <u>6269824.43 feet</u>
Drilling CompanyBC <sup>2</sup> Environmental Corp	

	Depth (feet)	(mqq) CIP	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 0						
	- 5		818725-10			СН	Fat Clay, very dark gray (3/0), very soft, very moist, organic black color. Sand, dark gray (5Y 4/1), poorly graded, very fine grained, wet, < 1% silt.
	- 10 -	25.8	75%			SP	Sand, dark gray (5Y 4/1), poorly graded, very fine grained, wet, < 1% slit.
	- 15 -						Drilling Details:
T 5/7/03							<ol> <li>Borehole drilled with direct push drill rig.</li> <li>Soil samples collected using a 4-foot long piston sampler to collect soil from discrete intervals.</li> <li>Boreholes chandened by filling usid with groupular bontonits that was then</li> </ol>
SPJ SITE-5.GD	- 20 -						<ol> <li>Boreholes abandoned by filling void with grannular bentonite that was then hydrated.</li> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> </ol>
ORING WELLS.G	- 25 -						
SOIL BORING LOG Rev: 5/7/03 MONITORING WELLS.GPJ SITE-5.GDT 5/7/03	- 30 -						
RING LOG Rev							
SOIL BO	- 35 -						



### Soil Boring <u>S5-B-04B</u>

Page: 1 of 1

Site Name IR Site 5 - Unit 2	Date Boring Began6/27/02 Finished6/27/02				
Location	Logged By/Field Geologist Brian C. White				
ClientUSN SWDIV	Log Checked By <i>Richard Wong</i>				
Project NameCTO-027	Surface Elevation				
Project Number 818725	Coordinates N <u>1832391.88 feet</u> E <u>6269934.31 feet</u>				
Drilling Company					

	Depth (feet)	(mqq) DIG	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 0						
	- 5 -						
	- 10	504 607	818725-10 90%	05		SP CH	Sand, very dark gray (2.5Y 3/1), poorly graded, very fine grained, wet, ~ 1-2% silt, solvent type odor, ~ 10% golden biotite. Fat clay, very dark gray (3/0), very soft, very moist, organic black color. Total boring depth is 9.5 feet below grade
	- 15						Drilling Details:
5/7/03							<ol> <li>Borehole drilled with direct push drill rig.</li> <li>Soil samples collected using a 4-foot long piston sampler to collect soil from discrete intervals.</li> <li>Boreholes abandoned by filling void with grannular bentonite that was then</li> </ol>
PJ SITE-5.GDT	- 20 -						<ul> <li>4. Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> </ul>
MONITORING WELLS.G	- 25 -						
: 5/7/03	- 30 -						
SOIL BORING LOG Rev	- 35 -						



## Soil Boring S5-B-05B

Page: 1 of 1

Site Name IR Site 5 - Unit 2	Date Boring Began6/27/02 Finished6/27/02		
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White		
ClientUSN SWDIV	Log Checked By Richard Wong		
Project Name <u>CTO-027</u>	Surface Elevation 11.21 feet Mean Lower Low Water		
Project Number <u>818725</u>	Coordinates N <u>1832366.08 feet</u> E <u>6269789.93 feet</u>		
Drilling CompanyBC <sup>2</sup> Environmental Corp			

	Depth (feet)	(mqq) CIP	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
-	- 0 -						
-	- 5 -						
-	- 10	20 20	818725-10 77%	07		SP CH SP	Sand, very dark gray (5Y 3/1), poorly graded, very fine grained, wet, ~ 4-5% silt, ~ 5% golden biotite. Fat clay, very dark gray (2.5Y 3/1), very soft, very moist, interbedded with above sand in 0.4 foot layers.
-	- 15						Total boring depth is 10 feet below grade Drilling Details:
T 5/7/03							<ol> <li>Borehole drilled with direct push drill rig.</li> <li>Soil samples collected using a 4-foot long piston sampler to collect soil from discrete intervals.</li> <li>Boreholes abandoned by filling void with grannular bentonite that was then</li> </ol>
LS.GPJ SITE-5.GD	- 20						<ul> <li>4. Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> </ul>
MONITORING WEL	- 25 -						
SOIL BORING LOG Rev: 5/7/03 MONITORING WELLS.GPJ SITE-5.GDT	- 30 -						
SOIL BORING	- 35						



# Soil Boring S5-B-06B

Page: 1 of 1

Site Name IR Site 5 - Unit 2	Date Boring Began <u>6/27/02</u> Finished <u>6/27/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project Name	Surface Elevation
Project Number <u>818725</u>	Coordinates N_1832342.56 feet E_6269856.28 feet
Drilling CompanyBC <sup>2</sup> Environmental Corp	

	Depth (feet)	(mqq) CIG	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 0						
	- 5 -					СН	Fat clay, very dark gray (3/0), very soft, very moist, organic black color.
	- 10	121 128	818725-10 60%	6		SP SM	Sand with silt, very dark gray (2.5Y 3/1), poorly graded, wet, ~ 7 to 8% silt, ~ 8-10% golden biotite, weak solvent type odor. Total boring depth is 10 feet below grade
							Drilling Details:
	- 15						1. Borehole drilled with direct push drill rig.
5/7/03							2. Soil samples collected using a 4-foot long piston sampler to collect soil from discrete intervals.
E-5.GDT	- 20 -						3. Boreholes abandoned by filling void with grannular bentonite that was then hydrated.
SOIL BORING LOG Rev: 5/7/03 MONITORING WELLS.GPJ SITE-5.GDT							<ol> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> </ol>
AONITORING V	- 25						
Rev: 5/7/03 N	- 30						
BORING LOG	25						
Soll	- 35						



# Monitoring Well <u>S5-MW-31</u>

Page: 1 of 2

Site Name IR Site 5 - Unit 2	Date Boring Began5/1/02 Finished5/1/02
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project NameCTO-027	Top of Casing Elevation13.10 feet Mean Lower Low Water
Project Number818725	Surface Elevation
Drilling CompanyBC <sup>2</sup> Environmental Corp.	Coordinates N_1832278.51 feet E_6269928.57 feet

Depth (feet)	Well Construction	PID (mdd)	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 0 - - 5 - - 10 - - 10 - - 15 - - 20 - - 25 -  - 30 -       			100% 100% 80% 53%			SP CH CH	<ul> <li>Sand, very dark grayish brown (2.5Y 3/2), loose, poorly graded, very fine grained, dry, ~1% silt, becomes moist at 1 foot.</li> <li>Sand, dark gray (5Y 4/1), loose, poorly graded, very fine grained, very moist, &lt;1% silt, weak solvent type odor, becomes wet at ~ 4.3 feet with heavy staining and odor.</li> <li>Sand, olive gray (5Y 4/2), loose, poorly graded, very fine grained, wet, &lt;1% silt.</li> <li>Fat clay, very dark gray (3/0), very soft, very, moist, no odor - organic black color or stained (?).</li> <li>Sand, olive gray (5Y 4/2), loose, poorly graded, very fine grained, wet, &lt;1% silt.</li> <li>Fat clay, very dark gray (3/0), very soft, very moist, no odor - organic black color or stained (?).</li> <li>Sand, olive gray (5Y 4/2), loose, poorly graded, very fine grained, wet, &lt;1% silt.</li> <li>Fat clay, very dark gray (3/0), very soft, very moist, no odor - organic black color or stained (?).</li> <li>Total boring depth is 11.5 feet below grade</li> <li>Drilling Details: <ol> <li>Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (0.D.) hollow stem auger.</li> <li>Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[1.D.]).</li> <li>Odor and staining detected at 4.3 feet below ground surface (bgs).</li> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> <li>Soil Color Chart: 1994 Edition.</li> </ol> </li> <li>Well Construction: <ol> <li>Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>Well Casing: 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.3 to 7.9 feet bgs.</li> <li>Well Casing: 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound bags or approximately 3 cubic feet). <i>Continued Next Page</i></li> </ol></li></ul>



# Monitoring Well <u>S5-MW-31</u>

Depth (feet)	Well Construction	(mqq) CIIA	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 35 -							<i>Continued</i> 5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bags or approximately 0.5 cubic feet).
-	_						approximately 0.5 cubic feet). 6. Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).
- 40 -							
-	_						
- 45 -							
-	_						
- 50							
-	_						
- 55							
-	_						
- 60		~					
_	_						
g – 65							
T 4/18/03							
CORP.GD							
11 SITE-5 Rev: 4/13/03 MONITORING WELLS.GPJ IT_CORP.GDT 4/18/03							
: 4/13/03 I	-						
08 - Rev							

# **IT CORPORATION**

# Monitoring Well <u>S5-MW-32</u>

Page: 1 of 2

Site Name IR Site 5 - Unit 2	Date Boring Began <u>5/1/02</u> Finished <u>5/1/02</u>
Location	Logged By/Field Geologist Brian C. White
ClientUSN SWDIV	Log Checked By Richard Wong
Project NameCTO-027	Top of Casing Elevation 13.12 feet Mean Lower Low Water
Project Number <u>818725</u>	Surface Elevation
Drilling CompanyBC <sup>2</sup> Environmental Corp.	Coordinates N <u>1832309.09 feet</u> E <u>6269853.57 feet</u>

Depth (feet)	Well Construction	(mqq) DIA	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
SITE-5 Rev: 4/13/03 MONITORING WELLS. Fail 10 - 0 - 10 - 10 - 10 - 10 - 10 - 10 -		7 1.6 44.3	100% 100% 53% 50%			SP HARAE	<ul> <li>Sand, dark grayish brown (2.5Y 4/2), loose, poorly graded, very fine grained, dry, becomes moist at 1 foot, &lt;1% silt.</li> <li>Sand, dark gray (5Y 4/1), loose, poorly graded, very fine grained, very moist, becomes wet at ~ 4.6 feet, &lt;1% silt, slight staining and solvent type odor in wet soil.</li> <li>Fat clay, very dark gray (3/0), very soft, very moist, clay appears to be stained or has black organic color.</li> <li>Sand, dark gray (5Y 4/1), loose, poorly graded, very fined grained, wet, &lt;1% silt.</li> <li>Fat clay, very dark gray (3/0), very soft, very moist, clay appears to be stained or has black organic color.</li> <li>Sand, with silt, dark gray (2.5 Y 4/1), loose, poorly graded, very fine grained, wet, ~10-12% silt, ~20% golden biotite.</li> <li>Fat clay, very dark gray (3/0), very soft, very moist, clay appears to be stained or has black organic color.</li> <li>Total depth is 11.5 feet below grade.</li> <li>Drilling Details:</li> <li>Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (0.D.) hollow stem auger.</li> <li>Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diamter[1.D.]).</li> <li>Odor and staining detected at 4.6 feet below ground surface (bgs).</li> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> <li>Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell Soil Color Chart: 1994 Edition.</li> <li>Well Construction:</li> <li>Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>Well Casing: 4-inch I.D. schedule 40 PVC, flush thread.</li> </ul>
S F							Continued Next Page



# Monitoring Well <u>S5-MW-32</u>

	Depth (feet)	Well Construction	(mqq) DIA	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
_	35 —							<i>Continued</i> 4. Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound bags or approximately 3 cubic feet).
-	_							bags or approximately 3 cubic feet). 5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
-	40 —							<ol> <li>6. Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).</li> </ol>
	_							
-	45 —							
-	_							
-	50 —							
-	_							
-	55 —							
-	_							
-	60 —							
_	_							
/03	65 —							
GDT 4/18,	-							
IT_CORP.	70 —							
I ILLS.GPJ	_	-						
DRING WE	75 —							
3 MONITC	-							
ev: 4/13/0	80							
IT SITE-5 Rev: 4/13/03 MONITORING WELLS.GPJ IT_CORP.GDT 4/18/03	80 —							

# **IT CORPORATION**

# Monitoring Well <u>S5-MW-33</u>

Page: 1 of 2

Site NameIR Site 5 - Unit 2	Date Boring Began <u>5/1/02</u> Finished <u>5/1/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project Name <u>CTO-027</u>	Top of Casing Elevation 14.75 feet Mean Lower Low Water
Project Number818725	Surface Elevation
Drilling CompanyBC <sup>2</sup> Environmental Corp.	Coordinates N 1832377.35 feet E 6269967.29 feet

	Depth (feet)	Well Construction	(mqq) CIP	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
-	- 0 - 5 ¥		0	100%			SP	Sand, dark grayish brown (2.5Y 4/2), loose, poorly graded, very fine grained, dry, <1% silt, becomes moist at 1 foot and very moist at 4 feet. Sand, dark gray (5Y 4/1), loose, poorly graded, very fine grained, wet, weak solvent type odor, <1% silt. Sand, dark greenish gray (3/3/1), loose, poorly graded, very fine
-	- 10 — - - 15 —		0	40% 45% 100%	09 44 55 34 5 5		SP SM CH	Sand with silt, dark gray (2.5Y 4/1), loose, poorly graded, very fine grained, wet, ~10-12% silt, ~20% golden biotite. Fat clay, black (2.5/0), very soft, very moist, clay appears stained black or has black oranic color Total depth is 11.5 feet below grade. Drilling Details:
RP.GDT 4/18/03	- 20 -							<ol> <li>Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (O.D.) hollow stem auger.</li> <li>Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[I.D.]).</li> <li>Odor and staining detected at 6.8 feet below ground surface (bgs).</li> <li>Photo ionization detector (PID) readings were taken from herefore a standard action of the samples of the approximate 10 minute</li> </ol>
4/13/03 MONITORING WELLS.GPJ IT_CORP.GDT	- 25							<ul> <li>headspace of bagged soil samples after an approximate 10-minute waiting period.</li> <li>5. Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell Soil Color Chart: 1994 Edition.</li> <li><u>Well Construction:</u></li> <li>1. Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush</li> </ul>
IT SITE-5 Rev: 4/13/03 MONI	- 30 - 							<ul> <li>thread.</li> <li>2. Well Screen: 5-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 4.0 to 8.6 feet bgs.</li> <li>3. Well Casing: 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>4. Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound <i>Continued Next Page</i>)</li> </ul>



# Monitoring Well <u>S5-MW-33</u>

i d	Lepth (feet)	Well Construction	(mqq)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
-	35 —							Continued bags or approximately 3 cubic feet).
-	_							5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
	40 —	•						6. Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).
-	_							
_	45 —	-						
-	_	<b>1</b>						
-	50 —	-						
-	_	-						
-	55 —	-						
-	_	-						
-	60 —	_						
	-	-						
8/03	65 —	-						
P.GDT 4/1	-	-						
IT COR	70 —	-						
ELLS.GP.	-	_						
	75 —	_						
3/03 MONI	_	-						
TE-5 Rev: 4/13	65 —  70 —  75 — - 80 —							

# **IT CORPORATION**

# Monitoring Well <u>S5-MW-34</u>

Page: 1 of 2

Site NameIR Site 5 - Unit 2	Date Boring Began <u>5/1/02</u> Finished <u>5/1/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
ClientUSN SWDIV	Log Checked By Richard Wong
Project Name <u>CTO-027</u>	Top of Casing Elevation13.18 feet Mean Lower Low Water
Project Number818725	Surface Elevation
Drilling CompanyBC <sup>2</sup> Environmental Corp	Coordinates N <u>1832349.95 feet</u> E <u>6269895.22 feet</u>

Depth (feet)	Well Construction	(mqq) CIq	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
(jeej) ↓13(2) MONITORING WELLS. CORP.GDT 4/18(03) 1 20 1 20 1 20 1 20 1 20 1 20 1 20 1 20		0 27.6 3.5 0.6	100% 86% 100% 66%		Graphic	보면다 영 USCS Classificati	Geologic Descriptions are Based on the
11 SITE-5 Rev:							slot, flush thread, slotted interval at 3.4 to 8.0 feet bgs. 3. Well Casing: 4-inch I.D. schedule 40 PVC, flush thread. <i>Continued Next Page</i>



# Monitoring Well <u>S5-MW-34</u>

-	Depth (feet)	Well Construction	(mqq)	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	35 —							Continued
								<ol> <li>Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound bags or approximately 3 cubic feet).</li> </ol>
							-	5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
-	40 —							<ol><li>Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).</li></ol>
-	_							
	45 —							
	43							
F	_							
_	50 -		-					
	_							
	55 —							
-	_							
	60 —							
/18/03	65 —							
GDT 4	_							
TCORF	70 —							
S.GPJ 1								
I MELL	_							
IT SITE-5 Rev: 4/13/03 MONITORING WELLS GPJ IT_CORP.GDT 4/18/03	75 —							
3/03 MC	-							
Rev: 4/1;	80 —							
SITE-5 F								
Ĕ								



# Mointoring Well <u>S5-MW-35</u>

Page: 1 of 2

Site Name IR Site 5 - Unit 2	Date Boring Began <u>5/2/02</u> Finished <u>5/2/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project NameCTO-027	Top of Casing Elevation13.82 feet Mean Lower Low Water
Project Number <u>818725</u>	Surface Elevation
Drilling CompanyBC <sup>2</sup> Environmental Corp.	Coordinates N <u>1832368.5 feet</u> E <u>6269747.85 feet</u>

Depth (feet)	Well Construction	(mqq) CIP	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 0 - - 5  - 10 -  - 15 - 		(iudd) 42.4 33.3 4.3	LI 00% 60% 66% 100% 40% 53%	ののののチャッチャッチャッチャット アメーズ X X X X X X X X X X X X X X X X X X X	Graphic	ୁ କୁମ୍ପ କୁ ରୁ କୁ	Description         Geologic Descriptions are Based on the Unified Soil Classification System (USCS)         Sand, very dark grayish brown (10YR 3/2), loose, poorly graded, very fine grained, dry, becomes moist at 1.5 feet and very moist at 3 feet, <1% silt.
MONITORING WELLS.GPJ IT_CORP.GDT 							5. Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell Soil Color Chart: 1994 Edition.
Rev: 4/13/03							<u>Well Construction:</u> 1. Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread. 2. Well Screen: 5-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.45 to 8.05 feet bgs.
- 35 -							3. Well Casing: 4-inch I.D. schedule 40 PVC, flush thread. Continued Next Page



# Mointoring Well <u>S5-MW-35</u>

	Depth (feet)	Well Construction	(mqq)	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	35 —							Continued
	00							4. Filter Pack: Lonestar 2/12 grade silica sand (3.75 each 100 pound bags or approximately 3.75 cubic feet).
-	_							5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
_	40 —							6. Surface Completion: Concrete (5 each 90 pound bags or
								approximately 3 cubic feet).
F	_							
-	45 —							
	_							
-	50 —	-						
	_							
┢	55 —							
-	_			v				
┢	60 —	-						
-	_	<b>1</b>						
7/03	65 —	-						
GDT 5,	_							
IT SITE-5 Rev: 4/13/03 MONITORING WELLS.GPJ IT_CORP.GDT 5/7/03	70							
TI L45	70 —							
VELLS.(	-	-						
RING V	- 75 —							
MONITO	, 0							
13/03	-	-						
Rev: 4/	80 —	-						
site-5								
SF[								



## Monitoring Well <u>S5-MW-36</u>

Page: 1 of 2

Site Name IR Site 5 - Unit 2	Date Boring Began <u>5/3/02</u> Finished <u>5/3/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project Name <u>CTO-027</u>	Top of Casing Elevation12.74 feet Mean Lower Low Water
Project Number818725	Surface Elevation13.19 feet Mean Lower Low Water
Drilling CompanyBC <sup>2</sup> Environmental Corp.	Coordinates N_1832523.54 feet E_6269983.66 feet

Depth (feet)	Well Construction	(mqq) CIP	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 0 - - 5  - 10 - - 15 -  		CId 0 0	100% 67% 47% 93%	<u>аъыюдолодолодоно</u> Вlow Count Recovery	Graphic Log	P     P     P     USCS       P     P     P     P	Geologic Descriptions are Based on the Unified Soil Classification System (USCS) Grass sod/organic soil. Sand with silt, dark yellowish brown (10 YR 4/4), loose, poorly graded, very fine grained, moist, ~10-12% silt, landfill cover material (?). Silty sand, black (2.5/0), loose to medium dense, very fine grained, moist, Unit - 1 landfill debris, soil is stained or burnt black, metal, glass, and wood debris, no odor. Sand, dark gray (5Y 4/1), loose, poorly graded, very fine grained, very moist, <1% silt, wet at ~ 5.1 feet. Fat clay, interbedded 0.05 foot thick layers of very dark gray (3/0) and dark olive gray (5Y 3/2) color clay, very soft, very moist, 0.1 feet layer of silt at top of clay layer. Total depth is 11.5 feet below grade. Drilling Details: 1. Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (O.D.) hollow stem auger. 2. Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[I.D.]). 3. Staining detected at 3.0 feet below ground surface (bgs). 4. Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period. 5. Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell
Rev: 4113/03 MONITORING WELLS.GPJ IT_CORP.GDT 							<ul> <li>Soil Color Chart: 1994 Edition.</li> <li><u>Well Construction:</u></li> <li>1. Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>2. Well Screen: 5-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.55 to 8.05 feet bgs.</li> <li>3. Well Casing: 4-inch I.D. schedule 40 PVC, flush thread.</li> </ul>
- 35 –	~						4. Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound Continued Next Page



# Monitoring Well <u>S5-MW-36</u>

Depth (feet)	Well	(mqq)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 35							<i>Continued</i> bags or approximately 3 cubic feet). 5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
- 40	_						6. Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).
- 45	_						
- 50	_						
- 55	_						
- 60	_						
- 65	_						
TCORPGDT	_				ø		
	_						
IT SITE-5 Rev. 4/13/03 MONITORING WELLS GPJ IT CORP GDT 5//03 2.2.2.1.1.2.2.2.2.1.1.2.2.2.2.1.1.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2	_						



## Monitoring Well <u>S5-MW-37</u>

Page: 1 of 2

Site Name <i>IR Site 5 - Unit 2</i>	Date Boring Began <u>5/3/02</u> Finished <u>5/3/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
ClientUSN SWDIV	Log Checked By Richard Wong
Project NameCTO-027	Top of Casing Elevation 12.02 feet Mean Lower Low Water
Project Number818725	Surface Elevation12.32 feet Mean Lower Low Water
Drilling CompanyBC <sup>2</sup> Environmental Corp	Coordinates N 1832486.27 feet E 6269911.30 feet

