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MCAS EL TORO
SSIC #5090.3

# Technical Memorandum

**Progress Report**
**Phase I Vadose Zone Remediation Activities**
Installation Restoration Program Site 24
Volatile Organic Compound (VOC) Source Area
Marine Corps Air Station, El Toro

***15 March 1999***

*Prepared by*
Southwest Division, Naval Facilities Engineering Command
BRAC Operations Office
San Diego, California

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# Transmittal

Date: March 15, 1999

From: David B. DeMars DBD
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IRP Site 24, MCAS El Toro

Via: Andy Piszkin
Lead Remedial Project Manager
MCAS El Toro

To: Glenn Kistner, Remedial Project Manager
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Subj: March 1999 Progress Report
Phase I Vadose Zone Remediation, Installation Restoration Program Site 24
Marine Corps Air Station, El Toro

Transmitted for your information are copies of the subject progress report. Please do not hesitate to contact me at (619) 532-4163 if you have questions pertaining to this project.

CF:
Joseph Joyce (MCAS El Toro)
Pat Brooks (Bechtel National, Inc.)
Eric Peterson, Crispin Wanyoike (Earth Tech)
Bill Sedlak (OHM/IT)
Project Files

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**OHM Remediation Services Corp.**
A Member of The IT Group

March 15, 1999

Ms. Bozier H. Demaree
Contracting Officer
Naval Facilities Engineering Command
Southwest Division
1220 Pacific Highway
San Diego, CA 92132-5187

Attention: Ms. Lynn Hornecker, 5BME.LMH

**Subject: Transmittal of March 1999 Progress Report, Phase I Vadose Zone Remediation, IRP Site 24, MCAS El Toro**
**Contract N68711-93-D-1459, Delivery Order 065,**
**Removal and Remedial Actions at IRP Sites, MCAS El Toro, California**

Dear Ms. Hornecker:

Attached are 4 copies of the March 1999 Progress Report for IRP Site 24, as requested in your Memorandum of March 8, 1999. Additional copies have been forwarded, with the cover Transmittal from Dave DeMars, directly to the following persons:

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Mr. Tayseer Mahmoud, RPM, California DTSC (2 copies)
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Pat Brooks, Bechtel National Inc. (2 copies)
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Two copies have also been sent to the Administrative Record, as you requested.

If you have any questions or need additional copies of the document, please let me know.

Sincerely,

William Sedlak
Sr. Project Manager

cc: OHM PMO File (1C/1E)
Project File, Correspondence B.01



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**D.O.:** 65

**Location:** MCAS EL TORO

**FROM:** Stewart Bornhoft, Program Manager

Edwin G. Bond, Contracts Manager

**DESCRIPTION OF ENCLOSURE:** ***Transmittal of March 1999 Progress Report, Phase I Vadose Zone Remediation IRP Site 24, Removal and Remedial Actions at IRP Sites, dated March 15, 1999***

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# TABLE OF CONTENTS

| Section | | Page |
|---|---|---|
| 1 | Introduction | 1 |
| 2 | Field Activities | 1 |
| 3 | References and/or Sources of Information | 3 |

**Tables**

| | |
|---|---|
| Table 1. | History and Status of Soil Vapor Extraction (SVE) Testing Operations at IRP Site 24 |
| Table 2. | Preliminary Soil Gas Survey Data |

**Exhibits**

| | |
|---|---|
| 2 ~~1~~ | Preliminary Soil Gas Survey Data, Deep Vadose Zone |
| 1 ~~2~~ | Preliminary Soil Gas Survey Data, Shallow and Intermediate Vadose Zones |
| 3 | TCE Concentrations in the Deep Vadose Zone |
| 4 | Selected SVE and Soil Gas Survey Data |

# Section 1
## *Introduction*

The purpose of this technical memorandum is to provide an update on the Phase I field activities associated with the remediation of the vadose zone at Installation Restoration Program (IRP) Site 24 - the Volatile Organic Compound (VOC) Source Area - at the Marine Corps Air Station, El Toro. This technical memorandum describes start-up and testing activities that were conducted during the period from late January 1999 through late February 1999 and soil gas surveying activities that were conducted from December 1998 through February 1999.

# Section 2
## *Field Activities*

*Central System Start-up Activities*
Vapor extraction wells 24SVE10, 24SVE104B, 24SVE107, 24SVE116, 24SVE5, 24SVE5A, 24SVE9, and 24SVE9A were connected to the Central System for the low flow test that was conducted on 27 and 28 January 1999. The influent trichloroethylene (TCE) vapor concentration was approximately 18 micrograms per liter on 28 January 1999 (see Table 1) and the flow rate was approximately 700 standard cubic feet per minute.

*Soil Gas Sampling Activities*
Soil gas sampling activities were conducted during the period from December 1998 through February 1999 in order to optimize the siting of new vapor extraction wells and/or piezometers. The preliminary laboratory results for TCE concentrations are shown on Exhibits 1 (deep vadose zone) and 2 (shallow and intermediate vadose zone). Selected analytes from the soil gas survey are presented in Table 2.

*Soil Vapor Extraction (SVE) Testing Activities*
Soil vapor extraction tests, utilizing portable SVE treatment units, were conducted at Wells 24SVE14 and 24SVE54 during the January – February 1999 time period. Influent TCE vapor concentrations and selected flow information are presented in Table 1. Updated TCE levels in the deep vadose zone, based upon preliminary data for tests conducted at Wells 24SVE12, 24SVE14, and 24SVE54 are shown on Exhibit 3. Selected influent TCE vapor concentrations at Wells 24SVE12, 24SVE14, and 24SVE54 are presented graphically as Exhibit 4.

*Other Activities*

Four piezometers were constructed along the east side of Building 297 in the vicinity of Wells 24SVE14 and 24SVE54. Construction details are presented in Table 1.

## Tentative Schedule for Central System and Other Activities

| Activity | Tentative Completion Date |
|---|---|
| *Start-up Activities* | |
| Central SVE Treatment System Assembly (Central System) | December 1998 (actual) |
| Publish Public Notice | 16 January 1999 (actual) |
| Public Presentation (Briefing) | 27 January 1999 (actual) |
| First Central System Low Flow Test | 28 January 1999 (actual) |
| LRA Site Visit | 19 February 1999 (actual) |
| Rebound Testing at Existing Wells | April 1999 |
| Central System Start-up and Testing | May 1999 |
| Soil Gas Sampling | July 1999 |
| Phase I Well Construction and System Operation | September 1999 |

# Section 3
## *References and/or Sources of Information*

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United States Marine Corps Air Station, El Toro. 1998. Correspondence: Letter dated 2 December 1998 to BRAC Cleanup Team Members pertaining to Central SVE System Start-Up, Testing, and Evaluation Activities.

United States Marine Corps Air Station, El Toro, California. 1997. Draft Final Record of Decision, Operable Units 2A and 3A, No Action Sites, Marine Corps Air Station, El Toro, California. September.

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***For discussion only***

## Table 1. History and Status of Soil Vapor Extraction (SVE) Testing Operations at IRP Site 24, MCAS El Toro (Updated 4 March 1999)

| Vapor Extraction Well ID | Screened Interval (Feet BGS) | Approximate Date(s) of SVE Operations | TCE Vapor Influent Concentrations (ug/L) unless otherwise noted | Date(s) of TCE Vapor Analyses | Comments | Average Flows (from various tests or from the EDR) | TCE Soil Gas Removal Estimates |
|---|---|---|---|---|---|---|---|
| **24SVE1** | 91 to 109 | Note: Soil gas sample via 24CPT31 at 105 feet had 6,120 ug/L of TCE on 29 August 1995. Well 24SVE1 was constructed in 1995.<br>19 days (10 Jun - 8 Jul 1996)<br>1 day or 4 hours (23 Oct 96)<br>84 days or 1,981.5 hours (18 Dec 96 - 12 Mar 97)<br>1 day or 4 hours (14 Mar 97)<br>1 day or 4 hours (12 May 97)<br>5 days approximately (1 - 5 Jun 98)<br>54 days (7 Oct – 30 Nov 98)<br>***TOTAL: 164 days approximately*** | **910**<br>**120**<br>**73**<br>**89**<br>**37**<br>**8.7** | 23 Oct 96<br>12 May 97<br>5 Jun 98<br>9 Oct 98<br>5 Nov 98<br>30 Nov 98 | Travel time: 1.4 days per pore volume (EDR). Approx. 114 pore volumes removed during tests (as of November 1998). | 225 cfm at 42" (1996) | 1.15 pound (1996)<br>**435 pounds (through 1997)**<br>Calculations in progress for 1998 tests |
| **24SVE2** | 80 to 105 | Note: Soil gas sample via 24CPT27 at 92 feet had 615 ug/L of TCE on 1 September 1995. **Well 24SVE2 was constructed in 1995.**<br>**1 day** or 4 hours (11 Nov 96)<br>4 days (7 - 11 Jan 99) | **160**<br>**230**<br>**240 (230** duplicate)<br>**320** | 11 Nov 96<br>7 Jan 99<br>8 Jan 99<br>11 Jan 99 | 100 IWG applied at 24SVE2 resulted in 0.5 IWG at 24SVE7 (396 feet away) during 1996 pilot test | 131 at 100" (1996) | 0.31 pound (1996) |
| **24SVE2A** | 40 to 70 | Note: Soil gas sample via 24CPT27 at 69 feet had 390 ug/L of TCE on 1 September 1995. **Well 24SVE2A was constructed in 1995.**<br>**1 day** or 4 hours (13 Nov 96)<br>2 days (11 – 13 Jan 99) | **150**<br>**57**<br>**75** | 13 Nov 96<br>11 Jan 99<br>13 Jan 99 | | 44 cfm at 80" (1996) | 0.08 pound (1996) |
| 24SVP2<br>Piezometer | 27.25-27.75<br>(approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 32 | 7 Jan 99 | | Not measured | |
| **24SVE3** | 80 to 105 | Note: Soil gas sample via 24CPT81 at 90 feet had 1,007 ug/L of TCE on 29 November 1995. Well 24SVE3 was constructed in 1995.<br>**1 day** or 4 hours (4 Nov 96)<br>**65 days** or 1,536 hours (21 July - 24 September 1997)<br>**6 days (22 – 28 Dec 98)**<br>***TOTAL: 72 days approximately*** | **1100**<br>**980**<br>**160**<br>**140 (139** duplicate)<br>**110** | 4 Nov 96<br>21 Jul 97<br>24 Sep 97<br>23 Dec 98<br>28 Dec 98 | | 22 cfm at 100" (1996) | 0.36 pound (1996)<br>**59 pounds (through 1997)** |
| **24SVE3A** | 45 to 60 | Note: Soil gas sample via 24CPT81 at 58 feet had 3 ug/L of TCE on 29 November 1995**Well 24SVE3A was constructed in 1995.**<br>**1 day** or 4 hours (5 Nov 96)<br>7 days (28 Dec 98 – 4 Jan 99)<br>***TOTAL: 7 days approximately*** | **130**<br>**0.39 (1.2** duplicate)<br>**7.5** | 5 Nov 96<br>28 Dec 98<br>4 Jan 99 | | 27 cfm at 120" (1996) | 0.04 pound (1996) |

# Table 1. (continued)

| Vapor Extraction Well ID | Screened Interval (Feet BGS) | Approximate Date(s) of SVE Operations | TCE Vapor Influent Concentrations (ug/L) unless otherwise noted | Date(s) of TCE Vapor Analyses | Comments | Average Flows (from various tests or from the EDR) | TCE Soil Gas Removal Estimates |
|---|---|---|---|---|---|---|---|
| **24SVE4** | 85 to 105 | **Note:** Soil gas sample via 24CPT37 at 96 feet had 47 ug/L of TCE on 11 September 1995. **Well 24SVE4 was constructed in 1995.**<br>**1 day** or 4 hours (14 Nov 96)<br>3 days (7 Jan – 13 Jan (water in well caused system shut-down during test (9-11 Jan 99))<br>***TOTAL: 3 days approximately*** | **280**<br>**60**<br>**34 (56 duplicate)**<br>**28**<br>**0.026** | 14 Nov 96<br>7 Jan 99<br>8 Jan 99<br>11 Jan 99<br>13 Jan 99 | GW in well | >131 at 55" (1996) | 0.55 pound (1996) |
| **24SVE5** | 68 to 88 | Note: Soil gas sample via 24CPT13 at 98 feet had 2,310 ug/L of TCE on 14 September 1995. Well 24SVE5 was constructed in 1995.<br>**1 day** or 4 hours (18 Nov 96)<br>**20 days** (10 Mar-30 Mar 98)<br>***TOTAL: 21 days approximately*** | **220**<br>**20**<br>**7.7**<br>**0.014** | 18 Nov 96<br>24 Mar 98<br>30 Mar 98<br>27 Jan 99 | | 27 cfm at 110" (1996) | 0.09 pound (1996)<br>Calculations in progress for 1998 tests |
| **24SVE5A** | 41.5 to 56.5 | **Note:** Soil gas sample via 24CPT13 at 54 feet had 785 ug/L of TCE on 14 September 1995. **Well 24SVE5A was constructed in 1995.**<br>**1 day** or 4 hours (20 Nov 96) | **360**<br>**0.75** | 20 Nov 96<br>27 Jan 99 | | 65 cfm at 100" (1996) | 0.35 pound (1996) |
| **24SVE6** | 89 to 109.5 | **Note:** Soil gas sample via 24CPT61 at 105 feet had 1,780 ug/L of TCE on 29 August 1995. **Well 24SVE6 was constructed in 1995.**<br>**1 day** or 4 hours (8 Nov 96)<br>6 days (28 Dec 98- 4 Jan 99)<br>***TOTAL: 7 days approximately*** | **440**<br>**6.3**<br>**24**<br>**23 (21 duplicate)** | 8 Nov 96<br>28 Dec 98<br>29 Dec 98<br>4 Jan 99 | | >131 at 30" (1996) | 0.86 pound (1996) |
| 24SVP6<br>Piezometer | 50 to 50.5<br>(approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 0.14 | 11 Jan 99 | | Not measured | |
| 24SVP6A<br>Piezometer | 67 to 67.5<br>(approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 0.17 | 11 Jan 99 | | Not measured | |
| **24SVE7** | 80 to 110 | Note: Soil gas sample via 24CPT69 at 110 feet had 2,630 ug/L of TCE on 31 August 1995. Well 24SVE7 was constructed in 1995.<br>**1 day** or 4 hours (31 Oct 96)<br>**2 days** (13 – 15 January 1999) | **54**<br>**140**<br>**170 (130 duplicate)**<br>**180** | 31 Oct 96<br>13 Jan 99<br>14 Jan 99<br>15 Jan 99 | GW in well | 180 cfm at 135" (1996)<br>~ 5 cfm at 120" (Jan 99) | 0.15 pound (1996) |
| **24SVE7A** | 63 to 74 | **Note:** Soil gas sample via 24CPT69 at 54 feet had 741 ug/L of TCE on 31 August 1995. **Well 24SVE7A was constructed in 1995.**<br>**1 day** or 4 hours (1 Nov 96)<br>3 days (15 – 18 January 1999) | **30**<br>**16** | 1 Nov 96<br>18 Jan 99 | | 28 cfm at 110" (1996) | 0.01 pound (1996) |
| 24SVP7<br>Piezometer | 54.5 to 55<br>(approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 6.4 | 11 Jan 99 | | Not measured | |

