**National Ground Penetrating Radar Service, Inc.**
Corporate Headquarters
8400 Normandale Lake Blvd, Suite 920
Minneapolis, Minnesota 55437
Office: (952) 445-9040
Fax: (952) 445-9046
www.nationalgpr.com


**SHEET TITLE - DRAFT**

EM61 SURVEY RESULTS
AREA 1
County Roads 5 and 6
Erie, Colorado

**NOTES**

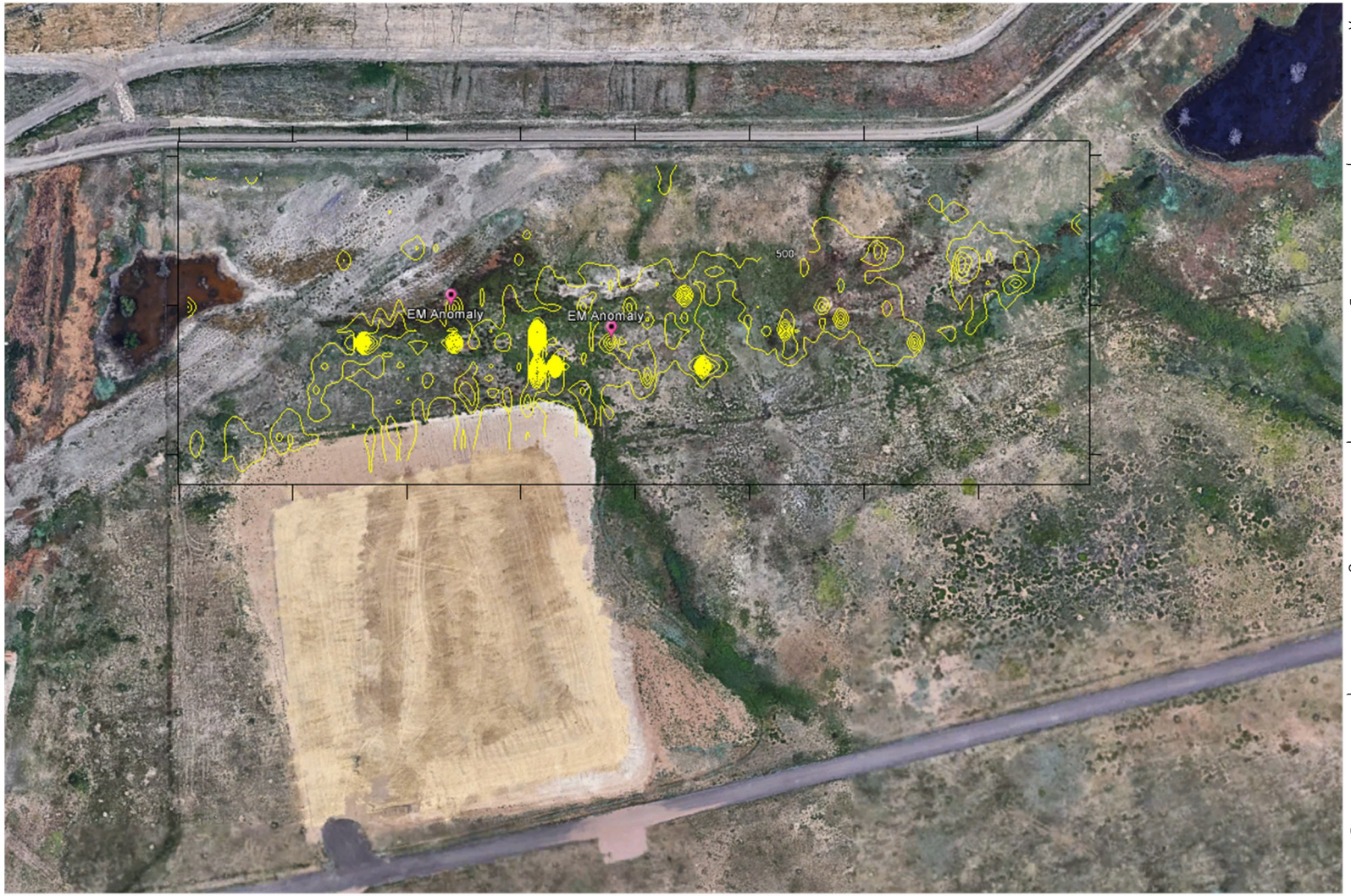
**EM61 Anomaly Locations with Limits of EM Data Collection Grid shown in gray.**

EM Anomaly to be confirmed

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 7/31/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **A-2** |

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**SHEET TITLE -DRAFT**

EM61 SURVEY RESULTS
AREA 2
County Roads 5 and 6
Erie, Colorado

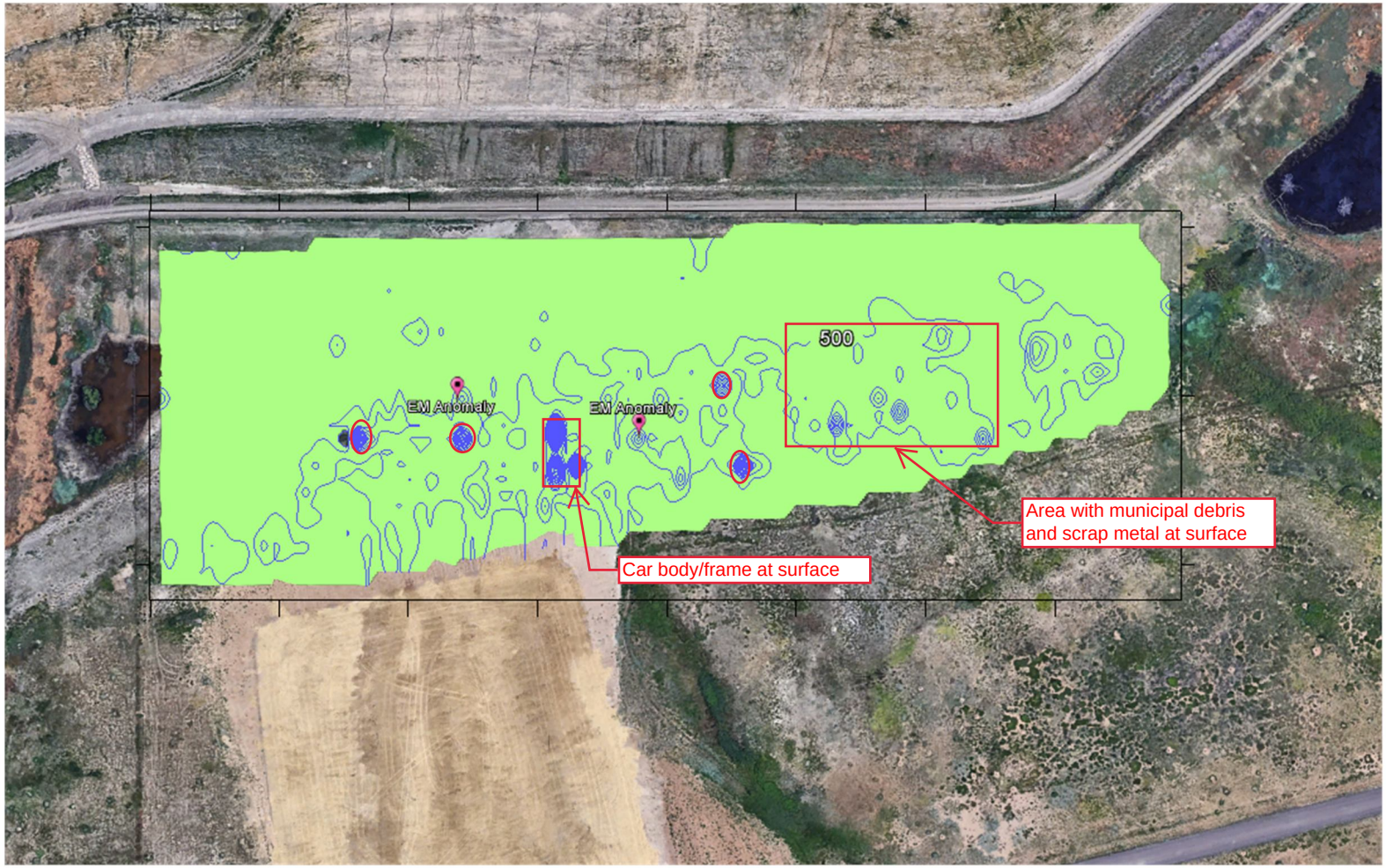
**NOTES**

**EM61 Contour Map with EM Anomaly Locations.**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 7/31/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **A-3** |

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**SHEET TITLE -DRAFT**

EM61 SURVEY RESULTS
AREA 2
County Roads 5 and 6
Erie, Colorado

**NOTES**

**EM61 Contour Map with EM Anomaly Locations, and Grid Data limits shown in green**

- EM Anomaly to be confirmed

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 7/31/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **A-4** |

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# GEOPHYSICAL EXPLORATION REPORT

**REPORTED TO:**
Stewart Environmental Consulting Group
748 Whaters Way, Suite 210
Fort Collins, Colorado 80525

**PROJECT LOCATION:**
County Roads 5 and 6
Erie, Colorado

**NGPRS PROJECT NO:** 177659

**ATTN:** David Stewart /
dave.stewart@stewartenv.com
**CLIENT PROJECT NO:** Redtail Ranch
**DATE:** August 2, 2017

---

## INTRODUCTION

Stewart Environmental Consulting Group, LLC. (Stewart Environmental) retained National Ground Penetrating Radar Service, Inc. (NGPRS) to perform a geophysical exploration investigation to locate subsurface metal objects representing potential drums, and other buried debris in two exterior, parcels designated Area 1 and Area 2. Area 1 comprised approximately Thirteen and Two-tenths (13.2) acres, and Area 2 comprised approximately Eight (8) acres. Also, a third area, consisting of about Four and one-half (4.5) acres was investigated using ground penetrating radar (GPR) to image geologic conditions to estimate the depth to bedrock. These three areas are shown on Exhibits A and B.

## EQUIPMENT

A GPR control unit, and 400 MHz radar antenna was used in the collection of the radar scans onsite to image geologic conditions to estimate the depth to bedrock. The radar antenna is pushed/pulled across the surface and then scrolled back along each transect to indicate the location of underground reflectors (Figure 1). The scans can be saved to an internal hard drive, and can be viewed on and off site. Once an underground reflector is encountered by the transmitting signal, it is reflected to the receiver and no further penetration beyond that point is visible in the radar scan. The maximum depth of the radar signal can be between 9-12 feet, depending on the soil type, and conditions. Due to the high clay content of the site soils the maximum depth was estimated to be about 6 feet at the site.

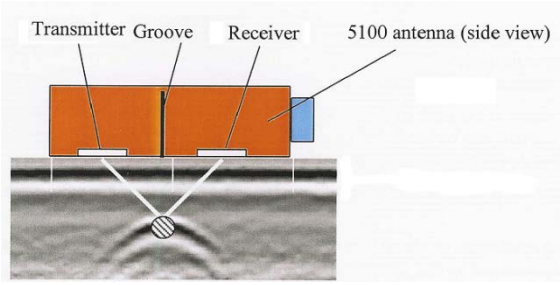


**Figure 1: Sample of profile GPR data.**

A Geonics EM61 MK2 (EM61) was used to explore the property for subsurface metal objects. The EM-61 is a time-domain, high sensitivity metal detector suitable for the detection of both ferrous and non-ferrous metal (Figure 2). The EM61 provides multiple measurements of the decay of the secondary magnetic field associated with any metallic object using up to four (4) time gates (readings spaced from 216 microseconds to 1,266 microseconds). The EM61 was equipped with an Archer data logger and global positioning system (GPS) antenna to record EM61 data and horizontal positioning data simultaneously.

**Figure 2: EM61-MK2 Metal Detector**

## OBSERVATIONS AND PROCEEDURES

NGPRS personnel performed the site exploration on July 11, 12 and 13, 2017. All field work was coordinated onsite with Mr. David Stewart of Steward Environmental. The geophysical investigation areas are shown in Exhibits A and B. A total of three (3) survey areas were established to complete the geophysical investigation. GPR was completed along multiple North-South and East-West transects ranging in length from 200 to 400 feet to evaluate the depth to bedrock. GPR line locations completed for the depth to bedrock are shown on Exhibit A.

EM data was collected by traversing Area 1 and Area 2 with about fifteen-foot line intervals in each grid area. Due to site features (vegetation and small trees) line spacing was adjusted, if needed, to work around these site features.

EM data with GPS coordinates were processed TrackMaker61MK2 software and converted for contouring using Surfer 14. Contour maps of the EM61 Channel 1 (metal) responses were prepared for each grid area and evaluated for high in-phase responses (anomalies) representing potential metal targets (drums, metal debris, magnetic tape and municipal waste). Channel 1 was selected for contouring because it provides the deepest exploration depth in the standard operation mode.

## FINDINGS

NGPRS personnel explored the areas shown in Exhibits A and B. EM61 and GPR data interpreted onsite and evaluated using software to further process the data has resulted in the findings presented below:

GPR data was collected from nineteen (19) transects, as shown on Exhibit A. GPR data was processed and evaluated using RADAN 7 software to estimate the depth to bedrock along a ridge line. The processed files indicate the estimated depth to the overburden/weathered bedrock interface was generally between 5 and 6 feet below ground level (bgl). At several locations along the GPR transects, the depth to the weathered bedrock surface could not be observed, and is inferred to be at depth greater than 6 feet bgl.

Representative examples of the processed GPR data for north-south and east-west transects with the interpreted approximate overburden/bedrock interface are provided in Attachment 1.

EM61 data was collected from Area 1 was initially checked against targets of interest (metal debris, magnetic tape and partially exposed drum remains at the surface) to evaluate the instrument response and determine if potential drum targets could be identified from other targets (i.e. target interference).

The EM61 contour map and interpreted results map for Area 1 provided as Exhibits A-1, and A-2, and for Area 2 as Exhibits B-1, and B-2, respectively. The findings of the EM61 survey are summarized below:

- A good correlation of the processed EM61 data and the field observations of site conditions and potential drum areas was achieved.
- Area 1 results indicate two (2) suspected or known drum areas were identified, along with two (2) additional targets to be confirmed. A large area of scattered debris is located across the central portion of the 13-acre parcel and are likely a combination of municipal garbage and metal debris from the former landfill operations.
- Area 2 results indicate metal debris from former municipal dumping are present at various locations across the 8-acre parcel, with the highest EM61 response from a car body/frame in the central portion of the site. In the eastern portion of Area 2 scattered debris and metal were observed and are likely the result of the former landfill operations.
- Subsequent test pits completed by Stewart Environmental confirmed the presence of drums at the Area 1 anomaly locations identified in Exhibit A-2, and only metal debris at the Area 2 anomaly locations identified in Exhibit B-2.

## LIMITATIONS

Our authorized work scope was limited to our observations in the requested areas only. As such, our conclusions and recommendations pertain only to those areas observed. Should conditions differing from those documented by NGPRS at the time our work be found in the future, NGPRS reserves the right to review our conclusions and recommendations, and modify them accordingly.

## STANDARD OF CARE

The work performed by National GPR Service, Inc. has been conducted in a manner consistent with that level of skill and care ordinarily exercised by other members of the profession currently practicing in this area. We recommend that all potential utility locations identified be confirmed using hand excavation or soft-dig (vacuum excavation) methods.

## REMARKS

We appreciate the opportunity to assist you on this project. If you have any questions regarding this report or our services, feel free to contact us.

National Ground Penetrating Radar Service, Inc.

Raymond Wagner, PG
Senior Geologist
Phone: (315) 415-2123
ray.wagner@nationalgpr.com

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**SHEET TITLE**

EM SURVEY AREA 1 AND
GPR BEDROCK AREA
County Roads 5 and 6
Erie, Colorado

**NOTES**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177659 |
| ISSUE DATE: | 8/03/2017 |
| DRAWN BY: | |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **A** |

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**SHEET TITLE**

EM SURVEY AREA 2

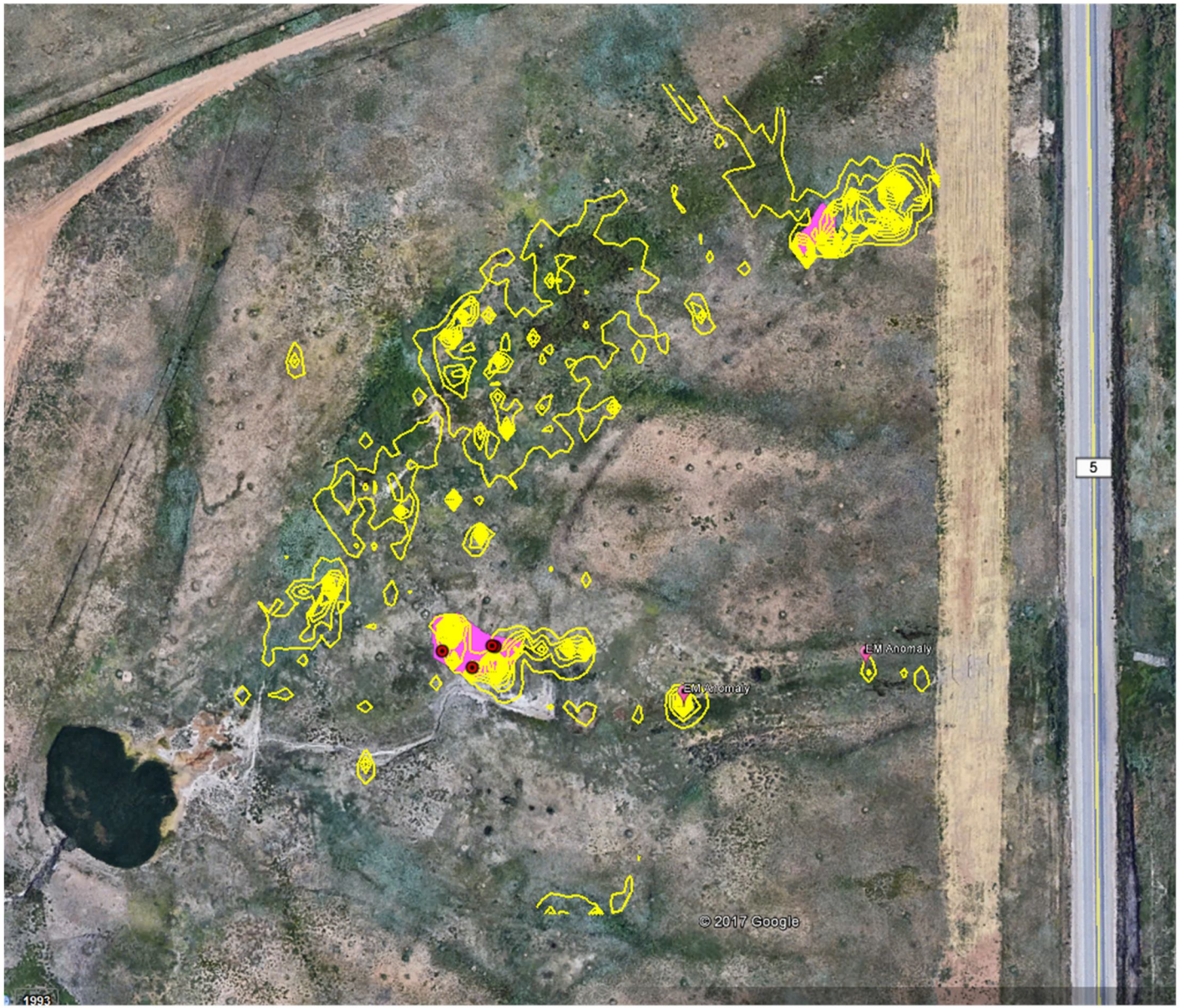
County Roads 5 and 6
Erie, Colorado

**NOTES**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177659 |
| ISSUE DATE: | 8/03/2017 |
| DRAWN BY: | |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **B** |





NATIONAL GPR SERVICE

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**SHEET TITLE**

EM61 SURVEY RESULTS
AREA 1
County Roads 5 and 6
Erie, Colorado

**NOTES**

**EM61 Contour Map with field EM Anomaly Locations and Possible Drum Areas shown**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 7/31/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **A-1** |

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**SHEET TITLE**

EM61 SURVEY RESULTS
AREA 1
County Roads 5 and 6
Erie, Colorado

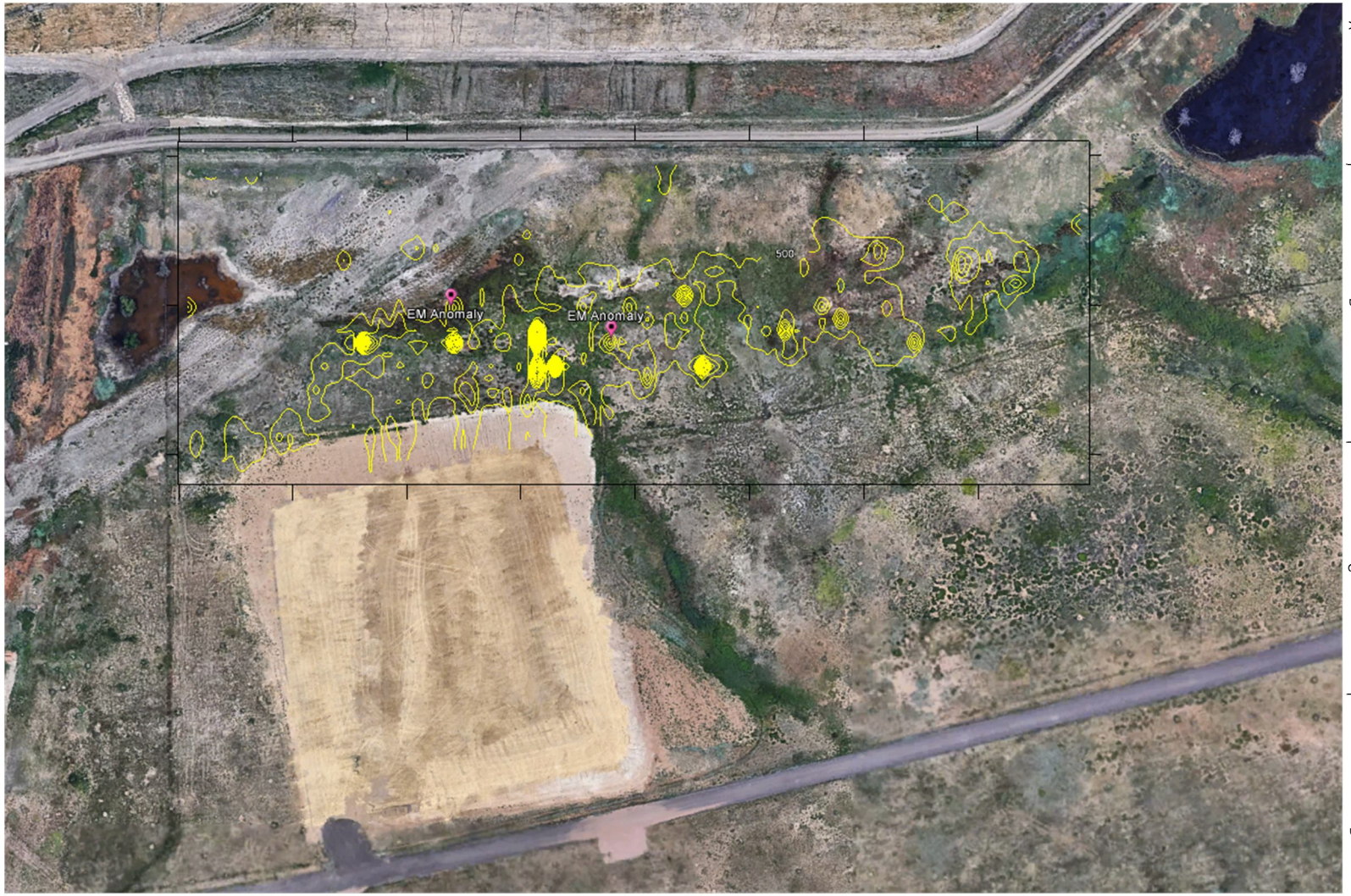
**NOTES**

**EM61 Contour Map with EM Anomaly Locations, and Grid Data limits shown in gray**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 8/02/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **A-2** |

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**SHEET TITLE**

EM61 SURVEY RESULTS
AREA 2
County Roads 5 and 6
Erie, Colorado

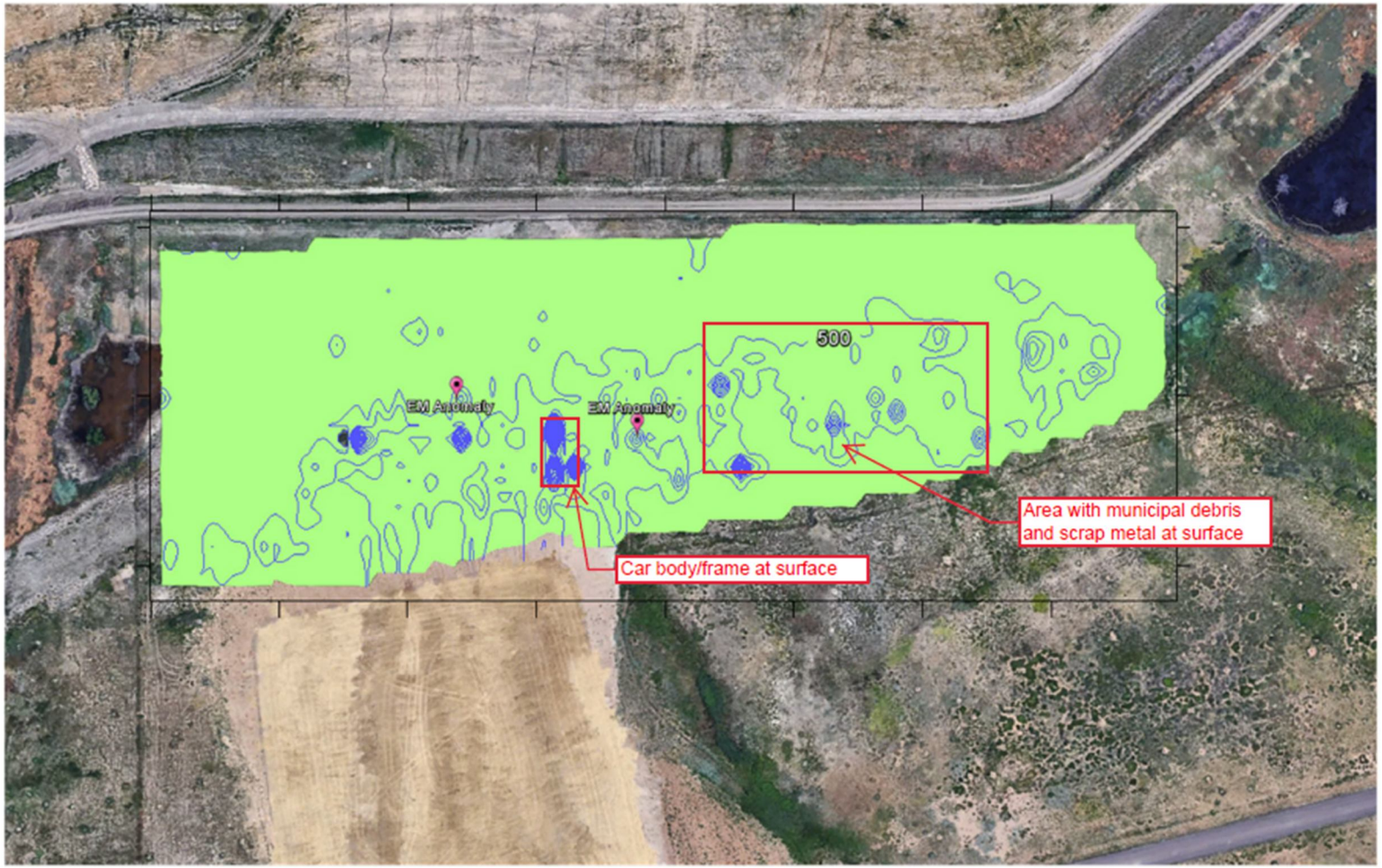
**NOTES**

**EM61 Contour Map with field EM Anomaly Locations.**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 8/02/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **B-1** |





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**SHEET TITLE**

EM61 SURVEY RESULTS
AREA 2
County Roads 5 and 6
Erie, Colorado

**NOTES**

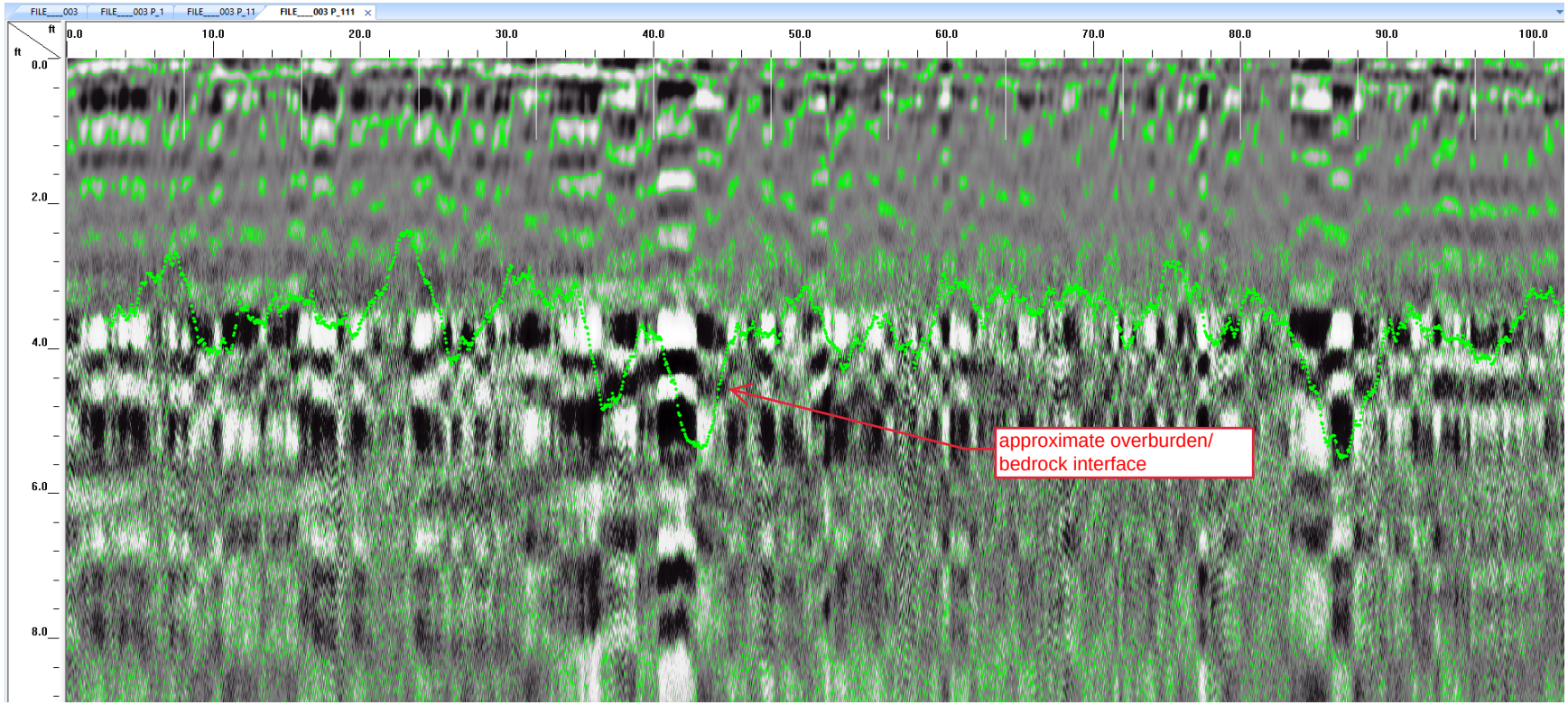
**EM61 Contour Map with EM Anomaly Locations, and Grid Data limits shown in green**

**DRAWING CONTROL**

| | |
|---|---|
| PROJECT NO.: | 177490 |
| ISSUE DATE: | 8/02/2017 |
| DRAWN BY: | **RW** |
| CHECKED BY: | |
| APPROVED BY: | JJL |

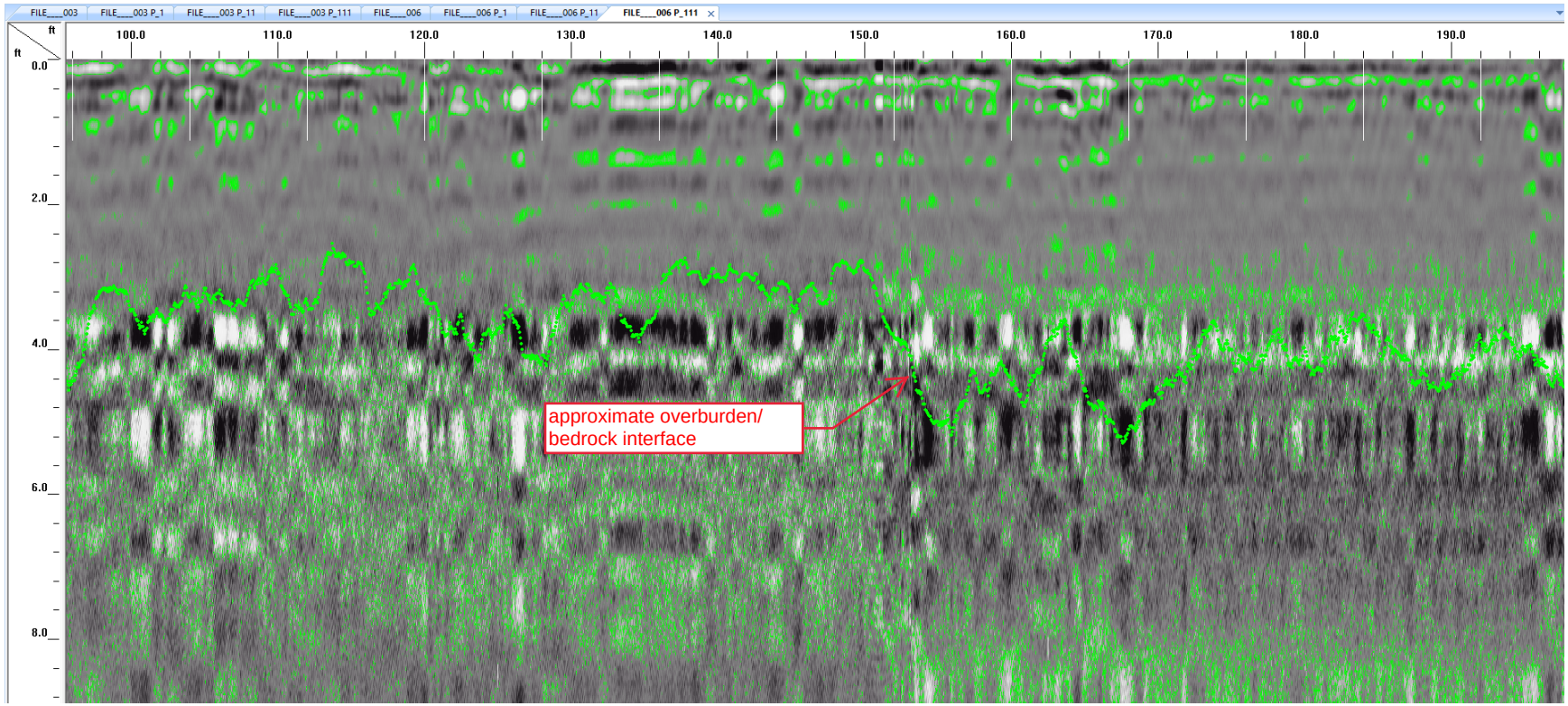
| **DRAWING NO..** | **EXHIBIT** |
|---|---|
| | **B-2** |

ATTACHMENT 1



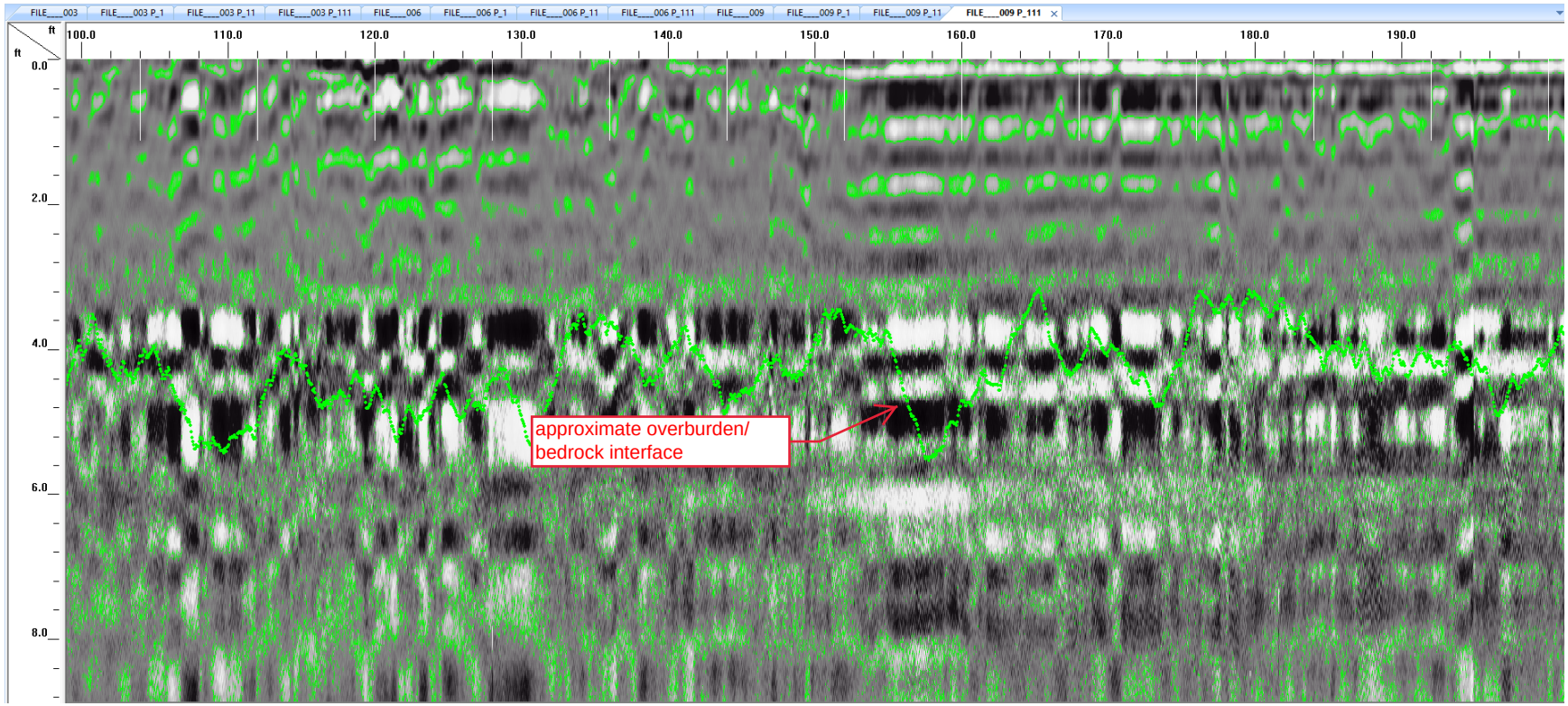

GPR Line 3 – 0 to 100 feet

ATTACHMENT 1



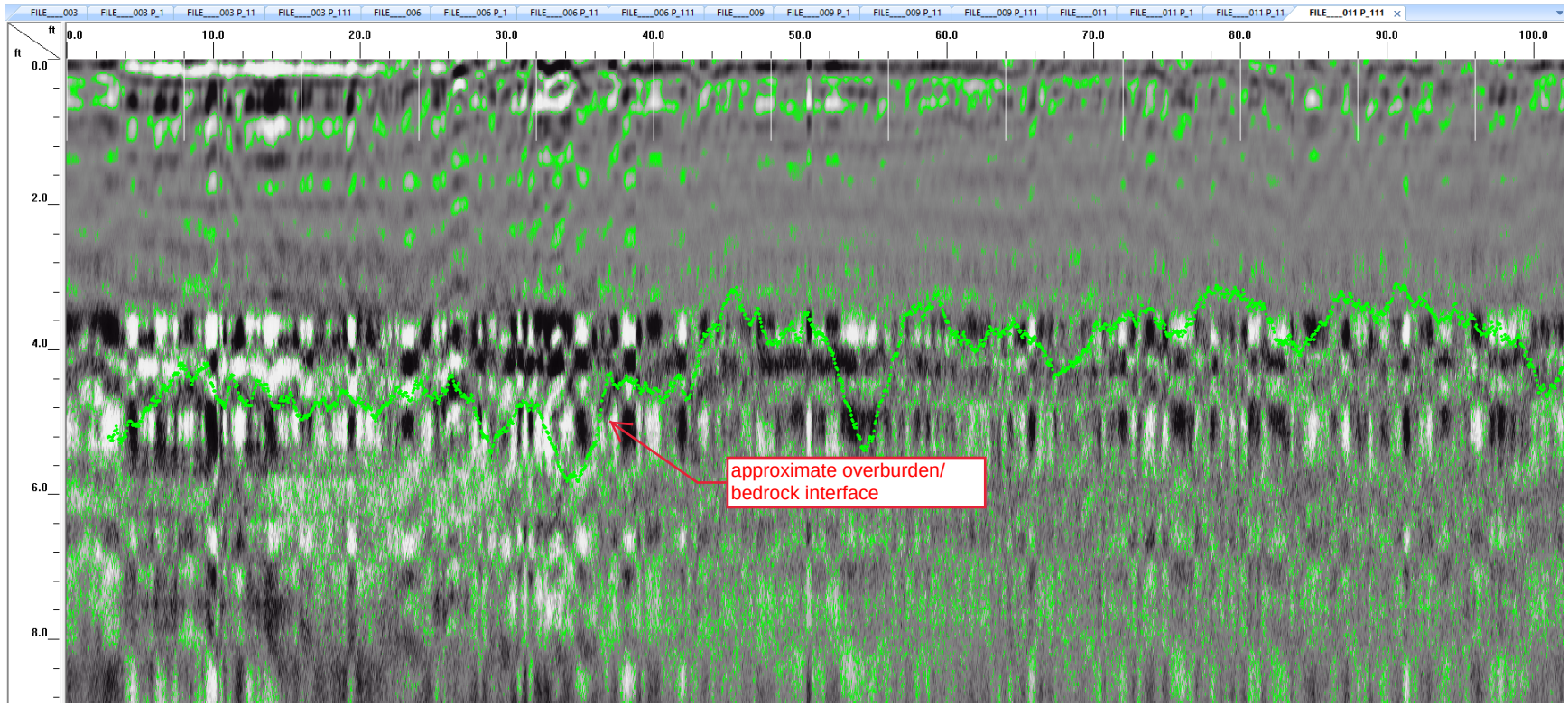

GPR Line 6 – 100 to 196 feet

ATTACHMENT 1



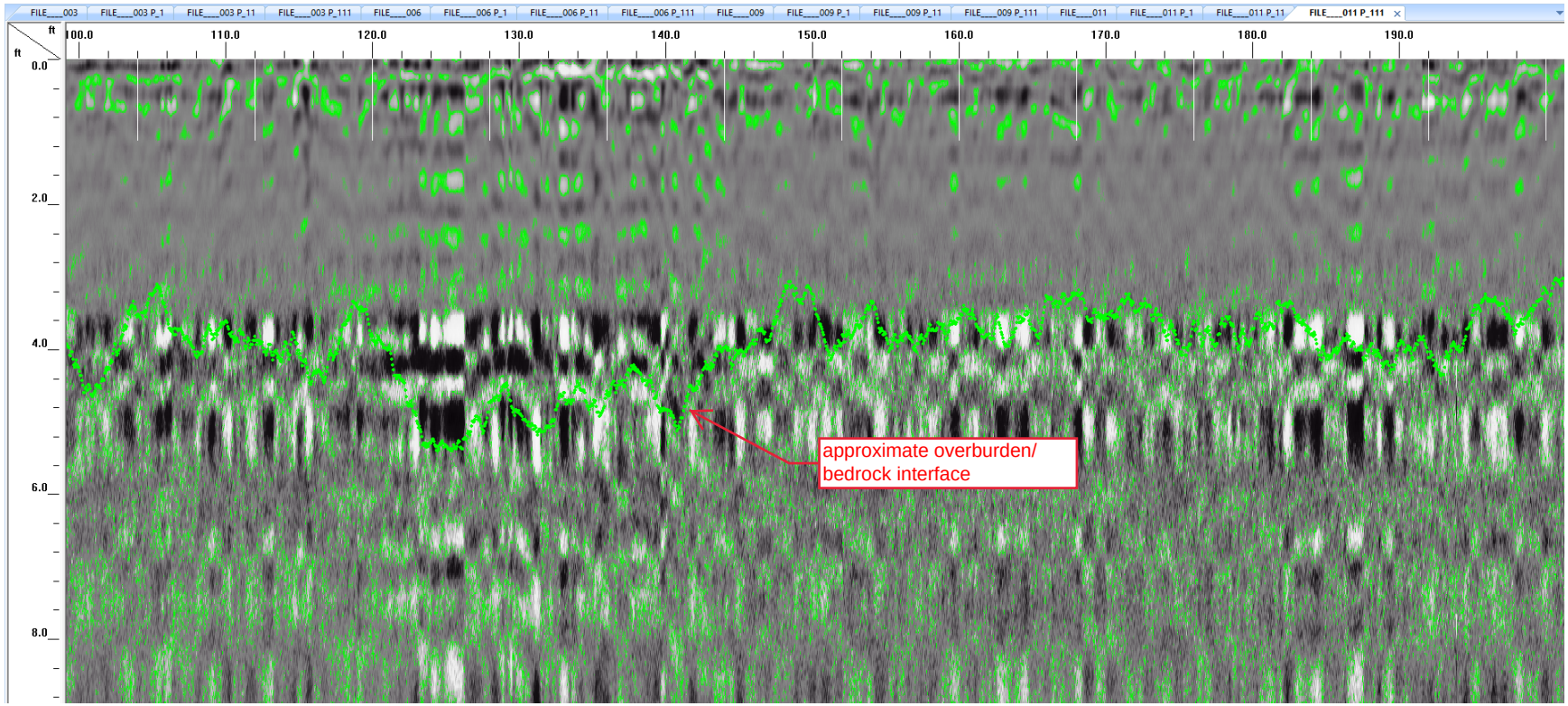

GPR Line 9 – 100 to 200 feet

ATTACHMENT 1



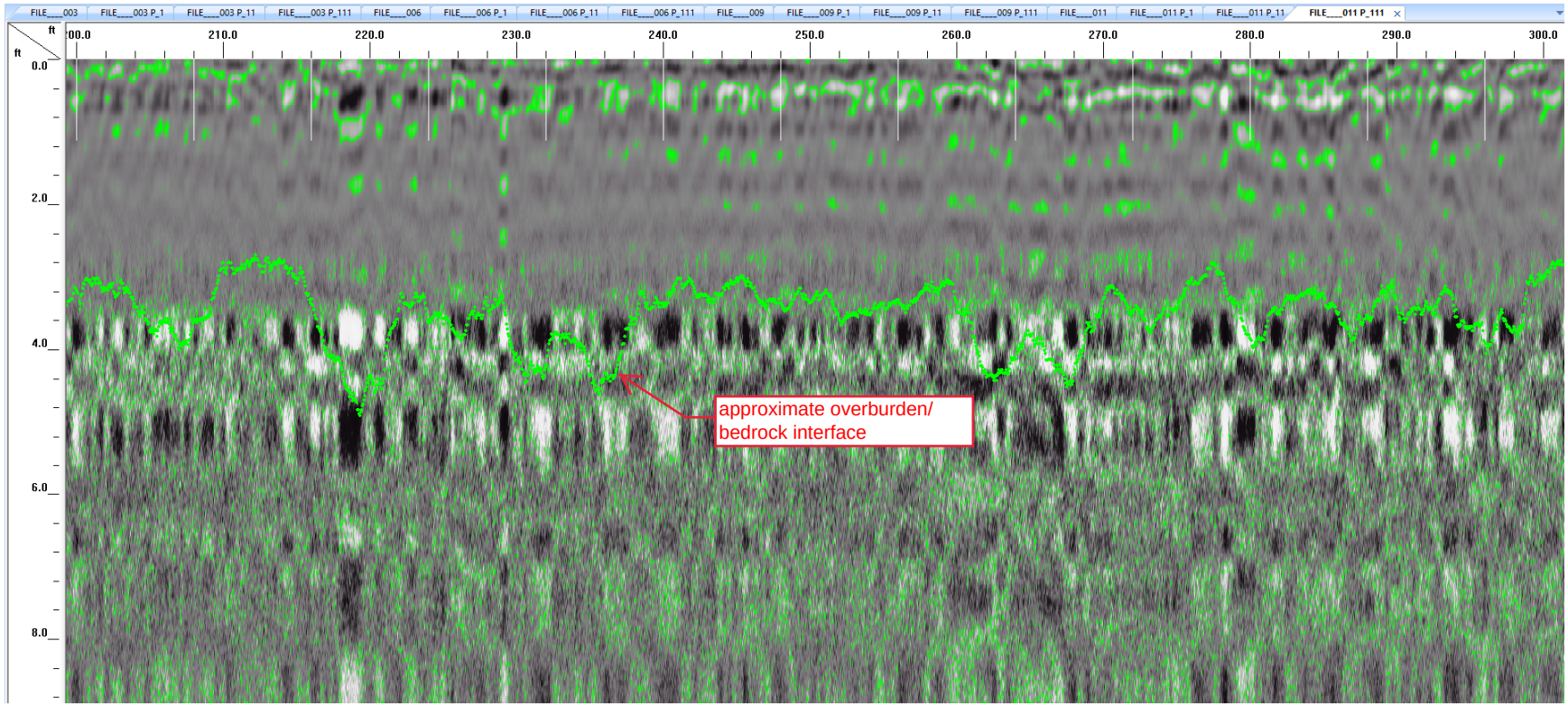

Line 11 – 0 to 100 feet

ATTACHMENT 1



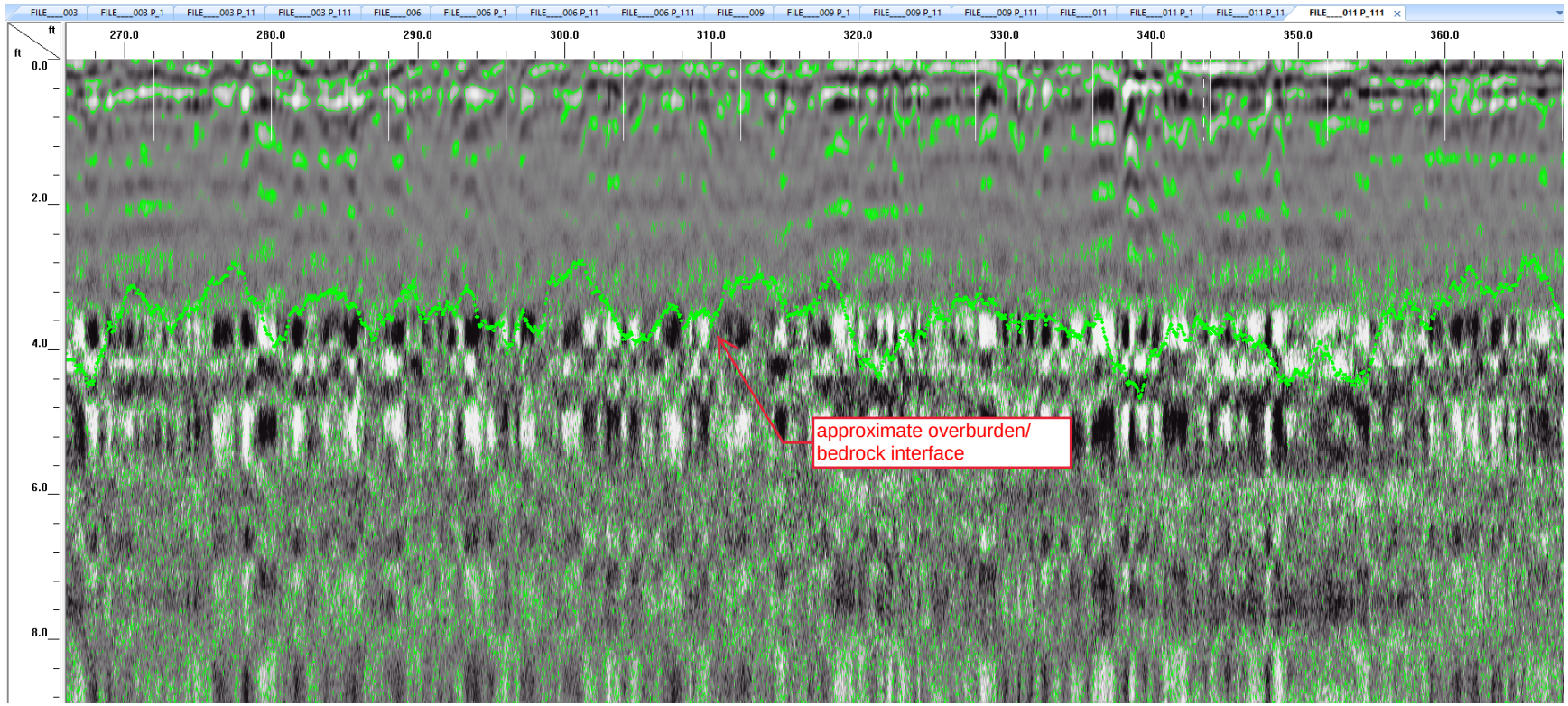

GPR Line 11 – 100 to 200 feet

ATTACHMENT 1




GPR Line 11 – 200 to 300 feet

ATTACHMENT 1




GPR Line 11 – 268 to 368 feet

120-00014 (00011)

REDTAIL RANCH — TEST PITS MON. WELLS

GPS ⊼ @ CP #1302 ~~1032~~ (#5 REBAR-BASELINE CP #8)

HI = 5.670' (CENTER OF BUMPER)

HR =

13,460 CK #1219

ΔN: ΔE: V.DIST

13,461 TEST PIT #7

13,462 MW #11 REPLACED

13,463 " @ GROUND S. SIDE

13,464 TEST PIT #8 IDENTIFIED BY D. STEWART

13,465 MW #12 REPLACED

13,466 " @ GROUND S. SIDE

13,467 MW #13 REPLACED

13,468 " @ GROUND S. SIDE

13,469 ~~467~~ EASTERN TEST PIT #4 IDENTIFIED BY D. STEWART

-13473

13,474 EASTERN TEST PIT #2 " " " "

13,475 EASTERN TEST PIT #~~4~~3 " " " "

13,476 " " " #5 " " " "

13,477 MW #2R REPLACED

13,478 " @ GROUND S. SIDE

2017C/28

08/17/2017

PC: ERIC C.

ID: BLAKE E.

RB-4 BASE

RB-4 ROVER

60-80° CLEAR

13,479 EASTERN TEST PIT #1 IDENTIFIED BY D. STEWART
-13,480
13,481 EASTERN TEST PIT #9 " " " "
13,482 METAL DRUM " " " "
13,483 EASTERN TEST PIT #10 " " " "
13,484 MW #15 REPLACED
13,485 " @ GROUND S. SIDE
13,486 MW #16 REPLACED
13,487 " @ GROUND S. SIDE
13,488 EASTERN TEST PIT #6
13,489 MW # 17 REPLACED
13,490 " " @ GROUND S. SIDE
13,491 MW #18 REPLACED
13,492 " @ GROUND S. SIDE
13,493 EASTERN TEST PIT #11
13,494 MW #14 REPLACED
13,495 " @ GROUND S. SIDE
13,496 MW #7
13,497 " @ GROUND S. SIDE
13,498 MW #19
13,499 " @ GROUND S. SIDE

| | |
|---|---|
| 13,500 | MW #20 |
| 13,501 | " @ GROUND S. SIDE |
| 13,502 | MW #8 |
| 13,503 | " @ GROUND S. SIDE |
| 13,504 | TEST PIT #1 IDENTIFIED BY D. STEWART |
| 13,505 | " " #6 " " " " |
| 13,506 | WESTERN TEST PIT #2 " " " " |
| 13,507 | " " " #7 " " " " |
| 13,508 | " " " #4 " " " " |
| 13,509 | " " " #3 " " " " |

CONSULTING GROUP
Civil Engineering * Land Surveying * Construction Services

April 11, 2017
October 24, 2017 Revised

Stewart Environmental Consulting Group, LLC
Attn: David R. Stewart
748 Whalers Way, Suite 210
Fort Collins, Colorado 80525
Dave.stewart@stewartenv.com

**RE: Monitoring Wells Locations**
**Redtail Ranch – Erie, Colorado**

Dear Mr. Stewart:

Per your email request CWC is providing this letter for verification that the location of the various monitoring wells on the Redtail Ranch site in Erie, Colorado were conducted under my direction and supervision as a Registered Land Surveyor in the State of Colorado.

CWC conducted field work on the following dates:

October 4, 2016 – Monitoring Wells
January 23, 2017 – Monitoring Wells
February 8, 2017 – Soil Vapor Wells
August 17, 2017 – Monitoring Wells

CWC provided the horizontal and vertical location of the monitoring wells and adjacent ground elevations in a local project coordinate system. The local project coordinate system is based on a modified State Plane Coordinate System (Ground Coordinates) and the NAVD88 Vertical Datum.

Should you have any questions, please do not hesitate to contact us.

Sincerely,
**CWC CONSULTING GROUP, INC.**

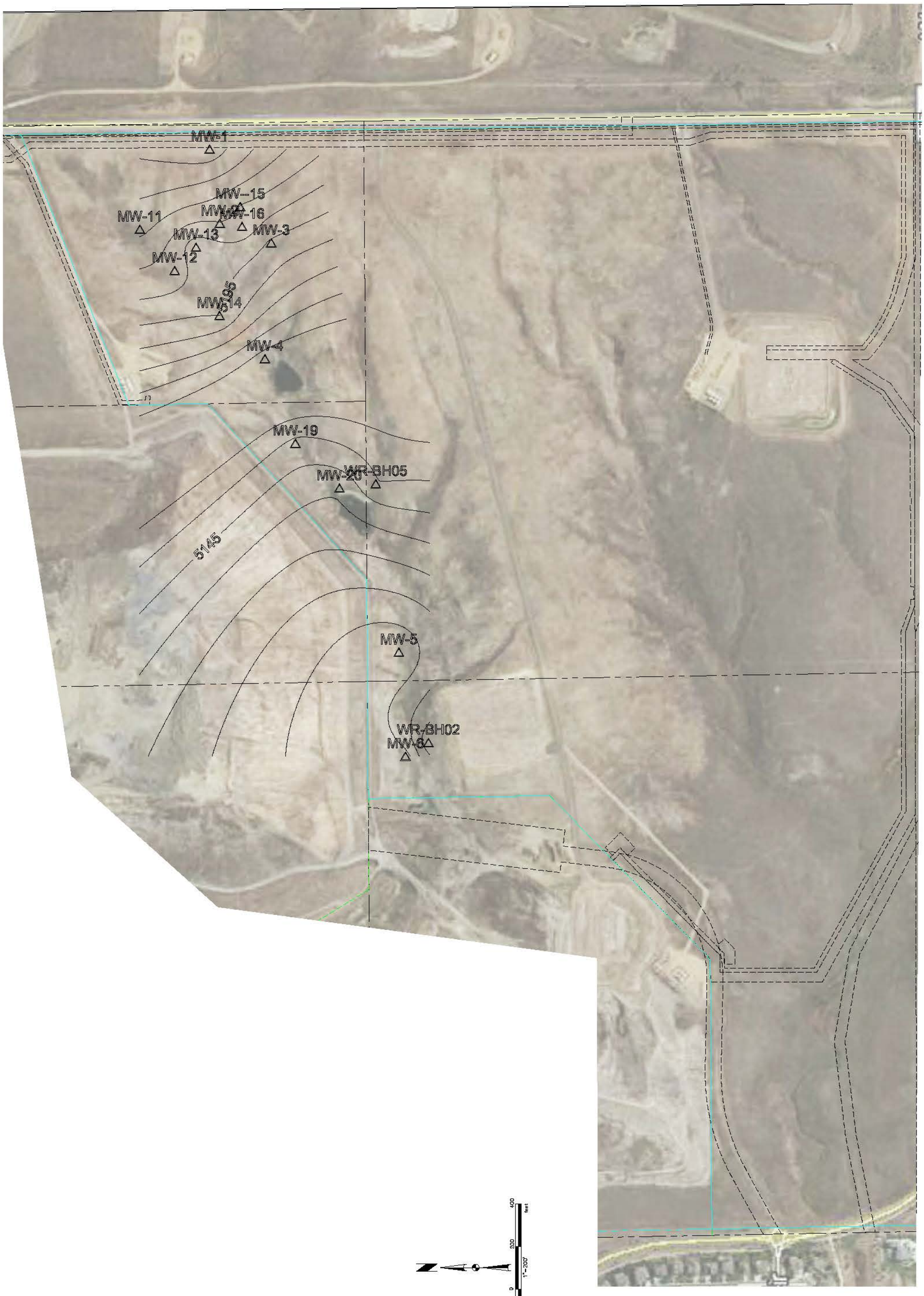
Eric D. Carson, PLS
Principal - Survey Division Manager

15460,1252846.159,3134868.448,5245.903,CK#1219
15461,1252378.470,3134629.083,5226.568,TEST PIT#7
15462,1252290.210,3134415.629,5218.487,MW#11 REPLACED
15463,1252289.533,3134415.786,5215.293,GROUND
15464,1252325.387,3134526.093,5222.162,TEST PIT#8
15465,1252126.343,3134221.699,5208.211,MW#12 REPLACED
15466,1252125.537,3134221.793,5205.101,GROUND
15467,1252025.643,3134331.091,5214.136,MW#13 REPLACED
15468,1252025.009,3134331.331,5211.303,GROUND
15469,1252006.946,3134271.984,5206.440,TEST PIT #4 EASTERN
15470,1251966.214,3134275.249,5203.555,TEST PIT #4 EASTERN
15471,1251945.315,3134310.748,5202.926,TEST PIT #4 EASTERN
15472,1251962.890,3134351.486,5206.340,TEST PIT #4 EASTERN
15473,1251985.467,3134363.561,5208.103,TEST PIT #4 EASTERN
15474,1252006.685,3134419.345,5212.695,TEST PIT #2 EASTERN
15475,1251976.828,3134416.412,5210.337,TEST PIT #3 EASTERN
15476,1251918.101,3134405.314,5208.372,TEST PIT #5 EASTERN
15477,1251913.739,3134443.051,5213.454,MW#2R REPLACED
15478,1251912.956,3134443.021,5210.141,GROUND
15479,1251925.650,3134509.237,5213.699,TEST PIT #1
15480,1251924.914,3134522.183,5214.211,TEST PIT #1
15481,1251934.856,3134564.629,5216.941,TEST PIT #9
15482,1251959.358,3134698.761,5225.403,METAL DRUM
15483,1251955.779,3134710.738,5226.249,TEST PIT #10
15484,1251818.109,3134521.640,5228.931,MW#15
15485,1251817.285,3134521.575,5225.827,GROUND
15486,1251808.901,3134428.310,5222.724,MW#16
15487,1251808.102,3134428.371,5219.789,GROUND
15488,1251728.669,3134398.408,5210.865,TEST PIT #6
15489,1251650.450,3134460.504,5226.098,MW #17
15490,1251649.869,3134460.236,5223.029,GROUND
15491,1251758.635,3134257.649,5204.313,MW#18
15492,1251757.820,3134257.741,5201.190,GROUND
15493,1251780.772,3134141.701,5196.752,TEST PIT #11
15494,1251915.063,3134010.360,5195.096,MW #14

13495,1251914.534,3134010.238,5191.722,GROUND
13496,1251651.137,3133847.892,5181.255,MW#7
13497,1251650.618,3133848.100,5177.852,GROUND
13498,1251557.415,3133411.380,5164.984,MW#19
13499,1251556.860,3133411.423,5161.598,GROUND
13500,1251350.031,3133201.403,5161.774,MW #20
13501,1251349.457,3133201.817,5159.283,GROUND
13502,1251103.130,3132875.455,5150.430,MW#8
13503,1251102.303,3132875.418,5147.336,GROUND
13504,1250979.316,3132294.813,5135.872,TEST PIT #1
13505,1250636.472,3132457.850,5161.329,TEST PIT #6
13506,1251014.898,3132107.603,5132.468,TEST PIT #2
13507,1250812.373,3131787.905,5135.864,TEST PIT #7
13508,1251163.697,3131998.930,5137.750,TEST PIT #4
13509,1251180.848,3132630.155,5152.718,TEST PIT #3

# FIGURE 2-1 GROUNDWATER WELL LOCATIONS & ISOPLETHS

RED TAIL RANCH LLC




STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00
SCALE 1" = 200'
DATE OCTOBER 2017
SHEET 1 of 13

DRAWN M.A.T.
CHECKED
DESIGNED
FILENAME 0003_Exhibit2

REVISIONS

| BY | DATE | DESCRIPTION |
|---|---|---|

| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN M.A.T.