Depth (feet)	Well Construction	(mqq) CIA	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
_ 0 _		0					Cand your dark gravish brown (2.5)(20) lease poorly graded your
		0	100%				Sand, very dark grayish brown (2.5Y 3/2), loose, poorly graded, very fine grained, dry, becomes moist at 1 foot, ~2% silt. Sand, olive brown (2.5Y 4/3), loose, poorly graded, very fine grained, moist, <1% silt.
_ 5 ¥		352	47%	467456		SP	Sand, black (2.5/0), loose, poorly graded, very moist, becomes wet at 5 feet, soil is very stained and has strong solvent type odor.
- 10 -			90% 100%	0 3 3 4 6 5 5 5 5 5 5 5 5 5 5 5 5 5			Fat clay, very dark gray (3/0), very soft, very moist, stained or
			60%	334		СН	organic black color, drive sample suggested sand at this interval but <u>soil at end of augger indicated clay to total depth.</u>
							Drilling Details: 1. Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (O.D.) hollow stem auger.
- 20 - 20 -							<ol> <li>Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[I.D.]).</li> <li>Odor and staining detected at 5.0 feet below ground surface (bgs).</li> </ol>
							<ol> <li>Photoionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> <li>Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell</li> </ol>
NITORING WEL	•						Soil Color Chart: 1994 Edition. <u>Well Construction:</u>
4/13/03							<ol> <li>Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>Well Screen: 5-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.4 to 8.0 feet bgs.</li> </ol>
- 32 -							3. Well Casing: 4-inch I.D. schedule 40 PVC, flush thread. Continued Next Page



# Monitoring Well <u>S5-MW-37</u>

	Depth (feet)	Well Construction	(mqq)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 35 -							Continued
								4. Filter Pack: Lonestar 2/12 grade silica sand (3.75 each 100 pound bags or approximately 3.75 cubic feet).
								5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
	- 40							<ol><li>6. Surface Completion: Cconcrete (5 each 90 pound bags or approximately 3 cubic feet).</li></ol>
	- 45							
	40							
-	- 50 -	-						
		-						
	- 55 -							
		-						
	- 60 -	_						
		-						
9/03	- 65 -	-						
DT 5/1		-						
CORP.G	70							
SPJ IT	- 70 -							
WELLS.(		-						
ORING \	- 75 -	-						
IT SITE-5 Rev: 4/13/03 MONITORING WELLS.GPJ IT_CORP.GDT 5/19/03								
4/13/03								
-5 Rev:	- 80 -	-						
IT SITE-								

# T CORPORATION

# Monitoring Well <u>S5-MW-38</u>

Page: 1 of 2

Site NameIR Site 5 - Unit 2	Date Boring Began <u>5/2/02</u> Finished <u>5/2/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project NameCTO-027	Top of Casing Elevation14.86 feet Mean Lower Low Water
Project Number818725	Surface Elevation
Drilling CompanyBC <sup>2</sup> Environmental Corp.	Coordinates N <u>1832452.35 feet</u> E <u>6269799.01 feet</u>

Depth (feet)	Well Construction	(mqq) CIP	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 0 - - 5 ↓ 100 MUILORING WEITS CORP. 100 - - 10 - - 10 - - 10 - - 20 - - 25 -    		0	00%			CH CH	Unified Soil Classification System (USCS) Sand with silt, dark brown (7.5 R 3/2), loose, poorly graded, fine to very fine grained, dry to slightly moist, ~8-12% silt, material appears to be imported road base with scattered subrounded gravel. Sand, dark grayish brown (2.5Y 4/2), loose, poorly graded, very fine grained, moist, 1-2% silt, becomes very moist at 3 feet and wet at ~4.5 feet. Sand, very dark gray (3/0), loose, poorly graded, very fine grained, wet, soil is stained and has weak degraded solvent type odor, <1% silt. At 7.5 feet the silt percent increases to 2-4%. Fat clay, very dark gray (3/0), very soft, very moist, stained or oganic black color. Total depth is 11.5 feet below grade. Drilling Details: 1. Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (O.D.) hollow stem auger. 2. Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[I.D.]). 3. Odor and staining detected at 4.5 feet below ground surface (bgs). 4. Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period. 5. Soil color Chart: 1994 Edition. Well Construction: 1. Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread. 2. Well Screen: 5-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.4 to 8.0 feet bgs. 3. Well Casing: 4-inch I.D. schedule 40 PVC, flush thread. 4. Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound
- 35 –							Continued Next Page



# Monitoring Well <u>S5-MW-38</u>

	Depth (feet)	Well Construction	(mqq)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 35							Continued bags or approximately 3 cubic feet).
-	-							5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
	- 40 —							6. Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).
-	_	-						
-	- 45	-						
-	_							
	- 50							
	- 55 -	-						
		_						
	60							
	- 60							
		-						
4/18/03	- 65 -	-						
RP.GDT		-						
	- 70							
MELLS.G								
NITORING	- 65 - - 70 - - 75 - - 80 -	-						
13/03 MO		-						
Rev: 4/	- 80 -	-						
IT SITE-5								



# Monitoring Well <u>S5-MW-39</u>

Page: 1 of 2

Site NameIR Site 5 - Unit 2	Date Boring Began <u>5/2/02</u> Finished <u>5/2/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
ClientUSN SWDIV	Log Checked By <i>Richard Wong</i>
Project Name CTO-027	Top of Casing Elevation
Project Number818725	Surface Elevation
Drilling Company	Coordinates N 1832525.74 feet E 6269873.60 feet

Depth (feet)	Well Construction	(mqq) CIP	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 0 -		0					Grass sod/organic soil. Grass at surface. Sand, dark grayish brown (2.5Y 4/2), loose, poorly graded, very fine grained, dry, becomes moist at 1 foot and
 - 5 -		210 8.1	100% 100% 100%	3473454		SP	wet at ~4 feet, < 1% silt. Sand, black (2.5Y 2.5/1), loose, poorly graded, very fine grained, wet, stained and has solvent type odor, less than 1% silt. At 6 foot very black stained layer that is 0.1 feet thick. Sand, dark gray (5Y 4/1), loose, poorly graded, very fine grained, wet, stained and has solvent type odor, < 1% silt.
- 10 -			70% 33%	445 334		сн	Fat clay, black (2.5/0), very soft, very moist, stained or organic black color Total depth is 11.5 feet below grade.
- 15 -							<u>Drilling Details:</u> 1. Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (O.D.) hollow stem auger.
- 20 - 20 -							<ol> <li>Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[I.D.]).</li> <li>Odor and staining detected at 4.0 feet below ground surface (bgs).</li> </ol>
NG WELLS GPU IT CORP.GDT							<ul> <li>4. Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> <li>5. Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell Soil Color Chart: 1994 Edition.</li> </ul>
MONITORI - 30 -							<u>Well Construction:</u> 1. Sediment trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread.
17 SITE-5 Rev: 4/13/03 52 1							<ol> <li>Well Screen: 5-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.3 to 7.8 feet bgs.</li> <li>Well Casing: 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>Filter Pack: Lonestar 2/12 grade silica sand (3 each 100 pound <i>Continued Next Page</i>)</li> </ol>



# Monitoring Well <u>S5-MW-39</u>

Depth (feet)	Well Construction	(mqq)	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 35 -	-						<i>Continued</i> bags or approximately 4 cubic feet).
	-						5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately 0.5 cubic feet).
- 40 -	-						6. Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).
- 45 -	-						
	-						
	-						
- 60 -	-						
	-						
	T T T T T T T T T T T T T T T T T T T						
	-						
IT SITE-5 Rev. 4/13/03 MONITORING WELLS.GPJ IT CORP.GDT 5///03	-						



# Monitoring Well <u>S5-MW-40</u>

Page: 1 of 2

Site NameIR Site 5 - Unit 2	Date Boring Began <u>5/2/02</u> Finished <u>5/2/02</u>
Location NAVAL AIR STATION NORTH ISLAND, CA.	Logged By/Field Geologist Brian C. White
Client USN SWDIV	Log Checked By Richard Wong
Project Name <u>CTO-027</u>	Top of Casing Elevation 14.18 feet Mean Lower Low Water
Project Number <u>818725</u>	Surface Elevation12.18 feet Mean Lower Low Water
Drilling Company	Coordinates N <u>1832489.88 feet</u> E <u>6269748.78 feet</u>

Depth	Well	(mqq) CII	<u>Sample ID</u> % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
- 0 - 5		2.5	100%			SP	Sand, dark grayish brown (2.5Y 4/2) loose, poorly graded, very fine grained, dry, < 1% silt, becomes moist at 2 feet and very moist at 3 feet. Sand, dark gray (2.5Y 4/1), loose, poorly graded, very fine grained, moist, < 1% silt, becomes wet at ~4 feet and has solvent type odor. From 5 feet to 6.5 feet sand is stained, very dark gray (3/0) and has
- - 10		5.4	80% 67% 55% 100%	46457 556868115		SP SM	Sand with silt, very dark grayish brown, (2.5Y 3/2), loose, poorly graded, very fine grained, wet, ~10-12% silt, scattered layers and stringers of stained soil that is black.
- 15			73% 90%	97 10 57 95		sм	Silty sand, dark olive gray (5Y 3/2), loose, poorly graded, very fine grained, wet, ~15-20% silt. Total depth is 15.5 feet below grade.
CORP.GDT 5/6/03	)						<ul> <li><u>Drilling Details:</u></li> <li>1. Borehole drilled with CME-75 drill rig equipped with 10-inch outside diamter (O.D.) hollow stem auger.</li> <li>2. Core samples were recovered in a 2.0-foot long drive sampler (1.25-inch inside diameter[I.D.]).</li> </ul>
	-						<ol> <li>Odor and staining detected at 5.0 feet below ground surface (bgs).</li> <li>Photo ionization detector (PID) readings were taken from headspace of bagged soil samples after an approximate 10-minute waiting period.</li> <li>Soil color clasification (i.e. olive yellow (5Y 6/3)) are from Munsell</li> </ol>
Rev: 4/13/03 MONITORI	)						<ul> <li>Soil Color Chart: 1994 Edition.</li> <li><u>Well Construction:</u></li> <li>1. Sedimant trap: 0.5-foot long, 4-inch I.D. schedule 40 PVC, flush thread.</li> </ul>
17 SITE-5 R	5						2. Well Screen: 10-foot long, 4-inch I.D. schedule 40 PVC, 0.01-inch slot, flush thread, slotted interval at 3.3 to 12.9 feet bgs. <i>Continued Next Page</i>



# Monitoring Well <u>S5-MW-40</u>

	Depth (feet)	Well Construction	(mqq) CIA	Sample ID % Recovery	Blow Count Recovery	Graphic Log	USCS Classification	Description Geologic Descriptions are Based on the Unified Soil Classification System (USCS)
	- 35 —							Continued
								<ol> <li>Well Casing: 4-inch I.D. schedule 40 PVC, flush thread.</li> <li>Filter Pack: Lonestar 2/12 grade silica sand (4.5 each 100 pound</li> </ol>
								bags or approximately 4.5 cubic feet). 5. Bentonite Seal: 3/8 inch diamter pellets (0.5 bag or approximately
-	- 40 —							0.5 cubic feet).
	_							<ol><li>Surface Completion: Concrete (5 each 90 pound bags or approximately 3 cubic feet).</li></ol>
	- 45 —							
╞	_							
	- 50 —							
╞	_							
	- 55 -							
	_							
-	- 60 —							
	_							
6/03	- 65 —							
GDT 5/	_							
CORP.	- 70 —					-		
GPJ IT	70							
MELLS.(	_							
IT SITE-5 Rev: 4/13/03 MONITORING WELLS.GPJ IT CORP.GDT 5/6/03	- 75							
MONIT								
4/13/03	_							
Rev:	- 80 -	4						
SITE-5								

## Appendix G Full-Scale Chemical Oxidation Reports

- (1) Fenton's Reagent Bench Test Report (June 28, 2002)
- (2) KMnO<sub>4</sub> Bench Test Report (November 21, 2002)
- (3) EBSI Groundwater Treatment Summary Report (June 2003)

G-1 Fenton's Reagent Bench Test Report (June 28, 2002)



## Chemical Oxidation Bench-Scale Evaluation Prepared For EBSI, Inc. Naval Air Station North Island, Site 5 June 28, 2002

## **Test Protocol**

A bench-scale test was designed to evaluate the efficiency of chemical oxidation of chlorinated volatile organic compounds (CVOC), particularly dichloroethylene (DCE) and vinyl chloride (VC), from soils and groundwater. Three treatment applications were compared:

Hydrogen Peroxide

Hydrogen Peroxide/COAM\*

Hydrogen Peroxide/COAM/Iron

These applications were selected based upon site groundwater data which indicate that (1) the site exhibits a significant buffering capacity; and, (2) naturally-occurring dissolved iron may support Fenton-like chemical reactions.

Contaminated soil from the site was homogenized and distributed to sealed test jars. Impacted soil at the water table and clay from the confining layer from an area near MW-37 was used in the tests. Groundwater from the site was added to each jar to give a final slurry composition of approximately 30% solids by weight. The sealed jars were equipped with sampling ports to minimize volatile loss of CVOC associated with sampling. Each jar had a tedlar bag connected to one of the sampling ports to collect offgas from the chemical oxidation.

Monitoring of chemical oxidation of CVOC was accomplished through periodic sampling and analysis of liquid samples from each of the test jars. It was assumed that the concentration of CVOC bound to the soil was proportional to the concentration of CVOC in the liquid. Thus the percentage of CVOC oxidized in the system could be approximated based solely upon changes in liquid-phase CVOC concentrations. Since the naturally-occurring organic carbon in the soils is also oxidized, the CVOC adsorption capacity is reduced. This approach likely gives a conservative (low) estimate of destruction percentage.

<sup>\*</sup> COAM – Complex Organic Acids Mixture

All results for CVOC oxidation were calculated relative to concentrations in a control slurry which received no chemical oxidants.

### **Initial Characterization**

Each of the test jars was sampled prior to the addition of any chemical oxidants to estimate the concentrations of CVOC in the slurry. Results from these analyses are presented in Table 1 as "treatment 0".

### **Results & Discussion**

The tests were conducted with the addition of 10% hydrogen peroxide in the test slurries. After two treatments with the hydrogen peroxide, all three treatment applications efficiently removed the VC and DCE from the slurries. The Peroxide, COAM, and COAM/Iron treatments removed 94%, 94% and 95% of the VC, respectively. The Peroxide, COAM, and COAM/Iron treatments removed 94%, 92% and 99% of the DCE, respectively. The results are presented in Figures 1 and 2.

Considering the relatively small difference in removal efficiency between the three treatments, the simplest treatment (hydrogen peroxide alone) is recommended. There appears to be enough naturally-occurring iron at the site to support Fenton-like chemical reactions without the addition of catalyst.

Analytical data for all of the samples are presented in Table 1.

Aqueous Sample Analysis		Concentra	tion (ug/L)
Sample	Treatment	DCE	VC
Control	0	1180	5880
	1	1190	5850
	2	1170	5800
Peroxide	0	1070	5970
	1	208	772
	2	72	334
COAM	0	1020	6320
	1	132	554
	2	93	346
COAM/Iron	0	1080	6430
	1	0	604
	2	16	294

## Table 1. Raw Data From Chemical Oxidation Test

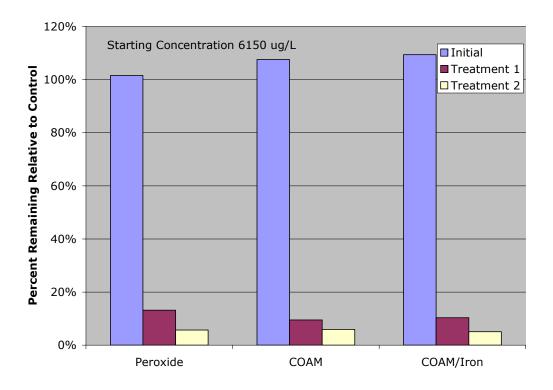


Figure 1. Vinyl Chloride Chemical Oxidation.

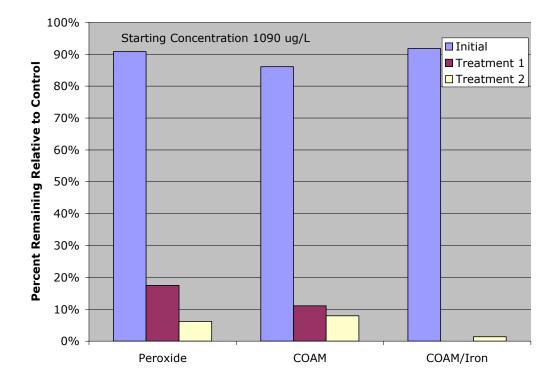


Figure 2. DCE Chemical Oxidation.

G-2 KMnO<sub>4</sub> Bench Test Report (November 21, 2002)



## Chemical Oxidation Bench-Scale Evaluation Prepared For EBSI, Inc. Naval Air Station North Island, Site 5 November 21, 2002

### **Test Protocol**

A bench-scale test was designed to evaluate the efficiency of using permanganate for the chemical oxidation of chlorinated volatile organic compounds (CVOC), particularly dichloroethylene (DCE) and vinyl chloride (VC), from soils and groundwater.

Contaminated soil from the site was homogenized and distributed to sealed test jars. Impacted soil at the water table and clay from the confining layer from an area near MW-37 was used in the tests. Groundwater from the site was added to each jar to give a final slurry composition of approximately 40% solids by weight. The sealed jars were equipped with sampling ports to minimize volatile loss of CVOC associated with sampling.

Monitoring of chemical oxidation of CVOC was accomplished through periodic sampling and analysis of liquid samples from each of the test jars. It was assumed that the concentration of CVOC bound to the soil was proportional to the concentration of CVOC in the liquid. Thus the percentage of CVOC oxidized in the system could be approximated based solely upon changes in liquid-phase CVOC concentrations. Since the naturally-occurring organic carbon in the soils is also oxidized, the CVOC adsorption capacity is reduced. This approach likely gives a conservative (low) estimate of destruction percentage.

All results for CVOC oxidation were calculated relative to concentrations in a control slurry which received no chemical oxidants.

#### **Initial Characterization**

Each of the test jars was sampled prior to the addition of any chemical oxidants to estimate the concentrations of CVOC in the slurry. Results from these analyses are presented in Table 1 as "treatment 0".

#### **Results & Discussion**

The tests were conducted with the addition of 1% potassium permanganate in the test slurries for the first two treatments, and 0.25% for the second two treatments. The permanganate concentration in the later treatments was reduced to increase the efficiency of permanganate

consumption. Following the treatments with potassium permanganate, the VC concentration was reduced by 96% relative to the control, and the DCE concentration was reduced by 94% relative to the control. The permanganate consumption in the test was significantly higher than the theoretical requirement for complete oxidation of the CVOC, indicating that the natural oxidant demand (NOD) of the soil will make a significant contribution to the overall oxidant requirements.

It is important to note, however, that since the site has been previously treated with Fenton's Reagent, a significant fraction of the NOD may have already been oxidized. Since virgin soils from the site were used for this bench-scale permanganate test, the *in-situ* permanganate demand may be somewhat lower than that observed during these bench-scale tests.

Analytical data for all of the samples are presented in Table 1.

Aqueous Sample Analysis		Concentra	tion (ug/L)
Sample	Treatment	DCE	VC
Control	0	20,700	4,670
	1	17,900	3,380
	2	14,200	3,130
	3	11,500	1,680
	4	12,800	1,610
Permanganate	0	21,100	5,580
	1	4,950	1,120
	2	874	196
	3	783	131
	4	758	58

#### Table 1. Raw Data From Permanganate Test

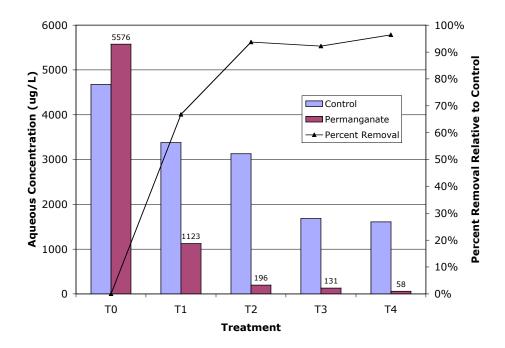


Figure 1. Vinyl Chloride Chemical Oxidation.

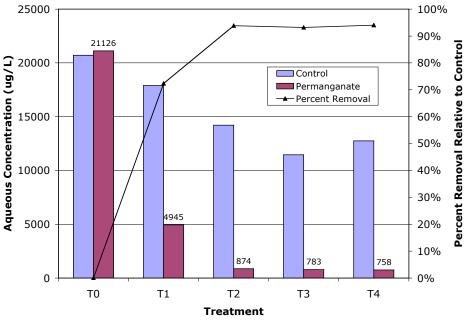


Figure 2. DCE Chemical Oxidation.

G-3 EBSI Groundwater Treatment Summary Report (June 2003)

## **PROJECT SUMMARY**

## IR Site 5 - Unit 2, Naval Air Station North Island San Diego, California

Prepared for:

Shaw Environmental Inc. 1230 Columbia Street, Suite 1200 San Diego, California 92101

Prepared by:

Environmental Business Solutions International, Inc. 1127 Crossing Way Wayne, New Jersey 07470

June 2003

## Table of Contents

1.0 In	troductio	)n					
1.1	Project	t Objectives	1				
1.2	Project	Project Personal1					
1.3		formation					
2.0 A	oproach	for VOC reduction	3				
2.1	In-situ	chemical oxidation	3				
	2.1.1	Emerging technology	3				
	2.1.2	Advantages of the On-Contact Process®	3				
2.2		ary of bench test results					
		Test Protocol					
	2.2.2	Initial Characterization.					
	2.2.3	Results and Discussion	5				
3.0	Genera	Il Procedures Used	7				
4.0 Se	quence	of Events	9				
4.1	Introdu	iction	9				
	4.1.1	Hydraulic Fracturing Summary	9				
	4.1.2	Phase I – Hydrogen Peroxide	12				
	4.1.3	Phase II - Iron + Hydrogen Peroxide	12				
	4.1.4	Phase III – Potassium Permanganate	13				
	4.1.5	Phase IV Potassium Permanganate	.13				
5.0 Da	ata Anal <u>y</u>	ysis and Conclusions	.15				
5.1	Backgi	round	.15				
5.2		ne Sampling					
5.3		n Sampling					
5.4	Post Tr	reatment Sampling	16				
6.0 Co	onclusion	ns	.17				

## List of Figures

Figure 1. Vinyl Chloride Chemical Oxidation.	6
Figure 2. DCE Chemical Oxidation	6
Figure 3. Site Map Including Injection Well Locations	
Figure 4. S5-PIW Well Construction Diagram	19
Figure 5. S5-VIW Well Construction Diagram	20
Figure 6. Supplemental S5-VIW Well Construction Diagram	21

## List of Tables

Table 1. Raw Data from Chemical Oxidation Test	5
Table 2. Monitoring Plan	8
Table 3. Fracture Description	11
Table 4. Phase I, Round 1 Injection Quantities	22
Table 5. Phase I - Monitoring Schedule	22
Table 6. Phase I, Round 2 Injection Quantities	23
Table 7. Phase II - Monitoring Schedule	23
Table 8. Phase II Injection Quantities	24
Table 9. Phase III Potassium Permanganate Injection Quantities	24
Table 10. Phase IV Potassium Permanganate Injection Quantities	
Table 11. Phase IV Potassium Permanganate Migration Status	

## LIST OF ACRONYMS AND ABBREVIATIONS

EBSI	Environmental Business Solutions International, Inc.
NAS	Naval Air Station
IR	Installation Restoration
Shaw	Shaw Environmental Inc.
CVOC	chlorinated volatile organic compound
bgs	below ground surface
RAW	Remedial Action Workplan
DCE	dichloroethylene
VC	vinyl chloride
COAM	complex organic acids mixture
μg/L	micrograms per liter
MW	monitor well
PIW	propagation injection point
VIW	vertical injection point
CPVC	chemical polyvinyl chloride
HIW	horizontal injection well
PVC	polyvinyl chloride
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound

## 1.0 <u>Introduction</u>

Environmental Business Solutions International, Inc. (EBSI) conducted in-situ chemical oxidation using the On-Contact Process at Naval Air Station (NAS) North Island Installation Restoration (IR) Site 5 - Unit 2. The work was conducted under Shaw Environmental Inc. (Shaw) Purchase Order number 189758.