# Table 1. (continued)

| Vapor Extraction Well ID | Screened Interval (Feet BGS) | Approximate Date(s) of SVE Operations | TCE Vapor Influent Concentrations (ug/L) unless otherwise noted | Date(s) of TCE Vapor Analyses | Comments | Average Flows (from various tests or from the EDR) | TCE Soil Gas Removal Estimates |
|---|---|---|---|---|---|---|---|
| **24SVE8** | 83 to 113 | **Note:** Soil gas sample via 24CPT58 at 96 feet had 1,270 ug/L of TCE on 15 September 1995. **Well 24SVE8 was constructed in 1995.**<br>**1 day** or 4 hours (25 Oct 96)<br>2 days (4 – 6 Jan 99) | **100**<br>**17**<br>**18 (19** duplicate) | 25 Oct 96<br>4 Jan 99<br>6 Jan 99 | | 30 cfm at 105" (1996) | 0.04 pound (1996) |
| **24SVE8A** | 50 to 78 | **Note:** Soil gas sample via 24CPT58 at 53 feet had 190 ug/L of TCE on 15 September 1995. **Well 24SVE8A was constructed in 1995.**<br>**1 day** or 4 hours (24 Oct 96)<br>2 days approximately (19 - 21 Jan 99) | **45**<br>**4.6**<br>**12 (12** duplicate)<br>**18 (2.9** duplicate) | 24 Oct 96<br>19 Jan 99<br>20 Jan 99<br>22 Jan 99 | | 70 cfm at 100" (1996) | 0.05 pound (1996) |
| 24SVP8<br>Piezometer | 30.5 to 31 (approximately) | Note: Piezometer was constructed in 1995. Preliminary testing was completed in January 1999. | 1.5 | 19 Jan 99 | | Not measured | |
| **24SVE9** | 81 to 111 | Note: Soil gas sample via 24CPT17 at 105 feet had 1,060 ug/L of TCE on 31 August 1995. Well 24SVE9 was constructed in 1995.<br>**1 day** or 4 hours (21 Nov 96)<br>**62 days** or 1,450.8 hours (15 May –16 Jul 97)<br>**4 days** (8 – 12 Jun 98)<br>***TOTAL: 67 days*** | **550**<br>**170**<br>**58**<br>**41** | 21 Nov 96<br>16 Jul 97<br>12 Jun 98<br>27 Jan 99 | Travel time: 0.77 days per pore volume (EDR). Approx. 80 pore volumes removed during tests. | 60 cfm at 95" (1996) | **19 pounds (through 1997)**<br>Calculations in progress for 1998 tests |
| **24SVE9A** | 55 to 85 | **Note:** Soil gas sample via 24CPT17 at 82 feet had 439 ug/L of TCE on 31 August 1995**Well 24SVE9A was constructed in 1995.**<br>**1 day** or 4 hours (22 Nov 96) | **36**<br>**0.04** | 22 Nov 96<br>27 Jan 99 | | 20 cfm at 100" (1996) | 0.01 pound (1996) |
| 24SVP9<br>Piezometer | 35.5 to 36 (approximately) | Note: Piezometer was constructed in 1995. Evaluation of condition of piezometer is in progress. | Not measured | | | Not measured | |
| **24SVE10** | 79 to 109 | **Note: Well 24SVE10 was constructed in 1995.**<br>**1 day** or 4 hours (15 Nov 96)<br>**44 days** or 1,005.9 hours (24 Mar – 7 May 97)<br>**26 days** (25 Sep 97 – 20 Oct 97)<br>1 day (10-11 December 1998)<br>***TOTAL: 72 days approximately*** | **1400**<br>**230**<br>**140**<br>**26**<br>**30 (33** duplicate)<br>**32.5** | 15 Nov 96<br>7 May 97<br>2 Oct 97<br>10 Dec 98<br>11 Dec 98<br>27 Jan 99 | Travel time: 2.17 days per pore volume (EDR). Approx. 31 pore volumes removed during tests. GW at 104' [GW in well (Dec 98)] | 250 cfm at 55" (1996) | 5.24 pounds (1996)<br>**308 pounds (through May 1997)**<br>Calculations in progress for late 1997 and 1998 tests |
| 24SVP10<br>Piezometer | 55.5 to 56 (approximately) | Note: Piezometer was constructed in 1995. Evaluation of condition of piezometer is in progress. | Not measured | | | Not measured | |
| 24SVP10A<br>Piezometer | 38 to 38.5 (approximately) | Note: Piezometer was constructed in 1995. Preliminary testing was completed in December 1998. | 0.15 | 10 Dec 98 | | Not measured | |

# Table 1. (continued)

| Vapor Extraction Well ID | Screened Interval (Feet BGS) | Approximate Date(s) of SVE Operations | TCE Vapor Influent Concentrations (ug/L) unless otherwise noted | Date(s) of TCE Vapor Analyses | Comments | Average Flows (from various tests or from the EDR) | TCE Soil Gas Removal Estimates |
|---|---|---|---|---|---|---|---|
| **24SVE11** | 79 to 109 | Note: Soil gas sample via 24CPT59 at 100 feet had 200 ug/L of TCE on 18 September 1995. Well 24SVE11 was constructed in 1995.<br>1 day or 4 hours (25 Nov 96)<br>24 days (28 Apr - 21 May 98)<br>2 days (13 – 15 January 1999)<br>***TOTAL: 26 days approximately*** | 300<br>23<br>160<br>120<br>96 (83 duplicate) | 25 Nov 96<br>29 Apr 98<br>8 May 98<br>21 May 98<br>14 Jan 99 | GW in well | 60 cfm at 100" (1996) | 0.27 pound Calculations in progress for 1998 tests |
| **24SVE11A** | 43 to 73 | Note: Soil gas sample via 24CPT59 at 52 feet had 461 ug/L of TCE on 18 September 1995Well 24SVE11A was constructed in 1995.<br>1 day or 4 hours (26 Nov 96)<br>3 days (15 – 18 January 1999) | 0.14<br>38 | 26 Nov 96<br>18 Jan 99 | | 27 cfm at 115" (1996) | |
| 24SVP11 Piezometer | 23.5 to 24 (approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 6.6 | 11 Jan 99 | | Not measured | |
| **24SVE12** | 34 to 74 | Note: Well 24SVE12 was constructed in 1995.<br>1 day or 4 hours (30 Dec 97)<br>6 days (26 January – 1 February 1999) | 330<br>160<br>77<br>110 (100 duplicate) | 30 Dec 97<br>28 Jan 99<br>29 Jan 99<br>1 Feb 99 | | | Calculations in progress |
| **24SVE13** | 79 to 109 | Note: Well 24SVE13 was constructed in 1995. Soil gas sample via 24CPT41 at 92 feet had 192 ug/L of PCE on 1 September 1995.<br>1 day or 4 hours (27 Nov 96)<br>28 days (12 Nov – 17 Dec 98)<br>***TOTAL: 29 days approximately*** | 4.1 (TCE)<br>120 (PCE)<br>92 (PCE)<br>42 (PCE)<br>4.1 (TCE) | 27 Nov 96<br>27 Nov 96<br>18 Nov 98<br>17 Dec 98<br>17 Dec 98 | | 40 cfm at 110" (1996) | Calculations in progress (PCE mass) |
| 24SVP13 Piezometer | 71.5 to 72 (approximately) | Note: Piezometer was constructed in 1995. Evaluation of condition of piezometer is in progress. | Not measured | | | Not measured | |
| **24SVE14** | 78 to 108 | Note: Well 24SVE14 was constructed in 1995.<br>1 day or 4 hours (7 Nov 96)<br>6 days (21 Dec – 28 Dec 98)<br>__ days (19 Jan - __) Test in progress | 110<br>760<br>940<br>780<br>420 (120 duplicate)<br>410 (140 duplicate)<br>180<br>168 (172 duplicate) | 7 Nov 96<br>21 Dec 98<br>22 Dec 98<br>28 Dec 98<br>20 Jan 99<br>25 Jan 99<br>2 Feb 99<br>16 Feb 99 | 124 IWG applied at 24SVE14 resulted in 0.7 IWG at 24SVE8 (450 feet away) during 1996 pilot test | 120 cfm at 120" (1996) | 0.2 pound (1996) |

# Table 1. (continued)

| Vapor Extraction Well ID | Screened Interval (Feet BGS) | Approximate Date(s) of SVE Operations | TCE Vapor Influent Concentrations (ug/L) unless otherwise noted | Date(s) of TCE Vapor Analyses | Comments | Average Flows (from various tests or from the EDR) | TCE Soil Gas Removal Estimates |
|---|---|---|---|---|---|---|---|
| 24SVP14 Piezometer | 49.5 to 50 (approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 27 | 11 Jan 99 | | | |
| 24SVP14A Piezometer | 29.5 to 30 (approximately) | Note: Piezometer was constructed in 1995. Preliminary testing completed January 1999. | 33 | 11 Jan 99 | | | |
| 24SVE104B | 25 to 45 | Note: Well 24SVE104B was constructed 16 Nov 1998.<br>2 days (30 Nov 98 – 2 Dec 98) | 1.3 (1.3 duplicate)<br>1.8<br>1.2 | 1 Dec 98<br>2 Dec 98<br>27 Jan 99 | Located within 500 ug/L TCE vapor concentration contour for shallow zone established in 1995 | ~200 cfm at ~20" (22 cfm at 92 IWG per EDR) | |
| 24SVE107 | 70 to 95 | Note: Well 24SVE107 was constructed 17 Nov 1998.<br>5 days (2 Dec – 7 Dec 98) | 14<br>4.4<br>7.5 | 3 Dec 98<br>7 Dec 98<br>27 Jan 99 | | ~40 cfm at ~100" (22 cfm at 92 IWG per EDR) | |
| 24SVE161 | 70 to 95 | Note: Well 24SVE161 was constructed 19 Nov 1998.<br>3 days (7 Dec 98 – 10 Dec 98) | 82<br>61 | 7 Dec 98<br>9 Dec 98 | GW in well (Dec 98) Located within 500 ug/L TCE vapor concentration contour for deep zone established in 1995 | ~50 cfm at ~95" (228 cfm at 47 IWG per EDR) | |
| 24SVE116 | 75 to 95 | Note: Well 24SVE116 was constructed 16 Dec 1998.<br>4 days (17-21 Dec 98) approximately | 130<br>82<br>65 | 17 Dec 98<br>21 Dec 98<br>27 Jan 99 | | ~75 cfm at ~80" (22 cfm at 92 IWG per EDR) | |
| 24SVE54 | 75 to 95 | Note: Well 24SVE54 was constructed 17 Dec 1998.<br>2 days (5 – 7 Jan 1999)<br>__ days (2 February - ____) Test in progress | 26<br>460<br>400 (430 duplicate)<br>144<br>106 | 5 Jan 99<br>6 Jan 99<br>7 Jan 99<br>4 Feb 99<br>9 Feb 99 | | ~20 cfm at 100" (22 cfm at 92 IWG per EDR) | |
| Central System Low-Flow Test | | Wells 24SVE5, 24SVE5A, 24SVE9, 24SVE9A, 24SVE10, 24SVE104B, 24SVE107, & 24SVE116 were connected to the Central System on 27 and 28 January 1999 to test the Central System for low-flow operations (~24-hour test duration). | 26<br>18 | 27 Jan 99<br>28 Jan 99 | | Approximately 700 scfm | |

## Table 1. (continued)

| Vapor Extraction Well ID | Screened Interval (Feet BGS) | Approximate Date(s) of SVE Operations | TCE Vapor Influent Concentrations (ug/L) unless otherwise noted | Date(s) of TCE Vapor Analyses | Comments | Average Flows (from various tests or from the EDR) | TCE Soil Gas Removal Estimates |
|---|---|---|---|---|---|---|---|
| 24SVP54N Piezometer [PZ54-N] | 91.5 to 96.5 | Constructed 25 February 1999. One-half inch diameter PVC. | 0.5 | 1 Mar 99 | Preliminary Data | | |
| 24SVP54S Piezometer [PZ54-S] | 83.5 to 88.5 | Constructed 26 February 1999. One-half inch diameter PVC. | 90 | 1 Mar 99 | Preliminary Data | | |
| 24SVP14S Piezometer [PZ14S] | 83.0 to 88.0 | Constructed 1 March 1999. One-half inch diameter PVC. | | | | | |
| | | *NOTE: Data from the Groundwater Remediation Pilot Test is presented for reference only (Source of Information: Draft Groundwater Remediation Pilot Test Report – Site 24 (Bechtel, December 1998).* | | | | | |
| **24EX3** | 105-180 | 132-day vacuum-enhanced GW extraction pilot test (22 Oct 97 – 15 May 98) | 39 **Range: ND to 148** | 15 May 98 | Near 24SVE10 | Approximate range: 80-140 scfm | 55.45 pounds of TCE vapor mass removed |
| **24EX4** | 104-190 | 19-day vacuum-enhanced GW extraction pilot test (6 Jan 98 – 27 Jan 98) | 75 **Range: 42 to 258** | 27 Jan 98 | Near 24SVE9 | Approximate range: 20-29 scfm | 4.06 pounds of TCE vapor mass removed |
| **24EX5** | 104-154 | 20-day vacuum-enhanced GW extraction pilot test (31 Mar 98 – 21 Apr 98) | 38 **Range: ND to 118** | 21 Apr 98 | Near 24SVE54 | Approximate range: 5 to 28 scfm | 1.04 pound of TCE vapor mass removed |
| **24EX6** | 103-173 | 21-day vacuum-enhanced GW extraction pilot test (2 Jun 98 – 29 Jun 98) | 26 **Range: ND to 455** | 29 Jun 98 | Near 24SVE2 | Approximate range: 62 to 69 scfm | 2.93 pounds of TCE vapor mass removed |

Mass calculations are in progress for the rebound and initial testing operations.

The Draft Final Interim Record of Decision, Operable Unit 2A, Site 24 – VOC Source Area, Vadose Zone, Marine Corps Air Station, El Toro (September 1997) states that approximately 870 pounds of TCE mass were removed during the SVE pilot test activities conducted during 1996 and 1997.