CHECKED

DESIGNED

FILENAME 0003_Exhibit2

RED TAIL RANCH LLC

FIGURE 2-5A
Cis 1,2- DCE

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00

SCALE 1" = 150'

DATE OCTOBER 2017

SHEET 2 of 13

150 0 150 300
scale 1"=150' feet

| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN M.A.T.
CHECKED
DESIGNED
FILENAME 0003_Exhibit2

**RED TAIL RANCH LLC**

**FIGURE 2-5B**
**MEK**

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST
TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00
SCALE 1" = 150'
DATE OCTOBER 2017
SHEET 3 of 13

REVISIONS

| BY | DATE | DESCRIPTION |
|---|---|---|
| RED TAIL RANCH LLC | | |

DRAWN M.A.T.

CHECKED

DESIGNED

FILENAME 0003_Exhibit2

# RED TAIL RANCH LLC

## FIGURE 2-5C NITRATE

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00

SCALE 1" = 150'

DATE OCTOBER 2017

SHEET 4 of 13

| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN: M.A.T.

CHECKED:

DESIGNED:

FILENAME: 0003_Exhibit2

# RED TAIL RANCH LLC

## FIGURE 2-5D
## TCE

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00

SCALE 1" = 150'

DATE OCTOBER 2017

SHEET 5 of 13

REVISIONS

| BY | DATE | DESCRIPTION |
|---|---|---|
| | | |

DRAWN M.A.T.

CHECKED

DESIGNED

FILENAME 0003_Exhibit2

RED TAIL RANCH LLC

FIGURE 2-5E
THF

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00

SCALE 1" = 150'

DATE OCTOBER 2017

SHEET 6 of 13

| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN M.A.T.

CHECKED

DESIGNED

FILENAME 0003_Exhibit2

RED TAIL RANCH LLC

FIGURE 2-5F
TOLUENE

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00

SCALE 1" = 150'

DATE OCTOBER 2017

SHEET 7 of 13

150 0 150 300
scale 1"=150' feet

| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN M.A.T.
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DESIGNED
FILENAME 0003_Exhibit2

RED TAIL RANCH LLC

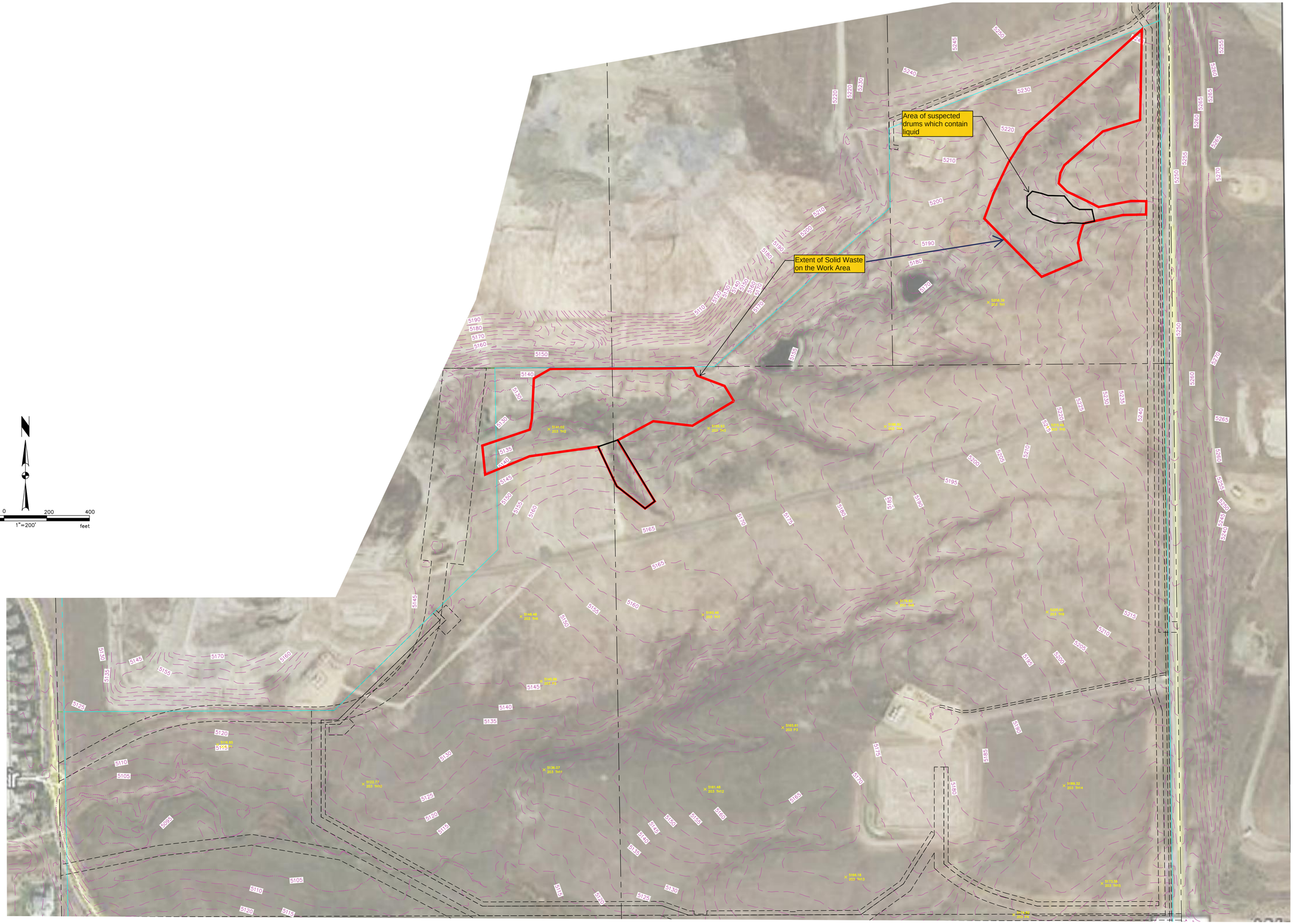
FIGURE 2-5G
DIOXANE

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00
SCALE 1" = 150'
DATE OCTOBER 2017
SHEET 8 of 13




| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN: M.A.T.

CHECKED:

DESIGNED:

FILENAME: 0003_Exhibit2

# RED TAIL RANCH LLC

# FIGURE 4-1 SOLID WASTE EXTENT AND TEST PIT LOCATIONS

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.226.0557

JOB NO. 0937.0003.00

SCALE 1" = 200'

DATE OCTOBER 2017

SHEET 9 of 13

| REVISIONS | | |
|---|---|---|
| BY | DATE | DESCRIPTION |

DRAWN: M.A.T.

CHECKED:

DESIGNED:

FILENAME: 0003_Exhibit2

RED TAIL RANCH LLC

FIGURE 5-1
BEDROCK

STEWART ENVIRONMENTAL CONSULTANTS, LLC

TST

TST, INC.
CONSULTING ENGINEERS
748 Whalers Way
Suite 200 Fort Collins
Colorado 80525
Phone: 970.225.0557

JOB NO. 0937.0003.00

SCALE 1" = 150'

DATE OCTOBER 2017

SHEET 11 of 13

COLORADO
Department of Public
Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

April 4, 2018

Mr. Richard Dean
Stratus Redtail Ranch, LLC
8480 E. Orchard Road, Suite 1100
Greenwood Village, CO 80111

RE: **CDPHE Comments on the Response Document for the Phase 2 Nature and Extent Investigation Report**
Stratus Redtail Ranch, LLC
Erie, Colorado

SW/WLD/NEU 4.3

Dear Mr. Dean:

The Colorado Department of Public Health and Environment ("CDPHE"), Hazardous Materials and Waste Management Division ("Division") received on February 22, 2018 via email the following document prepared on your behalf:

> *"Response to November 15, 2017 letter on Phase 2 Nature and Extent Investigation Report Stratus Redtail Ranch, LLC - Rev 2;"* prepared for Stratus Redtail Ranch, LLC; prepared by Stewart Environmental Consulting Group, LLC; dated February 21, 2017 [sic] (received on February 22, 2018 via email, herein referred to as the "Response Document").

The Division's comments on the following report are presented in a letter dated November 15, 2017:

> *"Report on Phase 2 Nature and Extent Investigation at the Stratus Redtail Ranch, LLC, Erie, Colorado;"* prepared for Stratus Redtail Ranch, LLC; prepared by Stewart Environmental Consulting Group, LLC; dated October 20, 2017 (herein referred to as the "Phase 2 Report").

The requirements for the Phase 2 Report are presented in the following work plan and in the Division's approval with modifications letter dated June 13, 2017:

> *"Phase Two Work Plan to Determine the Nature and Extent Of Ground Water Contamination and Solid Waste Extent at the Stratus Redtail Ranch, LLC, Erie, Colorado;"* prepared for Stratus Redtail Ranch, LLC; prepared by Stewart Environmental Consulting Group, LLC; dated May 31, 2017 (herein referred to as the "Phase 2 Work Plan").

The Division has completed its review of the Response Document. The following comments should be addressed and incorporated into a revised Phase 2 Report. Please submit the revised Phase 2 Report by May 18, 2018.

1. Response to Comment ("RTC") Numbers 1 through 13, 17 through 22, and 24 are acceptable to the Division. The information provided in the Response Document for these RTCs should be incorporated into the revised Phase 2 Report.

2. RTC Number 14 continues to be misleading and unacceptable to the Division. Specifically, the following sentence is misleading and must be either deleted or revised: *"In addition, the location of certain drum sites are consistent with the statements provided in the of the* [sic] *PSA report of 1990 which indicate* [sic] *potential waste in the south draw."* First, the 1990 Preliminary Assessment concludes that the drummed chemical waste from IBM was disposed at Old Erie Landfill, not in the south draw (The south draw is now known as the Neuhauser Landfill). Second, the primary purpose of the buried drum investigation at Neuhauser Landfill was to confirm the Division's hypothesis that the 1990 Preliminary Assessment was incorrect, and that the IBM drums were actually disposed at the Neuhauser Landfill, not at the Old Erie Landfill. Third, the 1990 Preliminary Assessment (on page 12) states that *"Wastes deposited along the south draw include regular solid wastes, photo conductor film (probably from IBM) and occasionally rusted empty drums."* The Division believes the buried drum investigation identified the IBM drums, not "occasionally rusted empty drums." Therefore, "drum sites" identified by the buried drum investigation are not consistent with the findings of the 1990 Preliminary Assessment.

3. RTC Numbers 15, 16, 23, and 25 state that the comments will be addressed in the revised Phase 2 Report. The Division will review the information for these RTCs once the revised Phase 2 Report is received.

Please note that this comment letter on the Response Document does not preclude the Town of Erie from taking independent review action.

The Division is authorized to bill for its review of submittals at $125 per hour, pursuant to Section 1.7 of 6 CCR 1007-2, Part 1, the Regulations Pertaining to Solid Waste Sites and Facilities. An invoice for the Division's review of the subject document will be sent under separate cover.

Should you have questions about this letter, please contact Curt Stovall at (303) 692-2295 or curtis.stovall@state.co.us.

Sincerely,

Curt R. Stovall

Curt Stovall, P.E.
Solid Waste Permitting Unit
Solid Waste and Materials Management Program
Hazardous Materials and Waste Management Division

ec: Joyce Ackerman - EPA Superfund Technical Assessment and Response Team
Mark Adams - Waste Connections, Inc.
Todd Bjerkaas, PLA - Town of Erie Senior Planner
David Folkes, PE - Geosyntec Consultants
Ben Frissell - Weld County Department of Public Health and Environment
David Fronczak - EPA Site Assessment Program
Jerry Henderson - CDPHE Solid Waste Permitting Unit Leader
Don Hostetter - Pratt Management Company, LLC
Doug Ikenberry, PE - CDPHE Solid Waste Compliance Assurance Unit
Victor Ketellapper, PE - EPA Site Assessment Program
Jason King, Esq - Colorado Office of the Attorney General
Alan Linton - Pratt Management Company, LLC
Martin O'Grady - CDPHE Site Assessment
R. Martin Ostholthoff - Town of Erie Community Development Director
Ed Smith - CDPHE Solid Waste Compliance Assurance Unit Leader
Jonathan Steeler, Esq - Senn Visciano Canges P.C.
David Stewart, PE, PhD - Stewart Environmental Consultants, LLC

STATE OF COLORADO

**- CDPHE, cdphe <cdphe.hmdrecordscenter@state.co.us>**

# Fwd: CDPHE Comments on the Phase 2 Response Document

1 message

**Stovall - CDPHE, Curtis** <curtis.stovall@state.co.us> Thu, Apr 5, 2018 at 7:21 AM
To: cdphe hmdrecordscenter <cdphe.hmdrecordscenter@state.co.us>

Hello Kim:

Please file this email and the attached PDF as follows:

County: Weld

Site: Neuhauser Landfill

Title: CDPHE Comments on the Response Document for the Phase 2 Nature and Extent Investigation Report

Code: SW / WLD / NEU 4.3

Document dated: 4/4/18

Document received:

Confidential (Y/N): N

Thanks,
Curt

---------- Forwarded message ----------
From: **Stovall - CDPHE, Curtis** <curtis.stovall@state.co.us>
Date: Wed, Apr 4, 2018 at 1:30 PM
Subject: CDPHE Comments on the Phase 2 Response Document
To: Richard Dean <rdean@stratuscompanies.com>
Cc: "Ackerman, Joyce" <Ackerman.Joyce@epa.gov>, Mark Adams <MarkA@wasteconnections.com>, Todd Bjerkaas <tbjerkaas@erieco.gov>, "Dave Folkes, PE" <dfolkes@geosyntec.com>, Ben Frissell <bfrissell@co.weld.co.us>, "Fronczak, David" <Fronczak.David@epa.gov>, "Henderson, Jerry" <jerry.henderson@state.co.us>, Don Hostetter <dhostetter91@gmail.com>, "Ikenberry, Doug" <Douglas.Ikenberry@state.co.us>, "Ketellapper, Victor" <Ketellapper.Victor@epa.gov>, Jason King <Jason.King@coag.gov>, Alan Linton <alinton@prattland.com>, Martin OGrady - CDPHE <martin.ogrady@state.co.us>, "R. Martin Ostholthoff" <mostholthoff@erieco.gov>, Edward Smith <edwardh.smith@state.co.us>, "Jonathan H. Steeler (JSteeler@sennlaw.com)" <JSteeler@sennlaw.com>, "Dave Stewart, P.E." <dave.stewart@stewartenv.com>

Richard,

Please find attached an electronic version of the above-referenced letter. A hard copy of the letter will follow in the mail. Please call if you'd like to discuss the letter.

Sincerely,
Curt

--

**Curt Stovall, P.E.**
**Environmental Protection Specialist**
Solid Waste Permitting Unit
Solid Waste and Materials Management Program

COLORADO
Hazardous Materials
& Waste Management Division
Department of Public Health & Environment

P 303.692.2295 | F 303.759.5355
4300 Cherry Creek Drive South, Denver, Colorado 80246-1530
curtis.stovall@state.co.us | www.colorado.gov/cdphe/hm

--

**Curt Stovall, P.E.**
**Environmental Protection Specialist**
Solid Waste Permitting Unit
Solid Waste and Materials Management Program

COLORADO
Hazardous Materials
& Waste Management Division
Department of Public Health & Environment

P 303.692.2295 | F 303.759.5355
4300 Cherry Creek Drive South, Denver, Colorado 80246-1530
curtis.stovall@state.co.us | www.colorado.gov/cdphe/hm

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**2018-4-4 CDPHE Comments on Response Document for Phase 2 Nature and Extent Investigation Report - Stratus Redtail Ranch LLC.pdf**
652K

Do not make entries in shad areas

OMB #: 2050-0005 Expires: 1-31-83

SW/WLD/OEL 2.8

ENVIRONMENTAL PROTECTION AGENCY

# GENERATOR ANNUAL HAZARDOUS WASTE REPORT

This report is for the calendar year ending December 31, 1981.

AFFIX LABEL HERE

Please print/type with elite type (12 characters per inch)

GENERAL INSTRUCTIONS: If you received a preprinted label attached to the mailing envelope in which this form was enclosed, affix it in the space provided. If any of the information on the label is incorrect, draw a line through it and provide the correct information in the appropriate section below. If the information is correct and complete, leave Sections I, II, and III below blank. If you did not receive a preprinted label, complete all sections. REFER TO THE SPECIFIC INSTRUCTIONS CONTAINED IN THIS BOOKLET BEFORE COMPLETING THIS FORM. The information requested in this report is required by law (Section 3002 of the Resource Conservation Recovery Act).

## I. GENERATOR'S EPA I.D. NUMBER

T.A.C.

F C O D 0 0 1 8 8 3 1 6 4 1

1 2 13 14 15

## II. NAME OF INSTALLATION

I N T E R N A T I O N A L B U S I N E S S M A C H I N E S C O R P .

30 69

## III. INSTALLATION MAILING ADDRESS

3 P . O . B O X 1 9 0 0

15 16 45

Street or P.O. Box

4 B O U L D E R C O 8 0 3 0 2

15 16 41 42 47 51

City or Town State Zip Code

## IV. LOCATION OF INSTALLATION (if different than section III above)

5 6 3 0 0 D I A G O N A L H I G H W A Y

15 16 45

Street or Route number

6 B O U L D E R C O 8 0 3 0 2

15 16 41 42 47 51

City or Town State Zip Code

## V. INSTALLATION CONTACT

2 C A M P B E L L , G A R Y 7 0 4 / 0 1 0 - 4

15 16 45

Name (last and first)

3 0 3 - 4 4 7 - 6 5 9 7

46 55

Phone No. (area code & no.)

## VI. CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

J. A. Frankovsky General Manager [signature] 1-10-83

Print/Type Name Title Signature of Authorized Representative Date Signed

EPA Form 8700-13A(5-80) (Revised 10-82)

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Do not make entries in shaded areas

ENVIRONMENTAL PROTECTION AGENCY

# Generator Annual Hazardous Waste Report (cont.)

This report is for the calendar year ending December 31, 1981.

Date rec'd: _____ Rec'd by: _____

VII. GENERATOR'S EPA I.D. NO.

T/A C

G C O D 0 0 1 8 8 3 1 6 4 1

1 2 13 14 15

VIII. FACILITY NAME (specify facility to which all wastes on this page were shipped)

Chemical Waste Mgmt, Kettleman Hills, California

IX. FACILITY'S EPA I.D. NO.

F C A T 0 0 0 6 4 6 1 1 7

16 28

X. FACILITY ADDRESS

P.O. BOX 157
Kettleman City, CA 93239

XI. TRANSPORTATION SERVICES USED (List the name and EPA identification numbers of all transporters whose services were used during 1981. This section to be completed only once. Do not repeat on supplemental sheets.)

US Pollution Control - OKT 410010474 & OKT 410010466
ThoroProducts Co. COD007065576 Ringsby - COD006915987

XII. WASTE IDENTIFICATION

| Sequence | Line # | A. Description of Waste | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|
| 32 | 1 | Waste magnetic coating solution used to make magnetic tape prod (Solids and liquids) | 0 9 (33 34) | D 0 0 1 (35 38 39 42) | 7 1 9 0 2 4 (51 59) | K (60) |
| | 2 | Waste corrosives, acids and caustics used in plating, cleaning, processing | 0 2 | D 0 0 2 | 1 5 7 9 6 | K |
| | 3 | Waste halogenated cleaning solutions, Freons, Chlorethane, Methyl Chloroform | 1 5 | F 0 0 2 | 3 1 2 2 2 | K |
| | 4 | Waste ethylene diamine | 0 2 | P 0 5 3 | 9 1 | K |
| | 5 | Waste potassium cyanide | 1 7 | P 0 9 8 | 4 1 5 | K |
| | 6 | Waste Zinc cyanide | 1 7 | P 1 2 1 | 2 6 2 | K |
| | 7 | | | | | |
| | 8 | | | | | |
| | 9 | | | | | |
| | 10 | | | | | |
| | 11 | | | | | |
| | 12 | | | | | |

XIII. COMMENTS (enter information by section number—see instructions)

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ENVIRONMENTAL PROTECTION AGENCY

# Generator Annual Hazardous Waste Report (cont.)

This report is for the calendar year ending December 31, 1981.

Date rec'd: _____ Rec'd by: _____

VII. GENERATOR'S EPA I.D. NO.

GC 0 D 0 0 1 8 8 3 1 6 4 1 (1/A C)
1 2 13 14 15

IX. FACILITY'S EPA I.D. NO.

FA R D 0 6 9 7 4 8 1 9 2
16 28

VIII. FACILITY NAME (specify facility to which all wastes on this page were shipped)

ENERGY SYSTEMS (ENSCO)

X. FACILITY ADDRESS

AMERICAN ROAD
El Dorado, Arkansas 71730

XI. TRANSPORTATION SERVICES USED (List the name and EPA identification numbers of all transporters whose services were used during 1981. This section to be completed only once. Do not repeat on supplemental sheets.)

Matlack - PAD046548756
Liquid Waste Transport - COT 090010216

XII. WASTE IDENTIFICATION

| Sequence # | Line # | A. Description of Waste | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|
| 32 | 1 | Waste flammable liquids from manufacture of magnetic product | 0 9 (33 34) | D 0 0 1 (35 38) (39 42) (43 46) (47 50) | 3 3 5 (51 59) | T (60) |
| | 2 | containing= toluene, methyleth-retone, plasticizers, iron oxide, | | | | |
| | 3 | tetrahydrofuran | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
| | 6 | | | | | |
| | 7 | | | | | |
| | 8 | | | | | |
| | 9 | | | | | |
| | 10 | | | | | |
| | 11 | | | | | |
| | 12 | | | | | |

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XIII. COMMENTS (enter information by section number—see instructions)

BOL 025

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ENVIRONMENTAL PROTECTION AGENCY

# Generator Annual Hazardous Waste Report (cont.)

This report is for the calendar year ending December 31, 1981.

Date rec'd: _____ Rec'd by: _____

VII. GENERATOR'S EPA I.D. NO.

T/A C

G C O D 0 0 1 8 8 3 1 6 4 1

1 2 13 14 15

VIII. FACILITY NAME (specify facility to which all wastes on this page were shipped)

Rollins Environmental Services

IX. FACILITY'S EPA I.D. NO.

F T X D 0 5 5 1 4 1 3 7 8

16 28

X. FACILITY ADDRESS

P.O. Box 609

Deer Park, Texas 77536

XI. TRANSPORTATION SERVICES USED (List the name and EPA identification numbers of all transporters whose services were used during 1981. This section to be completed only once. Do not repeat on supplemental sheets.)

Chem. Waste Mgmt - COD 000 695 007

Oil and Solvent Process Co. COD 000 695 171

XII. WASTE IDENTIFICATION

| Sequence # | Line # | A. Description of Waste | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|
| 32 | 1 | Waste flammable liquids from mfg of magnetic products | 33 34 | D 0 0 1 (35 38 / 39 42) 43 46 / 47 50 | 1 6 1 (51 59) | T (60) |
| | 2 | containing THF, MEK, toluene, plasticizers, iron oxides | | | | |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
| | 6 | | | | | |
| | 7 | | | | | |
| | 8 | | | | | |
| | 9 | | | | | |
| | 10 | | | | | |
| | 11 | | | | | |
| | 12 | | | | | |

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XIII. COMMENTS (enter information by section number—see instructions)

BOL 025

BOL 025

Do not make entries in shade areas

ENVIRONMENTAL PROTECTION AGENCY

# Generator Annual Hazardous Waste Report (cont.)

This report is for the calendar year ending December 31, 1981.

Date rec'd: _____ Rec'd by: _____

VII. GENERATOR'S EPA I.D. NO.

C O D 0 0 1 2 8 3 1 6 4 1A C 1

VIII. FACILITY NAME (specify facility to which all wastes on this page were shipped)

Thoro Products

IX. FACILITY'S EPA I.D. NO.

F C O D 0 0 7 0 6 5 5 7 6

X. FACILITY ADDRESS

P.O. Box 504
Arvada, Co. 80002

XI. TRANSPORTATION SERVICES USED (List the name and EPA identification numbers of all transporters whose services were used during 1981. This section to be completed only once. Do not repeat on supplemental sheets.)

XII. WASTE IDENTIFICATION

| Sequence # | Line # | A. Description of Waste | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|
| 32 | 1 | Waste flammable liquids from manufacture of magnetic product containing Tetrahydrofuran | 0 9 (33 34) | D 0 0 1 (35–38) (39–42) (43–46) (47–50) | 2 3 3 (51–59) | T (60) |
| | 2 | | | | | |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
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| | 12 | | | | | |

XIII. COMMENTS (enter information by section number—see instructions)

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ENVIRONMENTAL PROTECTIO[illegible] [illegible]GENCY

# Generator Annual Hazardous Waste Report (cont.)

This report is for the calendar year ending December 31, 1981.

Date rec'd: _____ Rec'd by: _____

VII. GENERATOR'S EPA I.D. NO.

T/A C

C O D 0 0 1 2 8 3 1 6 4 1

1 2 13 14 15

VIII. FACILITY NAME (specify facility to which all wastes on this page were shipped)

Romic Chemical Co.

IX. FACILITY'S EPA I.D. NO.

F C A D G 0 9 4 5 2 6 5 7

16 28

X. FACILITY ADDRESS

2081 Bay Rd.
E. Palo Alto, CA 94303

XI. TRANSPORTATION SERVICES USED (List the name and EPA identification numbers of all transporters whose services were used during 1981. This section to be completed only once. Do not repeat on supplemental sheets.)

XII. WASTE IDENTIFICATION

| Sequence # | Line # | A. Description of Waste | B. DOT Hazard code | C. EPA Hazardous Waste No. (see instructions) | D. Amount of Waste | E. Unit of Measure |
|---|---|---|---|---|---|---|
| 32 | 1 | Waste flammable liquids from magnetic products manufacture; containing IHr, ferric oxides. | 33 0 9 34 | 35 D 0 0 1 38 / 39 42 / 43 46 / 47 50 | 51 1 9 6 59 | T 60 |
| | 2 | | | | | |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
| | 6 | | | | | |
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| | 11 | | | | | |
| | 12 | | | | | |

XIII. COMMENTS (enter information by section number—see instructions)

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**Tier Two**
EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY
*Specific Information by Chemical*

**Facility Identification**
Name: IBM Corp.
Street Address: 6800 Diagonal Hwy.
City: Boulder State: CO Zip: 80302
SIC: 357 Dun & Bradstreet #: 00-136-8083

**Owner/Operator**
Name: IBM Corp.
Mail Address: P.O. Box 1900
Boulder, CO 80302
Phone: (303) 924-1900

**Emergency Contacts**
Name: Larry Leinweber
Title: Security Project Manager
Phone: (303) 924-6999
24 Hour/Day Phone Number: (303) 924-4155

*Important: Read all instructions before completing form*

Reporting Period: From January 1 to December 31, 1987

| Chemical Description (Circle all that apply: Pure, Mix, Sol, Liq, Gas) | Max. Amount (Enter code) | Avg. Daily Amount (Enter code) | Physical Hazards: Combustible Liq. | Compressed Gas | Corrosive | Explosive | Flammable | Organic Peroxide | Oxidizer | Pyrophoric | Unstable/Reactive | Water Reactive | Health Hazards: Carcinogen | Highly Toxic | Irritant | Sensitizer | Toxic | Blood Toxin | Eye Hazard | Kidney Toxin | Liver Toxin | Lung Toxin | Nerv. Sys. Toxin | Reproductive Tox. | Skin Hazard | Location: Non-Confidential — Site Location / Storage Codes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chem Name: No. 1 Fuel Oil; CAS #: 80082 06 | 05 | 05 | X | | | X | | | | | | | | | X | | X | | | X | X | X | X | | X | G6 [Tank] A (2.4) (.)<br>E6 [012] F (1.4) (.) |
| Chem Name: No. 2 Fuel Oil; CAS #: 68476 30 2 | 04 | 04 | X | | | X | | | | | | | | | X | | X | | | | | | | | X | F8 [Tank] A (2.4) (.)<br>D7 [Tank] A (2.4) (.) |
| Chem Name: No. 6 Fuel Oil; CAS #: 68553 00 4 | 05 | 05 | X | | | X | | | | | | | | | X | | X | | | | | | | | X | F6 [Tank] A (2.4) (.)<br>E6 [9 Tanks] B (2.4) (.) |
| Chem Name: Liquid Nitrogen; CAS #: 7727 37 9 | 04 | 04 | | X | | | | | | | | | | | | | | | X | | | | X | | X | E8 [030] A (2.7) (.)<br>C5 [022] L (2.7) (.) |
| Chem Name: Methyl Ethyl Ketone; CAS #: 78 93 3 | 03 | 03 | | | | X | X | | | | | | | | X | | X | | X | X | X | X | X | X | X | E6 [012] D (1.4) (.)<br>E8 [031] D (1.4) (.) |
| Chem Name: Trichlorotrifluoroethane; CAS #: 76 13 1 | 03 | 03 | | X | | | | | | | | | | | X | | | | X | | | X | X | | X | E6 [012] D (1.4) (.)<br>[ ] (.) (.) |
| Chem. Name: 1,1,1 trichloroethane; CAS #: 71 55 6 | 03 | 03 | | | | | | | | | | | | | X | | | | X | X | X | | X | | X | E6 [012] D (1.4) (.)<br>[ ] (.) (.) |
| Chem Name: Toluene; CAS #: 108 88 3 | 03 | 03 | | | | X | X | | | | | | | | X | | | X | X | X | X | X | X | X | X | E8 [031] A (2.4) D (1.4)<br>E6 [012] D (1.4) M (1.4) |
| Chem Name: Tetrahydrofuran; CAS #: 109 99 9 | 04 | 03 | | | | X | X | | | | | | | | X | | X | | X | X | X | X | X | | X | E8 [031] A (2.4) D (1.4)<br>E6 [012] D (1.4) M (1.4) |
| Chem Name: Methylene Chloride; CAS #: 75 09 2 | 03 | 02 | | | | X | | | | | | | | | X | | X | X | X | X | X | X | X | X | X | E6 [012] D (1.4) M (1.4)<br>C4 [023] D (1.4) M (1.4) |

**Certification** *(Read and sign after completing all sections)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

R. L. Patnoe
Name and Title of Owner or Owner's Authorized Representative

Signature

10/16/87
Date Signed

**Attachments** *(Check one)*

- [X] I have attached a site plan
- [ ] I have attached a list of site coordinate abbreviations

**Tier Two**
EMERGENCY AND HAZARDOUS CHEMICAL INVENTORY
*Specific Information by Chemical*

**Facility Identification**
Name: IBM Corp.
Street Address: 6800 Diagonal Hwy.
City: Boulder State: CO Zip: 80302
SIC: 357 Dun & Bradstreet #: 00-136-8083

**Owner/Operator**
Name: IBM Corp.
Mail Address: P.O. Box 1900
Boulder, CO 80302
Phone: (303) 924-1900

**Emergency Contacts**
Name: Larry Leinweber
Title: Security Project Manager
Phone: (303) 924-6999
24 Hour/Day Phone Number: (303) 924-4155

*Important: Read all instructions before completing form*

Reporting Period: From January 1 to December 31, 1987

| Chemical Description | Circle all that apply | Max. Amount (Enter code) | Avg. Daily Amount (Enter code) | Physical Hazards: Combustible Liq. | Compressed Gas | Corrosive | Explosive | Flammable | Organic Peroxide | Oxidizer | Pyrophoric | Unstable/Reactive | Water Reactive | Health Hazards: Carcinogen | Highly Toxic | Irritant | Sensitizer | Toxic | Blood Toxin | Eye Hazard | Kidney Toxin | Liver Toxin | Lung Toxin | Nerv. Sys. Toxin | Reproductive Tox. | Skin Hazard | Location: Non-Confidential — Site Location | Storage Codes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chem Name: n-Butylamine; CAS #: 109739 | Pure, Sol, Liq, Mix, Gas | 03 | 02 | | | | X | X | | | | | | | | X | | X | | X | | | X | X | | X | E8 [031] | A(2.4) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | E6 [012] | M(1.4) ( , ) |
| Chem Name: Ethylene Diamine; CAS #: 107153 | Pure, Sol, Liq, Mix, Gas | 03 | 02 | | | X | | X | | | | | | | | X | X | X | X | X | X | X | X | | | X | E8 [031] | A(2.4) D(1.4) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | E6 [012] | D(1.4) M(1.4) |
| Chem Name: Ammonia; CAS #: 7664417 | Pure, Sol, Liq, Mix, Gas | 01 | 01 | | X | X | | | | | | | X | | | X | X | X | | X | | | X | X | | X | E6 [012] | L(2.4) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | [021] | L(2.4) ( , ) |
| Chem Name: Sulfuric Acid; CAS #: 7664939 | Pure, Sol, Liq, Mix, Gas | 03 | 03 | | | X | X | | | | | X | X | | | X | X | X | | X | | | X | X | | X | C5 [021] | G(1.4) M(1.4) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | E7 [011] | G(1.4) ( , ) |
| Chem Name: CAS #: | Pure, Sol, Liq, Mix, Gas | | | | | | | | | | | | | | | | | | | | | | | | | | D4 [024] | R(1.4) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | D8 [006] | R(1.4) ( , ) |
| Chem Name: CAS #: | Pure, Sol, Liq, Mix, Gas | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| Chem Name: CAS #: | Pure, Sol, Liq, Mix, Gas | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| Chem Name: CAS #: | Pure, Sol, Liq, Mix, Gas | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| Chem Name: CAS #: | Pure, Sol, Liq, Mix, Gas | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| Chem Name: CAS #: | Pure, Sol, Liq, Mix, Gas | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | [ ] | ( , ) ( , ) |

**Certification** *(Read and sign after completing all sections)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

R.L. PAYNE
Name or Title of Owner or Owner's Authorized Representative

Signature

10/16/87
Date Signed

**Attachments** *(Check one)*

- [X] I have attached a site plan
- [ ] I have attached a list of site coordinate abbreviations

IBM-Boulder
original dated 09.21.83

Source: IBM Corp. Permit file
RCRA

Section C

## Waste Characteristics and Information

### C - 1

### Waste Information

IBM Boulder hazardous wastes are produced from various activities and processes. The information provided below describes these processes, the types of waste generated, and specific information about each waste stream. Recent analysis of each of the stream is also provided. This information is provided in accordance with the requirements of 40 CFR 270.25 (a)(2) and (3).

Accept as otherwise noted, each of the waste streams listed below are considered hazardous due to testing for flashpoint. This characteristic test is the parameter used to evaluate these streams. This parameter is used based on the known formulation of the wastes based primarily on solvents such as tetrahydrofuran (THF), toluene, and methyl isobutyl ketone (MIBK). All wastes are tested using the procedures prescibed in 40 CFR 261, EPA publication number SW-846, and standard methods.

**Magnetic media manufacture-** Magnetic media operations involve the production of flexible magnetic material for use as computer tape, magnetic diskettes and other similar products. The process involves the coating of solvent based oxides onto long rolls of mylar plastic. The coating, or ink, is prepared in a

mix room by bending finely ground metallic oxides, plasticizers, and solvents. Following the application of the ink to the mylar, the media is dried in a large oven. The volatilized solvents are controlled by a solvent recovery plant that utilizes carbon adsorption to reduce the emissions of solvents. Wastes are generated from three areas of the operation. These wastes are:

tetrahydrofuran (THF)- used to wash equipment in the mix room
coating solution waste- a sludge-like material
rags and filters- used to clean equipment and filter the coating solutions

The THF wash solvent is used in a coatings preparation mix room. The solvent is pumped from the mix room to Tank B 21-2 where it is stored until ready for shipment. The waste is loaded into transport vehicles at the loading station near the tanks. All piping is above ground. The waste is transported for reclaiming and eventual return to IBM for reuse. The solvent solution will contain primarily THF with small amounts of the oxide coating material cleaned from the process equipment.

The coating solution waste is primarily THF based coating solution that is either off spec or the end of a batch that is not needed. The often sludge-like material is placed into bung type steel 55 gallon drums in the mix room by mix room personnel. The drums are then placed outside the mix room where Chemical Control personnel transport the drums to the Chemical Storage Building. When about 100 drums accumulate at the Chemical Storage Building, the drums are

until empty? what [illegible] and operating [illegible]?

vacuum pumped into a bulk transport vehicle. The waste is then transported to a reclaimer. The cleaned solvent is returned to IBM for reuse. The separated oxides are secure landfilled even though they no longer meet the criteria of hazardous waste. The drums are reused here on site for the same material until any unpumpable sludge builds up in the drum to a point where the drum is unusable. Absorbant is then added and the drum is buried at a secure landfill as an ignitable solid.

The rags and filters are saturated with THF based wash solvent and waste coating solution. The waste is drummed in open top steel drums by mix room personnel. Each drum has 40 pounds of absorbant added to assure any free liquids are solidified. The drums are picked up by Chemical Control personnel and transported to the Chemical Storage Building. The drums are disposed of as an ignitable solid at a secure landfill.

**Photoconductor manufacture** - Photoconductor is manufactured using a process similar to that used to make magnetic media. A mylar plastic material is coated with three layers of different solvent based coatings. Photoconductor is used as the image transfer media in IBM Copiers. The waste from this process includes:

Waste amine containing coating solutions

Waste non-amine containing coating solutions

Waste coating from this process are generated when batches of solutions are off spec or left over from a production run. The solutions contain varying

JUL 02 '90

quantities of solids in either THF or mixtures of THF and ethyene diamine, or n-butylamine. Amine containing wastes are sent from the mix room by above ground piping to the 10,000 gallon amine waste tank (TK-105). Non-amine wastes are sent to the 6,000 gallon waste tank (TK-106). Both waste streams are sent off site to be incinerated.

**Pilot coating operations** - There are three pilot coating operations on site. These are used for experimental and development work prior to production on the manufacturing coaters discussed above.

The Building 023 development coating area generates waste from the experimental coating of photoconductor materials. This small coater generates waste similar to that from the above discussed Photoconductor manufacturing process, but at a much lower volume. These wastes are generally drummed in steel drums and transported by chemical control personnel to the Chemical Storage Building. Waste liquids may be pumped by underground double walled piping to tank xxx located west of Building 022. These wastes are bulk loaded and transported for incineration. Solids such as rags, filters and glassware are drummed and sent for burial at a secure landfill as ignitable solids. Liquid solvents and coating solutions are either reclaimed or incinerated off site.

The Building 022 pilot coating area generates wastes from the experimental coating of magnetic media materials. This small coater generates waste similar to that from the above discussed magnetic media manufacturing process. Wastes are normally drummed and transported by Chemical Control personnel to the CDC. Waste solutions can be directed by underground piping to the B 022 above ground

waste storage tank located outside just west of the coater area.

The Building 021 pilot coating area is similar to the B 023 operation only it is much smaller and rarely used. All wastes are drummed and transported by CDC personnel.

**Laboratory operations** - There are numerous laboratories in several buildings at IBM Boulder. These labs generate wastes from a variety of experimental and testing activities. The wastes generally include glassware, small bottles of solvents and other chemicals, gloves, rags, paper and other typical lab wastes. This material is disposed of as "lab packs" as prescribed in section 265.316 of the RCRA regs.

**Air emission control device condensate** - Two small adsorption devices ~~are~~ used to control air emission of volatile organic compounds are in use at IBM Boulder. These devices generate a mixture of waste water and solvent. This waste has at times met the RCRA characteristics for hazardous waste due to flash point. One unit is located in Building 004 on a process that manufactures magnetic diskette machine components. The other unit is on the development coater in Building 023. Both units are plumbed to carry the condensate mixture to separate storage tanks. The waste contains water and solvents and is transported offsite and incinerated. A recent analysis is attached.

**Process containment collected waters** - Several processing and loading areas on site have spill containment structures which collect rain water. This material may be contaminated with small quantities of solvents used in the particular area. These waters are tested when generated for key parameters. If the concentration of waste is low, then the water is pumped to our IWRF. If the level exceeds the capabilities ot the IWRF, then the waters are pumped into bulk transport vehicles and either incinerated, treated, or evaporated at a secure facility. The collected waters are tested and removed soon after accumulation. Some evaporation of the water takes place prior to removal, but such evaporation is not a part of IBM Boulder's waste management program. Should a spill of hazardous waste occur, the collected material is immediately removed for transport to a secure facility for final disposal.

how soon is soon?

**Empty drums** - Empty drums that have contained hazardous materials, wastes, or materials IBM Boulder considers improper for removal to steel scrap dealers, are either crushed on site or transported to a secure facility for crushing prior to burial.

**Cleaning solvents** - Several chlorinated cleaning solvents are used throughout the site. The materials are used to clean parts, tools, and other process equipment. When the materials become contaminated or spent, they are prepared for disposal. These materials include:

Freon VG (1,1,1 Trichloroethane, methyl chloroform)

Freon TE

Freon TF

Freon TWD

methylene chloride

trichloroethylene

These wastes are removed from the area of use in either steel drums or safety cans of 1 to 5 gallon capacity. The material is combined into drums at the CDC into 55 gallon drums for eventual transport to reclamation or incineration. Testing of these materials include metals content by the EP Toxicity method.

**Plating operations** - One small plating line is in operation in Building 004. This plating operation generates small amounts of waste solutions which are drummed and transported for neutralization, treatment, or incineration. These wastes may include the common plating materials such as:

acids - sulfuric, nitric

plating baths - nickel, silver, gold, copper

other material - ferric chloride, xxx — ?

These wastes are tested for pH, metals by EP Toxicity, and flashpoint.

**Industrial Waste Reclamation Facility (IWRF)** - The IWRF generates waste into the surface impoundments. See the section that deals with the IWRF and impoundments for detailed information. Additional waste from these operations is generated only when certain sludges are removed from processing equipment. None of these wastes are expected to meet the RCRA hazardous waste standards but are tested and disposed of as hazardous wastes.

These wastes are tested for pH, metals by EP Toxicity, and flashpoint.

organics is what's needed

**Off site facility** - IBM Boulder operates some minor waste generating activity in a leased building located about one mile south of the main plant site. The building is designated 910. Processes at the site result in waste that qualifies the building as a small quantity generator under section 261.5 of the RCRA regs. The wastes are generated from parts cleaning operations and from the finishing of magnetic diskettes. Wastes materials generated do not normally meet the RCRA hazardous waste standards. The wastes are, however, managed as hazardous waste. The wastes include:

Freons
Texo brand LP-803 cleaning solution
lubricating oils

These wastes are transported by common carrier to the Chemical Storage Building for accumulation and eventual transport to reclamation or disposal. The raw

JUL 021 '20 TM

chemicals and the waste containers are supplied by CDC, the processes generating the wastes are IBM operated, and the areas are included in site audit procedures. Therefore, additional testing of the waste is only conducted when there is evidence of possible variation in the wastes or labeling discrepancies are noted.

**Other Wastes-**

Various site operations produce small amounts of other wastes. Some of these wastes meet the RCRA hazardous waste standards. The wastes include off spec solvents from the solvent recovery plants, quality control rejected solvents, paints, inks, hydraulic oils, metal shavings, plastics, and other non hazardous wastes. All waste generated at IBM Boulder is evaluated against the hazardous waste standards either by formulation knowledge, testing, or manufacturers information. Non hazardous manufacturing process wastes are referred to by IBM Boulder as "industrial waste".

All IBM waste is evaluated for reclamation. Almost all solvent based waste is now sent to selected reclamation vendors for recycling back to IBM Boulder. Waste hydraulic oils are in the process of being evaluated for recovery. Paper and metals have been recovered for several years.

With the exception of one waste stream, all IBM Boulder non hazardous industrial waste is sent to secure hazardous waste facilities for treatment, burial or incineration. The one waste stream sent to local landfill is waste toner and carrier. These products are manufactured in Building 030. Toner is the fine black plastic powder that forms the image on an IBM copier reproduction. Carrier is the fine steel shot that carries the toner onto the paper. Both have been tested extensivly and determined not to meet the RCRA hazardous waste standards. A recent analysis is attached for both wastes.

While not regulated by RCRA, IBM Boulder generates PCB waste. This waste is primarily from the removal of small PCB capacitors that are removed from used IBM copiers prior to dismantle and salvage.
These small capacitors are placed in 55 gallon drums and stored on a special pad inside the Chemical Control and Distribution building. The drums are eventually sent to be incinerated in El Dorado Arkansas.
There are several PCB cooled high voltage capacitors in use on site. When these are discarded they are also sent for incineration. IBM Boulder has no PCB transformers in use or storage.

C - 2

Waste Analysis Frequency

IBM Boulder's major processes and the wastes from those processes are stable and remain generally unchanged. Periodic operation audits by Environmental Programs Engineering and Chemical Control identify significant changes in the processes or the wastes. All chemical usage on site is controlled by the Chemical Distribution and Control department. This procedure assures constant knowledge of the materials used, and thus wasted, from all operations on site. Waste analysis is conducted randomly to further audit the waste streams. Testing is also conducted when ever any process modification indicates a particular batch of waste have changed. This procedure applies to hazardous waste and other waste that does not qualify as hazardous waste but that IBM chooses to manage through our waste tracking program.

will this ensure accurate and up to date analysis?

C - 3

IBM Internal Waste Management Procedures

The IBM Corporation has established a system to assure all IBM hazardous wastes are properly managed. This system uses the attached form as the basis for information about each waste stream. The form is called a Schedule A. The Schedule A is completed by the Chemical Control department when a waste is to be generated from the site. The form is reviewed by Boulder Environmental Programs Engineering to assure the waste will be managed in an method that minimizes environmental impacts. The form is then sent to selected disposal, treatment, or reclamation companies as described below. Those companies

determine the cost and practicality of managing the waste at their facility. The form is then returned to Boulder for evaluation. Additionally, the form is sent to IBM Corporate Environmental Programs at Tarrytown, New York for review. Following these approvals a waste management facility is chosen and the waste may then be transported offsite for disposal, treatment, or reclamation.

C- 4

**Waste Management Vendor Selection Process**

IBM uses selected waste management firms for the disposal, treatment or reclamation of wastes. IBM Corporate policy allows IBM Boulder to use only firms that have been evaluated and selected for use. The selection process involves a visit to the waste management facility by Corporate Environmental staff and an IBM contractor specializing in hazardous wastes. IBM Boulder also visits the company to assure all IBM waste will be properly managed. Each of these visits is repeated at least annually. The visit includes a review of records, observation of operations, discussions of issues related to government inspection of the site, design of the site, and site geology. Finally, contacts are made with the government agencies responsible for inspecting the site. IBM is committed to proper management of our wastes and deals only with firms that can consistently provide that level of performance.

Needs to include test methods & sampling methods - a minimum frequency for testing must be specified. And outline of a detailed chemical & physical analysis should be included. Are there existing records?

May 31, 2016

Richard Dean
Stratus Companies LLC
8480 E. Orchard Road, Suite 1100
Greenwood Village, CO 80111

**Re: Redtail Ranch Site in Weld County, CO**
**February-May 2016 Groundwater Assessment**

Dear Mr. Dean:

Quality Environmental Services and Technologies, Inc. ("QUEST") has been retained by Stratus Companies to conduct environmental assessment services for the Redtail Ranch Site in Weld County, Colorado. We have reviewed Colorado Department of Public Health and Environment (CDPHE) records and met with CDPHE Hazardous Materials and Waste Management Division (HMWMD) representatives to discuss characterization of the subject site's shallow groundwater system(s) with regard to historical findings of volatile organic compounds (VOCs) in soil vapor and groundwater at site locations adjacent to the closed Old Erie Landfill and the active Denver Regional Landfill-South, located immediately north and northeast to the subject site, respectively. Based on the information reviewed, meetings with CDPHE, discussions with David Stewart of Stewart Environmental (seller's environmental consultant), and our understanding of your site needs, QUEST conducted PID field screening and groundwater sampling in the proposed buffer zone area as well as within the northern limits of the proposed development's residential lots at the Redtail Ranch property.

As requested, on February 22 and 24, April 11 and 12, and May 10, 20, and 23, 2016, the QUEST representatives conducted groundwater monitoring well drilling in seventeen (17) locations within the proposed buffer area and northern limits of the proposed development's residential lots at the north/northeast boundary of the Redtail Ranch property (see attached maps for monitoring well locations). The initial (7) locations were selected by QUEST during a February 2, 2016 meeting with CDPHE HMWMD representatives Jerry Henderson, Curtis Stovall, and Andy Todd. At the meeting, the CDPHE representatives expressed concern that VOC-contaminated shallow groundwater at the northeast corner of the subject property may be migrating via shallow paleochannels onto the subject property, potentially from the adjacent landfills; and that this leachate may provide a contaminant distribution pathway that could result in soil vapor intrusion into homes proposed to be built along the northern boundary of the Redtail Ranch development. All parties agreed that shallow groundwater monitoring (for volatile organics analysis by EPA Method 8260B) is necessary to further characterize potential risks along the property's northern border, in areas adjacent to the landfills; and to determine if the adjacent landfills are leaching contamination onto the subject site. In early April of 2016, the locations for the six (6) additional (follow-up) monitoring wells were determined following assessment of the initial groundwater

sampling results (for water samples collected from GW#3 and GW#5) and further discussions with yourself and Patrick Riddell of RESIGHT Advice Invest, in conjunction with CDPHE representatives and David Stewart of Stewart Environmental, with particular interest placed on the northern limits of the proposed development's residential lots. Following QUEST's assessment of the follow-up groundwater sampling results (for water samples collected from GW#8, GW#9, GW#11, GW#12, and GW#13) and a May 4, 2016 meeting with yourself and Patrick Riddell of RESIGHT Advice Invest, in conjunction with the subject property's seller's representative Al Linton and David Stewart of Stewart Environmental, all parties agreed that drilling of four (4) additional (second follow-up) monitoring wells was necessary, in locations south of GW#8 and GW#10, in order to delineate the southern boundary of the identified on-site contamination in the northeast portion of the subject site, to provide the property owner with the information needed to establish an appropriate buffer zone.

Site Services, Inc. drilled five (5) monitoring wells (GW#1 - GW#5) on February 22, 2016; two (2) monitoring wells (GW# 6 and GW#7) on February 24, 2016; four (4) monitoring wells (GW#8 – GW#11) on April 11, 2016; two (2) monitoring wells (GW#12 and GW#13) on April 12, 2016; two (2) monitoring wells (GW#14 and GW#16) on May 10, 2016; one (1) monitoring well (GW#17) on May 20, 2016; and one (1) monitoring well (GW#15) on May 23, 2016. In each well, slotted PVC was temporarily set in the bottom ten or fifteen feet of the well secured to solid PVC to above ground surface for the collection of groundwater samples. Drill cuttings were back filled around the installed PVC monitoring wells, and the ground surface was sealed with several feet of bentonite chips. Denver Blue bedrock, groundwater, and/or drilling refusal was encountered in GW#3, GW#4, GW#5, GW#6, GW#10, GW#11, GW#13, GW#16, and GW#17; at which time drilling ceased. Additionally, PVC was temporarily set (and the PVC monitoring well was backfilled, sealed with bentonite, and the groundwater evacuated then allowed to recharge) in TB-1 (located in close proximity to GW#16), a test boring hole previously drilled by A.G. Wassenaar in early April of 2016 for a geotechnical site development study. Monitoring well locations (GPS coordinates), drilling depths (below ground surface), and ground surface elevations are listed in the table below, with successful groundwater sampling locations bolded.

| **Monitoring Well** | **Drilling Depth (feet bgs*)** | **GPS Coordinates (From iPhone Designation)** | **Ground Surface Elevation (feet – From Google Earth)** |
|---|---|---|---|
| GW#1 | 34 | 40°1'34"N 105°1'9"W | 5,243 |
| GW#2 | 34 | 40°1'29"N 105°1'17"W | 5,214 |
| **GW#3** | **48** | **40°1'26"N 105°1'18"W** | **5,195** |
| GW#4 | 59 | 40°1'19"N 105°1'44"W | 5,137 |
| **GW#5** | **30** | **40°1'19"N 105°1'31"W** | **5,162** |
| GW#6 | 58.5 | 40°1'25"N 105°1'22"W | 5,189 |
| GW#7 | 34 | 40°1'29"N 105°1'22"W | 5,214 |
| **GW#8** | **25** | **40°1'27"N 105°1'12"W** | **5,214** |
| **GW#9** | **22** | **40°1'28"N 105°1'15"W** | **5,205** |
| GW#10 | 43 | 40°1'24"N 105°1'18"W | 5,194 |

| | | | |
|---|---|---|---|
| **GW#11** | **49** | **40°1'21"N 105°1'27"W** | **5,167** |
| **GW#12** | **19** | **40°1'16"N 105°1'47"W** | **5,134** |
| **GW#13** | **49** | **40°1'31"N 105°1'10"W** | **5,226** |
| **GW#14** | **30** | **40°1'24"N 105°1'14"W** | **5,204** |
| GW#15 | 69 | 40°1'24"N 105°1'17"W | 5,208 |
| **GW#16** | **30** | **40°1'25"N 105°1'12"W** | **5,221** |
| **GW#17** | **69** | **40°1'23"N 105°1'11"W** | **5,226** |
| **TB-1** | **34**** | **40°1'25"N 105°1'11"W** | **5,227** |

*bgs=below ground surface
**As reported in A.G. Wassenaar's April 28, 2016 *Geotechnical Site Development Study* report

**Groundwater and Soil Sampling**

On the days of initial drilling (February 22 and 24, 2016), no groundwater was obtained from the GW#1 – GW#7 monitoring wells. Soils from all of these drilled wells contained no observable debris, odors, stains, or contamination. QUEST returned to the property one week later, on March 2, 2016, and collected one (1) groundwater sample from GW#5; and on March 9, 2016, QUEST collected an additional groundwater sample from GW#3. During each of our inspections since that time, monitoring wells GW#1, #2, #4, #6, and #7 remained dry. In monitoring wells #3 and #5, two (2) bottles of groundwater were collected from each well in laboratory-provided clear glass VOA vial sampling bottles after purging the wells for at least five bailers.

The groundwater samples were submitted to Environmental Chemistry Services (ECS) in Castle Rock, Colorado following strict chain-of-custody procedures. Groundwater samples were submitted for volatile organics analysis by EPA Method 8260B. The following summary table and attached laboratory reports detail the initial groundwater sample results as compared with the Colorado Department of Public Health and Environment (CDPHE) Groundwater Protection Values (Water Standards).

As detailed in the table below and the attached laboratory reports, no volatile organics were detected in the GW#5 groundwater sample. The GW#3 groundwater sample, however, contained trichloroethene (TCE) in exceedance of the CDPHE Groundwater Protection Water Standard in addition to a low concentration of Freon-113 (1,1,2-Trichloro-1,2,2-trifluoroethane). No other volatile organics were detected in the GW#3 groundwater sample.

After reviewing the initial groundwater results and Stewart Environmental Consultant's (Stewart) 2007 soil vapor monitoring results, and conferring with CDPHE, Stewart Environmental, Richard Dean and Pat Riddell; QUEST conducted follow-up drilling and groundwater sampling within the buffer zone. Between April 11$^{th}$ and 14$^{th}$, 2016 six (6) additional wells were drilled (GW#8, GW#9, GW#10, GW#11, GW#12, and GW#13) and groundwater was obtained from GW#8, GW#9, GW#11, and GW#12. No groundwater was obtainable from GW#10 or GW#13 wells (wells dry). However, QUEST returned to the site on April 25, 2016 and obtained groundwater from GW#13 (GW#10 remains dry). In addition to collecting groundwater from the newly drilled wells, QUEST also obtained follow-up groundwater samples on April 11, 2016 from the previously sampled

GW#3 and GW#5. Two (2) bottles of groundwater were collected from each well in laboratory-provided clear glass VOA vial sampling bottles after purging the wells.

As detailed in the table below and the attached laboratory reports, no volatile organics were detected in the GW#13, GW#5, GW#11, and GW#12 groundwater samples. The GW#3 groundwater sample, however, contained 1,1-dichloroethene (1,1-DCE) and TCE in exceedance of the CDPHE Groundwater Protection Water Standards in addition to concentrations of Freon-113 (1,1,2-Trichloro-1,2,2-trifluoroethane) and tetrahydrofuran (THF). No other volatile organics were detected in the GW#3 groundwater sample. The GW#8 and GW#9 groundwater samples contained concentrations of cis-1,2-dichloroethene (cis-DCE) and TCE in exceedance of the CDPHE Groundwater Protection Water Standards. 1,1-DCE and cis-DCE are TCE degradation pathway products (intermediate compounds produced during microbial reductive dechlorination of TCE to benign end products ethene and ethane). No other volatile organics were detected in the GW#8 groundwater sample.

The locations for monitoring wells GW#8, GW#9, and GW#13 were selected, in part, based on their proximity to the SV-22 and SV-21 (Stewart Environmental) soil vapor monitoring wells. In 2007, soil vapor / landfill gas monitoring conducted by Tetra Tech and Stewart identified TCE, Freon, and other volatile organics in the northeast corner of the subject property (near the northern boundary), in locations proximal to QUEST's recently drilled monitoring wells. In their June 5, 2007 soil vapor monitoring assessment, Stewart detected concentrations of TCE in SV-22 which were well above the regulatory standard. TCE was not detected by Stewart in SV-21 (located approximately twenty feet west of GW#13) during their 2007 and 2010 soil vapor monitoring assessments. In January of 2007, landfill gases monitoring (at 18-19 feet below ground surface) conducted by Tetra Tech identified exceedances for eight VOCs, including TCE. Stewart conducted limited soil vapor (at 5 feet and 15-20 feet below ground surface) and detected concentrations of TCE above the regulatory standard in their June 5, 2007 assessment. No VOCs were detected in their June 24, 2007 assessment. Stewart also conducted limited groundwater monitoring (at 18-20 feet below ground surface) and identified 1,1-Dichloroethane (1,1-DCA) above the regulatory standard in one of the paired monitoring points; no other VOCs were detected above the detection limit.

During the April 12, 2016 drilling, QUEST observed the remnants of approximately six rusty metal drums partially buried, but exposed on the surface soils in the northeast corner of the property, in the vicinity of the SV-21 (Stewart Environmental) soil vapor monitoring well. QUEST selected the location for the GW#13 monitoring well based, in part, on observations of drum remnants near SV-21 and potentially contaminated soils in the GW#9 well. The GW#13 well is located down-gradient of the observed drum remnants, but within the same drainage area (and up-gradient) of wells GW#3, GW#8, and GW#9, all wells which contained volatile organics concentrations in excess of regulatory limits (see below for details).

After reviewing the follow-up groundwater sampling results (for monitoring wells GW#8, GW#9, GW#11, GW#12, and GW#13), and conferring with yourself, Pat Riddell, Al Linton, and Dave Stewart (May 4, 2016), QUEST conducted a second follow-up drilling and groundwater sampling assessment in locations south (but in close proximity) of the northern limits of the proposed

development's residential lots, specifically in the northeast portion of the subject site. The purpose of the second follow groundwater assessment was to delineate the southern boundary of the identified on-site contamination in the northeast portion of the subject site and establish an appropriate buffer zone. Between May 10th and 23rd, 2016 four (4) additional wells were drilled (GW#14, GW#15, GW#16, and GW#17) and groundwater was obtained from GW#14, GW#16, and GW#17. Additionally, on May 11, 2016, groundwater was also obtained from TB-1, a test boring hole into which PVC was temporarily set (backfilled, sealed, and purged) one day earlier. Monitoring wells GW#16 and TB-1 are located within the same drainage area as volatile organics-contaminated wells GW#3, GW#8, and GW#9. Wells GW#14, GW#15, and GW#17 are located within a different drainage area that is immediately south of the volatile-organics contaminated drainage area containing GW#3, GW#8, GW#9, GW#16, and TB-1. No groundwater was obtainable from the GW#15 monitoring well (well dry) during this time period; QUEST will continue in their attempts to collect groundwater from temporary monitoring wells GW#10 and GW#15. Two (2) bottles of groundwater were collected from each productive well in laboratory-provided clear glass VOA vial sampling bottles after purging the wells.

As detailed in the table below and the attached laboratory reports, no volatile organics were detected in the GW#14 and GW#17 groundwater samples. The GW#16 and TB-1 groundwater samples, however, contained 1,1-DCE, cis-1,2-DCE, and TCE in exceedance of the CDPHE Groundwater Protection Water Standards. The GW#16 groundwater sample also contained vinyl chloride (VC) in exceedance of the CDPHE Groundwater Protection Water Standard, in addition to concentrations of Freon-113 and THF. No other volatile organics were detected in the GW#16 or TB-1 groundwater samples. VC, in addition to 1,1-DCE and cis-DCE, are degradation products of TCE. VC is a known human and animal carcinogen; the concentration of VC identified in the GW#16 groundwater sample is 5,217 times greater than CDPHE's permissible standard.

Soils from all of these drilled wells (with the exception of GW#9) contained no observable debris, odors, stains, or contamination. However GW#9 soils contained a potent organic smell and were black in color. In the GW#9 monitoring well, the top 1-3 feet of soils consisted of visibly clean appearing fill; from a depth of 3-18 feet the soils consisted of black, organic-rich clayey soils intermixed with plastic and other light debris. A soil sample of this black, organic-rich clayey soil from well GW#9 was collected on April 11, 2016 in a laboratory-provided four-ounce EPA sterile glass jar. The soil and groundwater samples were submitted to Environmental Chemistry Services (ECS) in Castle Rock, Colorado following strict chain-of-custody procedures. The soil and groundwater samples were submitted for volatile organics analysis by EPA Method 8260B.

The following summary tables and attached laboratory reports detail the groundwater and soil sample results as compared with the Colorado Department of Public Health and Environment (CDPHE) Groundwater Protection Values (Groundwater Protection Levels and Water Standards) and the EPA Regional Screening Levels (RSLs) for soils. Since November 28, 2012, the State of Colorado has been utilizing the EPA Regional Screening Levels (RSLs) rather than the previously utilized Colorado Soil Evaluation Values (CSEVs). In the following tables, exceedances are identified in bold.