In summary, EBSI installed twenty nine total injection points and conducted four treatment events (Phase I through Phase IV) on the site from June 2002 to February 2003. Injection points were a combination of propagation injection points (PIW), horizontal injection wells (HIW) and vertical injection wells (VIW). Chemical treatment included both hydrogen peroxide and potassium permanganate injections. Shaw collected all baseline and post-treatment samples.

## 1.1 **Project Objectives**

The purpose of this project was to achieve 90% chlorinated volatile organic compounds (CVOCs) concentration reduction in selected groundwater samples. This was to be accomplished using combined injection techniques and sequences of chemical oxidation injected to degrade target compounds.

## 1.2 Project Personal

The EBSI professional staff includes research chemists, scientists, engineers and geologists who are all experienced in conducting in-situ chemical oxidation projects.

<u>Dr. Bill Mahaffey</u> – An industry recognized leader in bio-treatment and chemical oxidation treatment, Dr. Mahaffey specifies the chemical formulations to be used in the varies stages of EBSI cleanup projects. From surfactants and oxidizing formulations to biodegradation augmentation treatments, Dr. Mahaffey has conducted bench and field scale treatments using a variety of techniques.

<u>Dr. Bill Slack</u> – Recognized as an expert in hydraulic fracturing and the physical delivery of subsurface chemical treatments, Dr. Slack has experience with geologic conditions across North America. The wide area coverage achieved in the On-Contact Process® stems from Dr. Slack's delivery method developments.

<u>Ron Adams, P.E.</u> – A chemical engineer with more than a dozen years in designing and implementing remedial actions at contaminated sites, Mr. Adams has managed over 65 in-situ chemical oxidation projects using the CleanOX Process. Mr. Adams designed and was the technical lead for the pilot testing conducted at Site 5 - Unit 2 using the CleanOX Process.

<u>Tony Scittorale</u> – Mr. Scittorale manages the day to day activities of the EBSI field crews and has become expert in resolving logistic and technical issues that arise during any field remediation effort. Mr. Scittorale has over 7 years of experience in implementing site solutions - from treatment system construction to operation and maintenance.

<u>Ron Resseguie</u> - Mr. Resseguie was an EBSI Field Manager from August 2001 to through December 2002. Beginning in June 2002, Mr. Resseguie managed the field operations of the On-Contact Process at Site 5 - Unit 2.

<u>Brian Kennedy</u> – Mr. Kennedy has been a field geologist and technician with EBSI since August of 2001. Throughout the duration of the Site 5 – Unit 2 project, Mr. Kennedy acted as an onsite technician for the application of the On-Contact Process. In January 2003, Mr. Kennedy took over the Field Management responsibilities at Site 5 – Unit 2.

<u>Donald McFadden</u> – Mr. McFadden has been a field technician with EBSI since December 2002. Mr. McFadden worked at Site 5 – Unit 2 during the final injection phase IV. During this time he was responsible for applying the On-Contact Process.

## **1.3** Site Information

The former liquid waste disposal pits of Site 5 - Unit 2 were used for the disposal of petroleum products and chlorinated solvents and their respective containers by the Navy. Most solid materials have been removed from the subsurface, however some drums were discovered during excavation of the non-saturated source area. This site is no longer used for hazardous material disposal. The subsurface at Site 5 - Unit 2 is composed of fill material to approximately ten feet below ground surface (bgs). The fill was apparently dredged from the nearby San Diego Bay and is mostly very fine sands.

The following describes baseline conditions.

- Site 5 Unit 1 is currently covered by the NAS North Island base golf course. Impacts at Site 5 - Units 1 and 2 are the result of previous military landfill activities in the area. Site 5 - Unit 2 geology consists of fine to medium sands to about 10 to 15 feet bgs, where silty clay (Spanish Bight) is encountered. Depth to the water table is approximately 5 feet bgs. The vertical interval of treatment is from 5 to 10-15 feet bgs. Great care was taken during drilling to ensure the integrity of Spanish Bight layer was not compromised, potentially spread contaminants;
- Site investigations have determined that chlorinated CVOCs were found at elevated levels in shallow groundwater at the site. Shaw has identified an approximately 40,000 square foot area shown in the MIP data maps provided in the bid package;
- Shaw intends to excavate the source area soils as shown as the purple zone of the MIP data maps. Location and dimensions are described in the Remedial Action Workplan (RAW) addendum.

## 2.0 Approach for VOC reduction

## 2.1 In situ chemical oxidation

EBSI's technical approach to the project was based on our site understanding and on our assessment of the CleanOX pilot testing results. Our approach differed in several respects:

## 2.1.1 Emerging technology

EBSI proposed using propagations (described below) which provide a preferential pathway for rapid, radial distribution of On-Contact chemistry. While site soils are sandy (as is the propagant material), the propagation is formed from well-sorted, 'clean' sand (among other, proprietary ingredients) which provides more uniform flow paths for reagents. Once reagents are distributed radially, they need only to migrate vertically a few feet in order to contact contaminants.

The On-Contact Process® is a proprietary in-situ technology which involves the application of physical and chemical methods to degrade organic contamination in soil and groundwater into harmless compounds like carbon dioxide and water. Specifically, the On-Contact Process® consists of the following four stages: 1) a physical method to enhance the disbursement of reagents into the contaminated area, 2) a chemical method involving the injection of a proprietary biodegradable conditioning mixture to enhance the availability of target contaminants, 3) a chemical method involving the injection of a proprietary to degrade target contaminants, and 4) a chemical method to complete the degradation process and restore subsurface conditions, if necessary. These stages were applied through the injection points discussed above with exception to Stage 4.

## 2.1.2 Advantages of the On-Contact Process®

EBSI applied this technical approach because: (1) traditional approaches would require 45 injection wells be installed whereas the On-Contact Process® approach requires roughly one-half to two-thirds that amount. Well methods require that reagents flow through the tortuous path of native soil mixtures both radially and vertically in order to contact contaminants. Injection point installation is included in our lump sum costs; (2) the high degree of contaminant dissolution that occurs during the initial Fenton-like treatments accomplished using small volumes of less costly conditioners; (3) the oxidation stage can be accomplished at neutral pH conditions, eliminating the need for excessive amounts of mineral acids; and, (4) the On-Contact Process® oxidation formulations are more efficient therefore less oxidizer is required to achieve similar goals.

A single propagation has the ability to do the work of 5 to 35 vertical injection wells (depending on site soils and treatment interval) at a fraction of the cost. Reagents were injected into the propagation area using fixed manifolds on the surface. Propagations are

filled like bladders at low pressure and are used to feed reagents into subsurface environments.

## 2.2 <u>Summary of bench test results</u>

## 2.2.1 Test Protocol

A bench-scale test was designed to evaluate the efficiency of chemical oxidation of CVOCs, particularly dichloroethylene (DCE) and vinyl chloride (VC), from soils and groundwater. Three treatment applications were compared:

Hydrogen Peroxide

Hydrogen Peroxide/COAM (complex organic acids mixture)

Hydrogen Peroxide/COAM/Iron

These applications were selected based upon site groundwater data which indicated that (1) the site exhibits a significant buffering capacity; and, (2) naturally-occurring dissolved iron may support Fenton-like chemical reactions.

Contaminated soil from the site was homogenized and distributed to sealed test jars. Impacted soil at the water table and clay from the confining layer from an area near monitor well (MW) 37 was used in the tests. Groundwater from the site was added to each jar to give a final slurry composition of approximately 30% solids by weight. The sealed jars were equipped with sampling ports to minimize volatile loss of CVOC associated with sampling. Each jar had a tedlar bag connected to one of the sampling ports to collect offgas from the chemical oxidation reaction.

Monitoring of chemical oxidation of CVOC was accomplished through periodic sampling and analysis of liquid samples from each of the test jars. It was assumed that the concentration of CVOC bound to the soil was proportional to the concentration of CVOC in the liquid. Thus the percentage of CVOC oxidized in the system could be approximated based solely upon changes in liquid-phase CVOC concentrations. Since the naturally-occurring organic carbon in the soils is also oxidized, the CVOC adsorption capacity is reduced. This approach likely gives a conservative (low) estimate of destruction percentage.

All results for CVOC oxidation were calculated relative to concentrations in a control slurry which received no chemical oxidants.

## 2.2.2 Initial Characterization

Each of the test jars was sampled prior to the addition of any chemical oxidants to estimate the concentrations of CVOC in the slurry. Results from these analyses are presented in Table 1 as "treatment 0".

## 2.2.3 Results & Discussion

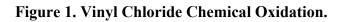
The tests were conducted with the addition of 10% hydrogen peroxide in the test slurries. After two treatments with the hydrogen peroxide, all three treatment applications efficiently removed the VC and DCE from the slurries. The hydrogen peroxide, hydrogen peroxide/COAM, and hydrogen peroxide/COAM/iron treatments removed 94%, 94% and 95% of the VC, respectively; and removed 94%, 92% and 99% of the DCE, respectively. The results are presented in Figures 1 and 2.

Considering the relatively small difference in removal efficiency between the three treatments, the simplest treatment (hydrogen peroxide alone) is recommended. There appears to be enough naturally-occurring iron at the site to support Fenton-like chemical reactions without the addition of catalyst.

Analytical data for all bench test samples are presented in Table 1.

Aqueous	Sample	Concentration	n (ug/L)
<u>Analysis</u>			
Sample	Treatment	DCE	VC
Control	0	1180	5880
	1	1190	5850
	2	1170	5800
Peroxide	0	1070	5970
	1	208	772
	2	72	334
COAM	0	1020	6320
	1	132	554
	2	93	346
COAM/Iron	0	1080	6430
	1	0	604
	2	16	294

#### Table 1. Raw Data From Chemical Oxidation Test



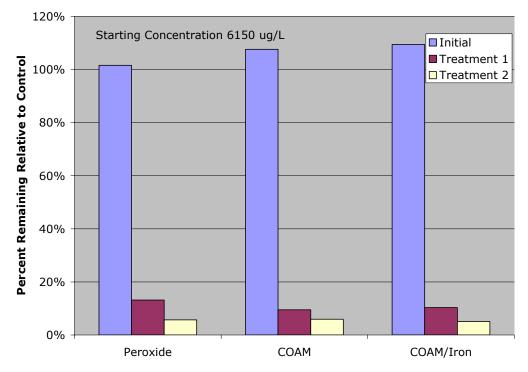
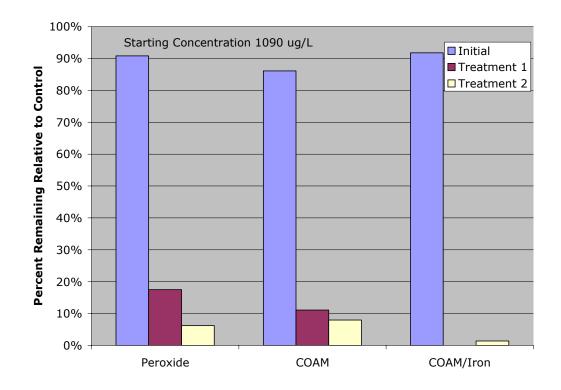


Figure 2. DCE Chemical Oxidation.



6

## 3.0 <u>General Procedures Used</u>

EBSI installed a combination of vertical injection points and propagation injection points within the impacted area to create a conduit for chemical oxidizing reagents. Following installation of the delivery network, reagents associated with the On-Contact® Process were infiltrated into the subsurface.

**Physical Stage** –The On-Contact® process at Site 5 Unit – 2 was conducted with the use of propagations and vertical injection wells. Propagation locations were plotted using a grid format spaced at twenty foot intervals. Each point was then completed using a fracturing like technology to create a disk from 50 to 120 foot across and approximately 2 cm in average thickness. This creates a plane of approximately 11,000 square feet to infiltrate reagents into the subsurface independent of geological limitations. EBSI installed a combination of 10 vertical injection points and 19 propagation injection points within the impacted area creating a conduit for chemical oxidizing reagents. Following installation of the delivery network, reagents associated with the On-Contact® Process were infiltrated into the subsurface.

**Preparation Stage** – In all On-Contact® designs, contaminated areas are prepared in the subsurface for a higher efficiency of contaminant conversion to base states or harmless compounds. To prevent rebound effects, contaminants need to be removed from adhering to or encapsulating site soils. To accomplish this, very low concentration and volume mixtures of conditioning agents are used to enhance the chemical remediation within the influence of the propagations.

**Conversion Stage** – Using oxidizers, food grade acids, catalysts, reducing compounds and / or transitional compounds specifically configured for the site, contaminants were converted to harmless states "on-contact". Please note one of the major innovations of the On-Contact® family is the use of sub-surface electronics to monitor the condition and travel of remediation fluids and the real-time survivability of the contaminants. EBSI anticipates that multiple (at least two) round of chemical treatment will be needed to achieve project goals. **Injections will be conducted to prevent contaminant migration to areas outside the treatment area.** 

Based on Dr. Mahaffey's review of the site information provided, it appears that the reducing conditions at the site together with relatively high naturally occurring iron concentrations have led to there being between 15 mg/l to 30 mg/l ferrous iron in site groundwater. EBSI's first attempt at oxidation was therefore conducted without addition of any supplemental iron to the aquifer. Based on field observations, EBSI then applied a solution of dilute organic acid that will both reduce any oxidized iron back to ferrous and maintain it in solution for subsequent use as a catalyst. **Our approach to chemical treatment is to make the smallest impact to site conditions as possible while still achieving our goal of oxidizing contaminants.** 

All On-Contact<sup>®</sup> chemistry is adjusted on-site. Real-time monitoring allows for tuning of application stages and ends the unpredictability of batch in-situ application, especially infiltration through conventional wells. The Monitoring Plan is displayed as Table 2. There is no long-term chemical inventory stored at the site. All On-Contact<sup>®</sup> chemistry is environmentally friendly, neutralized by water, if spilled. Site work is conducted by OSHA certified / EBSI trained technicians and normally requires Level D OSHA equipment.

## Table 2. Monitoring Plan

Parameter	Baseline	During	Interim/Post
		Treatment	Treatment
Monitoring well he	eadspace		
OVA*	Shaw	EBSI	Shaw
LEL*	Shaw	EBSI	Shaw
02*	Shaw	EBSI	Shaw
CO2*	Shaw	EBSI	Shaw
Free Chlorine*	Shaw	EBSI	Shaw
Groundwater samp	oles		
VOCs (8260)	Shaw		Shaw
Total &	Shaw		Shaw
dissolved iron			
(AA or ICP)			
pH*	Shaw	EBSI	Shaw
Dissolved O2*	Shaw	EBSI	Shaw
Specific	Shaw	EBSI	Shaw
Conductance*			
ORP*	Shaw	EBSI	Shaw
Soil Samples			
VOCs (8260)	Shaw		Shaw

\*measured using field instrument

## 4.0 <u>Sequence of Events</u>

### 4.1 Introduction

The area of concern consists of 10 to 12 feet of beach sand covering the Spanish Bight clay layer. It is believed that the Spanish Bight clay has prevented the downward vertical migration of contaminants. Figure 3 is a site map including injection well locations. EBSI installed 19 PIWs (S5-PIW-1 through 19) and 4 VIWs (S5-VIW-2 through 5) starting on June 12, 2002. FRx fractured PIWs beginning on June 21, 2002. Figure 4 shows the PIW well construction diagram. Figure 5 shows the VIW well construction diagrams. Six supplemental injection wells (S5-VIW-6 through 11) were installed on January 29, 2003 by Tri-County Drilling. A well construction diagram including a general soil description for the supplemental VIWs is depicted in Figure 6.

A two tank setup was implemented for pumped chemical injection with a third tank utilized for gravity feed injection. The two tank setups each consisted of a 110 gallon polyethylene cone tank connected to a multiphase magnetic drive inverter pump. The manifold setup is constructed out of 1-inch I.D. schedule 80 CPVC. Each manifold has a pressure gauge that reads pump pressure and one that reads head resistance pressure gauge. A 1-inch stainless steel pressure release valve prevents the potential buildup of excess pressure within the system. A ball valve is used to manually de-gas the system. The third tank consisted only of a Polyethylene cone tank connected directly to a manifold. This tank was primarily used on the HIWs because the system did not require pressurization. A two-inch Cam Lock is used to fasten the manifold to a 12-inch riser pipe. For the PIWs, a steel 2-inch threaded collar was used to fasten the riser to the well. For the HIWs and the VIWs, a 2-inch fernco fitting was used.

A total of four injection phases were conducted between July 15, 2002 and February 22, 2003. Phase I and Phase II injections totaled 103,982 pounds of solution injected into the subsurface. Phase III and Phase IV totaled 345,682 pounds of solution injected into the subsurface. Total water usage was 46,780 gallons. Cumulative project time spanned 70 days of mobilization.

## 4.1.1 Hydraulic Fracturing Summary

This section summarizes fieldwork performed at Site 5 - Unit 2 from June 19 to 23, 2002. During that time FRX created 19 sand-filled fractures to facilitate the injection of treatment chemicals into the subsurface by EBSI.

The remedial design for the site used hydraulic fracturing to create preferential pathways for the installation of sand propagations for improved in situ distribution and enhanced injection of proprietary chemical treatments by EBSI.

Fractures were created using methods and specialty equipment provided by FRx. These procedures include (1) installing a dedicated propagation conduit consisting of a 2-inch

pipe fitted with a drive point, (2) dislodging the drive point downward to expose a short section of open hole, (3) cutting a thin kerf in the wall of the borehole below the driven pipe by means of a horizontal hydraulic jet, (4) pressurizing the kerf with liquid so as to nucleate a horizontal fracture from the hoop that constitutes its outer edge, (5) delivering sand-laden slurry to the open hole section of the well so as to propagate the fracture, and (6) monitoring the injection pressure and surface deformation, which permits deduction of the fracture form.

Wells were installed at locations specified by Environmental Business Solutions, Inc. by EBSI personnel and their drilling contractor prior to the arrival of FRx personnel on site. The drive points were dislodged prior to fracturing by FRx personnel using FRx equipment.

Cutting the notch for the 19 propagation locations yielded approximately 400 gallons of slurry composed of soil particles (very fine to fine grained sands, dark gray to black in color) and groundwater. Slurry derived from notching was disposed of by Shaw. Fracture nucleation and propagation installation proceeded easily at all propagations. Fractures were filled with sand obtained from Sinclair Drilling Supplies of San Diego, California. Table 3 details the materials used to create each fracture.

Following fracture formation at the site, FRx personnel installed an inner screened PVC casing and screen within the steel pipe installed by EBSI for each of the 19 propagation locations. Six to eight inches of 1.25 inch 20-slot screen was washed with water to the steel drive point. Inner casings were completed with 1.25 inch Schedule 40 PVC riser to ground surface. The annular space between the inner and outer casings was filled with 12/20 screen sand to within two to three feet of the ground surface. The inner casing should assure that the connection with each fracture, or the area where the fractures intersect their respective riser pipe can be washed with water without the risk of dislodging the propagate material upward into the propagation.

Wellhead injection pressure was monitored during fracturing. A nucleation pressure, or breakdown pressure, could be identified for each fracture, which suggests the fractures were horizontal or sub-horizontal. The upward surface displacement caused by opening the aperture of each fracture, a feature called uplift, was observed and recorded for all fractures created at this site. Similarity among pressure logs and near ideal uplift patterns for all of the fractures created at this site are strong indicators that these fractures are horizontal. Uplift data indicates that these fractures are approximately centered on their respective injection wells and that each fracture is at least 10 to 15 feet in radius.

Sand-filled horizontal fractures in fine-grained soils should greatly enhance injection rates and distribution of injected fluid in the soil. Development of hydraulic fractures at the United States Environmental Protection Agency (USEPA) in the early 1990s showed that such fractures would affect at least an order of magnitude increase in discharge or delivery and cause significant flow at radii twice the extent of the sand-filled fracture. In any case, injection into the propagation should be constrained to pressures less than the

final propagation pressure of the fracture, least the fracture aperture is opened and sand be dislodged away from the propagation conduit. If propagation sand near the conduit pipe is displaced, that action might inhibit subsequent delivery or recovery of fluids. Final injection pressures for each propagation are listed in Table 3.