**Table 2. Preliminary Soil Gas Survey Data (December 1998 through February 1999)**
**IRP Site 24, MCAS El Toro**

| Soil Gas Sample Point Identification [nearest reference point] | Sample Identification Number | Sample Depth (Feet Below Ground Surface) | TCE in Micrograms Per Liter (ug/L) | Other Chemicals at or greater than 1 ug/L:<br>• 1,1-DCE<br>• Carbon Tetrachloride ($CCl_4$)<br>• PCE<br>• Freon 113<br>• other |
|---|---|---|---|---|
| ***Soil Gas Samples Collected During January and February 1999*** | | | | |
| **24SG15** [Well 24SVE13] | 18708-838 | 51.5 | **0.26** | |
| **24SG15** [Well 24SVE13] | 18708-847 | 74 | ND | |
| **24SG15** [Well 24SVE13] | 18708-849 | 95 | **0.035** | |
| **24SG19** [South of Well 24SVE4 and West of Building 297] | 18708-817 | 50.5 | ND | |
| **24SG19** [South of Well 24SVE4 and West of Building 297] | 18708-819 | 70 | **4.1** | 1,1-DCE: 35<br>Freon 113: 26 |
| **24SG19** [South of Well 24SVE4 and West of Building 297] | 18708-820 | 92 | **23** | 1,1-DCE: 41<br>Freon 113: 64<br>$CCl_4$: 2.2 |
| **24SG23** [West of Building 297] | 18708-784 | 48.5 | **1.6** | 1,1-DCE: 2.7<br>Freon 113: 4.6 |
| **24SG23** [West of Building 297] | 18708-786 | 61.5 | **0.018** | |
| **24SG23** [West of Building 297] | 18708-787 | 94.5 | **1.6** | 1,1-DCE: 10<br>Freon 113: 11 |
| **24SG24** [Southwest Corner of Building 297] | 18233-044 | 53 | ND | |
| **24SG24** [Southwest Corner of Building 297] | 18233-045 | 75 | **2.35** | 1,1-DCE: 10.2<br>Freon 113: 27.9 |
| **24SG24** [Southwest Corner of Building 297] | 18233-046 | 95 | **0.14** | |

**Table 2. (Continued)**

| Soil Gas Sample Point Identification [nearest reference point] | Sample Identification Number | Sample Depth (Feet Below Ground Surface) | TCE in Micrograms Per Liter (ug/L) | Other Chemicals at or greater than 1 ug/L:<br>• 1,1-DCE<br>• Carbon Tetrachloride ($CCl_4$)<br>• PCE<br>• Freon 113<br>• other |
|---|---|---|---|---|
| **24SG26** [Southeast Corner of Building 297] | 18233-003 | 72 | **20** | 1,1-DCE: 4<br>Freon 113: 638 |
| **24SG26** [Southeast Corner of Building 297] | 18233-004 | 95 | **0.056** | |
| **24SG31** [South of Well 24SVE4] | 18708-776 | 47.5 | **0.47** | 1,1-DCE: 1.2<br>Freon 113: 1.5 |
| **24SG31** [South of Well 24SVE4] | 18708-777 | 70 | **2.2** | 1,1-DCE: 4.4<br>Freon 113: 7.4 |
| **24SG31** [South of Well 24SVE4] | 18708-778 | 95.5 | **12** | 1,1-DCE: 25<br>Freon 113: 38<br>$CCl_4$: 2.2 |
| **24SG37** [Northeast of Well 24SVE2] | 18233-039 | 49 | ND | |
| **24SG37** [Northeast of Well 24SVE2] | 18233-040 | 68 | **1.21** | 1,1-DCE: 1.22 |
| **24SG37** [Northeast of Well 24SVE2] | 18233-042 | 92 | **19.7** | 1,1-DCE: 15.3<br>Freon 113: 5.19 |
| **24SG47** [Near Well 24SVE14 in Building 297] | 18233-051 | 35 | **6.1** | |
| **24SG47** [Near Well 24SVE14 in Building 297] | 18233-052 | 71.5 | **0.185** | |
| **24SG47** [Near Well 24SVE14 in Building 297] | 18233-053 | 94 | **34.6** | 1,1-DCE: 12.5<br>Freon 113: 13.8<br>$CCl_4$: 1.02 |
| **24SG63** [South of Well 24SVE1] | 18708-823 | 49 | **0.023** | |
| **24SG63** [South of Well 24SVE1] | 18708-825 | 75.5 | ND | |
| **24SG63** [South of Well 24SVE1] | 18708-826 | 96 | ND | |

**Table 2. (Continued)**

| Soil Gas Sample Point Identification [nearest reference point] | Sample Identification Number | Sample Depth (Feet Below Ground Surface) | TCE in Micrograms Per Liter (ug/L) | Other Chemicals at or greater than 1 ug/L: • 1,1-DCE • Carbon Tetrachloride ($CCl_4$) • PCE • Freon 113 • other |
|---|---|---|---|---|
| **24SG68** [South of Well 24SVE13] | 18233-034 | 51 | **0.16** | |
| **24SG68** [South of Well 24SVE13] | 18233-036 | 69.5 | **0.03** | |
| **24SG68** [South of Well 24SVE13] | 18233-037 | 92 | **0.64** | PCE: 16.4 |
| **24SG82** [Northwest Corner of Building 296] | 18233-027 | 75 | ND | |
| **24SG82** [Northwest Corner of Building 296] | 18233-028 | 94.5 | **3.38** | 1,1-DCE: 1.12<br>Freon 113: 10.9 |
| **24SG83** [North End of Building 296] | 18233-024 | 75 | **3.7** | 1,1-DCE: 1.17<br>Freon 113: 13.2 |
| **24SG83** [North End of Building 296] | 18233-025 | 96 | **3.21** | 1,1-DCE: 2.52<br>Freon 113: 14.8 |
| **24SG92** [East of Building 296] | 18708-811 | 47 | **1.01** | Freon 113: 14 |
| **24SG92** [East of Building 296] | 18708-812 | 71 | **0.018** | |
| **24SG92** [East of Building 296] | 18708-814 | 93.5 | **9.0** | Freon 113 39 |
| **24SG106** [Inside of Building 296 near Well 24SVE9] | 18233-006 | 72 | **3.6** | Freon 113: 1.4<br>Acetone: 1.4 |
| **24SG106** [Inside of Building 296 near Well 24SVE9] | 18233-007 | 90 | **12** | Freon 113: 10 |
| **24SG109** [South of Building 296] | 18233-055 | 50 | **0.12** | Freon 113: 11.4 |
| **24SG116A** [East of Building 326] | 18708-857 | 43.5 | ND | Freon 113: 583 |
| **24SG116A** [East of Building 326] | 18708-858 | 73 | ND | |
| **24SG116A** [East of Building 326] | 18708-859 | 95 | ND | Freon 113: 2.3 |

**Table 2. (Continued)**

| Soil Gas Sample Point Identification [nearest reference point] | Sample Identification Number | Sample Depth (Feet Below Ground Surface) | TCE in Micrograms Per Liter (ug/L) | Other Chemicals at or greater than 1 ug/L: • 1,1-DCE • Carbon Tetrachloride ($CCl_4$) • PCE • Freon 113 • other |
|---|---|---|---|---|
| **24SG127** [East of Building 296] | 18708-799 | 50.5 | **4.8** | Freon 113: 56 |
| **24SG127** [East of Building 296] | 18708-800 | 69 | **3.7** | Freon 113: 55 |
| **24SG127** [East of Building 296] | 18708-801 | 95 | **6** | Freon 113: 73 |
| **24SG133** [East of Building 296] | 18708-794 | 50 | **2.1** | Freon 113: 38 |
| **24SG133** [East of Building 296] | 18708-795 | 72.5 | **2.5** | Freon 113: 63 |
| **24SG133** [East of Building 296] | 18708-797 | 89.5 | **2.8** | Freon 113: 85 |
| **24SG136** [Near Building 324] | 18233-049 | 46.5 | ND | Freon 113: 951 |
| **24SG137** [South of Building 324] | 18708-852 | 48 | ND | |
| **24SG137** [South of Building 324] | 18708-853 | 76 | ND | Freon 113: 474 |
| **24SG137** [South of Building 324] | 18708-855 | 97 | ND | |
| **24SG138** [Near Well 24SVE12] | 18233-030 | 51 | **52** | Freon 113: 300 |
| **24SG138** [Near Well 24SVE12] | 18233-032 | 81 | **1.4** | |
| **24SG148A** [South of Well 24SVE12] | 18708-829 | 44 | **0.87** | |
| **24SG148A** [South of Well 24SVE12] | 18708-831 | 71 | **4** | Chloroform: 4.3 |

**Table 2. (Continued)**

| Soil Gas Sample Point Identification [nearest reference point] | Sample Identification Number | Sample Depth (Feet Below Ground Surface) | TCE in Micrograms Per Liter (ug/L) | Other Chemicals at or greater than 1 ug/L:<br>• 1,1-DCE<br>• Carbon Tetrachloride ($CCl_4$)<br>• PCE<br>• Freon 113<br>• other |
|---|---|---|---|---|
| *Soil Gas Samples Collected During December 1998* | | | | |
| **24SG1** [Near Well 24SVE12] | 18708-481 | 55 | **1.3** | |
| **24SG1** [Near Well 24SVE12] | 18708-482 | 74 | **320** | PCE: 4.6 |
| **24SG2** [South of Well 24SVE12] | 18708-485 | 51 | **6.4** | |
| **24SG2** [South of Well 24SVE12] | 18708-486 | 72 | **4.2** | |
| **24SG3** [South of Well 24SVE12] | 18708-488 | 54 | **3.8** | |
| **24SG3** [South of Well 24SVE12] | 18708-489 | 74 | **7.3** | |

*Explanation:*
ND not detected at or above the laboratory reporting limit

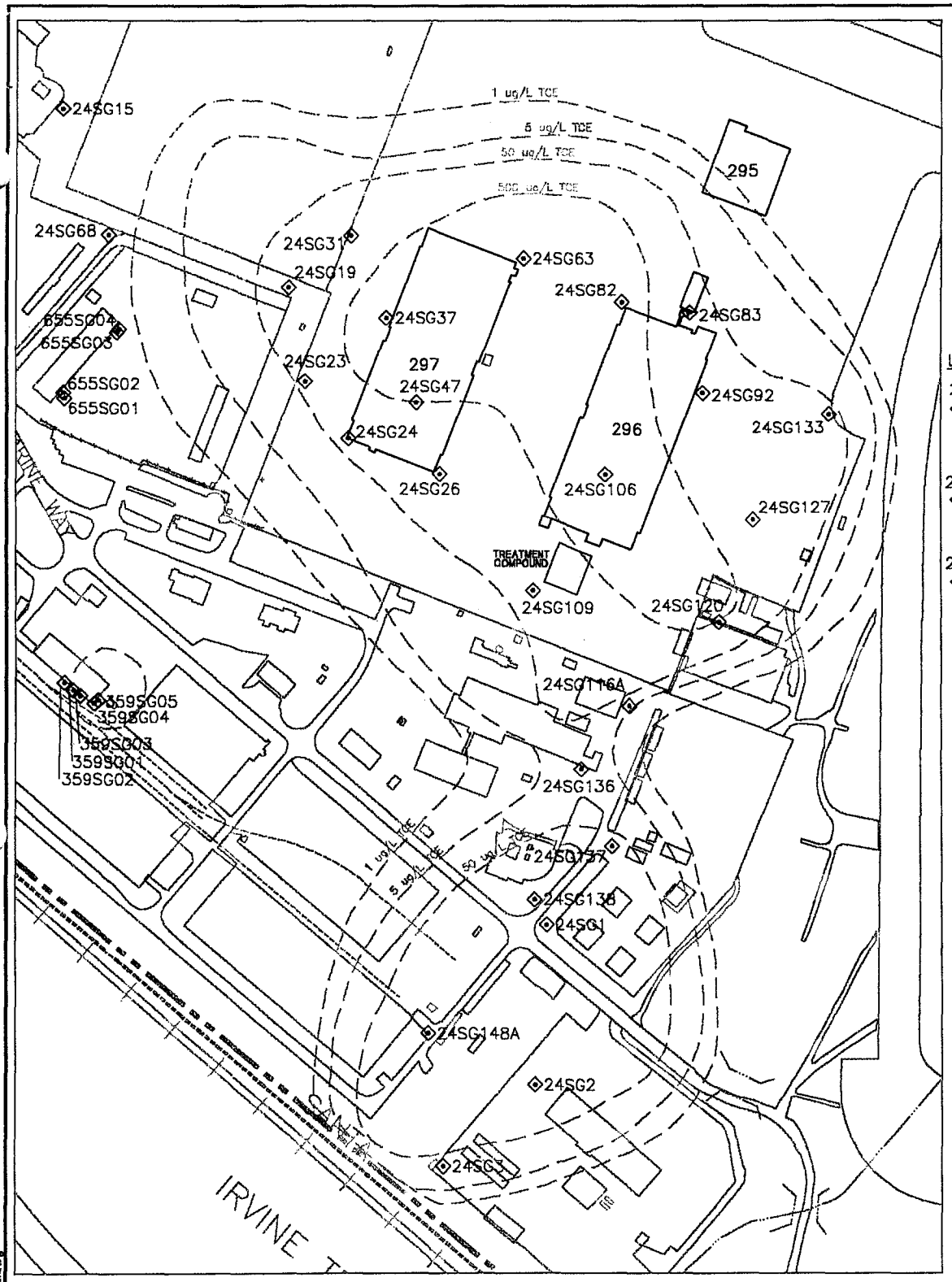
# Exhibits

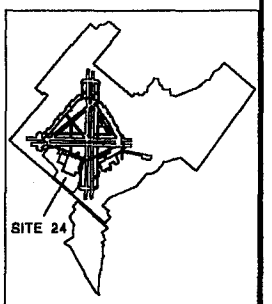
2 ~~1~~ Preliminary Soil Gas Survey Data
January 1999 Sampling Activities
TCE Concentrations in the Deep Vadose Zone

1 ~~2~~ Preliminary Soil Gas Survey Data
January 1999 Sampling Activities
TCE Concentrations in the Shallow and Intermediate Zones

3 TCE Concentrations in the Deep Vadose Zone
As of February 1999

4 Selected SVE and Soil Gas Survey Data
(Preliminary Results)




MCAS EL TORO

LEGEND

24SG9
◇ EQUAL TO OR LESS THAN TARGET LEVEL

24SG4
◇ BETWEEN TARGET AND 100 ug/L

24SG4
◇ GREATER THAN 100 ug/L TCE OR UNKNOWN

N

CONTOURS (DASHED LINES --------) REPRESENT APPROXIMATE TCE VAPOR CONCENTRATIONS NEAR GROUNDWATER (IN ug/L) AS MEASURED IN 1995.

GRAPHIC SCALE
0 100 200 400
(IN FEET)

NOTES:
1. LOCATIONS OF WELLS AND SURFACE FEATURES ARE INTENDED FOR ILLUSTRATION AND GENERAL USE ONLY. LOCATIONS OF WELLS ARE APPROXIMATE.
2. SOIL GAS POINTS NEAR OIL/WATER SEPARATORS OR TANKS AT BUILDINGS 359 AND 655 ARE SHOWN FOR REFERENCE ONLY; DATA WAS COLLECTED DURING 1998 FOR THE PETROLEUM CORRECTIVE ACTION PROGRAM.