***Volatile Organics in Groundwater (Collected March 2 and 9, 2016)***

| **Compound** | **GW#3 (µg/L)** | **GW#5 (µg/L)** | **CDPHE Groundwater Standard (ug/L)** |
|---|---|---|---|
| Freon-113 | 50 | ND | NA |
| Trichloroethene (TCE) | **8.3** | ND | 5 |

*ND=None Detected, NA=Not Applicable

***Volatile Organics in Groundwater (Collected April 11, 12, 14, and 25, 2016)***

| **Compound** | **GW#13 (µg/L)** | **GW#8 (µg/L)** | **GW#9 (µg/L)** | **GW#3 (µg/L)** | **GW#5 (µg/L)** | **GW#11 (µg/L)** | **GW#12 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene (1,1-DCE) | ND | ND | ND | **140** | ND | ND | ND | 7 |
| Freon-113 | 0.12 | ND | ND | 160 | ND | ND | ND | NA |
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | ND | **350** | **150** | ND | ND | ND | ND | 14 |
| Tetrahydrofuran (THF) | ND | ND | 270 | 160 | ND | ND | ND | NA |
| Trichloroethene (TCE) | ND | **560** | **130** | **480** | ND | ND | ND | 5 |

*ND=None Detected, NA=Not Applicable

***Volatile Organics in Groundwater (Collected May 11, 16, and 23, 2016)***

| **Compound** | **GW#16 (µg/L)** | **TB-1 (µg/L)** | **GW#14 (µg/L)** | **GW#17 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|---|---|
| Vinyl Chloride (VC) | **120** | ND | ND | ND | 0.023 |
| 1,1-Dichloroethene (1,1-DCE) | **61** | **37** | ND | ND | 7 |
| Freon-113 | 810 | ND | ND | ND | NA |
| 1,1-Dichloroethane (1,1-DCA) | **98** | ND | ND | ND | 61 |
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | **2,500** | **230** | ND | ND | 14 |
| Tetrahydrofuran (THF) | 510 | ND | ND | ND | NA |
| Trichloroethene (TCE) | **4,500** | **610** | ND | ND | 5 |

*ND=None Detected, NA=Not Applicable

***Volatile Organics in GW#9 Soil (Collected April 11, 2016)***

| **Compound** | **Soils at GW#9 (µg/Kg)** | **EPA RSLs (Resident Soil) (µg/Kg)** | **CDPHE Groundwater Protection Level (µg/Kg)** |
|---|---|---|---|
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | 16 | 160,000 | 261 |
| Trichloroethene (TCE) | 20 | 940 | 680 |
| 1,4-Dichlorobenzene | 15 | 2,600 | 7,800 |

In conclusion, no volatile organics (including TCE) exceedances were identified in the soil sample collected from GW#9 as compared to CDPHE Groundwater Protection Values (Groundwater Protection Levels) and EPA RSLs for Resident Soil. However, the soil sample contained concentrations (albeit low) of cis-1,2-DCE, TCE, and 1,4-dichlorobenzene. TCE and cis-1,2-DCE were detected in groundwater collected from GW#3, GW#8, GW#9, GW#16, and TB-1. 1,4-Dichlorobenzene was not detected in any of the groundwater samples. Sampling results identified no detectable concentrations of volatile organics in groundwater collected from GW#13, GW#14, GW#17, GW#11, GW#5, and GW#12. Based on QUEST's visual observation of contaminated

soils in the vicinity of GW#9, in conjunction with the soil and groundwater sampling results, there appears to be on-site volatile organics contamination localized to the northeast portion of the site (within the proposed buffer zone area and inside the current northern residential lot limits), in soils down-gradient of GW#13 and up-gradient of GW#14, GW#17, and GW#11. On-site contamination appears to be limited to the soils between monitoring wells GW#13 and GW#14 / GW#17, which are localized within one drainage area. Wells GW#14 and GW#17 are located within a different drainage area that is immediately south of the volatile-organics contaminated drainage area containing GW#3, GW#8, GW#9, GW#16, and TB-1. As such, you may wish to extend the currently proposed buffer zone area at the northeast portion of the subject site to include soils located within the impacted drainage area and concurrently move south, the northern limits of the proposed development's residential lots, to a location south of the drainage area that contains GW#14 and GW#17.

*PID Field Screening*

For field screening purposes, QUEST utilized a MultiRAE PGM-6228 photo-ionization chemical detector (PID) to measure airborne concentrations of combustible gasses (% LEL), total volatile organic compounds (TVOCs in ppm), hydrogen sulfide (ppm), carbon monoxide (ppm), and oxygen (%) in, and around, the monitoring wells during fifteen (15) site visits between February and May of 2016, at times in which drilling and groundwater collection activities occurred. QUEST consistently detected moderate to high airborne concentrations of LEL in monitoring wells GW#1 and #4 (from 8% - >99%), and very low concentrations in GW#7 and GW#14 (2% – 8%). LEL was also detected in GW#9 (4% - >99%) and GW#13 (13%) during our April 2016 site visits. No LEL was ever detected in monitoring wells GW#3, GW#6, GW#8, GW#10, GW#11, GW#12, GW#16, GW#17, and TB-1.

Airborne concentrations of TVOCs were consistently detected in monitoring wells GW#1 (0.8 ppm – 2.7 ppm), GW#3 (2.6 ppm – 10.6 ppm), GW#7 (0.5 ppm – 3.5 ppm), GW#8 (9.2 ppm - 54.6 ppm), and GW#9 (0.4 ppm - 6.4 ppm), GW#16 (27.1 ppm – 120.4 ppm), and TB-1 (3.2 ppm – 7.4 ppm). TVOCs were detected, although not consistently and in low concentrations (0.4 ppm – 1.4 ppm), in monitoring wells GW#6, GW#10, GW#11, GW#13, GW#14, and GW#15. No TVOCs or only background TVOC concentrations (0.0-0.2 ppm) were detected in monitoring wells GW#2, GW#4, GW#5, GW#12, and GW#17.

There appears to be some correlation between the consistently detected airborne concentrations of TVOCs in monitoring wells GW#3, GW#8, GW#9, GW#16, and TB-1 and the identified concentrations of volatile organics in the groundwater samples collected from GW#3, GW#8, GW#9, GW#16, and TB-1 as these wells consistently present with the highest detectable concentrations of TVOCs. PID field screening for airborne TVOCs in those monitoring wells which are currently not producing water appears to be a reasonable indicator of volatile organics contamination in those locations. Based on this information, volatile organics contamination may also be present in locations corresponding to monitoring wells GW#1 and GW#7, as consistent TVOC concentrations have been detected by PID field screening in both of these wells. Wells GW#1 and GW#7 are located along the subject site's northern boundary, immediately adjacent to the Old Erie and Denver Regional Landfills. If contamination is present in these locations, it

likely leached onto the subject property from one or both of the adjacent landfills. Conversely, consistently low or non-detectable TVOC concentrations were identified in wells GW#6, GW#10, and GW#15, potentially indicating that these locations are devoid of volatile organics contamination. Further studies are needed in order to determine the exact extent, if any, of contamination in the proposed buffer zone areas along the northern boundary, in locations between the landfills and up-gradient of GW#11, GW#14, and GW#17.

**Conclusions**

QUEST visual findings, in conjunction with the laboratory results, indicate that contaminated soils are present on site, in and around the vicinity of monitoring well GW#9. The observed drum remnants near (up-gradient of) monitoring well GW#13 do not appear to be contributing to the identified on-site contamination, as groundwater collected from GW#13 contained no detectable concentrations of volatile organics. On-site volatile organics contamination appears to be localized to the northeast portion of the site (within the proposed buffer zone area and inside the northern residential lot limits at the east end of the site), in the area down-gradient of GW#13 (to the north) and up-gradient of GW#11, GW#14, and GW#17 (to the south). Wells GW#14 and GW#17 contained clean groundwater and are located within a different drainage area that is immediately south of the volatile-organics contaminated drainage area containing GW#3, GW#8, GW#9, GW#16, and TB-1.

Numerous attempts have been made to obtain groundwater from wells GW#6, GW#10, and GW#15, to conclusively delineate the southwest limit of the area of contamination. However, it appears that no shallow groundwater system(s) exist in this area, thereby limiting the potential for volatile organics contamination migration in these locations. Additionally, PID field screening identified consistently low to none detected concentrations of airborne TVOCs in monitoring wells GW#6, GW#10, and GW#15. Based on this information, QUEST concludes that the current extent of contamination is limited to the areas northeast of GW#6, GW#10, GW#15, GW#14, and GW#17, and southwest of GW#13.

Although the concentrations of volatile organics (cis-1,2-DCE, TCE, and 1,4-dichlorobenzene) detected in well GW#9 soils did not exceed regulatory limits; TCE and cis-1,2-DCE groundwater concentrations from wells producing groundwater within the northeast portion of the property (GW#3, GW#8, GW#9, GW#16, and TB-1) exceeded CDPHE Groundwater Protection Water Standards, with highest concentrations detected in well GW#16. Of note, Tetra Tech, as detailed in their February 2, 2007 *Summary Report of Preliminary Site Investigation Activities* report, observed soil vapor TCE concentrations in monitoring point SV-3 (also referred to as SV-3 TT in the Stewart Environmental reports) that exceeded the risk-based screening level by a factor of nearly 20,000. Tetra Tech also observed a 1,1-DCE soil vapor concentration in SV-3 which exceeded the risk-based screening level by a factor of 11. SV-3 is located at the northeastern-most point of the subject property, just south of the Old Erie Landfill. Soil vapor samples were evaluated against risk-based screening levels developed in accordance with the Target Shallow Soil Gas Concentration values, as determined utilizing USEPA's *2002 Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils*. As detailed in their

September 14, 2007 *Supplemental Soil Vapor Investigation – Property South of the Old Erie Landfill, Erie, Colorado* report, Stewart collected a perched water sample from monitoring point SV-10 that was found to contain an exceedance for 1,1-DCA. Tetra Tech's and Stewart's findings indicate that TCE, 1,1-DCE, and 1,1-DCA contamination on the subject site may be due to landfill leachate from the Old Erie Landfill, given the proximity of SV-3 and SV-10, to this landfill.

No volatile organic compounds were detected in the groundwater samples from wells GW#12, GW#5, GW#11, GW#14, and GW17 indicating that no groundwater contamination was detected down-gradient (southwest) of these locations. The existing buffer zone near GW#12, GW#5, GW#11 appears to be sufficient for planned residential development. However, due to the presence of volatile organics contamination in the northeast portion of the subject site, you may wish to move the northeastern limit of the proposed development's residential lots south from its current proposed location to immediately south of the drainage area that contains GW#14 and GW#17.

QUEST will continue our attempts to collect groundwater from those temporary monitoring wells that have not yet produced groundwater in order to further characterize contamination in the subject site's shallow groundwater system(s) and to determine if leachate from the adjacent landfills is contributing to observed site contamination. If you have any questions, please contact Bob Woellner or Tony Konowal at QUST Environmental at 303-935-1573. We look forward to our continued association.

Sincerely,

Robert A. Woellner
President / Environmental Professional

Anatole Konowal
Project Manager / Environmental Professional

Attachments: Feb. 22 and 24; March 2 and 9; April 11, 12, and 25 2016; and May 10, 16, 20, 23, and 31, 2016 Site Photographs
Laboratory Reports
Redtail Ranch Preliminary Plat
Redtail Ranch North Development Limits Map
Redtail Ranch Temporary Monitoring Wells Maps (Entire Site)
Redtail Ranch Temporary Monitoring Wells Maps (Northeast Portion of Site)

**February 22, 2016 Site Photographs**

On February 22, 2016, monitoring wells (GW #1 – GW #5) were drilled by Site Services (GW #1 pictured here).

On February 22, 2016, monitoring wells (GW #1 – GW #5) were drilled by Site Services (GW #2 pictured here).

On February 22, 2016, monitoring wells (GW #1 – GW #5) were drilled by Site Services (GW #3 pictured here).

On February 22, 2016, monitoring wells (GW #1 – GW #5) were drilled by Site Services (GW #4 pictured here).

On February 22, 2016, monitoring wells (GW #1 – GW #5) were drilled by Site Services (GW #5 pictured here).

In each well, slotted PVC was temporarily set in the bottom ten or fifteen feet of the well secured to solid PVC to above ground surface for the collection of groundwater samples. A padlock was utilized with the monitoring well caps.

**February 24, 2016 Site Photos**

On February 24, 2016, monitoring wells (GW #6 and #7) were drilled by Site Services (GW #6 pictured here).

On February 24, 2016, monitoring wells (GW #6 and #7) were drilled by Site Services (GW #7 pictured here).

In GW#1, PID field screening detected 2.3 ppm of TVOCs and 38% LEL.

**March 2, 2016 Site Photos**

PID field screening detected TVOCs in GW#1 and GW#7 (GW#1 pictured here).

A groundwater sample was collected from the GW#5 temporary monitoring well.

**March 9, 2016 Site Photos**

PID field screening detected TVOCs in GW#1, #3, #6, and #7 (GW#3 pictured here).

A groundwater sample was collected from the GW#3 temporary monitoring well.

**April 11, 2016 Site Photographs**

On April 11 & 12, 2016, QUEST conducted follow-up drilling for temporary monitoring wells (GW#8 - #13) near the northern development limit at the Redtail Ranch site.

The northern residential lot limits had been staked out at the time of drilling.

On April 11, 2016, monitoring wells (GW #8 - #11) were drilled by Site Services (GW #8 pictured here). A groundwater sample was collected from the GW#8 temporary monitoring well.

Monitoring well GW#8 is located approximately 105 feet north of the current northern residential lot property limits.

On April 11, 2016, monitoring wells (GW #8 - #11) were drilled by Site Services (GW #9 pictured here). Groundwater and soil samples were collected from the GW#9 temporary monitoring well.

In the GW#9 monitoring well, the top 1-3 feet of soils consisted of visibly clean soils; soils between 3 and18 feet below ground surface consisted of black, organic-rich clayey soils intermixed with plastic / light debris. A soil sample of this black, organic-rich clayey soil from well GW#9 was collected and analyzed.

PID field screening detected TVOCs in newly drilled monitoring wells GW#8, GW#9, GW#10, and GW#11 (GW#9 pictured here).

On April 11, 2016, monitoring wells (GW #8 - #11) were drilled by Site Services (GW#10 pictured here).

On April 11, 2016, monitoring wells (GW #8 - #11) were drilled by Site Services (GW #11 pictured here). A groundwater sample was collected from the GW#11 temporary monitoring well.

**April 12, 2016 Site Photographs**

On April 12, 2016, monitoring wells (GW #12 and GW#13) were drilled by Site Services (GW #12 pictured here). On April 14, 2016, a groundwater sample was collected from the GW#12 temporary monitoring well.

On April 12, 2016, QUEST observed the remnants of approximately six rusty metal drums in surface soils near the northeast corner of the property, in the vicinity of GW#13 and the SV-22 (Stewart Environmental) soil vapor monitoring well.

On April 12, 2016, QUEST observed the remnants of approximately six rusty metal drums in surface soils near the northeast corner of the property, in the vicinity of GW#13 and the SV-22 (Stewart Environmental) soil vapor monitoring well.

On April 12, 2016, QUEST observed the remnants of approximately six rusty metal drums in surface soils near the northeast corner of the property, in the vicinity of GW#13 and the SV-22 (Stewart Environmental) soil vapor monitoring well.

The GW#13 well is located down-gradient of the observed drum remnants, but within the same drainage area (and up-gradient) of wells GW#3, GW#8, and GW#9, all wells which contain volatile organics concentrations in excess of regulatory limits.

The GW#13 well is located down-gradient of the observed drum remnants, but within the same drainage area (and up-gradient) of wells GW#3, GW#8, and GW#9, all wells which contain volatile organics concentrations in excess of regulatory limits (GW#9 visible in background).

**April 25, 2016 Site Photographs**

A groundwater sample was collected from the GW#13 temporary monitoring well.

**May 10, 2016 Site Photographs**

On May 10, 2016, monitoring wells (GW#14 and GW#16) were drilled by Site Services (GW #14 pictured here).

On May 10, 2016, monitoring wells (GW#14 and GW#16) were drilled by Site Services (GW#16 pictured here). On May 11, 2016, a groundwater sample was collected from the GW#16 temporary monitoring well.

PID field screening detected very low TVOCs in newly drilled monitoring well GW#14.

PID field screening detected significant TVOCs in newly drilled monitoring well GW#16.

PVC was temporarily installed in TB-1 (located in close proximity to GW#16), a test boring hole previously drilled by A.G. Wassenaar in early April of 2016 for a geotechnical site development study. On May 11, 2016, the boring hole was back filled, sealed with bentonite, the groundwater was purged, then a groundwater sample was collected from the TB-1 temporary monitoring well.

**May 16, 2016 Site Photographs**

A groundwater sample was collected from the GW#14 temporary monitoring well.

**May 20, 2016 Site Photographs**

On May 23, 2016, monitoring well GW#17 was drilled by Site Services. Well GW#17 is located approximately 150 feet south/southeast of volatile organics contaminated well GW#16 (GW#16 pictured in foreground).

Well GW#17 is located up-gradient (and within the same drainage) of well GW#14.

PID field screening detected no TVOCs in newly drilled monitoring well GW#17.

**May 23, 2016 Site Photographs**

On May 23, 2016, monitoring well GW#15 was drilled by Site Services.

A groundwater sample was collected from the GW#17 temporary monitoring well.

**May 31, 2016 Site Photographs**

PID field screening detected low TVOCs in recently drilled monitoring well GW#15.

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

March 07, 2016

Tony Konowal
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1603005

Dear Tony Konowal:

Environmental Chemistry Services, Inc. received 1 sample(s) on 3/3/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, , unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1603005**
Date: **3/7/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1603005: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *07-Mar-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160216901-GW5 |
| **Work Order:** | 1603005 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 3/2/2016 4:15:00 PM |
| **Lab ID:** | 1603005-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| MTBE | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| THF | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Benzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Trichloroethene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 2-CEVE | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Toluene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| EDB | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *07-Mar-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160216901-GW5 |
| **Work Order:** | 1603005 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 3/2/2016 4:15:00 PM |
| **Lab ID:** | 1603005-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| PCE | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Styrene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| DBCP | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/4/2016 11:21:00 AM |
| Surr: Dibromofluoromethane | 99.4 | 79.2-122 | | %Rec | 1 | 3/4/2016 11:21:00 AM |
| Surr: 1,2-Dichloroethane-d4 | 104 | 80-120 | | %Rec | 1 | 3/4/2016 11:21:00 AM |
| Surr: Toluene-d8 | 108 | 80-120 | | %Rec | 1 | 3/4/2016 11:21:00 AM |
| Surr: 4-Bromofluorobenzene | 103 | 89.6-118 | | %Rec | 1 | 3/4/2016 11:21:00 AM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

Environmental Chemistry Services, Inc.
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TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1603005**

***07-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2609**

Sample ID **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2609**
Client ID: **LCSW** Batch ID: **R2609** TestNo: **SW8260C** Analysis Date: **3/4/2016** SeqNo: **34077**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 110 | 1.0 | 100.0 | 0 | 110 | 47 | 147 | | | | |
| Benzene | 110 | 1.0 | 100.0 | 0 | 111 | 73 | 125 | | | | |
| Trichloroethene | 100 | 1.0 | 100.0 | 0 | 102 | 66.7 | 119 | | | | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 110 | 73.6 | 124 | | | | |
| Chlorobenzene | 120 | 1.0 | 100.0 | 0 | 120 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.6 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 53 | | 50.00 | | 105 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 103 | 94.2 | 110 | | | | |

Sample ID **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2609**
Client ID: **LCSS02** Batch ID: **R2609** TestNo: **SW8260C** Analysis Date: **3/4/2016** SeqNo: **34078**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 120 | 1.0 | 100.0 | 0 | 115 | 47 | 147 | 109.8 | 4.73 | 15 | |
| Benzene | 120 | 1.0 | 100.0 | 0 | 115 | 73 | 125 | 110.8 | 3.77 | 15 | |
| Trichloroethene | 100 | 1.0 | 100.0 | 0 | 104 | 66.7 | 119 | 102.0 | 1.46 | 15 | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 112 | 73.6 | 124 | 109.9 | 2.20 | 15 | |
| Chlorobenzene | 120 | 1.0 | 100.0 | 0 | 122 | 74.8 | 125 | 120.2 | 1.83 | 15 | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.6 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 52 | | 50.00 | | 105 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 51 | | 50.00 | | 103 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1603005**

***07-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2609**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2609**
Client ID: **PBW** Batch ID: **R2609** TestNo: **SW8260C** Analysis Date: **3/4/2016** SeqNo: **34079**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1603005**

***07-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2609**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2609**
Client ID: **PBW** Batch ID: **R2609** TestNo: **SW8260C** Analysis Date: **3/4/2016** SeqNo: **34079**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| 2-CEVE | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1603005**

***07-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2609**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2609**
Client ID: **PBW** Batch ID: **R2609** TestNo: **SW8260C** Analysis Date: **3/4/2016** SeqNo: **34079**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.7 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 53 | | 50.00 | | 105 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 109 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 51 | | 50.00 | | 102 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
Environmental Chemistry Services
2 Oakwood Park Plaza, Suite 100
Castle Rock, Colorado 80104
Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 14519

**PROJECT INFORMATION**

Project Number: 1602169-01
Project Name: Stratus; Red Tail Ranch
Report To: konowal@questmi.com admin@questmi.com woellner@questmi.com
Telephone: 303-435-1573
Fax / E-Mail:

**ANALYSES REQUESTED**

NUMBER OF CONTAINERS: 2
8260-VOA: ✓

**TURN-AROUND-TIME (TAT)**: ☒ Standard ☐ Rush ☐ Other

**REMARKS**

QUEST

Work Order Number: *(for lab use only)* 1603005

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size.** | NUMBER OF CONTAINERS | 8260-VOA | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|---|
| 1602169-01-GW5 | 3/2/16 | 4:15pm | AQ | C | 2 | ✓ | | | 1 |

Sampled By: Tony Konowal
Shipment Method:
Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | Maggie Masters | Maggie Masters | Quest Environmental | 3/3/16 | 1356 |
| 1b Received By: | | Tom Mascarenas | ECS | 3/3/16 | 1356 |
| 2a Relinquished By: | | | | | |
| 2b Received By: | | | | | |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

***Matrix Key:** AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other
****Container:** A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other
**Preservative:** H = HCl N = Nitric SF = Sulfuric

Page _____ of _____

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

March 10, 2016

Tony Konowal
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1603016

Dear Tony Konowal:

Environmental Chemistry Services, Inc. received 1 sample(s) on 3/9/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, , unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1603016**
Date: **3/10/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1603016: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *10-Mar-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160216901-GW3 |
| **Work Order:** | 1603016 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 3/9/2016 12:15:00 PM |
| **Lab ID:** | 1603016-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Freon-113 | 50 | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Trichloroethene | 8.3 | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *10-Mar-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160216901-GW3 |
| **Work Order:** | 1603016 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 3/9/2016 12:15:00 PM |
| **Lab ID:** | 1603016-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 3/9/2016 8:30:00 PM |
| Surr: Dibromofluoromethane | 104 | 79.2-122 | | %Rec | 1 | 3/9/2016 8:30:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 105 | 80-120 | | %Rec | 1 | 3/9/2016 8:30:00 PM |
| Surr: Toluene-d8 | 107 | 80-120 | | %Rec | 1 | 3/9/2016 8:30:00 PM |
| Surr: 4-Bromofluorobenzene | 104 | 89.6-118 | | %Rec | 1 | 3/9/2016 8:30:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

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# QC SUMMARY REPORT

Work Order: **1603016**

***10-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2614**

Sample ID **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2614**
Client ID: **LCSW** Batch ID: **R2614** TestNo: **SW8260C** Analysis Date: **3/9/2016** SeqNo: **34152**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 96 | 1.0 | 100.0 | 0 | 96.1 | 47 | 147 | | | | |
| Benzene | 100 | 1.0 | 100.0 | 0 | 102 | 73 | 125 | | | | |
| Trichloroethene | 89 | 1.0 | 100.0 | 0 | 88.7 | 66.7 | 119 | | | | |
| Toluene | 97 | 1.0 | 100.0 | 0 | 96.7 | 73.6 | 124 | | | | |
| Chlorobenzene | 100 | 1.0 | 100.0 | 0 | 104 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 52 | | 50.00 | | 105 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 53 | | 50.00 | | 105 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 107 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 51 | | 50.00 | | 103 | 94.2 | 110 | | | | |

Sample ID **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2614**
Client ID: **LCSS02** Batch ID: **R2614** TestNo: **SW8260C** Analysis Date: **3/9/2016** SeqNo: **34153**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 92 | 1.0 | 100.0 | 0 | 91.5 | 47 | 147 | 96.06 | 4.85 | 15 | |
| Benzene | 99 | 1.0 | 100.0 | 0 | 98.9 | 73 | 125 | 101.6 | 2.75 | 15 | |
| Trichloroethene | 86 | 1.0 | 100.0 | 0 | 85.7 | 66.7 | 119 | 88.70 | 3.48 | 15 | |
| Toluene | 94 | 1.0 | 100.0 | 0 | 93.9 | 73.6 | 124 | 96.71 | 2.94 | 15 | |
| Chlorobenzene | 100 | 1.0 | 100.0 | 0 | 101 | 74.8 | 125 | 103.8 | 2.31 | 15 | |
| Surr: Dibromofluoromethane | 52 | | 50.00 | | 104 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 53 | | 50.00 | | 105 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 107 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 103 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1603016**

***10-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2614**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2614**
Client ID: **PBW** Batch ID: **R2614** TestNo: **SW8260C** Analysis Date: **3/9/2016** SeqNo: **34154**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1603016**

***10-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2614**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2614**
Client ID: **PBW** Batch ID: **R2614** TestNo: **SW8260C** Analysis Date: **3/9/2016** SeqNo: **34154**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1603016**

***10-Mar-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2614**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2614**
Client ID: **PBW** Batch ID: **R2614** TestNo: **SW8260C** Analysis Date: **3/9/2016** SeqNo: **34154**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 52 | | 50.00 | | 105 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 53 | | 50.00 | | 106 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 107 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 103 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
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Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 14520

**PROJECT INFORMATION**

Project Number: 1602169-01

Project Name: Stratus; Red Tail Ranch

Report To: konowal@questmi.com, weellner@questmi.com, admin@questmi.com

Telephone: 303-935-1573

Fax / E-Mail:

**ANALYSES REQUESTED**

NUMBER OF CONTAINERS: 2

8260-VOA ✓

**TURN-AROUND-TIME (TAT)**: ☐ Standard ☒ Rush ☐ Other

**REMARKS**: QUEST

Work Order Number: *(for lab use only)* 1603016

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size** | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|
| 16021601-GW3 | 3/9/16 | 12:15pm | AQ | C | | | 1 |

Sampled By: Tony Konowal

Shipment Method: Drop-off

Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | [illegible] | Tony Konowal | QUEST Env. | 3/9/16 | 2:05pm |
| 1b Received By: | Maggie Masters | Maggie Masters | QUEST Env. | 3/9/16 | 2:05pm |
| 2a Relinquished By: | Maggie Masters | Maggie Masters | QUEST Env | 3/9/16 | 4:30pm |
| 2b Received By: | [illegible] | KRIS MASCARENAS | ECS | 3.9.16 | 16:30 |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

***Matrix Key:** AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other

**Preservative:** H = HCl N = Nitric SF = Sulfuric

****Container:** A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

April 15, 2016

Robert Woellner
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1604028

Dear Robert Woellner:

Environmental Chemistry Services, Inc. received 6 sample(s) on 4/12/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, 1604028, unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1604028**
Date: **4/15/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1604028: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-08 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 1:25:00 PM |
| **Lab ID:** | 1604028-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| cis-1,2-Dichloroethene | 350 | 10 | D | µg/L | 10 | 4/14/2016 9:17:00 AM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Trichloroethene | 560 | 10 | D | µg/L | 10 | 4/14/2016 9:17:00 AM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-08 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 1:25:00 PM |
| **Lab ID:** | 1604028-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 8:56:00 PM |
| Surr: Dibromofluoromethane | 99.0 | 79.2-122 | | %Rec | 1 | 4/13/2016 8:56:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 104 | 80-120 | | %Rec | 1 | 4/13/2016 8:56:00 PM |
| Surr: Toluene-d8 | 106 | 80-120 | | %Rec | 1 | 4/13/2016 8:56:00 PM |
| Surr: 4-Bromofluorobenzene | 100 | 89.6-118 | | %Rec | 1 | 4/13/2016 8:56:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-03 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 10:10:00 AM |
| **Lab ID:** | 1604028-02A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,1-Dichloroethene | 140 | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Freon-113 | 160 | 5.0 | D | µg/L | 5 | 4/14/2016 9:39:00 AM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| THF | 160 | 10 | D | µg/L | 5 | 4/14/2016 9:39:00 AM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Trichloroethene | 480 | 5.0 | D | µg/L | 5 | 4/14/2016 9:39:00 AM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-03 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 10:10:00 AM |
| **Lab ID:** | 1604028-02A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:18:00 PM |
| Surr: Dibromofluoromethane | 98.6 | 79.2-122 | | %Rec | 1 | 4/13/2016 9:18:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 105 | 80-120 | | %Rec | 1 | 4/13/2016 9:18:00 PM |
| Surr: Toluene-d8 | 106 | 80-120 | | %Rec | 1 | 4/13/2016 9:18:00 PM |
| Surr: 4-Bromofluorobenzene | 100 | 89.6-118 | | %Rec | 1 | 4/13/2016 9:18:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-05 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 11:15:00 AM |
| **Lab ID:** | 1604028-03A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Trichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-05 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 11:15:00 AM |
| **Lab ID:** | 1604028-03A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 9:40:00 PM |
| Surr: Dibromofluoromethane | 98.5 | 79.2-122 | | %Rec | 1 | 4/13/2016 9:40:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 104 | 80-120 | | %Rec | 1 | 4/13/2016 9:40:00 PM |
| Surr: Toluene-d8 | 106 | 80-120 | | %Rec | 1 | 4/13/2016 9:40:00 PM |
| Surr: 4-Bromofluorobenzene | 101 | 89.6-118 | | %Rec | 1 | 4/13/2016 9:40:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-09 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 1:40:00 PM |
| **Lab ID:** | 1604028-04A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| cis-1,2-Dichloroethene | 150 | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| THF | 270 | 4.0 | D | µg/L | 2 | 4/14/2016 10:01:00 AM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Trichloroethene | 130 | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-09 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 1:40:00 PM |
| **Lab ID:** | 1604028-04A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:02:00 PM |
| Surr: Dibromofluoromethane | 99.2 | 79.2-122 | | %Rec | 1 | 4/13/2016 10:02:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 105 | 80-120 | | %Rec | 1 | 4/13/2016 10:02:00 PM |
| Surr: Toluene-d8 | 106 | 80-120 | | %Rec | 1 | 4/13/2016 10:02:00 PM |
| Surr: 4-Bromofluorobenzene | 100 | 89.6-118 | | %Rec | 1 | 4/13/2016 10:02:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-09 soil |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 9:45:00 AM |
| **Lab ID:** | 1604028-05A | **Matrix:** | SOIL |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Chloromethane | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Vinyl chloride | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Bromomethane | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Chloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Freon-11 | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,1-Dichloroethene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Methylene chloride | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Freon-113 | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,1,2-Trichloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Carbon disulfide | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| trans-1,2-Dichloroethene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Methyl tert-butyl ether | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,1-Dichloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Chloroprene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| cis-1,2-Dichloroethene | 16 | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Bromochloromethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Chloroform | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 2,2-Dichloropropane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| THF | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2-Dichloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,1,1-Trichloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,1-Dichloropropene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Carbon tetrachloride | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Benzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Dibromomethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2-Dichloropropane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Trichloroethene | 20 | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Bromodichloromethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Methyl methacrylate | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| cis-1,3-Dichloropropene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Methyl isobutyl ketone | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| trans-1,3-Dichloropropene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Toluene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,3-Dichloropropane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Ethyl methacrylate | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Dibromochloromethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2-Dibromoethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Tetrachloroethene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-09 soil |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/11/2016 9:45:00 AM |
| **Lab ID:** | 1604028-05A | **Matrix:** | SOIL |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: | **SW8260C** | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Chlorobenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Ethyl benzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| m,p-Xylene | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Bromoform | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Styrene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| o-Xylene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2,3-Trichloropropane | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Isopropylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Bromobenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| n-Propylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 2-Chlorotoluene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 4-Chlorotoluene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,3,5-Trimethylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| tert-Butylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| sec-Butylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2,4-Trimethylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,3-Dichlorobenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 4-Isopropyltoluene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,4-Dichlorobenzene | 15 | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2-Dichlorobenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| n-Butylbenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2,4-Trichlorobenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Naphthalene | ND | 10 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Hexachlorobutadiene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| 1,2,3-Trichlorobenzene | ND | 5.0 | | µg/Kg | 1 | 4/14/2016 5:35:00 PM |
| Surr: Dibromofluoromethane | 100 | 50-150 | | %Rec | 1 | 4/14/2016 5:35:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 101 | 50-150 | | %Rec | 1 | 4/14/2016 5:35:00 PM |
| Surr: Toluene-d8 | 109 | 50-150 | | %Rec | 1 | 4/14/2016 5:35:00 PM |
| Surr: 4-Bromofluorobenzene | 102 | 50-150 | | %Rec | 1 | 4/14/2016 5:35:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-11 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/12/2016 8:35:00 AM |
| **Lab ID:** | 1604028-06A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Trichloroethene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *15-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-11 gw |
| **Work Order:** | 1604028 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/12/2016 8:35:00 AM |
| **Lab ID:** | 1604028-06A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/13/2016 10:23:00 PM |
| Surr: Dibromofluoromethane | 99.1 | 79.2-122 | | %Rec | 1 | 4/13/2016 10:23:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 105 | 80-120 | | %Rec | 1 | 4/13/2016 10:23:00 PM |
| Surr: Toluene-d8 | 105 | 80-120 | | %Rec | 1 | 4/13/2016 10:23:00 PM |
| Surr: 4-Bromofluorobenzene | 99.8 | 89.6-118 | | %Rec | 1 | 4/13/2016 10:23:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

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Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2679**

Sample ID **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2679**
Client ID: **LCSW** Batch ID: **R2679** TestNo: **SW8260C** Analysis Date: **4/13/2016** SeqNo: **35274**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 75 | 1.0 | 100.0 | 0 | 75.0 | 47 | 147 | | | | |
| Benzene | 94 | 1.0 | 100.0 | 0 | 93.7 | 73 | 125 | | | | |
| Trichloroethene | 85 | 1.0 | 100.0 | 0 | 85.1 | 66.7 | 119 | | | | |
| Toluene | 90 | 1.0 | 100.0 | 0 | 90.3 | 73.6 | 124 | | | | |
| Chlorobenzene | 99 | 1.0 | 100.0 | 0 | 98.8 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 46 | | 50.00 | | 92.5 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 45 | | 50.00 | | 90.3 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 51 | | 50.00 | | 102 | 94.2 | 110 | | | | |

Sample ID **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2679**
Client ID: **LCSS02** Batch ID: **R2679** TestNo: **SW8260C** Analysis Date: **4/13/2016** SeqNo: **35275**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 77 | 1.0 | 100.0 | 0 | 76.9 | 47 | 147 | 74.95 | 2.61 | 15 | |
| Benzene | 100 | 1.0 | 100.0 | 0 | 101 | 73 | 125 | 93.66 | 7.91 | 15 | |
| Trichloroethene | 94 | 1.0 | 100.0 | 0 | 94.0 | 66.7 | 119 | 85.08 | 9.97 | 15 | |
| Toluene | 100 | 1.0 | 100.0 | 0 | 102 | 73.6 | 124 | 90.29 | 12.3 | 15 | |
| Chlorobenzene | 110 | 1.0 | 100.0 | 0 | 110 | 74.8 | 125 | 98.79 | 10.4 | 15 | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 97.5 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 52 | | 50.00 | | 105 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 106 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 50 | | 50.00 | | 101 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2679**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2679**
Client ID: **PBW** Batch ID: **R2679** TestNo: **SW8260C** Analysis Date: **4/13/2016** SeqNo: **35276**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2679**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2679**
Client ID: **PBW** Batch ID: **R2679** TestNo: **SW8260C** Analysis Date: **4/13/2016** SeqNo: **35276**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2679**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2679**
Client ID: **PBW** Batch ID: **R2679** TestNo: **SW8260C** Analysis Date: **4/13/2016** SeqNo: **35276**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 97.5 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 52 | | 50.00 | | 105 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 106 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 50 | | 50.00 | | 100 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
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TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2682**

Sample ID **LCS** SampType: **LCS** TestCode: **8260C_S** Units: **µg/Kg** Prep Date: RunNo: **2682**
Client ID: **LCSS** Batch ID: **R2682** TestNo: **SW8260C** Analysis Date: **4/14/2016** SeqNo: **35325**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 94 | 5.0 | 100.0 | 0 | 94.3 | 50 | 150 | | | | |
| Benzene | 110 | 5.0 | 100.0 | 0 | 109 | 50 | 150 | | | | |
| Trichloroethene | 100 | 5.0 | 100.0 | 0 | 103 | 50 | 150 | | | | |
| Toluene | 100 | 5.0 | 100.0 | 0 | 105 | 50 | 150 | | | | |
| Chlorobenzene | 110 | 5.0 | 100.0 | 0 | 113 | 50 | 150 | | | | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.3 | 40 | 150 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 46 | | 50.00 | | 92.1 | 40 | 150 | | | | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 107 | 40 | 150 | | | | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 105 | 40 | 150 | | | | |

Sample ID **LCSD** SampType: **LCSD** TestCode: **8260C_S** Units: **µg/Kg** Prep Date: RunNo: **2682**
Client ID: **LCSS02** Batch ID: **R2682** TestNo: **SW8260C** Analysis Date: **4/14/2016** SeqNo: **35326**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 79 | 5.0 | 100.0 | 0 | 78.7 | 50 | 150 | 94.33 | 18.0 | 30 | |
| Benzene | 100 | 5.0 | 100.0 | 0 | 102 | 50 | 150 | 109.2 | 7.05 | 30 | |
| Trichloroethene | 94 | 5.0 | 100.0 | 0 | 94.2 | 50 | 150 | 103.3 | 9.15 | 30 | |
| Toluene | 96 | 5.0 | 100.0 | 0 | 96.1 | 50 | 150 | 104.5 | 8.38 | 30 | |
| Chlorobenzene | 100 | 5.0 | 100.0 | 0 | 102 | 50 | 150 | 113.1 | 10.4 | 30 | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.4 | 40 | 150 | | 0 | 30 | |
| Surr: 1,2-Dichloroethane-d4 | 46 | | 50.00 | | 93.0 | 40 | 150 | | 0 | 30 | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 106 | 40 | 150 | | 0 | 30 | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 104 | 40 | 150 | | 0 | 30 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2682**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_S** Units: **µg/Kg** Prep Date: RunNo: **2682**
Client ID: **PBS** Batch ID: **R2682** TestNo: **SW8260C** Analysis Date: **4/14/2016** SeqNo: **35327**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 10 | | | | | | | | | |
| Chloromethane | ND | 10 | | | | | | | | | |
| Vinyl chloride | ND | 5.0 | | | | | | | | | |
| Bromomethane | ND | 10 | | | | | | | | | |
| Chloroethane | ND | 5.0 | | | | | | | | | |
| Freon-11 | ND | 10 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 5.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 5.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 5.0 | | | | | | | | | |
| Carbon disulfide | ND | 5.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 5.0 | | | | | | | | | |
| Methyl tert-butyl ether | ND | 5.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 5.0 | | | | | | | | | |
| Chloroprene | ND | 5.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 5.0 | | | | | | | | | |
| Bromochloromethane | ND | 5.0 | | | | | | | | | |
| Chloroform | ND | 5.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 5.0 | | | | | | | | | |
| THF | ND | 5.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 5.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 5.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 5.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 5.0 | | | | | | | | | |
| Benzene | ND | 5.0 | | | | | | | | | |
| Dibromomethane | ND | 5.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch
**BatchID:** **R2682**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_S** Units: **µg/Kg** Prep Date: RunNo: **2682**
Client ID: **PBS** Batch ID: **R2682** TestNo: **SW8260C** Analysis Date: **4/14/2016** SeqNo: **35327**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,2-Dichloropropane | ND | 5.0 | | | | | | | | | |
| Trichloroethene | ND | 5.0 | | | | | | | | | |
| Bromodichloromethane | ND | 5.0 | | | | | | | | | |
| Methyl methacrylate | ND | 5.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 5.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 5.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 5.0 | | | | | | | | | |
| Toluene | ND | 5.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 5.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 5.0 | | | | | | | | | |
| Dibromochloromethane | ND | 5.0 | | | | | | | | | |
| 1,2-Dibromoethane | ND | 5.0 | | | | | | | | | |
| Tetrachloroethene | ND | 5.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 5.0 | | | | | | | | | |
| Chlorobenzene | ND | 5.0 | | | | | | | | | |
| Ethyl benzene | ND | 5.0 | | | | | | | | | |
| m,p-Xylene | ND | 10 | | | | | | | | | |
| Bromoform | ND | 5.0 | | | | | | | | | |
| Styrene | ND | 5.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 5.0 | | | | | | | | | |
| o-Xylene | ND | 5.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 10 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 5.0 | | | | | | | | | |
| Isopropylbenzene | ND | 5.0 | | | | | | | | | |
| Bromobenzene | ND | 5.0 | | | | | | | | | |
| n-Propylbenzene | ND | 5.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604028**

***15-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2682**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_S** Units: **µg/Kg** Prep Date: RunNo: **2682**
Client ID: **PBS** Batch ID: **R2682** TestNo: **SW8260C** Analysis Date: **4/14/2016** SeqNo: **35327**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 5.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 5.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 5.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 5.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 5.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 5.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 5.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 5.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 5.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 5.0 | | | | | | | | | |
| n-Butylbenzene | ND | 5.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 5.0 | | | | | | | | | |
| Naphthalene | ND | 10 | | | | | | | | | |
| Hexachlorobutadiene | ND | 5.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 5.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 48 | | 50.00 | | 96.8 | 50 | 150 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 43 | | 50.00 | | 85.2 | 50 | 150 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 50 | 150 | | | | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 104 | 50 | 150 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
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www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 15036

**PROJECT INFORMATION**

Project Number: 1604169-01

Project Name: Stratus; Red Tail Ranch

Report To: QUEST, Inc. 5211 S. Quebec St Greenwood Village, CO 80111

Telephone: 303-935-1573

Fax / E-Mail: woellner@questmi.com; adwin@questmi.com

**ANALYSES REQUESTED**: 8260 VOA

**TURN-AROUND-TIME (TAT)**: ☑ Standard ☐ Rush ☐ Other

**REMARKS**: QUEST

Work Order Number: (for lab use only) 1604028

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size** | NUMBER OF CONTAINERS | 8260 VOA | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|---|
| 160416901-08 gw | 4/11/16 | 1:25pm | gw | VOA Vial | 2 | ✓ | | | 1 |
| 160416901-03 gw | | 10:10am | " | | | ✓ | | | 2 |
| 160416901-05 gw | | 11:15am | " | " | | ✓ | | | 3 |
| 160416901-09 gw | | 1:40pm | gw | | | ✓ | | | 4 |
| 160416901-09 Soil | " | 9:45am | Soil | 2oz Jar | 1 | ✓ | | | 5 |
| 160416901-11 gw | 4/12/16 | 8:35am | gw | VOA Vials | 2 | ✓ | | | 6 |

Sampled By: Shipment Method: Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | [signature] | Robert A. Woellner | QUEST, Inc | 4/12/16 | 14:30 |
| 1b Received By: | Maggie Masters | Maggie Masters | Quest, inc | 4/12/16 | 14:30 |
| 2a Relinquished By: | Maggie Masters | Maggie Masters | Quest, inc | 4/12/16 | 16:45 |
| 2b Received By: | [signature] | KRIS MASE | ECS | 4-12-16 | 16:45 |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

*Matrix Key: AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other

**Container: A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other

Preservative: H = HCl N = Nitric SF = Sulfuric

*Environmental Chemistry Services, Inc.*
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*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

April 16, 2016

Robert Woellner
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1604033

Dear Robert Woellner:

Environmental Chemistry Services, Inc. received 1 sample(s) on 4/14/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, 1604033, unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1604033**
Date: **4/16/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1604033: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organics Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *16-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-12 |
| **Work Order:** | 1604033 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/14/2016 10:30:00 AM |
| **Lab ID:** | 1604033-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Trichloroethene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *16-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-12 |
| **Work Order:** | 1604033 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/14/2016 10:30:00 AM |
| **Lab ID:** | 1604033-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 4/15/2016 8:21:00 PM |
| Surr: Dibromofluoromethane | 97.8 | 79.2-122 | | %Rec | 1 | 4/15/2016 8:21:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 107 | 80-120 | | %Rec | 1 | 4/15/2016 8:21:00 PM |
| Surr: Toluene-d8 | 105 | 80-120 | | %Rec | 1 | 4/15/2016 8:21:00 PM |
| Surr: 4-Bromofluorobenzene | 100 | 89.6-118 | | %Rec | 1 | 4/15/2016 8:21:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604033**

***16-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2686**

Sample ID **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2686**
Client ID: **LCSW** Batch ID: **R2686** TestNo: **SW8260C** Analysis Date: **4/15/2016** SeqNo: **35389**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 93 | 1.0 | 100.0 | 0 | 92.8 | 47 | 147 | | | | |
| Benzene | 100 | 1.0 | 100.0 | 0 | 103 | 73 | 125 | | | | |
| Trichloroethene | 98 | 1.0 | 100.0 | 0 | 98.2 | 66.7 | 119 | | | | |
| Toluene | 100 | 1.0 | 100.0 | 0 | 104 | 73.6 | 124 | | | | |
| Chlorobenzene | 110 | 1.0 | 100.0 | 0 | 110 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 97.4 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 54 | | 50.00 | | 107 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 52 | | 50.00 | | 105 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 50 | | 50.00 | | 100 | 94.2 | 110 | | | | |

Sample ID **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2686**
Client ID: **LCSS02** Batch ID: **R2686** TestNo: **SW8260C** Analysis Date: **4/15/2016** SeqNo: **35390**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 97 | 1.0 | 100.0 | 0 | 96.7 | 47 | 147 | 92.84 | 4.04 | 15 | |
| Benzene | 110 | 1.0 | 100.0 | 0 | 107 | 73 | 125 | 103.2 | 3.77 | 15 | |
| Trichloroethene | 100 | 1.0 | 100.0 | 0 | 102 | 66.7 | 119 | 98.18 | 3.80 | 15 | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 109 | 73.6 | 124 | 104.0 | 4.35 | 15 | |
| Chlorobenzene | 110 | 1.0 | 100.0 | 0 | 114 | 74.8 | 125 | 110.4 | 3.58 | 15 | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 97.6 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 54 | | 50.00 | | 107 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 52 | | 50.00 | | 105 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 50 | | 50.00 | | 100 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1604033**

***16-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2686**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2686**
Client ID: **PBW** Batch ID: **R2686** TestNo: **SW8260C** Analysis Date: **4/15/2016** SeqNo: **35391**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604033**

***16-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2686**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2686**
Client ID: **PBW** Batch ID: **R2686** TestNo: **SW8260C** Analysis Date: **4/15/2016** SeqNo: **35391**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
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Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604033**

***16-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2686**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2686**
Client ID: **PBW** Batch ID: **R2686** TestNo: **SW8260C** Analysis Date: **4/15/2016** SeqNo: **35391**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 97.8 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 54 | | 50.00 | | 107 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 52 | | 50.00 | | 105 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 50 | | 50.00 | | 99.8 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
Environmental Chemistry Services
2 Oakwood Park Plaza, Suite 100
Castle Rock, Colorado 80104
Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 14938

**PROJECT INFORMATION**

Project Number: 160416901

Project Name:

Report To: QUEST, Inc
5211 S. Quebec St
Greenwood Village, CO 80111

Telephone: 303-935-1573

Fax / E-Mail: wallace@questmi.com; kovaro@questmi.com; adwreq@questmi.com

**ANALYSES REQUESTED**

NUMBER OF CONTAINERS: 8260 VOCs

**TURN-AROUND-TIME (TAT)**

☑ Standard
☐ Rush
☐ Other

**REMARKS**

QUEST

Work Order Number: *(for lab use only)* 1604033.

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size** | NUMBER OF CONTAINERS | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|
| 160416901-12 | 4/14/16 | 10:30 am | gw | VOA vials | 2 | | | 1 |

Sampled By: Robert A. Wacllo

Shipment Method: Hand delivered

Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | [signature] | Robert A. Wacllo | QUEST, Inc. | 4/14/16 | 04:30pm |
| 1b Received By: | Maggie Masters | Maggie Masters | Quest, inc | 4/14/16 | 4:30pm |
| 2a Relinquished By: | Maggie Masters | Maggie Masters | Quest, inc | 4/14/16 | 5:00pm |
| 2b Received By: | [signature] | Kris Ho | ECS | 4.14.16 | 17:00 |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

***Matrix Key:** AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other

**Preservative:** H = HCl N = Nitric SF = Sulfuric

****Container:** A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

April 26, 2016

Tony Konowal
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1604044

Dear Tony Konowal:

Environmental Chemistry Services, Inc. received 1 sample(s) on 4/25/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, 1604044, unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1604044**
Date: **4/26/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1604044: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *26-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-GW13 |
| **Work Order:** | 1604044 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/25/2016 1:15:00 PM |
| **Lab ID:** | 1604044-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 0.0030 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Chloromethane | ND | 0.0030 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Vinyl chloride | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Bromomethane | ND | 0.0030 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Chloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Freon-11 | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,1-Dichloroethene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Methylene chloride | ND | 0.0050 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Freon-113 | 0.12 | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Carbon disulfide | ND | 0.0060 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| trans-1,2-Dichloroethene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| MTBE | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,1-Dichloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Chloroprene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| cis-1,2-Dichloroethene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Bromochloromethane | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Chloroform | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 2,2-Dichloropropane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| THF | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2-Dichloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,1,1-Trichloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,1-Dichloropropene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Carbon tetrachloride | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Benzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Dibromomethane | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2-Dichloropropane | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Trichloroethene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Bromodichloromethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Methyl methacrylate | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| cis-1,3-Dichloropropene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Methyl isobutyl ketone | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| trans-1,3-Dichloropropene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,1,2-Trichloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Toluene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,3-Dichloropropane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Ethyl methacrylate | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Dibromochloromethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| EDB | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| PCE | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *26-Apr-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160416901-GW13 |
| **Work Order:** | 1604044 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 4/25/2016 1:15:00 PM |
| **Lab ID:** | 1604044-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Chlorobenzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Ethylbenzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| m,p-Xylene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Bromoform | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Styrene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,1,2,2-Tetrachloroethane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| o-Xylene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2,3-Trichloropropane | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| trans-1,4-Dichloro-2-butene | ND | 0.0030 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Isopropylbenzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Bromobenzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| n-Propylbenzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 2-Chlorotoluene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 4-Chlorotoluene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Pentachloroethane | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,3,5-Trimethylbenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| tert-Butylbenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| DBCP | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| sec-Butylbenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2,4-Trimethylbenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,3-Dichlorobenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 4-Isopropyltoluene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,4-Dichlorobenzene | ND | 0.0010 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2-Dichlorobenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| n-Butylbenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2,4-Trichlorobenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Naphthalene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Hexachlorobutadiene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| 1,2,3-Trichlorobenzene | ND | 0.0020 | | mg/L | 1 | 4/26/2016 11:42:00 AM |
| Surr: Dibromofluoromethane | 100 | 79.2-122 | | %Rec | 1 | 4/26/2016 11:42:00 AM |
| Surr: 1,2-Dichloroethane-d4 | 111 | 80-120 | | %Rec | 1 | 4/26/2016 11:42:00 AM |
| Surr: Toluene-d8 | 112 | 80-120 | | %Rec | 1 | 4/26/2016 11:42:00 AM |
| Surr: 4-Bromofluorobenzene | 96.1 | 89.6-118 | | %Rec | 1 | 4/26/2016 11:42:00 AM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604044**

***26-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2712**

Sample ID **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **mg/L** Prep Date: RunNo: **2712**
Client ID: **LCSW** Batch ID: **R2712** TestNo: **SW8260C** Analysis Date: **4/26/2016** SeqNo: **35763**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.095 | 0.0010 | 0.10 | 0 | 94.7 | 47 | 147 | 0 | | | |
| Benzene | 0.10 | 0.0010 | 0.10 | 0 | 101 | 73 | 125 | 0 | | | |
| Trichloroethene | 0.089 | 0.0010 | 0.10 | 0 | 89.0 | 66.7 | 119 | 0 | | | |
| Toluene | 0.098 | 0.0010 | 0.10 | 0 | 97.6 | 73.6 | 124 | 0 | | | |
| Chlorobenzene | 0.11 | 0.0010 | 0.10 | 0 | 109 | 74.8 | 125 | 0 | | | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 100 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 55 | | 50.00 | | 111 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 56 | | 50.00 | | 111 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 48 | | 50.00 | | 95.9 | 94.2 | 110 | | | | |

Sample ID **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **mg/L** Prep Date: RunNo: **2712**
Client ID: **LCSS02** Batch ID: **R2712** TestNo: **SW8260C** Analysis Date: **4/26/2016** SeqNo: **35764**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 0.097 | 0.0010 | 0.10 | 0 | 96.5 | 47 | 147 | 0.095 | 1.91 | 15 | |
| Benzene | 0.10 | 0.0010 | 0.10 | 0 | 104 | 73 | 125 | 0.10 | 3.28 | 15 | |
| Trichloroethene | 0.092 | 0.0010 | 0.10 | 0 | 92.0 | 66.7 | 119 | 0.089 | 3.35 | 15 | |
| Toluene | 0.10 | 0.0010 | 0.10 | 0 | 100 | 73.6 | 124 | 0.098 | 2.42 | 15 | |
| Chlorobenzene | 0.11 | 0.0010 | 0.10 | 0 | 111 | 74.8 | 125 | 0.11 | 2.39 | 15 | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 100 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 55 | | 50.00 | | 110 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 55 | | 50.00 | | 111 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 48 | | 50.00 | | 95.3 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604044**

***26-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2712**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **mg/L** Prep Date: RunNo: **2712**
Client ID: **PBW** Batch ID: **R2712** TestNo: **SW8260C** Analysis Date: **4/26/2016** SeqNo: **35765**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 0.0030 | 0 | 0 | | | | 0 | | | |
| Chloromethane | ND | 0.0030 | 0 | 0 | | | | 0 | | | |
| Vinyl chloride | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Bromomethane | ND | 0.0030 | 0 | 0 | | | | 0 | | | |
| Chloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Freon-11 | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,1-Dichloroethene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Methylene chloride | ND | 0.0050 | 0 | 0 | | | | 0 | | | |
| Freon-113 | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Carbon disulfide | ND | 0.0060 | 0 | 0 | | | | 0 | | | |
| trans-1,2-Dichloroethene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| MTBE | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,1-Dichloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Chloroprene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| cis-1,2-Dichloroethene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Bromochloromethane | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Chloroform | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 2,2-Dichloropropane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| THF | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,2-Dichloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,1,1-Trichloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,1-Dichloropropene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Carbon tetrachloride | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Benzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Dibromomethane | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,2-Dichloropropane | ND | 0.0020 | 0 | 0 | | | | 0 | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604044**

***26-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

**BatchID:** **R2712**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **mg/L** Prep Date: RunNo: **2712**
Client ID: **PBW** Batch ID: **R2712** TestNo: **SW8260C** Analysis Date: **4/26/2016** SeqNo: **35765**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Bromodichloromethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Methyl methacrylate | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| cis-1,3-Dichloropropene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Methyl isobutyl ketone | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| trans-1,3-Dichloropropene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,1,2-Trichloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Toluene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,3-Dichloropropane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Ethyl methacrylate | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Dibromochloromethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| EDB | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| PCE | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,1,1,2-Tetrachloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Chlorobenzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Ethylbenzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| m,p-Xylene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Bromoform | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Styrene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,1,2,2-Tetrachloroethane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| o-Xylene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,2,3-Trichloropropane | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| trans-1,4-Dichloro-2-butene | ND | 0.0030 | 0 | 0 | | | | 0 | | | |
| Isopropylbenzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| Bromobenzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| n-Propylbenzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1604044**

***26-Apr-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2712**

Sample ID **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **mg/L** Prep Date: RunNo: **2712**
Client ID: **PBW** Batch ID: **R2712** TestNo: **SW8260C** Analysis Date: **4/26/2016** SeqNo: **35765**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 4-Chlorotoluene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Pentachloroethane | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,3,5-Trimethylbenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| tert-Butylbenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| DBCP | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| sec-Butylbenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,2,4-Trimethylbenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,3-Dichlorobenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 4-Isopropyltoluene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,4-Dichlorobenzene | ND | 0.0010 | 0 | 0 | | | | 0 | | | |
| 1,2-Dichlorobenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| n-Butylbenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,2,4-Trichlorobenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Naphthalene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Hexachlorobutadiene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| 1,2,3-Trichlorobenzene | ND | 0.0020 | 0 | 0 | | | | 0 | | | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.7 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 55 | | 50.00 | | 110 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 56 | | 50.00 | | 111 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 48 | | 50.00 | | 96.2 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
Environmental Chemistry Services
2 Oakwood Park Plaza, Suite 100
Castle Rock, Colorado 80104
Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 14518

| PROJECT INFORMATION | |
|---|---|
| Project Number: 1604169-01 | Project Name: Stratus; RedTail Ranch |
| Report To: QUEST Environmental | |
| Telephone: 303-935-1573 | |
| Fax / E-Mail: | |

ANALYSES REQUESTED: EPA 8260

TURN-AROUND-TIME (TAT): ☒ Standard ☒ Rush ☐ Other

REMARKS: QUEST

Work Order Number: (for lab use only) 1604044

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size** | NUMBER OF CONTAINERS | EPA 8260 | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|---|
| 160418901-GW13 | 4/25/16 | 1:15pm | AQ | C | 2 | ✓ | | | 1 |

Sampled By: Tony Konowal  Shipment Method:  Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | [signature] | Tony Konowal | QUEST Environmental | 4/25/16 | 4:45pm |
| 1b Received By: | Maggie Masters | Maggie Masters | QUEST Environmental | 4/25/16 | 4:45pm |
| 2a Relinquished By: | [signature] | Tom Masonwood | ECS | 4/25/16 | 1645 |
| 2b Received By: | Maggie | Maggie | Quest | 4-25-16 | 1645 |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

*Matrix Key: AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other
**Container: A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other
Preservative: H = HCl N = Nitric SF = Sulfuric

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
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*Website: www.ecs-corp.com*

May 14, 2016

Robert Woellner
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1605016

Dear Robert Woellner:

Environmental Chemistry Services, Inc. received 2 sample(s) on 5/12/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, 1605016, unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1605016**
Date: **5/14/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1605016: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *14-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-16 |
| **Work Order:** | 1605016 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/11/2016 4:35:00 PM |
| **Lab ID:** | 1605016-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Vinyl chloride | 120 | 20 | D | µg/L | 10 | 5/13/2016 6:43:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,1-Dichloroethene | 61 | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Freon-113 | 810 | 10 | D | µg/L | 10 | 5/13/2016 6:43:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,1-Dichloroethane | 98 | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| cis-1,2-Dichloroethene | 2,500 | 50 | D | µg/L | 50 | 5/13/2016 7:05:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| THF | 510 | 20 | D | µg/L | 10 | 5/13/2016 6:43:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Trichloroethene | 4,500 | 50 | D | µg/L | 50 | 5/13/2016 7:05:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *14-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-16 |
| **Work Order:** | 1605016 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/11/2016 4:35:00 PM |
| **Lab ID:** | 1605016-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:14:00 PM |
| Surr: Dibromofluoromethane | 97.7 | 79.2-122 | | %Rec | 1 | 5/13/2016 1:14:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 108 | 80-120 | | %Rec | 1 | 5/13/2016 1:14:00 PM |
| Surr: Toluene-d8 | 108 | 80-120 | | %Rec | 1 | 5/13/2016 1:14:00 PM |
| Surr: 4-Bromofluorobenzene | 98.6 | 89.6-118 | | %Rec | 1 | 5/13/2016 1:14:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *14-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-TB-1 |
| **Work Order:** | 1605016 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/11/2016 4:50:00 PM |
| **Lab ID:** | 1605016-02A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,1-Dichloroethane | 37 | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| cis-1,2-Dichloroethene | 230 | 5.0 | D | µg/L | 5 | 5/13/2016 7:27:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Trichloroethene | 610 | 5.0 | D | µg/L | 5 | 5/13/2016 7:27:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *14-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-TB-1 |
| **Work Order:** | 1605016 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/11/2016 4:50:00 PM |
| **Lab ID:** | 1605016-02A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/13/2016 1:36:00 PM |
| Surr: Dibromofluoromethane | 103 | 79.2-122 | | %Rec | 1 | 5/13/2016 1:36:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 107 | 80-120 | | %Rec | 1 | 5/13/2016 1:36:00 PM |
| Surr: Toluene-d8 | 107 | 80-120 | | %Rec | 1 | 5/13/2016 1:36:00 PM |
| Surr: 4-Bromofluorobenzene | 97.6 | 89.6-118 | | %Rec | 1 | 5/13/2016 1:36:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605016**

***14-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2752**

Sample ID: **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2752**
Client ID: **LCSW** Batch ID: **R2752** TestNo: **SW8260C** Analysis Date: **5/13/2016** SeqNo: **36365**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 97 | 1.0 | 100.0 | 0 | 97.4 | 47 | 147 | | | | |
| Benzene | 110 | 1.0 | 100.0 | 0 | 106 | 73 | 125 | | | | |
| Trichloroethene | 94 | 1.0 | 100.0 | 0 | 93.9 | 66.7 | 119 | | | | |
| Toluene | 100 | 1.0 | 100.0 | 0 | 101 | 73.6 | 124 | | | | |
| Chlorobenzene | 110 | 1.0 | 100.0 | 0 | 108 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 51 | | 50.00 | | 102 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 52 | | 50.00 | | 105 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 107 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 49 | | 50.00 | | 98.4 | 94.2 | 110 | | | | |

Sample ID: **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2752**
Client ID: **LCSS02** Batch ID: **R2752** TestNo: **SW8260C** Analysis Date: **5/13/2016** SeqNo: **36366**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 110 | 1.0 | 100.0 | 0 | 111 | 47 | 147 | 97.41 | 12.8 | 15 | |
| Benzene | 120 | 1.0 | 100.0 | 0 | 120 | 73 | 125 | 106.1 | 12.4 | 15 | |
| Trichloroethene | 110 | 1.0 | 100.0 | 0 | 106 | 66.7 | 119 | 93.93 | 11.9 | 15 | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 113 | 73.6 | 124 | 100.5 | 11.8 | 15 | |
| Chlorobenzene | 120 | 1.0 | 100.0 | 0 | 120 | 74.8 | 125 | 108.0 | 10.5 | 15 | |
| Surr: Dibromofluoromethane | 51 | | 50.00 | | 103 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 52 | | 50.00 | | 105 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 107 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 48 | | 50.00 | | 96.8 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605016**

***14-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2752**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2752**
Client ID: **PBW** Batch ID: **R2752** TestNo: **SW8260C** Analysis Date: **5/13/2016** SeqNo: **36367**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605016**

***14-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2752**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2752**
Client ID: **PBW** Batch ID: **R2752** TestNo: **SW8260C** Analysis Date: **5/13/2016** SeqNo: **36367**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1605016**

***14-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2752**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2752**
Client ID: **PBW** Batch ID: **R2752** TestNo: **SW8260C** Analysis Date: **5/13/2016** SeqNo: **36367**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 52 | | 50.00 | | 104 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 53 | | 50.00 | | 106 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 53 | | 50.00 | | 107 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 49 | | 50.00 | | 97.7 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS Environmental Chemistry Services
2 Oakwood Park Plaza, Suite 100
Castle Rock, Colorado 80104
Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 15088

**PROJECT INFORMATION**

Project Number: 1605169-01
Project Name: Stratus-Redtail 3rd Supply
Report To: QUEST, Inc
5211 S. Quebec St
Greenwood Village CO 80111
Telephone: 303-935-1573
Fax / E-Mail: woellner@questmi.com; Konowal@Questmi.com; adam

**ANALYSES REQUESTED**

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size.** | NUMBER OF CONTAINERS | 8260 VOAs | | | | | | | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160516901-16 | 5/11/16 | 4:35pm | gw | VOA Vials | 2 | ✓ | | | | | | | | | 1 |
| 160516901-TB-1 | " | 4:50pm | gw | VOA Vials | 2 | ✓ | | | | | | | | | 2 |

**TURN-AROUND-TIME (TAT)**
- ☑ Standard
- ☐ Rush
- ☐ Other

**REMARKS**

QUEST

Work Order Number: *(for lab use only)* 1605016

☆ Tom and Kris; The client is very price sensitive so opted for standard turnaround; but if you're able, we'd love to have the results friday afternoon to direct Monday Mornings followup drilling. Many thanks,
Bob

Sampled By: Robert A. Woellner
Shipment Method: Courier - ECS
Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | [signature] | Robert A. Woellner | QUEST, Inc | 5/12/16 | 10:58 |
| 1b Received By: | [signature] | Shawn Laux | Swift Courier | 5/12/16 | 10:58 |
| 2a Relinquished By: | [signature] | Shawn Laux | Swift " | 5/12/16 | 12:25 |
| 2b Received By: | [signature] | KRIS MacCarnes | ECS | 5.12.16 | 12:25 |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

***Matrix Key:** AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other
**Preservative:** H = HCl N = Nitric SF = Sulfuric
****Container:** A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

May 18, 2016

Tony Konowal
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1605027

Dear Tony Konowal:

Environmental Chemistry Services, Inc. received 1 sample(s) on 5/16/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, 1605027, unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1605027**
Date: **5/18/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1605027: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *18-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-GW14 |
| **Work Order:** | 1605027 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/16/2016 9:55:00 AM |
| **Lab ID:** | 1605027-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Trichloroethene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *18-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-GW14 |
| **Work Order:** | 1605027 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/16/2016 9:55:00 AM |
| **Lab ID:** | 1605027-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/17/2016 1:43:00 PM |
| Surr: Dibromofluoromethane | 103 | 79.2-122 | | %Rec | 1 | 5/17/2016 1:43:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 110 | 80-120 | | %Rec | 1 | 5/17/2016 1:43:00 PM |
| Surr: Toluene-d8 | 108 | 80-120 | | %Rec | 1 | 5/17/2016 1:43:00 PM |
| Surr: 4-Bromofluorobenzene | 99.0 | 89.6-118 | | %Rec | 1 | 5/17/2016 1:43:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605027**

***18-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2763**

Sample ID: **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2763**
Client ID: **LCSW** Batch ID: **R2763** TestNo: **SW8260C** Analysis Date: **5/17/2016** SeqNo: **36575**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 110 | 1.0 | 100.0 | 0 | 114 | 47 | 147 | | | | |
| Benzene | 110 | 1.0 | 100.0 | 0 | 110 | 73 | 125 | | | | |
| Trichloroethene | 96 | 1.0 | 100.0 | 0 | 96.0 | 66.7 | 119 | | | | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 106 | 73.6 | 124 | | | | |
| Chlorobenzene | 110 | 1.0 | 100.0 | 0 | 110 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 51 | | 50.00 | | 102 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 55 | | 50.00 | | 109 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 50 | | 50.00 | | 99.0 | 94.2 | 110 | | | | |

Sample ID: **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2763**
Client ID: **LCSS02** Batch ID: **R2763** TestNo: **SW8260C** Analysis Date: **5/17/2016** SeqNo: **36576**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 120 | 1.0 | 100.0 | 0 | 120 | 47 | 147 | 113.6 | 5.64 | 15 | |
| Benzene | 120 | 1.0 | 100.0 | 0 | 118 | 73 | 125 | 110.2 | 6.52 | 15 | |
| Trichloroethene | 100 | 1.0 | 100.0 | 0 | 103 | 66.7 | 119 | 96.05 | 6.89 | 15 | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 113 | 73.6 | 124 | 106.1 | 5.95 | 15 | |
| Chlorobenzene | 120 | 1.0 | 100.0 | 0 | 116 | 74.8 | 125 | 109.8 | 5.43 | 15 | |
| Surr: Dibromofluoromethane | 51 | | 50.00 | | 103 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 55 | | 50.00 | | 109 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 49 | | 50.00 | | 98.3 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605027**

***18-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2763**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2763**
Client ID: **PBW** Batch ID: **R2763** TestNo: **SW8260C** Analysis Date: **5/17/2016** SeqNo: **36577**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1605027**

***18-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2763**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2763**
Client ID: **PBW** Batch ID: **R2763** TestNo: **SW8260C** Analysis Date: **5/17/2016** SeqNo: **36577**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1605027**

***18-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2763**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2763**
Client ID: **PBW** Batch ID: **R2763** TestNo: **SW8260C** Analysis Date: **5/17/2016** SeqNo: **36577**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 51 | | 50.00 | | 103 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 55 | | 50.00 | | 110 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 49 | | 50.00 | | 98.2 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
Environmental Chemistry Services
2 Oakwood Park Plaza, Suite 100
Castle Rock, Colorado 80104
Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 15117

**PROJECT INFORMATION**

Project Number: 1605169-01

Project Name: Stratus; Redtail Ranch

Report To: QUEST, Inc.