Table 3.	Fracture Description
----------	----------------------

FracID	Date	Depth	Sand	Sand Type	Gel	Final	Injection
		(Ft bgs)	) (Lb)		(Gal)	Pressu	ire (psi)
PIW-1	June 23, 2002	10	500	12/20 Sinclair	110	15	
PIW-2	June 21, 2002	10	450	12/20 Sinclair	80	13	
PIW-3	June 21, 2002	10	450	12/20 Sinclair	100	15	
PIW-4	June 21, 2002	10	450	12/20 Sinclair	40	22	
PIW-5	June 23, 2002	10	500	12/20 Sinclair	50	15	
PIW-6	June 21, 2002	10	450	12/20 Sinclair	60	19	
PIW-7	June 21, 2002	10	450	12/20 Sinclair	70	20	
PIW-8	June 21, 2002	10	450	12/20 Sinclair	70	20	
PIW-9	June 21, 2002	10	450	12/20 Sinclair	85	15	
<b>PIW-10</b>	June 21, 2002	10	500	12/20 Sinclair	100	13	
PIW-11	June 22, 2002	10	450	12/20 Sinclair	85	16	
PIW-12	June 21, 2002	10	500	12/20 Sinclair	100	15	
PIW-13	June 21, 2002	10	450	12/20 Sinclair	80	11	
<b>PIW-14</b>	June 22, 2002	10	450	12/20 Sinclair	55	18	
<b>PIW-15</b>	June 15, 2002	10	450	12/20 Sinclair	60	18	
PIW-16	June 22, 2002	10	450	12/20 Sinclair	80	10	
<b>PIW-17</b>	June 22, 2002	10	450	12/20 Sinclair	40	14	
<b>PIW-18</b>	June 22, 2002	10	450	12/20 Sinclair	60	12	
PIW-19	June 22, 2002	10	450	12/20 Sinclair	90	13	
Total			8750				

On June 14, 2002, EBSI personnel oversaw the installation of four vertical injection wells by Vironex, locations S5-VIW-02, S5-VIW-03, S5-VIW-04 and S5-VIW-05. Injection well logs are provided as Figures 5. Each well was advanced to a depth of approximately 11 feet bgs and a 2-inch well installed in a 3.25 inch borehole. 6-inches of 10/20 silica sand were placed at the bottom of the borehole followed by a 2-inch diameter silt cap 6-inches in length. A 5 foot length of Tri-Lock 2-inch schedule 40 PVC screeen was installed. The screen is 0.01 slot size. A 4.5 foot long riser pipe was installed from 5 feet bgs to 0.5 feet bgs. A no. 10/20 silica sand pack was added to the borehole from 11 feet bgs to 7 feet bgs, one foot above the riser/screen union. One foot of hydrated bentonite granules were added followed by 2.5 feet of Type-1 Portland cement. Vertical injection wells were completed using a 12-inch round traffic box encapsulated by a 4-inch thick 2 foot by 2 foot concrete pad.

On January 29, 2003, EBSI personnel installed 6 supplemental vertical injection wells labeled S5-VIW-06 through 11. Supplemental injection wells were installed using an 8-

inch auger to drill each borehole. Two-inch PVC was advanced to 10 feet bgs. The well was finished with a 0.01 cut slotted screened length from 5 to 10 feet bgs and riser to grade. Sand (2/12) was used to complete the filter pack which extends 6 inches above the screened/unscreened union. Due to the shallow depth of the VIWs, the bentonite annular seal was reduced from the standard 3 foot thick section to a 1 foot section. This modification (specified by Shaw) allowed for the installation of the 3 foot thick Class A concrete surface seal. The driller settled the gravel pack in each well by surging with a surge block for approximately 5 minutes to attain hydraulic conductivity. A 12-inch diameter security vault was installed on each well with a 2-inch locking cap. The concrete surface seal has a diameter of 3 feet. Well logs are presented as Figure 6.

## 4.1.2 Phase I – Hydrogen Peroxide and Iron + Hydrogen Peroxide

The first injections round of Phase 1 was started on July 15, 2002 and continued through July 19, 2002, 5 days consecutively. During this time 19 PIWs, 4 VIWs and 3 HIWs were utilized for injections. The first round of injections consisted of a 17% solution of hydrogen peroxide (technical grade), being injected into the fore mentioned PIW, HIW and VIW points at an average flow rate of 1 gallon per minute (gpm). To achieve a 17% solution of hydrogen peroxide. Table 4 is a summary table containing injection quantities for the first half of Phase I chemical injections. Chemical injections for this injection period totaled 36,660 pounds of solution using 2,000 gallons of water.

The second round of Phase 1 injections started on July 22, 2002 and continued through July 26, 2002, 5 days consecutively. The same points as the first round were treated, with the difference being that each point received 30 gallons of ferrous chloride solution, prior to the injection of a 17% hydrogen peroxide solution at an injection rate of  $1^{1}/_{2}$  gpm. Ferrous iron and total iron measurements were taken before and after the first round of injection. Prior to the injection rounds, base line readings were established in the surrounding monitoring wells (MWs) and recorded (Table 5). During the treatments, surrounding MWs were monitored to establish an effective radius of influence. An average radius was visually confirmed by the visual monitoring of off-gassing, increased hydraulic head and use of field equipment in nearby monitor wells at 30 feet, although instances of up to 60 ft radius were also observed on several occasions. During the treatments no significant temperature rises were observed in the surrounding MWs. Several of the PIWs did see an increase in temperature after treatment (steaming and occasional hot fluid rising up the casing, in small quantities). Peroxide rose to the surface in several of the MWs within the main body/area of treatment, but none of the reactions were hot. Table 6 is a summary table containing injection quantities for the second half of Phase I chemical injections. Total chemistry injected was 43,998 pounds of solution with 2,840 gallons of water added.

## 4.1.3 Phase II - Iron + Hydrogen Peroxide

Phase 2 injections began on September 17, 2002 and concluded on September 22, 2002. Prior to the Phase II injection round, base line readings were established in the surrounding MWs and recorded (Table 7). The injection was conducted in this treatment event as is described above for the second round of Phase 1 (Section 4.1.2). A solution of 1.5 gallons of iron sulfate added to 30 gallons of water was injected into each of the injection locations at a rate of 2.5 gallons per minute. This was followed by a 17% hydrogen peroxide solution pumped at a rate of 1 to 1.5 gallons per minute. The chemical quantities for each injection location are given in Table 8. Total chemistry injected was 43,998 pounds of solution with 2,840 gallons of water added.

During the injection process PIW-04, PIW-7, PIW-12 and PIW-17 were damaged. As observed, several factors that may have contributed to the damaging of these points;

- Inadequate bentonite/grout and cement seals can create undesired plains of weakness for fluid to migrate through.
- Over pressurization of the system caused by the chemical reaction can force fluid through the soil/seal interfaces resulting in the surfacing of chemistry.

These injection points should be abandoned since they no longer function and may provide an undesired conduit to the subsurface.

## 4.1.4 Phase III – Potassium Permanganate

Phase 3 injections included the use of potassium permanganate in proxy of Fenton's Reagent. Injections began on December 9, 2002 and concluded December 18, 2002. A total of 2000 pounds of potassium permanganate was injected into 18 different VIW, PIWs and HIWs. Injections were conducted mostly by gravity feed, although pumping was required for some points. Apart from the technique utilized, an average pumping rate of 2 gallons per minute was not exceeded. 36,656 pounds of solution was added to the subsurface with 4,300 gallons of water added (Table 9). MWs were monitored for the presence of potassium permanganate. Potassium permanganate was not detected in any of the monitor wells.

Potassium Permanganate was injected into PIW-7, PIW-12 and PIW-17 even though these points had been damaged during previous injections. Successful acceptance of fluid during this phase without surfacing is attributed to a pressure free system. The chemistry added to these points was done by gravity feed at a rate of 0.25 gallons per minute. This slow rate allowed for fluid to slowly infiltrate into the surrounding soil and groundwater with no mounding effect.

## 4.1.5 Phase IV Potassium Permanganate

On January 28, 2003 EBSI personal arrived in San Diego, California to begin Phase IV of the in-situ chemical remediation. Following the installation of the 6 additional VIWs that occurred on January 29, 2003, EBSI initiated chemical injections on January 30, 2003 and continued through February 19, 2003. The total quantity of injected solution consisted of 309,026 pounds of solution. An approximate 4% potassium permanganate solution was distributed to the new VIWs as well as other pre-existing PIWs, VIWs and

HIWs (Table 10). MWs were monitored for the presence or absence of potassium permanganate throughout the injection process. Visual samples were collected with 1-inch bailers (Table 11). The general aquifer response to the injections included the presence of potassium permanganate within an 800 gallon injection of solution in the up gradient VIWs.

Several monitor wells were purged throughout this phase. On February 5, 2003, MW-27 was purged for 80 gallons, MW-24 for 10 gallons and MW-30 for 5 gallons. On February 6, 2003, MW-28 was purged for 150 gallons and on February 9, 2003, MW-21 was purged for 50 gallons.

Purging of the monitor wells was implemented in order to stimulate hydraulic conductivity through out the subsurface as well as an attempt to minimize the volume of potable water used for mixing. The purge water was in turn utilized as mixing water/treated with potassium permanganate and're-circulated' into the subsurface. The treating and re-circulation of groundwater was limited due to the inefficiency of accessible site pumps.

Surface breakthrough of injected fluids occurred during injection at two of the new wells. VIW-09 was the first to breakthrough on February 3, 2003. The pumping rate was approximately 3 gpm with a pressure reading of 1.5 psi. The well took a total of 600 gallons before surfacing. On February 4, 2003, EBSI personal dug out the well out and resealed the concrete. No breakthrough occurred at VIW-09 during the remaining injections. VIW-10 was the second well to undergo breakthrough on February 6, 2003. This well took a total of 1,600 gallons of solution before surfacing, 300 gallons on the day it broke through. EBSI personal repaired the well on the same day and found that settling of the sand pack had opened a void, thus creating a plain of weakness. On February 7, 2003, EBSI personal resumed injections on VIW-10. Within the first 20 gallons of water injected, breakthrough occurred. On February 15, 2003, EBSI personal again repaired the well. Upon digging out the seal to a depth of 2.5 feet bgs, garbage and metal debris was encountered. Permanganate was observed flowing along the interface between steel wire debris and the soil. The excavated area was then filled with 150 pounds of cat litter to act as a clay seal followed by 350 pounds of cement. An additional 800 gallons of solution was injected into VIW-10 before surface breakthrough occurred. No further injections were conducted at location VIW-10.

## 5.0 Data Analysis and Conclusions

## 5.1 Background

It is understood and accepted in the environmental industry that site characterization data represents a summary of discrete sampling points that are generalized to form a conceptual model of site conditions. The final form of the site characterization is determined after an analysis of data needs compared to the costs of collecting data. Cost considerations dictate that soil and groundwater sampling locations and depth intervals must be placed far enough apart so that large areas can be investigated and characterized at a reasonable cost. Data needs require that sample points be placed close enough together to allow inference of the conditions in the areas lying between data points. This approach is the standard industry practice and was the method used in characterizing Site 5 - Unit 2. A key assumption in following this approach is that site conditions are fairly homogeneous so that site conditions between data points can be inferred. Based on our review of the site data following several chemical oxidation treatment events, EBSI feels that Site 5 - Unit 2 is significantly heterogeneous, to the extent that EBSI, the Navy, and Shaw could not have possibly accounted for every heterogeneity even if unlimited spending were authorized for extensive site characterization studies. Based on the data collected in all the site activities to date, EBSI concludes that the Navy and its consultants made a reasonable efforts to fully characterize the site; however, the significant heterogeneity of the site effects the customary or standard assumptions that can be made about the mass of contamination present and its distribution at the site.

The discussion below presents an overview of the baseline, interim, and post-treatment sampling results collected and provided by Shaw. More detailed information regarding these activities can be found in the project report prepared by Shaw. Since DCE and VC make up the vast majority of the site total CVOCs, the sum of DCE and VC will be taken to mean total CVOCs.

## 5.2 Baseline Sampling

Baseline sampling was conducted by Shaw and consisted of installing additional monitoring wells and collecting a round of groundwater samples from monitoring wells (new and existing) which had been identified as target wells by the Project Team. Total CVOCs were estimated at 212,000 ug/l for baseline. The total consisted of a large contribution from well MW-21 (112,000 ug/l), MW-25 (7,900 ug/l), MW-26 (13,000 ug/l), MW-28 (40,000 ug/l), and MW-30 (22,800 ug/l), and MW-34 (3,700 ug/l).

## 5.3 Interim Sampling

Shaw collected three rounds of interim samples from some or all of the target wells. Interim number 1 data were collected following EBSI's first set of peroxide treatments that occurred in August 2002. Overall, total CVOCs dropped nearly 50% across the site with all wells showing decreases except MW-26, MW-30, and MW-34. Interim number 2 data were collected following EBSI's last peroxide treatment performed during

September 2002 and indicated that overall CVOC reduction remained at nearly 50% with increases noted at wells MW-21, MW-26, and MW-34. Interim number 3 data were collected following EBSI's first permanganate treatment at the site completed in December 2002. Only selected wells out of the target group were sampled; however, the wells sampled indicated a significant increase in total CVOC, especially at wells MW-21, MW-26, and MW-34.

## 5.4 Post Treatment Sampling

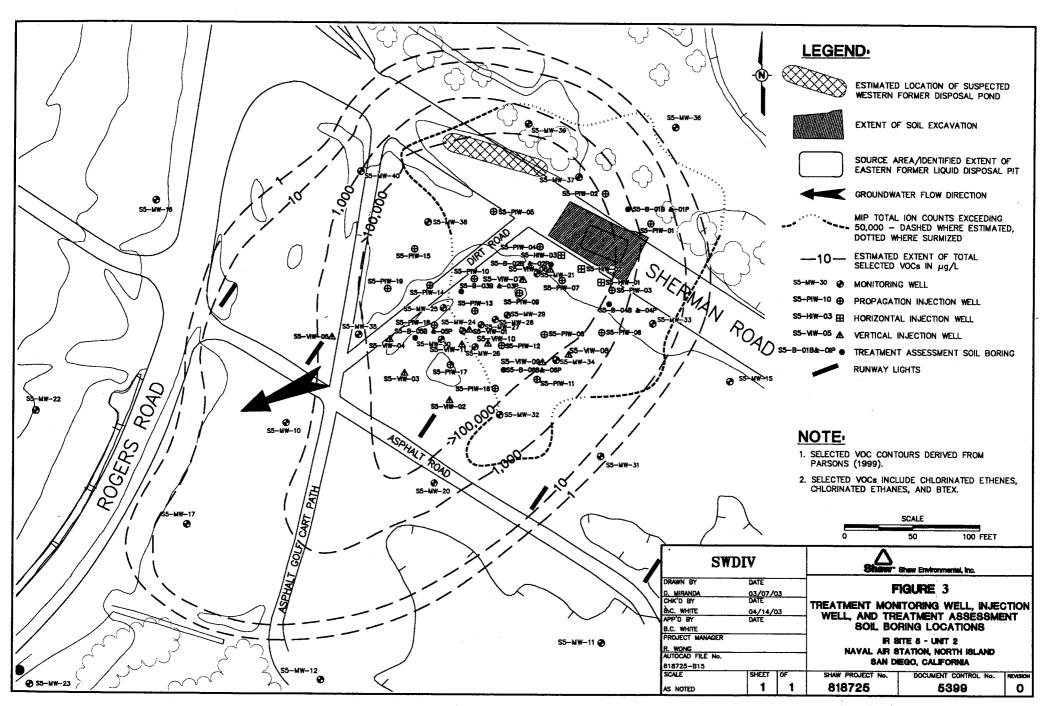
Following review of Interim number 3 data, EBSI developed a permanganate injection program using newly installed injection wells near monitoring wells MW-21, MW-26, and MW-34 since it appeared that significant contaminant mass resided in the subsurface surrounding these wells. Following almost four weeks of injection that deliver approximately 13,000 pounds of potassium permanganate to selected site injection wells, Shaw collected 30-day post-treatment samples from all target wells to evaluate site cleanup (Post-Treatment number 1). As a result of elevated groundwater CVOC concentrations detected during Post-Treatment number 1 groundwater samples, a second post-treatment sampling event was performed 14-days subsequent to the 30-day post-treatment sampling event. EBSI noted the following after review of the two post-treatment sampling events:

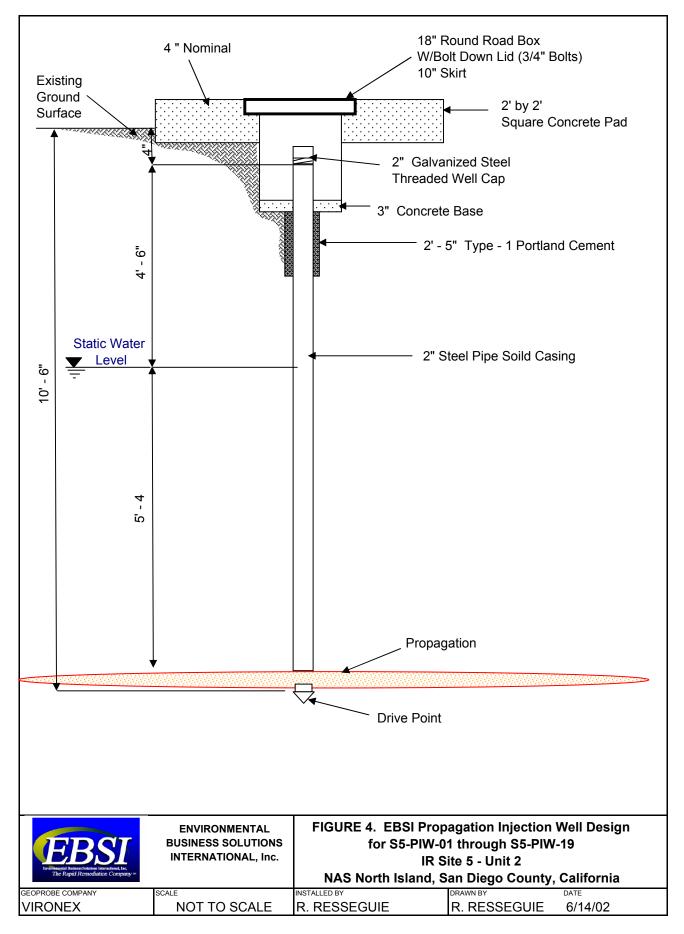
- Wells MW-26 and MW-34 were not sampled since the groundwater was still purple indicating the presence of permanganate at those locations.
- Analytical results of the remaining well samples indicated that CVOC had decreased in well MW-21 but had increased dramatically in wells MW-25, MW-28, MW-32, and MW-35.
- The total CVOC concentration detected in well MW-25 during this sampling round was as high as the total CVOC detected in all the wells during baseline (e.g. greater than 200,000 ug/l).
- Post-Treatment number 2 CVOC results indicated that concentrations increased in well MW-21 while they were displaying a decreasing trend in wells MW-25, MW-28, MW-32, and MW-35.
- Total CVOC concentrations dropped over 50% in well MW-25 from the first to the second post-treatment sampling event.

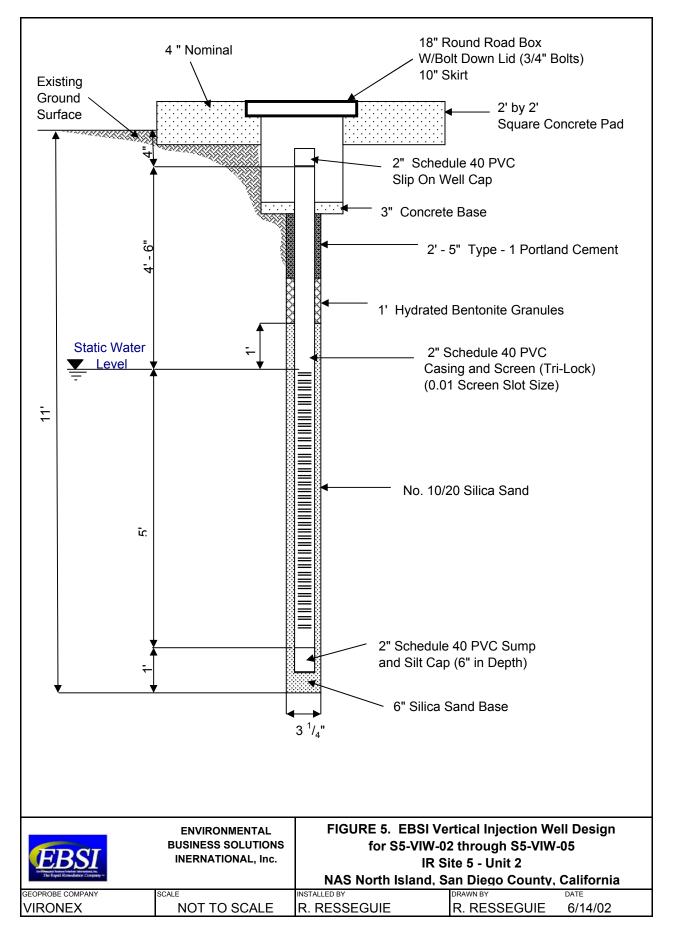
## 6.0 Conclusions

Based on our review of the field data and observations made during injection, and on the interim and post-treatment sampling data, EBSI concludes that the conditions at Site 5 - Unit 2 are more heterogeneous than had been anticipated. EBSI has drawn the following conclusions:

- Since the site had been impacted by its former use as a military debris landfill, it is highly likely that buried materials, large and small, created preferential flow paths for groundwater, contaminants, and remediation reagents and also concealed pockets of contaminant mass in the subsurface.
- The remedial actions implemented by EBSI are known to be effective at similar sites. The amount of contaminant destruction completed at the site cannot be calculated since any contaminant destruction was masked by contaminant liberation, as seen in the increased groundwater concentrations in target wells.
- Based on the trend observed from Post-Treatment number 1 to Post-Treatment number 2 sampling events, EBSI expects that a new equilibrium concentration of CVOC at the target wells will be achieved within three months where the total CVOC concentrations are lower than baseline.
- Continued chemical oxidation at the site is possible but is expected to take longer and cost more than originally estimated. Large doses of chemical oxidants would need to be injected over a 6 to 12 month period in order to achieve a goal of 90% mass destruction. Alternatively, a recirculation system where downgradient groundwater is extracted, mixed with permanganate, and re-injected upgradient could be done at lower cost but would require approximately 9 to 18 months to complete.