*SOUTHWEST DIVISION*
*NAVAL FACILITIES ENGINEERING COMMAND*

MCAS EL TORO, CA

PRELIMINARY SOIL GAS DATA
SHALLOW & INTERMEDIATE VADOSE ZONES
VADOSE ZONE REMEDIATION—IRP SITE 24

| FILE NO. | | DATE |
|---|---|---|
| 18292132.DWG | EXHIBIT 1 | |

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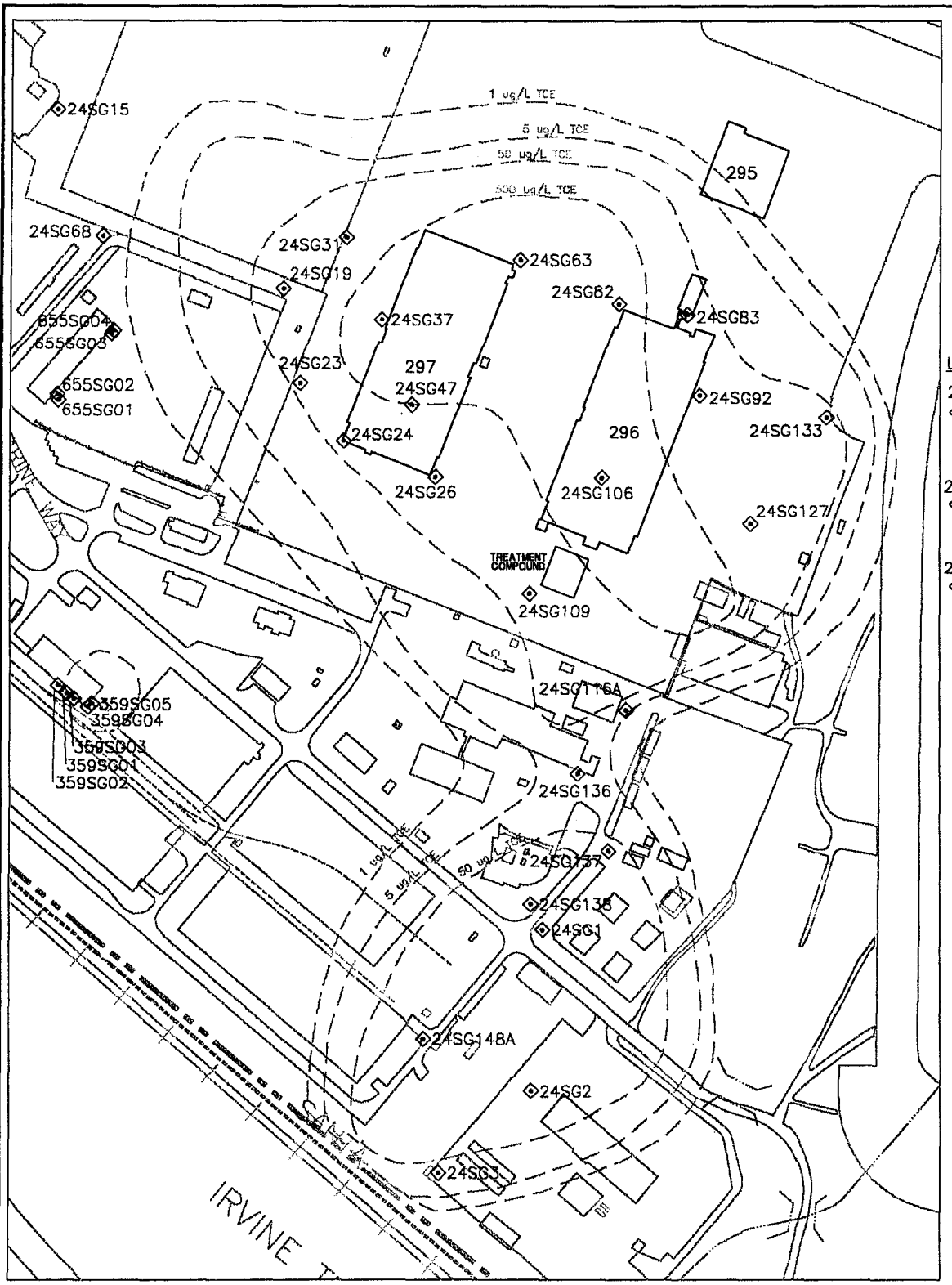


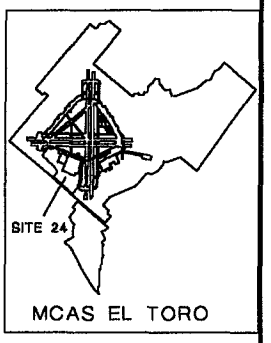


LEGEND

24SG9
◇ EQUAL TO OR LESS THAN TARGET LEVEL

24SG4
◇ BETWEEN TARGET AND 100 ug/L

24SG4
◇ GREATER THAN 100 ug/L TCE OR UNKNOWN

CONTOURS (DASHED LINES --------) REPRESENT APPROXIMATE TCE VAPOR CONCENTRATIONS NEAR GROUNDWATER (IN ug/L) AS MEASURED IN 1995.

GRAPHIC SCALE
0 100 200 400
(IN FEET)

NOTES:
1. LOCATIONS OF WELLS AND SURFACE FEATURES ARE INTENDED FOR ILLUSTRATION AND GENERAL USE ONLY. LOCATIONS OF WELLS ARE APPROXIMATE.
2. SOIL GAS POINTS NEAR OIL/WATER SEPARATORS OR TANKS AT BUILDINGS 359 AND 655 ARE SHOWN FOR REFERENCE ONLY; DATA WAS COLLECTED DURING 1998 FOR THE PETROLEUM CORRECTIVE ACTION PROGRAM.

*SOUTHWEST DIVISION*
*NAVAL FACILITIES ENGINEERING COMMAND*

MCAS EL TORO, CA

PRELIMINARY SOIL GAS DATA
DEEP VADOSE ZONES
VADOSE ZONE REMEDIATION–IRP SITE 24

| FILE NO. | EXHIBIT 2 | DATE |
|---|---|---|
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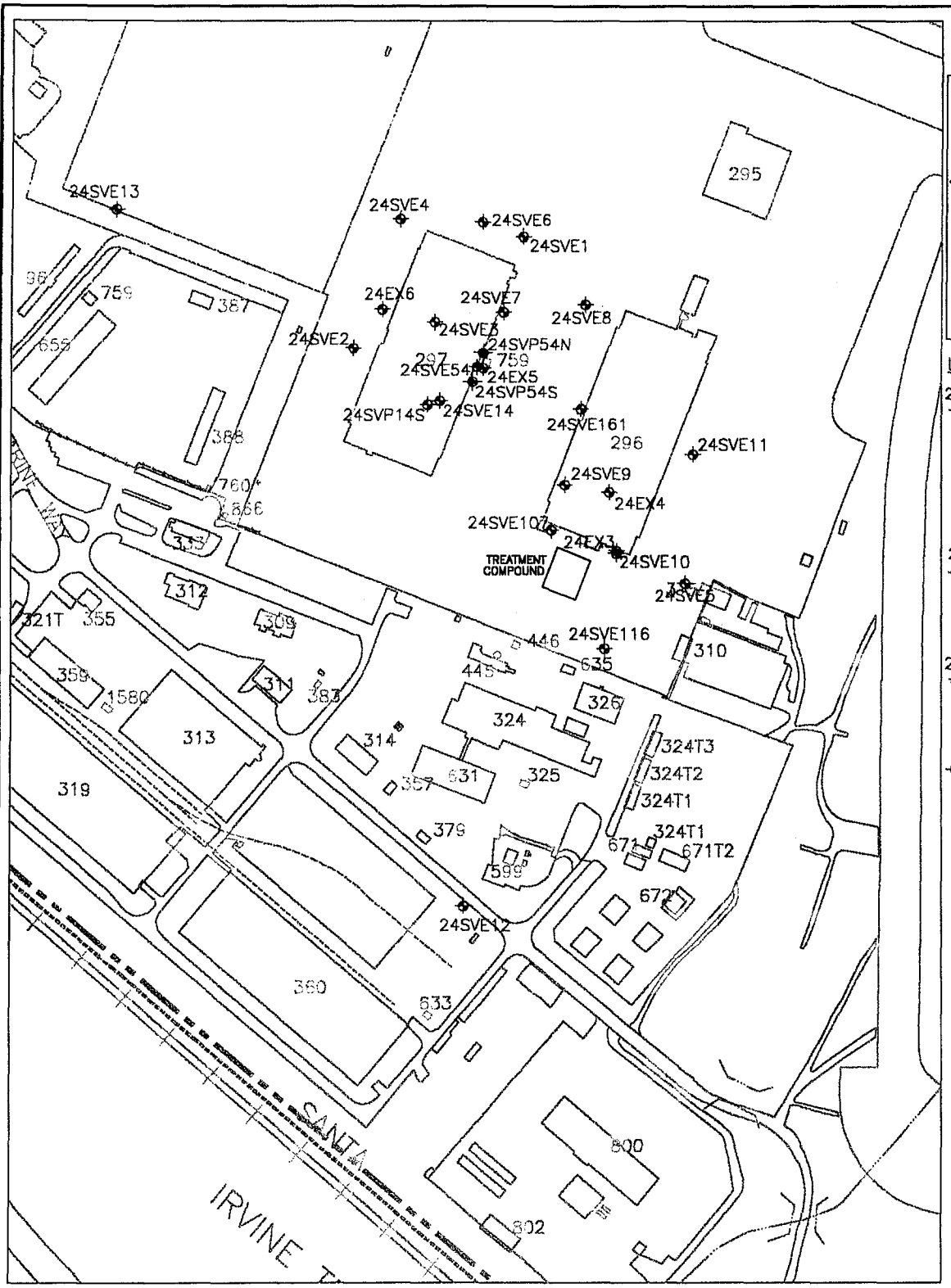
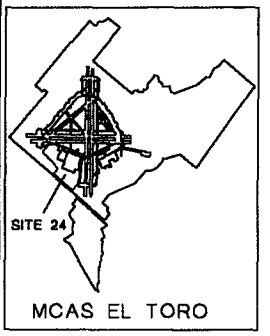



LEGEND

24SVE6
VAPOR EXTRACTION WELLS WITH CONCENTRATIONS EQUAL TO OR LESS THAN THE TARGET CLEANUP LEVELS ESTABLISHED IN THE INTERIM ROD

24SVE9
VAPOR EXTRACTION WELLS BETWEEN TARGET CLEANUP LEVEL AND 100 ug/L

24SVE2
VAPOR EXTRACTION WELLS GREATER THAN 100 ug/L

PIEZOMETER WELL

N

GRAPHIC SCALE
0 100 200 400
(IN FEET)

NOTES:
1. PRIMARY SOURCES OF INFORMATION ARE THE DRAFT FINAL ENGINEERING DESIGN REPORT (BECHTEL, 1998), THE DRAFT GROUNDWATER REMEDIATION PILOT TEST REPORT (BECHTEL, 1998), THE "DRAFT FINAL INTERIM RECORD OF DECISION, OPERABLE UNIT 2A, SITE 24–VOC SOURCE AREA, VADOSE ZONE, MCAS EL TORO (MCAS EL TORO, SEPTEMBER 1997), AND PRELIMINARY LABORATORY DATA PACKAGES (IT/OHM, 1998–1999)".
2. GROUNDWATER EXTRACTION WELLS 24EX3, 24EX4, 24EX5 AND 24EX6 ARE PRESENTED ON THIS MAP BECAUSE THEY ARE LOCATED INSIDE OF THE 500 MICROGRAM PER LITER CONTOUR FOR TCE (AS ESTABLISHED DURING THE REMEDIAL INVESTIGATION OF 1995) AND BECAUSE VACUUM–ENHANCED GROUNDWATER EXTRACTION UTILIZING A PORTABLE SOIL VAPOR EXTRACTION (SVE) TREATMENT SYSTEM WAS CONDUCTED AT THESE WELLS DURING THE PILOT TESTS OF 1997 AND 1998.
3. LOCATIONS OF WELLS AND SURFACE FEATURES ARE INTENDED FOR ILLUSTRATION AND GENERAL USE ONLY. LOCATIONS OF WELLS ARE APPROXIMATE.

*SOUTHWEST DIVISION*
*NAVAL FACILITIES ENGINEERING COMMAND*

MCAS EL TORO, CA

**TCE CONCENTRATIONS IN THE DEEP VADOSE ZONE AS OF FEBRUARY 1999**
**VADOSE ZONE REMEDIATION – IRP SITE 24**

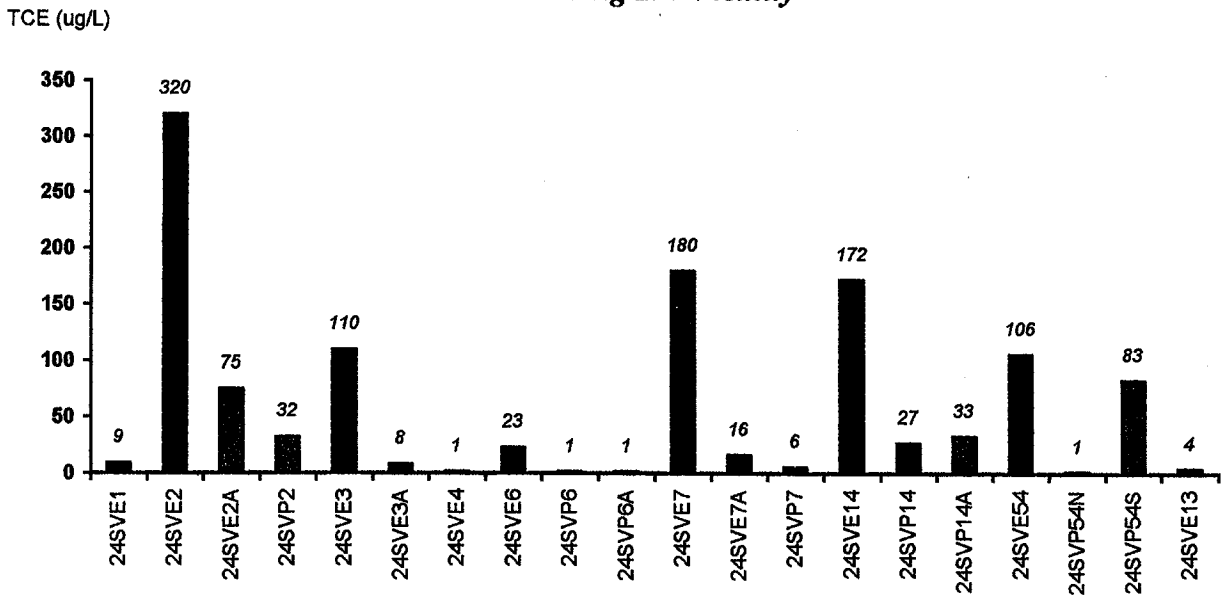
| FILE NO. | | DATE |
|---|---|---|
| 18292121.DWG | EXHIBIT 3 | |