Telephone: 303-935-1573

Fax / E-Mail: on file

**ANALYSES REQUESTED**

**TURN-AROUND-TIME (TAT)**: ☑ Standard ☐ Rush ☐ Other

**REMARKS**

QUEST

Work Order Number: *(for lab use only)* 1605027

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size.** | NUMBER OF CONTAINERS | 8260 VOAs | | | | | | | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16051690 1-GW14 | 5/16/16 | 9:55am | AQ | C | 2 | ✓ | | | | | | | | | 1 |

Sampled By: Tony Konowal

Shipment Method:

Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | Maggie Masters | Maggie Masters | QUEST | 5/16/16 | 12:30 |
| 1b Received By: | MF | Sky Muscavenes | ECS | 05/16/16 | 12:30P |
| 2a Relinquished By: | | | | | |
| 2b Received By: | | | | | |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

***Matrix Key:** AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other

**Preservative:** H = HCl N = Nitric SF = Sulfuric

****Container:** A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

May 25, 2016

Tony Konowal
QUEST Environmental
5211 South Quebec Street
Greenwood Village, CO 80111
TEL: (303) 935-1573
FAX (303) 935-7955

RE: Stratus; Red Tail Ranch Order No.: 1605039

Dear Tony Konowal:

Environmental Chemistry Services, Inc. received 1 sample(s) on 5/23/2016 for the analyses presented in the following report.

There were no problems with the analytical events associated with this report, 1605039, unless noted in the Case Narrative.

Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call or email.

TEL: (303) 850-7606 ext:300
kris@ecs-corp.com

Sincerely,

Kris Mascarenas
Director of Client Services
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885

*Environmental Chemistry Services, Inc.*
*2 Oakwood Park Plaza; 100*
*Castle Rock, CO 80104-1885*
*TEL: (303) 850-7606 FAX: (303) 850-7609*
*Website: www.ecs-corp.com*

# Case Narrative

WO#: **1605039**
Date: **5/25/2016**

**CLIENT:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch

WorkOrder Narrative:
1605039: This report in its entirety consists of the documents listed below. All documents contain the Environmental Chemistry Services, Inc. Work Order Number assigned to this report.

1. Paginated Report including: A Cover Letter, Case Narrative, Analytical Results, and Applicable Quality Control Reports.

2. Copies of the Chain of Custody Document(s) supplied with this sample set.

3. Electronic Data Deliverables (EDD) if requested.

Samples were analyzed for Volatile Organic Compounds by EPA Method 8260C. This is a gas chromatography/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards are added to monitor purging efficiency.

Any comments or problems with the analytical events associated with this report are noted below.

# Environmental Chemistry Services, Inc.

**Date:** *25-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-GW17 |
| **Work Order:** | 1605039 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/23/2016 10:15:00 AM |
| **Lab ID:** | 1605039-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| Dichlorodifluoromethane | ND | 3.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Chloromethane | ND | 3.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Vinyl chloride | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Bromomethane | ND | 3.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Chloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Freon-11 | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,1-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Methylene chloride | ND | 5.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Freon-113 | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Carbon disulfide | ND | 6.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| trans-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| MTBE | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,1-Dichloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Chloroprene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| cis-1,2-Dichloroethene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Bromochloromethane | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Chloroform | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 2,2-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| THF | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2-Dichloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,1,1-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,1-Dichloropropene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Carbon tetrachloride | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Benzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Dibromomethane | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2-Dichloropropane | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Trichloroethene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Bromodichloromethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Methyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| cis-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Methyl isobutyl ketone | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| trans-1,3-Dichloropropene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,1,2-Trichloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Toluene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,3-Dichloropropane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Ethyl methacrylate | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Dibromochloromethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| EDB | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| PCE | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

# Environmental Chemistry Services, Inc.

**Date:** *25-May-16*

| | | | |
|---|---|---|---|
| **Client:** | QUEST Environmental | **Client Sample ID:** | 160516901-GW17 |
| **Work Order:** | 1605039 | **Canister ID:** | |
| **Project:** | Stratus; Red Tail Ranch | **Collection Date:** | 5/23/2016 10:15:00 AM |
| **Lab ID:** | 1605039-01A | **Matrix:** | WATER |

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **VOLATILE ORGANIC COMPOUNDS** | | Method: **SW8260C** | | | | Analyst: **KM** |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Chlorobenzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Ethylbenzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| m,p-Xylene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Bromoform | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Styrene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| o-Xylene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2,3-Trichloropropane | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Isopropylbenzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Bromobenzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| n-Propylbenzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 2-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 4-Chlorotoluene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Pentachloroethane | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| tert-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| DBCP | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| sec-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,3-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 4-Isopropyltoluene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,4-Dichlorobenzene | ND | 1.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2-Dichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| n-Butylbenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Naphthalene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Hexachlorobutadiene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | µg/L | 1 | 5/25/2016 12:54:00 PM |
| Surr: Dibromofluoromethane | 99.4 | 79.2-122 | | %Rec | 1 | 5/25/2016 12:54:00 PM |
| Surr: 1,2-Dichloroethane-d4 | 104 | 80-120 | | %Rec | 1 | 5/25/2016 12:54:00 PM |
| Surr: Toluene-d8 | 109 | 80-120 | | %Rec | 1 | 5/25/2016 12:54:00 PM |
| Surr: 4-Bromofluorobenzene | 105 | 89.6-118 | | %Rec | 1 | 5/25/2016 12:54:00 PM |

| **Qualifiers:** | | | | |
|---|---|---|---|---|
| | B | Analyte detected in the associated Method Blank | D | Dilution was required. |
| | DF | Dilution Factor | E | Value above quantitation range |
| | H | Holding times for preparation or analysis exceeded | J | Analyte detected above MDL below RL |
| | N | Tentatively identified compounds (Valures are estimated) | ND | Not Detected at the RL |
| | R | RPD outside accepted recovery limits | R | Percent Difference outside accepted limits |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605039**

***25-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2786**

Sample ID: **LCS** SampType: **LCS** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2786**
Client ID: **LCSW** Batch ID: **R2786** TestNo: **SW8260C** Analysis Date: **5/25/2016** SeqNo: **36916**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 91 | 1.0 | 100.0 | 0 | 91.4 | 47 | 147 | | | | |
| Benzene | 99 | 1.0 | 100.0 | 0 | 99.1 | 73 | 125 | | | | |
| Trichloroethene | 95 | 1.0 | 100.0 | 0 | 95.1 | 66.7 | 119 | | | | |
| Toluene | 100 | 1.0 | 100.0 | 0 | 100 | 73.6 | 124 | | | | |
| Chlorobenzene | 110 | 1.0 | 100.0 | 0 | 110 | 74.8 | 125 | | | | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 97.3 | 87.5 | 107 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 51 | | 50.00 | | 102 | 80.1 | 121 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | | | |
| Surr: 4-Bromofluorobenzene | 53 | | 50.00 | | 106 | 94.2 | 110 | | | | |

Sample ID: **LCSD** SampType: **LCSD** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2786**
Client ID: **LCSS02** Batch ID: **R2786** TestNo: **SW8260C** Analysis Date: **5/25/2016** SeqNo: **36917**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1,1-Dichloroethene | 97 | 1.0 | 100.0 | 0 | 96.7 | 47 | 147 | 91.44 | 5.62 | 15 | |
| Benzene | 100 | 1.0 | 100.0 | 0 | 103 | 73 | 125 | 99.09 | 4.14 | 15 | |
| Trichloroethene | 100 | 1.0 | 100.0 | 0 | 101 | 66.7 | 119 | 95.08 | 5.84 | 15 | |
| Toluene | 110 | 1.0 | 100.0 | 0 | 106 | 73.6 | 124 | 100.3 | 5.69 | 15 | |
| Chlorobenzene | 120 | 1.0 | 100.0 | 0 | 116 | 74.8 | 125 | 110.3 | 4.92 | 15 | |
| Surr: Dibromofluoromethane | 50 | | 50.00 | | 99.4 | 87.5 | 107 | | 0 | 0 | |
| Surr: 1,2-Dichloroethane-d4 | 52 | | 50.00 | | 104 | 80.1 | 121 | | 0 | 0 | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80.5 | 112 | | 0 | 0 | |
| Surr: 4-Bromofluorobenzene | 52 | | 50.00 | | 105 | 94.2 | 110 | | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

Environmental Chemistry Services, Inc.
2 Oakwood Park Plaza; 100
Castle Rock, CO 80104-1885
TEL: (303) 850-7606 FAX: (303) 850-7609
Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605039**

***25-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2786**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2786**
Client ID: **PBW** Batch ID: **R2786** TestNo: **SW8260C** Analysis Date: **5/25/2016** SeqNo: **36918**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dichlorodifluoromethane | ND | 3.0 | | | | | | | | | |
| Chloromethane | ND | 3.0 | | | | | | | | | |
| Vinyl chloride | ND | 2.0 | | | | | | | | | |
| Bromomethane | ND | 3.0 | | | | | | | | | |
| Chloroethane | ND | 1.0 | | | | | | | | | |
| Freon-11 | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Methylene chloride | ND | 5.0 | | | | | | | | | |
| Freon-113 | ND | 1.0 | | | | | | | | | |
| Carbon disulfide | ND | 6.0 | | | | | | | | | |
| trans-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| MTBE | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | | | | | | | | | |
| Chloroprene | ND | 2.0 | | | | | | | | | |
| cis-1,2-Dichloroethene | ND | 1.0 | | | | | | | | | |
| Bromochloromethane | ND | 2.0 | | | | | | | | | |
| Chloroform | ND | 1.0 | | | | | | | | | |
| 2,2-Dichloropropane | ND | 1.0 | | | | | | | | | |
| THF | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | | | | | | | | | |
| 1,1-Dichloropropene | ND | 1.0 | | | | | | | | | |
| Carbon tetrachloride | ND | 1.0 | | | | | | | | | |
| Benzene | ND | 1.0 | | | | | | | | | |
| Dibromomethane | ND | 2.0 | | | | | | | | | |
| 1,2-Dichloropropane | ND | 2.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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# QC SUMMARY REPORT

Work Order: **1605039**

***25-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2786**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2786**
Client ID: **PBW** Batch ID: **R2786** TestNo: **SW8260C** Analysis Date: **5/25/2016** SeqNo: **36918**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | ND | 1.0 | | | | | | | | | |
| Bromodichloromethane | ND | 1.0 | | | | | | | | | |
| Methyl methacrylate | ND | 1.0 | | | | | | | | | |
| cis-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| Methyl isobutyl ketone | ND | 2.0 | | | | | | | | | |
| trans-1,3-Dichloropropene | ND | 2.0 | | | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | | | | | | | | | |
| Toluene | ND | 1.0 | | | | | | | | | |
| 1,3-Dichloropropane | ND | 1.0 | | | | | | | | | |
| Ethyl methacrylate | ND | 1.0 | | | | | | | | | |
| Dibromochloromethane | ND | 1.0 | | | | | | | | | |
| EDB | ND | 1.0 | | | | | | | | | |
| PCE | ND | 1.0 | | | | | | | | | |
| 1,1,1,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| Chlorobenzene | ND | 1.0 | | | | | | | | | |
| Ethylbenzene | ND | 1.0 | | | | | | | | | |
| m,p-Xylene | ND | 2.0 | | | | | | | | | |
| Bromoform | ND | 2.0 | | | | | | | | | |
| Styrene | ND | 2.0 | | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | | | | | | | | | |
| o-Xylene | ND | 1.0 | | | | | | | | | |
| 1,2,3-Trichloropropane | ND | 1.0 | | | | | | | | | |
| trans-1,4-Dichloro-2-butene | ND | 3.0 | | | | | | | | | |
| Isopropylbenzene | ND | 1.0 | | | | | | | | | |
| Bromobenzene | ND | 1.0 | | | | | | | | | |
| n-Propylbenzene | ND | 1.0 | | | | | | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
| ND | Not Detected at the RL | O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits |
| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

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Website: www.ecs-corp.com

# QC SUMMARY REPORT

Work Order: **1605039**

***25-May-16***

**Client:** QUEST Environmental
**Project:** Stratus; Red Tail Ranch **BatchID:** **R2786**

Sample ID: **MBLK** SampType: **MBLK** TestCode: **8260C_W** Units: **µg/L** Prep Date: RunNo: **2786**
Client ID: **PBW** Batch ID: **R2786** TestNo: **SW8260C** Analysis Date: **5/25/2016** SeqNo: **36918**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| 4-Chlorotoluene | ND | 2.0 | | | | | | | | | |
| Pentachloroethane | ND | 2.0 | | | | | | | | | |
| 1,3,5-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| tert-Butylbenzene | ND | 2.0 | | | | | | | | | |
| DBCP | ND | 2.0 | | | | | | | | | |
| sec-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trimethylbenzene | ND | 2.0 | | | | | | | | | |
| 1,3-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| 4-Isopropyltoluene | ND | 2.0 | | | | | | | | | |
| 1,4-Dichlorobenzene | ND | 1.0 | | | | | | | | | |
| 1,2-Dichlorobenzene | ND | 2.0 | | | | | | | | | |
| n-Butylbenzene | ND | 2.0 | | | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Naphthalene | ND | 2.0 | | | | | | | | | |
| Hexachlorobutadiene | ND | 2.0 | | | | | | | | | |
| 1,2,3-Trichlorobenzene | ND | 2.0 | | | | | | | | | |
| Surr: Dibromofluoromethane | 49 | | 50.00 | | 98.9 | 79.2 | 120 | | | | |
| Surr: 1,2-Dichloroethane-d4 | 51 | | 50.00 | | 103 | 80 | 125 | | | | |
| Surr: Toluene-d8 | 54 | | 50.00 | | 108 | 80 | 122 | | | | |
| Surr: 4-Bromofluorobenzene | 53 | | 50.00 | | 106 | 89.6 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | D | Dilution was required. | H | Holding times for preparation or analy |
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| RL | Reporting Limit | S | Spike Recovery outside accepted recovery limits | W | Sample container temperature is out o |

ECS
Environmental Chemistry Services
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Castle Rock, Colorado 80104
Phone: 303.850.7606
Fax: 303.850.7609
www.ecs-corp.com

# Chain of Custody Record (COC)

COC # 14940

**PROJECT INFORMATION**

Project Number: 1605169-01

Project Name: Stratus; Redtail Ranch

Report To: QUEST, Inc
3211 S. Quebec St.
Greenwood Village, CO 80111

Telephone: 303-935-1573

Fax / E-Mail: on file

**ANALYSES REQUESTED**

TURN-AROUND-TIME (TAT): ☒ Standard ☐ Rush ☐ Other

REMARKS: QUEST

Work Order Number: *(for lab use only)* 1605039

| SAMPLE NUMBER / IDENTIFICATION | SAMPLE Date | SAMPLE Time | Matrix* | Container & Size.** | NUMBER OF CONTAINERS | 8260 VOAs | | | | | | | CANISTER ID | REMARKS | LAB # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 160516901-GW17 | 5/23/16 | 10:15am | AQ | CG | 2 | ✓ | | | | | | | | | |

Sampled By: T. Konowal

Shipment Method:

Airbill Number:

| | SIGNATURE | PRINT NAME | COMPANY | DATE | TIME |
|---|---|---|---|---|---|
| 1a Relinquished By: | Maggie Masters | Maggie Masters | QUEST | 5/23/16 | 4:37pm |
| 1b Received By: | | Tom Mascaro | ECS | 5/24/16 | 1637 |
| 2a Relinquished By: | | | | | |
| 2b Received By: | | | | | |
| 3a Relinquished By: | | | | | |
| 3b Received By: | | | | | |

THE ABOVE SIGNED HAS READ AND UNDERSTANDS THE CREDIT TERMS AND CREDIT POLICIES OF ECS, INC. AND AGREES TO THE TERMS AND CONDITIONS AS SET FORTH IN THIS AGREEMENT.

***Matrix Key:** AQ = Aqueous AR = Air SO = Soil WA = Waste OT = Other

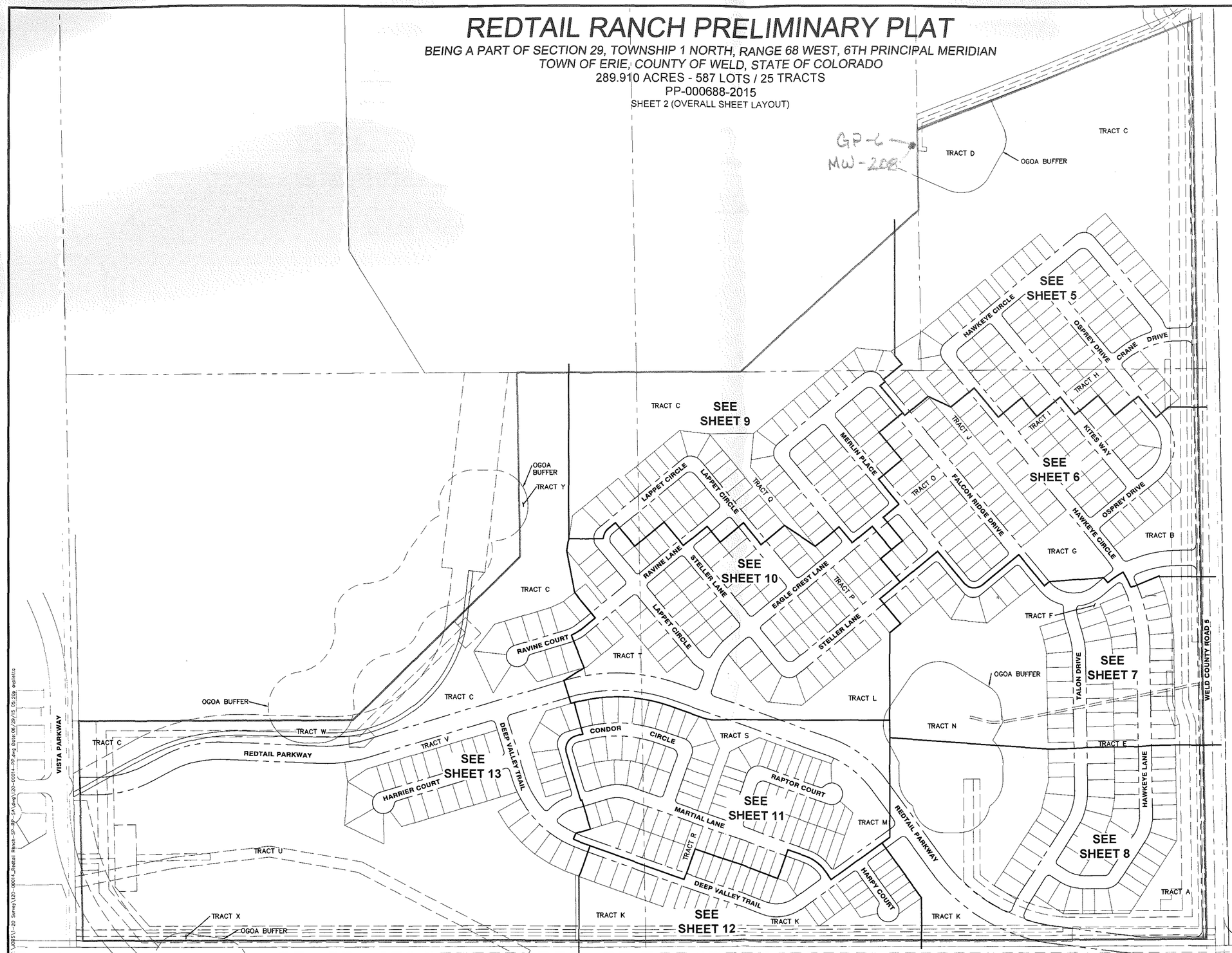
**Preservative:** H = HCl N = Nitric SF = Sulfuric

****Container:** A = Amber B = Brass C = Clear Glass P = Plastic S = Soil Jar SU = Summa PF = PUF T = Tedlar TU = Tube OT = Other

# REDTAIL RANCH PRELIMINARY PLAT

BEING A PART OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 68 WEST, 6TH PRINCIPAL MERIDIAN
TOWN OF ERIE, COUNTY OF WELD, STATE OF COLORADO
289.910 ACRES - 587 LOTS / 25 TRACTS
PP-000688-2015
SHEET 2 (OVERALL SHEET LAYOUT)

NOTE:
SEE SHEETS 3 AND 4 FOR OVERALL SUBDIVISION BOUNDARY AND PARCEL INFORMATION.
SEE SHEET 14 FOR TRACTS A, B, J & Q DETAILS.
SEE SHEET 15 FOR TRACTS K, L, N & S DETAILS.
SEE SHEET 16 FOR TRACTS U, V & X DETAILS.
SEE SHEET 17 FOR TRACTS C, D, W & Y DETAILS.



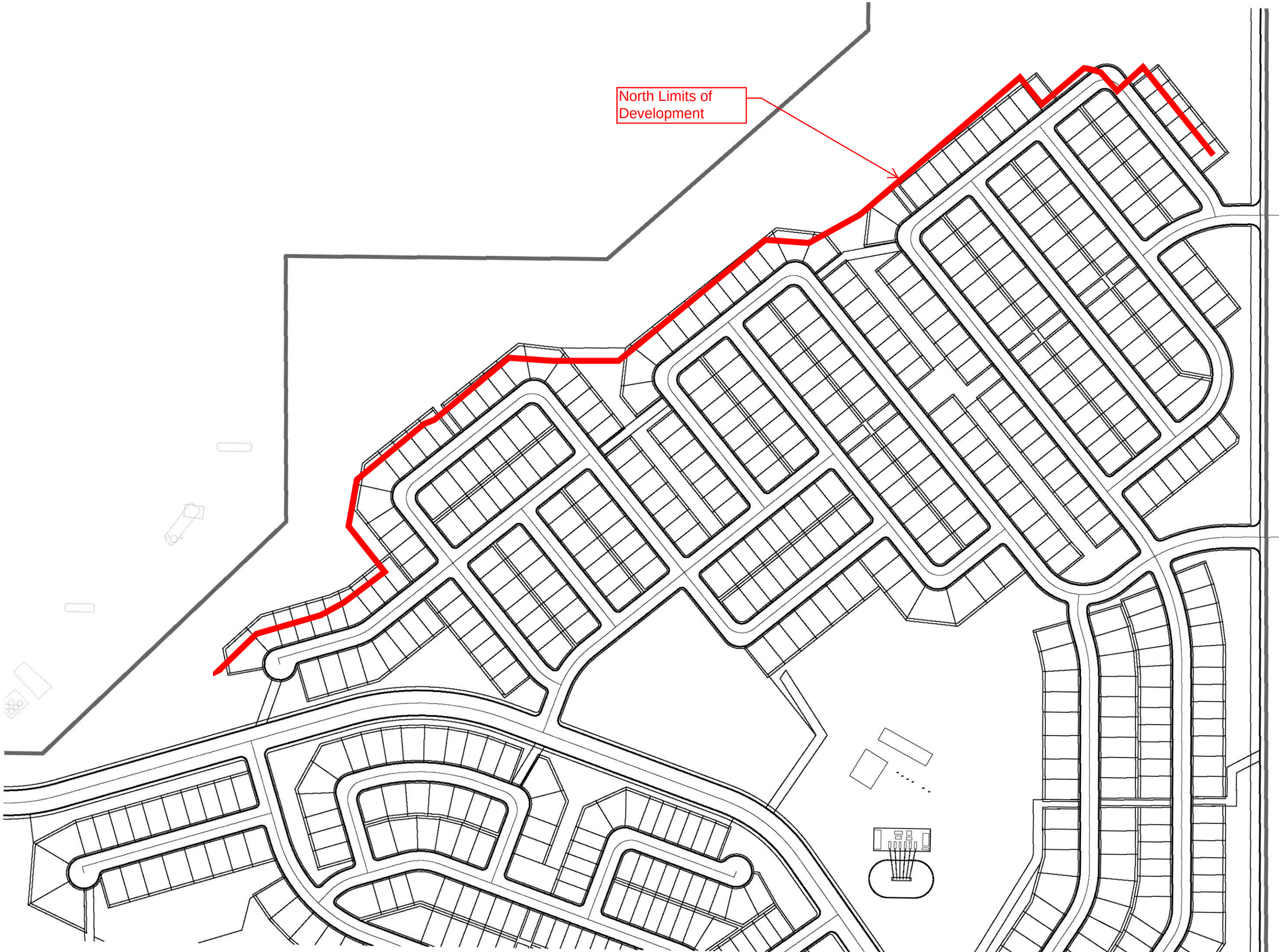

GRAPHIC SCALE
300' 0 150' 300' 600' 1200'
( IN FEET )
1 inch = 300' ft.

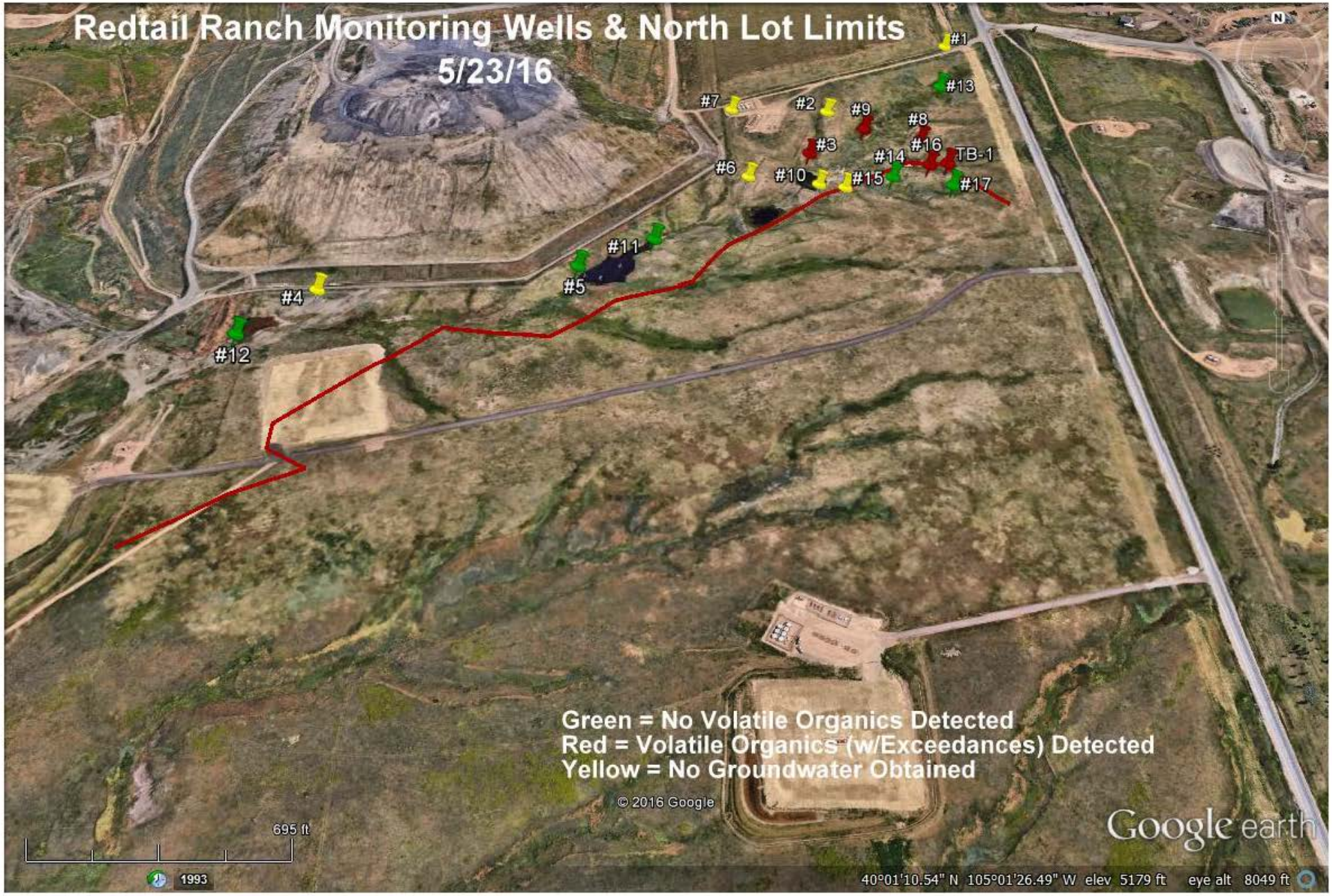

CWC CONSULTING GROUP
CIVIL ENGINEERING · LAND SURVEYING · CONSTRUCTION SERVICES
210 FRONT STREET
CASTLE ROCK, COLORADO 80104
TELEPHONE: 303-380-2700
FAX 303-380-2701

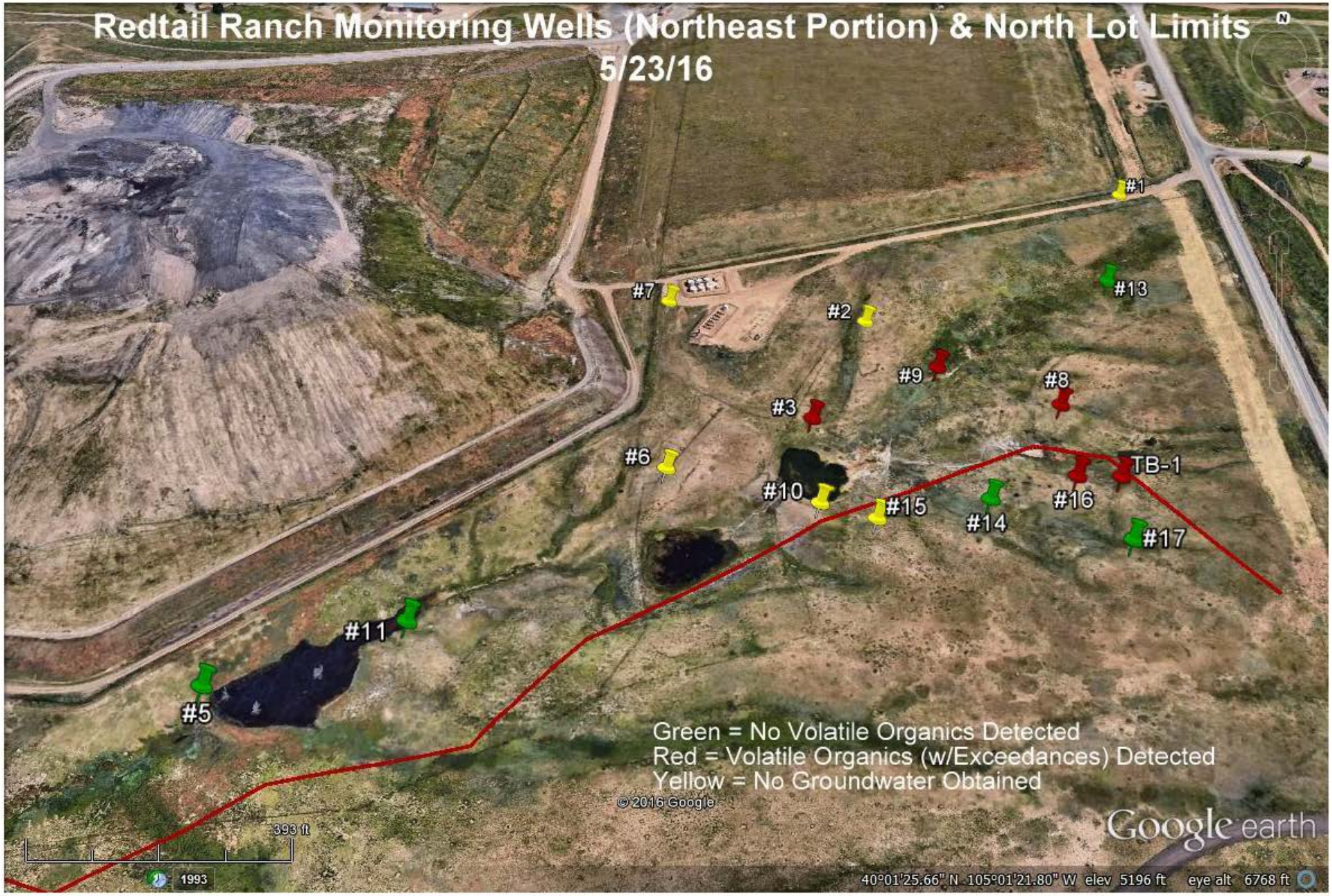

| DATE | REVISION | BY |
|---|---|---|
| 07-01-2015 | 1ST SUBMITTAL | |

DRAFTED BY: S.L.G.3
CHECKED BY: E.D.C.
DATE: JUNE 15, 2015
JOB NO.: 120-00014PP
PREPARED FOR:
STRATUS COMPANIES
8480 EAST ORCHARD ROAD, SUITE 1100
GREENWOOD VILLAGE, CO 80111
PHONE: (720) 214-5000

SHEET NO. 2


North Limits of
Development


Redtail Ranch Monitoring Wells & North Lot Limits
5/23/16
#1
#13
#7
#2
#9
#8
#3
#16
TB-1
#14
#6
#10
#15
#17
#11
#5
#4
#12
Green = No Volatile Organics Detected
Red = Volatile Organics (w/Exceedances) Detected
Yellow = No Groundwater Obtained
© 2016 Google
695 ft
1993
Google earth
40°01'10.54" N 105°01'26.49" W elev 5179 ft eye alt 8049 ft


Redtail Ranch Monitoring Wells (Northeast Portion) & North Lot Limits
5/23/16
#1
#13
#7
#2
#9
#8
#3
#6
TB-1
#10
#15
#14
#16
#17
#11
#5
Green = No Volatile Organics Detected
Red = Volatile Organics (w/Exceedances) Detected
Yellow = No Groundwater Obtained
© 2016 Google
Google earth
393 ft
1993
40°01'25.66" N 105°01'21.80" W elev 5196 ft eye alt 6768 ft

To: Richard Dean, Stratus Companies
Dave Stewart, Stewart Environmental
Jon Steeler, Senn Visciano Canges P.C.
From: Robert Woellner and Anatole Konowal, QUEST Environmental
Date: August 19, 2016
Re: Redtail Ranch March-August 2016 Volatile Organics in Groundwater Sampling Results

Quality Environmental Services and Technologies, Inc. ("QUEST") was retained by Stratus Companies to conduct follow-up groundwater sampling on August 10 and 11, 2016 in the proposed buffer zone area as well as within the northern limits of the proposed development's residential lots at the Redtail Ranch property.

QUEST's sampling protocol was developed based on the site conditions as provided in QUEST's Phase I environmental site assessment, subsequent Phase II groundwater sampling, and discussions with Stratus, CDPHE, and other site representatives. The subject site is downgradient from several landfills and may have had localized surface debris disposal on-site in the northeast corner of the site, but is predominantly undisturbed land. The depth to shallow groundwater is extremely variable; when encountered, the groundwater recovery rates are generally very slow; and the volume of the groundwater available in the monitoring wells is typically minimal. Because of these site conditions and the desire to obtain the maximum number of groundwater samples, we have not yet installed permanent monitoring wells with sampling pumps. The Redtail Ranch site contains depths to shallow groundwater that are typically more than 50 feet below ground surface and are slow to recharge, so peristaltic pumps cannot be used (since the practical limit of a peristaltic pump is groundwater depths of 20 to 25 feet) and other sampling pumps may have tubing capacities greater than the volume present within the wells. One must consider the potential impact of the sampling device on the potential bias versus the desired detection levels. Since volatile organic compounds are sensitive to negative pressures that may be created with the use of pumps, then a negative bias may be introduced into the sampling results by the use of a pump. QUEST recognizes that in site conditions such as this in which the wells have an open interval across the water table in a low permeability zone, there may be no way to avoid pumping and/or bailing the wells dry. Although positive-displacement pumps or low-flow submersible pumps with variable controlled flow rates are often preferable, in this case, bailers with a check valve and bottom-emptying device were used to collect the samples since the recovery rates were expected and historically determined to be slow, and the volume of the water to be removed and sampled was minimal (less than five feet of water). QUEST thus concludes that, for the current sampling needs, the most appropriate technology for purging and sampling of the temporary monitoring wells is by bailers with bottom-emptying, control-flow check valves.

Sampling was attempted (for dry wells) or conducted (in wells with groundwater present) in all of the temporary monitoring wells previously installed by QUEST for groundwater sampling at the subject site. The temporary monitoring wells are composed of two-inch PVC piping installed to approximately five to ten feet below the groundwater surface, with ten to fifteen feet of slotted PVC screen where the groundwater depth was unknown. There is an approximately four-inch reservoir (cap) on the bottom of each well. PVC bailers (unweighted, 36-inch bailers) were

utilized for purging and sampling in the monitoring wells. If the groundwater volume was adequate, purging of ten bailers was conducted, then the wells were allowed to recharge prior to sample collection. The same devices used for purging the monitoring wells were used for sampling to minimize the potential for cross-contamination and potential agitation of the water column. Using the bottom-emptying bailers, QUEST transferred the groundwater samples into pre-labeled, laboratory-provided, sterile, 40-ounce, Teflon-capped, clear silica vials with zero headspace. A field blank was prepared in the field with distilled water (provided by Stewart Environmental). The cooler-pack chilled samples were transmitted to the analytical laboratory under strict chain-of-custody. The samples were analyzed by Environmental Chemistry Services, Inc. of Castle Rock, Colorado for volatile organic compounds by EPA method 8260C. This is a gas chromatograph/mass spectrometry method using purge and trap concentration and a capillary chromatography column. The surrogate standards were added to monitor purging efficiency.

The following summary tables and attached laboratory reports detail the sample results as compared with the Colorado Department of Public Health and Environment (CDPHE) Groundwater Protection Values Soil Cleanup Table (Water Standard). March samples were collected March 2 and 9, 2016. April samples were collected April 11, 12, 14, and 25, 2016. May samples were collected May 11, 16, and 23, 2016. August samples were collected August 10 and 11, 2016. In the following tables, exceedances are identified in bold.

***GW#3***

| **Compound** | **March 2016 (µg/L)** | **April 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|---|
| Freon-11 | ND | ND | 8.5 | NA |
| 1,1-Dichloroethene (1,1-DCE) | ND | **140** | **150** | 7 |
| Freon-113 | 50 | 160 | 280 | NA |
| 1,1-Dichloroethane (1,1-DCA) | ND | ND | 10 | 61 |
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | ND | ND | **31** | 14 |
| Chloroform | ND | ND | **3.6** | 3.5 |
| Tetrahydrofuran (THF) | ND | 160 | 420 | NA |
| 1,1,1-Trichloroethane | ND | ND | 16 | 200 – 1,400 |
| Trichloroethene (TCE) | **8.3** | **480** | **3,000** | 5 |

*ND=None Detected, NA=Not Applicable

***GW#5***

No volatile organics were detected during the March 2016, April 2016, and August 2016 sampling.

***GW#8***

| **Compound** | **April 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|
| 1,1-Dichloroethene (1,1-DCE) | ND | **25** | 7 |
| Freon-113 | ND | 190 | NA |
| Trans-1,2-Dichloroethene | ND | 4.5 | 100 |
| 1,1-Dichloroethane (1,1-DCA) | ND | 30 | 61 |
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | **350** | **800** | 14 |
| Tetrahydrofuran (THF) | ND | 140 | NA |
| Trichloroethene (TCE) | **560** | **1,100** | 5 |
| PCE | ND | **6.6** | 5 |

*ND=None Detected, NA=Not Applicable

***GW#9***

| **Compound** | **April 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | **150** | 3.8 | 14 |
| Tetrahydrofuran (THF) | 270 | 290 | NA |
| Benzene | ND | 2.6 | 5 |
| Trichloroethene (TCE) | **130** | **6.1** | 5 |
| m,p-Xylene | ND | 4.2 | 1400 (Total Xylenes) |
| o-Xylene | ND | 3.3 | 1400 (Total Xylenes) |
| 1,2,4-Trimethylbenzene | ND | 5.9 | NA |
| 1,4-Dichlorobenzene | ND | 11 | 75 |

*ND=None Detected, NA=Not Applicable

***GW#11***

No volatile organics were detected during the April 2016 and August 2016 sampling.

***GW#12***

No volatile organics were detected during the April 2016 and August 2016 sampling.

***GW#13***

| **Compound** | **April 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|
| Freon-11 | ND | 8.7 | NA |
| 1,1-Dichloroethene (1,1-DCE) | ND | **27** | 7 |
| Freon-113 | 0.12 | 130 | NA |
| Tetrahydrofuran (THF) | ND | 3.6 | NA |

*ND=None Detected, NA=Not Applicable

***GW#14***

No volatile organics were detected during the May 2016 and August 2016 sampling.

***GW#16***

| **Compound** | **May 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|
| Vinyl Chloride (VC) | **120** | **130** | 0.023 |
| 1,1-Dichloroethene (1,1-DCE) | **61** | **54** | 7 |
| Freon-113 | 810 | 2,200 | NA |
| Trans-1,2-Dichloroethene | ND | 18 | 100 |
| 1,1-Dichloroethane (1,1-DCA) | **98** | **73** | 61 |
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | **2,500** | **1,700** | 14 |
| Tetrahydrofuran (THF) | 510 | 1,000 | NA |
| 1,1,1-Trichloroethane | ND | 4.3 | 200 – 1,400 |
| Trichloroethene (TCE) | **4,500** | **2,200** | 5 |
| PCE | ND | **14** | 5 |
| 4-Isopropyltoluene | ND | 3.8 | NA |

*ND=None Detected, NA=Not Applicable

***GW#17***

| **Compound** | **May 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | ND | 4.1 | 14 |
| Trichloroethene (TCE) | ND | **5.9** | 5 |

*ND=None Detected, NA=Not Applicable

***TB-1***

| **Compound** | **May 2016 (µg/L)** | **August 2016 (µg/L)** | **CDPHE GW Standard (ug/L)** |
|---|---|---|---|
| 1,1-Dichloroethene (1,1-DCE) | **37** | 6.6 | 7 |
| Freon-113 | ND | 32 | NA |
| 1,1-Dichloroethane (1,1-DCA) | ND | 28 | 61 |
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | **230** | **130** | 14 |
| Tetrahydrofuran (THF) | ND | 10 | NA |
| 1,1,1-Trichloroethane | ND | 14 | 200 – 1,400 |
| Trichloroethene (TCE) | **610** | **220** | 5 |

*ND=None Detected, NA=Not Applicable

One field blank was prepared in the field with distilled water (provided by Stewart Environmental). The field blank contained 4.7 µg/L of Tetrahydrofuran (THF). No other analytes were detected in the field blank.

The following summary table and attached laboratory report details the soil sample results as compared with the EPA Regional Screening Levels (RSLs) for soils and CDPHE Groundwater Protection Values Soil Cleanup Table (Groundwater Protection Level). Since November 28, 2012, the State of Colorado has been utilizing the EPA Regional Screening Levels (RSLs) rather than the previously utilized Colorado Soil Evaluation Values (CSEVs).

***GW#9 Soil***

| **Compound** | **April 11, 2016 (µg/Kg)** | **EPA RSLs (Resident Soil) (µg/Kg)** | **CDPHE Groundwater Protection Level (µg/Kg)** |
|---|---|---|---|
| Cis-1,2-Dichloroethene (cis-1,2-DCE) | 16 | 160,000 | 261 |
| Trichloroethene (TCE) | 20 | 940 | 680 |
| 1,4-Dichlorobenzene | 15 | 2,600 | 7,800 |

If you have any questions, please contact Bob Woellner or Tony Konowal at QUEST Environmental at 303-935-1573. We look forward to our continued association.

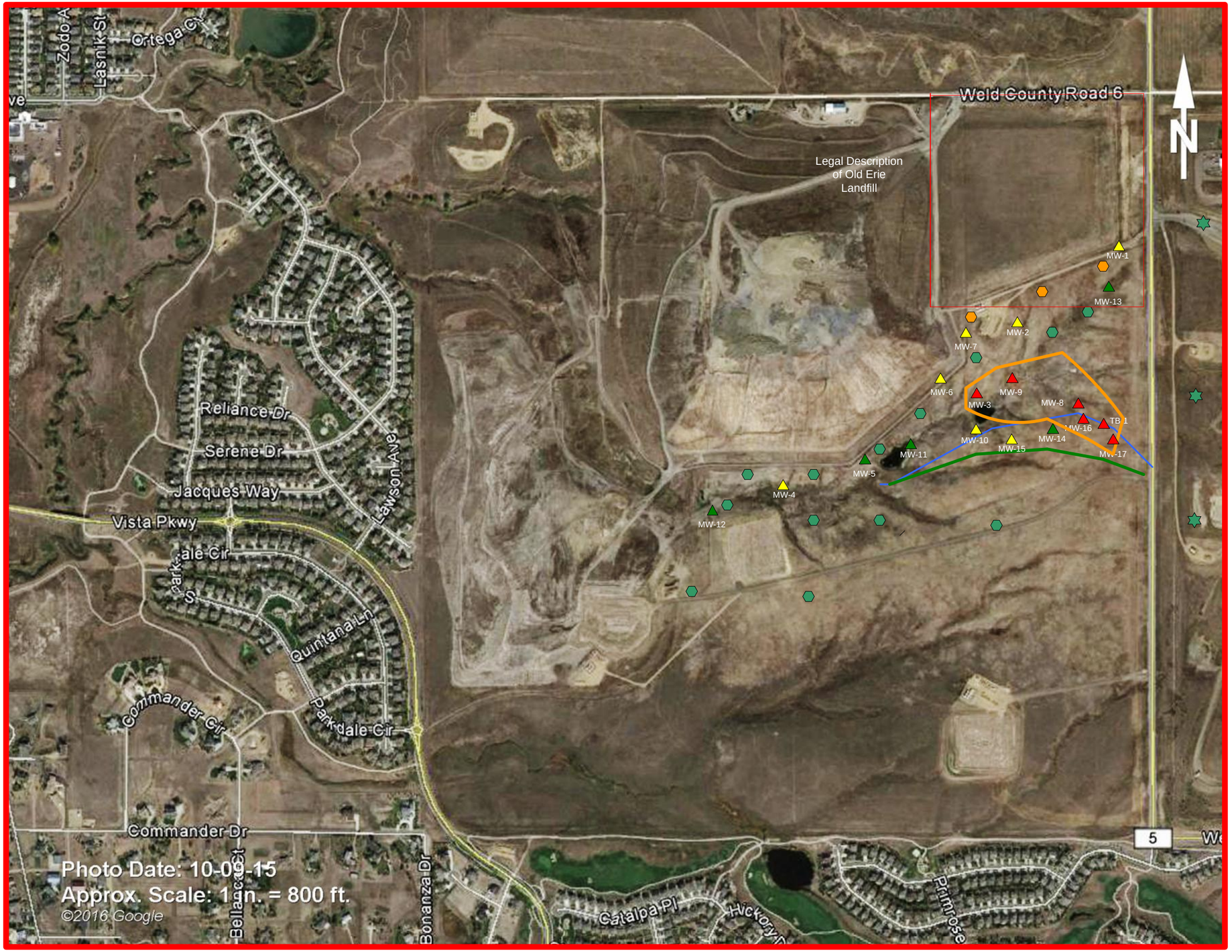
Sincerely,

Robert A. Woellner
President / Environmental Professional

Anatole Konowal
Project Manager / Environmental Professional

Attachment: Laboratory Report

# Red Tail Ranch – Old Erie Landfill – Proposed Clean Line




| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-3 | Mar-16 | Apr-16 | Aug-16 | |
| 1-1, DCE | ND | ND | 8.5 | 7 |
| 1,1-DCA | ND | ND | 10 | 61 |
| Cis-1,2-DCE | ND | ND | 31 | 14 |
| Chloroform | ND | ND | 3.6 | |
| 1,1,1-TCA | ND | ND | 16 | 200-1,400 |
| TCE | 8.3 | 480 | 3000 | 5 |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-5 | Mar-16 | Apr-16 | Aug-16 | |
| | | | | |
| All Parameters | ND | ND | ND | |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-8 | Mar-16 | Apr-16 | Aug-16 | |
| 1-1, DCE | NA | ND | 25 | 7 |
| Trans 1,1-DCE | NA | ND | 4.5 | 100 |
| 1,1-DCA | NA | ND | 30 | 61 |
| Cis-1,2-DCE | NA | 350 | 800 | 14 |
| TCE | NA | 560 | 1100 | 5 |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-9 | Mar-16 | Apr-16 | Aug-16 | |
| Cis-1,2-DCE | NA | 150 | 3.8 | 14 |
| TCE | NA | 130 | 6.1 | 5 |
| Xylenes - Total | NA | ND | 7.5 | 1400 |
| 1,4-Dichlorobenzene | NA | ND | 11 | 75 |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-11 | Mar-16 | Apr-16 | Aug-16 | |
| | | | | |
| All parameters | NA | ND | ND | |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-12 | Mar-16 | Apr-16 | Aug-16 | |
| | | | | |
| All parameters | NA | ND | ND | |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-13 | Mar-16 | Apr-16 | Aug-16 | |
| 1,1-DCE | NA | ND | 27 | 7 |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-14 | Mar-16 | Apr-16 | Aug-16 | |
| | | | | |
| All parameters | NA | ND | ND | |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-16 | Mar-16 | May-16 | Aug-16 | |
| Vinyl Chloride | NA | 120 | 130 | 0.023 |
| 1,1-DCE | NA | 61 | 54 | 7 |
| Trans 1,2-DCE | NA | ND | 18 | 100 |
| 1,1-DCA | NA | 98 | 73 | 61 |
| Cis 1,2-DCE | NA | 2500 | 1700 | 14 |
| TCE | NA | 4500 | 2200 | 5 |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| MW-17 | Mar-16 | May-16 | Aug-16 | |
| Cis 1,2-DCE | NA | ND | 4.1 | 14 |
| TCE | NA | ND | 5.9 | 5 |

| | Conc - ug/l | | | WQ Standard |
|---|---|---|---|---|
| TB-1 | Mar-16 | May-16 | Aug-16 | |
| 1,1-DCE | NA | 37 | 6.6 | 7 |
| 1,1-DCA | NA | ND | 28 | 61 |
| Cis 1,2-DCE | NA | 230 | 130 | 14 |
| 1,1,1-TCA | NA | ND | 14 | 200 - 1,400 |
| TCE | NA | 610 | 220 | 5 |

| | |
|---|---|
| Preliminary Plat Lot Line | |
| Proposed Lot Line | |
| Contaminated Well - GW | ▲ |
| Clean Well - GW | ▲ |
| Dry Well | ▲ |

STATE OF COLORADO

- CDPHE, cdphe <cdphe.hmdrecordscenter@state.co.us>

# Fwd: Redtail Ranch

1 message

**Stovall - CDPHE, Curtis** <curtis.stovall@state.co.us> Thu, Sep 29, 2016 at 2:27 PM
To: cdphe - CDPHE <cdphe.hmdrecordscenter@state.co.us>

Hello Kim:

Please file this email and the two attached PDFs as follows:

County: Weld

Site: Old Erie Landfill

Title: Redtail Ranch March-August 2016 Volatile Organics in Groundwater Sampling Results

Code: SW / WLD / OEL 4.3

Document dated: 8/19/16

Document received: 9/7/16

Confidential (Y/N): N

Thanks,
Curt

——— Forwarded message ———
From: **Dave Stewart** <Dave.Stewart@stewartenv.com>
Date: Wed, Sep 7, 2016 at 3:20 PM
Subject: RE: Redtail Ranch
To: "Stovall - CDPHE, Curtis" <curtis.stovall@state.co.us>
Cc: Robert Woellner <woellner@questmi.com>, Richard Dean <rdean@stratuscompanies.com>, JSteeler@sennlaw.com, Martin OGrady - CDPHE <martin.ogrady@state.co.us>, Fonda Apostolopoulos - CDPHE <fonda.apostolopoulos@state.co.us>, David Fronczak <Fronczak.David@epa.gov>, "Ketellapper, Victor" <Ketellapper.Victor@epa.gov>, Edward Smith - CDPHE <edwardh.smith@state.co.us>, Jason King <Jason.King@coag.gov>, Tony Konowal <konowal@questmi.com>, "Henderson, Jerry" <jerry.henderson@state.co.us>, Freddy Arck - CDPHE <freddy.arck@state.co.us>

Curt, thanks for sending this note. In regard to Bob Woellner's email of last Friday, I have attached a link to a drop box folder that I sent earlier today (https://www.dropbox.com/sh/vcav81fefyx25qb/AABpdQp0h3tuuCai1RycoUjDa?dl=0) with the report describing Quest's August sampling results. We have also included a map of the property in question with the sampling results depicted on the map. We know you have raised some concerns regarding potential land filling at the north end of the Redtail Ranch property (a copy of this map is provided in the drop box). As we will discuss on last Thursday, we do not think any land filling has been done at the north end of the Redtail property. We have included drilling logs from the many investigations that have been done on that property over the last decade and none of those logs indicate that trash was encountered. As you will note, these results are consistent with the findings in PA prepared by CDPHE in 1990. Ms. Buckingham researched the historical records and interviewed numerous folks who all indicated that the IBM waste/Sundstrand waste and potentially other hazardous waste was disposed in the Old Erie Landfill and not south of there on the Redtail Ranch Property. We have also included in the drop box a significant number of aerial photos that also indicate that there was no land filling on the northern section of the Redtail Ranch. We will be happy to discuss those as well.

In any event we look forward to our meeting to discussing the Redtail Ranch property and the development that is planned for the southern reaches of that property.

Dave Stewart

STEWART ENVIRONMENTAL CONSULTANTS, LLC
ENGINEERING FOR LIFE

David R Stewart, PhD, PE

President and CEO

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3601 Automation Way, Suite 200

Fort Collins, Colorado 80525

t: 970-226-5500

c: 970-217-6501

f: 970-226-4946

e: dave.stewart@stewartenv.com

w: www.stewartenv.com

---

**From:** Stovall - CDPHE, Curtis [mailto:curtis.stovall@state.co.us]
**Sent:** Wednesday, September 07, 2016 12:04 PM
**To:** Dave Stewart
**Cc:** Robert Woellner; Richard Dean; Jonathan H. Steeler (JSteeler@sernlaw.com); Martin OGrady - CDPHE; Fonda Apostolopoulos - CDPHE; David Fronczak; Ketellapper, Victor; Edward Smith - CDPHE; Jason King; Tony Konowal; Henderson, Jerry; Freddy Arck - CDPHE
**Subject:** Re: Redtail Ranch

Hello All,

As a reminder, tomorrow's meeting will be held in Building C, Conference Room C1A starting at 10:00am. Please sign in at the security desk at the main entrance of Building A (east side of 5-story building closest to Cherry Creek Drive). The guard will give you a badge and provide directions to C1A. If you have trouble finding the room, please call me on my cell phone and I'll assist you. My cell no. is (303) 817-1442.

We look forward to seeing everyone tomorrow.

Thanks,

Curt

On Wed, Sep 7, 2016 at 8:25 AM, Dave Stewart <Dave.Stewart@stewartenv.com> wrote:

Curt, here is a link for the presentation tomorrow.

Dave

https://www.dropbox.com/sh/vcav81fefyx25qb/AABpdQp0h3tuuCai1RycoUjDa?dl=0

STEWART ENVIRONMENTAL CONSULTANTS, LLC
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f: 970-226-4946

e: dave.stewart@stewartenv.com

w: www.stewartenv.com

---

**From:** Stovall - CDPHE, Curtis [mailto:curtis.stovall@state.co.us]
**Sent:** Friday, September 02, 2016 3:11 PM
**To:** Robert Woellner
**Cc:** Richard Dean; Jonathan H. Steeler (JSteeler@sennlaw.com); Dave Stewart; Martin OGrady - CDPHE; Fonda Apostolopoulos - CDPHE; David Fronczak; Ketellapper, Victor; Edward Smith - CDPHE; Jason King; Tony Konowal
**Subject:** Fwd: Redtail Ranch

Hi Bob,

Thanks for the heads up. Obviously, the sooner we receive access to the file share, the more likely we will have an opportunity to review the information before the meeting. In addition to me, please provide access to the file share to Martin O'Grady, David Fronczak, Fonda Apostolopoulos, Victor Ketellapper, Ed Smith, and Jason King.

We look forward to next week's meeting.

Thanks again,

Curt

——— Forwarded message ———
From: **Robert Woellner** <woellner@questmi.com>
Date: Fri, Sep 2, 2016 at 1:08 PM
Subject: RE: Redtail Ranch
To: "Stovall - CDPHE, Curtis" <curtis.stovall@state.co.us>
Cc: Richard Dean <rdean@stratuscompanies.com>, "Jonathan H. Steeler (JSteeler@sennlaw.com)" <JSteeler@sennlaw.com>, "Dave Stewart (dave.stewart@stewartenv.com)" <dave.stewart@stewartenv.com>, Robert Woellner <woellner@questmi.com>, Tony Konowal <konowal@questmi.com>, Admin User <admin@questmi.com>, "voorheesj@gtlaw.com" <voorheesj@gtlaw.com>

Curt;

I understand that Dave Stuart is setting up a file share site for the Redtail Ranch documents; and that QUEST's recent sampling report, well logs, numerous maps and photographs, and relevant documents will all be posted to that site within the first two days of next week. Dave will be forwarding the link to the site directly.

We look forward to seeing you on Thursday.

Best regards, Bob

Robert A. Woellner, President

QUEST Environmental

5211 S. Quebec St.

Greenwood Village, CO 80111

303-935-1573 tel.

303-935-7955 fax

woellner@questmi.com

www.questmi.com

cc: Stratus Team: Richard Dean, Jon Steeler, Dave Stewart, Tony Konowal, and John Voorhees

**From:** Robert Woellner
**Sent:** Tuesday, August 23, 2016 1:59 PM
**To:** Stovall - CDPHE, Curtis
**Cc:** Richard Dean; Jonathan H. Steeler (JSteeler@sennlaw.com); Robert Woellner; Admin User
**Subject:** RE: Redtail Ranch

Curt,

Thank you for the email. We are in the process of finalizing the report with mapped locations and will forward it to you well before the September 8th meeting.

Best regards, Bob

Robert A. Woellner, President

QUEST Environmental

5211 S. Quebec St.

Greenwood Village, CO 80111

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303-935-7955 fax

woellner@questmi.com

www.questmi.com

**From:** Stovall - CDPHE, Curtis [mailto:curtis.stovall@state.co.us]
**Sent:** Tuesday, August 23, 2016 12:34 PM
**To:** Robert Woellner
**Cc:** Richard Dean
**Subject:** Redtail Ranch

Hi Bob,

I spoke briefly with Richard Dean this morning. He mentioned that one of the agenda items for the September 8th meeting is to discuss the results of a second round of groundwater sampling that Quest recently conducted. We would greatly appreciate it if you could forward the groundwater results in advance of the meeting if possible (raw lab data would suffice).

I mentioned to Richard that there will be some new faces at the meeting representing CDPHE and EPA. Martin O'Grady and Fonda Apostolopoulos are planning to attend from CDPHE's Superfund/Brownfields Program. David Fronczak from EPA's Assessment & Revitalization Program and Ed Smith from CDPHE's Solid Waste Compliance Assurance Unit are planning to attend.

We look forward to seeing you on the 8th.

Thanks,

Curt

–

**Curt Stovall, P.E.**
**Environmental Protection Specialist**
Solid Waste Permitting Unit
Solid Waste and Materials Management Program

COLORADO
Hazardous Materials
& Waste Management Division
Department of Public Health & Environment

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–

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–

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–

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**2 attachments**

**2016-8-19 Quest - Redtail Aug 2016 Follow-Up GW Smplg. Tables.pdf**
128K

**2016-9-7 Stewart Clean Line v4.pdf**
565K

**DOPHE 136**

**HAZARDOUS MATERIALS**

SW_1.1._7029

BOX#

257

**Old Erie Landfill/OEL**

2/2/2007

WLD

Solid Waste - Correspondence - General - Summary Report of Preliminary Site Investigation Activities, Weld County, Colorado

**SW/1.1./7029**

**SW/1.1./7014**

TETRA TECH

Boulder Office
4900 Pearl E. Circle
Suite 300W
Boulder, CO 80301
303.447.1823
Fax: 303.447.1836

RECEIVED
MAR 21 2007
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

February 2, 2007

Mr. Jon Benallo
Vice President of Development
SouthWestern Investment Group, Inc.
333 West Hampden Avenue, Suite 810
Englewood. Colorado 80110

**RE: Summary Report of Preliminary Site Investigation Activities**
**Weld County, Colorado**

Dear Mr. Benallo:

This letter report summarizes the site investigation field activities recently performed by Tetra Tech at the Pratt Property in Weld County, Colorado (the Property). A summary of the proposed scope of the site investigation activities is listed below:

- Attempt to locate boring logs for the two existing monitoring wells (MW-1 West and East) on the Property and collect groundwater samples from each of the wells. Samples will be analyzed for the same suite of constituents included in the routine detection monitoring program conducted by DRLS.