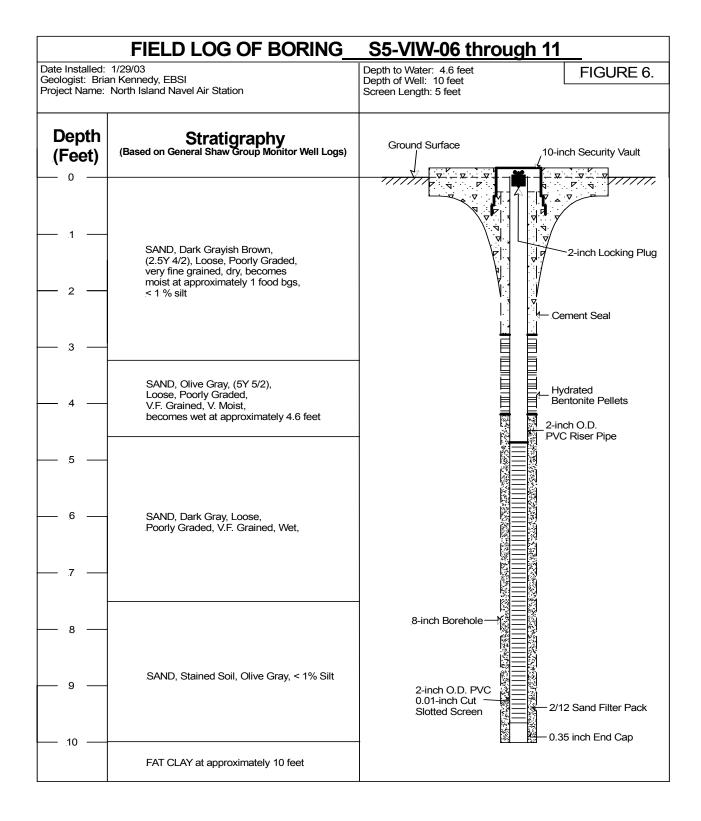
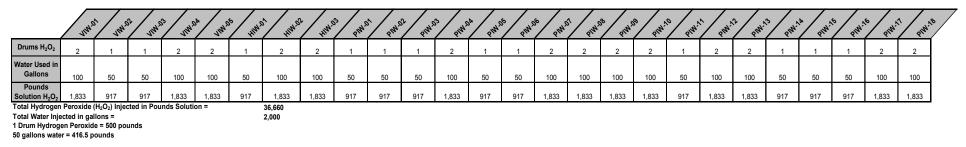


Table 4. PHASE I, ROUND 1 INJECTION QUANTITIES Naval Air Station North Island, IR Site 5 - Unit 2 July 15, 2002 through July 23, 2002



#### Table 5. PHASE I - MONITORING SCHEDULE Naval Air Station North Island, IR Site 5 - Unit 2 July 15, 2002 through July 22, 2002

Monitoring Well ID	Date	Fe2+ (mg/L)	Total Iron (mg/L)	LEL % (Vapor)	O2 % (Vapor)	CO2 ppm (Vapor)	Cl2 ppm (Vapor)	VOC ppm (Vapor)	рН	Cond.	DO	Temp. (° C)	DEP	SAL	TDS	ot	ORP	Turb.
(Background)																		
S5-MW-36	7/15/2002	0.51	0.76	0	3.7	OR+20K	0	3.1	7.19	0.35	1.2	21.9	2.0	0.1	1.3	0	-186	2.7
S5-MW-27	7/15/2002	0.40	0.67	0	20.6	2,700	0	6.0	7.34	0.82	1.2	22.4	2.9	0.5	5.2	1	-181	5.0
S5-MW-35	7/15/2002	0.23	3.77	0	5.6	15,840	0	2.0	7.16	0.28	1.4	22.0	2.0	0.1	1.8	0	-69	3.5
(During Treat	ment of Sui	rroundin	g PIW's)															
S5-MW-36	7/15/2002	NT	NT	0	12.0	OR+20K	0	1.2	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
S5-MW-27	7/19/2002	NT	NT	4	OR+40	11,000	0	166.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
S5-MW-35	7/19/2002	NT	NT	8	OR+40	OR+20K	0	38.0	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
(After First Ro	ound of Tre	atment)																
S5-MW-36	7/22/2002	0.24	0.97	0	20.9	OR+20K	0	2.5	7.89	0.14	1.1	19.6	2.0	0.1	0.9	0	-28	-10.0
S5-MW-27	7/22/2002	0.05	1.78	3	36.0	11,000	0	15.0	6.76	0.44	2.7	24.6	2.3	0.2	2.8	0	70	-10.0
S5-MW-35	7/22/2002	0.09	4.60	2	OR+40	OR+20K	0	8.0	7.57	0.31	19.9	22.7	1.7	0.2	2	0	200	-2.0

NS - Sample not collected

OR - Parameter Over Threshold

#### Table 6. PHASE I, ROUND 2 INJECTION QUANTITIES

Naval Air Station North Island, IR Site 5 - Unit 2

July 22, 2002 through July 26, 2002

	VIV	OT JUN	02 JUN	03 JIW	04 JNN-0	5 HIN	o' HW	52 HIN	0 <sup>5</sup> PIN	OT PIN	02 PIN	0 <sup>2</sup> PIN	OA PIN	05 PIN	.06 PIN	.0 <sup>1</sup>	.08 PIN	0 <sup>9</sup> PIN	10 PIN	TT PIN	12 PIN	1.13 PIN	A PIN	15 PIN	16 PIN	T PIN
Drums H <sub>2</sub> O <sub>2</sub>	2	1	1	2	2	1	2	2	1	1	1	2	1	1	2	2	2	2	1	2	2	1	1	1	2	2
H <sub>2</sub> O added to H <sub>2</sub> O <sub>2</sub>																										
(Gallons)	100	50	50	100	100	50	100	100	50	50	50	100	50	50	100	100	100	100	50	100	100	50	50	50	100	100
Pounds H <sub>2</sub> O <sub>2</sub>																										
Solution	1833	916.5	916.5	1833	1833	916.5	1833	1833	916.5	916.5	916.5	1833	916.5	916.5	1833	1833	1833	1833	916.5	1833	1833	916.5	916.5	916.5	1833	1833
Ferrous Chloride																										
Gallons	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5	5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
H <sub>2</sub> O added to Iron																										
(Gallons)	30	30	30	30	30	30	30	30	60	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Ferrous Chloride in Pounds Solution		261.03	261.03	261.03	261.0294	261.03	261.029	261.03	536.76	536.76	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03
Total Injected Chemistry in Pounds Solution	2,094	1,178	1.178	2,094	2,094	1,178	2,094	2,094	1,453	1,453	1.178	2,094	1 178	1,178	2 004	2,094	2,094	2,094	1,178	2,094	2,094	1,178	1,178	1,178	2 004	2,094
Total Hydrogen Pero Total Ferrous Chlorid	xide (H <sub>2</sub>	O <sub>2</sub> ) Injec	ted in Po	ounds So			2,094 36,660 7,338	2,034	1,400	1,400	1,170	2,034	1,170	1,170	2,034	2,034	2,034	2,034	1,170	2,034	2,034	1,170	1,170	1,170	2,034	2,034
Total Chemistry Inject							7,336 43,998																			

Total Water Used in Gallons = 2,840

1 Drum Hydrogen Peroxide = 500 pounds

50 gallons water = 416.5 pounds

1 Gallon Ferrous Chloride = 7.35 pounds

#### Table 7. Phase II - MONITORING SCHEDULE Naval Air Station North Island, IR Site 5 - Unit 2 **September 16, 2002**

Monitoring Well ID	Date	Fe2+ (mg/L)	Total Iron (mg/L)	LEL % (Vapor)	O2 % (Vapor)	CO2 ppm (Vapor)	Cl2 ppm (Vapor)	VOC ppm (Vapor)	рН	Cond.	DO	Temp. (° C)	DTW	SAL	TDS	ot	ORP	Turb.
(Background)																		
S5-MW-36	9/16/2002	NS	NS	7	4.2	17000	0	2.0	6.56	0.37	1.2	20.6	4.84	0.2	2.4	0	-74	13.4
S5-MW-27	9/16/2002	NS	NS	0	20.6	0	0	20.0	5.53	2.10	1.9	24.2	7.23	1.3	13	7	2	OR
S5-MW-35	9/16/2002	NS	NS	0	17.0	OR+20K	0	100.0	5.25	0.95	0.9	22.8	6.95	0.5	6	2	21	-10.0
(During Treat	ment of Su	rroundin	g PIW's)															
S5-MW-36	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S5-MW-27	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S5-MW-35	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
(After First Ro	ound of Tre	atment)	-	-	-													
S5-MW-36	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S5-MW-27	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
S5-MW-35	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS - Sample not collected

**OR - Parameter Over Threshold** 

#### Table 8. PHASE II INJECTION QUANTITIES

Naval Air Station North Island, IR Site 5 - Unit 2

September 17, 2002 through September 22, 2002

	VIIN	ot Jun	02 JUN	03 JW	OA VINIS	55 HIW	.01 HW	02 HIM	.0 <sup>2</sup> PIW	OT PIN	OZ PIN	0 <sup>2</sup> PIN	OA PIN	05 PIN	.06 PIN	.ol put	.08 PIN	.0 <sup>9</sup> PIN	10 PIN	.11 PIN	12 PIN	1 <sup>2</sup> PIN	The PIN	15 PIN	16 PIN	,1 <sup>1</sup> 214
Drums H <sub>2</sub> O <sub>2</sub>	2	1	1	2	2	1	2	2	1	1	1	2	1	1	2	2	2	2	1	2	2	1	1	1	2	2
H <sub>2</sub> O added to H <sub>2</sub> O <sub>2</sub>																										
(Gallons)	100	50	50	100	100	50	100	100	50	50	50	100	50	50	100	100	100	100	50	100	100	50	50	50	100	100
Pounds H <sub>2</sub> O <sub>2</sub>																										
Solution	1833	916.5	916.5	1833	1833	916.5	1833	1833	916.5	916.5	916.5	1833	916.5	916.5	1833	1833	1833	1833	916.5	1833	1833	916.5	916.5	916.5	1833	1833
Ferrous Chloride Gallons	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	5	5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
H <sub>2</sub> O added to Iron	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0	<u> </u>	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
(Gallons)	30	30	30	30	30	30	30	30	60	60	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Ferrous Chloride in																										
	261.03	261.03	261.03	261.03	261.0294	261.03	261.03	261.03	536.76	536.76	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03	261.03
Total Injected																										
Chemistry in Pounds	2,094	1,178	1,178	2,094	2,094	1,178	2,094	2,094	1,453	1,453	1,178	2,094	1,178	1,178	2,094	2,094	2,094	2,094	1,178	2,094	2,094	1,178	1,178	1,178	2,094	2,094
Solution Total Hydrogen Peroxi	,	,	,	,	,	,	2,094 36,660	2,094	1,400	1,400	1,170	2,094	1,170	1,170	2,094	2,094	2,094	2,094	1,170	2,094	2,094	1,170	1,170	1,170	2,094	2,094
Total Ferrous Chloride					-		7,338																			
otal Chemistry Injecte							43,998																			
otal Water Used in Ga			2.840				,																			
Drum Hydrogen Pero			ds																							
0 gallons water = 416.	5 poun	ds																								
I Gallon Ferrous Chlor	ide = 7.	35 poun	ds																							

Table 9. PHASE III POTASSIUM PERMANGANATE INJECTION QUANTITIES

Naval Air Station North Island, IR Site 5 - Unit 2

December 9, 2002 through December 19, 2002

	55.11	N.04 55-11	N-05 55-HW	.o1 55+11	N-02 55-HW	4.03 55.PM	N.DA SS.PH	N-05 S5-PH	N-06 55-PH	NOT SPAT	N-08 55-PH	N-09 55-PH	N-10 55PH	N-11 55-PH	N-12 55-PH	N-13 55.PH	N-14 55-PH	N-17 55-PIN-19
KMnO <sub>4</sub> Solution Injected in Pounds	880	880	1,713	1.713	1,713	3.379	1,713	2,546	3,379	2,546	3,379	880	1.713	3,379	1,713	880	3,379	880
Solution Water Used (Gallons)	100	100	200	200	200	400	200	300	400	300	400	100	200	400	200	100	400	100
OTAL INJEC		-	s Solution =		36,656 4,300													

#### Table 10. PHASE IV POTASSIUM PERMANGANATE INJECTION QUANTITIES

Naval Air Station North Island, IR Site 5 - Unit 2 January 30, 2003 through February 19, 2003

Date	VINI	VINA	A VIN OF	o vinco	VINAS	WINLOS	VIN	VINI	HIMA	HINA	t HIM-D	5 PINA	A PINIO	B PINLO	PIN-1	PIN-1	B PIN-15
30-Jan			6994	6994	Í	Í	Í			Í		Í	· · · ·	· · · ·		Í	
31-Jan			10491	10491													
3-Feb			5245.5	5245.5	5245.5	5245.5											
4-Feb					10436.04		6087.69										
5-Feb	3478.68					5218.02	5218.02	6087.69									
6-Feb					2609.01		2609.01	6957.36					5218.02				
7-Feb	4348.35							9566.37					4348.35				
9-Feb	1739.34							10436.04			2609.01	4348.35					
10-Feb																	
11-Feb			6087.69	7827.03													
12-Feb					4348.35	4348.35											
13-Feb			3478.68						2609.01	3478.68	2609.01	3478.68					
14-Feb			1739.34	12175.38				12175.38									
15-Feb			6087.69		6957.36	1739.34											
16-Feb				6087.69		869.67	6087.69	4348.35									
17-Feb					2609.01		869.67	8696.7		1740	2609.01						
18-Feb	2609.01	2609.01	6957.36												1739.34	1739.34	1739.34
19-Feb			4348.35		2609.01	1739.34			6957.36	6957.432	6957.36			1739.34			
Totals	12,175	2,609	51,430	48,821	34,814	19,160	20,872	58,268	9,566	12,176	14,784	7,827	9,566	1,739	1,739	1,739	1,739
tal Injecte	ed KMnO₄ in ∣	Pounds Solu	ition =	309,027													

Total Water Injected in gallons =

28,800

#### Table 11. PHASE IV POTASSIUM PERMANGANATE MIGRATION STATUS

Naval Air Station North Island, IR Site 5 - Unit 2 January 30, 2003 to February 20, 2003

	MW-21		MW-29			MW-26		MW-24		MW-30		MW-25		
Date	AM	PM	AM	PM	MW-34	AM	PM	AM	PM	AM	PM	AM	PM	MW-27
30-Jan	Unreacted	Unreacted												
31-Jan	Unreacted	Unreacted												
3-Feb	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted									
4-Feb	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted							
5-Feb	Clear	Clear	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Clear
6-Feb	Clear	Clear	Unreacted	Semireacted	Unreacted	Unreacted	Unreacted	Semireacted	Semireacted	Semireacted	Unreacted	Mostly Reacted	Unreacted	Clear
7-Feb	Clear	Clear	Semireacted	Semireacted	Unreacted	Unreacted	Unreacted	Semireacted	Unreacted	Unreacted	Unreacted	Mostly Reacted	Semireacted	Clear
9-Feb	Clear	Clear	Semireacted	Mostly Reacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Mostly Reacted	Clear	Clear
10-Feb	No Injections		No Injections	3	No Injecti	ons	No In	jections						
11-Feb	Unreacted	Unreacted	Semireacted	Mostly Reacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Mostly Reacted	Clear	Unreacted
12-Feb	Unreacted	Unreacted	Mostly Reacted	Mostly Reacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Clear	Clear	Unreacted
13-Feb	Mostly Reacted	Unreacted	Unreacted	Unreacted	Phas	Semi/Unreacted	Semireacted	Unreacted	Unreacted	Unreacted	Unreacted	MnO Residue	MnO Residue	Unreacted
14-Feb	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Clear	Clear	Unreacted
15-Feb	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Semireacted	Semi/Unreacted	Semi/Unreacted	Unreacted	Unreacted	Unreacted	Clear	Clear	Unreacted
16-Feb	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
17-Feb	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
18-Feb	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Mostly Reacted	Mostly Reacted	Unreacted
19-Feb	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
20-Feb	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted	Unreacted

Unreacted = Fresh dark purple KMnO4 present

Semireacted = Purple color partly reacted or diluted

Mostly Reacted = Pink color with brown MnO residue

Clear = No KMnO4 present, clear water bailed from well MnO Residue = Brown MnO biproduct in water

NS = Not Sampled

MW-28	and	MW-35
CLEAR		

# Appendix H Microbial Natural Attenuation Reports

- (1) Baseline Microbial Insights Laboratory Report (July 26, 2002)
- (2) Baseline SIREM Laboratory Microbial Report (July 26, 2002)
- (3) Posttreatment Summary Microbial Insights Laboratory Report (July 25, 2003)

H-1 Baseline Microbial Insights Laboratory Report (July 26, 2002)

2340 Stock Creek Blvd. Rockford TN 37853-3044 Phone (865) 573-8188 Fax: (865) 573-8133 Email: microbe@microbe.com

# **Microbial Analysis Report**

Client:	Jim Fr		nmental Inc.	Phone:	619-744-3034	
	1230 (		Street, Suite 400	Fax:	619-687-8787	
MI Ident	ifier:	1bec	Date Rec.:	7/12/02	Report Date:	7/26/02
Analysis	s Requ	ested:	PLFA, DNA, Culturing	g		
Project:						

**Comments:** 

All samples within this data package were analyzed under U.S. EPA Good Laboratory Practice Standards: Toxic Substances Control Act (40 CFR part 790). All samples were processed according to standard operating procedures. Test results submitted in this data package meet the quality assurance requirements established by Microbial Insights, Inc.

**Reported by:** 

(Data Analyst)

**Reviewed by:** 

(Director)

**NOTICE:** This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.



2340 Stock Creek Blvd. Rockford TN 37853-3044 Phone (865) 573-8188 Fax: (865) 573-8133 Email: microbe@microbe.com

# Microbial Analysis Report

#### **Executive Summary**

The microbial communities from 8 samples were characterized by phospholipid fatty acid content (PLFA Analysis). Additionally these samples were screened for the presence of *Dehalococcoides ethenogenes* by a targeted gene detection approach. Results from these analyses revealed the following:

- Samples 203M001, 203M004, and 203M007 contained biomass levels which were at or below our detectable limits. Biomass estimates for the remaining samples (as defined by the total concentration of PLFA) ranged from ~10<sup>4</sup> to 10<sup>5</sup> cells/mL filtered, and was highest in the 203M006 sample.
- The PLFA profiles revealed moderately diverse community structures (as defined by the variety of PLFA detected) in samples 203M002, 203M003, 203M005, and 203M006. These samples were mainly comprised of Gram-negative bacteria (indicated by the percentage of monoenoic PLFA). High proportions of Gram-negative bacteria are of particular interest at contaminated sites due to their ability to utilize a wide range of carbon sources and adapt quickly to changing environmental conditions.
- Fatty acid biomarkers indicative of anaerobic metal reducing bacteria (branched monoenoic and midchain branched PLFA) were present in samples 203M002, 203M003, 203M005, and 203M006.
- Ratios of fatty acid biomarkers that provide indications of activity (turnover rate) showed that turnover rates ranged from slow in sample 203M003 to relatively fast in sample 203M008. Due to the low amount of biomass, samples 203M001, 203M004 and 203M007 did not contain detectable biomarkers for turnover rate.
- Ratios of fatty acid biomarkers that indicate a metabolic response to environmentally induced stress (decreased membrane permeability) revealed that sample 203M002 was showing the most evidence of this occurring.
- DNA results confirmed the presence of *Dehalococcoides ethenogenes* in all but samples 203M004 and 203M007.

#### **Figures and Tables:**

#### **Biomass Content:**

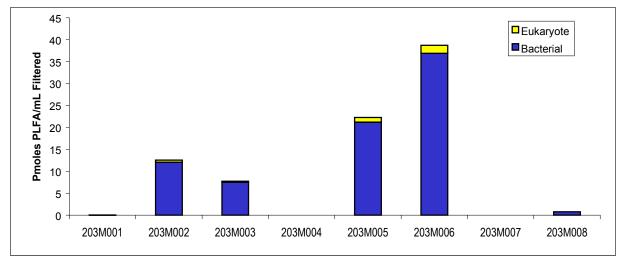
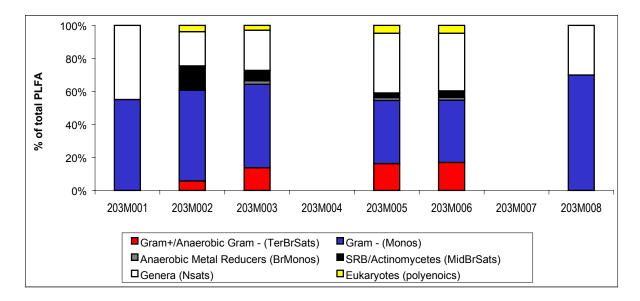


Figure 1. Biomass content is presented as the total amount of phospholipid fatty acids (PLFA) present in a given sample. PLFA comprise a large proportion of the membranes of all living cells, but decompose quickly upon cell death. Bacterial biomass is calculated based upon PLFA attributed specifically to bacteria whereas eukaryotic biomass is based on PLFA associated with higher organisms.



#### **Community Structure:**

**Figure 2.** A comparison of the relative percentages of total PLFA structural groups in the samples described in Figure 1. Structural groups are assigned according to PLFA chemical structure which is related to fatty acid biosynthesis. Normal saturate are ubiquitous, terminally branched saturates (TerBrSats) are attributed to Gram positive bacteria and some anaerobic Gram negatives, branched monoenoic fatty acids (f.a.) are found in anaerobic metal reducing bacteria, mid chain branched f.a. are common in metal reducers and aerobic Actinomycetes, monoenoic f.a. are in Gram negative bacteria, and polyenoic f.a. are found in eukaryotic organisms.

#### Profiles of individual fatty acids for each sample are available upon request.

#### **Metabolic Activity:**

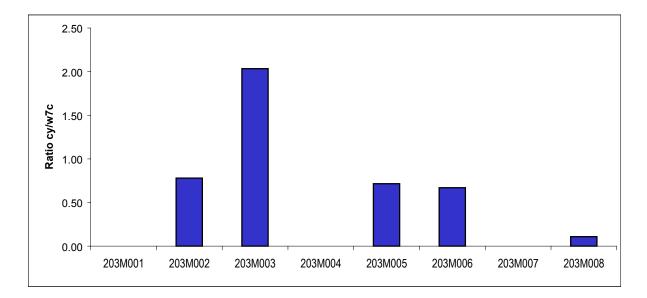
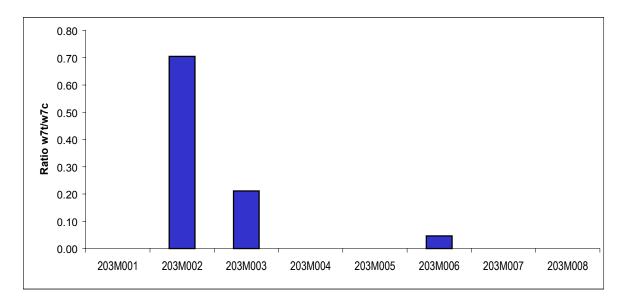


Figure 3. Growth rate of the Gram-negative community is assessed by the ratio cy/ $\omega$ 7c fatty acids. Specifically, 16:1 $\omega$ 7c and 18:1 $\omega$ 7c fatty acids are converted to cyclopropyl fatty acids (cy17:0 & cy19:0) as microbial growth slows down (decreased turnover rate).