Witzel-Yanez Design 3/11/99 9:04 AM 18292121.dwg

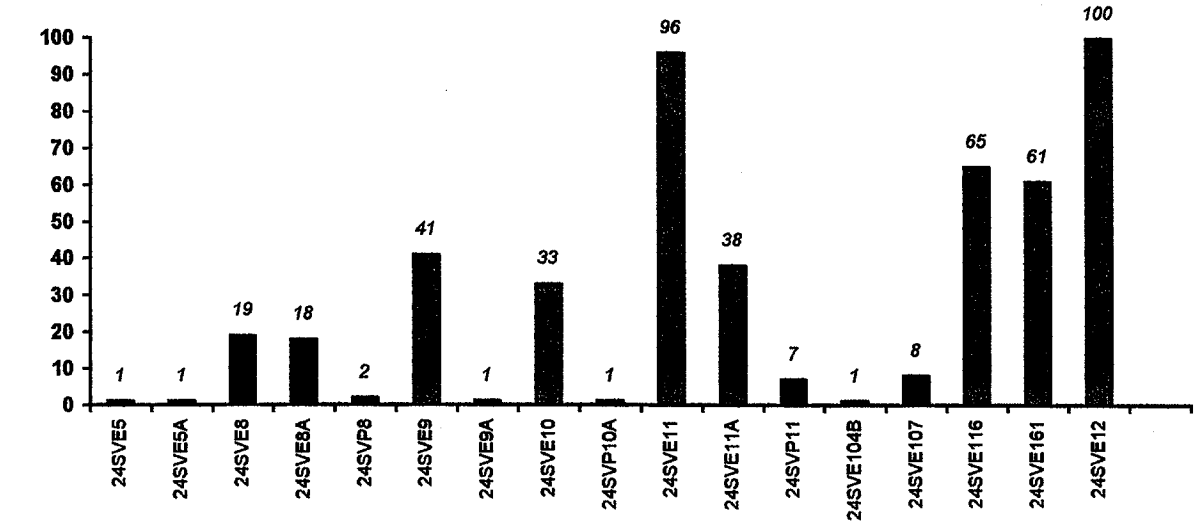
# Selected SVE and Soil Gas Survey Test Data
# (Preliminary Results)

# Recent TCE Vapor Concentrations at Vapor Extraction Wells (as of 28 February 1999)
# IRP Site 24 - VOC Source Area, MCAS El Toro

## *Building 297 Vicinity*




## *Building 296 Vicinity*



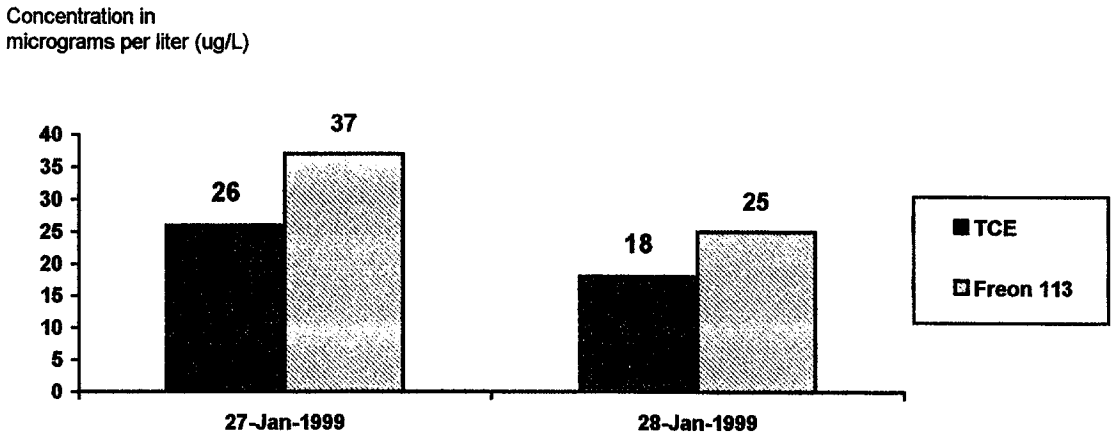

### Legend

**24SVE1** Deep Vadose Zone Well
**24SVE2A** Intermediate Depth Vadose Zone Well
**24SVE104B** Shallow Vadose Zone Well
**24SVP6** Piezometer
**24SG82** Soil Gas Sample Point (2 to 3 samples per point, highest TCE level shown)
NOTE: TCE Concentrations of less than or equal to 1 ug/L are shown as 1 ug/L on the charts.

At or below 27 ug/L TCE
28-100 ug/L TCE
Greater than 100 ug/L TCE

*Target Threshold Levels (Draft Final Interim ROD, September 1997)*
**TCE 27 ug/L** C Cl4 61 ug/L
PCE 69 ug/L 1,1 DCE 563 ug/L
Freon 113 234,000 ug/L

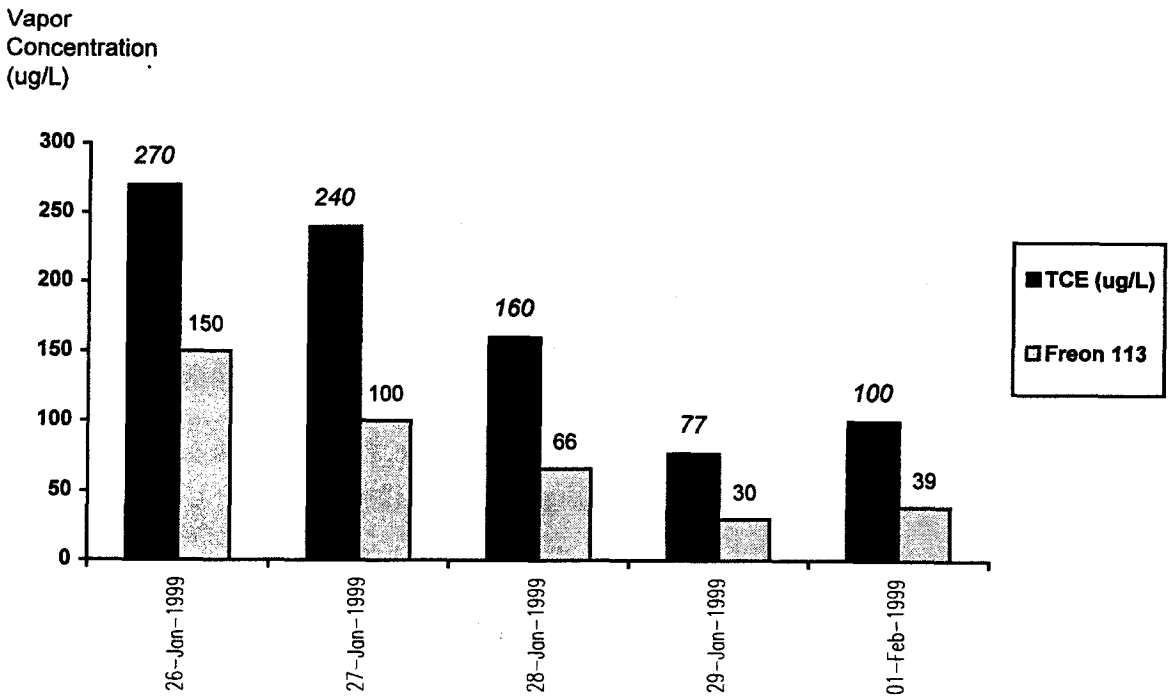
# Influent Vapor Concentrations at the Central SVE Treatment System
## Low-Flow Test * of 27-28 January 1999
## IRP Site 24, MCAS El Toro

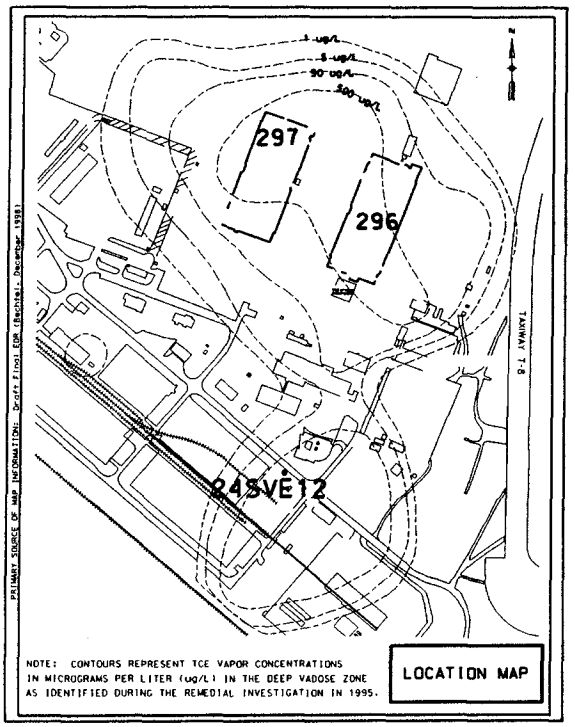



* Vapor Extraction Wells 24SVE5, 24SVE5A, 24SVE9, 24SVE9A, 24SVE10, 24SVE104B, 24SVE107, and 24SVE116 were connected to the Central System for the test.

1,1-DCE and PCE were detected at less than 1 microgram per liter (ug/L) during the low-flow test.

# Recent TCE and Freon 113 Vapor Concentrations at Well 24 SVE12
# IRP Site 24 - VOC Source Area, MCAS El Toro



**SOIL GAS POINT SG-47 LOCATED INSIDE OF BUILDING 297**

**OHM Remediation Services Corp**
*Subsidiary of OHM Corporation*
*U.S. Route 224 East • Findlay, Ohio 45840 • (419) 423-3326*

# CHAIN-OF-CUSTODY RECORD

LABORATORY COPY
219487
FORM 0019 REV 2 97

| | | | | | |
|---|---|---|---|---|---|
| OHM LAB COORDINATOR: Thizar Tinbat-Williams | LAB COORDINATOR'S PHONE: (949) 660-5300 | LAB COORDINATOR'S FAX: (949) 475-5433 | LABORATORY SERVICE ID: (9136097) | LABORATORY CONTACT: Maria Jones | MAIL REPORT TO (OHM AND NAME): OHM Remediation |
| PROJECT NAME: Soil Gas @ Site 24 | PROJECT LOCATION: MCAS El Toro | PROJECT NUMBER: 18233 | LABORATORY PHONE: (916) 985-1006 | LABORATORY FAX: | RECIPIENT NAME: Duayne Ishida |
| PROJECT CONTACT: Thizar Tinbat-Williams | PROJECT PHONE NUMBER: (949) 660-5300 | PROJECT FAX: (949) 475-5433 | LABORATORY ADDRESS: Quanterra | | ADDRESS: 3347 Michelson Dr., Ste. 200 |
| PROJECT ADDRESS: MCAS El Toro | CITY, STATE AND ZIP CODE: Santa Ana, CA | CLIENT: Lynn Hancock, SW Div | CITY, STATE AND ZIP CODE: Santa Ana, CA | | CITY, STATE AND ZIP CODE: Irvine, CA |
| PROJECT MANAGER: Bill Sedlak | PROJECT MANAGER'S PHONE: (949) 660-5300 | PROJECT MANAGER'S FAX: (949) 475-5433 | | | |

Analyze 'A' Bag First

| Item | Sample Identifier | Matrix | Date | Time | Preserved | # of Cont | QC Level | T.A.T. | Analyses TO-14 | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18233-050 | Vapor | 2/2/99 | 0936 | Ambient | 2 | III | 24 hr | X | |
| 2 | 18233-051 | Vapor | 2/2/99 | 1015 | Ambient | 3 | III | 24 hr | X | |
| 3 | 18233-052 | Vapor | 2/2/99 | 1130 | Ambient | 3 | III | 24 hr | X | |
| 4 | 18233-053 | Vapor | 2/2/99 | 1340 | Ambient | 3 | III | 24 hr | X | |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |

Linda 2/2/99

SAMPLES COLLECTED BY: Linda Sulley
RELINQUISHED BY: Linda Sulley
COURIER AND AIR BILL NUMBER:
RECEIVED BY:
DATE:
TIME:
COOLER TEMPERATURE UPON RECEIPT:
SAMPLE RECONCILIATION UPON RECEIPT:

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

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

| Sample Point Location | Sample Type G | C | F | QC |
|---|---|---|---|---|
| (1) 24SG47 - Amb | X | | X | X |
| (2) 24SG47 - @ 35' | X | | X | |
| (3) 24SG47 @ 71.5' | X | | X | |
| (4) 24SG47 @ 94' | X | | X | |

Comments:
(2)-(4) SG47 at Site 24

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

**Preliminary – Data Evaluation In Progress**

## Volatile Organics by GCMS - EPA TO14 Modified

| | | | |
|---|---|---|---|
| Client Name: | IT Group | | |
| Client ID: | 18233-050 | | |
| LAB ID: | 136077-0001-SA | | |
| Matrix: | AIR | Sampled: 02 FEB 99 | Received: 02 FEB 99 |
| Authorized: | 02 FEB 99 | Prepared: N/A | Analyzed: 02 FEB 99 |
| Instrument: | GC/MS-B | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Dichlorodifluoromethane | ND | | 2.0 | ppb (v/v) |
| Chloromethane | ND | | 4.0 | ppb (v/v) |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.0 | ppb (v/v) |
| Vinyl chloride | ND | | 2.0 | ppb (v/v) |
| Bromomethane | ND | | 2.0 | ppb (v/v) |
| Chloroethane | ND | | 4.0 | ppb (v/v) |
| Trichlorofluoromethane | ND | | 2.0 | ppb (v/v) |
| 1,1-Dichloroethene | ND | | 2.0 | ppb (v/v) |
| Carbon disulfide | ND | | 10 | ppb (v/v) |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 4.2 | | 2.0 | ppb (v/v) |
| Acetone | 41 | | 10 | ppb (v/v) |
| Methylene chloride | 2.6 | | 2.0 | ppb (v/v) |
| trans-1,2-Dichloroethene | ND | | 2.0 | ppb (v/v) |
| Methyl t-butyl ether | 19 | F | 10 | ppb (v/v) |
| 1,1-Dichloroethane | ND | | 2.0 | ppb (v/v) |
| Vinyl acetate | ND | | 10 | ppb (v/v) |
| cis-1,2-Dichloroethene | ND | | 2.0 | ppb (v/v) |
| 2-Butanone | ND | | 10 | ppb (v/v) |
| Chloroform | ND | | 2.0 | ppb (v/v) |
| 1,1,1-Trichloroethane | ND | | 2.0 | ppb (v/v) |
| Carbon tetrachloride | ND | | 2.0 | ppb (v/v) |
| Benzene | 3.6 | F | 2.0 | ppb (v/v) |
| 1,2-Dichloroethane | ND | | 2.0 | ppb (v/v) |
| Trichloroethene | ND | | 2.0 | ppb (v/v) |
| 1,2-Dichloropropane | ND | | 2.0 | ppb (v/v) |
| Bromodichloromethane | ND | | 2.0 | ppb (v/v) |
| cis-1,3-Dichloropropene | ND | | 2.0 | ppb (v/v) |
| 4-Methyl-2-pentanone | ND | | 10 | ppb (v/v) |
| Toluene | 23 | | 5.0 | ppb (v/v) |
| trans-1,3-Dichloropropene | ND | | 2.0 | ppb (v/v) |
| 1,1,2-Trichloroethane | ND | | 2.0 | ppb (v/v) |
| Tetrachloroethene | 4.1 | | 2.0 | ppb (v/v) |
| 2-Hexanone | ND | | 30 | ppb (v/v) |
| Dibromochloromethane | ND | | 2.0 | ppb (v/v) |
| 1,2-Dibromoethane (EDB) | ND | | 2.0 | ppb (v/v) |
| Chlorobenzene | ND | | 2.0 | ppb (v/v) |
| Ethylbenzene | 9.7 | | 2.0 | ppb (v/v) |
| Xylenes (total) | 49 | | 2.0 | ppb (v/v) |
| Styrene | ND | | 2.0 | ppb (v/v) |
| Bromoform | ND | | 2.0 | ppb (v/v) |
| 1,1,2,2-Tetrachloroethane | ND | | 2.0 | ppb (v/v) |
| Benzyl chloride | ND | | 10 | ppb (v/v) |
| 4-Ethyltoluene | 3.5 | | 2.0 | ppb (v/v) |