- Install three gas monitoring points along the northern boundary of the Property adjacent to the Old Erie Landfill. These gas monitoring points will be installed using a Geoprobe drill rig and vapor samples collected from each location will be analyzed for methane and VOCs.

- Conduct further investigation into the location of the reported mud pits associated with the oil and gas wells. Global positioning system (gps) coordinates for the mud pit locations will be obtained from COGCC records and these locations will be field verified based on observations for residual drilling mud, petroleum hydrocarbons in the soil, or other visual evidence. Shallow borings will be advanced using a Geoprobe drill rig. Samples will be collected from the borings within the identifiable mud pits located on the Property and analyzed for TPH and other contaminants required by the COGCC for mud pit closure.

Attempts to locate the boring logs for the two existing monitoring wells were unsuccessful. There are no records of these wells on file with the State Engineer's Office, and Stewart Environmental, who reported analytical results from these wells in their Phase II Site Investigation Report from 1992 were unable to provide any well construction details or boring logs. Installation of the three soil vapor monitoring points was completed on January 11, 2007 and the sampling of soil vapor and groundwater was conducted on January 15 and 16, 2007. The former mud pit locations were not sampled due to deep snow drifts, which prevented access to these areas. Additional detail regarding the completed site investigation activities are provided below.

SW WLD OEL1.1

**Summary of Completed Site Investigation Activities**

Three soil vapor monitoring points were installed on January 11, 2007 along the northern property boundary, just south of the Old Erie Landfill. Their locations are shown on Figure 1 (attached). Site Services, Inc. of Golden Colorado was subcontracted to install the soil vapor monitoring points. A direct push GeoProbe rig was used to create two and a half inch borings. Each boring was continuous sampled, and boring logs with construction details for each vapor monitoring point are included in Attachment A. The soil vapor monitoring points were installed through the GeoProbe drilling rods. Three-eighths inch tubing was connected to a one-foot screened stainless steel soil vapor extraction point and extended to the surface. One and a half feet of sand was placed around the soil vapor point screen and the remaining boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover. SV-1, the western point, was installed with a screened interval between 15.5 and 6.5 feet below ground surface (bgs). SV-2 was installed with a screened interval between 15.5 and 16.5 feet bgs. SV-3, the eastern point, was installed with a screened interval between 18 and 19 feet bgs. Prior to soil vapor sampling on January 16, 2007, the probe installations were allowed to equilibrate for four days. A SKC Universal PCXR4 personal air sampling pump was used to purge and sample each of the soil vapor points. The air sampling pump was calibrated in the field to a flow rate of 2-liters per minute using a traceable manometer. Purging of each soil vapor point was accomplished by connecting the pump intake directly to the 3/8-inch tubing extending to the surface from each soil vapor point. At each soil vapor point, 10 liters of soil vapor were purged prior to sample collection. After completion of each purge, a tedlar bag was connected directly to the air sampling pump exhaust using a dedicated piece of tygon tubing. Each soil vapor sample was contained in a ten liter tedlar bag, filled at a rate of 2 l/min. The three samples were shipped to Atmospheric Analysis & Consulting, Inc. for analysis. The soil vapor was analyzed for a landfill gas suite and volatile organic compounds from the EPA's AP-42 list. The laboratory data is presented in Table 1 and discussed below.

Groundwater samples were collected from the two existing monitoring wells on January 15, 2007. As indicated on Figure 1, these wells are located in the south-central portion of the site near the bottom of a swale running east to west through the Property. Prior to sample collection the water level and total depth was recorded. The western well, identified as MW-1A has a total depth of 41.9 feet and the depth to water was measured at 18.50 feet below the top of the casing. The eastern well, identified as MW-1B has a total depth of 79.7 feet and the depth to water was measured at 54.62 feet below the top of the casing. Disposable bailers were used to purge the wells of three well volumes prior to sample collection. Sample containers were placed on ice in a cooler and shipped to Pace Analytical Labs for analysis. The water generated from each well was clear and free of sheens and odors. Each sample was analyzed for Total Petroleum Hydrocarbons (TPH) and Total Volatile Organic Compounds (VOCs). The laboratory data is presented in Table 2 and discussed below.

**Discussion of Preliminary Site Investigation Results**

Analytical results from both the groundwater and soil vapor samples have been evaluated against risk-based screening levels developed in accordance with the *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils*, developed by the United States Environmental Protection Agency's Office of Solid Waste and Emergency Response (EPA, 2002). This document, referred to as the Subsurface Vapor Intrusion Guidance (SVIG) presents an approach to determining if there is a potential for an unacceptable risk associated with vapor intrusion. Vapor intrusion is defined as the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface soils and into indoor air spaces in ways similar to that of radon gas seeping into homes (EPA, 2002). The Draft SVIG presents generic screening levels or target shallow gas or groundwater concentrations

for a long list of organic chemicals, which correspond to risk-based concentrations for indoor air in residential settings. These screening levels are calculated over a risk range of $1 \times 10^{-4}$ (one in ten-thousand) to $1 \times 10^{-6}$ (one in one million). A primary factor utilized in calculating the screening levels is the soil gas-to-indoor air, or groundwater-to-indoor air attenuation factors, or the anticipated amount of vapor which may migrate from the subsurface into indoor air spaces. Many site-specific conditions affect this migration pathway, the calculation of appropriate attenuation factors, the determination of whether a complete pathway exists and the evaluation of the potential risk associated with vapor intrusion. These conditions or factors include building characteristics, chemical type, soil type, and depth to the source (either in soil gas or groundwater). As this document is a guidance document, it does not impose any requirements or obligations and the screening levels developed through its use are not regulatory limits.

The analytical results for the soil vapor samples collected from SV-1, SV-2, and SV-3 are presented in the attached Table 1. This table also presents the Target Shallow Soil Gas Concentration, or screening levels, from the Draft SVIG based on a conservative soil gas-to-indoor air attenuation factor of 0.1 at a risk level of $1 \times 10^{-6}$ (one in one million). This attenuation is considered appropriate for soils less than five feet below a foundation surface. As stated above, each of the soil vapor samples were collected from depths of less than 20 feet below ground surface. As indicated in Table 1, the observed soil vapor concentrations for 8 volatile organic compounds and hexane exceed the screening level values, with at least one exceedance in each of the three monitoring points. The observed concentrations of vinyl chloride, methylene chloride, trichloroethene (TCE) and tetrachloroehtylene (PCE) in SV-3 all exceed the risk-based screening levels by a factor of more than 100 (TCE by nearly 20,000 and PCE by more than 2,000). Each of these constituents is a known or suspected carcinogen and the screening levels are based on the potential cancer risk associated with exposure to these chemicals. The maximum methane concentration observed occurred in SV-3, at 1.2% methane by volume. This is less than the lower explosive limit for methane of 5%, the threshold limit for methane gas at a landfill facility boundary. Based on these data, additional site specific information is necessary to fully characterize the nature and extent of potential contamination in this area of the site, to understand whether the site conditions represent a complete exposure pathway, and to fully characterize the potential risks.

The analytical results for the groundwater samples collected from MW-1A and MW-1B are presented in the attached Table 2. This table also presents the Federal Drinking Water Standards and Target Groundwater Concentrations, or screening levels, from the Draft SVIG based on a conservative, or relatively high, soil gas-to-indoor air attenuation factor of 0.001 at a risk level of $1 \times 10^{-6}$ (one in one million). None of the petroleum hydrocarbon compounds or VOCs analyzed for in the groundwater samples were detected above the laboratory reporting limits presented in the table and none exceed the Federal Drinking Water Standards, or screening levels. However, it should be noted that the screening levels for TCE, PCE, vinyl chloride and other VOCs have been set equal to the Maximum Contaminant Levels (MCLs) identified in the Federal Drinking Water Standards, and may be subject to further review and modification.

**Additional Site Characterization**

Based on the results of the initial site investigation, presented above, and discussions with SouthWestern, additional investigation activities to further characterize the property have been considered. The objectives of an enhanced site investigation include: the investigation of the potential source and extent of VOCs in soil vapor in the northeastern portion of the property near the Old Erie landfill; a more complete evaluation of potential soil gas along the northern property boundary, south of Denver Regional Landfill South (DRLS); the collection of additional site characterization information relative to the evaluation of attenuation factors and potential exposure pathways; and the

characterization of groundwater quality throughout the property. To meet these objectives the following activities are proposed:

- Installation and sampling of five or six additional soil vapor monitoring points within the proposed 300-foot buffer along the northern boundary of the property;
- Re-sampling of the three recently installed vapor monitoring points (SV-1, SV-2, and SV-3);
- Installation and sampling of six to eight groundwater monitoring wells located throughout the property; and
- Conduct the originally proposed investigation of the former mud pit locations associated with the oil and gas wells.

The proposed locations of the additional monitoring points are illustrated on the attached Figure 2. The proposed soil vapor monitoring points are anticipated to be installed within the unsaturated soil zone above the weathered claystone bedrock, typically encountered at depths of 20 feet or less. The locations have been selected to further characterize and assist in defining the presence and extent of affected soil vapor south of the Old Erie Landfill and to assess the soil vapor quality immediately south of the DRLS, where the landfill's landfill gas monitoring wells are all completed within the claystone bedrock formation at depths ranging from 40 to 100 feet below ground surface. Field measurements of methane using a landfill gas detector will be made in the field following the installation of the vapor monitoring points. If these field observations reveal the presence of methane, or any other landfill gas indicators, additional vapor monitoring points may be installed in an attempt to define the limits of any affected soil vapor or gas migration. Very shallow (three to five feet) monitoring points are also being considered in the vicinity of SV-3 to evaluate vertical gradients and potential attenuation.

As documented through our review of landfill records available through the CDPHE, groundwater conditions in the area are somewhat complex. The existing groundwater monitoring network downgradient of the DRLS consists of four monitoring wells completed in the No. 6 coal seam which exists beneath the property, dipping to the southeast at a reported angle of 1.5 degrees. Groundwater may also occur in shallower isolated or perched zones of more permeable sand and sandstone lenses within the claystone bedrock of the Denver-Arapahoe formation. In reports for both the DRLS and the Front Range Landfill (FRL) to the east, it has been concluded that groundwater encountered in these shallow, perched systems are typically isolated and not likely to be continuous, or contiguous, across the site.

Groundwater monitoring results from the DRLS have not identified any "statistically significant" increases (see December 8, 2006 *Letter Report for Due Diligence Assessment*) of contaminants in the downgradient wells within the No. 6 coal 'aquifer'. Along the west side of the DRLS and throughout the FRL site, perched groundwater zones have been identified in the claystone formation above the No. 6 coal. As discussed previously, and in accordance with the EPA's Draft SVIG, vapor intrusion is typically a concern where the depth to groundwater is less than 100 feet. Therefore, the focus of the enhanced groundwater investigation will be to identify the occurrence of groundwater within the No. 6 coal 'aquifer', or shallower, perched aquifers to a maximum depth of 100 feet below ground surface. Depending on subsurface conditions encountered during drilling, monitoring well pairs (nested wells) may be installed at one location if multiple perched aquifers, or saturated zones, are encountered. It is anticipated that the No. 6 coal 'aquifer' may be encountered at depths of less than 100 feet in the western portion of the site, but in the eastern portion of the property this aquifer may be as deep or deeper than 175 feet, as the surface topography rises to the east and the aquifer appears to dip, or get deeper, to the east or southeast.

If you have any questions regarding the discussion of results, or proposed scope of additional site investigation activities, please do not hesitate to contact me. It is our pleasure to be of continued service to SouthWestern in the evaluation of the Pratt Property.

Sincerely,

**TETRA TECH**

Daryl L. Longwell, P.E.
Senior Project Manager

Attachments

Table 1 – Soil Vapor Monitoring Results
Table 2 – Groundwater Monitoring Results
Figure 1 – Site Plan and Existing Monitoring Locations
Figure 2 – Proposed Enhanced Site Investigation Locations
Attachment A – Soil Boring Logs and Vapor Monitoring Point Construction Details

**Table 1**
**Pratt Property, Weld County, CO**
**Soil Vapor Monitoring Results - January 16, 2007**
**SouthWestern Investment Group, Inc.**

| Compound | Target Shallow Soil Gas Concentration [1] (ppbv) | SV-1 (West) Screened: 15-16 ft bgs (ppbv) | SV-2 Screened: 16.5-17.5 ft bgs (ppbv) | SV-3 (East) Screened: 18-19 ft bgs (ppbv) |
|---|---|---|---|---|
| Chlorodifluoromethane | 140,000 | 20.2 | <1 [2] | 1,170 |
| Dichlorodifluoromethane | 400 | 263 | 1.1 | **1,110** |
| Chloromethane | 12 | <1 | <1 | <200 |
| Vinyl Chloride | 1.1 | <1 | <1 | **410** |
| Chloroethane | 38,000 | <1 | <1 | 589 |
| Dichlorofluoromethane | -- [3] | 17.7 | 1.3 | 9,460 |
| Ethanol | -- | 11.3 | 7.7 | <400 |
| Acetone | 1,500 | 14 | 13.5 | <400 |
| Trichlorofluoromethane | 1,200 | 5 | <1 | 624 |
| Isopropyl Alcohol | -- | <1 | <1 | <400 |
| Acrylonitrile | 0.17 | <1 | <1 | <200 |
| 1,1-Dichloroethylene | 500 | <1 | <1 | **5,510** |
| Methylene Chloride | 15 | 2.9 | 1.3 | **6,270** |
| Carbon Disulfide | 2,200 | <1 | <1 | <200 |
| t-1,2-Dichloroethylene | -- | <1 | <1 | <200 |
| 1,1-Dichloroethane | 1,200 | 12.7 | <1 | **3,580** |
| 2-Butanone (MEK) | 3,400 | 2.3 | 1.1 | <200 |
| Hexane | 570 | 3.7 | 2.7 | <200 |
| Chloroform | 0.22 | <1 | <1 | <200 |
| 1,2-Dichloroethane | 0.23 | <1 | <1 | <200 |
| 1,1,1-Trichloroethane | 4,000 | 2.2 | <1 | 2110 |
| Benzene | 0.98 | **1.5** | <1 | <200 |
| Carbon Tetrachloride | 0.26 | <1 | <1 | <200 |
| 1,2-Dichloropropane | 8.7 | <1 | <1 | <200 |
| Bromodichloromethane | 0.21 | <1 | <1 | <200 |
| Trichloroethene (TCE) | 0.041 | **1.3** | <1 | **816** |
| 4-Methyl-2-Pentanone (MiBK) | 200 | <1 | <1 | <200 |
| Toluene | 1,100 | 10.5 | 2.8 | <200 |
| 1,2-Dibromoethane | 0.014 | <1 | <1 | <200 |
| Tetrachloroethylene (PCE) | 1.2 | **3.7** | **1.4** | **2,870** |
| Chlorobenzene | 130 | <1 | <1 | <200 |
| Ethylbenzene | 5.1 | <1 | <1 | <200 |
| m- & p-Xylenes | 16,000 | <1 | <1 | <200 |
| 1,1,2,2-Tetrachloroethane | 0.061 | <1 | <1 | <200 |
| o-Xylene | 16,000 | <1 | <1 | <200 |
| 1,3-Dichlorobenzene | 170 | <1 | <1 | <200 |
| 1,4-Dichlorobenzene | 1300 | <1 | <1 | <200 |
| 1,2-Dichlorobenzene | 330 | <1 | <1 | <200 |

**Table 1**
**Pratt Property, Weld County, CO**
**Soil Vapor Monitoring Results - January 16, 2007**
**SouthWestern Investment Group, Inc.**

| Compound, Units | Target Shallow Soil Gas Concentration [1] (ppmv) | SV-1 Screened: 18-19 ft bgs (ppbv) | SV-2 Screened: 16.5-17.5 ft bgs (ppbv) | SV-3 Screened: 15-16 ft bgs (ppbv) |
|---|---|---|---|---|
| TRS [4], ppmv | -- | <0.01 [5] | <0.01 | 0.01 |
| Ethane, ppmv | -- | <0.3 | <0.3 | <0.3 |
| Propane, ppmv | -- | <0.3 | <0.3 | 3.7 |
| Butane, ppmv | -- | <0.3 | <0.3 | 8 |
| Pentane, ppmv | -- | <0.3 | <0.3 | 6.2 |
| Hexane, ppmv | 0.57 | <0.3 | <0.3 | **7.8** |
| NMOC as Methane | -- | 3 | 2.7 | 120 |
| Hydrogen Sulfide, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Carbonyl Sulfide, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Methyl Mercaptan, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Carbon Disulfide, ppmv | 2.2 | <0.01 | <0.01 | 0.01 |
| Ethyl Mercaptan, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Dimethyl Sulfide, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Carbon Monoxide, % | -- | <0.1 % | <0.1 % | <0.1 % |
| Oxygen, % | -- | 18.4 | 18.7 | 13.5 |
| Nitrogen, % | -- | 81 | 81.2 | 73.5 |
| Methane, % [6] | -- | <0.1 % | <0.1 % | 1.2 |
| Carbon Dioxide, % | -- | 0.5 | <0.1 % | 11.7 |

Notes:
(1) Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.1 (less than 5 ft below foundation surface) at a risk level of $1 \times 10^{-6}$ (includes both carcinogenic and non-carcinogenic risk). Source: Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (EPA, 2002).
(2) Values given as a < result indicate that the compound was not detected, and is less than the reporting limit concentration.
(3) No values are given for Target Indoor Air Concentrations where none were listed in the guidance document refereced above.
(4) Total Reduced Sulfur Compounds
(5) Result not detected at a value greater than the Practical Quantitation Limit
(6) Under RCRA Subtitle D, methane gas at a landill facility boundary cannot exceed the lower explosive limit for methane, which is 5%

**Table 2**
**Pratt Property, Weld County, CO**
**Groundwater Monitoring Results - January 15, 2007**
**SouthWestern Investment Group, Inc.**

| Compound | Federal Drinking Water Standards [1] (MCL) (mg/L) | Target Groundwater Concentration [2] (mg/L) | MW-1A (mg/L) | MW-1B (mg/L) |
|---|---|---|---|---|
| **Petroleum Hydrocarbons** | | | | |
| Diesel Fuel | -- [3] | -- | <0.4 [4] | <0.4 |
| Fuel Oil | -- | -- | <0.4 | <0.4 |
| Jet Fuel | -- | -- | <0.4 | <0.4 |
| Kerosene | -- | -- | <0.4 | <0.4 |
| Mineral Spirits | -- | -- | <0.4 | <0.4 |
| Motor Oil | -- | -- | <0.4 | <0.4 |
| Total Petroleum Hydrocarbons | -- | -- | <0.4 | <0.4 |
| **Volatile Organic Compounds (VOCs)** | | | | |
| | ug/L | ug/L | ug/L | ug/L |
| Acetone | -- | 220,000 | <10 | <10 |
| Benzene | 5 | 5 | <1 | <1 |
| Bromobenzene | -- | -- | <1 | <1 |
| Bromochloromethane | -- | -- | <1 | <1 |
| Bromodichloromethane | -- | 2.1 | <1 | <1 |
| Bromoform | -- | 0.0083 | <1 | <1 |
| Bromomethane | -- | -- | <1 | <1 |
| 2-Butanone (MEK) | -- | 440,000 | <10 | <10 |
| tert-Butyl Alcohol | -- | | <10 | <10 |
| n-Butylbenzene | -- | 260 | <1 | <1 |
| sec-Butylbenzene | -- | 250 | <1 | <1 |
| tert-Butylbenzene | -- | 290 | <1 | <1 |
| Carbon disulfide | -- | 560 | <5 | <5 |
| Carbon Tetrachloride | 5 | 5 | <1 | <1 |
| Chlorobenzene | 100 | 390 | <1 | <1 |
| Chloroethane | -- | 28,000 | <1 | <1 |
| Chloroform | -- | 80 | <1 | <1 |
| Chloromethane | -- | 7 | <1 | <1 |
| 2-Chlorotoluene | -- | -- | <1 | <1 |
| 4-Chlorotoluene | -- | -- | <1 | <1 |
| 1,2-Dibromo-3-chloropropane | 0.2 | 33 | <2.5 | <2.5 |
| Dibromochloromethane | 60.0 | 3.2 | <1 | <1 |
| 1,2-Dibromoethane (EDB) | 0.05 | 0.36 | <1 | <1 |
| Dibromomethane | -- | -- | <1 | <1 |
| 1,2-Dichlorobenzene | -- | 2,600 | <1 | <1 |
| 1,3-Dichlorobenzene | 600 | 830 | <1 | <1 |
| 1,4-Dichlorobenzene | 75 | 8,200 | <1 | <1 |
| Dichlorodifluromethane | -- | 14 | <1 | <1 |
| 1,1-Dichloroethane | -- | 2,200 | <1 | <1 |
| 1,2-Dichloroethane | 5 | 5 | <1 | <1 |
| 1,2-Dichloroethene (Total) | -- | -- | <1 | <1 |
| 1,1-Dichloroethene | 7 | 190 | <1 | <1 |
| cis-1,2-Dichloroethene | 70 | 210 | <1 | <1 |
| trans-1,2-Dichloroethene | 100 | -- | <1 | <1 |
| 1,2-Dichlorpropane | 5 | 35 | <1 | <1 |
| 1,3-Dichloropropane | -- | -- | <1 | <1 |
| 2,2-Dichloropropane | -- | -- | <1 | <1 |
| 1,1-Dichloropropene | -- | -- | <1 | <1 |
| cis-1,3-Dichloropropene | -- | 0.84 | <1 | <1 |
| trans-1,3-Dichloropropene | -- | 0.84 | <1 | <1 |

**Table 2**
**Pratt Property, Weld County, CO**
**Groundwater Monitoring Results - January 15, 2007**
**SouthWestern Investment Group, Inc.**

| Compound | Federal Drinking Water Standards [1] (MCL) (mg/L) | Target Groundwater Concentration [2] (mg/L) | MW-1A (mg/L) | MW-1B (mg/L) |
|---|---|---|---|---|
| Ethylbenzene | 700 | 700 | <1 | <1 |
| Hexachloro-1,3-butadiene | -- | 0.33 | <1 | <1 |
| 2-Hexanone | -- | -- | <10 | <10 |
| Isopropylbenzene (Cumene) | -- | 8 | <1 | <1 |
| p-Isopropyltoluene | -- | -- | <1 | <1 |
| Methylene chloride | -- | 6 | <1 | <1 |
| 4-Methyl-2-pentanone (MIBK) | -- | 14,000 | <10 | <10 |
| Methyl-tert-butyl ether | -- | 120,000 | <1 | <1 |
| Naphthalene | -- | 150 | <10 | <10 |
| n-Propylbenzene | -- | 320 | <1 | <1 |
| Styrene | 100 | 8,900 | <1 | <1 |
| 1,1,1,2-Tetrachloroethane | -- | 3 | <1 | <1 |
| 1,1,2,2-Tetrachloroethane | -- | 3 | <1 | <1 |
| Tetrachloroethene | 5 | 5 | <1 | <1 |
| Toluene | 1,000 | 1,500 | <1 | <1 |
| 1,2,3-Trichlorobenzene | | -- | <1 | <1 |
| 1,2,4-Trichlorobenzene | 70 | -- | <1 | <1 |
| 1,1,1-Trichloroethane | 200 | 3,100 | <1 | <1 |
| 1,1,2-Trichloroethane | 5 | 5 | <1 | <1 |
| Trichloroethene | 5 | 5 | <1 | <1 |
| Trichlorofluoromethane | -- | 180 | <1 | <1 |
| 1,2,3-Trichloropropane | -- | 290 | <2.5 | <2.5 |
| 1,2,4-Trimethylbenzene | -- | 24 | <1 | <1 |
| 1,3,5-Trimethylbenzene | -- | 25 | <1 | <1 |
| Vinyl Chloride | 2 | 2 | <1 | <1 |
| Xylene (Total) | 10,000 | 22,000 | <3.0 | <3.0 |
| Gasoline Range Organics | -- | -- | <500 | <500 |

**Notes:** (1) Federal Drinking Water Standards; Maximum Contaminant Levels (MCLs) obtained from http://www.epa.gov/safewater/contaminants/index.html, accessed January 22, 2007.
(2) Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.001 and Partitioning Across the Water Table Obeys Henry's Law at a risk level of 1 x 10-6. Source: Draft Guidance for Evaluating the Vapor Intrusion Indoor Air Pathway From Groundwater and Soils (EPA, 2002)
(3) No values are given for Federal Drinking Water Standards or Target Groundwater Concentrations
(4) Values given as a < result indicate that the compound was not detected, and is less than the reporting limit concentration.
(5) MW-1A DTW:18.50 ft TD: 41.89 ft; MW-1B DTW: 54.62 ft TD: 79.740 ft

25-JAN-2007 N:\ARCPRJ2\010341\PLT\070125_SITEINV\FIG1_MONLOCS.MXD

**Legend**

- Boundary
- Fence
- Section Line
- Quarter/Quarter Section Line
- Oil & Gas Production Well
- On-Site Groundwater Monitoring Well
- New Gas Probe Location
- Potential Mud Pit
- Landfill Monitoring
- Landfill Gas Monitoring Location

Note:
Locations for the oil & gas production wells and mud pits are based on information obtained from the COGCC online GIS system: http://oil-gas.state.co.us

N

0 600 1,200
Feet

SOUTHWESTERN INVESTMENT GROUP, INC.
PRATT PROPERTY SITE INVESTIGATION

FIGURE 1

**MONITORING LOCATIONS**

| | | |
|---|---|---|
| PROJECT: 010341 | DATE: JAN 25, 2007 | |
| REV: 0 | BY: CRL | CHECKED: JMK |

Tetra Tech, Inc.

02-FEB-2007 N:\ARCPRJ2\010341\PLT\070125_SITEINV\FIG2_MONLOCS_DRG.MXD

SOUTHWESTERN INVESTMENT GROUP, INC.

PRATT PROPERTY SITE INVESTIGATION

FIGURE 2

**PROPOSED ENHANCED SITE INVESTIGATION LOCATIONS**

| | | |
|---|---|---|
| PROJECT: 010341 | DATE: FEB 02, 2007 | |
| REV: 0 | BY: CRL | CHECKED: JMK |

Tetra Tech, Inc.

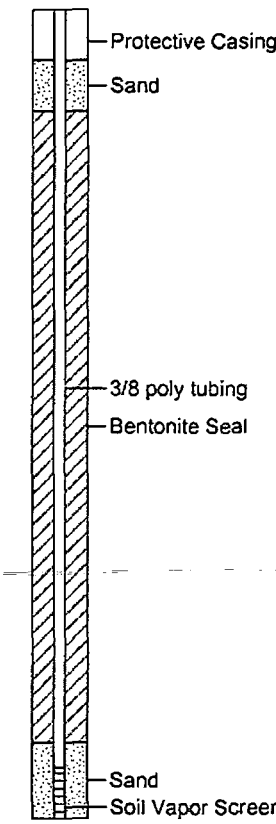
# Attachment A
# Boring Logs and Vapor Monitoring Point Construction Details

| TETRA TECH, INC | Log of Boring SV-1 (Page 1 of 1) |
|---|---|

| Erie Site Investigation<br>Project No. 010341.2<br>Erie, Colorado | Date Started : 1/11/07<br>Date Completed : 1/11/07<br>Boring Diameter : 2.5 inches<br>Drilling Method : Direct Push<br>Sampling Method : Continuous | Northing Coord. (m) : na<br>Easting Coord. (m) : na<br>Survey By : na<br>Logged By : Jim Kienholz |
|---|---|---|

| Depth | Surf. Elev. 0 | DESCRIPTION | USCS | Water Level |
|---|---|---|---|---|
| 0 | 0 | Sandy CLAY, brown to gray, very stiff, medium plasticity, slightly moist, no stain, no odor | CL | |
| 5 | -5 | Silty CLAY, light brown, very stiff, medium plasticity, slightly moist, light iron stain, no odor | CL | |
| 10 | -10 | SILTY CLAY, dark brown to gray, very stiff, medium plasticity, iron staining, no odor | CL | |
| 15 | -15 | Sandy CLAY w/ Silt, light grey, stiff, medium plasticity, slightly moist, no stain, no odor | CL | |
| | | Refusal<br>Total Depth: 16.5 ft bgs | | |
| 20 | -20 | | | |
| 25 | | | | |

Well ID: SV-1




**Well Const. Information**

The soil vapor points were installed through the GeoProbe drilling rods. 3/8" poly tubing was connected to a 1 ft stainless steel soil vapor extration point. 1.5 ft of sand was placed around the soil vapor point screen and the rest of the boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover.

02-02-2007 J:\BLD01\010341\Site Investigation\Boring Logs\SV-1.bor

| TETRA TECH, INC | Log of Boring SV-2 (Page 1 of 1) |
|---|---|

Erie Site Investigation
Project No. 010341.2
Erie, Colorado

| | | | |
|---|---|---|---|
| Date Started | : 1/11/07 | Northing Coord. (m) | : na |
| Date Completed | : 1/11/07 | Easting Coord. (m) | : na |
| Boring Diameter | : 2.5 inches | Survey By | : na |
| Drilling Method | : Direct Push | Logged By | : April Turney |
| Sampling Method | : Continuous | | |

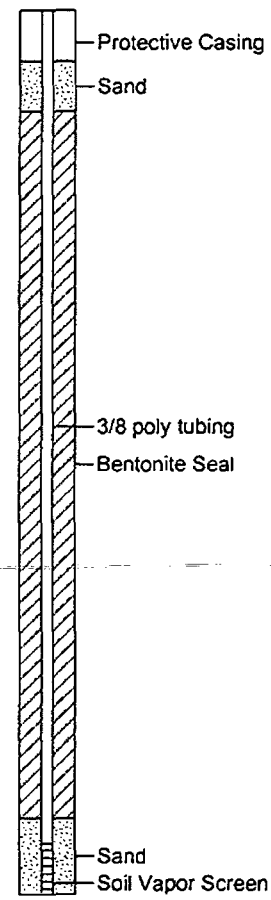
Surf. Elev. 0

| DESCRIPTION | USCS |
|---|---|
| Sandy SILT, light brown, medium dense, dry, no stain, no odor | ML |
| Sandy CLAY, brown to gray, very stiff, medium plasticity, light iron staining, no odor | CL |
| No Recovery | |
| CLAY, grey to brown, very stiff, plastic, slightly moist, light iron staining, no odor. | CL |
| SAND lense, brown, dense, dry, no stain, no odor | SP |
| CLAY, brown, very stiff, medium plasticity, dry, no stain, no odor | CL |

Total Depth: 18.0 ft bgs

Water Level

Well ID: SV-2




Well Const. Information

The soil vapor points were installed through the GeoProbe drilling rods. 3/8" poly tubing was connected to a 1 ft stainless steel soil vapor extration point. 1.5 ft of sand was placed around the soil vapor point screen and the rest of the boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover.

0 — 0
5 — -5
10 — -10
15 — -15
20 — -20
25

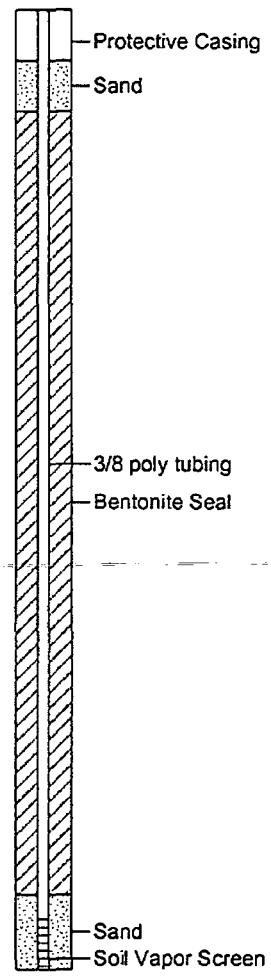
02-02-2007 J:\BLD01\010341\Site Investigation\Boring Logs\SV-2.bor

| TETRA TECH, INC | Log of Boring SV-3 (Page 1 of 1) |
|---|---|

| | | | | |
|---|---|---|---|---|
| Erie Site Investigation<br>Project No. 010341.2<br>Erie, Colorado | Date Started | : 1/11/07 | Northing Coord. (m) | : na |
| | Date Completed | : 1/11/07 | Easting Coord. (m) | : na |
| | Boring Diameter | : 2.5 inches | Survey By | : na |
| | Drilling Method | : Direct Push | Logged By | : April Turney |
| | Sampling Method | : Continuous | | |

| Depth | Surf. Elev. 0 | DESCRIPTION | USCS | Water Level |
|---|---|---|---|---|
| 0 | 0 | Sandy SILT w/ Clay, brown, dense, dry, no stain, no odor | ML | |
| 5 | -5 | Sandy CLAY, brown to grey, very stiff, medium plasticity, no stain, no odor | CL | |
| 10 | -10 | Sandy CLAY, grey, very stiff, medium plasticity, slightly moist, some iron staining, no odor | CL | |
| 15 | -15 | CLAY w/ Sand, gray, stiff, plastic, slightly moist, light iron staining, no odor | CL | |
| 20 | -20 | Sandy CLAY, gray, very stiff, plastic, trace of moisture, no stain, no odor | CL | |
| 25 | | Total Depth: 20 ft bgs | | |

Well ID: SV-3




**Well Const. Information**

The soil vapor points were installed through the GeoProbe drilling rods. 3/8" poly tubing was connected to a 1 ft stainless steel soil vapor extration point. 1.5 ft of sand was placed around the soil vapor point screen and the rest of the boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover.

02-02-2007 J:\BLD01\010341\Site Investigation\Boring Logs\SV-3.bor

**DOPHE 136**

**HAZARDOUS MATERIALS**

SW_1.1._7117

BOX#

257

**Old Erie Landfill/OEL**

9/14/2007

WLD

Solid Waste - Correspondence - General - Supplemental Soil Vapor Investigation - Property South of the Old Erie Landfill, Erie, Colorado

SW/1.1./7117

SW/1.1./7014

Stewart Environmental Consultants, Inc.
*consulting engineers and scientists*

**Corporate Office & Laboratory:**
3801 Automation Way, Suite 200
Fort Collins, Colorado 80525
ph: (970) 226-5500
fax: (970) 226-4946
www.stewartenv.com

September 14, 2007

RECEIVED
SEP 19 2007
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

Mr. Jon Benallo
Vice President of Land Development
Southwestern Investments Group, LLC.
333 West Hampden Avenue, Suite 810
Englewood, Colorado 80110

Subject: Supplemental Soil Vapor Investigation – Property South of the Old Erie Landfill, Erie, Colorado
Project No.: 3710.001(2)

Dear Mr. Benello:

Prior to development of the open property located south of the Old Erie Landfill in Erie, Colorado, investigations have been conducted to study the possible impacts from the neighboring landfills. Tetra Tech, Inc. conducted a limited soil vapor study in the northeast corner of the property in January 2007. Results of the Tetra Tech study, Attachment 1, showed positive detection of volatile organic compounds (VOCs) in soil gas at the three locations; SV-1 TT, SV-2 TT, and SV-3 TT (noted on the attached Figure 1). The only sampling point showing results that exceed regulatory standards was SV-3 TT, which is located in the extreme northeast corner of the property.

To further investigate the property a broader site investigation was conducted in June 2007 by Stewart Environmental Consultants, Inc. Soil vapor monitoring points SV-1 through SV-30 were installed on the north and east portions of the property. Most of these points are nested pairs with two screen intervals completed at each location; 5 feet and 15 to 20 feet. Elevated concentrations of trichloroethene (TCE) were detected in several soil vapor samples collected at locations along the northern boundary. Sample locations are shown on Figure 1.

In response to these findings, supplemental soil vapor samples were collected by Stewart Environmental on July 24, 2007 at selected points of interest. Samples for VOC analyses were collected from previously installed monitoring points, shown on Figure 2. Results are discussed below.

**Soil Vapor Sampling and Monitoring – Stewart Environmental**

Soil vapor samples were collected from 16 of the existing monitoring points and analyzed for VOCs. Sample locations are shown on Figure 2 and include:

SV-9, SV-10, SV-11, SV-12, SV-13, SV-14, SV-15, SV-16, SV-17, SV-18, SV-22, SV-23, SV-24, SV-28, SV-29, and SV-30

ACEC
MEMBER

SW WLD OEL 1.1

Soil vapor samples were submitted to Stewart Environmental's laboratory for analysis. In the June 2007 samples, TCE was detected above the regulatory standard in samples from both screen intervals at locations SV-14, SV-16, and SV-22. Neither TCE nor any of the other VOCs tested were detected above regulatory standards in the current (July 24, 2007) set of samples collected at these locations. Likewise, VOCs were not detected above regulatory standards in any of the other monitoring points. Laboratory results are summarized in Table 1. The table has been edited to show specific compounds of concern. Only those compounds with results above method detection limits have been included and units have been converted to parts per billion by volume (ppbv) for comparison to regulatory standards. Stewart Environmental laboratory results for the current set of samples, included herein as Attachment 2, show the complete list of parameters and are reported in milligrams per liter (mg/l).

In addition to collection of soil vapor samples, the three existing monitoring points installed by Tetra Tech and each of the 30 existing monitoring points were checked for methane ($CH_4$), carbon monoxide ($CO_2$), oxygen ($O_2$), and lower explosive limit (LEL). The LEL is the primary monitoring value of concern and is calculated from the methane concentration recorded in a particular sample.

Elevated LEL values (greater than 25 percent) were recorded in the deeper screen interval at three locations; SV-10 (20 feet), SV-11 (12.5 feet), and SV-3 TT (16 feet). Samples from the shallow screen interval at SV-10 and SV-11 showed a substantially lower LEL value. This is consistent with previous monitoring results. Monitoring point SV-3 TT is a single well with one screen interval.

Previously, slightly elevated LEL readings (2 percent) were recorded in SV-2 and SV-3 located at the southeast corner of the property (see Figure 1). These readings are not considered significant values posing a threat to potential development; however, they do support the need for continued monitoring. No positive LEL readings were recorded at these locations in the current monitoring event. While these locations should continue to be monitored along with other points around the site, the primary area of interest is the northern boundary. LEL results and readings for other gases from all monitoring points are summarized in Table 2.

**Soil Vapor Monitoring – Denver Regional Landfill**

Denver Regional Landfill conducts quarterly soil vapor monitoring. The network of monitoring points includes a total of eight wells located around the perimeter of the landfill. As summarized in the Table 3, the monitoring points are completed at total depths ranging from 22.5 to 100.0 feet below grade. Of primary interest to the current project are monitoring points GP-3, GP-4, GP-5, and GP-6 located along the southern boundary of the landfill that borders the north boundary of the subject property (see Figure 3).

Monitoring results from the primary points of interest show no significant concentration of methane; however, they are completed deeper than the recently installed soil vapor monitoring points on the property to the south. This is particularly noteworthy for GP-4, GP-5, and GP-6. Monitoring point construction details and monitoring data from 1998 to present are summarized in reports obtained from Colorado Department of Health and Environment (CDPHE).

The most recent report on file at CDPHE is for the third quarter of 2006. Table 2 of the report shows elevated LEL readings in GP-2, GP-7, and S-102 and slightly elevated readings in GP-1. These points are located along the north and west sides of the landfill and the readings do not affect the subject property other than to show that landfill gases may migrate beyond the property boundary of Denver Regional Landfill. Table 2 is included in Attachment 3 along with copies of other pertinent pages from the report.

As part of the alternative compliance schedule filed with CDPHE, Denver Regional Landfill agreed that "*the LEL be met at the property boundary at the time of closure or at such time as neighboring properties are developed, whichever occurs first.*"

File material from CDPHE documents a dialogue beginning in June 2005 between Denver Regional Landfill and the state regarding mitigation of the soil vapors detected in GP-2, GP-7, and S-102. Apparently, several iterations of a mitigation plan have been presented to CDPHE. A letter from CDPHE dated March 22, 2007 outlines comments pertaining to mitigation plan drawings. The drawings were not available and file material does not indicate if the plan has been implemented. To our knowledge, actions of the plan are pending. Copies of pertinent letters of agreement and other relevant information from CDPHE file material are included in Attachment 4.

Several sources of methane gas are discussed in the plans. The primary and most plausible sources are coal bed methane and landfill gas. It may be that some to the gases detected around the property are from the coal beds underlying a wide area around the town of Erie, Colorado. However, chlorinated compounds are present in the soil gas samples collected on the subject property. These compounds would not originate from the coal beds, but from degradation of material within the landfill. Additionally, if the wide ranging coal beds are impacting near-surface soils, more consistent readings would be expected in various monitoring points located across the subject property and in the deeper monitoring points at the landfill.

## Groundwater Monitoring – Stewart Environmental

In conversations between the interested parties concerning the June 2007 sample results, supplemental groundwater monitoring wells were discussed for the purpose of investigating the possibility of perched groundwater near SV-22 and SV-23. During the July 2007 soil vapor sampling event, groundwater was found in the deeper of the paired soil vapor monitoring points at SV-9 and SV-10. In lieu of installing groundwater monitoring wells, samples of perched water were collected from these points and analyzed for VOCs. Of the compounds of interest, only 1,1-dichloroethane was detected above the regulatory standard and only in SV-10. No other VOCs were detected above the method detection limit in either sample. Sample results are summarized in Table 4 with complete laboratory reports included herein as part of Attachment 2.

## Groundwater Monitoring – Denver Regional Landfill

Denver Regional Landfill conducts quarterly groundwater monitoring at wells GW-1, P-3, S-203, S-204, S-205, S-209, S-210, and S-211. Well locations are depicted on Figure 3. The most recent report on file at CDPHE is for the third quarter of 2006. Monitoring results show no significant concentration of VOCs or other parameters tested in the wells sampled. Copies of pertinent pages from the monitoring report, including a groundwater result summary table, are included in Attachment 3.

## Conclusions and Recommendations

The following conclusions and recommendations are based the findings of the current investigation, data from the June 2007 site sampling, data obtained from a February 2, 2007 Tetra Tech report, and file material from CDPHE.

Conclusions:

- Landfill gases from Denver Regional Landfill and the Old Erie Landfill are migrating onto the property located south of the landfills The affected areas are located on the north side of the subject property. Little to no soil gas appears to emanate from Front Range Landfill to the subject property.

- Soil vapor monitoring wells around the Denver Regional Landfill, particularly on the south side, are completed at depths too deep to accurately measure migration of the gases affecting the subject property.

- Perched groundwater in the northeast corner of the subject property has been affected. The concentration of 1,1-dichloroethane and other VOCs detected in the sample from SV-10 do not represent an immediate threat to human health. However, off-gassing from groundwater may be an issue in the future if it is shown that perched water conditions are prevalent and persistent. If perched water is only present for short periods after storm events it may not represent a significant threat. Additional study is required.

Recommendations:

- Remediation of soil vapors will benefit groundwater quality in the northeast corner. Specific technologies to address groundwater may or may not be necessary in the future. The situation will require additional study to assess groundwater occurrence and quality.

- Remediation of soil vapors impacting the property may include an upgrade of the existing and/or proposed gas collection system at the landfill. Other remedial actions also may be necessary. This could include installation of a vapor collection trench or a series of vapor extraction wells along the boundary between the subject property and the landfill or at various locations on the subject property.

- Regularly scheduled monitoring should continue in order to establish trends in subsurface conditions and ensure that harmful or explosive vapors are not reaching residences as the property is developed.

- Determine if corrective actions to address the documented migration of soil vapors have been completed by Denver Regional Landfill.

- Review options for engineered remedial systems. Enter discussions with Denver Regional Landfill concerning who is to be responsible for development and installation of the systems.

- Continue to monitor each of the soil vapor points for methane/LEL on a quarterly basis

- Monitoring the deeper screen intervals at SV-9 and SV-10 to establish trends in perched water conditions. Consider installation of groundwater monitoring wells in this area.

- Sample selected vapor monitoring points for VOCs to establish trends in soil vapor conditions.

- Review options for engineered venting system beneath structures constructed in the areas of concern. Options may vary depending upon type of construction and land use.

- Review options for receipt of regulatory closure from CDPHE.

We appreciate the opportunity to work with you on this project. If you have questions or require additional information, please contact our office.

Sincerely,

STEWART ENVIRONMENTAL CONSULTANTS, INC.

Paul A. Stone, PG
Geologist

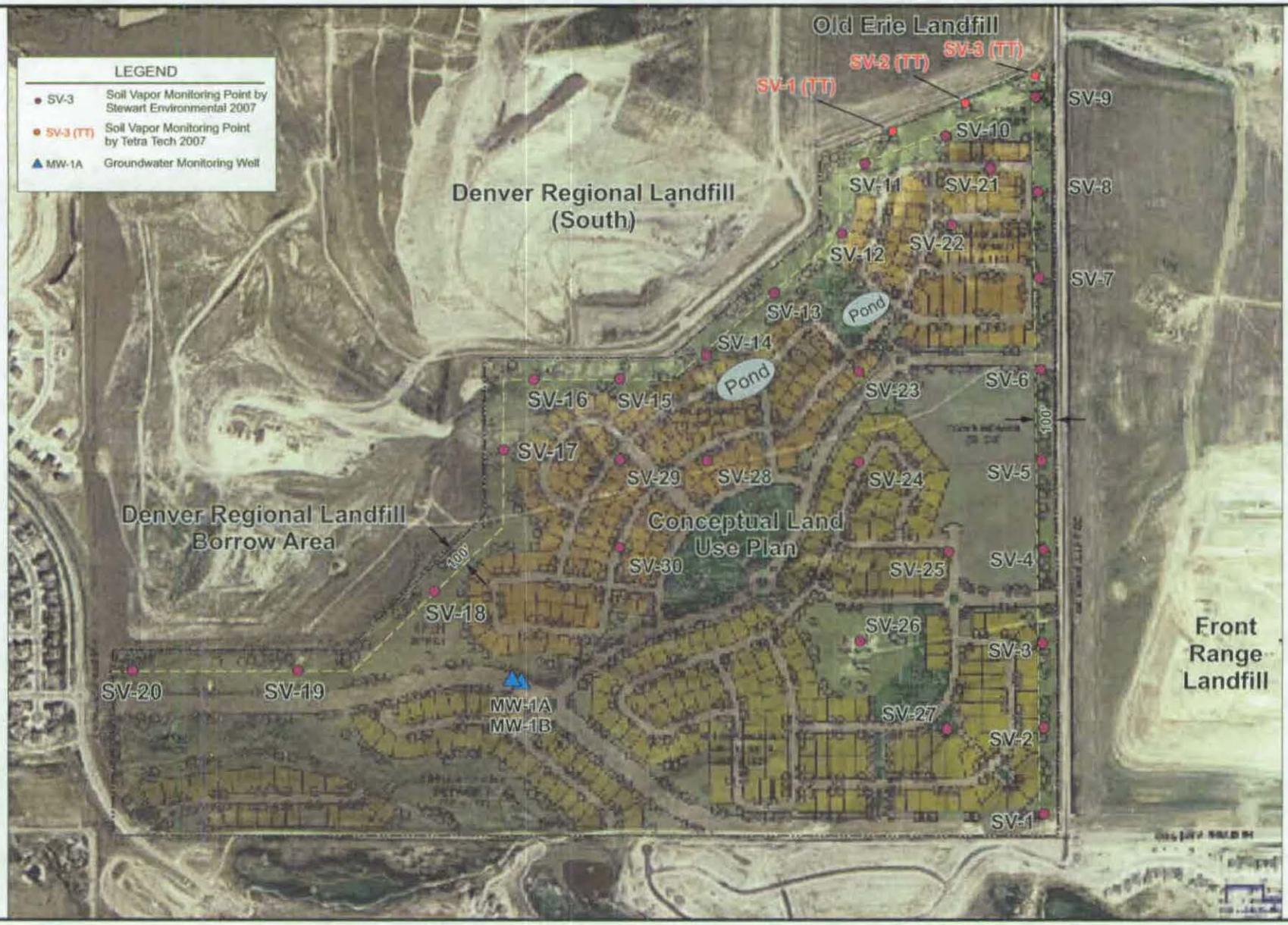
David R. Stewart, PhD, PE
President and CEO

Enc.

cc: Mr. Jonathan Nelson, Pratt Management Company, LLC

3710.001(2)\old erie landfill soil vapor report 14sep07.rpt

# Figures




Stewart Environmental Consultants, Inc.
*consulting engineers and scientists*

PROJECT NUMBER
3710-001(2)

DATE
August 2007

0 200 400 600 800 1,000
APPROX. SCALE IN FEET

PROJECT
Old Erie Landfill
Erie, Colorado

FIGURE 1
SITE LAYOUT AND SOIL VAPOR MONITORING LOCATIONS

wpfiles\3710-001(2)\fig 1 site layout and sv locations.cdr

| Depth (ft.) | $CH_4$ | $CO_2$ | $O_2$ | LEL |
|---|---|---|---|---|
| 5 | 0.5 | 6.3 | 18.2 | 10.0 |
| 20 | 6.3 | 19.6 | 1.5 | 126.0 |

| Depth (ft.) | $CH_4$ | $CO_2$ | $O_2$ | LEL |
|---|---|---|---|---|
| 5 | 0.0 | 3.5 | 18.1 | 0.0 |
| 20 | 7.4 | 21.7 | 0.2 | 148.0 |

| Depth (ft.) | $CH_4$ | $CO_2$ | $O_2$ | LEL |
|---|---|---|---|---|
| 16 | 3.5 | 14.3 | 6.4 | 70 |

Stewart Environmental Consultants, Inc.
*consulting engineers and scientists*

PROJECT NUMBER 3710-001

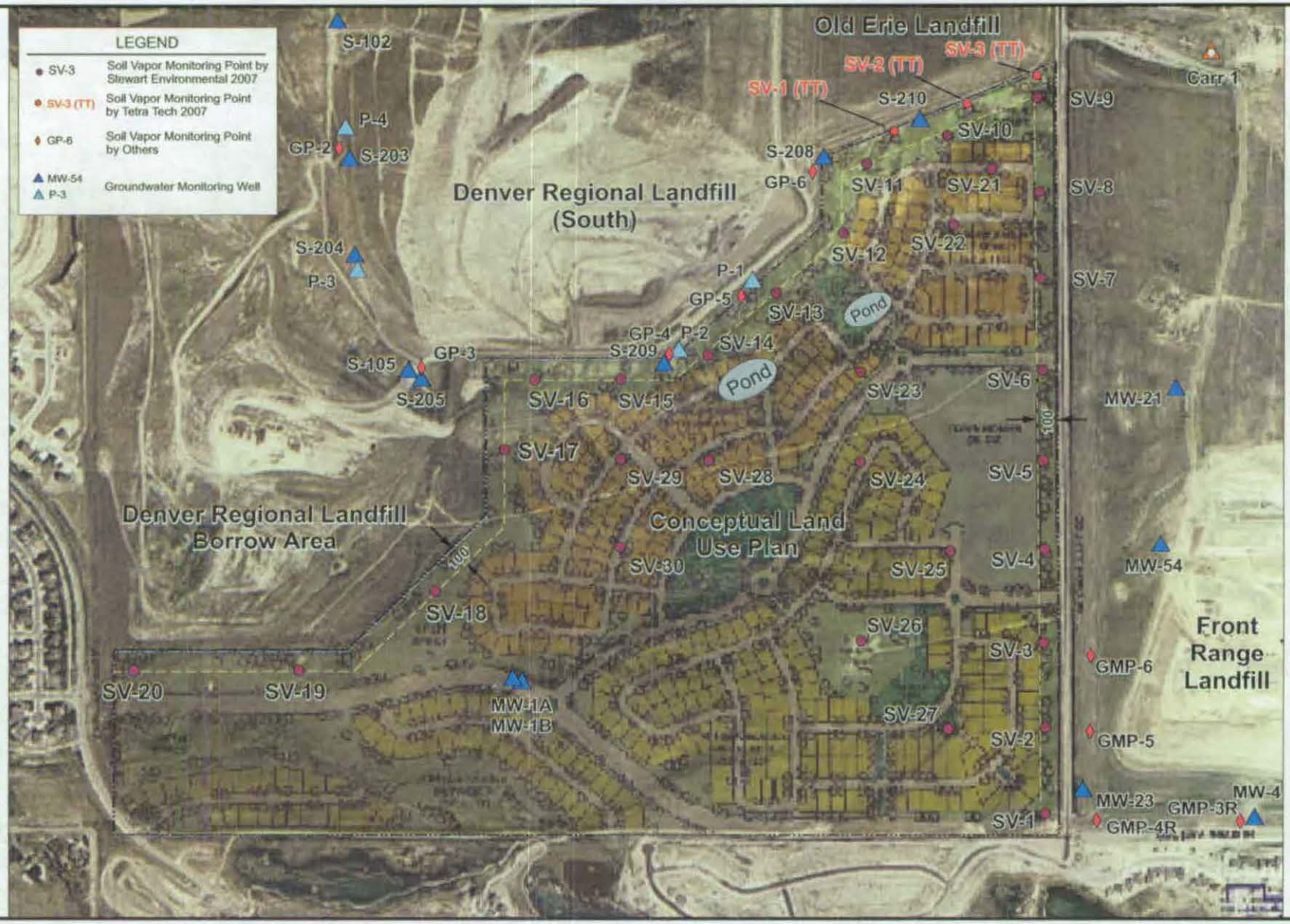
DATE August 2007

0 200 400 600 800 1,000
APPROX. SCALE IN FEET

PROJECT
Old Erie Landfill
Erie, Colorado

FIGURE 2
SOIL VAPOR MONITORING
SUMMARY OF RESULTS

Engneer\3700\3710-001\Old erie lf sample results lel and voc.cdr




| | | | | |
|---|---|---|---|---|
| Stewart Environmental Consultants, Inc. *consulting engineers and scientists* | PROJECT NUMBER 3710-001(2) DATE August 2007 | 0 200 400 600 800 1,000 APPROX. SCALE IN FEET | PROJECT Old Erie Landfill Erie, Colorado | FIGURE 3 OFFSITE MONITORING LOCATIONS |

wpfiles\3710-001(2)\fig 3 sv and drl mon locations.cdr

# Tables

TABLE 1
SAMPLE RESULTS SUMMARY: VOCs IN SOIL VAPOR
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)
page 1 of 2

| Parameter | Molecular Weight | Detection Limit | Reg Std ppbv | SV-9 | | SV-10 | | SV-11 | | SV-12 | | SV-13 | SV-14 | | SV-15 | | SV-16 | | SV-17 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 5' | 18' | 5' | 20' | 5' | 12.5' | 5' | 11.5' | 8.5' | 5' | 15.25' | 5' | 17.25' | 5' | 16' | 5' | 19' |
| Acetone | 58.09 | 2.105 | 1,500 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 78.11 | 0.078 | 98 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromodichloromethane | 163.83 | 0.037 | 21 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroform | 119.38 | 0.051 | 22 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloromethane | 50.49 | 0.606 | — | ND | water | ND | water | ND | 0.462 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Dichlorodifluoromethane | 120.91 | 0.253 | 400 | ND | water | ND | water | 3.10 | 65.950 | 0.263 | 12.563 | ND | ND | ND | ND | ND | ND | trace | ND | ND |
| 1,1-Dichloroethane | 98.96 | 0.062 | 1,200 | ND | water | ND | water | ND | 0.489 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | 98.96 | 0.062 | 23 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethene (DCE) | 96.94 | 0.063 | 500 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 96.94 | 0.063 | 88 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 96.94 | 0.063 | --- | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloropropane | 112.99 | 0.054 | 8.7 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | 84.93 | 0.072 | 1,500 | ND | water | ND | water | ND | 0.145 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene (PERC) | 165.83 | 0.037 | 120 | ND | water | ND | water | ND | 0.096 | ND | ND | ND | ND | ND | ND | ND | ND | 0.037 | ND | ND |
| Toluene | 92.14 | 0.066 | 1,100 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | 0.262 | ND | ND | 0.326 | trace |
| 1,1,1-Trichloroethane (TCA) | 133.41 | 0.046 | 4,000 | ND | water | ND | water | ND | 0.43 | ND | 0.069 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene (TCE) | 131.39 | 0.047 | 4.1 | ND | water | ND | water | ND | 0.077 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichlorofluoromethane | 137.37 | 0.045 | 1,200 | ND | water | ND | water | ND | 1.051 | ND | 0.769 | ND | ND | ND | ND | ND | ND | ND | 0.28 | ND |
| Trichlorotrifluoromethane | 187.38 | 0.033 | 39,000 | ND | water | ND | water | ND | 0.194 | ND | 0.292 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 62.5 | 0.098 | 110 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| m&p Xylenes | 106.16 | 0.058 | 16,000 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | 0.264 | ND | ND | 0.265 | ND |
| o-Xylene | 106.16 | 0.058 | 16,000 | ND | water | ND | water | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

**NOTES:**
Units: All values reported in ppbv (as converted from original laboratory reports in ug/l)
ND = Parameter not detected above method detection limit as listed above.
++ = Parameter not included in analyte list.
Reg Std = Regulatory Standard - Target Shallow Soil Gas Concentration Corresponding to Target Indoor Air Concnetration Where the Soil Gas to Indoor Air Attenuation Factor = 0.1 as cited in *"Draft Guidance for Evaluation the Vapor Intrusion to Inddor Air Pathway From Groundwater and Soils - November 2002"*
--- = Regulatory standard not established.

TABLE 1
SAMPLE RESULTS SUMMARY: VOCs IN SOIL VAPOR
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)


| Parameter | Molecular Weight | Detection Limit | Reg Std ppbv | SV-18 | | SV-21 | | SV-22 | | SV-23 | | SV-24 | | SV-28 | | SV-29 | | SV-30 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 5' | 18' | 5' | 15' | 5' | 18' | 5' | 14' | 5' | 20' | 5' | 15' | 5' | 14' | 5' | 18' |
| Acetone | 58.09 | 2.105 | 1,500 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Benzene | 78.11 | 0.078 | 98 | ND | ND | 0.051 | 0.077 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Bromodichloromethane | 163.83 | 0.037 | 21 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloroform | 119.38 | 0.051 | 22 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Chloromethane | 50.49 | 0.606 | --- | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Dichlorodifluoromethane | 120.91 | 0.253 | 400 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethane | 98.96 | 0.062 | 1,200 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloroethane | 98.96 | 0.062 | 23 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,1-Dichloroethene (DCE) | 96.94 | 0.063 | 500 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| cis-1,2-Dichloroethene | 96.94 | 0.063 | 88 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| trans-1,2-Dichloroethene | 96.94 | 0.063 | --- | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 1,2-Dichloropropane | 112.99 | 0.054 | 8.7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Methylene Chloride | 84.93 | 0.072 | 1,500 | ND | ND | 0.038 | 0.068 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Tetrachloroethene (PERC) | 165.83 | 0.037 | 120 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Toluene | 92.14 | 0.066 | 1,100 | ND | 0.304 | 0.91 | 0.115 | ND | ND | ND | ND | ND | 0.109 | ND | 0.138 | 0.072 | 0.090 | 0.076 | 0.235 |
| 1,1,1-Trichloroethane (TCA) | 133.41 | 0.046 | 4,000 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichloroethene (TCE) | 131.39 | 0.047 | 4.1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichlorofluoromethane | 137.37 | 0.045 | 1,200 | 0.28 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Trichlorotrifluoromethane | 187.38 | 0.033 | 39,000 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Vinyl Chloride | 62.5 | 0.098 | 110 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| m&p Xylenes | 106.16 | 0.058 | 16,000 | 0.265 | ND | 0.034 | 0.033 | ND | ND | ND | ND | ND | 0.063 | ND | 0.080 | ND | ND | ND | 0.141 |
| o-Xylene | 106.16 | 0.058 | 16,000 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

**NOTES:**
Units: All values reported in ppbv (as converted from original laboratory reports in ug/l)
ND = Parameter not detected above method detection limit as listed above.
++ = Parameter not included in analyte list.
Reg Std = Regulatory Standard - Target Shallow Soil Gas Concentration Corresponding to Target Indoor Air Concnetration Where the Soil Gas to Indoor Air Attenuation Factor = 0.1 as cited in *"Draft Guidance for Evaluation the Vapor Intrusion to Inddor Air Pathway From Groundwater and Soils - November 2002"*
--- = Regulatory standard not established.

Reg Std = Regulatory Standard - as cited in Colorado Basic Standards for Groundwater
--- = Regulatory standard not established.