**Figure 4.** Adaptation of the Gram-negative community to changes in the environment is determined by the ratio of  $\omega$ 7t/ $\omega$ 7c fatty acids. Gramnegative bacteria generate *trans* fatty acids to minimize the permeability of their cellular membranes as adaptation to a more hostile environment. Ratios (16:1 $\omega$ 7t/16:1 $\omega$ 7c and 18:1 $\omega$ 7t/18:1 $\omega$ 7c) greater than 0.1 have been shown to indicate an adaptation to a toxic or stressful environment resulting in decreased membrane permeability 
 Table 1.
 Summary of PLFA results.

			Physiological status										
Sample Name	Total Biomass	Cell equivalent value <sup>1</sup>	Bacterial biomass	Eukaryotic biomass	ratio bacteria/ eukarya	Gram+/ anaerobic Gram - (TerBrSats)	Gram - (Monos)	Anaerobic metal reducers (BrMonos)	SRB/ Actinomycetes (MidBrSats)		Eukaryotes (polyenoics)	Growth Phase (cy/w7c)	Adaptation (w7t/w7c)
203M001	Trace	4.25E+02	Trace	ND	NC	0.0	55.2	0.0	0.0	44.9	0.0	0.00	0.00
203M002	13	2.51E+05	12	Trace	26	5.7	55.0	0.8	14.0	20.8	3.7	0.78	0.70
203M003	8	1.55E+05	8	Trace	33	13.7	50.6	2.1	6.3	24.3	3.0	2.03	0.21
203M004	ND	0.00E+00	ND	ND	NC	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00
203M005	22	4.46E+05	21	1	20	16.3	38.3	1.7	2.8	36.2	4.7	0.72	0.00
203M006	39	7.74E+05	37	2	20	17.0	37.8	1.7	3.9	35.0	4.7	0.67	0.05
203M007	ND	0.00E+00	ND	ND	NC	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00
203M008	1	1.50E+04	1	Trace	NC	0.0	70.0	0.0	0.0	30.0	0.0	0.11	0.00

<sup>&</sup>lt;sup>1</sup> The cell equivalent value is calculated from experiments with typical bacteria isolated from soil and water. This value is based on 2.0 x 10<sup>12</sup> cells per gram dry weight of cells and 10<sup>8</sup> picomoles of phospholipid/gram dry weight of cells. The number of cells/gram of dry weight may vary and is dependent on the environmental conditions from which the microorganisms were recovered.

#### **Overview of Targeted Gene Detection Approach**

The recovery of DNA and its subsequent analysis provides a powerful tool for characterizing bacterial community structure. All cells (animals, plants, fungi, and bacteria) contain DNA that allows for their identification. These cells also contain ribosomes, which are required for normal cell functions. The favored target in DNA identification for bacteria is the small sub-unit ribosomal RNA gene, generally referred to as "16S rDNA" in prokaryotes). This target is favored because during the course of evolution, different regions of the ribosome have mutated (or changed) at different rates, with the overall result that some regions of this gene are virtually the same between all organisms (conserved), while other regions differ among even closely related species.

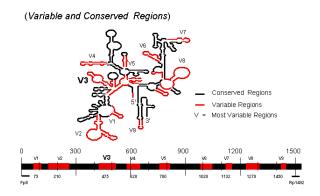
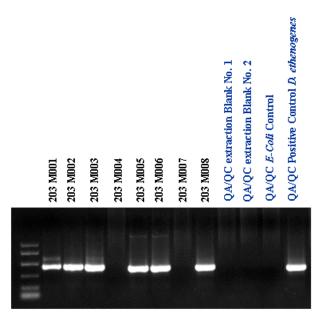


Figure 5. Diagramatic representation detailing the variable and conserved regions of the 16S rRNA gene. This figure was taken from ITRC Internet Training on Natural Attenuation of Chlorinated Solvents in Groundwater: Principles and Practices, Apr 00.

Specific primers directed to a variable region of the 16S rRNA gene of *Dehalococcoides ethenogenes* was used to determine its presence. Based upon Loffler et. al. the sensitivity of these primers is ~10<sup>3</sup> cells/mL or g of sample.



**Figure 6.** Results from the DNA amplification using primers specific for *Dehalococcoides ethenogenes*. QA/QC samples are listed in blue. Two extraction blanks were used to account for any contamination during the DNA extraction procedure. Two amplification samples were used to unsure a negative response for E-coli and a positive response for *D. ethenogenes*.

#### **Quality Assurance Section**

#### **Sample Arrival and Holding Times:**

Eight samples were received on 7/12/02, accompanied by a chain of custody form. All arrival conditions and required holding times were acceptable according to SOP #SREC.

#### Sample Analysis and QA/QC Parameters:

Samples were analyzed under the U.S. EPA Good Laboratory Practice Standards: Toxic Substances Control Act (40 CFR part 790). All samples were processed according to standard operating procedures.

Notes: No QC or analytical problems were encountered

#### **Calibrations and Solvent Checks:**

All laboratory equipment and instruments utilized throughout the analyses were calibrated and operating within acceptable ranges. The instruments were calibrated according to Standard Operating Procedures (EQ4). All solvents used in these analyses were validated for purity.

#### **Data Validation:**

All data analyses were performed correctly. All calculations and transcriptions of raw and final data were verified.

BECHTEL CLE	AN	CH	AIN-C	)F-CU	ISTODY	R	E(	CC					21075
Site Name: CTO Number: Site Contact/Sup	22214-20		oler(s): <u>A</u> ature(s): <u>A</u>	thony	Rossi Ana Romi	P Ilyses	ay Ite Requ	iired	N KELL				
Analytical Labor	atory Address: 2	Microbia   Insi 2340 Stock (reek B 203-003/23			37853	1							
						)	1	1	Preservatio	on (4°C)			TAT (in days)
Sample ID No. (8 digit)	Date/Time Collected	Station Description	Sample Matrix	Number of Containers	Archive (Container No.)				Container No	os. (2 digit	)		Remarks (e.g., MS, MSD)
2031001	7/11/02 0920	55-MW-36	GW	2		01	02						01: 2400 mL, 1 fil. 02: 1200 mL, 1 fil.
203M 002		55-MW-20	GW	3		01	02	05					01: 2400 mL, 2 fil. 02:17:00 mL, 1 fil.
203M003	7/11/02	55-MW-21	ew	2			02						011600mL, 2 filters 02:200mL 1 filt.
2	1/11/02	TKT/Npz Equipment Ringote		2			1	1					01:2400mL, 1filt.
203/1004	1330	Rinsote	BW				02						02:12.00mL, 16:14. 01:600mL, 2filt.
203 MOOS	7/11/02	55-MW-30 55-MW-30	GW GW	2 2		01	02	4					02:600mL, 1filt. 01:600mL, 2filt. 02:600mL, 2filt.
203 4007	7/11/02	Source Blank	BW	7		01	02						01:2400ml, 1 filt. 02:1200ml, 1 filt.
203 4008	7/11/02	55-MW-38	GW	2			02						01: 900mL, 2Filt. 02: COOML, 1 filt.
Relinguished B	//Company	Received By/Company	Date	 •   Tir	ne Reason f	l or Tra	l. Ansfe	 r   C	Commenta/Inst	ructions:			
	4. /BNT	FedEx	7/11/0	2 180	o Shipt	<u> </u>	ab						
									Method of Shipment: Fed Ex Tot				otal No. of
						Airbill No .: 818658168406			x	Coolers Shipped:			
								T	Total No. of				

H-2 Baseline SiREM Laboratory Microbial Report (July 26, 2002)



130 Research Lane, Suite 2 Guelph, Ontario N1G 5G3 Phone: (519) 822-2265 Fax: (519) 822-3151

## Test Results for Gene-Trac™Dehalococcoides Assay

Client Name: Bechtel	Test Reference Number: DT-0016					
Contact: Jim French	Report Issued: 26-Jul-02					
Site Location: IR site 5, NASNI	Site Sampling: 11-July-02 Sample(s) Received: 15-July-02 DNA Extraction: 17-Jul-02					
Telephone: (619) 744-3034	Method Used: Gene-Trac™ Dehalococcoides Assay					
E-mail: jhfrench@Bechtel.com	Positive Control (Pos. Ctrl.): Assay with Cloned Dehalococcoides 16S rRNA gene					
Fax:	Negative Control (Neg. Ctrl) Assay with DNA extraction blank					

#### **Test Results:**

Client Sample ID	SIREM ID	Bacterial DNA Detected	Dehalococcoides Test, Intensity (% of Positive Control)	Intensity Score	Test Result
203M001	DHC-0097	yes	0%	-	Negative
203M002	DHC-0098	yes	200%	++++	Positive (3 of 3 primer sets)
203M003	DHC-0099	yes	468%	++++	Positive (3 of 3 primer sets)
203M004	DHC-0100	yes	64%	++	Positive (2 of 3 primer sets)
203M005	DHC-0101	yes	800%	++++	Positive (3 of 3 primer sets)
203M006	DHC-0102	yes	780%	++++	Positive (3 of 3 primer sets)
203M007	DHC-0103	no	0%	-	Negative
203M008	DHC-0104	yes	500%	++++	Positive (3 of 3 primer sets)
na	Pos. Ctrl.	na	100%	+++	Positive
na	Neg. Ctrl	na.	0%	-	Negative

The above results refer only to that portion of the sample tested with the Gene-Trac assay. The test is based on PCR with primer sets specific to DNA sequences in the 16S rRNA gene of *Dehalococcoides*. A positive (+ to ++++) result in this assay indicates that a member of the *Dehalococcoides* group was detected in the water sample. *Dehalococcoides* organisms are the only microorganisms proven to possess the necessary enzymes for the complete dechlorination of PCE or TCE to ethene. The presence of *Dehalococcoides* has been positively correlated to complete dechlorinated ethenes at contaminated sites.

\*Intensity Score", categorizes PCR product quantity based on the "intensity (% of positive control)": ++++ = Very high band intensity (greater than 100% of positive control), +++ = high band intensity (67-100%), ++ moderate band intensity (34-66%) + = low band intensity (4-33%), -/+ = inconclusive (1-3%), - = no band (0%)

"Intensity (% of Positive control)" = Quantitative assessment of electrophoresis gel band intensity of most abundant PCR product test result as a percentage of corresponding positive control reaction. This value provides a semi-quantitative assessment of the number of *Dehalococcoides* organisms present in the sample. While band intensity might reflect actual concentration of the target organism, GeneTrac<sup>TM</sup> is a semi-quantitative method and results are only meant to be a qualitative indicator for determination of the presence or absence of *Dehalococcoides*.

Authorized by:

Philip Dennis, M.A.Sc., SiREM Operations Manager

Date: 26 - Jul - 02

Leading Science. Lasting Solutions

## Gene-Trac<sup>™</sup> Dehalococcoides Test, Case Narrative, Test DT-0016

Eight samples from IR Site 5 NASNI were received by SiREM 4 days post sampling, at this time the cooler temperature was measured at a warm but acceptable temperature of 15 C.

All field samples (with the exception of 203M001) tested positive for *Dehalococcoides*. Sample 203M001 tested positive for bacterial DNA (but not *Dehalococcoides* DNA) confirming that the DNA extraction for this sample was successful. Sample 203M004 ("equipment rinsate") tested mildly positive for *Dehalococcoides* DNA suggesting that some cross contamination between samples is a possibility, due to the very strong positives of the majority of samples, however, this would appear unlikely. Sample 203M007 (Source Blank) tested negative for *Dehalococcoides* DNA as well as bacterial DNA suggesting this sample was completely free of bacteria.

PD

#### Leading Science. Lasting Solutions

BECHTEL	CLEA	N	CH	AIN-O	F-CU	STODY	' RI	EC	ORI	D					21072		
CTO Numb	er: <u>2</u>	5ite5, 1 2214-20 Irvisor: Jame	3 Signa	ler(s): Ant ture(s):	hony R	ossi Mī An	Pa alyses f		d , ŋ								
Analytical I	Labora	tory Address: $\underline{l}$	SiREM Labor 30 Research Ln., 203-003 / 23	ste. 2, Gi	velph, On	tario, CANAD VIGS & 3	A /	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	<u>si/ /</u>	reserva	ation (4°C	) (			TAT (in days)		
		. –						1							2 7 4 30		
Sample ID (8 digit		Date/Time Collected	Station Description	Sample Matrix	Number of Containers	Archive (Container No.)			Cor	tainer	Nos. (2 d	digit)			Remarks (e.g., MS, MSD)		
203M00		7/11/02 0930	55-MW-36	GW	2		OF)	04									
203M0		7/11/02/045	55-MW-20	GiW	2		03	04									
203MC	203	7/11/02	55-MW-21	ωW	2		03	04							· · · · · · · · · · · · · · · · · · ·		
203 M		7/11/02 1330	Equipment Rinsote	BW	2 2		03	04		┨╂							
20310	-	111/02	55-MW-30	GW	2		03	04									
203MC	06	1445 7/11/02 1500	55-MW-30	cw	2		03	04				<u> </u>					
203400	07	1530	Source Blank	Βω	2		03	04	<u> </u>			<u> </u>					
20310	୭ଟ	7/11/02	55-MW-38	GW	2	· · · · · · · · · · · · · · · · · · ·	03	04					$\left  - \right $		· · · · · · · · · · · · · · · · · · ·		
										┼╌┤		+					
Relinquis	shed B	y/Company	Received By/Company	Date	e Ti	me Reason	n for Tr	ansfer			nstructio						
1#	N	- TONT	FedEx S:REM	7/11/0	1050		<u>-o La</u>	rb_	Plea encl	se r osed	etvrn Fed Ei	x la	bel.	and	blue ice w/		
All to		/SREM	SIKON	7/15/0		<u> </u>			Meth	od of S	hipment	: Fed	IEx		otal No. of		
			<u> </u>						Airbil	I No.: <	318654	8168	391	0	oolers Shipped: /		
										Total No. of							
									Cont	ainers:	16						

٠

.

H-3 Posttreatment Summary Microbial Insights Laboratory Report (July 25, 2003)

2340 Stock Creek Blvd. Rockford TN 37853-3044 Phone (865) 573-8188 Fax: (865) 573-8133 Email: microbe@microbe.com

# **Microbial Analysis Report**

Client:	Shaw Environme Infrastructure Brian White/ Dwa		Phone:	619.437.6326	
	1230 Columbia S Coronado, CA 92	t., Ste. 1200	Fax:	619.437.6368	
MI Ident	t <b>ifier:</b> 20shw	Date Rec.:	7/10/03	Report Date:	8/18/03
Analysis	s Requested: <sub>F</sub>	PLFA and DNA			
Project:	CTO-027				

#### **Comments:**

The following is an amended report reflecting an adjustment to the "crunch factor" used to report the number of 16S rDNA gene copies for *Dehalococcoides*.

All samples within this data package were analyzed under U.S. EPA Good Laboratory Practice Standards: Toxic Substances Control Act (40 CFR part 790). All samples were processed according to standard operating procedures. Test results submitted in this data package meet the quality assurance requirements established by Microbial Insights, Inc.

**Reported by:** 

**Reviewed by:** 

**NOTICE:** This report is intended only for the addressee shown above and may contain confidential or privileged information. If the recipient of this material is not the intended recipient or if you have received this in error, please notify Microbial Insights, Inc. immediately. The data and other information in this report represent only the sample(s) analyzed and are rendered upon condition that it is not to be reproduced without approval from Microbial Insights, Inc. Thank you for your cooperation.



2340 Stock Creek Blvd. Rockford TN 37853-3044 Phone (865) 573-8188 Fax: (865) 573-8133 Email: microbe@microbe.com

## Microbial Analysis Report

### **Executive Summary**

The microbial communities from five sampling events of two monitoring wells were characterized according to their phospholipid fatty acid composition (PLFA analysis). In addition, each sample was screened for the presence of *Dehalococcoides* using a targeted gene detection approach. Results from this study revealed the following key observations:

- Overall, MW-21 contained higher levels of biomass with greater variance among sampling events, than did MW-30.
- PLFA profiles showed that within MW-21 proportions of Firmicutes have increased while biomarkers for Proteobacteria have continued to decrease through the June 2003 sampling event. Results from the July 2003 sampling event showed a shift in the community composition at MW-21 in which the community became more similar to the March 30, 2003 sample. The community structure in MW-30 remained fairly consistent with that which was observed in the previous sampling event.
- Physiological status biomarkers indicated that starvation levels, for the most part, decreased steadily
  over time in MW-30. Starvation levels in sample MW-21 although having decreased following the
  chemical oxidation treatment increased through the third post treatment event. Results from the July
  2003 sampling event showed that starvation markers had decreased in MW-21. Neither MW-21 nor
  MW-30 was shown to be responding to environmentally induced stress at any time throughout the
  duration of the study.
- The presence of *Dehalococcoides* was detected at all sites except SS-MW-21 at the second sampling, and at S5-MW-30 at the third.

#### **Overview of Approach:**

#### **Phospholipid Fatty Acid Analysis**

Examining the phospholipid fatty acids (PLFA) in environmental samples is an effective tool for monitoring microbial responses to their environment. They are essential components of the membranes of all cells (except for the Archea, a minor component of most environments), so their sum includes all important actors of most microbial communities. There are four different types of information in PLFA profiles – biomass, community structure, diversity, and physiological status.

**Biomass:** PLFA analysis is the most reliable and accurate method available for the determination of viable microbial biomass. Since phospholipids break down rapidly upon cell death (21, 23), the PLFA biomass does not contain 'fossil' lipids of dead cells. The sum of the PLFA, expressed as picomoles (1 picomole =  $1 \times 10^{-12}$  mole), is proportional to the number of cells. The proportion used in this report, 20,000 cells/pmole, is taken from cells grown in laboratory media, and varies somewhat with type of organism and environmental conditions. Starving bacterial cells have the lowest cells/pmol, and healthy eukaryotic cells have the highest.

**Community Structure:.** The PLFA in an environmental sample is the sum of the microbial community's PLFA, and reflects the proportions of different organisms in the sample. PLFA profiles are routinely used to classify bacteria and fungi (19) and are one of the characteristics used to describe new bacterial species (25). Broad phylogenic groups of microbes have different fatty acid profiles, making it possible to distinguish among them (4, 5, 22, 24). Table 1 describes the six major structural groups employed in this report.

PLFA Structural Group	General classification
Monoenoic (Monos)	Abundant in Proteobacteria (Gram negative bacteria), typically fast growing, utilize many carbon sources, and adapt quickly to a variety of environments.
Terminally Branched Saturated (TerBrSats)	Characteristic of Firmicutes (Low G+C Gram-positive bacteria), and also found in Bacteriodes, and some Gram-negative bacteria (especially anaerobes).
Branched Monoenoic (BrMonos)	Found in the cell membranes of micro-aerophiles and anaerobes, such as sulfate- or iron- reducing bacteria
Mid-Chain Branched Saturated (MidBrSats)	Common in Actinobacteria (High G+C Gram-positive bacteria), and some metal-reducing bacteria.
Normal Saturated (Nsats)	Found in all organisms.
Polyenoic	Found in eukaryotes such as fungi, protozoa, algae, higher plants, and animals.

 Table 1. Description of PLFA structural groups.

**Diversity:** The diversity of a microbial community is a measure of the number of different organisms and the evenness of their distribution. Natural communities in an undisturbed environment tend to have high diversity. Contamination with toxic compounds will reduce the diversity by killing all but the resistant organisms. The addition of a large amount of a food source will initially reduce the diversity as the opportunists (usually Proteobacteria) over-grow organisms less able to reproduce rapidly. The formulas used to calculate microbial community diversity from PLFA profiles have been adapted from those applied to communities of macroorganisms (8).

**Physiological status:** The membrane of a microbe must adapt to the changing conditions of it's environment, and these changes are reflected in the PLFA. Toxic compounds or environmental conditions that disrupt the membrane cause some bacteria to make trans fatty acids from the usual cis fatty acids (7). Many Proteobacteria and others respond to starvation or highly toxic conditions by making cyclopropyl (7) or midchain branched fatty acids (20). The physiological status biomarkers for Toxic Stress and Starvation/Toxicity are formed by dividing the amount of the stress-induced fatty acid by the amount of it's biosynthetic precursor. PLFA were analyzed by extraction of the total lipid (21) and then separation of the polar lipids by column chromatography (6). The polar lipid fatty acids were derivatized to fatty acid methyl esters, which were quantified using gas chromatography (15). Fatty acid structures were verified by chromatography/mass spectrometry and equivalent chain length analysis.

#### **Targeted Gene Detection:**

DNA primers (short pieces of DNA) matching a conserved region of the 16S rRNA gene of Dehalococcoides were used to determine if this bacterium was present at detectable levels in the samples. Based on Loffler *et al.* (2) the sensitivity of these primers is  $\sim 10^3$  cells/ liter or g of sample. Cloned *Dehalococcoides* 16S rDNA was used as a positive control to verify test results.

#### **Results and Discussion**

#### **Phospholipid Fatty Acid Analysis**

Overall, biomass estimates (as determined by the total concentration of PLFA) were highest in MW-21 throughout the study. During the baseline event both locations were  $\sim 10^5$  cells/mL. Following the chemical oxidation treatment, both samples experienced an increase in biomass with MW-21 showing the most notable response (almost two orders of magnitude). However biomass levels in MW-21 were noticeably lower in the samples collected during the 4/30/03 and 6/5/03 sampling events, before rebounding to the highest recorded level ( $\sim 10^7$  cells/mL). It is speculated that the increase in biomass following the chemical oxidation treatment was most likely due to increased carbon availability from the partial breakdown of polymeric material (i.e. humics, fulvics, lignin, etc).

Biomass concentrations in MW-30 varied less than in MW-21 but generally increased through the 4/30/03 sampling event.

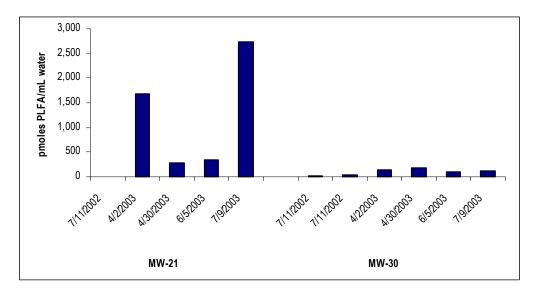


Figure 1. Biomass content is presented as the total amount of phospholipid fatty acids (PLFA) extracted from a given sample. Total biomass is calculated based upon PLFA attributed to bacterial and eukaryotic biomass (associated with higher organisms).