F = Reported value estimated due to an interference.
ND = Not Detected

**Preliminary – Data Evaluation In Progress**

NOTE: 185 parts per billion (ppb by volume) of TCE equals approximately 1 microgram per liter (ug/L)

## Volatile Organics by GCMS - EPA TO14 Modified (cont.)

Client Name: IT Group
Client ID: 18233-050
LAB ID: 136077-0001-SA
Matrix: AIR
Authorized: 02 FEB 99
Instrument: GC/MS-B

Sampled: 02 FEB 99
Prepared: N/A
Dilution: 1.0

Received: 02 FEB 99
Analyzed: 02 FEB 99

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 1,3,5-Trimethylbenzene | ND | | 2.0 | ppb (v/v) |
| 1,2,4-Trimethylbenzene | 3.8 | | 2.0 | ppb (v/v) |
| 1,3-Dichlorobenzene | ND | | 2.0 | ppb (v/v) |
| 1,4-Dichlorobenzene | ND | | 2.0 | ppb (v/v) |
| 1,2-Dichlorobenzene | ND | | 2.0 | ppb (v/v) |
| 1,2,4-Trichlorobenzene | ND | | 20 | ppb (v/v) |
| Hexachlorobutadiene | ND | | 4.0 | ppb (v/v) |

ND = Not Detected

**Preliminary – Data Evaluation In Progress**

## Volatile Organics by GCMS - EPA TO14 Modified

Client Name: IT Group
Client ID: 18233-051
LAB ID: 136077-0002-SA
Matrix: AIR
Authorized: 02 FEB 99
Instrument: GC/MS-B

Sampled: 02 FEB 99
Prepared: N/A
Dilution: 5.0

Received: 02 FEB 99
Analyzed: 03 FEB 99

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Dichlorodifluoromethane | ND | | 10 | ppb (v/v) |
| Chloromethane | ND | | 20 | ppb (v/v) |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 10 | ppb (v/v) |
| Vinyl chloride | ND | | 10 | ppb (v/v) |
| Bromomethane | ND | | 10 | ppb (v/v) |
| Chloroethane | ND | | 20 | ppb (v/v) |
| Trichlorofluoromethane | ND | | 10 | ppb (v/v) |
| 1,1-Dichloroethene | 150 | | 10 | ppb (v/v) |
| Carbon disulfide | ND | | 50 | ppb (v/v) |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 130 | | 10 | ppb (v/v) |
| Acetone | 66 | | 50 | ppb (v/v) |
| Methylene chloride | 27 | | 10 | ppb (v/v) |
| trans-1,2-Dichloroethene | ND | | 10 | ppb (v/v) |
| Methyl t-butyl ether | ND | | 50 | ppb (v/v) |
| 1,1-Dichloroethane | ND | | 10 | ppb (v/v) |
| Vinyl acetate | ND | | 50 | ppb (v/v) |
| cis-1,2-Dichloroethene | ND | | 10 | ppb (v/v) |
| 2-Butanone | ND | | 50 | ppb (v/v) |
| Chloroform | 58 | | 10 | ppb (v/v) |
| 1,1,1-Trichloroethane | ND | | 10 | ppb (v/v) |
| Carbon tetrachloride | ND | | 10 | ppb (v/v) |
| Benzene | ND | | 10 | ppb (v/v) |
| 1,2-Dichloroethane | ND | | 10 | ppb (v/v) |
| → Trichloroethene | 1100 | | 10 | ppb (v/v) |
| 1,2-Dichloropropane | ND | | 10 | ppb (v/v) |
| Bromodichloromethane | ND | | 10 | ppb (v/v) |
| cis-1,3-Dichloropropene | ND | | 10 | ppb (v/v) |
| 4-Methyl-2-pentanone | ND | | 50 | ppb (v/v) |
| Toluene | 35 | | 25 | ppb (v/v) |
| trans-1,3-Dichloropropene | ND | | 10 | ppb (v/v) |
| 1,1,2-Trichloroethane | ND | | 10 | ppb (v/v) |
| Tetrachloroethene | ND | | 10 | ppb (v/v) |
| 2-Hexanone | ND | | 150 | ppb (v/v) |
| Dibromochloromethane | ND | | 10 | ppb (v/v) |
| 1,2-Dibromoethane (EDB) | ND | | 10 | ppb (v/v) |
| Chlorobenzene | ND | | 10 | ppb (v/v) |
| Ethylbenzene | 11 | | 10 | ppb (v/v) |
| Xylenes (total) | 52 | | 10 | ppb (v/v) |
| Styrene | ND | | 10 | ppb (v/v) |
| Bromoform | ND | | 10 | ppb (v/v) |
| 1,1,2,2-Tetrachloroethane | ND | | 10 | ppb (v/v) |
| Benzyl chloride | ND | | 50 | ppb (v/v) |
| 4-Ethyltoluene | ND | | 10 | ppb (v/v) |
| 1,3,5-Trimethylbenzene | ND | | 10 | ppb (v/v) |

ND = Not Detected

**Preliminary – Data Evaluation In Progress**

NOTE: 185 parts per billion (ppb by volume) of TCE equals approximately 1 microgram per liter (ug/L)

## Volatile Organics by GCMS - EPA TO14 Modified (cont.)

| | | | |
|---|---|---|---|
| Client Name: | IT Group | | |
| Client ID: | 18233-051 | | |
| LAB ID: | 136077-0002-SA | | |
| Matrix: | AIR | Sampled: 02 FEB 99 | Received: 02 FEB 99 |
| Authorized: | 02 FEB 99 | Prepared: N/A | Analyzed: 03 FEB 99 |
| Instrument: | GC/MS-B | Dilution: 5.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | ND | | 10 | ppb (v/v) |
| 1,3-Dichlorobenzene | ND | | 10 | ppb (v/v) |
| 1,4-Dichlorobenzene | ND | | 10 | ppb (v/v) |
| 1,2-Dichlorobenzene | ND | | 10 | ppb (v/v) |
| 1,2,4-Trichlorobenzene | ND | | 100 | ppb (v/v) |
| Hexachlorobutadiene | ND | | 20 | ppb (v/v) |

ND = Not Detected

**Preliminary – Data Evaluation In Progress**

## Volatile Organics by GCMS - EPA TO14 Modified

| | | | |
|---|---|---|---|
| Client Name: | IT Group | | |
| Client ID: | 18233-052 | | |
| LAB ID: | 136077-0003-SA | | |
| Matrix: | AIR | Sampled: 02 FEB 99 | Received: 02 FEB 99 |
| Authorized: | 02 FEB 99 | Prepared: N/A | Analyzed: 02 FEB 99 |
| Instrument: | GC/MS-B | Dilution: 1.0 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Dichlorodifluoromethane | ND | | 2.0 | ppb (v/v) |
| Chloromethane | ND | | 4.0 | ppb (v/v) |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 2.0 | ppb (v/v) |
| Vinyl chloride | ND | | 2.0 | ppb (v/v) |
| Bromomethane | ND | | 2.0 | ppb (v/v) |
| Chloroethane | ND | | 4.0 | ppb (v/v) |
| Trichlorofluoromethane | ND | | 2.0 | ppb (v/v) |
| 1,1-Dichloroethene | ND | | 2.0 | ppb (v/v) |
| Carbon disulfide | ND | | 10 | ppb (v/v) |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | ND | | 2.0 | ppb (v/v) |
| Acetone | 30 | | 10 | ppb (v/v) |
| Methylene chloride | 2.1 | | 2.0 | ppb (v/v) |
| trans-1,2-Dichloroethene | ND | | 2.0 | ppb (v/v) |
| Methyl t-butyl ether | ND | | 10 | ppb (v/v) |
| 1,1-Dichloroethane | ND | | 2.0 | ppb (v/v) |
| Vinyl acetate | ND | | 10 | ppb (v/v) |
| cis-1,2-Dichloroethene | ND | | 2.0 | ppb (v/v) |
| 2-Butanone | ND | | 10 | ppb (v/v) |
| Chloroform | ND | | 2.0 | ppb (v/v) |
| 1,1,1-Trichloroethane | ND | | 2.0 | ppb (v/v) |
| Carbon tetrachloride | ND | | 2.0 | ppb (v/v) |
| Benzene | 3.2 | F | 2.0 | ppb (v/v) |
| 1,2-Dichloroethane | ND | | 2.0 | ppb (v/v) |
| → Trichloroethene | 34 | | 2.0 | ppb (v/v) |
| 1,2-Dichloropropane | ND | | 2.0 | ppb (v/v) |
| Bromodichloromethane | ND | | 2.0 | ppb (v/v) |
| cis-1,3-Dichloropropene | ND | | 2.0 | ppb (v/v) |
| 4-Methyl-2-pentanone | ND | | 10 | ppb (v/v) |
| Toluene | 58 | | 5.0 | ppb (v/v) |
| trans-1,3-Dichloropropene | ND | | 2.0 | ppb (v/v) |
| 1,1,2-Trichloroethane | ND | | 2.0 | ppb (v/v) |
| Tetrachloroethene | 3.0 | | 2.0 | ppb (v/v) |
| 2-Hexanone | ND | | 30 | ppb (v/v) |
| Dibromochloromethane | ND | | 2.0 | ppb (v/v) |
| 1,2-Dibromoethane (EDB) | ND | | 2.0 | ppb (v/v) |
| Chlorobenzene | ND | | 2.0 | ppb (v/v) |
| Ethylbenzene | 7.1 | | 2.0 | ppb (v/v) |
| Xylenes (total) | 36 | | 2.0 | ppb (v/v) |
| Styrene | ND | | 2.0 | ppb (v/v) |
| Bromoform | ND | | 2.0 | ppb (v/v) |
| 1,1,2,2-Tetrachloroethane | ND | | 2.0 | ppb (v/v) |
| Benzyl chloride | ND | | 10 | ppb (v/v) |
| 4-Ethyltoluene | 3.4 | | 2.0 | ppb (v/v) |

F = Reported value estimated due to an interference.
ND = Not Detected

**Preliminary – Data Evaluation In Progress**

NOTE: 185 parts per billion (ppb by volume) of TCE equals approximately 1 microgram per liter (ug/L)

## Volatile Organics by GCMS - EPA TO14 Modified (cont.)

Client Name: IT Group
Client ID: 18233-052
LAB ID: 136077-0003-SA
Matrix: AIR
Authorized: 02 FEB 99
Instrument: GC/MS-B

Sampled: 02 FEB 99
Prepared: N/A
Dilution: 1.0

Received: 02 FEB 99
Analyzed: 02 FEB 99

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 1,3,5-Trimethylbenzene | ND | | 2.0 | ppb (v/v) |
| 1,2,4-Trimethylbenzene | 4.1 | | 2.0 | ppb (v/v) |
| 1,3-Dichlorobenzene | ND | | 2.0 | ppb (v/v) |
| 1,4-Dichlorobenzene | ND | | 2.0 | ppb (v/v) |
| 1,2-Dichlorobenzene | ND | | 2.0 | ppb (v/v) |
| 1,2,4-Trichlorobenzene | ND | | 20 | ppb (v/v) |
| Hexachlorobutadiene | ND | | 4.0 | ppb (v/v) |

= Not Detected

**Preliminary – Data Evaluation In Progress**

## Volatile Organics by GCMS - EPA TO14 Modified

Client Name: IT Group
Client ID: 18233-053
LAB ID: 136077-0004-SA
Matrix: AIR — Sampled: 02 FEB 99 — Received: 02 FEB 99
Authorized: 02 FEB 99 — Prepared: N/A — Analyzed: 03 FEB 99
Instrument: GC/MS-B — Dilution: 25

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| Dichlorodifluoromethane | ND | | 50 | ppb (v/v) |
| Chloromethane | ND | | 100 | ppb (v/v) |
| 1,2-Dichloro-1,1,2,2-tetrafluoroethane | ND | | 50 | ppb (v/v) |
| Vinyl chloride | ND | | 50 | ppb (v/v) |
| Bromomethane | ND | | 50 | ppb (v/v) |
| Chloroethane | ND | | 100 | ppb (v/v) |
| Trichlorofluoromethane | ND | | 50 | ppb (v/v) |
| 1,1-Dichloroethene | 3200 | | 50 | ppb (v/v) |
| Carbon disulfide | ND | | 250 | ppb (v/v) |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 1800 | | 50 | ppb (v/v) |
| Acetone | ND | | 250 | ppb (v/v) |
| Methylene chloride | ND | | 50 | ppb (v/v) |
| trans-1,2-Dichloroethene | ND | | 50 | ppb (v/v) |
| Methyl t-butyl ether | ND | | 250 | ppb (v/v) |
| 1,1-Dichloroethane | ND | | 50 | ppb (v/v) |
| Vinyl acetate | ND | | 250 | ppb (v/v) |
| cis-1,2-Dichloroethene | ND | | 50 | ppb (v/v) |
| 2-Butanone | ND | | 250 | ppb (v/v) |
| Chloroform | 73 | | 50 | ppb (v/v) |
| 1,1,1-Trichloroethane | ND | | 50 | ppb (v/v) |
| Carbon tetrachloride | 160 | | 50 | ppb (v/v) |
| Benzene | ND | | 50 | ppb (v/v) |
| 1,2-Dichloroethane | ND | | 50 | ppb (v/v) |
| → Trichloroethene | 6400 | | 50 | ppb (v/v) |
| 1,2-Dichloropropane | ND | | 50 | ppb (v/v) |
| Bromodichloromethane | ND | | 50 | ppb (v/v) |
| cis-1,3-Dichloropropene | ND | | 50 | ppb (v/v) |
| 4-Methyl-2-pentanone | ND | | 250 | ppb (v/v) |
| Toluene | ND | | 120 | ppb (v/v) |
| trans-1,3-Dichloropropene | ND | | 50 | ppb (v/v) |
| 1,1,2-Trichloroethane | ND | | 50 | ppb (v/v) |
| Tetrachloroethene | ND | | 50 | ppb (v/v) |
| 2-Hexanone | ND | | 750 | ppb (v/v) |
| Dibromochloromethane | ND | | 50 | ppb (v/v) |
| 1,2-Dibromoethane (EDB) | ND | | 50 | ppb (v/v) |
| Chlorobenzene | ND | | 50 | ppb (v/v) |
| Ethylbenzene | ND | | 50 | ppb (v/v) |
| Xylenes (total) | ND | | 50 | ppb (v/v) |
| Styrene | ND | | 50 | ppb (v/v) |
| Bromoform | ND | | 50 | ppb (v/v) |
| 1,1,2,2-Tetrachloroethane | ND | | 50 | ppb (v/v) |
| Benzyl chloride | ND | | 250 | ppb (v/v) |
| 4-Ethyltoluene | ND | | 50 | ppb (v/v) |
| 1,3,5-Trimethylbenzene | ND | | 50 | ppb (v/v) |