TABLE 2
SAMPLE RESULTS SUMMARY: SOIL VAPOR LEL
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)

| Sample ID | Sample Date | Depth (ft.) | % $CH_4$ | % $CO_2$ | % $O_2$ | % LEL |
|---|---|---|---|---|---|---|
| SV-1 | 06/05/07 | 5 | 0.0 | 1.5 | 20.0 | 0.0 |
| | 07/24/07 | | 0.0 | 1.1 | 20.2 | 0.0 |
| | 06/05/07 | 18 | 0.0 | 0.0 | 20.8 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 20.1 | 0.0 |
| SV-2 | 06/05/07 | 5 | 0.1 | 0.0 | 19.1 | 2.0 |
| | 07/24/07 | | 0.0 | 0.0 | 16.9 | 0.0 |
| | 06/05/07 | 18 | 0.1 | 0.5 | 19.1 | 2.0 |
| | 07/24/07 | | 0.0 | 0.5 | 16.6 | 0.0 |
| SV-3 | 06/05/07 | 5 | 0.1 | 0.0 | 17.7 | 2.0 |
| | 07/24/07 | | 0.0 | 0.0 | 18.1 | 0.0 |
| | 06/05/07 | 18.5 | 0.1 | 0.0 | 20.9 | 2.0 |
| | 07/24/07 | | 0.0 | 0.0 | 20.3 | 0.0 |
| SV-4 | 06/05/07 | 5 | 0.0 | 0.2 | 18.9 | 0.0 |
| | 07/24/07 | | 0.0 | 0.3 | 19.1 | 0.0 |
| | 06/05/07 | 14 | 0.0 | 0.7 | 18.1 | 0.0 |
| | 07/24/07 | | 0.0 | 0.9 | 18.5 | 0.0 |
| SV-5 | 06/05/07 | 5 | 0.0 | 0.0 | 19.7 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 19.9 | 0.0 |
| | 06/05/07 | 20 | 0.0 | 0.0 | 14.4 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 15.6 | 0.0 |
| SV-6 | 06/05/07 | 5 | 0.0 | 0.5 | 19.8 | 0.0 |
| | 07/24/07 | | 0.0 | 0.9 | 20.1 | 0.0 |
| SV-7 | 06/05/07 | 5 | 0.0 | 0.2 | 18.4 | 0.0 |
| | 07/24/07 | | 0.0 | 0.5 | 19.1 | 0.0 |
| | 06/05/07 | 12 | 0.0 | 2.0 | 17.1 | 0.0 |
| | 07/24/07 | | 0.0 | 2.9 | 18.1 | 0.0 |
| SV-8 | 06/05/07 | 5 | 0.0 | 0.3 | 18.2 | 0.0 |
| | 07/24/07 | | 0.0 | 0.5 | 18.3 | 0.0 |
| | 06/05/07 | 17 | 0.0 | 4.8 | 14.9 | 0.0 |
| | 07/24/07 | | 0.0 | 5.0 | 15.8 | 0.0 |
| SV-9 | 06/05/07 | 5 | 0.0 | 2.6 | 13.4 | 0.0 |
| | 07/24/07 | | 0.0 | 5.9 | 12.9 | 0.0 |
| | 06/05/07 | 18 | 0.2 | 4.9 | 16.4 | 4.0 |
| | 07/24/07 | | 0.0 | 3.0 | 15.4 | 0.0 |
| SV-10 | 06/05/07 | 5 | 0.4 | 5.3 | 17.8 | 8.0 |
| | 07/24/07 | | 0.5 | 6.3 | 18.2 | 10.0 |
| | 06/05/07 | 20 | 3.1 | 29.0 | 0.2 | 62.0 |
| | 07/24/07 | | 6.3 | 19.6 | 1.5 | 126.0 |
| SV-11 | 06/05/07 | 5 | 0.0 | 6.7 | 16.0 | 0.0 |
| | 07/24/07 | | 0.0 | 3.5 | 18.1 | 0.0 |
| | 06/05/07 | 12.5 | 7.2 | 25.6 | 0.9 | 144.0 |
| | 07/24/07 | | 7.4 | 21.7 | 0.2 | 148.0 |

TABLE 2
SAMPLE RESULTS SUMMARY: SOIL VAPOR LEL
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)

| | | | | | | |
|---|---|---|---|---|---|---|
| SV-12 | 06/05/07 | 5 | 0.0 | 0.2 | 16.1 | 0.0 |
| | 07/24/07 | | 0.0 | 0.7 | 17.3 | 0.0 |
| | 06/05/07 | 11.5 | 0.0 | 6.6 | 14.5 | 0.0 |
| | 07/24/07 | | 0.0 | 5.8 | 12.6 | 0.0 |
| SV-13 | 06/05/07 | 5 | 0.0 | 0.2 | 16.7 | 0.0 |
| | 07/24/07 | | 0.0 | 0.1 | 17.3 | 0.0 |
| SV-14 | 06/05/07 | 5 | 0.0 | 0.2 | 19.5 | 0.0 |
| | 07/24/07 | | 0.0 | 0.2 | 17.4 | 0.0 |
| | 06/05/07 | 15.25 | 0.0 | 0.4 | 18.5 | 0.0 |
| | 07/24/07 | | 0.0 | 0.8 | 17.8 | 0.0 |
| SV-15 | 06/05/07 | 5 | 0.0 | 0.2 | 16.9 | 0.0 |
| | 07/24/07 | | 0.0 | 0.8 | 17.8 | 0.0 |
| | 06/05/07 | 17.25 | 0.0 | 0.1 | 17.0 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 17.2 | 0.0 |
| SV-16 | 06/05/07 | 5 | 0.0 | 0.7 | 19.5 | 0.0 |
| | 07/24/07 | | 0.0 | 0.2 | 18.3 | 0.0 |
| | 06/05/07 | 16 | 0.0 | 2.4 | 16.5 | 0.0 |
| | 07/24/07 | | 0.0 | 1.6 | 16.3 | 0.0 |
| SV-17 | 06/05/07 | 5 | 0.0 | 2.5 | 16.7 | 0.0 |
| | 07/24/07 | | 0.0 | 3.2 | 1.2 | 0.0 |
| | 06/05/07 | 19 | 0.0 | 0.4 | 20.4 | 0.0 |
| | 07/24/07 | | 0.0 | 0.3 | 18.0 | 0.0 |
| SV-18 | 06/05/07 | 5 | 0.0 | 0.5 | 20.5 | 0.0 |
| | 07/24/07 | | 0.0 | 0.4 | 17.6 | 0.0 |
| | 06/05/07 | 15 | 0.0 | 0.3 | 20.4 | 0.0 |
| | 07/24/07 | | 0.0 | 0.2 | 18.2 | 0.0 |
| SV-19 | 06/05/07 | 5 | 0.0 | 0.7 | 19.9 | 0.0 |
| | 07/24/07 | | 0.0 | 0.4 | 19.1 | 0.0 |
| | 06/05/07 | 12.5 | 0.0 | 0.2 | 18.5 | 0.0 |
| | 07/24/07 | | 0.0 | 0.2 | 17.9 | 0.0 |
| SV-20 | 06/05/07 | 5 | 0.0 | 0.1 | 16.2 | 0.0 |
| | 07/24/07 | | 0.0 | 0.1 | 16.5 | 0.0 |
| | 06/05/07 | 15 | 0.0 | 0.1 | 16.5 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 16.4 | 0.0 |
| SV-21 | 06/05/07 | 5 | 0.0 | 0.6 | 19.1 | 0.0 |
| | 07/24/07 | | 0.0 | 0.5 | 18.1 | 0.0 |
| | 06/05/07 | 15 | 0.0 | 0.4 | 15.6 | 0.0 |
| | 07/24/07 | | 0.0 | 0.3 | 15.1 | 0.0 |
| SV-22 | 06/05/07 | 5 | 0.0 | 0.3 | 19.0 | 0.0 |
| | 07/24/07 | | 0.0 | 0.6 | 16.0 | 0.0 |
| | 06/05/07 | 18 | 0.0 | 0.4 | 18.1 | 0.0 |
| | 07/24/07 | | 0.0 | 0.1 | 17.1 | 0.0 |
| SV-23 | 06/05/07 | 5 | 0.0 | 0.2 | 19.1 | 0.0 |
| | 07/24/07 | | 0.0 | 0 | 17.3 | 0.0 |
| | 06/05/07 | 14 | 0.0 | 0.3 | 18.4 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 17.1 | 0.0 |

TABLE 2
SAMPLE RESULTS SUMMARY: SOIL VAPOR LEL
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)

| | | | | | | |
|---|---|---|---|---|---|---|
| SV-24 | 06/05/07 | 5 | 0.0 | 0.2 | 19.9 | 0.0 |
| | 07/24/07 | | 0.0 | 0.4 | 18.4 | 0.0 |
| | 06/05/07 | 20 | 0.0 | 1.1 | 19.0 | 0.0 |
| | 07/24/07 | | 0.0 | 1.7 | 18.9 | 0.0 |
| SV-25 | 06/05/07 | 5 | 0.0 | 0.0 | 19.7 | 0.0 |
| | 07/24/07 | | 0.0 | 0.1 | 19.8 | 0.0 |
| | 06/05/07 | 18 | 0.0 | 0.5 | 18.1 | 0.0 |
| | 07/24/07 | | 0.0 | 0.5 | 18.4 | 0.0 |
| SV-26 | 06/05/07 | 5 | 0.0 | 0.0 | 20.2 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 19.5 | 0.0 |
| | 06/05/07 | 18 | 0.0 | 1.0 | 17.0 | 0.0 |
| | 07/24/07 | | 0.0 | 1.2 | 17.5 | 0.0 |
| SV-27 | 06/05/07 | 5 | 0.0 | 0.0 | 20.4 | 0.0 |
| | 07/24/07 | | 0.0 | 0.0 | 20.1 | 0.0 |
| | 06/05/07 | 18 | 0.0 | 0.6 | 19.7 | 0.0 |
| | 07/24/07 | | 0.0 | 0.7 | 19.8 | 0.0 |
| SV-28 | 06/05/07 | 5 | 0.0 | 0.1 | 19.0 | 0.0 |
| | 07/24/07 | | 0.0 | 0.5 | 17.9 | 0.0 |
| | 06/05/07 | 15 | 0.0 | 0.5 | 19.0 | 0.0 |
| | 07/24/07 | | 0.0 | 1.5 | 17.0 | 0.0 |
| SV-29 | 06/05/07 | 5 | 0.0 | 0.3 | 19.9 | 0.0 |
| | 07/24/07 | | 0.0 | 0.5 | 17.7 | 0.0 |
| | 06/05/07 | 14 | 0.0 | 0.3 | 18.3 | 0.0 |
| | 07/24/07 | | 0.0 | 0.2 | 16.8 | 0.0 |
| SV-30 | 06/05/07 | 5 | 0.0 | 0.2 | 19.6 | 0.0 |
| | 07/24/07 | | 0.0 | 0.4 | 17.4 | 0.0 |
| | 06/05/07 | 18 | 0.0 | 0.3 | 18.0 | 0.0 |
| | 07/24/07 | | 0.0 | 0.9 | 17.1 | 0.0 |
| SV-1 TT | 06/05/07 | 19 | 0.0 | 0.5 | 18.9 | 0.0 |
| | 07/24/07 | | 0.0 | 0.8 | 19.2 | 0.0 |
| SV-2 TT | 06/05/07 | 17.5 | 0.0 | 21.2 | 0.0 | 0.0 |
| | 07/24/07 | | 0.0 | 19.4 | 0.2 | 0.0 |
| SV-3 TT | 06/05/07 | 16 | 5.5 | 8.7 | 14.8 | 110 |
| | 07/24/07 | | 3.5 | 14.3 | 6.4 | 70 |

NOTES:
$CH_4$ = Methane
$CO_2$ = Carbon Dioxide
$O_2$ = Oxygen
LEL = Lower Explosive Limit - Calculated from methane concentration
LEL Target Limit = 25%
Shaded values exceed Target Limit for LEL (25%)

TABLE 3
DENVER REGIONAL LANDFILL
SOIL VAPOR MONITORING POINTS
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)

| Monitoring Point ID | Effective Screen Interval |
|---|---|
| GP-1 | 23.0' - 35.0' |
| GP-2 | 33.0' - 45.0' |
| GP-3 | 16.0' - 28.0' |
| GP-4 | 43.0' - 55.0' |
| GP-5 | 52.5' - 75.0' |
| GP-6 | 78.0' - 100.0' |
| GP-7 | 32.8' - 45.0' |
| S-102 | 10.5' - 22.5' |

NOTES:
Source: Doty and Associates, Third Quarter 2006 Monitoring Report, December 12, 2006.

TABLE 4
SAMPLE RESULTS SUMMARY: VOCs IN GROUNDWATER
Open Property South of Old Erie Landfill
Erie, Colorado
Project No. 3710-001 (2)

| Parameter | Detection Limit | Reg Std mg/l | SV-9 18' | SV-10 20' |
|---|---|---|---|---|
| Acetone | 0.400 | --- | ND | ND |
| Benzene | 0.010 | 0.005 | ND | ND |
| Bromodichloromethane | 0.020 | --- | ND | ND |
| Chloroform | 0.020 | --- | ND | ND |
| Chloromethane | 0.100 | --- | ND | ND |
| Dichlorodifluoromethane | 0.100 | --- | ND | ND |
| 1,1-Dichloroethane | 0.020 | --- | ND | 0.030 |
| 1,2-Dichloroethane | 0.020 | 0.005 | ND | ND |
| 1,1-Dichloroethene (DCE) | 0.020 | 0.007 | ND | ND |
| cis-1,2-Dichloroethene | 0.020 | 0.07 | ND | ND |
| trans-1,2-Dichloroethene | 0.020 | 0.1 | ND | ND |
| 1,2-Dichloropropane | 0.020 | 0.005 | ND | ND |
| Methylene Chloride | 0.020 | --- | ND | ND |
| Tetrachloroethene (PERC) | 0.020 | 0.005 | ND | ND |
| Toluene | 0.020 | 1 | ND | ND |
| 1,1,1-Trichloroethane (TCA) | 0.020 | 0.2 | ND | ND |
| Trichloroethene (TCE) | 0.020 | 0.005 | ND | ND |
| Trichlorofluoromethane | 0.020 | --- | ND | ND |
| Trichlorotrifluoromethane | 0.020 | --- | ND | ND |
| Vinyl Chloride | 0.020 | 0.002 | ND | ND |
| m&p Xylenes | 0.020 | 10 | ND | ND |
| o-Xylene | 0.020 | 10 | ND | ND |

**NOTES:**
Units: All values reported in mg/l
ND = Parameter not detected above method detection limit as listed above.
++ = Parameter not included in analyte list.
Reg Std = Regulatory Standard - as cited in Colorado Basic Standards for Groundwater
--- = Regulatory standard not established.

# Attachment 1

*Tetra Tech Soil Vapor Study*

TETRA TECH

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February 2, 2007

Mr. Jon Benallo
Vice President of Development
SouthWestern Investment Group, Inc.
333 West Hampden Avenue, Suite 810
Englewood, Colorado 80110

**RE: Summary Report of Preliminary Site Investigation Activities**
**Weld County, Colorado**

Dear Mr. Benallo:

This letter report summarizes the site investigation field activities recently performed by Tetra Tech at the Pratt Property in Weld County, Colorado (the Property). A summary of the proposed scope of the site investigation activities is listed below:

- Attempt to locate boring logs for the two existing monitoring wells (MW-1 West and East) on the Property and collect groundwater samples from each of the wells. Samples will be analyzed for the same suite of constituents included in the routine detection monitoring program conducted by DRLS.

- Install three gas monitoring points along the northern boundary of the Property adjacent to the Old Erie Landfill. These gas monitoring points will be installed using a Geoprobe drill rig and vapor samples collected from each location will be analyzed for methane and VOCs.

- Conduct further investigation into the location of the reported mud pits associated with the oil and gas wells. Global positioning system (gps) coordinates for the mud pit locations will be obtained from COGCC records and these locations will be field verified based on observations for residual drilling mud, petroleum hydrocarbons in the soil, or other visual evidence. Shallow borings will be advanced using a Geoprobe drill rig. Samples will be collected from the borings within the identifiable mud pits located on the Property and analyzed for TPH and other contaminants required by the COGCC for mud pit closure.

Attempts to locate the boring logs for the two existing monitoring wells were unsuccessful. There are no records of these wells on file with the State Engineer's Office, and Stewart Environmental, who reported analytical results from these wells in their Phase II Site Investigation Report from 1992 were unable to provide any well construction details or boring logs. Installation of the three soil vapor monitoring points was completed on January 11, 2007 and the sampling of soil vapor and groundwater was conducted on January 15 and 16, 2007. The former mud pit locations were not sampled due to deep snow drifts, which prevented access to these areas. Additional detail regarding the completed site investigation activities are provided below.

## Summary of Completed Site Investigation Activities

Three soil vapor monitoring points were installed on January 11, 2007 along the northern property boundary, just south of the Old Erie Landfill. Their locations are shown on Figure 1 (attached). Site Services, Inc. of Golden Colorado was subcontracted to install the soil vapor monitoring points. A direct push GeoProbe rig was used to create two and a half inch borings. Each boring was continuous sampled, and boring logs with construction details for each vapor monitoring point are included in Attachment A. The soil vapor monitoring points were installed through the GeoProbe drilling rods. Three-eighths inch tubing was connected to a one-foot screened stainless steel soil vapor extraction point and extended to the surface. One and a half feet of sand was placed around the soil vapor point screen and the remaining boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover. SV-1, the western point, was installed with a screened interval between 15.5 and 6.5 feet below ground surface (bgs). SV-2 was installed with a screened interval between 15.5 and 16.5 feet bgs. SV-3, the eastern point, was installed with a screened interval between 18 and 19 feet bgs. Prior to soil vapor sampling on January 16, 2007, the probe installations were allowed to equilibrate for four days. A SKC Universal PCXR4 personal air sampling pump was used to purge and sample each of the soil vapor points. The air sampling pump was calibrated in the field to a flow rate of 2-liters per minute using a traceable manometer. Purging of each soil vapor point was accomplished by connecting the pump intake directly to the 3/8-inch tubing extending to the surface from each soil vapor point. At each soil vapor point, 10 liters of soil vapor were purged prior to sample collection. After completion of each purge, a tedlar bag was connected directly to the air sampling pump exhaust using a dedicated piece of tygon tubing. Each soil vapor sample was contained in a ten liter tedlar bag, filled at a rate of 2 l/min. The three samples were shipped to Atmospheric Analysis & Consulting, Inc. for analysis. The soil vapor was analyzed for a landfill gas suite and volatile organic compounds from the EPA's AP-42 list. The laboratory data is presented in Table 1 and discussed below.

Groundwater samples were collected from the two existing monitoring wells on January 15, 2007. As indicated on Figure 1, these wells are located in the south-central portion of the site near the bottom of a swale running east to west through the Property. Prior to sample collection the water level and total depth was recorded. The western well, identified as MW-1A has a total depth of 41.9 feet and the depth to water was measured at 18.50 feet below the top of the casing. The eastern well, identified as MW-1B has a total depth of 79.7 feet and the depth to water was measured at 54.62 feet below the top of the casing. Disposable bailers were used to purge the wells of three well volumes prior to sample collection. Sample containers were placed on ice in a cooler and shipped to Pace Analytical Labs for analysis. The water generated from each well was clear and free of sheens and odors. Each sample was analyzed for Total Petroleum Hydrocarbons (TPH) and Total Volatile Organic Compounds (VOCs). The laboratory data is presented in Table 2 and discussed below.

## Discussion of Preliminary Site Investigation Results

Analytical results from both the groundwater and soil vapor samples have been evaluated against risk-based screening levels developed in accordance with the *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils*, developed by the United States Environmental Protection Agency's Office of Solid Waste and Emergency Response (EPA, 2002). This document, referred to as the Subsurface Vapor Intrusion Guidance (SVIG) presents an approach to determining if there is a potential for an unacceptable risk associated with vapor intrusion. Vapor intrusion is defined as the migration of volatile chemicals from the subsurface into overlying buildings. Volatile chemicals in buried wastes and/or contaminated groundwater can emit vapors that may migrate through subsurface soils and into indoor air spaces in ways similar to that of radon gas seeping into homes (EPA, 2002). The Draft SVIG presents generic screening levels or target shallow gas or groundwater concentrations

for a long list of organic chemicals, which correspond to risk-based concentrations for indoor air in residential settings. These screening levels are calculated over a risk range of $1 \times 10^{-4}$ (one in ten-thousand) to $1 \times 10^{-6}$ (one in one million). A primary factor utilized in calculating the screening levels is the soil gas-to-indoor air, or groundwater-to-indoor air attenuation factors, or the anticipated amount of vapor which may migrate from the subsurface into indoor air spaces. Many site-specific conditions affect this migration pathway, the calculation of appropriate attenuation factors, the determination of whether a complete pathway exists and the evaluation of the potential risk associated with vapor intrusion. These conditions or factors include building characteristics, chemical type, soil type, and depth to the source (either in soil gas or groundwater). As this document is a guidance document, it does not impose any requirements or obligations and the screening levels developed through its use are not regulatory limits.

The analytical results for the soil vapor samples collected from SV-1, SV-2, and SV-3 are presented in the attached Table 1. This table also presents the Target Shallow Soil Gas Concentration, or screening levels, from the Draft SVIG based on a conservative soil gas-to-indoor air attenuation factor of 0.1 at a risk level of $1 \times 10^{-6}$ (one in one million). This attenuation is considered appropriate for soils less than five feet below a foundation surface. As stated above, each of the soil vapor samples were collected from depths of less than 20 feet below ground surface. As indicated in Table 1, the observed soil vapor concentrations for 8 volatile organic compounds and hexane exceed the screening level values, with at least one exceedance in each of the three monitoring points. The observed concentrations of vinyl chloride, methylene chloride, trichloroethene (TCE) and tetrachloroehtylene (PCE) in SV-3 all exceed the risk-based screening levels by a factor of more than 100 (TCE by nearly 20,000 and PCE by more than 2,000). Each of these constituents is a known or suspected carcinogen and the screening levels are based on the potential cancer risk associated with exposure to these chemicals. The maximum methane concentration observed occurred in SV-3, at 1.2% methane by volume. This is less than the lower explosive limit for methane of 5%, the threshold limit for methane gas at a landfill facility boundary. Based on these data, additional site specific information is necessary to fully characterize the nature and extent of potential contamination in this area of the site, to understand whether the site conditions represent a complete exposure pathway, and to fully characterize the potential risks.

The analytical results for the groundwater samples collected from MW-1A and MW-1B are presented in the attached Table 2. This table also presents the Federal Drinking Water Standards and Target Groundwater Concentrations, or screening levels, from the Draft SVIG based on a conservative, or relatively high, soil gas-to-indoor air attenuation factor of 0.001 at a risk level of $1 \times 10^{-6}$ (one in one million). None of the petroleum hydrocarbon compounds or VOCs analyzed for in the groundwater samples were detected above the laboratory reporting limits presented in the table and none exceed the Federal Drinking Water Standards, or screening levels. However, it should be noted that the screening levels for TCE, PCE, vinyl chloride and other VOCs have been set equal to the Maximum Contaminant Levels (MCLs) identified in the Federal Drinking Water Standards, and may be subject to further review and modification.

**Additional Site Characterization**

Based on the results of the initial site investigation, presented above, and discussions with SouthWestern, additional investigation activities to further characterize the property have been considered. The objectives of an enhanced site investigation include: the investigation of the potential source and extent of VOCs in soil vapor in the northeastern portion of the property near the Old Erie landfill; a more complete evaluation of potential soil gas along the northern property boundary, south of Denver Regional Landfill South (DRLS); the collection of additional site characterization information relative to the evaluation of attenuation factors and potential exposure pathways; and the

characterization of groundwater quality throughout the property. To meet these objectives the following activities are proposed:

- Installation and sampling of five or six additional soil vapor monitoring points within the proposed 300-foot buffer along the northern boundary of the property;
- Re-sampling of the three recently installed vapor monitoring points (SV-1, SV-2, and SV-3);
- Installation and sampling of six to eight groundwater monitoring wells located throughout the property; and
- Conduct the originally proposed investigation of the former mud pit locations associated with the oil and gas wells.

The proposed locations of the additional monitoring points are illustrated on the attached Figure 2. The proposed soil vapor monitoring points are anticipated to be installed within the unsaturated soil zone above the weathered claystone bedrock, typically encountered at depths of 20 feet or less. The locations have been selected to further characterize and assist in defining the presence and extent of affected soil vapor south of the Old Erie Landfill and to assess the soil vapor quality immediately south of the DRLS, where the landfill's landfill gas monitoring wells are all completed within the claystone bedrock formation at depths ranging from 40 to 100 feet below ground surface. Field measurements of methane using a landfill gas detector will be made in the field following the installation of the vapor monitoring points. If these field observations reveal the presence of methane, or any other landfill gas indicators, additional vapor monitoring points may be installed in an attempt to define the limits of any affected soil vapor or gas migration. Very shallow (three to five feet) monitoring points are also being considered in the vicinity of SV-3 to evaluate vertical gradients and potential attenuation.

As documented through our review of landfill records available through the CDPHE, groundwater conditions in the area are somewhat complex. The existing groundwater monitoring network downgradient of the DRLS consists of four monitoring wells completed in the No. 6 coal seam which exists beneath the property, dipping to the southeast at a reported angle of 1.5 degrees. Groundwater may also occur in shallower isolated or perched zones of more permeable sand and sandstone lenses within the claystone bedrock of the Denver-Arapahoe formation. In reports for both the DRLS and the Front Range Landfill (FRL) to the east, it has been concluded that groundwater encountered in these shallow, perched systems are typically isolated and not likely to be continuous, or contiguous, across the site.

Groundwater monitoring results from the DRLS have not identified any "statistically significant" increases (see December 8, 2006 *Letter Report for Due Diligence Assessment*) of contaminants in the downgradient wells within the No. 6 coal 'aquifer'. Along the west side of the DRLS and throughout the FRL site, perched groundwater zones have been identified in the claystone formation above the No. 6 coal. As discussed previously, and in accordance with the EPA's Draft SVIG, vapor intrusion is typically a concern where the depth to groundwater is less than 100 feet. Therefore, the focus of the enhanced groundwater investigation will be to identify the occurrence of groundwater within the No. 6 coal 'aquifer', or shallower, perched aquifers to a maximum depth of 100 feet below ground surface. Depending on subsurface conditions encountered during drilling, monitoring well pairs (nested wells) may be installed at one location if multiple perched aquifers, or saturated zones, are encountered. It is anticipated that the No. 6 coal 'aquifer' may be encountered at depths of less than 100 feet in the western portion of the site, but in the eastern portion of the property this aquifer may be as deep or deeper than 175 feet, as the surface topography rises to the east and the aquifer appears to dip, or get deeper, to the east or southeast.

If you have any questions regarding the discussion of results, or proposed scope of additional site investigation activities, please do not hesitate to contact me. It is our pleasure to be of continued service to SouthWestern in the evaluation of the Pratt Property.

Sincerely,

**TETRA TECH**

Daryl L. Longwell, P.E.
Senior Project Manager

Attachments

Table 1 – Soil Vapor Monitoring Results
Table 2 – Groundwater Monitoring Results
Figure 1 – Site Plan and Existing Monitoring Locations
Figure 2 – Proposed Enhanced Site Investigation Locations
Attachment A – Soil Boring Logs and Vapor Monitoring Point Construction Details

Table 1
Pratt Property, Weld County, CO
Soil Vapor Monitoring Results - January 16, 2007
SouthWestern Investment Group, Inc.

| Compound | Target Shallow Soil Gas Concentration [1] (ppbv) | SV-1 (West) Screened: 15-16 ft bgs (ppbv) | SV-2 Screened: 16.5-17.5 ft bgs (ppbv) | SV-3 (East) Screened: 18-19 ft bgs (ppbv) |
|---|---|---|---|---|
| Chlorodifluoromethane | 140,000 | 20.2 | <1 [2] | 1,170 |
| Dichlorodifluoromethane | 400 | 263 | 1.1 | **1,110** |
| Chloromethane | 12 | <1 | <1 | <200 |
| Vinyl Chloride | 1.1 | <1 | <1 | **410** |
| Chloroethane | 38,000 | <1 | <1 | 589 |
| Dichlorofluoromethane | -- [3] | 17.7 | 1.3 | 9,460 |
| Ethanol | -- | 11.3 | 7.7 | <400 |
| Acetone | 1,500 | 14 | 13.5 | <400 |
| Trichlorofluoromethane | 1,200 | 5 | <1 | 624 |
| Isopropyl Alcohol | -- | <1 | <1 | <400 |
| Acrylonitrile | 0.17 | <1 | <1 | <200 |
| 1,1-Dichloroethylene | 500 | <1 | <1 | **5,510** |
| Methylene Chloride | 15 | 2.9 | 1.3 | **6,270** |
| Carbon Disulfide | 2,200 | <1 | <1 | <200 |
| t-1,2-Dichloroethylene | -- | <1 | <1 | <200 |
| 1,1-Dichloroethane | 1,200 | 12.7 | <1 | **3,580** |
| 2-Butanone (MEK) | 3,400 | 2.3 | 1.1 | <200 |
| Hexane | 570 | 3.7 | 2.7 | <200 |
| Chloroform | 0.22 | <1 | <1 | <200 |
| 1,2-Dichloroethane | 0.23 | <1 | <1 | <200 |
| 1,1,1-Trichloroethane | 4,000 | 2.2 | <1 | 2110 |
| Benzene | 0.98 | **1.5** | <1 | <200 |
| Carbon Tetrachloride | 0.26 | <1 | <1 | <200 |
| 1,2-Dichloropropane | 8.7 | <1 | <1 | <200 |
| Bromodichloromethane | 0.21 | <1 | <1 | <200 |
| Trichloroethene (TCE) | 0.041 | **1.3** | <1 | **816** |
| 4-Methyl-2-Pentanone (MiBK) | 200 | <1 | <1 | <200 |
| Toluene | 1,100 | 10.5 | 2.8 | <200 |
| 1,2-Dibromoethane | 0.014 | <1 | <1 | <200 |
| Tetrachloroethylene (PCE) | 1.2 | **3.7** | **1.4** | **2,870** |
| Chlorobenzene | 130 | <1 | <1 | <200 |
| Ethylbenzene | 5.1 | <1 | <1 | <200 |
| m- & p-Xylenes | 16,000 | <1 | <1 | <200 |
| 1,1,2,2-Tetrachloroethane | 0.061 | <1 | <1 | <200 |
| o-Xylene | 16,000 | <1 | <1 | <200 |
| 1,3-Dichlorobenzene | 170 | <1 | <1 | <200 |
| 1,4-Dichlorobenzene | 1300 | <1 | <1 | <200 |
| 1,2-Dichlorobenzene | 330 | <1 | <1 | <200 |

**Table 1**
**Pratt Property, Weld County, CO**
**Soil Vapor Monitoring Results - January 16, 2007**
**SouthWestern Investment Group, Inc.**

| Compound, Units | Target Shallow Soil Gas Concentration [1] (ppmv) | SV-1 Screened: 18-19 ft bgs (ppbv) | SV-2 Screened: 16.5-17.5 ft bgs (ppbv) | SV-3 Screened: 15-16 ft bgs (ppbv) |
|---|---|---|---|---|
| TRS [4], ppmv | -- | <0.01 [5] | <0.01 | 0.01 |
| Ethane, ppmv | -- | <0.3 | <0.3 | <0.3 |
| Propane, ppmv | -- | <0.3 | <0.3 | 3.7 |
| Butane, ppmv | -- | <0.3 | <0.3 | 8 |
| Pentane, ppmv | -- | <0.3 | <0.3 | 6.2 |
| Hexane, ppmv | 0.57 | <0.3 | <0.3 | 7.8 |
| NMOC as Methane | -- | 3 | 2.7 | 120 |
| Hydrogen Sulfide, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Carbonyl Sulfide, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Methyl Mercaptan, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Carbon Disulfide, ppmv | 2.2 | <0.01 | <0.01 | 0.01 |
| Ethyl Mercaptan, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Dimethyl Sulfide, ppmv | -- | <0.01 | <0.01 | <0.01 |
| Carbon Monoxide, % | -- | <0.1 % | <0.1 % | <0.1 % |
| Oxygen, % | -- | 18.4 | 18.7 | 13.5 |
| Nitrogen, % | -- | 81 | 81.2 | 73.5 |
| Methane, % [6] | -- | <0.1 % | <0.1 % | 1.2 |
| Carbon Dioxide, % | -- | 0.5 | <0.1 % | 11.7 |

Notes:
(1) Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.1 (less than 5 ft below foundation surface) at a risk level of $1 \times 10^{-6}$ (includes both carcinogenic and non-carcinogenic risk). Source: Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway From Groundwater and Soils (EPA, 2002).
(2) Values given as a < result indicate that the compound was not detected, and is less than the reporting limit concentration.
(3) No values are given for Target Indoor Air Concentrations where none were listed in the guidance document refereced above
(4) Total Reduced Sulfur Compounds
(5) Result not detected at a value greater than the Practical Quantitation Limit
(6) Under RCRA Subtitle D, methane gas at a landill facility boundary cannot exceed the lower explosive limit for methane, which is 5%

Table 2
Pratt Property, Weld County, CO
Groundwater Monitoring Results - January 15, 2007
SouthWestern Investment Group, Inc.

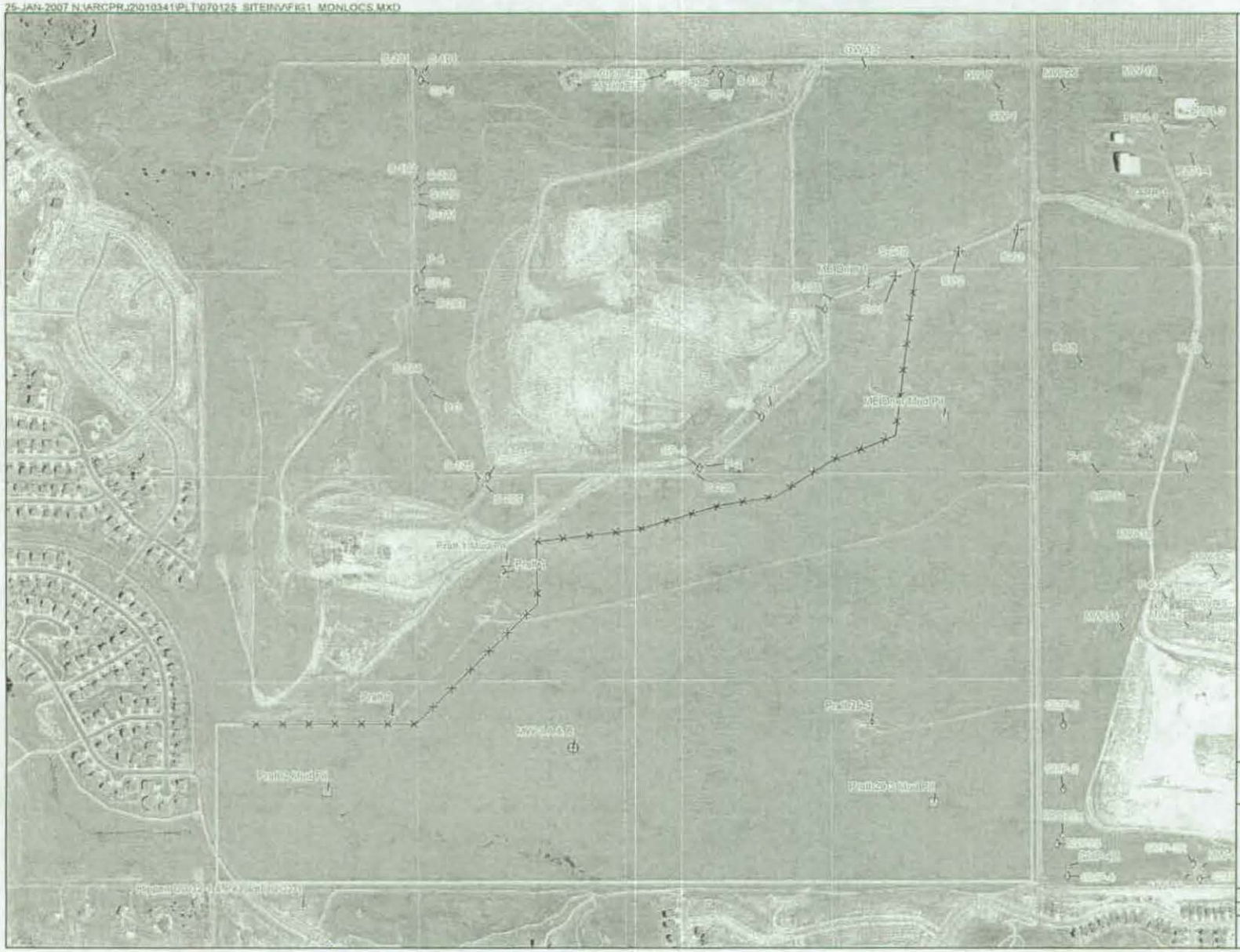
| Compound | Federal Drinking Water Standards [1] (MCL) (mg/L) | Target Groundwater Concentration [2] (mg/L) | MW-1A (mg/L) | MW-1B (mg/L) |
|---|---|---|---|---|
| **Petroleum Hydrocarbons** | | | | |
| Diesel Fuel | -- [3] | -- | <0.4 [4] | <0.4 |
| Fuel Oil | -- | -- | <0.4 | <0.4 |
| Jet Fuel | -- | -- | <0.4 | <0.4 |
| Kerosene | -- | -- | <0.4 | <0.4 |
| Mineral Spirits | -- | -- | <0.4 | <0.4 |
| Motor Oil | -- | -- | <0.4 | <0.4 |
| Total Petroleum Hydrocarbons | -- | -- | <0.4 | <0.4 |
| **Volatile Organic Compounds (VOCs)** | | | | |
| | ug/L | ug/L | ug/L | ug/L |
| Acetone | -- | 220,000 | <10 | <10 |
| Benzene | 5 | 5 | <1 | <1 |
| Bromobenzene | -- | -- | <1 | <1 |
| Bromochloromethane | -- | -- | <1 | <1 |
| Bromodichloromethane | -- | 2.1 | <1 | <1 |
| Bromoform | -- | 0.0083 | <1 | <1 |
| Bromomethane | -- | -- | <1 | <1 |
| 2-Butanone (MEK) | -- | 440,000 | <10 | <10 |
| tert-Butyl Alcohol | -- | | <10 | <10 |
| n-Butylbenzene | -- | 260 | <1 | <1 |
| sec-Butylbenzene | -- | 250 | <1 | <1 |
| tert-Butylbenzene | -- | 290 | <1 | <1 |
| Carbon disulfide | -- | 560 | <5 | <5 |
| Carbon Tetrachloride | 5 | 5 | <1 | <1 |
| Chlorobenzene | 100 | 390 | <1 | <1 |
| Chloroethane | -- | 28,000 | <1 | <1 |
| Chloroform | -- | 80 | <1 | <1 |
| Chloromethane | -- | 7 | <1 | <1 |
| 2-Chlorotoluene | -- | -- | <1 | <1 |
| 4-Chlorotoluene | -- | -- | <1 | <1 |
| 1,2-Dibromo-3-chloropropane | 0.2 | 33 | <2.5 | <2.5 |
| Dibromochloromethane | 60.0 | 3.2 | <1 | <1 |
| 1,2-Dibromoethane (EDB) | 0.05 | 0.36 | <1 | <1 |
| Dibromomethane | -- | -- | <1 | <1 |
| 1,2-Dichlorobenzene | -- | 2,600 | <1 | <1 |
| 1,3-Dichlorobenzene | 600 | 830 | <1 | <1 |
| 1,4-Dichlorobenzene | 75 | 8,200 | <1 | <1 |
| Dichlorodifluromethane | -- | 14 | <1 | <1 |
| 1,1-Dichloroethane | -- | 2,200 | <1 | <1 |
| 1,2-Dichloroethane | 5 | 5 | <1 | <1 |
| 1,2-Dichloroethene (Total) | -- | -- | <1 | <1 |
| 1,1-Dichloroethene | 7 | 190 | <1 | <1 |
| cis-1,2-Dichloroethene | 70 | 210 | <1 | <1 |
| trans-1,2-Dichloroethene | 100 | -- | <1 | <1 |
| 1,2-Dichlorpropane | 5 | 35 | <1 | <1 |
| 1,3-Dichloropropane | -- | -- | <1 | <1 |
| 2,2-Dichloropropane | -- | -- | <1 | <1 |
| 1,1-Dichloropropene | -- | -- | <1 | <1 |
| cis-1,3-Dichloropropene | -- | 0.84 | <1 | <1 |
| trans-1,3-Dichloropropene | -- | 0.84 | <1 | <1 |

**Table 2**
**Pratt Property, Weld County, CO**
**Groundwater Monitoring Results - January 15, 2007**
**SouthWestern Investment Group, Inc.**

| Compound | Federal Drinking Water Standards [1] (MCL) (mg/L) | Target Groundwater Concentration [2] (mg/L) | MW-1A (mg/L) | MW-1B (mg/L) |
|---|---|---|---|---|
| Ethylbenzene | 700 | 700 | <1 | <1 |
| Hexachloro-1,3-butadiene | -- | 0.33 | <1 | <1 |
| 2-Hexanone | -- | -- | <10 | <10 |
| Isopropylbenzene (Cumene) | -- | 8 | <1 | <1 |
| p-Isopropyltoluene | -- | -- | <1 | <1 |
| Methylene chloride | -- | 6 | <1 | <1 |
| 4-Methyl-2-pentanone (MIBK) | -- | 14,000 | <10 | <10 |
| Methyl-tert-butyl ether | -- | 120,000 | <1 | <1 |
| Naphthalene | -- | 150 | <10 | <10 |
| n-Propylbenzene | -- | 320 | <1 | <1 |
| Styrene | 100 | 8,900 | <1 | <1 |
| 1,1,1,2-Tetrachloroethane | -- | 3 | <1 | <1 |
| 1,1,2,2-Tetrachloroethane | -- | 3 | <1 | <1 |
| Tetrachloroethene | 5 | 5 | <1 | <1 |
| Toluene | 1,000 | 1,500 | <1 | <1 |
| 1,2,3-Trichlorobenzene | | -- | <1 | <1 |
| 1,2,4-Trichlorobenzene | 70 | -- | <1 | <1 |
| 1,1,1-Trichloroethane | 200 | 3,100 | <1 | <1 |
| 1,1,2-Trichloroethane | 5 | 5 | <1 | <1 |
| Trichloroethene | 5 | 5 | <1 | <1 |
| Trichlorofluoromethane | -- | 180 | <1 | <1 |
| 1,2,3-Trichloropropane | -- | 290 | <2.5 | <2.5 |
| 1,2,4-Trimethylbenzene | -- | 24 | <1 | <1 |
| 1,3,5-Trimethylbenzene | -- | 25 | <1 | <1 |
| Vinyl Chloride | 2 | 2 | <1 | <1 |
| Xylene (Total) | 10,000 | 22,000 | <3.0 | <3.0 |
| Gasoline Range Organics | -- | -- | <500 | <500 |

**Notes:** (1) Federal Drinking Water Standards; Maximum Contaminant Levels (MCLs) obtained from http://www.epa.gov/safewater/contaminants/index.html, accessed January 22, 2007.
(2) Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.001 and Partitioning Across the Water Table Obeys Henry's Law at a risk level of 1 x 10-6. Source: Draft Guidance for Evaluating the Vapor Intrusion Indoor Air Pathway From Groundwater and Soils (EPA, 2002)
(3) No values are given for Federal Drinking Water Standards or Target Groundwater Concentrations
(4) Values given as a < result indicate that the compound was not detected, and is less than the reporting limit concentration.
(5) MW-1A DTW:18.50 ft TD: 41 89 ft; MW-1B DTW: 54.62 ft TD: 79.740 ft

25-JAN-2007 N:\ARCPRJ\2010341\PLT\070125_SITEINVFIG1_MONLOCS.MXD



**Legend**

- Boundary
- Fence
- Section Line
- Quarter/Quarter Section Line
- Oil & Gas Production Well
- On-Site Groundwater Monitoring Well
- New Gas Probe Location
- Potential Mud Pit
- Landfill Monitoring
- Landfill Gas Monitoring Location

Note:
Locations for the oil & gas production wells and mud pits are based on information obtained from the COGCC online GIS system: http://oil-gas.state.co.us

N

0 600 1,200
Feet

SOUTHWESTERN INVESTMENT GROUP, INC.
PRATT PROPERTY SITE INVESTIGATION

FIGURE 1

**MONITORING LOCATIONS**

| | |
|---|---|
| PROJECT: 010341 | DATE: JAN 25, 2007 |
| REV: 0 | BY: CRL CHECKED: JMK |

Tetra Tech, Inc.

02-FEB-2007 N:\ARCPRJ\2010341\PLT\070125_SITEINV\FIG2_MONLOCS_DRG.MXD

**Legend**

- Landfill Monitoring
- Landfill Gas Monitoring Location
- Oil & Gas Production Well
- On-Site Groundwater Monitoring Well
- Possible Nested Groundwater Well
- New Gas Probe Location
- Potential Mud Pit
- Approximate Development Boundary
- Fence
- Boundary
- Section Line
- Quarter/Quarter Section Line

Note:
Locations for the oil & gas production wells and mud pits are based on information obtained from the COGCC online GIS system: http://oil-gas.state.co.us

N

0 600 1,200
Feet

SOUTHWESTERN INVESTMENT GROUP, INC.
PRATT PROPERTY SITE INVESTIGATION

FIGURE 2

**PROPOSED ENHANCED SITE INVESTIGATION LOCATIONS**

| | | |
|---|---|---|
| PROJECT: 010341 | DATE: FEB 02, 2007 | |
| REV: 0 | BY: CRL | CHECKED: JMK |

Tetra Tech, Inc.

# Attachment A
## Boring Logs and Vapor Monitoring Point Construction Details

| TETRA TECH, INC | Log of Boring SV-1 (Page 1 of 1) |
|---|---|

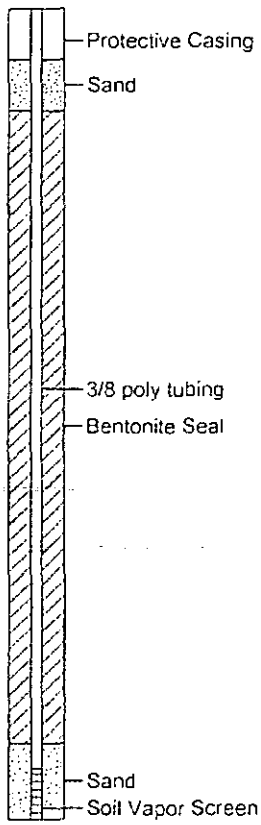
Erie Site Investigation
Project No. 010341.2
Erie, Colorado

| | | | |
|---|---|---|---|
| Date Started | : 1/11/07 | Northing Coord. (m) | : na |
| Date Completed | : 1/11/07 | Easting Coord. (m) | : na |
| Boring Diameter | : 2.5 inches | Survey By | : na |
| Drilling Method | : Direct Push | Logged By | : Jim Kienholz |
| Sampling Method | : Continuous | | |

Surf. Elev. 0

| Depth | Elev. | DESCRIPTION | USCS | Water Level |
|---|---|---|---|---|
| 0 | 0 | Sandy CLAY, brown to gray, very stiff, medium plasticity, slightly moist, no stain, no odor | CL | |
| 5 | -5 | Silty CLAY, light brown, very stiff, medium plasticity, slightly moist, light iron stain, no odor | CL | |
| 10 | -10 | SILTY CLAY, dark brown to gray, very stiff, medium plasticity, iron staining, no odor | CL | |
| 15 | -15 | Sandy CLAY w/ Silt, light grey, stiff, medium plasticity, slightly moist, no stain, no odor | CL | |
| | | Refusal | | |
| | | Total Depth: 16.5 ft bgs | | |
| 20 | -20 | | | |
| 25 | | | | |

Well ID: SV-1




Well Const. Information

The soil vapor points were installed through the GeoProbe drilling rods. 3/8" poly tubing was connected to a 1 ft stainless steel soil vapor extration point. 1.5 ft of sand was placed around the soil vapor point screen and the rest of the boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover.

02-02-2007 J:\BLE01\010341\Site Investigation\Boring Logs\SV-1.bor

| TETRA TECH, INC | Log of Boring SV-2 (Page 1 of 1) |
|---|---|

Erie Site Investigation
Project No. 010341.2
Erie, Colorado

| | | | |
|---|---|---|---|
| Date Started | : 1/11/07 | Northing Coord. (m) | : na |
| Date Completed | : 1/11/07 | Easting Coord. (m) | : na |
| Boring Diameter | : 2.5 inches | Survey By | : na |
| Drilling Method | : Direct Push | Logged By | : April Turney |
| Sampling Method | : Continuous | | |

Surf. Elev. 0

| Depth | Elev. | DESCRIPTION | USCS |
|---|---|---|---|
| 0 | 0 | Sandy SILT, light brown, medium dense, dry, no stain, no odor | ML |
| 5 | -5 | Sandy CLAY, brown to gray, very stiff, medium plasticity, light iron staining, no odor | CL |
| 10 | -10 | | |
| | | No Recovery | |
| 15 | -15 | CLAY, grey to brown, very stiff, plastic, slightly moist, light iron staining, no odor. | CL |
| | | SAND lense, brown, dense, dry, no stain, no odor | SP |
| | | CLAY, brown, very stiff, medium plasticity, dry, no stain, no odor | CL |
| | | Total Depth: 18.0 ft bgs | |
| 20 | -20 | | |
| 25 | | | |

Water Level

Well ID: SV-2

Well Const. Information

The soil vapor points were installed through the GeoProbe drilling rods. 3/8" poly tubing was connected to a 1 ft stainless steel soil vapor extration point. 1.5 ft of sand was placed around the soil vapor point screen and the rest of the boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover

02-02-2007 J:\BLD010\010341\Site Investigation\Boring Logs\SV-2.bor

| TETRA TECH, INC | Log of Boring SV-3 (Page 1 of 1) |
|---|---|

Erie Site Investigation
Project No. 010341.2
Erie, Colorado

| | | | |
|---|---|---|---|
| Date Started | : 1/11/07 | Northing Coord. (m) | : na |
| Date Completed | : 1/11/07 | Easting Coord (m) | : na |
| Boring Diameter | : 2.5 inches | Survey By | : na |
| Drilling Method | : Direct Push | Logged By | : April Turney |
| Sampling Method | : Continuous | | |

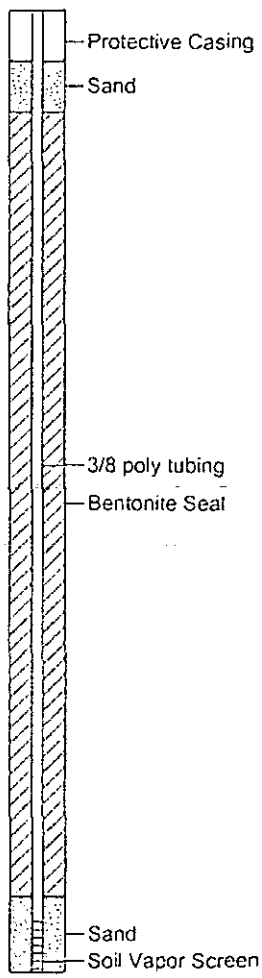
Surf. Elev. 0

| DESCRIPTION | USCS |
|---|---|
| Sandy SILT w/ Clay, brown, dense, dry, no stain, no odor | ML |
| Sandy CLAY, brown to grey, very stiff, medium plasticity, no stain, no odor | CL |
| Sandy CLAY, grey, very stiff, medium plasticity, slightly moist, some iron staining, no odor | CL |
| CLAY w/ Sand, gray, stiff, plastic, slightly moist, light iron staining, no odor | CL |
| Sandy CLAY, gray, very stiff, plastic, trace of moisture, no stain, no odor | CL |

Total Depth: 20 ft bgs

Water Level

Well ID: SV-3




Well Const. Information

The soil vapor points were installed through the GeoProbe drilling rods. 3/8" poly tubing was connected to a 1 ft stainless steel soil vapor extraction point. 1.5 ft of sand was placed around the soil vapor point screen and the rest of the boring was sealed with hydrated bentonite chips. The tubing is protected at the surface by a six-inch flush mounted protective cover.

0 — 0
5 — -5
10 — -10
15 — -15
20 — -20
25

02-02-2007 J:\BLD\010341\Site Investigation\Boring Logs\SV-3.bor

# Attachment 2

*Stewart Environmental Laboratory Results*

Stewart Environmental Consultants, Inc.
*consulting engineers and scientists*

**Corporate Office & Laboratory:**
3801 Automation Way, Suite 200
Fort Collins, Colorado 80525
ph: (970) 226-5500
fax: (970) 226-4946
www.stewartenv.com

# LABORATORY TESTING RESULTS

DATE: August 3, 2007
SUBJECT: Southwestern Investments Group, LLC.
JOB NO.: 3710-001 (002)

Please find enclosed laboratory testing results for the samples received at our laboratory on July 24, 2007.

We appreciate the opportunity to provide these analytical services and look forward to working with you in the future. If you have any questions regarding this report, do not hesitate to contact us.

STEWART ENVIRONMENTAL CONSULTANTS, INC.

Michael A. Glavanovich
Laboratory Manager

Enc.

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (5')
Sample Matrix: Air
Sample No.: 704376
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (5')
Sample Matrix: Air
Sample No.: 704376
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (5')
Sample Matrix: Air
Sample No.: 704376
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (5')
Sample Matrix: Air
Sample No.: 704376
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (5')
Sample Matrix: Air
Sample No.: 704377
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (5')
Sample Matrix: Air
Sample No.: 704377
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (5')
Sample Matrix: Air
Sample No.: 704377
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (5')
Sample Matrix: Air
Sample No.: 704377
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (5')
Sample Matrix: Air
Sample No.: 704378
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (5')
Sample Matrix: Air
Sample No.: 704378
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | 3.10 | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (5')
Sample Matrix: Air
Sample No.: 704378
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (5')
Sample Matrix: Air
Sample No.: 704378
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (12.5')
Sample Matrix: Air
Sample No.: 704379
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (12.5')
Sample Matrix: Air
Sample No.: 704379
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | 326 | 1.25 |
| 1,1-Dichloroethane | 1.98 | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (12.5')
Sample Matrix: Air
Sample No.: 704379
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | 0.502 | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | 0.653 | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | 2.32 | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | 0.412 | 0.250 |
| Trichlorofluoromethane | 5.90 | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-11 (12.5')
Sample Matrix: Air
Sample No.: 704379
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | 1.49 | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (5')
Sample Matrix: Air
Sample No.: 704380
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (5')
Sample Matrix: Air
Sample No.: 704380
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | 1.30 | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (5')
Sample Matrix: Air
Sample No.: 704380
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (5')
Sample Matrix: Air
Sample No.: 704380
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (11.5')
Sample Matrix: Air
Sample No.: 704381
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (11.5')
Sample Matrix: Air
Sample No.: 704381
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | 62.1 | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (11.5')
Sample Matrix: Air
Sample No.: 704381
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | 0.379 | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | 4.32 | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-12 (11.5')
Sample Matrix: Air
Sample No.: 704381
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | 2.24 | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-13 (8.5')
Sample Matrix: Air
Sample No.: 704382
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-13 (8.5')
Sample Matrix: Air
Sample No.: 704382
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-13 (8.5')
Sample Matrix: Air
Sample No.: 704382
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-13 (8.5')
Sample Matrix: Air
Sample No.: 704382
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (5')
Sample Matrix: Air
Sample No.: 704383
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (5')
Sample Matrix: Air
Sample No.: 704383
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (5')
Sample Matrix: Air
Sample No.: 704383
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (5')
Sample Matrix: Air
Sample No.: 704383
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/26/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (15.25')
Sample Matrix: Air
Sample No.: 704384
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (15.25')
Sample Matrix: Air
Sample No.: 704384
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (15.25')
Sample Matrix: Air
Sample No.: 704384
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-14 (15.25')
Sample Matrix: Air
Sample No.: 704384
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (5')
Sample Matrix: Air
Sample No.: 704385
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (5')
Sample Matrix: Air
Sample No.: 704385
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (5')
Sample Matrix: Air
Sample No.: 704385
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (5')
Sample Matrix: Air
Sample No.: 704385
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (17.25')
Sample Matrix: Air
Sample No.: 704386
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (17.25')
Sample Matrix: Air
Sample No.: 704386
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (17.25')
Sample Matrix: Air
Sample No.: 704386
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.282 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | 0.264 | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-15 (17.25')
Sample Matrix: Air
Sample No.: 704386
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (5')
Sample Matrix: Air
Sample No.: 704387
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (5')
Sample Matrix: Air
Sample No.: 704387
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (5')
Sample Matrix: Air
Sample No.: 704387
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (5')
Sample Matrix: Air
Sample No.: 704387
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (16')
Sample Matrix: Air
Sample No.: 704388
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (16')
Sample Matrix: Air
Sample No.: 704388
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | Trace | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (16')
Sample Matrix: Air
Sample No.: 704388
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | 0.251 | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-16 (16')
Sample Matrix: Air
Sample No.: 704388
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (5')
Sample Matrix: Air
Sample No.: 704389
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (5')
Sample Matrix: Air
Sample No.: 704389
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (5')
Sample Matrix: Air
Sample No.: 704389
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.326 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | 0.280 | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | 0.265 | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (5')
Sample Matrix: Air
Sample No.: 704389
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/27/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (19')
Sample Matrix: Air
Sample No.: 704390
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (19')
Sample Matrix: Air
Sample No.: 704390
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (19')
Sample Matrix: Air
Sample No.: 704390
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | Trace | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-17 (19')
Sample Matrix: Air
Sample No.: 704390
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (5')
Sample Matrix: Air
Sample No.: 704391
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (5')
Sample Matrix: Air
Sample No.: 704391
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (5')
Sample Matrix: Air
Sample No.: 704391
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (5')
Sample Matrix: Air
Sample No.: 704391
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (18')
Sample Matrix: Air
Sample No.: 704392
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (18')
Sample Matrix: Air
Sample No.: 704392
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (18')
Sample Matrix: Air
Sample No.: 704392
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.304 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-18 (18')
Sample Matrix: Air
Sample No.: 704392
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (5')
Sample Matrix: Air
Sample No.: 704393
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (5')
Sample Matrix: Air
Sample No.: 704393
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (5')
Sample Matrix: Air
Sample No.: 704393
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (5')
Sample Matrix: Air
Sample No.: 704393
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (18')
Sample Matrix: Air
Sample No.: 704394
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (18')
Sample Matrix: Air
Sample No.: 704394
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (18')
Sample Matrix: Air
Sample No.: 704394
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-22 (18')
Sample Matrix: Air
Sample No.: 704394
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/25/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (5')
Sample Matrix: Air
Sample No.: 704395
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (5')
Sample Matrix: Air
Sample No.: 704395
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (5')
Sample Matrix: Air
Sample No.: 704395
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (5')
Sample Matrix: Air
Sample No.: 704395
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/30/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (14')
Sample Matrix: Air
Sample No.: 704396
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (14')
Sample Matrix: Air
Sample No.: 704396
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (14')
Sample Matrix: Air
Sample No.: 704396
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-23 (14')
Sample Matrix: Air
Sample No.: 704396
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (5')
Sample Matrix: Air
Sample No.: 704397
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (5')
Sample Matrix: Air
Sample No.: 704397
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (5')
Sample Matrix: Air
Sample No.: 704397
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (5')
Sample Matrix: Air
Sample No.: 704397
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (20')
Sample Matrix: Air
Sample No.: 704398
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (20')
Sample Matrix: Air
Sample No.: 704398
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (20')
Sample Matrix: Air
Sample No.: 704398
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.410 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | 0.275 | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-24 (20')
Sample Matrix: Air
Sample No.: 704398
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (5')
Sample Matrix: Air
Sample No.: 704399
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (5')
Sample Matrix: Air
Sample No.: 704399
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (5')
Sample Matrix: Air
Sample No.: 704399
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | ND | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (5')
Sample Matrix: Air
Sample No.: 704399
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (15')
Sample Matrix: Air
Sample No.: 704400
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (15')
Sample Matrix: Air
Sample No.: 704400
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (15')
Sample Matrix: Air
Sample No.: 704400
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.521 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | 0.348 | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-28 (15')
Sample Matrix: Air
Sample No.: 704400
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 07/31/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (5')
Sample Matrix: Air
Sample No.: 704401
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (5')
Sample Matrix: Air
Sample No.: 704401
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (5')
Sample Matrix: Air
Sample No.: 704401
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.271 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (5')
Sample Matrix: Air
Sample No.: 704401
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (14')
Sample Matrix: Air
Sample No.: 704402
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (14')
Sample Matrix: Air
Sample No.: 704402
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (14')
Sample Matrix: Air
Sample No.: 704402
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.338 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-29 (14')
Sample Matrix: Air
Sample No.: 704402
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (5')
Sample Matrix: Air
Sample No.: 704403
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (5')
Sample Matrix: Air
Sample No.: 704403
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (5')
Sample Matrix: Air
Sample No.: 704403
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.285 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | ND | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (5')
Sample Matrix: Air
Sample No.: 704403
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (18')
Sample Matrix: Air
Sample No.: 704404
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.125 |
| Acetone | ND | 5.00 |
| Bromobenzene | ND | 0.250 |
| Bromochloromethane | ND | 0.250 |
| Bromodichloromethane | ND | 0.250 |
| Bromoform | ND | 0.250 |
| Bromomethane | ND | 1.25 |
| n-Butylbenzene | ND | 0.250 |
| sec-Butylbenzene | ND | 0.250 |
| tert-Butylbenzene | ND | 0.250 |
| Carbon tetrachloride | ND | 0.250 |
| Chlorobenzene | ND | 0.250 |
| Chloroethane | ND | 0.625 |
| Chloroform | ND | 0.250 |
| Chloromethane | ND | 1.25 |
| 2-Chlorotoluene | ND | 0.250 |
| 4-Chlorotoluene | ND | 0.250 |
| Dibromochloromethane | ND | 0.250 |
| 1,2-Dibromo-3-chloropropane | ND | 0.625 |
| 1,2-Dibromoethane | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (18')
Sample Matrix: Air
Sample No.: 704404
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.250 |
| 1,2-Dichlorobenzene | ND | 0.250 |
| 1,3-Dichlorobenzene | ND | 0.250 |
| 1,4-Dichlorobenzene | ND | 0.250 |
| Dichlorodifluoromethane | ND | 1.25 |
| 1,1-Dichloroethane | ND | 0.250 |
| 1,2-Dichloroethane | ND | 0.250 |
| 1,1-Dichloroethene | ND | 0.250 |
| cis-1,2-Dichloroethene | ND | 0.250 |
| trans-1,2-Dichloroethene | ND | 0.250 |
| 1,2-Dichloropropane | ND | 0.250 |
| 1,3-Dichloropropane | ND | 0.250 |
| 2,2-Dichloropropane | ND | 0.250 |
| 1,1-Dichloropropene | ND | 0.250 |
| cis-1,3-Dichloropropene | ND | 0.250 |
| trans-1,3-Dichloropropene | ND | 0.250 |
| Ethylbenzene | ND | 0.250 |
| Hexachlorobutadiene | ND | 0.250 |
| Isopropylbenzene | ND | 0.250 |
| 4-Isopropyltoluene | ND | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (18')
Sample Matrix: Air
Sample No.: 704404
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.250 |
| Naphthalene | ND | 0.250 |
| n-Propylbenzene | ND | 0.250 |
| Styrene | ND | 0.250 |
| 1,1,1,2-Tetrachloroethane | ND | 0.250 |
| 1,1,2,2-Tetrachloroethane | ND | 0.250 |
| Tetrachloroethene | ND | 0.250 |
| Toluene | 0.886 | 0.250 |
| 1,2,3-Trichlorobenzene | ND | 0.250 |
| 1,2,4-Trichlorobenzene | ND | 0.250 |
| 1,1,1-Trichloroethane | ND | 0.250 |
| 1,1,2-Trichloroethane | ND | 0.250 |
| Trichloroethene | ND | 0.250 |
| Trichlorofluoromethane | ND | 0.250 |
| 1,2,3-Trichloropropane | ND | 0.625 |
| 1,2,4-Trimethylbenzene | 0.286 | 0.250 |
| 1,3,5-Trimethylbenzene | ND | 0.250 |
| Vinyl chloride | ND | 0.250 |
| o-Xylene | ND | 0.250 |
| m&p-Xylenes | 0.612 | 0.250 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-30 (18')
Sample Matrix: Air
Sample No.: 704404
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260Air/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 5.00 |
| Acrylonitile | ND | 5.00 |
| 2-Butanone | ND | 5.00 |
| Carbon Disulfide | ND | 5.00 |
| 2-Chloroethyl vinyl ether | ND | 5.00 |
| trans-1,4-Dichloro-2-butene | ND | 5.00 |
| 2-Hexanone | ND | 5.00 |
| Iodomethane | ND | 5.00 |
| Methyl tert-Butyl ether | ND | 0.250 |
| 4-Methyl-2-pentanone | ND | 5.00 |
| Trichlorotrifluoroethane | ND | 0.250 |
| Vinyl Acetate | ND | 5.00 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (18')
Sample Matrix: Water
Sample No.: 704405
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.010 |
| Acetone | ND | 0.400 |
| Bromobenzene | ND | 0.020 |
| Bromochloromethane | ND | 0.020 |
| Bromodichloromethane | ND | 0.020 |
| Bromoform | ND | 0.020 |
| Bromomethane | ND | 0.100 |
| n-Butylbenzene | ND | 0.020 |
| sec-Butylbenzene | ND | 0.020 |
| tert-Butylbenzene | ND | 0.020 |
| Carbon tetrachloride | ND | 0.020 |
| Chlorobenzene | ND | 0.020 |
| Chloroethane | ND | 0.050 |
| Chloroform | ND | 0.020 |
| Chloromethane | ND | 0.100 |
| 2-Chlorotoluene | ND | 0.020 |
| 4-Chlorotoluene | ND | 0.020 |
| Dibromochloromethane | ND | 0.020 |
| 1,2-Dibromo-3-chloropropane | ND | 0.050 |
| 1,2-Dibromoethane | ND | 0.020 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (18')
Sample Matrix: Water
Sample No.: 704405
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.020 |
| 1,2-Dichlorobenzene | ND | 0.020 |
| 1,3-Dichlorobenzene | ND | 0.020 |
| 1,4-Dichlorobenzene | ND | 0.020 |
| Dichlorodifluoromethane | ND | 0.100 |
| 1,1-Dichloroethane | ND | 0.020 |
| 1,2-Dichloroethane | ND | 0.020 |
| 1,1-Dichloroethene | ND | 0.020 |
| cis-1,2-Dichloroethene | ND | 0.020 |
| trans-1,2-Dichloroethene | ND | 0.020 |
| 1,2-Dichloropropane | ND | 0.020 |
| 1,3-Dichloropropane | ND | 0.020 |
| 2,2-Dichloropropane | ND | 0.020 |
| 1,1-Dichloropropene | ND | 0.020 |
| cis-1,3-Dichloropropene | ND | 0.020 |
| trans-1,3-Dichloropropene | ND | 0.020 |
| Ethylbenzene | ND | 0.020 |
| Hexachlorobutadiene | ND | 0.020 |
| Isopropylbenzene | ND | 0.020 |
| 4-Isopropyltoluene | ND | 0.020 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (18')
Sample Matrix: Water
Sample No.: 704405
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.020 |
| Naphthalene | ND | 0.020 |
| n-Propylbenzene | ND | 0.020 |
| Styrene | ND | 0.020 |
| 1,1,1,2-Tetrachloroethane | ND | 0.020 |
| 1,1,2,2-Tetrachloroethane | ND | 0.020 |
| Tetrachloroethene | ND | 0.020 |
| Toluene | ND | 0.020 |
| 1,2,3-Trichlorobenzene | ND | 0.020 |
| 1,2,4-Trichlorobenzene | ND | 0.020 |
| 1,1,1-Trichloroethane | ND | 0.020 |
| 1,1,2-Trichloroethane | ND | 0.020 |
| Trichloroethene | ND | 0.020 |
| Trichlorofluoromethane | ND | 0.020 |
| 1,2,3-Trichloropropane | ND | 0.050 |
| 1,2,4-Trimethylbenzene | ND | 0.020 |
| 1,3,5-Trimethylbenzene | ND | 0.020 |
| Vinyl chloride | ND | 0.020 |
| o-Xylene | ND | 0.020 |
| m&p-Xylenes | ND | 0.020 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-9 (18')
Sample Matrix: Water
Sample No.: 704405
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 0.400 |
| Acrylonitile | ND | 0.400 |
| 2-Butanone | ND | 0.400 |
| Carbon Disulfide | ND | 0.400 |
| 2-Chloroethyl vinyl ether | ND | 0.400 |
| trans-1,4-Dichloro-2-butene | ND | 0.400 |
| 2-Hexanone | ND | 0.400 |
| Iodomethane | ND | 0.400 |
| Methyl tert-Butyl ether | ND | 0.020 |
| 4-Methyl-2-pentanone | ND | 0.400 |
| Trichlorotrifluoroethane | ND | 0.020 |
| Vinyl Acetate | ND | 0.400 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (20')
Sample Matrix: Water
Sample No.: 704406
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Benzene | ND | 0.010 |
| Acetone | ND | 0.020 |
| Bromobenzene | ND | 0.020 |
| Bromochloromethane | ND | 0.020 |
| Bromodichloromethane | ND | 0.020 |
| Bromoform | ND | 0.020 |
| Bromomethane | ND | 0.100 |
| n-Butylbenzene | ND | 0.020 |
| sec-Butylbenzene | ND | 0.020 |
| tert-Butylbenzene | ND | 0.020 |
| Carbon tetrachloride | ND | 0.020 |
| Chlorobenzene | ND | 0.020 |
| Chloroethane | ND | 0.050 |
| Chloroform | ND | 0.020 |
| Chloromethane | ND | 0.100 |
| 2-Chlorotoluene | ND | 0.020 |
| 4-Chlorotoluene | ND | 0.020 |
| Dibromochloromethane | ND | 0.020 |
| 1,2-Dibromo-3-chloropropane | ND | 0.050 |
| 1,2-Dibromoethane | ND | 0.020 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (20')
Sample Matrix: Water
Sample No.: 704406
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Dibromomethane | ND | 0.020 |
| 1,2-Dichlorobenzene | ND | 0.020 |
| 1,3-Dichlorobenzene | ND | 0.020 |
| 1,4-Dichlorobenzene | ND | 0.020 |
| Dichlorodifluoromethane | ND | 0.100 |
| 1,1-Dichloroethane | 0.030 | 0.020 |
| 1,2-Dichloroethane | ND | 0.020 |
| 1,1-Dichloroethene | ND | 0.020 |
| cis-1,2-Dichloroethene | ND | 0.020 |
| trans-1,2-Dichloroethene | ND | 0.020 |
| 1,2-Dichloropropane | ND | 0.020 |
| 1,3-Dichloropropane | ND | 0.020 |
| 2,2-Dichloropropane | ND | 0.020 |
| 1,1-Dichloropropene | ND | 0.020 |
| cis-1,3-Dichloropropene | ND | 0.020 |
| trans-1,3-Dichloropropene | ND | 0.020 |
| Ethylbenzene | ND | 0.020 |
| Hexachlorobutadiene | ND | 0.020 |
| Isopropylbenzene | ND | 0.020 |
| 4-Isopropyltoluene | ND | 0.020 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (20')
Sample Matrix: Water
Sample No.: 704406
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Methylene chloride | ND | 0.020 |
| Naphthalene | ND | 0.020 |
| n-Propylbenzene | ND | 0.020 |
| Styrene | ND | 0.020 |
| 1,1,1,2-Tetrachloroethane | ND | 0.020 |
| 1,1,2,2-Tetrachloroethane | ND | 0.020 |
| Tetrachloroethene | ND | 0.020 |
| Toluene | ND | 0.020 |
| 1,2,3-Trichlorobenzene | ND | 0.020 |
| 1,2,4-Trichlorobenzene | ND | 0.020 |
| 1,1,1-Trichloroethane | ND | 0.020 |
| 1,1,2-Trichloroethane | ND | 0.020 |
| Trichloroethene | ND | 0.020 |
| Trichlorofluoromethane | ND | 0.020 |
| 1,2,3-Trichloropropane | ND | 0.050 |
| 1,2,4-Trimethylbenzene | ND | 0.020 |
| 1,3,5-Trimethylbenzene | ND | 0.020 |
| Vinyl chloride | ND | 0.020 |
| o-Xylene | ND | 0.020 |
| m&p-Xylenes | ND | 0.020 |

Client Name: Southwestern Investments Group, LLC.
Project No.: 3710-001 (002)
Sample Name: SV-10 (20')
Sample Matrix: Water
Sample No.: 704406
Sample Date: 07/24/07
Date Received: 07/24/07
Date of Analysis: 08/01/07
Analyst: WVS
Method No.: 8260/3

| VOLATILE ORGANICS | TESTED VALUE (ug/L) | DETECT LIMIT |
|---|---|---|
| Acrolein | ND | 0.400 |
| Acrylonitile | ND | 0.400 |
| 2-Butanone | ND | 0.400 |
| Carbon Disulfide | ND | 0.400 |
| 2-Chloroethyl vinyl ether | ND | 0.400 |
| trans-1,4-Dichloro-2-butene | ND | 0.400 |
| 2-Hexanone | ND | 0.400 |
| Iodomethane | ND | 0.400 |
| Methyl tert-Butyl ether | ND | 0.020 |
| 4-Methyl-2-pentanone | ND | 0.400 |
| Trichlorotrifluoroethane | ND | 0.020 |
| Vinyl Acetate | ND | 0.400 |

ND = Not Detected
/3 Test Methods for Evaluating Solid Waste, SW-846, 3rd Edition, 1986

# Attachment 3

*Denver Regional Landfill Monitoring Results*

DOTY & ASSOCIATES, LLC
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# THIRD QUARTER 2006 MONITORING
# DENVER REGIONAL LANDFILL

December 12, 2006

Prepared for:

Denver Regional Landfill
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SW WLD DRL 4.