The PLFA profiles of the control (pre treatment) samples revealed a diverse microbial community at both sampling locations (Figure 2), similar to other subsurface groundwater samples. Upon *in situ* oxidation, the proportions of biomarkers for Proteobacteria increased, and the proportions of Firmicutes, anaerobic metal reducers, Actinomycetes, and Eukaryotes decreased. Many Proteobacteria are opportunists, and here they have taken advantage of the change in conditions to quickly increase their biomass.

Within MW-21, proportions of Firmicutes have increased while biomarkers for Proteobacteria decrease through the 6/5/03 sampling event. By the 7/9/03 event, the community structure within MW-21 had shifted to be similar to the community observed on 4/30/03. The community structure in MW-30 remained consistent with that which was observed in the previous sampling event.

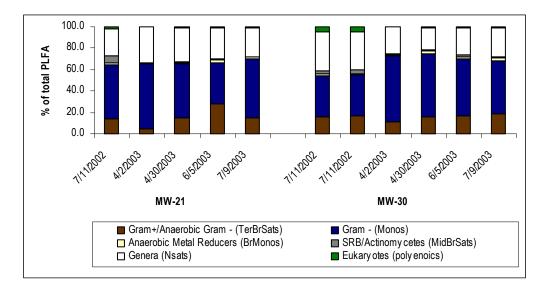
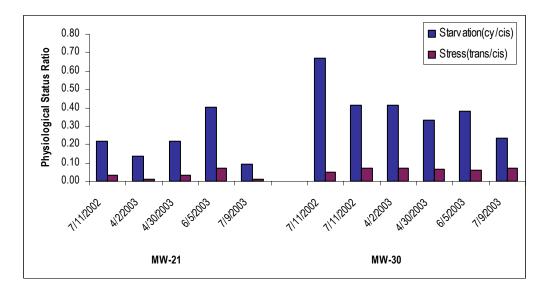


Figure 2. Relative percentages of total PLFA structural groups in the samples analyzed. Structural groups are assigned according to PLFA chemical structure, which is related to fatty acid biosynthesis. See Table 1 for detailed descriptions of structural groups.

Physiological status biomarkers indicated that starvation levels, for the most part, decreased steadily over time in MW-30. Starvation levels in sample MW-21 decreased following treatment and then increased through the third post-treatment event (6/5/03). Results from the last round of sampling showed that starvation indicators had decreased. Neither MW-21 nor MW-30 was shown to be responding to environmentally induced stress at any time throughout the duration of this study.



**Figure 3.** Microbial physiological stress markers. The starvation biomarker for the Gram-negative bacterial community is assessed by the ratios of cyclopropyl fatty acids to their metabolic precursors. An adaptation of the Gram-negative community to toxic stress is determined by the ratio of  $\omega 7t/\omega 7c$  fatty acids. Gram-negative bacteria generate *trans* fatty acids to minimize the permeability of their cellular membranes as an adaptation to a less favorable environment. Ratios ( $16:1\omega 7t/16:1\omega 7c$  and  $18:1\omega 7t/18:1\omega 7c$ ) greater than 0.1 have been shown to indicate an adaptation to a toxic or stressful environment, resulting in decreased membrane permeability.

Table 2. Values below are: viable microbial biomass expressed as picomoles of PLFA per mL of sample and as cells per mL of sample, fatty acid structural groups as percent of total PLFA, and physiological status biomarkers as mole ratio. "-" indicates data not available.

Samp	les	Bio	mass		Com	nunity Structur	e (% of total PLFA)			Physiolo	gical Status
				Anaerobic Gram Neg./		Anaerobic metal	Actinomycetes/				Membrane
Sample Name	Sample Date	pmol/mL	cells/mL	Firmicutes (TerBrSats)	Proteobacteria (Monos)	reducers (BrMonos)	SRB (MidBrSats)	General (Nsats)	Eukaryotes (polyenoics)	Starved cy/cis	Stress, trans/cis
S5-MW-21	7/11/02	8	1.55E+05	13.7	50.6	2.1	6.3	25.4	1.9	0.22	0.03
S5-MW-21	4/2/03	1,680	3.36E+07	4.8	60.5	0.5	0.2	33.9	0.1	0.14	0.01
S5-MW-21	4/30/03	275	5.50E+06	15.3	49.8	1.6	0.6	32.1	0.6	0.22	0.03
S5-MW-21	6/5/03	342	6.84E+06	28.4	38.2	2.6	0.8	29.4	0.7	0.40	0.07
S5-MW-21	7/9/2003	2,740	5.48E+07	15.3	54.6	1.7	0.4	27.4	0.6	0.09	0.01
S5-MW-30	7/11/02	22	4.46E+05	16.3	38.3	1.7	2.8	36.2	4.7	0.67	0.05
S5-MW30	7/11/02	39	7.74E+05	17.0	37.8	1.7	3.7	35.2	4.5	0.41	0.07
S5-MW-30	4/2/03	137	2.73E+06	11.1	61.3	1.6	1.1	24.6	0.2	0.41	0.07
S5-MW-30	4/30/03	192	3.83E+06	16.3	58.5	2.8	1.4	20.2	0.7	0.33	0.06
S5-MW-30	6/5/03	93	1.86E+06	17.1	52.9	1.8	1.7	25.4	1.3	0.38	0.06
S5-MW-30	7/9/2003	127	2.53E+06	18.5	49.5	2.6	1.7	26.5	1.2	0.23	0.07

#### **Targeted Gene Detection**

*Dehalococcoides* was detected in both samples from the last sampling event. Since the establishment of this study, Microbial Insights, Inc. has acquired the technology required to quantify the number of *Dehalococcoides* S16 rRNA gene copies/mL water. This technology was applied to the last sampling event in this study and therefore the results are also expressed (in brackets) as a numerical value. In general, the presence of *Dehalococcoides* was detected at all sites except SS-MW-21 at the second sampling, and at S5-MW-30 at the third.

**Table 6.** Results from DNA amplification using primers specific for *Dehalococcoides*. Specific primers directed to a conserved region of the 16S rRNA gene of *Dehalococcoides* were used to determine if this bacterium was present at detectable levels in the samples. The sensitivity of these primers is  $\sim 10^3$  cells/liter or g of sample. Presence is noted with a plus sign, and the relative abundance is presented by the number of plus signs.

Sample	Dehalococcoides ethenogenes
S5-MW-21 (7/11/02)	+++
S5-MW-21 (4/2/03)	-
S5-MW-21 (4/30/03)	++
S5-MW-21 (6/5/03)	++
S5-MW-21 (7/9/03)	+++ (NQ (4.63E+02 <sup>a,b</sup> ))
S5-MW-30 (7/11/02)	+++
S5-MW30 (7/11/02)	+++
S5-MW-30 (4/2/03)	+++
S5-MW-30 (4/30/03)	-
S5-MW-30 (6/5/03)	+
S5-MW-30 (7/9/03)	+++ (1.53E+03 <sup>a,b</sup> )
Dehalococcoides etheneogenes positive control	+++
E.coli negative control	-

NQ = Detectable, but not quantifiable. These results were obtained using a Q-PCR analysis for Dehaolococcoides 16S rDNA.

A Assuming Dehalococcoides ethenogenes contains single rRNA operon per genome, the value given also may represent the number of cells per mL or g of sample for bacteria in this phylogenetic group.

 $^{\rm B}\,$  The detection limit is  $\,{\sim}10^2\,16S$  rRNA gene copies per g or mL of sample.

#### References

- 1. Amann, R. I., W. Ludwig, and K.-H. Schleifer. 1995. Phylogenetic identification and in situ detection of individual microbial cells without cultivation. Microbiological Reviews 59:143-169.
- 2. Cottrell, MT and David L. Kirchman. Appl Environ Microbiol. 2000 April; 66 (4): 16921697.
- Gillis, M., V. Tran Van, R. Bardin, M. Goor, P. Hebbar, A. Willems, P. Segers, K. Kerstens, T. Heulin, and M. P. Fernadez. 1995. Polyphasic taxonomy in the genus Burkholderia leading to an amended description of the genus and proposition of Burkholderia vietnamiensis sp. nov. for N2-fixing isolates from rice in Vietnam. Int. J. Syst. Bacteriol. 45:274-289.
- 4. Dowling, N. J. E., F. Widdel, and D. C. White. 1986. Phospholipid ester-linked fatty acid biomarkers of acetate-oxidizing sulfate reducers and other sulfide forming bacteria. Journal of General Microbiology 132:1815-1825.
- 5. Edlund, A., P. D. Nichols, R. Roffey, and D. C. White. 1985. Extractable and lipopolysaccharide fatty acid and hydroxy acid profiles from Desulfovibrio species. Journal of Lipid Research 26:982-988.
- 6. Guckert, J. B., C. P. Antworth, P. D. Nichols, and D. C. White. 1985. Phospholipid ester-linked fatty acid profiles as reproducible assays for changes in prokaryotic community structure of estuarine sediments. FEMS Microbiol. Ecol. 31:147-158.
- Guckert, J. B., M. A. Hood, and D. C. White. 1986. Phospholipid ester-linked fatty acid profile changes during nutrient deprivation of Vibrio cholerae: increases in the trans/cis ratio and proportions of cyclopropyl fatty acids. Appl. Environ. Microbiol. 52:794–801.
- Hedrick, D.B., A Peacock, J.R. Stephen, S.J. Macnaughton, Julia Brüggemann, and David C. White. 2000. Measuring soil microbial community diversity using polar lipid fatty acid and denatured gradient gel electrophoresis data. J. Microbiol. Methods, 41, 235-248.
- 9. ITRC Internet Training on Natural Attenuation of Chlorinated Solvents in Groundwater: Principles and Practices, Apr 00.
- 10. Löffler, F. E., Q. Sun, et al. (2000). "16S rRNA gene-based detection of tetrachloroethene-dechlorinating Desulfuromonas and Dehalococcoides species." Appl Environ Microbiol 66(4): 1369-1374.
- 11. Maymo-Gatell X, Chien Y, Gossett JM, Zinder SH. 1997. Isolation of a bacterium that reductively dechlorinates tetrachloroethene to ethene. Science 276(5318):1568-71.
- Muyzer, G., E. C. De Waal, and A. G. Uitterlinden. 1993. Profiling of complex microbial populations by denaturing gradient gel electrophoresis analysis of polymerase chain reaction-amplified genes coding for 16S rRNA. Applied and Environmental Microbiology 59:695-700.
- 13. Ribosomal Database Project (<u>http://rdp.cme.msu.edu</u>. National Center for Biotechnology Information. (http://www.ncbi.nlm.nih.gov/)
- 14. Overman, J., "Family Chlorobiaceae," in M. Dworkin et al., eds., The Prokaryotes: An Evolving Electronic Resource for the Microbiological Community, 3rd edition, release 3.7, November 2, 2001, Springer-Verlag, New York, www.prokaryotes.com.
- 15. Ringelberg, D. B., G. T. Townsend, K. A. DeWeerd, J. M. Sulita, and D. C. White. 1994. Detection of the anaerobic dechlorinating microorganism Desulfomonile tiedjei in environmental matrices by its signature lipopolysaccharide branch-long-chain hydroxy fatty acids. FEMS Microbiol. Ecol. 14:9-18.
- 16. Schlötelburg, C. 2001. Mikrobielle Diversität und Dynamik einer 1,2-Dichlorpropan dechlorierenden Mischkultur (Microbial Diversity and Dynamics in a 1,2-Dichloropropane Dechlorinating Mixed Culture). Dissertation, Humbolt University, Berlin, Germany. In German: http://edoc.hu-berlin.de/dissertationen/schloetelburg-cord-2001-12-07/PDF/Schloetelburg.pdf
- 17. Sharp, R., D. Cossar, and R. Williams. 1995. Physiology and metabolism of Thermus. Biotechnol. Handb. 9:67-91.
- Stephen, J. R., Y.-J. Chang, Y. D. Gan, A. Peacock, S. Pfiffner, M. Barcelona, D. C. White, and S. J. Macnaughton. 1999. Microbial characterization of a JP-4 fuel-contaminated site using a combined lipid biomarker/polymerase chain reaction-denaturing gradient gel electrophoresis (PCR-DGGE) based approach. Environmental Microbiology 1:231-241.
- Tighe, S.W., de Lajudie, P., Dipietro, K., Lindström, K., Nick, G. & Jarvis, B.D.W. (2000). Analysis of cellular fatty acids and phenotypic relationships of Agrobacterium, Bradyrhizobium, Mesorhizobium, Rhizobium and Sinorhizobium species using the Sherlock Microbial Identification System. Int J Syst Evol Microbiol 50, 787-801.
- 20. Tsitko, I.V. Gennadi M. Zaitsev, Anatoli G. Lobanok, and Mirja S. Salkinoja-Salonen. 1999. Applied and Environmental Microbiology 65(2) 853-855.
- 21. White, D. C., W. M. Davis, J. S. Nickels, J. D. King, and R. J. Bobbie. 1979. Determination of the sedimentary microbial biomass by extractable lipid phosphate. Oecologia 40:51-62.

- White, D. C., H. C. Pinkart, and D. B. Ringelberg. 1997. Biomass measurements: Biochemical approaches, p. 91-101. In C. J. Hurst, G. R. Knudsen, M. J. McInerney, L. D. Stetzenbach, and M. V. Walter (ed.), Manual of Environmental Microbiology. ASM Press, Washington.
- 23. White, D. C., and D. B. Ringelberg. 1995. Utility of signature lipid biomarker analysis in determining in situ viable biomass, community structure, and nutritional / physiological status of the deep subsurface microbiota. In P. S. Amy and D. L. Halderman (ed.), The microbiology of the terrestrial subsurface. CRC Press, Boca Raton.
- 24. White, D. C., J. O. Stair, and D. B. Ringelberg. 1996. Quantitative comparisons of in situ microbial biodiversity by signature biomarker analysis. Journal of Industrial Microbiology 17:185-196.
- 25. Vandamme P, Pot B, Gillis M, de Vos P, Kersters K, Swings J. Polyphasic taxonomy, a consensus approach to bacterial systematics. Microbiol Rev 1996 Jun;60(2):407-38.

Site Name: CTO Number: Site Contact/Sup	R 5: <del>4</del> . 5, N 22214-20	IASNT Samp 3 Signa	oler(s): A	DF-CU			ay Ite	ms/ ired	7 22	21075
Analytical Labor	atory Address: 2	Microbia   Ins 2340 Stock (reek B 203-003/23			37853				Preservation (4°C)	TAT (in days)
Sample ID No. (8 digit)	Date/Time Collected	Station Description	Sample Matrix	Number of Containers	Archive (Container No.)			-	Container Nos. (2 digit)	2 7 4 30 Remarks (e.g., MS, MSD)
2031001		55-MW-36	GW	2		01	02			01: 2400 mL, 17:1. 02: 1200 mL, 1 fil.
203M 002		55-MW-20	GW	3			02			01: 2400 mL, 2 fil. 02:1200 mL, 2 fil.
	7/11/02	55-MW-21	an a	2		1				OliboomL, 2 faters
2031003	1/45	TK1/102 Equipment Ringate	aw				02			01:2400mL, 1filt.
203M004	1330	- Rinsate		2			02			02:12 00mL, 1filt. 01:600mL, 2filt.
2031005	1445	55-AW-30	GW	2		0	02	<b> </b>		02:600mL, 1filt. 01:600mL, 2filt.
203 MOOG	1/11/02 1500	55-MW-30	GW	2		01	07			02:600mL, 2Filt. 01:2400mL, 1 Pilt.
203 1007	1530	Source Blayle	BW	2		01	02			02:1200 mb, 15:14. 01:900 mL, 15:14.
203 4008	7/11/02	55-MW-38	GW	2		01	02			07: 100mL, 1filt.
			· · · · · · · · · · · · · · · · · · ·							
Relinquished B	y/Company	Received By/Company	Date	e Tir	ne Reason I	or Tra	ansfe	r   C	Commenta/Instructions:	
A. they Fr	1/BNT	Fed Ex	7/11/0	2 180	o Shipt	<u> </u>	ab			
								N	Nethod of Shipment: Fed Ex	Total No. of
								A	Nrbill No.: 818658168406	Coolers Shipped:
								ד	otal No. of	

ŝ,

Ύι.

the <b>Gigro</b>	IT Corpord 2790 Moss Monroevill (412)372-7	ation side Blvd. le, PA 151 7701	146-2792	CI	HAIN-	OF-C				ECC	ORD				ATORY COPY 18934 FORM 0019 REV. 9-99	Project Informat			
THE LAD COODDINIA TOD	1 AD COODDINATOD'S DUONE		I AB COOPDIN	ATOP'S E.	- 543	2	LABORAT MICR INSIG	ORY SER	VICE ID		TORY CON		15	MAIL REPORT (COMPANY NAME)	NIRCHMENTAL	For Project Pers Do Not Submit t			
P. ISTINA PROJECT NAME: CTO-027	PROJECT LOCATION $\frac{949-660-7}{FROJECT LOCATION}$ FROJECT PHONE NUMBER 619-437-6		-7	PROJEC	G NUMBER	5	LABORAT SUS-	ORY PHO	NE	LABORA	TORY FAL	VIII X	2122	RECIPIENT NAME D. 15HIN		DHO SAMPL	NG	ton	nory
CTC-OL/	PROJECT PHONE NUMBER	5- UN	PROJECT FAX	0	51512	3	LABORAT	ORY ADD	RESS					ADDRESS	51478	DHE SAMPLI GND OF MARC OF APRIL TO M Dhe REBAN	K/i	661	NNIN
BRIDN WHITE	619-437-6	326	619	-43	7-63	68	23	40	570	CK	CREE	KB	VD.	ADDRESS 3347 MICHLES	in DR; 200	FAPRIL TO A	sse.	S	
NASNI	CITY, STATE AND ZIP CODE CCREMADE CA PROJECT MANAGER'S	92135		15	N,		CITY, STA	TE AND Z	IP CODE	V	378	353	2	TRVINE, CA	92705	Dhe REBENI	0		
ROJECT MANAGER	PROJECT MANAGER'S	14133	PROJECT MAN	NAGER'S F.	AX		RUCK	1010	1/10	7.	17	7	7	1//					
RICHARD WONG	PHONE 619-437-6	6326	619	-43	7-636	58		USES 1	MUM I	50%	//	//	//	//			1	Sampl	le Type
Sample Identifier	Maint	D36 1.	THE PRES	erred #	of Cont.	Nor A.	Ana	LSAN	MUR		[.]	//	//	Commen	ts	Sample Point Location		С	FQ
1 818725-185		0310:25	ICE F	3 en 12 pey	III	PGR	X	X	Í		``					1 55-MW-21@ 8,6			X
818725-186	. 4.2.	03 11:35		Y	T	V	X	$\triangleleft$								2) 55-MW-30@8,07	ic.r		X
3		7											*				7-		
4	-		5													/			
5	_/												-			/			
6	NA															NA			
7	AR	-																	
8														7			_		
9													-						
10																			
SAMPLES COLLECTED BY: 2. Willia	Magsdale cour	RIER AND AIR BIL	in the second second		L		· · · · · ·							LER TEMPERATURE UPON RECEIPT:		Comments	-		
RELINQUISHED BY	- 4.2.03	R	ECEIVED BY			DATE	TIME	-	-	-		5	AMPLE'S C	CONDITION UPON RECEIPT		DEDICATED PULLOW FROM PULL	MP	-	
								12								LOW FLOW PUR	H/S	.OM	PLE
Di	stribution: White - La	aboratory ("	To be retu	urned u	with Analy	utical R	enort):	Golde	nrod	Droje	TFile.	Man	illa Dr	roiect Data Manager		Sample Type: G - Grab, C - Co	nposite, l rol Samp		d Sample

e Coro	IT C 2790 Mon	Corporation Mosside L	Blvd.	(	CHAI	N-OF-	CUS	TOD	YR	ECO	ORD			LABORATO		
	LAB COORDINATOR	)372-7701	4 13140-2	.192	,										8938 M 0019 REV. 9-99	Project Information Section
P. ISHIDA	949-6	660-75	61 9	ordinator	60-	5433	LABOR/	TORY SER		GR	EG L	DAVIS	s	MAIL REPORT (COMPANY NAME)	NMGNTAL	For Project Personnel Only Do Not Submit to Laborator
ECT NAME: CTO-027 ECT CONTACT	PROJECT LOCATION	SITE 5	- LINIT	2 PRO	SI87	25	LABOR/	-573	- 818	LABOR/	5-5	73-	8133	RECIPIENT NAME D. 15411	0A	MICROBE POST-TREATM
BRIAN WHITE	CITY, STATE AND ZIL	37-63.	26 6	19- 1	137-	6368	23	TORY ADD	STO	cKi	CREE	KB	ing	ADDRESS SUI 3347 MICHLES	TE 200 ON DR	MICROBE POST-TREATM #2 SAMPLING FOR END OF APRIL
NASNI	CORCHAD	0, CA 92	135	LI.S	.N.		Ro	ATE AND Z	IP CODE	TN	37	85	3	CITY, STATE AND ZIP CODE		END OF THEFE
ICHARD WONG	PROJECT MANAGER	·s 37-632	PROJEC	19-43	7-6.	368		-5/	//	/	/	7	77	//		
Samela Libert'S		Marint Date	/ /	Preserved	# of Cont.	Clevel A.	Ana	Nº CA	NA		//	//	//			Sample Ty
Sample Identifier 8/8725 - 218				240	* QLA	0/4.5	K		$\langle$	4	4	$\langle \rangle$	4	Comments		Sample Point Location G C F
818725-219	WATER		136 ICE	3	PERSON	DAYS	X	<u> </u>				_				1 55-MW-21@ 8,6 BGS
		V 14	22	V.	V	V	X	X								2 35-MW-30@ 8,0'8GS
<b>F</b>			~		1											
1												-				
		1						-	+			-				
								_	-							
													-			N/a
/																<u> </u>
					1.1.1	-										
		1							-		_	-				
1					-				-		_	-				
ES COLLECTED BY: BCW	WITH	COURIER AND	AIR BILL NUMBE	20.												
RELINQUISHED BY			RECEIVED I		-	DATE	TIME				and the	SA	MPLE'S CON	TEMPERATURE UPON RECEIPT:		Comments
							- Andrew Street	CO	OLE	R S	EAL	ep 1	N/T	APG & CUSTOOY.	SEAL	SAMPLES COLLECTED
									4. <u></u>				in a second			VIA DEPICATED PUMPS/ LOW FLOW PURGING.
		Land, and		λ										1		FCCW / URGING,
Dist	ribution: Whit	e - Laborato	ry (To be r	returned v	with Ana	lytical Re	eport);	Golden	rod - F	Project	File; 1	Manill	a - Proj	ect Data Manager		Sample Type: G - Grab, C - Composite, F - Field Samp QC - Quality Control Sample