ND = Not Detected

**Preliminary – Data Evaluation In Progress**

NOTE: 185 parts per billion (ppb by volume) of TCE equals approximately 1 microgram per liter (ug/L)

Volatile Organics by GCMS - EPA TO14 Modified (cont.)

| | | | |
|---|---|---|---|
| Client Name: | IT Group | | |
| Client ID: | 18233-053 | | |
| LAB ID: | 136077-0004-SA | | |
| Matrix: | AIR | Sampled: 02 FEB 99 | Received: 02 FEB 99 |
| Authorized: | 02 FEB 99 | Prepared: N/A | Analyzed: 03 FEB 99 |
| Instrument: | GC/MS-B | Dilution: 25 | |

| Parameter | Result | Qualifier | RL | Units |
|---|---|---|---|---|
| 1,2,4-Trimethylbenzene | ND | | 50 | ppb (v/v) |
| 1,3-Dichlorobenzene | ND | | 50 | ppb (v/v) |
| 1,4-Dichlorobenzene | ND | | 50 | ppb (v/v) |
| 1,2-Dichlorobenzene | ND | | 50 | ppb (v/v) |
| 1,2,4-Trichlorobenzene | ND | | 500 | ppb (v/v) |
| Hexachlorobutadiene | ND | | 100 | ppb (v/v) |

**Preliminary – Data Evaluation In Progress**

ND = Not Detected

Preliminary – Data Evaluation In Progress

# Well 24SVE14

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

## CHAIN-OF-CUSTODY RECORD

PROJECT DATA MANAGER'S COPY
222407
FORM 0019 REV 2-97

| | | | | | |
|---|---|---|---|---|---|
| OHM's LAB COORDINATOR: Thizar Tinhit-Williams | LAB COORDINATOR'S PHONE: (949) 660-5360 | LAB COORDINATOR'S FAX: (949) 475-5433 | LABORATORY SERVICE ID: M9B160186 | LABORATORY CONTACT: Maria Jones | MAIL REPORT (COMPANY NAME): OHM Remediation |
| PROJECT NAME: SVE 14 @ Site 24 | PROJECT LOCATION: MCAS El Toro | PROJECT NUMBER: 18708 | LABORATORY PHONE: (714) 258-8610 | LABORATORY FAX: | RECIPIENT NAME: Duwayne Ichida |
| PROJECT CONTACT: Thizar Tinhit-Williams | PROJECT PHONE NUMBER: (949) 660-5360 | PROJECT FAX: (949) 475-5433 | LABORATORY ADDRESS: Chanterra | | ADDRESS: 3347 Michelsen Dr., Ste 200 |
| PROJECT ADDRESS: MCAS El Toro | CITY, STATE AND ZIPCODE: Santa Ana CA | CLIENT: Lynn Hernecker, SW Div | CITY, STATE AND ZIPCODE: Santa Ana CA | | CITY, STATE, AND ZIPCODE: Irvine CA |
| PROJECT MANAGER: Bill Sedlak | PROJECT MANAGER'S PHONE: (949) 660-5360 | PROJECT MANAGER'S FAX: (949) 475-5433 | | | |

Analyze 'A' Bag first

| Item | Sample Identifier | Matrix | Date | Time | Preserved | # of Cont. | QC Level | T.A.T. | Analyses: TO-14 | Analyses: Hold-Conditional | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 18708-832 | Vapor | 2/16/99 | 0905 | Ambient | 2 | III | 5 DAY | X | | |
| 2 | 18708-833 | Vapor | 2/16/99 | 0910 | Ambient | 2 | III | 24-hr. | | X | Analyze only if 18708-834 is detected. |
| 3 | 18708-834 | Vapor | 2/16/99 | 0915 | Ambient | 3 | III | 24-hr. | X | | |
| 4 | 18708-835 | Vapor | 2/16/99 | 0930 | Ambient | 3 | III | 5 DAY | X | | |
| 5 | 18708-836 | Vapor | 2/16/99 | 0937 | Ambient | 3 | IV | 5 DAY | X | | |
| 6 | | | | | | | | | | | |
| 7 | | | | | | | | | | | |
| 8 | | | | | (2) | 2/16/99 | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |

SAMPLES COLLECTED BY: [signature]
RELINQUISHED BY: [signature]
COURIER AND AIR BILL NUMBER:
RECEIVED BY: Clay E. Green
DATE: 2/16/99
TIME: 3:00 PM
COOLER TEMPERATURE UPON RECEIPT:
SAMPLE'S CONDITION UPON RECEIPT:

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

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

| Sample Point Location | Sample Type: G | C | F | QC |
|---|---|---|---|---|
| 1. 24SVE14 Ambient | X | | X | X |
| 2. 24SVE14 - Eff | X | | X | |
| 3. 24SVE14 - Mid | X | | X | |
| 4. 24SVE14 - Inf. | X | | X | |
| 5. 24SVE14 - Inf (Cup) | X | | X | X |

Comments: 4th weekly sampling

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

d:\gcmsb\990215\B1149.D

M9D160186 - 2

## Quanterra Air Toxics Lab

| | | | |
|---|---|---|---|
| **Sample Name:** | CQTNG-102 OHM | **Data Analyzed:** | 16 Feb 1999 16:39 |
| **Misc. Info:** | 500ml 18708-834 B160186-3 TEDLA | **Method:** | MSB0216 |
| **Data Name:** | B1149.D | **Shift Cali.File:** | CC02161.D |
| **Data Path:** | d:\gcmsb\990215\ | **Dilution Factor:** | 1 |

| Compound | dRT | Result(ppbv) | RL(ppbv) |
|---|---|---|---|
| 2) Dichlorodifluoromethane (12) | -0.03 | ND | 2.00 |
| 3) Chloromethane | 0.00 | ND | 4.00 |
| 4) 1,2-Cl-1,1,2,2-F ethane (114) | 0.00 | ND | 2.00 |
| 5) Vinyl Chloride | | ND | 2.00 |
| 6) Bromomethane | | ND | 2.00 |
| 7) Chloroethane | | ND | 4.00 |
| 8) Trichlorofluoromethane (11) | -0.01 | ND | 2.00 |
| 9) 1,1-Dichloroethene | -0.22 | ND | 2.00 |
| 10) Carbon Disulfide | 0.02 | ND | 10.00 |
| 11) 1,1,2-Cl 1,2,2-F ethane (113) | 0.01 | ND | 2.00 |
| 12) Acetone | 0.02 | ND | 10.00 |
| 13) Methylene Chloride | -0.00 | ND | 2.00 |
| 14) t-1,2-Dichloroethene | | ND | 2.00 |
| 15) 1,1-Dichloroethane | | ND | 2.00 |
| 16) Vinyl Acetate | -0.03 | ND | 10.00 |
| 17) c-1,2-Dichloroethene | | ND | 2.00 |
| 18) 2-Butanone | | ND | 10.00 |
| 19) Chloroform | | ND | 2.00 |
| 20) 1,1,1-Trichloroethane | | ND | 2.00 |
| 21) Carbon Tetrachloride | | ND | 2.00 |
| 23) Benzene | 0.00 | ND | 2.00 |
| 25) 1,2-Dichloroethane | | ND | 2.00 |
| 26) Trichloroethene | | ND | 2.00 |
| 27) 1,2-Dichloropropene | | ND | 2.00 |
| 28) Bromodichloromethane | -0.49 | ND | 2.00 |
| 29) c-1,3-Dichloropropene | 0.01 | ND | 2.00 |
| 30) 4-Methyl-2-Pentanone | -0.06 | ND | 10.00 |
| 32) Toluene | -0.10 | ND | ~~2.00~~ 5.00 |
| 34) t-1,3-Dichloropropene | | ND | 2.00 |
| 35) 1,1,2-Trichloroethane | | ND | 2.00 |
| 36) Tetrachloroethene | -0.02 | ND | 2.00 |
| 37) 2-Hexanone | | ND | 30.00 |
| 38) Dibromochloromethane | | ND | 2.00 |
| 39) 1,2-Dibromoethane | | ND | 2.00 |
| 40) Chlorobenzene | 0.00 | ND | 2.00 |
| 41) Ethylbenzene | 0.02 | ND | 2.00 |
| 42) p,&m-Xylene | 0.01 | ND | 2.00 |
| 43) o-Xylene | 0.03 | ND | 2.00 |
| 44) Styrene | 0.04 | ND | 2.00 |
| 45) Bromoform | | ND | 2.00 |

**Preliminary – Data Evaluation In Progress**

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| | | | |
|---|---|---|---|
| Sample Name: | CQTNG-101 OHM | Data Analyzed: | 02/16/19 -1:6: |
| Misc. Info: | 500ml 18708-834 B160186-3 TE | Method: | MSB0216 |
| Data Name: | B1149.D | Shift Cali.File: | CC02161.D |
| Data Path: | d:\gcmsb\990215\ | Dilution Factor: | 1 |

| | Compound | dRT | Result(ppbv) | RL(ppbv) |
|---|---|---|---|---|
| 47) | 1,1,2,2-Tetrachloroethane | | ND | 2.00 |
| 48) | Benzyl Chloride | 0.07 | ND | 10.00 |
| 49) | 4-Ethyl Toluene | 0.06 | ND | 2.00 |
| 50) | 1,3,5-Trimethylbenzene | -0.12 | ND | 2.00 |
| 51) | 1,2,4-Trimethylbenzene | 0.04 | ND | 2.00 |
| 52) | 1,3-Dichlorobenzene | 0.30 | ND | 2.00 |
| 53) | 1,4-Dichlorobenzene | 0.09 | ND | 2.00 |
| 54) | 1,2-Dichlorobenzene | -0.39 | ND | 2.00 |
| 55) | 1,2,4-Trichlorobenzene | 0.17 | ND | 20.00 |
| 56) | Hexachlorobutadiene | | ND | 4.00 |
| | MTBE | | ND | 10 |

| I.S. | Daily Area | Sample Area | Area Criteria | Daily R.T. | Sample R.T. | R.T. Criteria |
|---|---|---|---|---|---|---|
| Bromochloromethane | 274430 | 296569 | OK | 7.06 | 7.05 | OK |
| 1,4-Difluorobenzene | 1097477 | 1064219 | OK | 8.69 | 8.69 | OK |
| Chlorobenzene-d5 | 562450 | 556021 | OK | 14.01 | 13.90 | OK |

| Surrogates | Spiked | Found | %Recovery |
|---|---|---|---|
| 1,2-Dichloroethane | 50 | 51.73 | 103.5 |
| Toluene-d8 | 50 | 44.84 | 89.7 |
| 4-Bromofluorobenzene | 50 | 43.65 | 87.3 |

Comments:

Foot Notes:

1st Review: PAT 2/16/99 2nd Review:

**Preliminary – Data Evaluation In Progress**

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## Quanterra Air Toxics Lab

| | | | |
|---|---|---|---|
| **Sample Name:** | CQTNG-~~101~~ -101 OHM | **Data Analyzed:** | 16 Feb 1999 16:39 |
| **Misc. Info:** | 500ml 18708-834 B160186-3 TEDL | **Method:** | MSB0216 |
| **Data Name:** | B1149.D | **Shift Cali.File:** | CC02161.D |
| **Data Path:** | d:\gcmsb\990215\ | **Dilution Factor:** | 1 |

| | Compound | dRT | Result(ug/L) | RL(ug/L) |
|---|---|---|---|---|
| 2) | Dichlorodifluoromethane (1 | -0.03 | ND | 0.0099 |
| 3) | Chloromethan | 0.00 | ND | 0.0082 |
| 4) | 1,2-Cl-1,1,2,2-F ethane (114) | 0.00 | ND | 0.0140 |
| 5) | Vinyl Chloride | | ND | 0.0051 |
| 6) | Bromomethan | | ND | 0.0078 |
| 7) | Chloroethane | | ND | 0.0105 |
| 8) | Trichlorofluoromethane (11) | -0.01 | ND | 0.0112 |
| 9) | 1,1-Dichloroethene | -0.22 | ND | 0.0079 |
| 10) | Carbon Disulfide | 0.02 | ND | 0.0311 |
| 11) | 1,1,2-Cl 1,2,2-F ethane (113) | 0.01 | ND | 0.0153 |
| 12) | Acetone | 0.02 | ND | 0.0237 |
| 13) | Methylene Chloride | -0.00 | ND | 0.0069 |
| 14) | t-1,2-Dichloroethene | | ND | 0.0079 |
| 15) | 1,1-Dichloroethane | | ND | 0.0081 |
| 16) | Vinyl Acetate | -0.03 | ND | 0.0351 |
| 17) | c-1,2-Dichloroethene | | ND | 0.0079 |
| 18) | 2-Butanone | | ND | 0.0294 |
| 19) | Chloroform | | ND | 0.0097 |
| 20) | 1,1,1-Trichloroethane | | ND | 0.0109 |
| 21) | Carbon Tetrachloride | | ND | 0.0126 |
| 23) | Benzene | 0.00 | ND | 0.0064 |
| 25) | 1,2-Dichloroethane | | ND | 0.0081 |
| 26) | Trichloroethene | | ND | 0.0107 |
| 27) | 1,2-Dichloropropane | | ND | 0.0092 |
| 28) | Bromodichloromethane | -0.49 | ND | 0.0134 |
| 29) | c-1,3-Dichloropropene | 0.01 | ND | 0.0091 |
| 30) | 4-Methyl-2-Pentanone | -0.06 | ND | 0.0409 |
| 32) | Toluene | -0.10 | ND | ~~0.0075~~ 0.019 |
| 34) | t-1,3-Dichloropropene | | ND | 0.0091 |
| 35) | 1,1,2-Trichloroethane | | ND | 0.0109 |
| 36) | Tetrachloroethene | -0.02 | ND | 0.0135 |
| 37) | 2-Hexanone | | ND | 0.1226 |
| 38) | Dibromochloromethane | | ND | 0.0170 |
| 39) | 1,2-Dibromoethane | | ND | 0.0153 |
| 40) | Chlorobenzene | 0.00 | ND | 0.0092 |
| 41) | Ethylbenzene | 0.02 | ND | 0.0087 |
| 42) | p,&m-Xylene | 0.01 | ND | 0.0087 |
| 43) | o-Xylene | 0.03 | ND | 0.0087 |
| 44) | Styrene | 0.04 | ND | 0.0085 |
| 45) | Bromoform | | ND | 0.0206 |