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# 1.0 INTRODUCTION

This report documents the environmental monitoring conducted at the Denver Regional Landfill in the third quarter of 2006. The Denver Regional Landfill consists of an area of approximately 150.6 acres in the East 1/2 of the Northwest 1/4 and the West 1/2 of the Northeast 1/4 of Section 29, Township 1 North, Range 68 West, Sixth Principal Meridian, Weld County, Colorado (Figure 1). The facility was originally permitted as the Southwest Weld County Landfill on 10 December 1979 by Colorado Landfill, Inc. Colorado Landfill sold the site to Western Disposal, Inc., in December 1985. Laidlaw Waste Systems, Inc., acquired the site from Western Disposal on January 1, 1988. Laidlaw was then purchased by Allied Waste Industries in December 1996; Waste Connections purchased the site from Allied in December 1999.

The environmental monitoring system consists of ten wells (eight on the subject property and two at the Old Erie Landfill), an additional twelve wells that are sampled if they contain sufficient water for chemical analysis, seven gas probes, four leachate sumps and an inspection of slopes under final cover and surface water control structures and channels. The system is monitored for ground-water level and quality, explosive gas concentrations and pressures, the presence and quality of leachate, and the condition of the fill slopes and surface water control structures. Table 1 provides a summary of the monitor well and gas probe construction details. In addition, explosive gas concentrations are monitored in six facility structures.

Ground-water monitoring and analyses are performed in accordance with the State of Colorado code of regulations (6 CCR 1007-2) and with the approved ground-water monitoring plan (Doty, 1994i). A copy of this report and any additional required supporting data or documents have been placed in the operating record at the site. This report has also been submitted to the Weld County Department of Public Health and Environment and the Colorado Department of Public Health and Environment (CDPHE). A listing of previous reports is presented in the bibliography (Section 6.0 of this report).

## 2.0 HYDROGEOLOGIC SUMMARY

The site geology consists of relatively thin soils underlain by the Laramie Formation. The soils are generally silty clays with a trace to some sand and are of low plasticity (Doty, 1991e). Undisturbed soils range in thickness from four to sixteen feet. The Laramie Formation consists mostly of claystone with lesser amounts of siltstone, sandstone, and coal. For the top several feet, the bedrock is highly weathered and moderately fractured. Both weathering and fracturing decrease with depth. Doty (1991e) shows the general geologic structure beneath the site as a mild anticline, the axis of which plunges approximately 1.5° to the southeast.

Extensive on-site investigation indicates that perennial saturation of the soils is limited to the area around P-2 (well locations are shown on Figure 2). The occurrence of water in soils appears to be associated with infiltration at areas of surface water concentration where the soils are relatively thick. Saturation of soils probably occurs periodically elsewhere, but only in response to precipitation events.

There are several hydrologically distinct ground-water systems in near surface bedrock (to depths of about 150 feet). The occurrence of ground water in these materials is controlled by relative hydraulic conductivities and geologic structure. The most shallow system occurs in fractured claystone near S-211. Ground water appears to occur in a thin veneer of fractured claystone (approximately twenty feet thick) and is perched above less fractured material. The saturation probably results from surface water infiltration and is estimated to have a maximum thickness of approximately fifteen feet thick and a width of fifty feet (Doty, 1994c).

The next ground-water system occurs in the No. 6 Coal. The depth to the No. 6 Coal decreases to the west and the No. 6 Coal has been removed by erosion along the western boundary. The No. 6 Coal is probably recharged by incident precipitation that percolates through the soil and enters the coal at its subcrop. Some water may also enter the coal by downward movement through the overlying claystones and siltstones; however, the quantity of recharge by this mechanism is likely to be small because of the low hydraulic conductivities of these materials (particularly in the vertical domain). Once water enters the subcrop, flow is downdip to the southeast as saturated slugs or as thin continuous saturation perched at the base of the coal.

Eventually, the water moving downdip reaches the fully saturated zone which occurs under the eastern and southern portions of the site.

Additional zones of saturation stratigraphically below the No. 6 Coal occur along the western permit boundary where the No. 6 Coal is either dry or has been removed by erosion. These zones are in a sandstone approximately ten feet below the No. 6 Coal in Well P-3, in a sandstone approximately ninety feet below ground in Well S-204 (on the order of sixty feet below the No. 6 Coal), and in a slightly deeper coal encountered in Wells S-201, S-202 and S-203. The zones of saturation along the western permit boundary are probably hydraulically isolated from the No. 6 Coal and are as follows.

- The saturated sandstone in P-3 is approximately ten feet below the No. 6 Coal, which has been removed by erosion in the area. The stratigraphic relationship with the No. 6 Coal is based on a correlation of the sandstone with a similar, but thicker unit in S-201 and S-205. This sandstone appears to be fairly continuous beneath the site; the unit has been correlated between borings along the northern, western and southern permit boundaries.

- The saturated sandstone in S-204 is a separate and relatively small ground-water system. Based on correlation of boring logs, the sandstone in S-204 appears to lie slightly above the deeper coal bed; however, S-204 was terminated before encountering the coal because of the saturation in the sandstone.. The S-204 sandstone appears to be of limited lateral extent (the same sandstone may be present in S-203 but is much thinner, and is not present in S-201 and S-202).

- The deeper coal was penetrated by S-201, S-202 and S-203. Water in well S-203 apparently originates from this unit. Well S-202 was completed in a sandstone unit below the deeper coal; the well is now dry (indicating lack of saturation in the underlying sandstone) even though there was water in the borehole at the time of drilling. Apparently, the water in the borehole at the time of drilling originated from the deeper coal. S-201 is completed in the deeper coal but is in an unsaturated area of the unit.

Although data are somewhat limited, the ground-water flow regimes in these zones are thought to be similar to that in the No. 6 Coal.

Ground water also occurs in the regional Laramie-Fox Hills aquifer at relatively great depth beneath the site. The Laramie-Fox Hills is a fine-grained, silty sandstone with

some carbonaceous and claystone horizons. Based on both the geophysical and drilling logs of the shop well, the aquifer consists primarily of sandstone from 375 to 718 feet below ground (343 feet thick) with three sandstone horizons approximately 10 feet thick in the depth interval 718 to 800 feet. Based on discussions in Robson (1987) and the presence of non-fractured claystone immediately above the aquifer (Doty, 1991e), it is highly unlikely that the operation will impact the Laramie-Fox Hills. Therefore, monitoring focuses on ground water in soils and the several hydrologically distinct ground-water systems in the near surface bedrock (to depths of about 150 feet).

# 3.0 MONITORING PROGRAM

## 3.1 MONITORING SYSTEMS

### 3.1.1 Ground Water

#### 3.1.1.1 Denver Regional Landfill

The ground-water monitoring system consists of eight wells near the waste management unit boundary (Figure 2). The saturated soil at P-2, fractured bedrock at S-211, and the No. 6 Coal are considered the uppermost aquifer for monitoring purposes. The deeper bedrock systems are also monitored to establish background at upgradient locations where the No. 6 Coal is absent. The wells and the ground-water systems that they monitor are as follows.

| System | | Wells | Hydraulic Position |
|---|---|---|---|
| Soil | | P-2 | down-gradient |
| S-211 Fractured Zone | | S-211 | down-gradient |
| No. 6 Coal | | S-205 | side-gradient |
| | | S-208 | down-gradient |
| | | S-209 | down-gradient |
| Deeper Bedrock | P-3 Sandstone | P-3 | up-gradient |
| | Lower Sandstone | S-204 | up-gradient |
| | Lower Coal | S-203 | up-gradient |

Over the years, water levels in P-2 and S-208 have gradually declined such that the saturated thickness is less than one foot (P-2) or the well is dry (S-208). These wells were last sampled in September 1999 (P-2) and September 1995 (S-208). An additional ten wells (P-1, P-4, S-101, S-102, S-105, S-106, S-201, S-202, S-206, and S-212) are checked for the presence of water and are sampled if they contain sufficient water for chemical analysis.

#### 3.1.1.2 Old Erie Landfill

As required by CDH (1988), routine post-closure ground-water monitoring is also performed at the Old Erie Landfill. The monitoring network consists of GW-1, which is completed in coal, and S-210, which is completed in the No. 6 Coal. Both GW-1 and S-210 routinely produce sufficient water for chemical analysis. In addition, GW-7 and GW-12 are checked for the presence of water and sampled if they contain sufficient water for chemical analysis. In compliance with CDH (1988), ground-water monitoring at the Old Erie Landfill will continue through the active life of the Denver Regional Landfill.

### 3.1.2 Leachate

The leachate detection system consists of four angled extraction pipes extending from leachate collection sumps (sump locations are shown on Figure 2).

### 3.1.3 Explosive Gas

The explosive gas monitoring system consists of one ground-water monitor well (S-102) and seven gas probes (GP-1 through GP-7). Well and probe locations are shown on Figure 3; construction details are provided in Table 1. In addition, explosive gas concentrations are measured in facility structures, including the shop, storage shed, temporary office, and Stanley Commercial Radio buildings (Figure 3).

### 3.1.4 Slopes & Drainages

Slopes under final cover, berms and benches on the final cover, and the perimeter drainage ditches are visually inspected for plugging and erosion. The sediment basin is also visually inspected for erosion and sedimentation.

## 3.2 MONITORING SCHEDULE

Ground-water level and quality, the presence and quality of leachate, explosive gas concentrations and pressures, and the condition of the fill slopes and surface water

control structures are all monitored on regularly scheduled bases. The schedules are as follows.

- Ground-water conditions are monitored semi-annually (March and September). Monitoring will continue on this schedule for the remaining life of the operation. Quarterly ground-water monitoring was performed through September 1995 in order to generate sufficient samples to characterize background conditions.

- Testing for the presence and quality of leachate is performed annually (June). This monitoring will continue for the life of the facility.

- Explosive gas concentrations and pressures, and the condition of the slopes and surface water control structures are monitored on a quarterly basis (March, June, September and December). This monitoring will continue for the life of the facility.

## 3.3 MONITORING PARAMETERS

### 3.3.1 Ground Water

Ground-water samples are analyzed for the detection monitoring parameters specified in the Colorado solid waste regulations (6 CCR 1007-2); these parameters are also listed in the ground-water monitoring plan (Doty, 1994i). If the wells produce insufficient volume for complete analysis of all parameters, sample bottles are filled in the following order.

1. three 40 milliliter (ml) glass vials, unfiltered and unpreserved for analysis of volatile organic compounds (VOCs)

2. one 250 ml amber glass bottle, unfiltered and preserved with sulfuric acid ($H_2SO_4$) for total organic carbon (TOC) analysis

3. one 500 ml polyethylene (PE) bottle, unfiltered and preserved with nitric acid ($HNO_3$) for analysis of total metals

4. one liter PE bottle, unfiltered and unpreserved for analysis of general chemistry, including major anions, nitrate and nitrite

Contrary to statements made in some of the earlier reports, VOC samples were chilled but otherwise unpreserved in 1999 and 2000 (Doty, 2001c); this has been the case

for all VOC samples collected since that time. Field parameters (temperature, pH, and specific conductance) are measured at each well during purging and immediately before the sample bottles are filled.

### 3.3.2 Leachate

The sumps are checked for the presence of fluid using a steel measuring tape (Northwest Sump) and down-hole pressure transducers (Cell A, B and C Sumps). In even numbered years, the fluid is sampled for determination of pH and analysis of the parameters listed in Appendix IA and IB of the state regulations (except specific conductance). In odd numbered years, the fluid is analyzed for the even numbered years analyte list plus the toxicity characteristics leaching procedure (TCLP) parameters. This is in compliance with the leachate recirculation plan (Doty, 1993d), as amended by Doty (1994e and i, 1997e, and 1998a) and Laidlaw (1995a).

# 4.0 FIELD METHODS

## 4.1 EXPLOSIVE GAS & WATER LEVEL MEASUREMENTS

Explosive gas and ground-water level measurements were made at the permit boundary on September 11, 2006. Explosive gas concentrations and depth to water were measured in the gas monitoring network well and probes, and depth to water was measured in twenty-one ground-water monitor wells (GW-1, GW-7, GW-12, P-1 through P-4, S-101, S-105, S-106, S-201 through S-206, and S-208 through S-212).

The gas monitoring well and probe casings have caps equipped with normally closed quick connect fittings for explosive gas monitoring purposes. The gas pressure inside the PVC casing is measured first using a Dwyer pressure gauge (Model 2310). The explosive gas concentration is then measured with a GasTech Landfill Monitor (Model 1939OX). Prior to use, the instrument is calibrated to zero hydrocarbons, 50 percent of the lower explosive limit (LEL) and 50 percent methane by volume, using laboratory grade zero hydrocarbon air and certified reference gases. The instrument is also repeatedly zeroed in well ventilated areas between measurements.

Depth to water is measured with a Sinco water level indicator (Model 51453). The depth to water measurements in the gas monitoring well and probes are taken after the gas pressure and concentration are determined.

Explosive gas concentrations in facility structures were also measured on September 11, 2006. These structures include the shop, storage shed, temporary office, and Stanley Commercial Radio buildings (Figure 3). Measurements were made using a portable GasTech Landfill Monitor (Model 1939OX). Again, the instrument was calibrated to zero hydrocarbons, 50 percent of the LEL, and 50 percent methane by volume prior to use. In addition, the instrument was repeatedly zeroed in well ventilated areas between measurements. The instrument probe was held in the area to be monitored for approximately thirty seconds or until the instrument equilibrated with the gas conditions.

Continuous monitoring instruments in the office and cashier buildings were calibrated on September 11, 2006. The sensors are installed in the crawl spaces beneath the

buildings (two beneath the office and one beneath the cashier building). The General Monitors combustible gas detectors (Model 590) were calibrated to 50 percent of the LEL and zeroed to laboratory grade zero hydrocarbon air.

## 4.2 MONITOR WELL PURGING

The monitor wells were purged between September 12 and 18, 2006. All of the wells were purged using dedicated bladder pumps. Stainless steel bladder pumps with teflon bladders were used to purge S-203, S-211, P-2, and P-3 and PVC bladder pumps with teflon bladders were used to purge GW-1, S-204, S-205, S-209, and S-210. Sampling personnel wore a new pair of powderless vinyl gloves while purging each well.

In accordance with CDPHE (1995a) and Doty (1995a), the wells equipped with dedicated bladder pumps were purged of at least two pump and tubing volumes prior to sampling. Purging was accomplished at flowrates of 100 milliliters per minute (ml/min) or less. Purging details are summarized on Table 2.

## 4.3 MONITOR WELL SAMPLING

### 4.3.1 Field Tests

During purging and immediately prior to filling the sample bottles, temperature, pH and specific conductance were measured in an approximately 800 milliliter (ml) aliquot of the sample in a 1,000 ml polyethylene beaker using a Hanna 4-in-1 field meter (Model HI 991301). Both the specific conductance and pH probes were calibrated immediately prior to making the field parameter measurements. The probes were rinsed with distilled water before and after making the measurements.

### 4.3.2 Sampling

The monitor wells were sampled with the same pumps used for purging; the samples were collected between September 12 and 18, 2006 (Table 2). Sampling personnel wore a new pair of powderless vinyl gloves while sampling each well. The wells

containing water produced sufficient sample for complete analyses, except P-2 which did not produce any purge fluid or sample.

### 4.3.3 Bottling

All samples were collected in bottles provided by the laboratory. The bottles already contain the appropriate preservatives when delivered to our facility. The samples were bottled at the wellhead directly from the bladder pump discharge tubing. Specific bottles filled were as follows:

1. three 40 ml glass vials, unpreserved (VOCs);
2. one 250 ml amber glass bottle, $H_2SO_4$ preserved (TOC);
3. one 500 ml PE bottle, $HNO_3$ preserved (total metals); and
4. one liter PE bottle, unpreserved (general chemistry).

While filling the sample bottles, the bladder pump discharge rates were kept below 100 ml/min to minimize sample turbidity and volatilization.

The sample bottles were labelled and placed in insulated containers as they were filled. The temperature in the insulated containers was maintained as nearly as possible at 4°C by adding ice. The containers were in the possession of Doty & Associates personnel until relinquished to FedEx for shipment to the laboratory. Severn Trent of Amherst, New York, performed the analyses under their standard chain of custody procedures. Chain of custody documentation is provided in Appendix D.

## 4.4 MONITOR WELL INSPECTION AND MAINTENANCE

The monitoring wells were visually inspected during this sampling event to evaluate the integrity of the pads, protective casings, locks, and wellhead assemblies. The results of the inspections are as follows.

- All of the monitor well pads, protective casings, locks and wellhead assemblies were in good condition.

- P-1 (a shallow, dry piezometer) has neither a protective casing nor a lock; however, the piezometer is in good condition and does not need upgrading to the more standard monitor well construction details.

- GW-12 (a deep dry well on the Old Erie Landfill) does not have an internal cap or a weep hole in the protective casing because of lack of space between the 5-inch diameter protective casing and the 4-inch diameter PVC well casing. Again, the well is in good condition and does not need upgrading to the more standard monitor well construction details.

# 5.0 RESULTS

## 5.1 GROUND WATER

### 5.1.1 Flow Direction & Rate

Potentiometric conditions appear consistent with historical data. Water level elevations are shown on Figure 4, based on depth to water measurements made during this monitoring event. At the time of measurement, the following wells were dry.

| | |
|---|---|
| GW-7 | GW-12 |
| P-1 | P-4 |
| S-101 | S-102 |
| S-105 | S-106 |
| S-201 | S-202 |
| S-206 | S-208 |
| S-212 | |

These wells are typically dry or have less than 0.14 feet of water.

The direction of flow also appears consistent with historical trends. Ground water in soil and the S-211 fracture zone flows downhill (south near P-2 and west near S-211). Ground water in the various bedrock systems flows to the southeast. A flow rate in the No. 6 Coal of approximately 2.2 feet per year was estimated from the March 2006 data (Doty, 2006c). Consistent with the ground-water monitoring plan (Doty, 1994i), the direction and rate of ground-water flow will be re-evaluated annually (in March).

### 5.1.2 Analytical Results

#### 5.1.2.1 Data Quality

Laboratory quality control analyses performed in conjunction with the sample analyses were evaluated following EPA (1994a and b) and the data appear to be of acceptable quality. All analyses were performed within the method specified holding times. Analytes in the method blanks were either non-detectable or much lower than ten percent of the sample concentrations. All method blank spike recoveries were

acceptable. Matrix spike samples also exhibited acceptable recoveries except for one of two total organic carbon matrix spikes and a sulfate matrix spike. However, the matrix spike samples with unacceptable recoveries were from an unrelated project and the recoveries probably result for chemical interferences in those samples. Finally, surrogate recoveries were acceptable and there were no volatile organic detections in the trip blank.

#### 5.1.2.2 Statistical Evaluation

In accordance with the ground-water monitoring plan (Doty, 1994i), the ground-water data are statistically evaluated using combined Shewhart-Cumulative Sum (CUSUM) control charts. The evaluations are made on an intra-well basis because there are no upgradient wells completed in soil (saturated soils do not occur uphill of the site) and because of the complexity of the bedrock ground-water system.

The Shewhart-CUSUM control chart compares the current parameter concentrations with the background data and is a plot of measured concentrations and accumulated concentrations against time. The method requires that the baseline data be characteristic of background (i.e., the sampling location is initially uncontaminated), that the background data be normally or log-normally distributed, and that there be sufficient detected values in the background data to obtain reliable estimates of the mean and standard deviation. The background pool has been updated to include all data through the end of 2005, except that outliers identified using Dixon's test have been excluded and certain past confirmed exceedances continue to be evaluated using the background period in effect when the exceedance was originally determined (the past exceedances are discussed below). The background period is adjusted every two years to include all in-control data. In accordance with the approved procedure, a Shewhart-CUSUM control chart failure must be verified by an independent sample collected in the next sampling event before a statistically significant increase is indicated.

Control charts for all inorganic parameters are presented in Appendix E with the background period set to the end of 2005. These charts indicate that all parameters are in control.

There have been six confirmed statistical exceedances for which demonstrations have been made to CDPHE, as follows.

- Chloride in S-209, 1st Quarter 2003. In Doty (2003c), we hypothesized that the chloride increases in the S-209 samples were probably the result of reduced infiltration following liner installation in upgradient areas and consequent longer residence times for ground water to contact and dissolve the solid matrix in the subsurface. We argued that the source could not be the waste management unit because the landfill leachate contains lower chloride concentrations than the well samples.

  CDPHE found these arguments and hypotheses inconclusive but allowed the facility to continue detection monitoring. However, CDPHE stated that assessment monitoring may be warranted in the future (CDPHE, 2003a).

- Nitrate in P-3, 1st Quarter 2003. In Doty (2003d), we argued that the nitrate increases in the P-3 samples were the result of dissolution of naturally occurring nitrate in the subsurface in the presence of infiltration from the interim sediment basin. We also argued that the source could not be the waste management unit because the gradient is from the well toward the leachate collection sump.

  CDPHE ultimately made no determination on our demonstration. Instead, the facility was allowed to continue detection monitoring with the understanding that, if nitrate concentrations fail to come under control, assessment monitoring may be a possible future option (CDPHE, 2003b).

- Arsenic in S-205, 3rd Quarter 2003. In Doty (2004b), we argued that the source of the elevated arsenic in the S-205 samples could not be the waste management unit because (1) the gradient is from the well toward the leachate collection sump and (2) arsenic concentrations in leachate are less than in the well samples.

  Again, the CDPHE found these arguments inconclusive but allowed the facility to continue detection monitoring. However, CDPHE stated that assessment monitoring may be warranted based on future conditions (CDPHE, 2004a).

- Sulfate in S-204, 1st Quarter 2004. In Doty (2004g), we argued that the source of the elevated sulfate in the S-204 samples could not be the waste management unit because (1) flow is from the well toward the landfill and (2) sulfate concentrations in the leachate are less than in the S-204 samples.

  CDPHE found these arguments inconclusive but allowed the facility to continue detection monitoring (CDPHE, 2004b). Again, CDPHE asserted its authority to require assessment monitoring in the future.

- Sulfate in S-203, 2nd Quarter 2005. In Doty (2006b), we argued that the source of the elevated sulfate in the S-203 samples could not be the waste management unit because (1) flow is from the well toward the landfill and (2) sulfate concentrations in the leachate are less than in the S-203 samples.

  We have not yet received a response from CDPHE but understand from them that continued detection monitoring is appropriate.

- Potassium in P-3, S-205 and S-211, 1st Quarter 2006. Based on a site-wide increase in potassium concentrations that coincided with a laboratory and analytical method change, we demonstrated in Doty (2006e) that the increases were caused by a factor other than the waste disposal unit. We have not yet received a response from CDPHE but understand from them that continued detection monitoring is appropriate.

Trichlorofluoromethane, 1,1-dichloroethane and 1,1,1-trichloroethane were again detected in the most recent GW-1 sample at concentrations consistent with the detections that began in the first quarter of 2001 when the reporting limit was lowered to one microgram per liter. A demonstration regarding these VOCs in the GW-1 samples has been made to CDPHE (Doty, 2002e) and accepted by them (CDPHE, 2002b).

## 5.2 EXPLOSIVE GAS

### 5.2.1 Permit Boundary

Explosive gases were detected in five of the eight wells and probes in the monitoring system (Table 3). GP-2, GP-7 and S-102 exhibited explosive gas concentrations of 5 percent or greater methane by volume in air. There does not appear to be a direct correlation between gas concentration and gas pressure (Table 4). Documentation of these explosive gas concentrations and pressures has been placed in the operating record. The Denver Regional Landfill has applied (Laidlaw, 1993 and 1994) and received approval (Laidlaw, 1995b; Weld, 1995; and CDPHE, 1995) for an alternate schedule for compliance with the concentration limits at the property boundary; however, the facility has proposed a remedial strategy for control of explosive gases near the probes with high gas concentrations. The strategy is currently being reviewed by the Colorado Department of Public Health and Environment.

### 5.2.2 Facility Structures

Explosive gases were less than 25 percent of the lower explosive limit (LEL) in all facility structures except the shop well cistern manhole (Table 5). This structure is an appurtenance to the shop well and is equipped with a turbine ventilator to reduce gas concentrations. The turbine was inspected on September 11, 2006 and found to turn freely. The manhole is not occupied and, in fact, is rarely accessed by site personnel. Thus, the hazard associated with the explosive gas concentration is small.

## 5.3 LEACHATE

Leachate monitoring was last performed on June 27, 2006, in accordance with Doty (1993), as amended by Doty (1994e and i, 1997e and 1998a). The results of these analyses were reported in Doty (2006f). The fluids are routinely pumped from the Cell A, B and C Sumps and sprayed on the fill within the area of influence of the leachate collection systems.

## 5.4 SLOPES & DRAINAGES

Slopes and drainages visually inspected on September 11, 2006. Slopes under final cover were found to be in generally satisfactory condition. Minor erosion was noted on the north and west slopes but the erosion is not significant enough to warrant any action other than continued monitoring. None of the channels were significantly plugged and slight erosion was noted in the north and west perimeter channels. The spillway from the sediment basin was free of debris and was in good condition. Overall, the drainage system is functioning satisfactorily and no action other than continued monitoring is required. A portion of the silt fencing around the off-site stockpile still needs to be installed and one area needs to be repaired. The field data sheet documenting the inspection is presented in Appendix F.

| DOTY & ASSOCIATES | 2308-23 | 11/28/2006 |
|---|---|---|

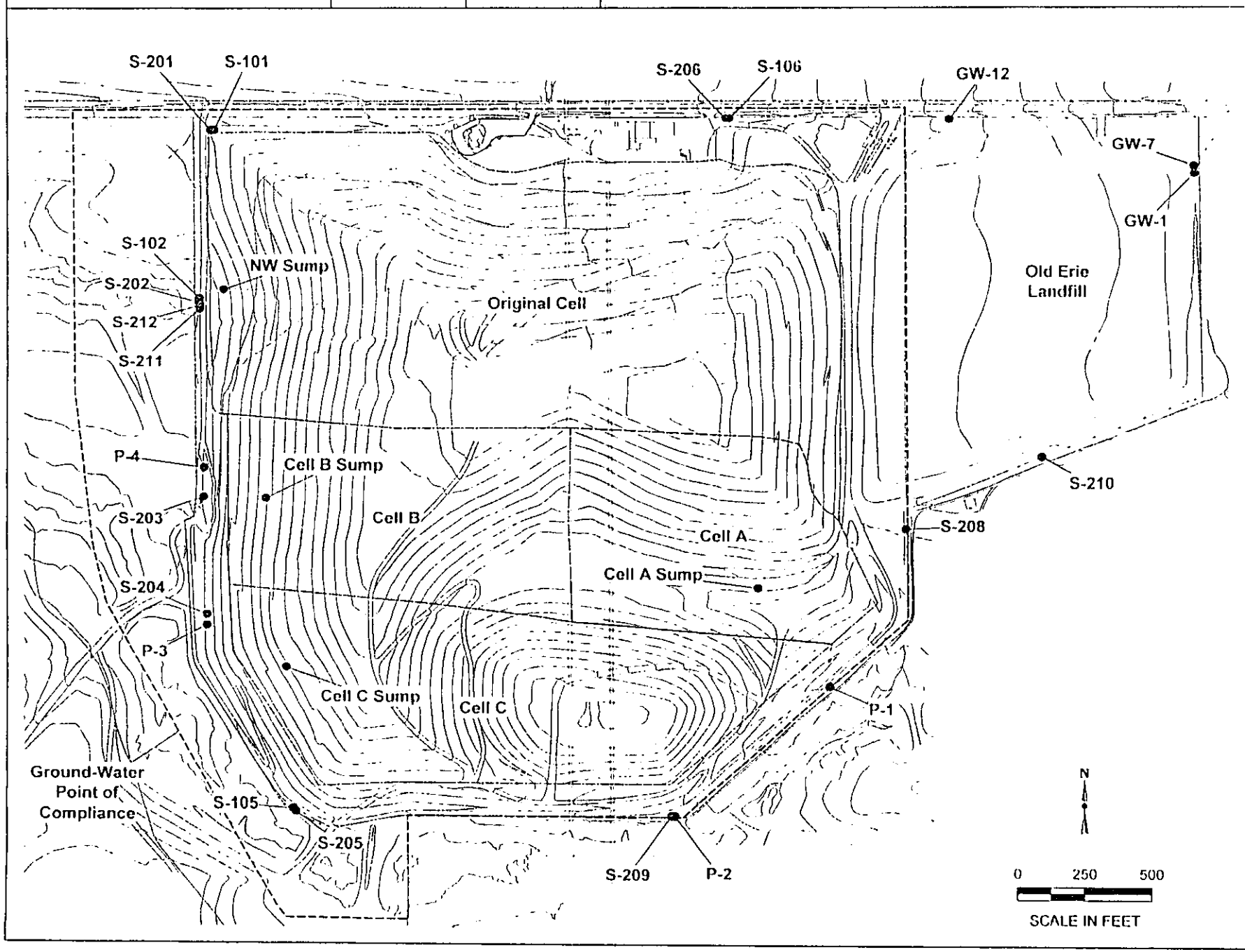


FIGURE 2

GROUND-WATER MONITORING SYSTEM

| DOTY & ASSOCIATES | 2308-23 | 11/28/2006 |
|---|---|---|

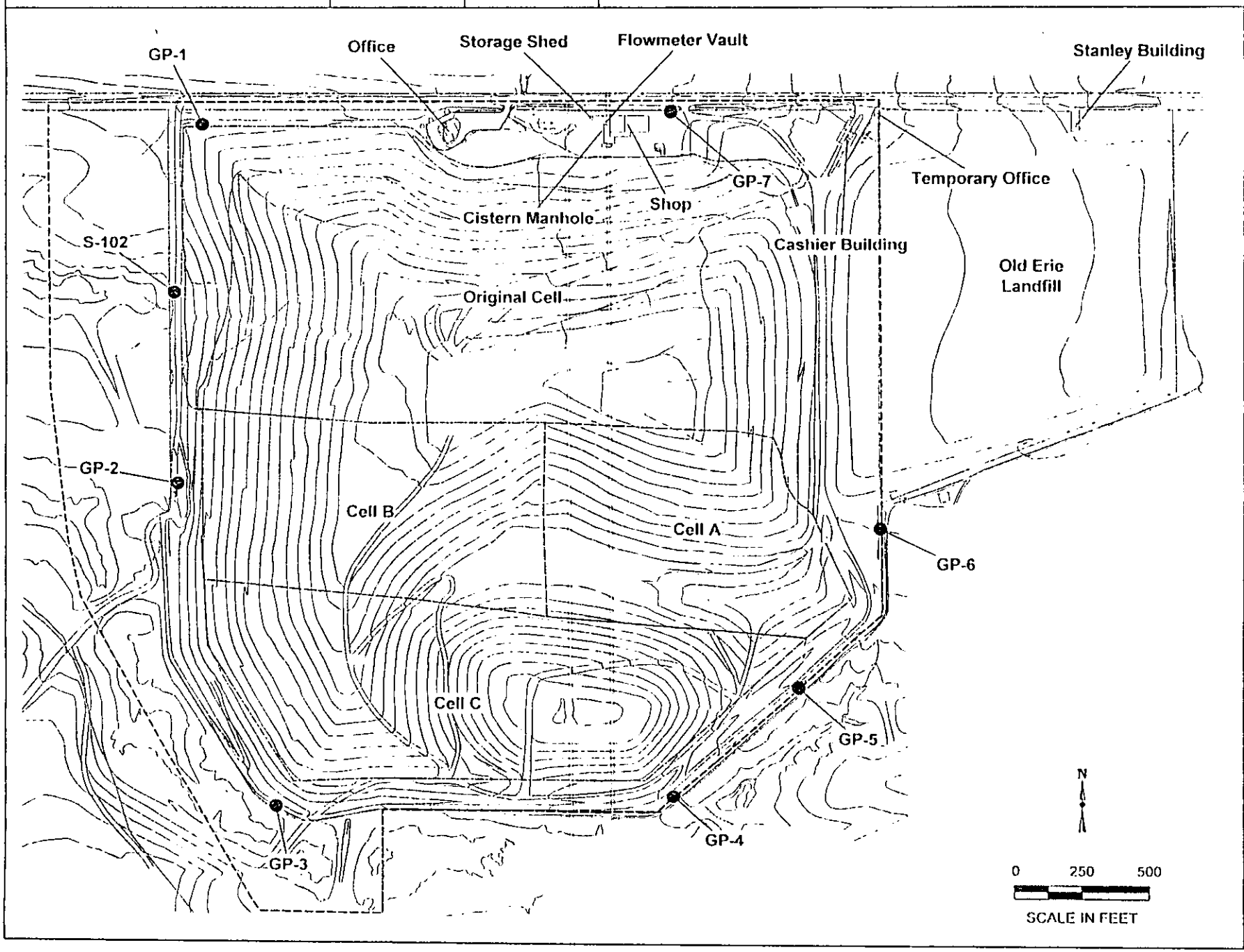


FIGURE 3

GAS MONITORING SYSTEM

| DOTY & ASSOCIATES | 2308-23 | 11/28/2006 |
|---|---|---|

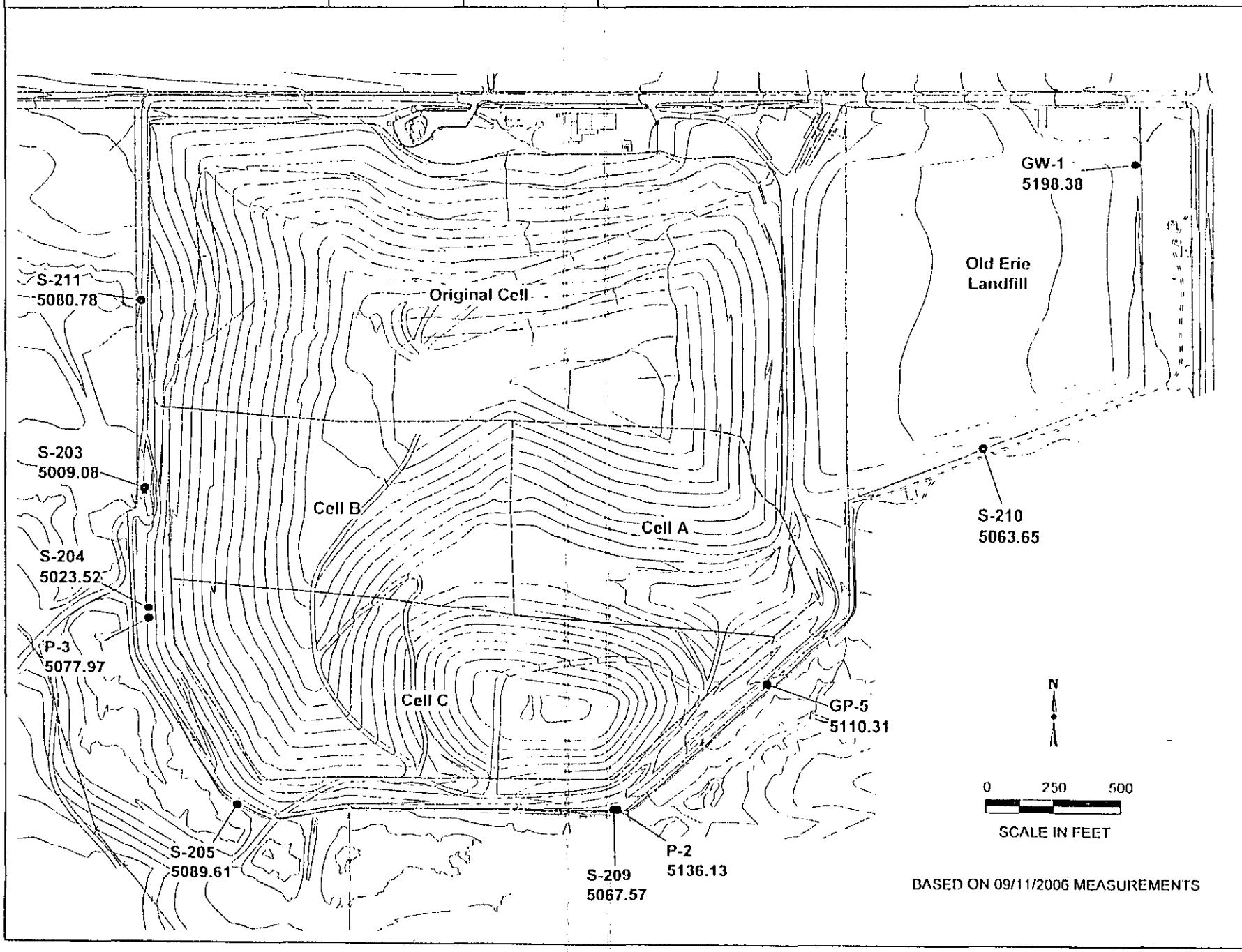


FIGURE 4

POTENTIOMETRIC CONDITIONS

# APPENDIX B

# TABLES

Table 1. Monitor Well and Gas Probe Summary

| Well | Date Installed | Drilling Method | Well Diameter (inches) | Screen Slot Size (inches) | Top of Casing Elevation (feet) | Ground Surface Elevation (feet) | Effective Screened Interval (feet) | Unit Monitored |
|---|---|---|---|---|---|---|---|---|
| P-1 | 12/19/89 | HSA | 2 | 0.010 | 5,179.16 | 5,176.73 | 2.0 - 4.6 | Soil |
| P-2 | 12/21/89 | HSA | 2 | 0.010 | 5,148.62 | 5,146.78 | 4.75 - 11.25 | Soil |
| P-3 | 12/20/89 | HSA | 2 | 0.010 | 5,111.84 | 5,110.72 | 26.0 - 39.0 | Bedrock |
| P-4 | 12/22/89 | HSA | 2 | 0.010 | 5,112.01 | 5,110.05 | 17.3 - 20.7 | Soil |
| GP-1 | 08/27/94 | Air Rotary | 2 | 0.010 | 5,152.62 | 5,150.56 | 23.0 - 35.0 | Bedrock |
| GP-2 | 08/25/94 | Air Rotary | 2 | 0.020 | 5,110.61 | 5,108.57 | 33.0 - 45.0 | Bedrock |
| GP-3 | 08/27/94 | Air Rotary | 2 | 0.010 | 5,123.15 | 5,121.16 | 16.0 - 28.0 | Bedrock |
| GP-4 | 08/27/94 | Air Rotary | 2 | 0.010 | 5,161.56 | 5,159.57 | 43.0 - 55.0 | Bedrock |
| GP-5 | 08/26/94 | Air Rotary | 2 | 0.010 | 5,180.74 | 5,178.68 | 52.5 - 75.0 | Bedrock |
| GP-6 | 08/26/94 | Air Rotary | 2 | 0.010 | 5,211.61 | 5,209.63 | 78.0 - 100.0 | Bedrock |
| GP-7 | 08/28/94 | Air Rotary | 2 | 0.010 | 5,181.81 | 5,179.87 | 32.8 - 45.0 | Bedrock |
| GW-1 | 09/83 | HSA | 2 | - | 5,248.18 | 5,245.94 | 50 - 100 | Bedrock |
| GW-7 | 09/83 | Auger | 2 | - | 5,250.94 | 5,247.87 | 16 - 26 | Bedrock |
| GW-12 | 06/04/87 | HSA | 4 | 0.020 | 5,226.14 | 5,224.05 | 9.5 - 71 | Soil/Bedrock |
| S-101 | 03/25/91 | HSA | 2 | 0.010 | 5,151.69 | 5,149.82 | 5.9 - 17.0 | Soil |
| S-102 | 03/22/91 | HSA | 2 | 0.010 | 5,113.27 | 5,111.40 | 10.5 - 22.5 | Soil |
| S-105 | 03/21/91 | HSA | 2 | 0.010 | 5,122.10 | 5,120.36 | 4.5 - 9.7 | Soil |
| S-106 | 03/21/91 | HSA | 2 | 0.010 | 5,185.23 | 5,183.40 | 5.0 - 11.2 | Soil |
| S-201 | 05/03/91 | HSA/Core | 2 | 0.010 | 5,151.83 | 5,149.66 | 116.0 - 144.5 | Bedrock |
| S-202 | 04/17/91 | HSA/Core | 2 | 0.010 | 5,113.37 | 5,111.23 | 90.1 - 98.0 | Bedrock |
| S-203 | 04/30/91 | HSA/Core | 2 | 0.010 | 5,110.39 | 5,108.41 | 94.0 - 101.48 | Bedrock |
| S-204 | 04/25/91 | HSA/Core | 2 | 0.010 | 5,112.68 | 5,110.88 | 86.6 - 103.9 | Bedrock |
| S-205 | 04/23/91 | HSA/Core | 2 | 0.010 | 5,122.31 | 5,120.33 | 32.93 - 42.62 | Bedrock |
| S-206 | 05/01/91 | HSA/Core | 2 | 0.010 | 5,185.22 | 5,183.18 | 116.0 - 143.97 | Bedrock |
| S-208 | 05/08/91 | HSA/Core | 2 | 0.010 | 5,212.73 | 5,211.06 | 136.0 - 148.9 | Bedrock |
| S-209 | 04/22/91 | HSA/Core | 2 | 0.010 | 5,151.14 | 5,149.19 | 82.5 - 95.15 | Bedrock |
| S-210 | 06/03/92 | Air Rotary | 2 | 0.010 | 5,231.73 | 5,299.90 | 165.5 - 178.1 | Bedrock |
| S-211 | 11/03/93 | HSA | 2 | 0.010 | 5,113.22 | 5,111.44 | 27.3 - 38.5 | Bedrock |
| S-212 | 11/11/93 | HSA/Core | 2 | 0.010 | 5,113.55 | 5,111.47 | 43.7 - 59.0 | Bedrock |

Notes: Depth of screened interval references ground surface.
- indicates not available.
HSA is hollow stem auger.

Table 2. Details of Purging and Sampling

| Well | Purge Date | Volume Purged (ml) | Pump & Tubing Volumes Removed | Sampling Date | Comments |
|---|---|---|---|---|---|
| GW-1 | 09/18/06 | 5,000 | 2.0 | 09/18/06 | Sample clear. |
| P-3 | 09/13/06 | 500 | 2.0 | 09/13/06 | Sample clear. |
| S-203 | 09/12/06 | 1,500 | 2.1 | 09/12/06 | Sample light yellow, sulfur odor. |
| S-204 | 09/13/04 | 5,200 | 2.0 | 09/13/06 | Sample clear. |
| S-205 | 09/12/06 | 2,500 | 2.0 | 09/12/06 | Sample yellow. |
| S-209 | 09/13/06 | 4,800 | 2.0 | 09/13/06 | Sample light yellow. |
| S-210 | 09/18/06 | 8,400 | 2.0 | 09/18/06 | Sample clear. |
| S-211 | 09/12/06 | 500 | 2.1 | 09/12/06 | Sample yellow. |

Notes: Volume purged in milliliters (ml).

Table 3. Gas Concentrations

| Date | GP-1 | GP-2 | GP-3 | GP-4 | GP-5 | GP-6 | GP-7 | S-102 |
|---|---|---|---|---|---|---|---|---|
| 06/18/91 | na | na | na | na | na | na | na | >5 |
| 09/12/91 | na | na | na | na | na | na | na | >5 |
| 12/22/91 | na | na | na | na | na | na | na | >5 |
| 03/23/92 | na | na | na | na | na | na | na | >5 |
| 06/23/92 | na | na | na | na | na | na | na | >5 |
| 09/02/92 | na | na | na | na | na | na | na | >5 |
| 12/15/92 | na | na | na | na | na | na | na | >5 |
| 03/03/93 | na | na | na | na | na | na | na | 49 |
| 06/02/93 | na | na | na | na | na | na | na | 28 |
| 09/02/93 | na | na | na | na | na | na | na | 40 |
| 12/02/93 | na | na | na | na | na | na | na | 47 |
| 03/01/94 | na | na | na | na | na | na | na | 45 |
| 06/01/94 | na | na | na | na | na | na | na | 44 |
| 09/12/94 | 2.2 | 1.5 | 0 | 0 | 0 | 27 | 32 | 35 |
| 12/30/94 | 0.8 | 0.9 | 0 | 0 | 0 | 11 | 32 | 43 |
| 03/13/95 | 0 | 0.3 | 0 | 0 | 0 | 0 | 0 | 28 |
| 06/05/95 | 0.2 | 3.8 | 0 | 0 | 0 | 7 | 29 | 51 |
| 09/08/95 | 5 | 1.2 | 0 | 0 | 0 | 0 | 43 | 16 |
| 12/12/95 | 5 | 5 | 0 | 0 | 0 | 9 | 32 | 45 |
| 03/01/96 | 4.2 | 0.4 | 0 | 0 | 0.05 | 0 | 30 | 66 |
| 06/07/96 | 2.8 | 0.1 | 0 | 0 | 0.05 | 0 | 11 | 32 |
| 09/03/96 | 4.9 | 11 | 0 | 0 | 0 | 5 | 32 | 53 |
| 12/10/96 | 5 | 5 | 0 | 0 | 0 | 10 | 1.8 | 52 |
| 03/11/97 | 5 | 0.2 | 0 | 0 | 0 | 0 | 26 | 36 |
| 06/06/97 | 3.8 | 1.6 | 0 | 0 | 0 | 7 | 26 | 10 |
| 09/09/97 | 3.6 | 2 | 0 | 0 | 0 | 0 | 26 | 15 |
| 12/19/97 | 1.8 | 1.8 | 0 | 0 | 0 | 0 | 30 | 34 |

Table 3. Gas Concentrations (continued)

| Date | GP-1 | GP-2 | GP-3 | GP-4 | GP-5 | GP-6 | GP-7 | S-102 |
|---|---|---|---|---|---|---|---|---|
| 03/24/98 | 3.8 | 5 | 0 | 0 | 0.1 | 5 | 40 | 52 |
| 06/25/98 | 0.5 | 3.6 | 0 | 0 | 0 | 0.2 | 30 | 0.8 |
| 09/08/98 | 4 | 5 | 0 | 0 | 0 | 5 | 28 | 37 |
| 12/03/98 | 4 | 5 | 0 | 0 | 0 | 7 | 29 | 19 |
| 03/15/99 | 2.8 | 16 | 0 | 0 | 0 | 3.8 | 28 | 3.8 |
| 06/15/99 | 2.5 | 2.7 | 0 | 0 | 0 | 0 | 4.3 | 3 |
| 09/15/99 | 8 | 10 | 0 | 0 | 0 | 0 | 40 | 16 |
| 03/24/00 | 1.6 | 2.7 | 0 | 0.1 | 0.1 | 3.8 | 42 | 0.2 |
| 06/29/00 | 2 | 0.2 | 0 | 0 | 0 | 0 | 28 | 9 |
| 09/19/00 | 3 | 6 | 0 | 0 | 0 | 9 | 30 | 3.4 |
| 12/22/00 | 1.8 | 2.4 | 0 | 0.1 | 0.1 | 1.4 | 47 | 0.1 |
| 03/14/01 | 2.4 | 7 | 0 | 0 | 0 | 19 | 41 | 0.1 |
| 06/26/01 | 1.7 | 5 | 0 | 0 | 0 | 0.2 | 34 | 0 |
| 09/13/01 | 2.2 | 7 | 0 | 0 | 0 | 0 | 23 | 0 |
| 12/27/01 | 2.8 | 14 | 0 | 0.1 | 0.1 | 0 | 58 | 9 |
| 03/12/02 | 2 | 5 | 0 | 0 | 0 | 0.2 | 35 | 29 |
| 06/26/02 | 1 | 0.8 | 0 | 0 | 0 | 0 | 28 | 32 |
| 09/17/02 | 2.9 | 7 | 0 | 0 | 0 | 12 | 33 | 32 |
| 12/17/02 | 4.1 | 17 | 0 | 0 | 0 | 31 | 62 | 36 |
| 03/10/03 | 3.2 | 7 | 0 | 0.1 | 0.1 | 0 | 37 | 24 |
| 06/24/03 | 2.9 | 7 | 0.2 | 0 | 0 | 17 | 32 | 6 |
| 09/10/03 | 4.2 | 9 | 0 | 0 | 0 | 21 | 31 | 6 |
| 12/04/03 | 2.2 | 4.8 | 0.3 | 0.1 | 0 | 0 | 9 | 21 |
| 03/09/04 | 1.8 | 3.2 | 1 | 0 | 0 | 0 | 36 | 22 |
| 06/24/04 | 0.3 | 1.5 | 2.6 | 0 | 0 | 0 | 28 | 10 |
| 09/09/04 | 1.8 | 4.6 | 7 | 0 | 0 | 0 | 41 | 17 |
| 12/15/04 | 1.8 | 9 | 1.1 | 0.2 | 0 | 0 | 50 | 18 |

Table 3. Gas Concentrations (continued)

| Date | GP-1 | GP-2 | GP-3 | GP-4 | GP-5 | GP-6 | GP-7 | S-102 |
|---|---|---|---|---|---|---|---|---|
| 03/10/05 | 1.8 | 6 | 0.4 | 0.2 | 0.2 | 0 | 22 | 20 |
| 06/23/05 | 2.2 | 0.4 | 0.1 | 0 | 0 | 0 | 42 | 24 |
| 09/13/05 | 2.6 | 6 | 0.6 | 0 | 0 | 0.8 | 31 | 14 |
| 12/21/05 | 1.8 | 8 | 0.2 | 0 | 0.2 | 0 | 39 | 16 |
| 03/06/06 | 2.2 | 10 | 0 | 0 | 0 | 0 | 40 | 14 |
| 06/27/06 | 1.6 | 9 | 0 | 0 | 0 | 0 | 41 | 18 |
| 09/11/06 | 1.9 | 11 | 0.2 | 0 | 0 | 0 | 42 | 24 |

Notes:

Gas concentrations in percent methane by volume.
na indicates well not installed.

Table 4. Explosive Gas Pressures

| Date | GP-1 | GP-2 | GP-3 | GP-4 | GP-5 | GP-6 | GP-7 | S-102 | Barometric Pressure |
|---|---|---|---|---|---|---|---|---|---|
| 12/02/93 | na | na | na | na | na | na | na | 0 | 24.71 |
| 03/01/94 | na | na | na | na | na | na | na | 0.1 | 24.87 |
| 06/01/94 | na | na | na | na | na | na | na | 0 | 24.7 |
| 09/12/94 | 0 | 0 | 0.1 | 0 | 0 | 0.8 | 0 | 0.1 | 24.725 |
| 12/30/94 | 0 | 0.1 | 0 | 0.2 | 0 | 0.5 | 0 | 0 | 24.68 |
| 03/13/95 | 0 | -0.2 | 0 | 0 | 0 | -1.4 | 0 | 0 | 24.67 |
| 06/05/95 | 0.2 | 0.2 | 0.1 | 0.1 | 0 | 1.2 | 1 | 0.3 | 24.645 |
| 09/08/95 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.9 | 0.2 | 0.01 | 24.76 |
| 12/12/95 | 0.1 | 0.15 | 0 | 0.15 | 0 | 1.65 | 0.15 | 0.15 | 24.9 |
| 03/01/96 | 0.1 | 0.05 | 0.05 | 0.1 | 0.1 | 0.4 | 0.1 | 0.1 | 25 |
| 06/07/96 | 0.05 | 0.05 | 0.05 | 0.05 | 0.1 | -1.4 | 0.2 | 0.1 | 25.2 |
| 09/03/96 | 0 | 0.05 | 0 | 0.05 | 0.1 | 0.9 | 0.1 | 0.1 | 25 |
| 12/10/96 | 0 | 0 | 0 | 1 | 0 | 1.6 | 0.2 | 0.2 | 24.7 |
| 03/11/97 | 0 | 0.2 | 0 | 0.8 | 1.2 | 0.7 | 0.5 | 0 | 25.04 |
| 06/06/97 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0.2 | 0 | 24.92 |
| 09/09/97 | 0 | 0.1 | 0 | 0.1 | 0.1 | 0 | 0.3 | 0.1 | 25.15 |
| 12/19/97 | 0 | 0.3 | 0 | 0 | 0 | 1.2 | 0.2 | 0 | 25.1 |
| 03/24/98 | 0.1 | 0.2 | 0 | 0.2 | 0.2 | 1.3 | 0.8 | 0.1 | 24.7 |
| 06/25/98 | 0 | 0.1 | 0 | 0 | 0.2 | 0.3 | 0.2 | 0 | 24.9 |
| 09/08/98 | 0 | 0 | 0 | 0 | 0.2 | 0.7 | 0.2 | 0 | 25.04 |
| 12/03/98 | 0 | 0.1 | 0 | 0.2 | 0.4 | 1.1 | 0.2 | 0 | 24.9 |
| 03/15/99 | 0 | 0.1 | 0 | 0 | 0 | -0.1 | -1.4 | 0 | 25.69 |
| 06/15/99 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 30.14 |
| 09/15/99 | 0 | 0 | 0 | 0.2 | 0.1 | 0.6 | 0 | 0 | 24.9 |
| 03/24/00 | 0 | 0 | 0 | 0.1 | 0.2 | 0.2 | 0.1 | 0 | 24.9 |
| 06/29/00 | 0 | 0.3 | 0 | 0.2 | 0.4 | 0.6 | 0.3 | 0.1 | 25 |
| 09/19/00 | 0 | 0 | 0 | 0 | 0 | 1.2 | 0.2 | 0 | 24.9 |
| 12/22/00 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0.1 | 0 | 24.9 |
| 03/14/01 | 0.2 | 0.2 | 0 | 0 | 0.2 | 1.6 | 0.2 | 0.1 | 24.7 |
| 06/26/01 | 0 | 0 | 0 | 0.2 | 0.2 | 0.2 | 0.2 | 0 | 25.1 |
| 09/13/01 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0.1 | 0 | 24.4 |
| 12/27/01 | 0 | 0.1 | 0 | 0.1 | 0.1 | 0.4 | 0.2 | 0 | 25 |
| 03/12/02 | 0.1 | 0.1 | 0 | 0.1 | 0.2 | 0.8 | 0.6 | 0 | 24.9 |
| 06/26/02 | 0.1 | 0.1 | 0 | 0 | 0.1 | 0.6 | 0.2 | 0.1 | 25.1 |

Table 4. Explosive Gas Pressures (continued)

| Date | GP-1 | GP-2 | GP-3 | GP-4 | GP-5 | GP-6 | GP-7 | S-102 | Barometric Pressure |
|---|---|---|---|---|---|---|---|---|---|
| 09/17/02 | 0 | 0.1 | 0 | 0 | 0.1 | 1.7 | 0.2 | 0.1 | 24.8 |
| 12/17/02 | 0 | 0.3 | 0 | 0.2 | 0.1 | 3.4 | 0.3 | 0 | 24.5 |
| 03/10/03 | 0 | 0.1 | 0.1 | 0.2 | 0.1 | 0.4 | 0.2 | 0 | 25 |
| 06/24/03 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 24.9 |
| 09/10/03 | 0 | 0 | 0 | 0 | 0 | 1.4 | 0 | 0 | 24.8 |
| 12/04/03 | 0 | 0.2 | 0 | 0 | 0 | 1.8 | 0 | 0 | 25.3 |
| 03/09/04 | 0.1 | 0.3 | 0 | 0.4 | 0.1 | 0.6 | 0.8 | 0 | 25.3 |
| 06/24/04 | 0 | 0.1 | 0 | 0 | 0 | 1.2 | 0.1 | 0 | 25.2 |
| 09/09/04 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 25.1 |
| 12/15/04 | 0 | 0 | 0 | 0 | 0 | 0.6 | 0.2 | 0 | 25.2 |
| 03/10/05 | 0 | 0.1 | 0 | 0 | 0 | 0.8 | 0.1 | 0 | 25.2 |
| 06/23/05 | 0 | 0 | 0 | 0.1 | 0 | 0.1 | 0.3 | 0 | 25 |
| 09/13/05 | 0 | 0 | 0 | 0 | 0.1 | 0.4 | 0.1 | 0 | 25.1 |
| 12/21/05 | 0 | 0 | 0 | 0 | 0 | 0.8 | 0.1 | 0 | 25.2 |
| 03/06/06 | 0 | 0.2 | 0 | 0.8 | 0.1 | 0 | 0.3 | 0 | 25.1 |
| 06/27/06 | 0 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.3 | 0 | 25.2 |
| 09/11/06 | 0 | 0 | 0 | 0 | 0 | 0.4 | 0 | 0 | 25.2 |

Notes: All pressures in inches of water, except barometric pressure which is in inches of Mercury.
Barometric pressures are actual (uncorrected) values.
na indicates probe not constructed.