PROJECT NAME: CTO-027	Monr. (412)3 LAB COORDINATOR'S 949-660 PROJECT LOCATION PROJECT PHONE NUM 619-437 CTTY, STATE AND ZIP	PHONE -7561 5-01 BER -6326 CODE	LAB COO 949- 949- NIT 2 PROJECT 6 619- CLEENT	92 RDINATOR'S I - 660 - 75 -	543 872 -636	<u>১</u> র	LABORA INS LABORA B65-2 LABORA 23	ORY SERVI	CE ID S E S S S S CODE	GRE LABORAT 865 KC	TORY CON TORY FAN 572	DAVI 3- 812 3- 812	3 1.VD	CITY STATE AND 7	FANY NAME) EC ISH	10A m #200		Project Information For Project Person Do Not Submit to MNA - POST-T #3 SAMPCIM END OF M	nel	On	ly	y
NASNI PROJECT MANAGER RICHARD WONG	CORONA PROJECT MANAGER'S PHONE 619-43	7-632	PROJECT	U.S.A MANAGER'S	FAX	68 (10)00/1. (10)00/1.		Need I	RI		A 3	785	9	TRAIN		92705		Sample Point Location		ample	e Typ	-
Sample Identifier           1         818725-01           55-MW-21(81872)         2           2         816725-80           35-MW-30(8187)         8187	5-223 Hater	65/03 11	(1976) 25 ICE	2	Person	14044	X	X	Ĺ	Á	$\int$		SA	MP(6 # 2 55-MI	Comments 8/872 W-21		se)	2) S5-MW-21			×	
2 816725-9 65 MW-30 8187	25-) Wate	6/5/6312	30 ICE	2	Per 50W	19day	X	¥			1		For	S5-MW	-30 (Fe	DA USE IN RE	ford)				$\tilde{z}$	
4			/									_										
6	N	A				-																
7	4																					
9																				7		
10 SAMPLES COLLECTED BY: B. T. RELINQUISIED BY	maka E	COURIER AND	D AIR BILL NUMB			2 66V DATE 6/5/07	TIME						MPLE'S C	ER TEMPERATURE UI ONDITION UPON REC CUSTED	EIPT	9८		Comments <u>Delkectel</u> VIA Ded <u>PUMPS/Low</u> flow	L L L L L L L	E el urg	10,	
Dis	stribution: Whi	te - Laborat	tory (To be	returned	with Ana	alytical F	Report);	Golde	nrod -	Projec	ct File	; Manil	la - Pro	oject Data Ma	mager			Sample Type: G - Grab, C - Con QC - Quality Cont	posite, ol Samp	F - Fie ble	ld San	iple,

	279 Mo (41)		de Blvd.			HAIN	- <b>OF</b> -					ORE	•		LABORATORY CON A 1895 FORM 1019	8	Project Informati			
Duray ne Ishida	LAB COORDINATO		,	a service a	DINATOR'S	FAX 543	2	LABOI	TODI	SERVICE	D LABO				MAIL REPORT (COMPANY NAME)		For Project Perso			
PROJECT NAME: CTO-27	PROJECT LOCATIO					CT NUMBER		LABO	RATORY	PHONE	ALABO	RATORY	3-81	22	RECEPTENT NAME DUBYNE IShida		Do Not Submit to			
PROJECT CONTACT	PROJECT PHONE N	UMBER		PROJECT F	AX	1870	2	LABO	RATORY	ADDRESS				+	ADDRESS		PostRebound	Sam	ph	ins
Brizn White	61943 CITY, STATE AND		326	619	43	762	68					k Cr	eels	: BL.	3347 Michelson #	200				
NASNI	Corona	doca	9213	5 I	USA	1		Re	ock	ND ZIP CO	rd	TN	378	53	IPNINE CA 927	05				
Richon Wans	PROJECT MANAGE	ER'S	221		ANAGER'S		368	1		/	7	//	7	11	//					-
0	1617-92	25-6:	2016	101		X. /	1		nalyses	×/_		//		//				S	ample	е Тур
Sample Identifie	r J	Matrit	Date	ine P	eserve w	of cont	Clevel A	1	s x	T		//	//	//	Comments		Sample Point Location	G	c	F
1 SS-MW-20(8187	5-24 Wat	2 7/9/	0945	1	2	Person	14 Days	X	X		T	ſſ		Sam	26 # 818725-241 FOR	-	D 55-MW-30		-	×
2 55-MW-21 (81872	5-242) Wat	24	1100			pop	UAVS	1				+		Sou	MW-30 (FOR Report USE) 11 # 818725-242, FOR MW-2,1 (FOR Report USE		2) 55-MW-21			×
	- ways		1100	ICE	2	SOW	V	×	×				_	55	MW-21 (FOR Report USG	2)				5
3																				4
4																				
5								F										A	-	-
							F													_
6					/												- DYA		-	
7		N	4										-				/18			_
8		1	A										-		······································				-	-
		1-						-				+								1
9			_														unice .		X	+
10										-	-						2		4	
SAMPLES COLLECTED BY: 8.720	ka K.C	COURI	ER AND AIR B	ILL NUMBER	UPS	:12				190	85	7784			R TEMPERATURE UPON RECEIPT:		Comments			
Brin Linguistien B		V	1	RECEIVED BY		-	719103	TIM		Sea	I N	Tap	e & C	MPLE'S CO	NDITION UPON RECEIPT		Collected VIA De	dic	ale	1
				-					_						/		pumpe / Low fl	su f	un	squ
					1			-			<del>10.</del> 2	in an	a an an ta	<u>pieren</u>						-
Di	stribution: WI	hite - Lah	oratory (	To be re	turned y	vith Ana	lytical R	enort)	· Gol	denror	- Proi	ect File	Manill	la Pro	ject Data Manager		Sample Type: G - Grab, C - Com	osite, F	- Field	d Sam

Appendix I Posttreatment Monitored Natural Attenuation Evaluation Report

## Posttreatment Evaluation of Site 5 – Unit 2 Groundwater Monitoring Data

### August 6, 2003

This report provides an evaluation of the baseline, interim, and posttreatment analyses of groundwater samples obtained from the treatment area monitor wells at Site 5 - Unit 2. The evaluation focuses on determining if conditions are favorable for continued microbial degradation of chlorinated aliphatic hydrocarbons, and predicting the effectiveness of the remedial treatments that have been performed at the Site. The evaluation considers direct evidence based on observations of the changes in contaminant concentrations, and indirect evidence based on natural attenuation parameters. Available Data

Several rounds of groundwater samples have been obtained from ten treatment area monitoring wells. A single baseline sample round was obtained during May 2002 prior to the three in situ chemical oxidation treatment events that occurred at the Site. Two interim samples rounds were obtained during the three treatment events. These interim rounds were collected during August and October 2002, and some wells were sampled a third time during January 2003. The final treatment event occurred during February 2003. Following the final treatment, two posttreatment rounds occurred at approximately 30 days and 48 days after the final treatment, and some wells were also sampled 106 days after the final treatment. An additional round of samples was obtained during July 2003, 138 days after the final treatment.

All of these samples were analyzed for VOCs using EPA Method 8260B, which included *cis*-1,2-DCE (DCE) and vinyl chloride (VC). Concentrations of VC exceed regulatory standards at some locations, so it is a contaminant of concern. Concentrations of DCE do not exceed any standards, but DCE is a precursor that degrades to VC as explained in the following section. In addition, two of the treatment area wells were also analyzed for a set of natural attenuation parameters, which included chloride, nitrate, sulfate, sulfide, total organic carbon (TOC), ethane, ethene, and methane.

## **Evaluation of VOC Concentrations**

Several natural attenuation processes can lower the concentrations of chlorinated aliphatic compounds, including DCE and VC. The most effective process is microbial reductive dechlorination (EPA, 1998), during which tetrachloroethene (PCE) is reduced to trichloroethene (TCE), which is then reduced to DCE, which is then reduced to VC, which is finally either reduced to ethene or completely mineralized.

The reaction sequence can be summarized as follows:

 $PCE \rightarrow TCE \rightarrow DCE \rightarrow VC \rightarrow [Ethene + H^+ + Cl^-] \text{ or } [CO_2 + H_2O + H^+ + Cl^-]$ 

Each step in the sequence involves the replacement of a chlorine atom with a hydrogen atom. The final products (ethene or complete breakdown products) are non-toxic. The most likely original source of contamination is PCE and/or TCE, both of which are commonly used solvents and degreasing agents. DCE and VC are mostly used in the manufacturing of plastics and are not usually found as primary contaminants at military installations. Concentrations of PCE are entirely nondetectable, and concentrations of TCE are mostly non-detectable, so at the current stage of natural attenuation, there is considerable progress along the sequential reductive dechlorination reaction. The concern, however, is that the degradation product VC is more toxic than its parent compounds, so the presence of these compounds will remain a concern until degradation is nearly complete.

Figures 1 through 4 show the concentrations of DCE (square symbols), and VC (diamond symbols) that were detected in the baseline, interim, and posttreatment sample rounds at four of the ten treatment area wells. Some samples from two of the wells (S5-MW-21 and S5-MW-30) were also analyzed for ethene (triangle symbols). The four wells shown in the figures are located within the treatment area, and had the highest concentrations of DCE and VC (although some of the reported concentrations were estimated [J-flagged]). Note that a logarithmic concentration scale is used on the vertical axis so that changes at lower concentrations can be clearly seen. The vertical line in the four figures indicates the final treatment date.

Figures 1 through 4 show that concentrations of DCE (and VC to a lesser extent) display a rebound effect after the last treatment, but VC concentrations are lower in the last sample relative to the baseline at all four wells. Rebound effects (temporary increases in contaminant concentrations) after treatment are commonly observed at sites where in situ chemical oxidation has been performed. DCE is more susceptible than VC to rebound for several reasons (Interstate Technology and Regulatory Cooperation Work Group [ITRC], 2001). Adsorption coefficients for DCE are higher than those of VC (U.S. Environmental Protection Agency [EPA], 1998), so more DCE is in an adsorbed state relative to VC. The oxidants used in the treatment will preferentially oxidize the dissolved contaminants, so aqueous DCE concentrations can quickly become replenished after treatment by desorption from the naturally occurring organic carbon present in the sediment. In addition, Fenton's reagent and permanganate can partially oxidize the organic substrate to which DCE (and VC to a lesser extent) are adsorbed, thus temporarily increasing their aqueous phase concentrations. Permanganate also causes large temporary increases in the dissolved concentrations of  $K^+$  and  $MnO_4^-$ , which disrupts the adsorptiondesorption equilibrium for all of the elements and compounds that compete for sorption sites.

Table 1 summarizes the monitoring data by showing the VC and DCE percentage change from the baseline (pre-treatment) sample round to the most recent posttreatment monitoring round. Concentrations of VC changed by +43 to -94 percent with an average change of -54 percent at the four wells. Concentrations of DCE decreased by as much as -93 percent at MW-28, but increased by +1557 percent at MW- 30 as a result of the rebound effect.

		% Ch	ange	
Contaminant	S5-MW-21	S5-MW-25	S5-MW-28	S5-MW-30
VC	-74	-94	-91	43
DCE	80	-92	-93	1557

Table 1
Percent Change in VC and DCE Concentrations: Baseline to July 2003

Continued monitoring at sites that display rebound effects usually shows a permanent reduction in contaminant concentrations after several months (ITRC, 2001). Ethene concentrations at the two treatment areas wells that were analyzed for natural attenuation parameters show increasing concentrations during the posttreatment period, suggesting that dechlorination of VC is still occurring.

## **Evaluation of Contaminant Ratios**

Absolute concentrations of contaminants in shallow aquifers can be difficult to evaluate because they are subject to dilution effects from periodic recharge. One technique for removing the effects of recharge is to evaluate ratios of contaminant concentrations. Periodic recharge will dilute the concentrations of all contaminants by similar factors so that the concentrations change but the ratios remain the same. The VC/DCE ratio is useful in this case because increases in the ratio over time suggest continuing conversion of DCE to VC, which is expected during microbial reductive dechlorination. The ethene/VC ratio is also useful because increasing ratios over time suggest continuing conversion of VC to ethene. However, during in situ chemical oxidation treatments, additional processes may occur that can affect the VC/DCE ratios. For instance, preferential desorption of DCE would decrease the VC/DCE ratio, and preferential oxidation of DCE would increase the VC/DCE ratio.

Despite these complications, evaluation of changes in the ratios over time, in concert with changes in the absolute concentrations over time, can provide insight into the processes occurring at the Site. Figures 5 through 8 show the VC/DCE ratios over time at the four wells depicted in the previous figures. Two of the wells also include ethene/VC ratios. All four figures show a general upward trend in the ratios during the posttreatment period (except the last sample round at MW-30), suggesting that reductive dechlorination of DCE to VC to ethene is still occurring during the posttreatment phase.

## **Evaluation of Natural Attenuation Parameters**

Natural attenuation of DCE and VC can occur by microbial reductive dechlorination, during which DCE is reduced to VC, which is then reduced to either ethene or  $CO_2 + H_2O + H^+ + CI^-$ . These reactions are mediated by anaerobic bacteria, which require organic carbon and reducing conditions. One concern regarding the use of chemical oxidants is that it may destroy all of the organic carbon and permanently induce oxidizing conditions so that anaerobes cannot survive, especially if too much oxidant is used. The natural attenuation parameters oxidation-reduction potential (ORP), sulfide, methane, and TOC provide independent information on the redox state of the system before and after treatment, and are discussed below.

**Oxidation-Reduction Potential**—Measurements of ORP provide information on the redox potentials of some (but not all) of the electrochemical reactions that are occurring. The ORP measurements will yield very high potentials if permanganate is present, and will return to the negative range if anaerobic conditions are re-established after treatment. Reductive dechlorination is possible at potentials below +50 mV, and is likely at potentials below -100 mV (EPA, 1998). Figure 9 shows the ORP measurements at four of the most impacted wells in the treatment area. The vertical line indicates the last treatment event. The figure shows that pretreatment ORP conditions were all below -100 mV. At Well MW-21, the treatment caused a pronounced spike to a potential of +84 mV, then dropped to values that were even lower than pre-treatment conditions, and then returned to -100 mV. Well MW-30 showed a similar but not as extreme pattern, also ending at a potential similar to baseline conditions. Wells MW-25 and MW-28 showed less of a response because they are farther from the injection points, but also ended at negative potentials that were similar to baseline conditions. These data suggest that anaerobic conditions similar to baseline have returned to these locations after the treatment phase.

**Sulfide**—Sulfide is produced by sulfate-reducing bacteria, which require very reducing conditions. Sulfide is quite reactive, and will form insoluble precipitates with several metals including iron. Because of its reactivity and tendency to precipitate, the absence of sulfide yields inconclusive information on the redox state, but the presence of sulfide is strong evidence for very reducing conditions.

Two of the treatment area wells were analyzed for sulfide. At MW-30, sulfide was nondetectable (<0.1 mg/L) in all five samples. At MW-21, sulfide concentrations were nondetectable (<0.1 mg/L) in the baseline sample, but had increased to 0.62, 0.36, and 0.54 mg/L in the last three posttreatment sample rounds (4/30/03, 6/5/03, and 7/9/03, respectively). The presence of detectable sulfide at MW-21 provides strong evidence that sulfate-reducing anaerobic conditions have returned at this location.

**Methane**—Methane is produced by methanogenic anaerobes which require even more reducing conditions than sulfate-reducing anaerobes. During methanogenesis, acetate is split to form carbon dioxide ( $CO_2$ ) and methane ( $CH_4$ ), or  $CO_2$  is used as an electron acceptor and is reduced to methane. Methane concentrations above 0.5 mg/L indicate favorable conditions for degradation of chlorinated solvents (EPA, 1998). Figure 10 shows the pre- and posttreatment methane concentrations at Wells MW-21 and MW-30. The concentrations at both locations were lower after treatment, but have subsequently increased in the last sample round (7/9/03) and are close to their original pre-treatment concentrations, indicating that methanogenesis is continuing.

**Total Organic Carbon**—An adequate supply of dissolved TOC is an essential component required to drive anaerobic microbial activity and is consumed in the process. The carbon can be naturally occurring, or can be present as hydrocarbon fuel contamination or landfill leachate. The rates of reductive dechlorination of CAH compounds at many sites have been shown to be limited by TOC availability. If the subsurface environment is depleted of TOC before the chlorinated solvents are completely degraded, then biological reductive dechlorination will cease, and natural attenuation may no longer occur. Concentrations in excess of 20 mg/L are desirable to drive reductive dechlorination reactions (EPA, 1998). Figure 11 shows the TOC concentrations at MW-21 and MW-30 before and after the oxidation treatment. As can be seen from the figure, TOC concentrations are 440 and 94.4 mg/L, which are higher than the pretreatment values, and are well above the minimum concentration of 20 mg/L that is required for reductive dechlorination.

The treatment events most likely completely oxidized some of the naturally occurring dissolved TOC, but also partially oxidized some of the solid organic carbon particles in the sediments, making them soluble and more bio-available. Although some of the organic carbon was undoubtedly destroyed, the net effect of the treatments was apparently an increase in the dissolved TOC.

## Estimated Mass Reduction

It is not possible to determine the total mass of contaminants remaining, because some fraction of the remaining mass is present in a dissolved form, and the remaining fraction is present in an adsorbed state. The mass remaining in the dissolved state can be estimated from observed concentrations in groundwater samples, but the adsorbed mass cannot be estimated. Degradation of dissolved contaminants will drive the desorption of additional contaminants from the sediment, so the adsorbed mass represents an important but unquantifiable parameter.

An upper bound on the total mass of contaminants that could be destroyed by the treatments was calculated based on the total mass and concentrations of injected oxidants. The total equivalent of 280,185 moles of pure  $H_2O_2$  and 44,279 moles of pure KMnO<sub>4</sub> were injected during four

phases of treatment. These oxidants will destroy many different types of organic compounds including fuel hydrocarbons, chlorinated VOCs, and some naturally occurring organic carbon materials. Other reduced inorganic substances such as ferrous iron and sulfide can also consume some fraction of these oxidants.

The dominant organic contaminants detected in the treatment area wells are VC and DCE, with lesser amounts of toluene and naphthalene. The two types of oxidants used at the site will react with these organic compounds in different ratios, depending on the specific oxidant and target compound. For instance, five moles of  $H_2O_2$  are required to oxidize one mole of VC, and four moles of  $H_2O_2$  are required to oxidize one mole of DCE. In a similar manner, 3.3 moles of KMnO<sub>4</sub> are required to oxidize one mole of VC, and 2.7 moles of KMnO<sub>4</sub> are required to oxidize one mole of DCE.

The calculation of the destroyed contaminant mass is based on an assumption that all of the injected oxidants destroyed DCE and VC, and that the average VC/DCE mass ratio is 5.5, which is based on observed ratios in the treatment area wells. Based on these assumptions and the total mass of injected oxidants, the treatments were capable of destroying up to 2,352 pounds of DCE and 8,338 pounds of VC, for a total of 10,690 pounds of pure chlorinated VOCs. This estimate should be considered an upper bound because some fraction of the injected oxidants were undoubtedly consumed by the oxidation of other organic contaminants that were present at low concentrations, as well as by naturally occurring organic carbon.

## Estimated Duration for MNA

Predicting the time required for attenuation of VC to concentrations that are below the regulatory limits is hampered by the pronounced rebound effect at some wells, which interferes with defining and extrapolating attenuation trends. Concentrations of DCE and VC are rapidly changing, and are increasing at some wells and decreasing at others, which is typical of a rebound effect. However, two treatment area wells have apparently recovered from the rebound phase, and were used to predict the time required for VC concentrations to fall below the regulatory limit.

An estimate of the time remaining until VC concentrations fall below the "Ocean Plan" limit of  $36 \ \mu g/L$  has been calculated based the concentrations in the most recent samples at two selected wells and a range of previously determined VC degradation rates. Parsons (1999, Appendix F) calculated a range of VC degradation rates based on the Buscheck and Alcantar method (Buscheck and Alcantar, 1995). These degradation rates were applied to the most recent (July 2003) VC concentrations at Wells MW-25 and MW-28. These two treatment area wells were selected because VC concentrations have already undergone a posttreatment rebound and are currently below their respective baseline concentrations, as shown in Figures 2 and 3.

The Parsons report (1999) provided upper and lower bounds for first-order VC degradation rates considering advection, dispersion, sorption, and biodegradation along two different flow paths. The maximum calculated VC degradation rate was 0.054 day–1, and the minimum was 0.011 day<sup>-1</sup>, which are equivalent to half-lives of 13 and 63 days, respectively.

Application of the Parsons (1999) degradation rates to current concentrations is valid only assuming that current chemical and microbiological conditions are similar to the pre-treatment conditions that existed when the degradation rates were developed. The above evaluation of natural attenuation parameters concluded that the ORP, as well as concentrations of methane and TOC, have returned to baseline values (Figures 9, 10, and 11), and the VC/DCE ratios (Figures 6 and 7) indicate that reductive dechlorination is continuing.

The predicted VC concentrations at MW-25 and MW-28 are provided in Figures 12 and 13. The initial concentrations are from the July 2003 samples, and the two curves in each plot are based on the high and low degradation rates calculated by Parsons (1999). The horizontal dashed line at the bottom of each plot is the "Ocean Plan" regulatory limit of 36  $\mu$ /L. Concentrations of VC at MW-25 are predicted to reach the regulatory limit between 43 and 212 days, and concentrations of VC at MW-28 are predicted to reach the regulatory limit between 83 and 405 days.

### References

Buscheck, T.E. and C. M. Alcantar, 1995, "Regression Techniques and Analytical Solutions to Demonstrate Intrinsic Bioremediation," in Proceedings of the 1995 Battelle International Conference on In-Situ and On Site Bioreclamation, April.

Interstate Technology and Regulatory Cooperation Work Group, 2001, Technical and Regulatory Guidance for In Situ Chemical Oxidation of Contaminated Soil and Groundwater, In Situ Chemical Oxidation Work Team, June.

Parsons Engineering Science, Inc., 1999, Evaluation of Monitored Natural Attenuation for Groundwater at Site 5, (Area of VOC Contamination) Golf Course Disposal Area, Naval Air Station North Island, California, May.

U.S. Environmental Protection Agency, 1998, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water, United States Environmental Protection Agency, Office of Research and Development, Washington DC 20460, EPA/600/R-98/128, September.