**Preliminary – Data Evaluation In Progress**

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| | | | |
|---|---|---|---|
| **Sample Name:** | CQTNG-101 OHM | **Data Analyzed:** | 02/16/19 -1:6: |
| **Misc. Info:** | 500ml 18708-834 B160186-3 T | **Method:** | MSB0216 |
| **Data Name:** | B1149.D | **Shift Cali.File:** | CC02161.D |
| **Data Path:** | d:\gcmsb\990215\ | **Dilution Factor:** | 1 |

| | Compound | dRT | Result(ug/L) | RL(ug/L) |
|---|---|---|---|---|
| 47) | 1,1,2,2-Tetrachloroethane | | ND | 0.0137 |
| 48) | Benzyl Chloride | 0.07 | ND | 0.0518 |
| 49) | 4-Ethyl Toluene | 0.06 | ND | 0.0098 |
| 50) | 1,3,5-Trimethylbenzene | -0.12 | ND | 0.0098 |
| 51) | 1,2,4-Trimethylbenzene | 0.04 | ND | 0.0098 |
| 52) | 1,3-Dichlorobenzene | 0.30 | ND | 0.0120 |
| 53) | 1,4-Dichlorobenzene | 0.09 | ND | 0.0120 |
| 54) | 1,2-Dichlorobenzene | -0.39 | ND | 0.0120 |
| 55) | 1,2,4-Trichlorobenzene | 0.17 | ND | 0.1481 |
| 56) | Hexachlorobutadiene | | ND | 0.0426 |
| | MTBE | | ND | 0.036 |

| I.S. | Daily Area | Sample Area | Area Criteria | Daily R.T. | Sample R.T. | R.T. Criteria |
|---|---|---|---|---|---|---|
| Bromochloromethane | 274430 | 296569 | OK | 7.06 | 7.05 | OK |
| 1,4-Difluorobenzene | 1097477 | 1064219 | OK | 8.69 | 8.69 | OK |
| Chlorobenzene-d5 | 562450 | 556021 | OK | 14.01 | 13.90 | OK |

| Surrogates | Spiked | Found | %Recovery |
|---|---|---|---|
| 1,2-Dichloroethane | 50 | 51.73 | 103.5 |
| Toluene-d8 | 50 | 44.84 | 89.7 |
| 4-Bromofluorobenzene | 50 | 43.65 | 87.3 |

Comments:

Foot Notes:

1st Review: PN 2/16/99. 2nd Review

**Preliminary – Data Evaluation In Progress**

d:\gcmsb\990215\B1152.D

## Quanterra Air Toxics Lab

| | | | |
|---|---|---|---|
| **Sample Name:** | CQTNH-107 OHM | **Data Analyzed:** | 16 Feb 1999 18:11 |
| **Misc. Info:** | 3ml 18708-835 B160186-4 TEDLAR | **Method:** | MSB0216 |
| **Data Name:** | B1152.D | **Shift Cali.File:** | CC02161.D |
| **Data Path:** | d:\gcmsb\990215\ | **Dilution Factor:** | 166.7 |

| | Compound | dRT | Result(ppbv) | RL(ppbv) |
|---|---|---|---|---|
| 2) | Dichlorodifluoromethane (12) | | ND | 333.40 |
| 3) | Chloromethane | | ND | 666.80 |
| 4) | 1,2-Cl-1,1,2,2-F ethane (114) | | ND | 333.40 |
| 5) | Vinyl Chloride | | ND | 333.40 |
| 6) | Bromomethane | | ND | 333.40 |
| 7) | Chloroethane | | ND | 666.80 |
| 8) | Trichlorofluoromethane (11) | | ND | 333.40 |
| 9) | 1,1-Dichloroethene | 0.01 | 1021.93 | 333.40 |
| 10) | Carbon Disulfide | | ND | 1667.00 |
| 11) | 1,1,2-Cl 1,2,2-F ethane (113) | -0.00 | 3849.25 | 333.40 |
| 12) | Acetone | -0.04 | ND | 1667.00 |
| 13) | Methylene Chloride | 0.00 | ND | 333.40 |
| 14) | t-1,2-Dichloroethene | | ND | 333.40 |
| 15) | 1,1-Dichloroethane | -0.03 | ND | 333.40 |
| 16) | Vinyl Acetate | -0.07 | ND | 1667.00 |
| 17) | c-1,2-Dichloroethene | -0.03 | ND | 333.40 |
| 18) | 2-Butanone | | ND | 1667.00 |
| 19) | Chloroform | 0.01 | ND | 333.40 |
| 20) | 1,1,1-Trichloroethane | | ND | 333.40 |
| 21) | Carbon Tetrachloride | 0.01 | ND | 333.40 |
| 23) | Benzene | | ND | 333.40 |
| 25) | 1,2-Dichloroethane | 0.38 | ND | 333.40 |
| 26) | Trichloroethene | 0.01 | 31338.58 | 333.40 |
| 27) | 1,2-Dichloropropane | | ND | 333.40 |
| 28) | Bromodichloromethane | | ND | 333.40 |
| 29) | c-1,3-Dichloropropene | -0.15 | ND | 333.40 |
| 30) | 4-Methyl-2-Pentanone | -0.03 | ND | 1667.00 |
| 32) | Toluene | | ND | ~~333.40~~ 834 |
| 34) | t-1,3-Dichloropropene | | ND | 333.40 |
| 35) | 1,1,2-Trichloroethane | 0.17 | ND | 333.40 |
| 36) | Tetrachloroethene | 0.02 | 703.57 | 333.40 |
| 37) | 2-Hexanone | | ND | 5001.00 |
| 38) | Dibromochloromethane | | ND | 333.40 |
| 39) | 1,2-Dibromoethane | | ND | 333.40 |
| 40) | Chlorobenzene | -0.16 | ND | 333.40 |
| 41) | Ethylbenzene | -0.35 | ND | 333.40 |
| 42) | p,&m-Xylene | | ND | 333.40 |
| 43) | o-Xylene | | ND | 333.40 |
| 44) | Styrene | | ND | 333.40 |
| 45) | Bromoform | | ND | 333.40 |

**Preliminary – Data Evaluation In Progress**

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| | | | |
|---|---|---|---|
| Sample Name: | CQTNH-101 OHM | Data Analyzed: | 02/16/19 -1:8: |
| Misc. Info: | 3ml 18708-835 B160186-4 TEDL | Method: | MSB0216 |
| Data Name: | B1152.D | Shift Cali.File: | CC02161.D |
| Data Path: | d:\gcmsb\990215\ | Dilution Factor: | 166.7 |

| | Compound | dRT | Result(ppbv) | RL(ppbv) |
|---|---|---|---|---|
| 47) | 1,1,2,2-Tetrachloroethane | -0.50 | ND | 333.40 |
| 48) | Benzyl Chloride | | ND | 1667.00 |
| 49) | 4-Ethyl Toluene | | ND | 333.40 |
| 50) | 1,3,5-Trimethylbenzene | | ND | 333.40 |
| 51) | 1,2,4-Trimethylbenzene | | ND | 333.40 |
| 52) | 1,3-Dichlorobenzene | | ND | 333.40 |
| 53) | 1,4-Dichlorobenzene | | ND | 333.40 |
| 54) | 1,2-Dichlorobenzene | | ND | 333.40 |
| 55) | 1,2,4-Trichlorobenzene | | ND | 3334.00 |
| 56) | Hexachlorobutadiene | | ND | 666.80 |
| | MTBE | | ND | 1665 |

| I.S. | Daily Area | Sample Area | Area Criteria | Daily R.T. | Sample R.T. | R.T. Criteria |
|---|---|---|---|---|---|---|
| Bromochloromethane | 274430 | 246625 | OK | 7.06 | 7.10 | OK |
| 1,4-Difluorobenzene | 1097477 | 965174 | OK | 8.69 | 8.75 | OK |
| Chlorobenzene-d5 | 562450 | 491432 | OK | 14.01 | 14.06 | OK |

| Surrogates | Spiked | Found | %Recovery |
|---|---|---|---|
| 1,2-Dichloroethane | 50 | 48.52 | 97.0 |
| Toluene-d8 | 50 | 51.51 | 103.0 |
| 4-Bromofluorobenzene | 50 | 41.98 | 84.0 |

Comments:

Foot Notes:

1st Review: PW 2/16/99 2nd Review:

Preliminary – Data Evaluation In Progress

d:\gcmsb\990215\b1152.d

## Quanterra Air Toxics Lab

| | | | |
|---|---|---|---|
| **Sample Name:** | CQTNH-~~102~~ -101 OHM | **Data Analyzed:** | 16 Feb 1999 18:11 |
| **Misc. Info:** | 3ml 18708-835 B160186-4 TEDLA | **Method:** | MSB0216 |
| **Data Name:** | B1152.D | **Shift Cali.File:** | CC02161.D |
| **Data Path:** | d:\gcmsb\990215\ | **Dilution Factor:** | 166.7 |

| | Compound | dRT | Result(ug/L) | RL(ug/L) |
|---|---|---|---|---|
| 2) | Dichlorodifluoromethane (1 | | ND | 1.6453 |
| 3) | Chloromethan | | ND | 1.3743 |
| 4) | 1,2-Cl-1,1,2,2-F ethane (114) | | ND | 2.3258 |
| 5) | Vinyl Chloride | | ND | 0.8505 |
| 6) | Bromomethan | | ND | 1.2919 |
| 7) | Chloroethane | | ND | 1.7557 |
| 8) | Trichlorofluoromethane (11) | | ND | 1.8694 |
| 9) | 1,1-Dichloroethene | 0.01 | 4.0438 | 1.3193 |
| 10) | Carbon Disulfide | | ND | 5.1810 |
| 11) | 1,1,2-Cl 1,2,2-F ethane (113) | -0.00 | 29.4390 | 2.5498 |
| 12) | Acetone | -0.04 | ND | 3.9525 |
| 13) | Methylene Chloride | 0.00 | ND | 1.1559 |
| 14) | t-1,2-Dichloroethene | | ND | 1.3193 |
| 15) | 1,1-Dichloroethane | -0.03 | ND | 1.3466 |
| 16) | Vinyl Acetate | -0.07 | ND | 5.8578 |
| 17) | c-1,2-Dichloroethene | -0.03 | ND | 1.3193 |
| 18) | 2-Butanone | | ND | 4.9060 |
| 19) | Chloroform | 0.01 | ND | 1.6247 |
| 20) | 1,1,1-Trichloroethane | | ND | 1.8154 |
| 21) | Carbon Tetrachloride | 0.01 | ND | 2.0931 |
| 23) | Benzene | | ND | 1.0629 |
| 25) | 1,2-Dichloroethane | 0.38 | ND | 1.3466 |
| 26) | Trichloroethene | 0.01 | 168.0688 | 1.7880 |
| 27) | 1,2-Dichloropropane | | ND | 1.5376 |
| 28) | Bromodichloromethane | | ND | 2.2294 |
| 29) | c-1,3-Dichloropropene | -0.15 | ND | 1.5100 |
| 30) | 4-Methyl-2-Pentanone | -0.03 | ND | 6.8147 |
| 32) | Toluene | | ND | ~~1.2539~~ 3.135 |
| 34) | t-1,3-Dichloropropene | | ND | 1.5100 |
| 35) | 1,1,2-Trichloroethane | 0.17 | ND | 1.8154 |
| 36) | Tetrachloroethene | 0.02 | 4.7625 | 2.2568 |
| 37) | 2-Hexanone | | ND | 20.4441 |
| 38) | Dibromochloromethane | | ND | 2.8346 |
| 39) | 1,2-Dibromoethane | | ND | 2.5565 |
| 40) | Chlorobenzene | -0.16 | ND | 1.5316 |
| 41) | Ethylbenzene | -0.35 | ND | 1.4446 |
| 42) | p,&m-Xylene | | ND | 1.4446 |
| 43) | o-Xylene | | ND | 1.4446 |
| 44) | Styrene | | ND | 1.4173 |
| 45) | Bromoform | | ND | 3.4394 |

**Preliminary – Data Evaluation In Progress**

d:\gcmsb\990215\b1152.d

| | | | |
|---|---|---|---|
| **Sample Name:** | CQTNH-101 OHM | **Data Analyzed:** | 02/16/19 -1:8: |
| **Misc. Info:** | 3ml 18708-835 B160186-4 TED | **Method:** | MSB0216 |
| **Data Name:** | B1152.D | **Shift Cali.File:** | CC02161.D |
| **Data Path:** | d:\gcmsb\990215\ | **Dilution Factor:** | 166.7 |

| | Compound | dRT | Result(ug/L) | RL(ug/L) |
|---|---|---|---|---|
| 47) | 1,1,2,2-Tetrachloroethane | -0.50 | ND | 2.2841 |
| 48) | Benzyl Chloride | | ND | 8.6284 |
| 49) | 4-Ethyl Toluene | | ND | 1.6357 |
| 50) | 1,3,5-Trimethylbenzene | | ND | 1.6357 |
| 51) | 1,2,4-Trimethylbenzene | | ND | 1.6357 |
| 52) | 1,3-Dichlorobenzene | | ND | 2.0004 |
| 53) | 1,4-Dichlorobenzene | | ND | 2.0004 |
| 54) | 1,2-Dichlorobenzene | | ND | 2.0004 |
| 55) | 1,2,4-Trichlorobenzene | | ND | 24.6916 |
| 56) | Hexachlorobutadiene | | ND | 7.0968 |
| | MTBE | | ND | 6.00 |

| I.S. | Daily Area | Sample Area | Area Criteria | Daily R.T. | Sample R.T. | R.T. Criteria |
|---|---|---|---|---|---|---|
| Bromochloromethane | 274430 | 246625 | OK | 7.06 | 7.10 | OK |
| 1,4-Difluorobenzene | 1097477 | 965174 | OK | 8.69 | 8.75 | OK |
| Chlorobenzene-d5 | 582450 | 491432 | OK | 14.01 | 14.06 | OK |

| Surrogates | Spiked | Found | %Recovery |
|---|---|---|---|
| 1,2-Dichloroethane | 50 | 48.52 | 97.0 |
| Toluene-d8 | 50 | 51.51 | 103.0 |
| 4-Bromofluorobenzene | 50 | 41.98 | 84.0 |

Comments:

Foot Notes:

1st Review: PMS 2/16/99 2nd Review

**Preliminary – Data Evaluation In Progress**