Table 5. Facility Structure Gas Concentrations

| Facility | Room | Location | % LEL | % CH4 |
|---|---|---|---|---|
| Shop | Parts Room | Above Ceiling | 0 | 0 |
| | | Breathing | 0 | 0 |
| | | Floor | 0 | 0 |
| | Restroom | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | | Shower Floor Drain | 0 | 0 |
| | Furnace Closet | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | Office | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | Loft | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | West Bay | NW Corner Breathing | 0 | 0 |
| | | NW Corner Floor | 0 | 0 |
| | | NE Corner Breathing | 0 | 0 |
| | | NE Corner Floor | 0 | 0 |
| | | West Wall Utilities | 0 | 0 |
| | Middle Bay | NW Corner Breathing | 0 | 0 |
| | | NW Corner Floor | 0 | 0 |
| | | NE Corner Breathing | 0 | 0 |
| | | NE Corner Floor | 0 | 0 |
| | East Bay | SW Corner Breathing | 0 | 0 |
| | | SW Corner Floor | 0 | 0 |
| | | SE Corner Breathing | 0 | 0 |
| | | SE Corner Floor | 0 | 0 |

Table 5. Facility Structure Gas Concentrations (continued)

| Facility | Room | Location | % LEL | % CH4 |
|---|---|---|---|---|
| Shop | Well | Cistern Manhole | 92 | 4.6 |
| | | Flowmeter Vault | 4 | 0.2 |
| Storage Shed | Single Room | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| Temporary Office | Closet | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | Main Room | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | | Floor Drain | 0 | 0 |
| | | Attic | 0 | 0 |
| | Restroom | Ceiling | 0 | 0 |
| | | Floor | 0 | 0 |
| | | Floor Drain | 0 | 0 |
| Stanley Building | North Side | Under Skirting | 0 | 0 |
| | South Side | Under Skirting | 0 | 0 |
| | East Side | Under Skirting | 0 | 0 |
| | West Side | Under Skirting | 0 | 0 |

# APPENDIX C

# CURRENT RESULTS

Table C-1. Field Parameters, Major Ions and Metals Results

| Parameter | GW-1 | P-3 | S-203 | S-204 | S-205 | S-209 | S-210 | S-211 | Units |
|---|---|---|---|---|---|---|---|---|---|
| Depth to Water | 49.80 | 44.47 | 101.31 | 99.28 | 34.97 | 83.57 | 168.08 | 32.44 | feet |
| Temperature | 15.6 | 16.5 | 22 | 17.1 | 19.6 | 20.1 | 14.1 | 17.1 | Degrees C |
| pH | 7.0 | 7.0 | 7.9 | 7.8 | 6.7 | 7.5 | 7.4 | 6.3 | s.u. |
| Specific Conductance | 6,500 | 6,530 | 2,990 | 2,740 | 9,120 | 4,450 | 4,330 | 7,680 | umhos/cm |
| Total Organic Carbon | 2.3 | 1.4 | 26.6 | 1U | 151 | 23.8 | 1U | 91.7 | mg/L |
| Calcium | 203 | 186 | 28.1 | 21.8 | 341 | 76.1 | 45.9 | 433 | mg/L |
| Magnesium | 160 | 102 | 7.4 | 5.9 | 156 | 18.3 | 11.4 | 248 | mg/L |
| Sodium | 1,360 | 1,510 | 746 | 653 | 2,060 | 1,100 | 869 | 1,380 | mg/L |
| Potassium | 14.3 | 18.6 | 4.9 | 4.4 | 24.5 | 7.9 | 6.1 | 20.2 | mg/L |
| Bicarbonate as CaCO3 | 612 | 900 | 1,140 | 744 | 1,030 | 1,140 | 280 | 728 | mg/L |
| Carbonate as CaCO3 | 5U | 5U | 75U | 5U | 75U | 5U | 5U | 5U | mg/L |
| Chloride | 304 | 176 | 107 | 361 | 351 | 679 | 1,290 | 63.6 | mg/L |
| Nitrate (as N) | 68.9 | 17.7 | 0.1U | 0.1U | 0.1U | 0.1U | 1.3 | 0.1U | MG/L-N |
| Nitrite (Total) | 0.02U | 0.2U | 0.02U | 0.2U | 0.02U | 0.02U | 0.02U | 0.02U | MG/L-N |
| Sulfate (as SO4) | 2,580 | 2,360 | 246 | 156 | 3,140 | 319 | 10U | 4,230 | mg/L |
| Antimony | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | mg/L |
| Arsenic | 0.01U | 0.01U | 0.01U | 0.01U | 0.047 | 0.01U | 0.01U | 0.01U | mg/L |
| Barium | 0.013 | 0.027 | 0.57 | 0.14 | 0.02 | 0.069 | 0.83 | 0.026 | mg/L |
| Beryllium | 0.001U | 0.001U | 0.001U | 0.001U | 0.001U | 0.001U | 0.001U | 0.001U | mg/L |
| Cadmium | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | mg/L |
| Chromium | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | mg/L |
| Cobalt | 0.01U | 0.01U | 0.01U | 0.01U | 0.012 | 0.01U | 0.01U | 0.022 | mg/L |
| Copper | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.0061 | mg/L |
| Lead | 0.003U | 0.003U | 0.003U | 0.003U | 0.003U | 0.003U | 0.003U | 0.003U | mg/L |
| Nickel | 0.0066 | 0.005U | 0.005U | 0.005U | 0.033 | 0.005U | 0.005U | 0.042 | mg/L |
| Selenium | 0.3 | 0.51 | 0.0061U | 0.0061U | 0.0061U | 0.0061U | 0.0061U | 0.013 | mg/L |
| Silver | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | mg/L |
| Thallium | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | 0.01U | mg/L |
| Vanadium | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | 0.005U | mg/L |
| Zinc | 0.01U | 0.01U | 0.01U | 0.01U | 0.012 | 0.01U | 0.01U | 0.062 | mg/L |

Notes: U indicates not detected at the concentration shown.

Table C-2. Volatile Organic Results

| Parameter | GW-1 | P-3 | S-203 | S-204 | S-205 | S-209 | S-210 | S-211 | Units |
|---|---|---|---|---|---|---|---|---|---|
| Acetone | 10U | 10U | 10U | 10U | 10U | 10U | 10U | 10U | ug/L |
| Acrylonitrile | 14U | 14U | 14U | 14U | 14U | 14U | 14U | 14U | ug/L |
| Benzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Bromochloromethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Bromoform | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Bromomethane | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | ug/L |
| 2-Butanone | 10U | 10U | 10U | 10U | 10U | 10U | 10U | 10U | ug/L |
| Carbon Disulfide | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Carbon Tetrachloride | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Chlorobenzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Chloroethane | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | ug/L |
| Chloroform | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Chloromethane | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | ug/L |
| Dibromochloromethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Dibromomethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Dibromochloropropane | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | ug/L |
| Dibromoethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,2-Dichlorobenzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,4-Dichlorobenzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| trans-1,4-Dichloro-2-butene | 10U | 10U | 10U | 10U | 10U | 10U | 10U | 10U | ug/L |
| 1,1-Dichloroethane | 1.3 | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,2-Dichloroethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,1-Dichloroethene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| cis-1,2-Dichloroethene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| trans-1,2-Dichloroethene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,2-Dichloropropane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| cis-1,3-Dichloropropene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| trans-1,3-Dichloropropene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Ethylbenzene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 2-Hexanone | 10U | 10U | 10U | 10U | 10U | 10U | 10U | 10U | ug/L |

Table C-2. Volatile Organic Results (continued)

| Parameter | GW-1 | F-3 | S-203 | S-204 | S-205 | S-209 | S-210 | S-211 | Units |
|---|---|---|---|---|---|---|---|---|---|
| Iodomethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Methylene chloride | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Methylisobutylketone | 10U | 10U | 10U | 10U | 10U | 10U | 10U | 10U | ug/L |
| Styrene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Tetrachloroethene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,1,1,2-Tetrachloroethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,1,2,2-Tetrachloroethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Toluene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,1,1-Trichloroethane | 2.3 | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,1,2-Trichloroethane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Trichloroethene | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Trichlorofluoromethane | 1.8 | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| 1,2,3-Trichloropropane | 1U | 1U | 1U | 1U | 1U | 1U | 1U | 1U | ug/L |
| Vinyl acetate | 5U | 5U | 5U | 5U | 5U | 5U | 5U | 5U | ug/L |
| Vinyl chloride | 2U | 2U | 2U | 2U | 2U | 2U | 2U | 2U | ug/L |
| Total Xylenes | 3U | 3U | 3U | 3U | 3U | 3U | 3U | 3U | ug/L |

Notes: U indicates not detected at the concentration shown.

# Attachment 4

*Supporting Documentation*

# STATE OF COLORADO

Bill Owens, Governor
Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80246-1530
Phone (303) 692-2000
TDD Line (303) 691-7700
Located in Glendale, Colorado

Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

June 20, 2005

Mr. Kevin Horst
Denver Regional Landfill
P.O. Box 320
Erie, CO 80516

RE: Alternative Compliance Schedule for Explosive Gas
Denver Regional Landfill (South)

Dear Mr. Horst,

Pursuant to a Hazardous Materials and Waste Management Division (Division) letter dated February 13, 1995 (see enclosure), Denver Regional Landfill (South) was allowed an alternative compliance schedule for explosive gas. The alternative compliance schedule was allowed with the condition that the lower explosive limit, as specified in section 2.3.1(B) of the solid waste regulations (6 CCR 1007-2) be met at the property boundary at the time of closure or at such time as neighboring properties are developed, whichever occurs first.

Based on the First Quarter 2005 Monitoring – Denver Regional Landfill (document dated May 19, 2005), elevated explosive gas continues to be detected at the facility boundary. Given the recent residential development near the landfill, the Division requests that the facility perform one or both of the following activities by August 22, 2005:

1) Submit a remediation plan to the Division and the Weld County Department of Public Health and Environment (WCDPHE) for review and approval.

2) Implement an approved remediation plan, place an approved copy of the plan in the operating record, and notify the Division and the WCDPHE that the plan has been implemented.

Please contact me at 303-692-3389 if you have any questions.

Sincerely,

Douglas M. Ikenberry

Douglas M. Ikenberry
Solid Waste Unit
Compliance Program

Enclosure

Cc: Cindi Etcheverry, WCDPHE

FILE: SW WLD DRL 4.1

**Denver Regional Landfill/DRL**

6/20/2005

WLD
Solid Waste - Monitoring - Gas Monitoring Data & Plans - RE: Alternative Compliance Schedule for Explosive Gas Denver Regional Landfill (South)

SW/4.1./1084

SW/4.1./254

# STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

*Dedicated to protecting and improving the health and environment of the people of Colorado*

HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION

4300 Cherry Creek Dr. S.
Denver, Colorado 80222-1530
Phone (303) 692-3300
Fax (303) 759-5355

222 S. 6th Street, Room 232
Grand Junction, Colorado 81501-2768
Phone (303) 248-7164
Fax (303) 248-7198

Colorado Department
of Public Health
and Environment

February 13, 1995

Rick Hoffman
Laidlaw Waste Systems, Inc.
P.O. Box 320
Erie, Colorado 80516

RE: Alternative Compliance Schedule for Explosive Gas
Denver Regional Landfill (South)
Weld County

Dear Mr. Hoffman:

The Solid Waste Section of the Hazardous Materials and Waste Management Division (the Division) has completed its review of your letter dated January 30, 1995 requesting an alternative compliance schedule for explosive gas at the above referenced facility. Your letter proposes that the lower explosive limit, as specified in section 2.3.1 (B) of the solid waste regulations (6 CCR 1007-2), be met at the property boundary at the time of closure or at such time as neighboring properties are developed, whichever occurs first.

The Division, after consultation with Weld County Health Department, agrees to your proposal. If site conditions change significantly, the Division will reevaluate the alternative compliance schedule and make appropriate changes as necessary.

If you have any questions regarding this matter please contact me at 303-692-3437.

Sincerely,

Roger Doak
Geologist
Solid Waste Section
Hazardous Materials and Waste Management Division

cc: Weld County Planning
T. Jiricek, Weld County Health Department

file [redacted]

# STATE OF COLORADO

Bill Owens, Governor
Douglas H. Benevento, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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Laboratory Services Division
8100 Lowry Blvd.
Denver, Colorado 80230-6928
(303) 692-3090

Colorado Department
of Public Health
and Environment

October 25, 2005

Mr. Kevin Horst
Denver Regional Landfill
P.O. Box 320
Erie, CO 80516

RE: Methane Gas Work Plan (dated August 2005)
Denver Regional Landfill (South)

Dear Mr. Horst,

The Hazardous Materials and Waste Management Division (Division) of the Colorado Department of Public Health and Environment has reviewed the referenced plan, which was attached to John Briest's (Weaver Boos Consultants LLC) cover letter dated August 18, 2005. The August 18, 2005 letter, which is addressed to me, states, "This plan is being provided to you based on a letter from the Colorado Department of Public Health and Environment (CDPHE) dated June 20, 2005 requesting that the elevated levels of methane be further investigated at the landfill's perimeter probes."

As a point of clarification, the intent of the Division's June 20, 2005 correspondence (that included an enclosed copy of a Division letter dated February 13, 1995) was to convey to Denver Regional Landfill (South) that the lower explosive limit for methane continues to be exceeded at the facility boundary. The February 13, 1995 letter documents the Division's agreement with Denver Regional Landfill's (South) proposal that the lower explosive limit be met at the property boundary at the time of closure or at such time as neighboring properties are developed, whichever occurs first (as originally proposed by the facility in a January 28, 1994 letter). Hence, given the recent development near the landfill, it is incumbent on Denver Regional Landfill (South) to take immediate action to remedy the elevated levels of methane at the facility boundary.

To further clarify, Table 3 included in the First Quarter 2005 Monitoring – Denver Regional Landfill (document dated May 19, 2005) indicates that on March 10, 2005 gas probes GP-2, GP-7, and S-102 had gas concentrations of 6, 22 and 20 percent methane by volume, respectively. A Doty & Associates report entitled Analytical Results, Isotopic Analyses of Explosive Gas, Denver Regional Landfill

(South), dated May 16, 1995, transmits results of explosive gas sampled at the site. The Doty & Associates report (on page 3) states, "Both the GP-7 and S-501 samples are clearly landfill gas." Table 2 of this report also indicates that GP-2 is O.K. for landfill gas monitoring." Furthermore, a May 17, 1995 Denver Regional Landfill letter to the Division states, "The results clearly indicate that S-208 and GP-6 contain naturally occurring coal bed methane, and that S-501 and GP-7 contain landfill gas."

Given the recent residential development near the landfill, the Division requests that the facility perform one or both of the following activities by November 30, 2005:

1) Submit a remediation plan to the Division and the Weld County Department of Public Health and Environment (WCDPHE) for review and approval.

2) Implement an approved remediation plan, place an approved copy of the plan in the operating record, and notify the Division and the WCDPHE that the plan has been implemented.

Please contact me at 303-692-3389 if you have any questions.

Sincerely,

Douglas M. Ikenberry

Douglas M. Ikenberry
Solid Waste Unit
Compliance Program

Cc: Cindi Etcheverry, WCDPHE
John Briest, P.E., Weaver Boos Consultants LLC

10/25/2005
WLD
Solid Waste - Monitoring - Gas Monitoring Data & Plans - RE: Methane Gas Work Plan (dated August 2005) Denver Regional Landfill (South)
SW/4.1./1116
SW/4.1./254
Denver Regional Landfill/DRL

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www.weaverboos.com

Chicago, IL
Naperville, IL
Griffith, IN
South Bend, IN
Springfield, IL
St. Louis, MO
Columbus, OH
Fort Worth, TX

RECEIVED
AUG 19 2005
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

August 18, 2005

Project No. 0601-355-11-01

Doug Ikenberry, P.E.
Colorado Department of Public Heath and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

RE: Waste Connections Inc.
Denver Regional Landfill South
Work Plan for Gas Probe Remediation

Dear Mr. Ikenberry

Please find the attached Work Plan for Denver Regional Landfill Inc. This plan is being provided to you based on a letter from the Colorado Department of Health and Environment (CDPHE) dated June 20, 2005 requesting that the elevated levels of methane be further investigated at the landfill's perimeter probes.

The enclosed Work Plan proposes a sampling and analysis plan to determine if there is a correlation between the landfill and the elevated methane readings the perimeter probes. The Work Plan, also outlines possible remediation options should the analytical results show that the elevated methane is possibly from the landfill.

Should you have any questions, or require further clarification, please feel free to contact me.

Sincerely,
Weaver Boos Consultants, LLC

John Briest

John Briest, P.E.
Senior Project Engineer

Attachment: Work Plan
CC: Cindi Etcheverry; Weld County
Mark Adams; WCI
Kevin Horst; DRLS

SW WLD DRL 4.1

# METHANE GAS WORK PLAN

# DENVER REGIONAL LANDFILL SOUTH

# ERIE, COLORADO

Prepared for

Waste Connections, Inc.

August 2005

Prepared by

**Weaver Boos Consultants, LLC**
5675 DTC Boulevard, Suite 102
Denver, Colorado 80111
720.529.0132

# 1 INTRODUCTION

Weaver Boos Consultants, LLC (WBC) has been retained by Waste Connections, Inc. (WCI) to prepare a Work Plan (WP) for Denver Regional Landfill South (DRLS) in Erie, Colorado. The purpose of this WP is to outline and describe to the Colorado Department of Health and Environment (CDPHE) WCI's proposed plan for obtaining site-specific information in evaluating the source of the sub-surface methane gas observed at perimeter gas monitoring probes GP-2, GP-7 and S-102. The plan describes the proposed sampling methods and locations to obtain the most accurate information for the site. If it is determined after implementing this WP that the elevated methane levels are the result of landfill-derived methane, a remediation plan will be developed in an effort to mitigate the methane exceedances. Due to the complex nature in this situation and the numerous factors which may contribute to the elevated methane reading in the probes, only preliminary remediation recommendations have been identified at this time.

This report addresses the initial background information pertinent to the assessment of subsurface gas migration at the site. It also provides a review of site conditions and possible sources, proposed laboratory analyses of gas samples to be collected from the site, and additional procedures that may be implemented to remediate or further investigate the situation.

# 2 LFG INVESTIGATION

## 2.1 Site Background

WCI conducted quarterly monitoring in accordance with 6 CCR 1007-2 Section 2.3. During the recent monitoring events WCI noted that probes GP-7 and S-102 showed elevated levels of methane consistently and GP-2 showed elevated levels intermittently. These probes GP-2, S-102 and GP-7 are approximately 22, 64, and 300 feet away respectively from the nearest limits of solid waste and are approximately 45, 45 and 28 feet respectively in depth. GP-2, GP-7 and S-102 are all completed in the Laramie Formation. A map of the facility and the probe locations are shown in Attachment 1.

## 2.2 Possible Sources

During a site review, several possible sources of the methane being detected at the probes were identified. These sources include:

- Coal Bed Methane – Historically, this landfill was sited atop an old coal field. Coal bed methane has previously been documented at this site and remains a potential source of subsurface combustible gas.

- Natural Gas – The existing landfill gas monitoring probes in this area of the site extend to depths ranging between 28 to 45 feet. At these depths, it is possible that natural gas could be encountered resulting in elevated methane readings in the probes.

- Glacial Drift Gas – Here gas generated from the decomposition of organic materials destroyed by advancing glaciers moving through the area approximately 35,000 to 40,000 years ago.

- Petroleum Products Pipeline Easement – There is an existing petroleum products pipeline located near the landfill gas monitoring probes in this area. It is possible that a leak in this pipeline could result in the elevated methane readings.

- Fertilizers/Pesticides – Another possible source could be from the use of fertilizers on the adjacent agricultural fields. Until recently, the surrounding area was predominately agricultural. Within the past 3 years, the surrounding area has become more developed with single family homes. Since landfill gas meters can react to other types of volatile organics, it is possible that residue from previously

applied fertilizers or pesticides used for agricultural purposes could cause a reaction from the portable combustible gas meter.

- Landfill Gas – Landfill gas (LFG) is a possible source. The perimeter probes range in distance from the permitted boundary 22 ft to 300 ft., making it possible that some LFG may be migrating to the these probes. However, the site has installed an active LFG collection and control system which reduces the potential for LFG migration.

# 3 PROPOSED SAMPLING AND ANALYSIS

## 3.1 VOC and Fixed Gas Sampling

To obtain the site-specific information needed to identify the source of the combustible gas at the probes, the site proposes to initially conduct gas sampling and analyses at DRLS. It is proposed that a gas sample will be collected from each of the impacted perimeter probes (GP-2, GP-7 and S-102). In addition, a gas sample will be collected from the south side main LFG header pipe and the west side main LFG header pipe. Prior to sample collection, a Landtec® GEM-500 will be used to field measure and record the concentration of methane, carbon dioxide, oxygen and balance gas.

Once collected, the samples will be submitted for laboratory analyses. The analysis for the gas samples will performed in accordance with federal Environmental Protection Agency (EPA)-approved methods. Specifically the laboratory analysis of the gas samples will include:

- Method 3C: Percent methane, carbon dioxide, oxygen and nitrogen (Fix).
- Method TO-15: Speciated volatile organic compounds (VOC).

The intent of sampling both the probes and header pipe, which would be in close proximity to one another, is to provide correlating analytical results of the LFG if such a relationship exists. GP-2 and S-102 would provide correlating results with the west side header, while GP-7 would provide correlating results with the north side header.

Should the analytical results demonstrate that characterization of the gas samples are the same, or nearly equivalent, it is highly probable that the combustible gas being measured at the probes represents landfill-derived methane. If this scenario were to occur, the site would move directly into mitigation, expand the LFG wellfield, and not conduct an additional analysis.

However, should the analytical results demonstrate the gas samples collected from the probes and LFG collection system are noticeably different, this could be an indication that the combustible gas at the probes is originating from a different source. If this occurs, the landfill proposes to conduct additional gas sampling and analysis as described in Section 3.2.

## 3.2 Isotopic Analysis

If it is suspected, based on the analytical results described in Section 3.1, that the gas at the probes has a different fingerprint than that of the known LFG samples, the site would then proceed with additional testing in an effort to identify the methane source. To do this, the site proposes to conduct isotopic analyses on a known LFG sample, as well as gas samples collected from the three probes. Carbon-14 dating and tritium analysis will be used to evaluate whether the methane gas at the probes is from a more modern source (i.e., landfill) or a much older methane source such as natural gas, coal gas, or glacial drift gas. These tests are able to evaluate the approximate age of the gas and determine whether the methane was only recently generated (within the landfill) or if it could be considerably older (naturally occurring gas).

The site would collect gas samples from the three probes (GP-2, GP-7 and S-102) and a known LFG sample from the common header pipe upstream of the existing flare. The sample from the header pipe at the flare would serve as a baseline for evaluating the results from the gas samples collected at the perimeter probes. The analytical results of these four samples will be reviewed and a determination made as to the original source of the gas at the perimeter probes.

Should the analytical results of the carbon-14/tritium analysis indicate that the gas originated from a source other than the landfill, the site will contact the CDPHE to discuss whether further remedial action is warranted.

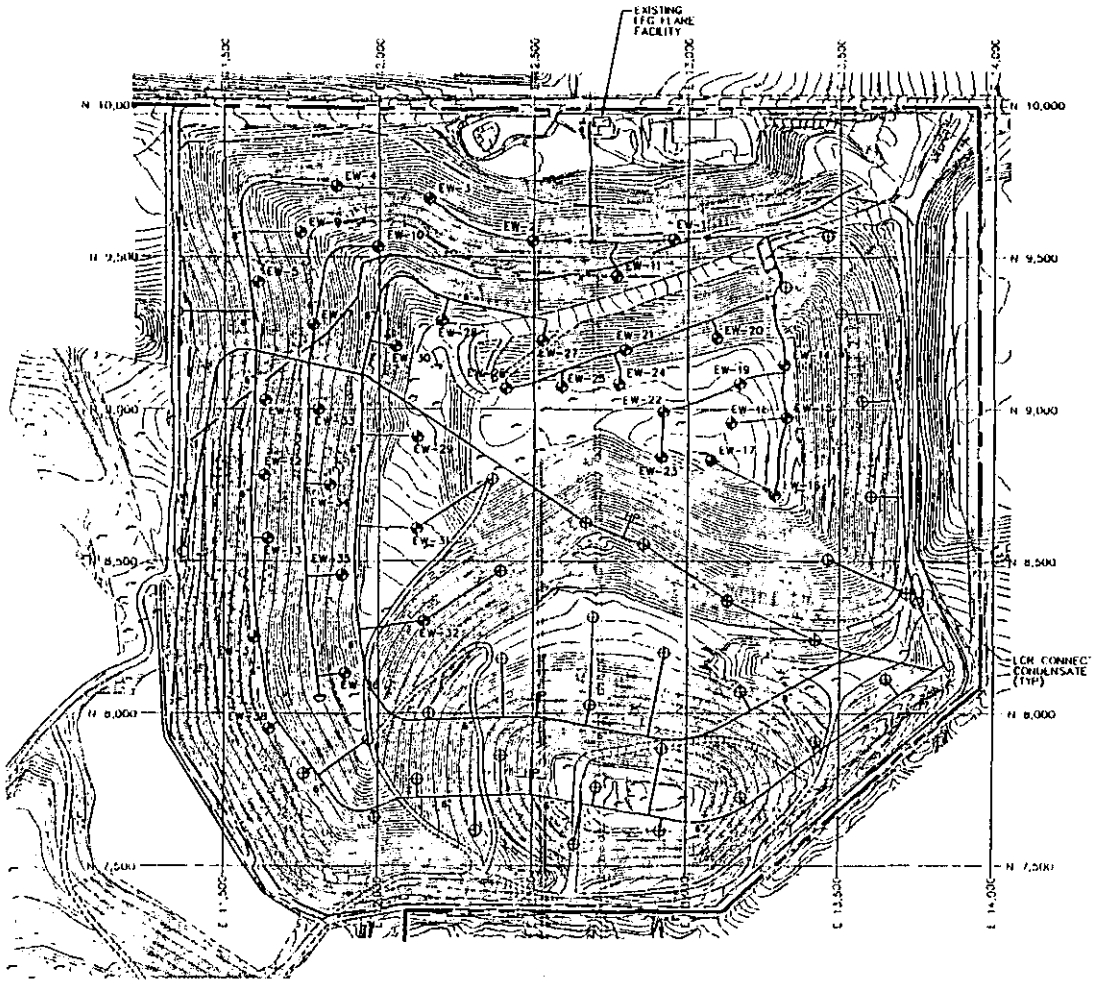
However, if the analytical results of the carbon-14/tritium analysis indicate that the gas is likely originating from the landfill, the site will initiate mitigation efforts.

## 4.0 Mitigation

If the preliminary laboratory analysis (VOC and fixed gases) or isotopic analysis demonstrates a positive correlation between the LFG and the perimeter probe gas, the site would move into mitigation. The most likely corrective measure will be to expand the existing LFG collection and control system. This may include installing additional extraction components in close proximity to the non-compliant perimeter probes. The actual LFG collection and control system expansion design will not be performed, until the gas sampling and analysis has been completed. A copy of the site's current LFG well field layout is presented in Attachment 2.

# 5 IMPLEMENTATION SCHEDULE

| | |
|---|---|
| Initial Work Plan. | Submitted August 22, 2005. |
| VOC and Fixed Gas Sampling. | To be completed by September 22, 2005. |
| Results of the VOC and Fixed Gas Analysis Submitted to CDPHE. | Within 30-days of receiving the lab results. Typical laboratory turn-around time is 10 working days. |
| Conduct Isotopic Analysis (if needed) | Collect gas samples within 45-days of submitting the VOC and fixed gas results to the CDPHE, if needed. The results will be submitted with 30 days of receiving results from the laboratory. Typical laboratory turn-around time for the isotopic analysis is 6 to 8 weeks. |
| Remediation Plan (if needed) | A submittal date of the Remediation Plan will be dependent on the lab results. A schedule for submitting the Remediation Plan will be provided to the CDPHE with the laboratory results, if applicable. |




PERMIT BOUNDRY

APPROXIMATE LIMIT OF WASTE AT CLOSURE

EW-12 EXISTING VERTICAL LFG EXTRACTION WELL

EXISTING LCR CONNECTION/CONDENSATE DRAIN

EXISTING LFG HEADER

EXISTING BURIED LFG HEADER

PROPOSED LFG EXTRACTION WELL

PROPOSED LFG HEADER

PROPOSED CONDENSATE SUMP

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS OUTSIDE THE WASTE FOOTPRINT PROVIDED BY WERTZ DIGITAL MAPPING FROM AERIAL PHOTOGRAPHY FLOWN 5-22-02.

2. EXISTING CONTOURS AND ELEVATIONS INSIDE THE WASTE FOOTPRINT PROVIDED BY AMETHOMELENING, INC. FROM AERIAL PHOTOGRAPHY FLOWN 3-11-05 BY AERIAL SURVEYS INTERNATIONAL.

3. LOCATIONS SHOWN FOR THE PROPOSED LFG SYSTEM EXPANSION ONLY APPROXIMATE. ACTUAL LOCATIONS TO BE DETERMINED BASED ON FIELD CONDITIONS AT THE TIME OF INSTALLATION.

DRAFT

FOR PERMITTING PURPOSES ONLY

APPROVED FOR CONSTRUCTION

CLIENT APPROVAL BY:

REUSE OF DOCUMENTS

PREPARED FOR

DENVER REGIONAL LANDFILL INC.

REVISIONS

| NO. | DATE | DESCRIPTION |
|---|---|---|
| | | |

**GAS EXTRACTION WELL LOCATIONS**

DENVER REGIONAL LANDFILL (SOUTH)
WELD COUNTY, COLORADO

*Weaver Boos Consultants*

DRAWING B-1

WEAVER
BOOS
CONSULTANTS
LLC

*5675 DTC BOULEVARD, SUITE 102*
*DENVER, COLORADO 80111*
*PHONE: (720) 529-0132*
*FAX: (720) 529-0137*
*www.weaverboos.com*

*Chicago, IL*
*Naperville, IL*
*Griffith, IN*
*South Bend, IN*
*Springfield, IL*
*St. Louis, MO*
*Columbus, OH*
*Fort Worth, TX*

NOV 30 2005

November 29, 2005

Project No. 0601-355-11-01

Doug Ikenberry, P.E.
Colorado Department of Public Heath and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

RE: Waste Connections Inc.
Denver Regional Landfill South
Proposed Mitigation Plan

Dear Mr. Ikenberry:

Please find the attached Mitigation Plan for Denver Regional Landfill Inc. This plan is being provided to you based upon the Colorado Department of Health and Environment (CDPHE) letter dated October 25, 2005 requesting a plan to mitigate the landfill gas migration at the site.

The enclosed Mitigation Plan proposes additional wells and their locations in relation to the affected landfill gas probes and the existing landfill gas well network. The purpose of these wells is to prevent further potential landfill gas from affecting these probes and control any potential migration.

Upon the Division's approval, construction level drawings will be generated based on the contents of the attached document.

Should you have any questions, or require further clarification, please feel free to contact me.

Sincerely,
Weaver Boos Consultants, LLC

John Briest

John Briest, P.E.
Senior Project Engineer

Attachment: Mitigation Plan
CC: Cindi Etcheverry; Weld County
Mark Adams; WCI
Kevin Horst; DRLS

SW WLD DRL 4.1

# MITIGATION PLAN

# DENVER REGIONAL LANDFILL SOUTH

# ERIE, COLORADO

Prepared for

Waste Connections, Inc.

November 2005

Prepared by

**Weaver Boos Consultants, LLC**
5675 DTC Boulevard, Suite 102
Denver, Colorado 80111
720.529.0132

# 1 INTRODUCTION

Weaver Boos Consultants, LLC (WBC) has been retained by Waste Connections, Inc. (WCI) to prepare a Mitigation Plan (MP) for Denver Regional Landfill South (DRLS) in Erie, Colorado. The purpose of this MP is to outline and describe to the Colorado Department of Health and Environment (CDPHE) WCI's proposed plan for addressing landfill gas which may not be collected by the existing Gas Collection and Control System (GCCS). Specifically this plan looks to increase the collection of gas in the proximity of gas monitoring probes GP-2, GP-7 and S-102. The plan describes the proposed mitigation methods and location to best address the current situation.

This report addresses the initial background information pertinent to the mitigation of the gas migration. It also provides a proposed supplemental gas system which will tie into the existing active GCCS.

# 2 BACKGROUND

Probes GP-7 and S-102 consistently have elevated levels of methane. GP-2 has also shown intermittent elevated methane levels. The probes GP-2, S-102 and GP-7 are approximately 22, 64, and 300 feet away respectively from the nearest limits of waste and are approximately 45, 28 and 45 feet respectively in depth. GP-2 has a screen interval of 33.0 ft to 44.4 ft below ground surface (bgs), GP-7 has a screen interval of 32.8 ft to 44.6 ft bgs and S-102 has a screen interval of 10.5 ft to 22.5 ft bgs. A map of the facility and the probe locations are shown in Attachment 1.

# 3 PROPOSED MITIGATION

To address LFG migration near probe GP-2 and S-102 it is proposed that 10 new vertical extraction wells be installed. It is proposed to install 5 new vertical extraction wells near each probe to capture the LFG migrating in these areas of the landfill as shown on in Attachment 1.

In addition, to address LFG migration near GP-7, it is proposed that 6 new vertical extraction wells be installed in the northeast corner of the site. Currently, this portion of the GCCS has not been completely developed as such vertical extraction wells will be installed in this area accordance with the site's approved GCCS plan.

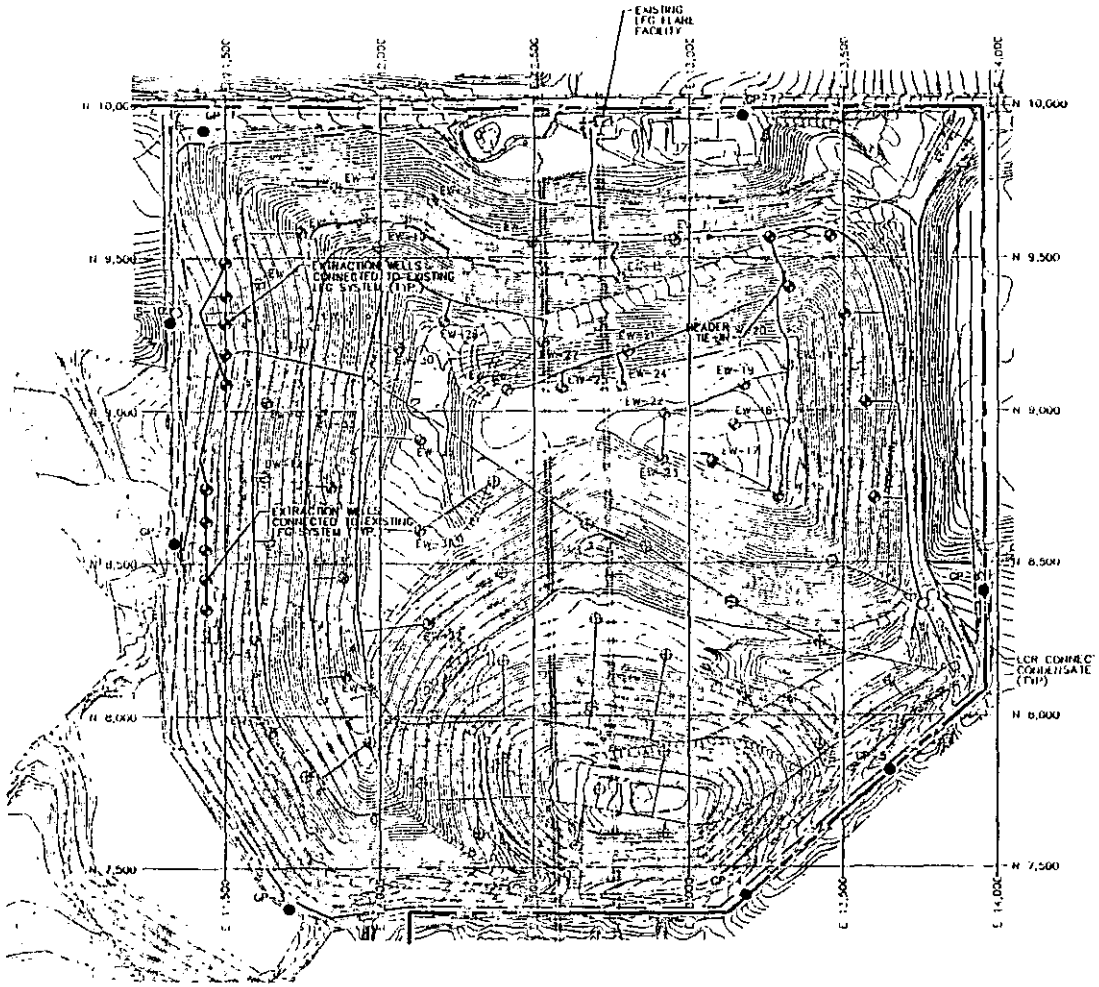
The proposed LFG extraction wells will be installed in vertical borings drilled within waste. The LFG extraction well casings will be fabricated from high density polyethylene (HDPE) pipe. The bottom portion of the well casing will be perforated with evenly spaced holes along the pipe. The length of the perforated section will depend on the depth of refuse where the extraction well is located. The annulus around the perforated sections of pipe will be backfilled with 1 to 3 inch diameter coarse gravel. Above the gravel backfill a bentonite seal will be placed. The remaining well bore will be backfilled with clay or select backfill to within 3 feet of the landfill surface.

A bentonite plug will be placed just below ground surface to provide protection from air intrusion when vacuum is applied. Compacted backfill will be mounded to slope away from the LFG extraction well to compensate for backfill settlement and to prevent ponding at the LFG extraction well.

As shown on Drawing 1, a proposed lateral pipe will be installed. Lateral piping will be installed to connect the new LFG extraction wells to the existing GCCS. A wellhead will be placed on each well casing to control the flow of LFG. The wellheads will be connected to a lateral pipe which will convey the flow of LFG into the existing GCCS.

# 4 IMPLEMENTATION

DRLS is prepared to move forward with the above mitigation plan upon approval of CDPHE. Once this plan has been approved, DRLS will continue with final system design and secure a construction contractor. It is anticipated that construction will begin on the proposed system within 180 days of CDPHE's approval. Once installed, it is anticipated that a six-month monitoring period will be needed to assess the effectiveness of the installed controls. This period of time will also be used to evaluate any seasonal fluctuations in the methane migration and whether additional control measures may be needed as a result. During this six month monitoring period the site will take monthly readings of the probes. At the end of the six month period DRLS will submit a report to the CDPHE which will describe the effectiveness of the proposed system and include the monthly readings.




PERIMETER BOUNDARY

APPROXIMATE LIMIT OF WASTE AT CLOSURE

EW-12 EXISTING VERTICAL LFG EXTRACTION WELL

EXISTING LCR CONNECT CONDENSATE DRAIN

EXISTING LFG HEADER

EW-12 PROPOSED VERTICAL EXTRACTION WELL

PROPOSED LFG HEADER

FUTURE LFG EXTRACTION WELL

FUTURE LFG HEADER

FUTURE CONDENSATE DRAIN

GP-2 EXISTING LFG MONITORING PROBE

NOTES:

1. EXISTING CONTOURS AND ELEVATIONS OUTSIDE THE WASTE FOOTPRINT PROVIDED BY WINTZ DIGITAL MAPPING FROM AERIAL PHOTOGRAPHY FLOWN 5-22-92.

2. EXISTING CONTOURS AND ELEVATIONS INSIDE THE WASTE FOOTPRINT PROVIDED BY ANTI-TRUST ENG. INC. FROM AERIAL PHOTOGRAPHY FLOWN 2-11-95 BY AERIAL SURVE INTERNATIONAL.

3. LOCATIONS SHOWN FOR THE PROPOSED LFG SYSTEM EXPANSION ARE APPROXIMATE. ACTUAL LOCATIONS TO BE DETERMINED BASED ON FIELD CONDITIONS AT THE TIME OF INSTALLATION.

[ ] DRAFT
[x] FOR PERMITTING PURPOSES ONLY
[ ] APPROVED FOR CONSTRUCTION
[ ] CLIENT APPROVAL BY: _____

DATE: _____ DRAWN BY: JR
JOB NO.: _____ DESIGNED: JRR
FILE NO.: _____ CHECKED BY: JRR

REUSE OF DOCUMENTS

PREPARED FOR
DENVER REGIONAL LANDFILL INC.

| REVISIONS | | |
|---|---|---|
| NO. | DATE | DESCRIPTION |
| | | |

PROPOSED REMEDIATION SYSTEM PLAN

DENVER REGIONAL LANDFILL (SOUTH)
WELD COUNTY, COLORADO

Weaver Boos Consultants

DENVER, CO
(303) 58-8130

DRAWING 1

# STATE OF COLORADO

Bill Ritter, Jr., Governor
James B. Martin, Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

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http://www.cdphe.state.co.us

Colorado Department
of Public Health
and Environment

March 8, 2007

CERTIFIED MAIL # 7005 1820 0000 3205 1855
Return Receipt Requested

Mr. Mark Adams
Waste Connections, Inc.
6855 S. Havana Street, Suite 300
Centennial, CO 80015

RE: Approval with Modifications of the Denver Regional Landfill (South) Revised Final Cover Drainage Plan (dated December 11, 2006) and enclosed Construction Quality Assurance Plan (dated December 2006) submitted with a Golder Associates Inc. Cover Letter dated December 12, 2006

Dear Mr. Adams,

The Hazardous Materials and Waste Management Division (Division) of the Colorado Department of Public Health and Environment reviewed the above referenced documents. Based on the Division's review and in consultation with the Weld County Department of Public Health and Environment (WCDPHE), we are approving the Revised Final Cover Drainage Plan with the following modification:

1) The Division's August 29, 2003 letter expressed a desire for assurance that sufficient soil is placed under the water diversion drop structures to achieve adequate protection from infiltration in these localized areas. Accordingly, please modify Detail 2 on Drawing 12 of the February 1996 Design Improvements drawings to incorporate that a full alternative final cover (AFC) thickness underlies the channel bottom in all locations.

Based on the Division's review, we are approving the Construction Quality Assurance (CQA) Plan with the following modifications for incorporation into a revised Construction Quality Assurance (CQA) Plan:

*General Modifications:*

1) A Colorado registered professional engineer must properly seal the plan.

2) Provide horizontal and vertical survey control tolerances for construction of the Cell C4 berm, AFC, final cover drainage features and the perimeter drainage features.

3) Please address [Access] Road Base Course in the text and as an item in Table 1, consistent with the Upcoming Construction at Denver Regional Landfill (South): Cell C – Module 3 and Portion of Final Cover (design document dated August 13, 2003).

4) Include specifications, criteria and quality assurance procedures for vegetation related activities and requirements identified in the Comparative Modeling Results for the Alternative Final Cover Demonstration, Denver Regional Landfill (South) (document dated July 25, 2003). These specifications and criteria will be incorporated into the Design and Operations Plan and the Construction Quality Assurance Plan.

*Specific Modifications:*

5) Page 4, section 3.1 –Omit "(prior to completion of the final cover components)" from the text.

6) Page 5, section 4.1 –Replace the text in item 7 with "Surveys performed for grid control and as-built Cell C4 berm cohesive soil liner and structural fill, alternative final cover and alternative final cover storm water control structures, and landfill perimeter storm water control structures."

7) Page 7, section 4.5 –Replace "should" with "shall."

8) Page 8, section 5.1.1 –Omit "approximately" from the text.

9) Page 8, section 5.1.1 –Replace "diameter" with "longest dimension."

10) Page 8, section 5.1.3, and page 10, section 5.2.3 –Replace "95%" with "95% maximum dry density."

11) Page 9, section 5.1.3 (continued), last paragraph –Replace the last sentence with, "Shelby tube sample locations (i.e., referenced to the design grid system) will be presented on a drawing in the Construction Documentation Report."

12) Page 9, section 5.2.1 –Replace "cohesive soil liner" and "Cohesive soil" with "structural fill."

13) Page 9, section 5.2.2 –Replace "cohesive soil liner" and "soil liner" with "structural fill."

14) Page 10, section 5.2.3 –Replace "cohesive soil" with "structural fill" and "Cohesive soil" with "Structural fill."

15) Page 10, section 5.3 –Insert "inside and outside" between "the" and "toe."

16) Page 10, section 5.3 –Add, "The survey locations for the Cell C4 berm (i.e., referenced to the design grid system) will be presented on a drawing in the Construction Documentation Report."

17) Page 12, section 6.3.1 –Replace "15%" with "70%."

18) Page 13, section 6.5 –Replace the text with "AFC area survey requirements include performing a land survey of the as-built surface of the final cover soil on a maximum 100-foot grid pattern and at maximum 100-foot intervals along grade breaks. Alternative AFC area survey requirements shall be submitted to the Weld County Department of Public Health and Environment and to the Colorado Department of Public Health and Environment Hazardous Materials and Waste Management Division (Division) for review and approval prior to implementation. Final cover soil thickness shall be determined via land survey, or other appropriate method approved by the Division, before and after cover placement or via manual measurements of the final cover soil thickness at corresponding

survey locations. The record drawing, which illustrates the contour lines and grades of the as-built surface of the final cover soil (i.e., referenced to the design grid system), shall be included in the Construction Documentation Report. Additionally, the corresponding as-built thickness of the water storage and topsoil layers shall be presented in the Construction Documentation Report."

The Division recognizes that some features may require spatial survey control frequencies different than the 100-foot grid pattern. We also recognize that the design engineer should provide the appropriate spatial survey control frequencies different than the pre-approved frequencies. The CQA Plan may contain spatial survey control frequencies different than those previously approved.

19) Page 14, section 7.1, last sentence –Replace the sentence with "The location of the ACB channel segments will be part of the record survey."

20) Page 14, section 7.2 –Replace the section title with "Construction Quality Assurance for Final Cover Add-on Berms, Access Road Ditch and Down Slope Channels."

21) Page 14, section 7.2 –Replace the last sentence with "The final cover soil surface at the channel flow line and the crest of the add-on berms shall be surveyed at maximum 100-foot intervals as part of the record survey. The access road ditch channel flow line and the center flow line of the down slope channel bottom shall be surveyed at the final cover soil surface at maximum 100-foot intervals and at all turning points and grade breaks. Access road ditch and down slope channel cross sections (i.e., including channel bottom widths) shall be surveyed at maximum 200-ft intervals as part of the record survey. Prior to implementation of the survey, the Division must approve any submittals of alternative survey requirements for the final cover add-on berms, access road ditch channel and down slope channels." (See comment 18 above).

22) Page 14, section 7.3, last paragraph – Add to the end of the text, "The location of the rip rap channel segments will be part of the record survey."

23) Page 15, section 8.1, second paragraph –Replace the first sentence with "Access road culverts and perimeter channel culverts shall be constructed as shown on the drawings."

24) Page 15, section 8.2 –Replace the text with "The center flow line of the perimeter channel bottom subgrade shall be surveyed at maximum 100-foot intervals and at all turning points and grade breaks. Perimeter channel cross sections (i.e., including channel bottom widths) shall be surveyed at maximum 200-foot intervals as part of the record survey. Additionally, the culvert inlet/outlet invert locations and riprap channel segments will be part of the record survey. Prior to implementation of the survey, the Division must approve any submittals of alternative survey requirements for the perimeter channel subgrade."

25) Page 16, section 9.0, 1st sentence –Omit "cover."

26) Page 16, section 9.0, 3rd sentence –Replace the sentence with "It will describe all major aspects of pertinent construction elements, including (but not limited to): water storage layer placement, top soil layer placement, final cover component thickness, seeding, fertilizing and mulching activities, access road base course placement, installation of final cover storm water control structures and perimeter storm water control structures (including channels, culverts, ACB and riprap) and corresponding as-built survey information."

27) Table 1, page 2 of 2 –Omit "Construction" and the associated information as a sub-item under "Riprap" as these material and testing protocols are not appropriate for riprap.

28) Table 1, page 2 of 2 –Replace "Thickness of topsoil layer" with "Thickness of water storage layer" as a Water Storage Layer Parameter.

29) Table 1, page 2 of 2, Note 4 –Replace "should" with "shall."

30) Appendix A –Expand the Typical Table of Contents for Construction Documentation Report to address all relevant construction element topics identified in the CQA Plan text.

The modified Detail 2 on Drawing 12 of the February 1996 Design Improvements drawings and revised CQA Plan for the alternative final cover, perimeter berm and final cover/perimeter drainage controls must be received within forty-five (45) calendar days of your receipt of this letter. Additionally, the Division requires submittal of a post-closure plan amendment that incorporates provisions to monitor and evaluate the long-term success of AFC vegetation within forty-five (45) calendar days of your receipt of the Division's approval letter of a revised CQA Plan.

In closing, the Division is authorized to bill for its review of technical submittals, pursuant to C.R.S. 30-20-109(2)(b). An invoice for the Division's review of the referenced plan will be transmitted under separate cover.

Please contact me at 303-692-3389 if you have any questions.

Sincerely,

Douglas M. Ikenberry

Douglas M. Ikenberry
Solid Waste Unit
Solid and Hazardous Waste Program

Cc: Kevin Horst, Denver Regional Landfill (South)
Troy Swain, WCDPHE
Mark McClain, P.E., Golder Associates Inc.

FILE: SW WLD DRL 2.2

# STATE OF COLORADO

Bill Owens, Governor
Dennis E. Ellis, Executive Director

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Colorado Department
of Public Health
and Environment

March 22, 2007

**CERTIFIED MAIL #** 7005 1820 0000 3205 1862

Mr. Mark Adams
Waste Connections Inc.
6855 S. Havana Street, Suite 300
Centennial, CO 80015

RE: Comments on the Denver Regional Landfill (South) Landfill Gas System Expansion Proposed Mitigation Plan Drawings (dated May 2006)

Dear Mr. Adams,

The Hazardous Materials and Waste Management Division (Division) of the Colorado Department of Public Health and Environment (Department) has completed our review of the Denver Regional Landfill (South) Landfill Gas System Expansion Proposed Mitigation Plan Drawings (dated May 2006), which were attached to the cover letter dated May 24, 2006. Based on our review of the above referenced drawings and the accompanying May 24, 2006 cover letter, we offer the following comments

*General Comments:*

1) Based on the available information, the May 2006 drawings were prepared "For Permitting Purposes Only." The May 24, 2006 cover letter states, "Please note there are no project specifications or CQA requirements other than what is included on these drawings."

   As previously requested in the Division's April 6, 2006 letter, please provide a comprehensive and detailed construction level remediation design package for the Gas Collection and Control System expansion (i.e., including drawings, specifications and construction quality assurance plan) to the Weld County Department of Public Health and Environment (WCDPHE), the Department's Air Pollution Control Division (APCD) and the Division for review and approval.

2) The May 24, 2006 cover letter indicates that upon approval of the drawings, Denver Regional Landfill (South) will submit a revised Gas Collection and Control System (GCCS) Design Plan to the APCD. Please submit the revised GCCS design plan to the APCD, WCDPHE and the Division concurrent with the construction level remediation design package required

in subsection 2.3.3(C) of the Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2).

3) In some cases the existing GCCS shown on the Appendix A as-built record drawings (which are evidently reduced copies of drawings dated June 25, 1998 enclosed with the May 28, 1998 cover letter) and on the Appendix C Drawing C-1, which are appendices to the April 2004 Denver Regional Landfill South Landfill Gas Collection and Control System Design Plan, are inconsistent with the existing GCCS illustrated on Weaver Boos Consultants Drawings 2, 3 and 4 (dated May 2006). For instance, it is not clear that the condensate collection sumps/drains (i.e., located near S-102 and GP-6) were ever connected to the GCCS pipe network.

Please clarify whether or not the condensate collection sumps/drains (i.e., located near S-102 and GP-6) and the corresponding gas collection outlets were ever connected to the GCCS pipe network, and if so, according to which design. If the collection sump/drain (i.e., located near S-102 has been connected to the existing GCCS, please clarify how condensate is conveyed from the header pipe to the leachate collection system riser pipe based on the Gas Collection Outlet 1 and Condensate Sump 1 detail shown on SCS Engineers Drawing 2 of 3 (dated June 25, 1998). If the collection sump/drain (i.e., located near S-102) has not yet been connected to the GCCS, the Division would like to revisit such design to prevent potential release of condensate into pre-Subtitle D areas of the landfill.

4) The APCD has expressed concern that above ground gas collection pipes are subject to clogging via freezing of condensate (particularly at locations on the western side slope), which may result in obstruction of the landfill gas pathway to the flare.

Additionally, the Division has concerns about the efficiency of the existing/proposed configuration of the GCCS pipe network shown on Drawing 4 with regard to attaining adequate positive drainage of condensate. Apparently, the condensate flow through the header pipes at the existing header tie-in junction (near grid point N 9450, E 13300) is directed northward and ultimately westward along the north edge of the landfill towards the junction of the header pipe segment that leads northward to the condensate collection sump located by the flare. However, based on SCS Engineers Drawing 1 of 3 (dated 6-25-98), there is a high point in the header pipe collection system located near EW-1. This high point could obstruct the passage of condensate towards the sump.

If possible, please provide comprehensive plans and profiles and/or other survey information for the as-built GCCS pipe network, which clearly illustrate the direction of condensate flow through the existing system.

5) On Drawing 3 the proposed GCCS segment located between "Min U-Trap Elev 5130'" and the "O" symbol (i.e., in proximity to GP–2) is cross referenced to Detail 7 on Drawing 6.

The design shown on Detail 7 on Drawing 6 appears to deviate from the Condensate Sump 2/Gas Collection Outlet 2 design shown at this location on SCS Engineering Drawings 2 of 3 and 3 of 3 (dated 6-25-98). Please clarify whether or not the condensate collection sump/drain (i.e., located near GP-2) was ever connected to the GCCS pipe network, and if so, according to which design. Additionally, clarify if the gas collection outlet (i.e., located near GP-2) was ever connected to the GCCS, and if so, according to which design.

6) On Drawing 4, the approximately 170-ft long 12-in diameter header segment located to the west of EW-50 is shown as *proposed* whereas the same header segment is shown as *existing* on Drawing C-1 of the Landfill Gas Collection and Control System Design Plan (dated April 2004). Clarify the apparent discrepancy regarding this portion of pipe segment.

*Specific Comments (for appropriate incorporation into a revised design submittal):*

7) The Legends on Drawings 2 through 4 appear incomplete or unclear (e.g., it is not clear the "O" symbol represents a condensate collection sump/drain). On Drawing 2 it appears that the dashed line that represents the limits of waste should not be in bold print as shown in the legend. On Drawing 2 it is not clear what the "closed semi-circle" symbol located south of EW-36 represents. On Drawings 2 and 4 it is not clear what the solid "bowtie" symbols located on the existing headers represent. On Drawing 4, it is not clear what the solid black arrow/triangle symbols located on the existing headers represent. Additionally, it is not clear what the "LCR" acronym presented on a Drawing 3 label and on Drawing 6 Detail 7 represents. Please provide comprehensive and definitive legends/labels on the drawings.

8) It is not clear whether the solid red line shown on Drawings 2 and 3 represents the existing alignment or proposed alignment of the 8-inch header segment. Please clarify and rectify.

9) On Drawing 3 the plan view of the junctions of the proposed 6-inch diameter headers with the 8-inch diameter header do not appear to be at 90° angles as indicated by the "Tee" junction shown on Detail 5 on Drawing 6. Please clarify and rectify.

10) On Drawing 3 the lateral pipe configuration for wells EW-39 through EW-44 and EW-49 are not indicated. Likewise, on Drawing 4 the lateral pipe configuration for wells EW-50 and EW-51 are not indicated. Identify the proposed lateral pipe configuration for each proposed gas extraction well.

11) Note 3 on Drawing 3 states "All disturbed areas shall be reclaimed to predisturbed conditions."

It appears that the proposed gas extraction wells are to be located on portions of the approved final cover. Please provide drawings, specifications and a construction quality assurance plan to implement and document reconstruction of such disturbed areas to pre-disturbed conditions, as applicable.

12) Note 4 on Drawings 3 and 4 specifies survey procedures and requires that the contractor provide field surveys of pipe runs to record as-built conditions.

Please change "or" to "and" in this note. Please include in the construction quality assurance (CQA) plan that the as-built field survey data for all pipe runs shall be included in the as-built certification report along with the corresponding as-built plan and profile drawings. Please require in the CQA plan that the as-built certification report will be submitted to the WCDPHE, APCD and the Division for review and approval.

13) Note 5 on Drawings 3 and 4 specifies that all piping is to be pressure tested at 10 psi for 4 hours with no more than 5 % loss in pressure and that the CQA representative must be present for all pressure testing. Identify the CQA contact (i.e., if not known please indicate same) and all other appropriate contacts in the CQA plan.

14) Note 7 on Drawings 3 and 4 states, "All pipe to be above ground except as noted on plans or details." Provide details that illustrate the junction(s) of the down slope channel(s) with the above ground pipe and the junction(s) of the add-on berms with the above ground pipe.

15) The direction of condensate flow through the proposed header pipes is not definitively illustrated on Drawings 3 and 4. Illustrate the direction of condensate flow through the proposed header pipe network on the design drawings.

16) Note 8 on Drawing 3 indicates that extraction wells B, C and D will be down slope wells. There do not appear to be any gas extraction wells labeled B, C and D on the drawings. Clarify and rectify these items.

17) On Drawing 4 it is not clear that the plan view of the configuration of the GCCS in proximity to "Min U-Trap Elev 5217'" and the "O" symbol is consistent with Detail 7 shown on Drawing 6. For instance, it is not clear if the GCCS pipe that traverses through the proposed road crossing is an 8" header pipe or a 4" lateral pipe. Provide a detail(s) that is clear and consistent with the plan view of the GCCS design at this location.

18) On Drawing 4 it is not clear what the slope of the GCCS pipe segment is between "Min U-Trap Elev 5217'" and the "O" symbol." Include plans and profiles that show the proposed GCCS pipe network elevations in relation to the existing ground surface elevation in the revised design.

19) On Drawing 4, the configuration of the proposed/existing GCCS located between EW-50 and the "12" Tee with Full Size Reducers" does not appear to be well defined. Please provide an enlarged design detail(s) and cross section(s) (i.e., complete with point elevations, etc.) that clearly illustrates the specific configuration of the proposed GCCS at this location relative to the existing pipe segment that is to be abandoned. Additionally, provide a detail(s) that illustrates the proposed "12" Tee with Full Size Reducers."

20) Demonstrate that a minimum slope of 2.5% (i.e., as prescribed in Note 2 on Drawing 4) is attained for the proposed header pipe network shown on Drawing 4. For instance, the slope of the proposed 10-inch diameter header between the EW-52 lateral junction and the EW-53 lateral junction is about 1.8%. The slope of the proposed 8-inch diameter header between the EW-54 lateral junction and the location of the Minimum U-Trap elevation of 5217' is about 1.25%. Please include plans and profiles for the proposed GCCS pipe network (i.e., relative to existing ground surface) in the revised design submittal that are consistent with the prescribed minimum 2.5% slope. Additionally, the Denver Regional Landfill (South) Revised Closure and Post-Closure Cost Estimates (document dated June 21, 2005) assumes that a header drain will be required for every five gas extraction wells and that an eight foot by eight foot by eight foot excavation will be required for each drain. Furthermore, a proposed condensate sump is shown on Drawing C-1 (near grid point N 8225, E 13850) included in the Denver Regional Landfill South Landfill Gas Collection and Control System Design Plan dated April 2004. Please incorporate header drains/condensate sumps into the design as necessary to achieve minimum 2.5% pipe slopes and to facilitate condensate sampling activities.

21) Detail 1 on Drawing 5 presents the landfill gas extraction well design. Please require that the horizontal and vertical locations of the as built gas extraction wells and the corresponding boring logs and well completion logs shall be included in the CQA report.

22) Note 8 under Detail 1 on Drawing 5 states, "For Downslope Wells Refer to Detail 8." Detail 8 on Drawing 6 indicates that a down slope well pipe lateral is sloped to allow condensate to drain towards the well. As shown on Drawing 3, the down slope well lateral design evidently applies to wells EW-45 through EW-49. The down slope well lateral design is unacceptable since it allows potential direct release of condensate into pre-Subtitle D areas of the landfill. The proposed GCCS expansion must collect and contain the generated condensate and provide that such condensate is available for sampling and laboratory analytical testing. Please modify the design so that condensate collected in the proposed GCCS expansion is contained and can be sampled for laboratory analytical testing to facilitate its proper management.

23) The Drawing 5 Detail 2 "Wellhead to Lateral" caption indicates that Detail 2 applies to Drawings 3, 4 and 5. The location(s) where Drawing 5 Detail 2 applies is not denoted on Drawing 3. Please rectify the information.

24) Note 1 under Detail 2 on Drawing 5 states, "LFG piping should be placed at 2.5% slope (min) unless otherwise approved by engineer." Please replace "should" with "shall" in the above note. Please specify minimum definitive pipe slopes (e.g., for headers, laterals, etc.) that must be achieved over specified maximum pipe reaches. Please specify that a design modification must be submitted to the WCDPHE, APCD and to the Division for review and approval prior to implementation if specified minimum pipe slopes cannot be achieved over specified maximum pipe reaches in the field.

25) Note 3 under Table 1 on Drawing 5 indicates that the top of clay liner elevations for wells EW-39 through EW-48 were obtained from Drawing 1 of 4 sealed 6-10-94 from Laidlaw Waste Systems and that all other liner elevations were obtained from an electronic drawing provided by Doty and Associates. The Division has a copy of a Laidlaw Waste Systems Drawing 1 (sealed on 6-9-94) that shows the detailed site layout for the Phase 2 top of clay liner, which can be used to determine the approximate top of clay elevations in the location of EW-39 through EW-43. Please provide a copy of the aforementioned Laidlaw Waste Systems Drawing 1 of 4 (sealed 6-10-94) that indicates the top of clay liner elevations for wells EW-39 through EW-48 and/or revise Note 3, as applicable.

The Doty electronic drawing can be used to determine the approximate bottom of waste elevations for EW-44 through EW-54.

Based our review of the above referenced drawings, it appears that the approximate bottom of waste differs from what is shown on Drawing 5 as follows:

| WELL NO. | Drawing 5 Approx. Bottom of Waste | Apparent Approx. Bottom of Waste |
|---|---|---|
| EW-47 | 5107 (ft – mean sea level) | 5108.5 (ft – mean sea level) |
| EW-46 | 5105 " | 5107 " |
| EW-45 | 5104 " | sump bottom – inconclusive elevation |
| EW-44 | 5105 " | 5106.3 (ft – mean sea level) |
| EW-43 | 5101 " | 5103 " |
| EW-42 | 5101 " | 5103 " |
| EW-41 | 5101 " | 5104 " |
| EW-40 | 5102 " | 5107 " |
| EW-39 | 5106 " | 5108 " |

Please note that the Division conservatively assumed a 2-ft contour interval in the vicinity of the sump, as shown on the Doty and Associates electronic drawing (i.e., the contours are not labeled in the vicinity of the sump), to arrive at the apparent elevations for EW-44 through EW-47 shown above. It appears that the corresponding elevations from Drawing 5 Table 1 were determined assuming a 5-ft contour interval in the area of the sump as shown on the Doty and Associates electronic drawing. Please revisit, clarify and rectify where needed the EW-39 through EW-47 approximate bottom of waste elevations shown on Drawing 5 Table 1 to minimize the potential for penetration of the liner via drilling of the extraction wells.

26) The Drawing 6 Detail 4 table provides various CMP sizes that correspond to various HDPE sizes. Please include a CMP size that applies to an 8-inch HDPE size, if applicable.

27) The Drawing 6 Detail 7 design of the landfill gas piping to leachate cleanout riser connection with wellhead appears to be a departure from what is shown on the Gas Collection Outlet/Condensate Sump details on the SCS Engineers drawings dated June 25, 1998. This design detail evidently applies to the locations identified on Drawings 3 and 4. Please clarify the status of the GCCS at these locations in light of comment 3 above. Additionally, the

configuration of the U-trap piping connection between the header pipe and the leachate cleanout riser in lieu of a straight line connection may lead to deterioration and leakage. Please address this issue. Moreover, please modify the design to ensure that the collected condensate can be sampled for laboratory analysis at all condensate drain/sump locations to facilitate its proper management.

Please include a cover letter and any documentation that adequately addresses the issues raised in this letter along with the revised Landfill Gas System Expansion system design, which incorporates the above applicable comments, by May 31, 2007.

In closing, the Department is authorized to bill for its review of technical submittals, pursuant to 30-20-109(2)(b). An invoice for the Division's review of the above referenced document will be transmitted under separate cover.

Please contact me at 303-692-3389 if you have any questions.

Sincerely,

Douglas M. Ikenberry

Douglas M. Ikenberry
Solid Waste Unit
Solid and Hazardous Waste Program

Cc: Troy Swain, WCDPHE
Theresa Amoroso, APCD
Kevin Horst, Denver Regional Landfill
John Briest, P.E., Weaver Boos Consultants LLC

FILE: SW WLD DRL 2.2

**Denver Regional Landfill/DRL**

3/22/2007

WLD

Solid Waste - Permit Process Information - D&O Amendments - Comments on the Denver Regional Landfill (South) Landfill Gas System Expansion Proposed Mitigation Plan Drawings (dated May 2006)

SW/2.2./2240

SW/2.2./415-03

# LETTER OF TRANSMITTAL

**STEWART ENVIRONMENTAL CONSULTANTS, INC.**
3801 Automation Way, Suite 200
Fort Collins, Colorado 80525
(970) 226-5500 Fax (970) 226-4946
info@stewartenv.com

Date: 9/17/2007 | Job No.: 3710.001(2)

Attention: Mr. Charles Johnson

RE: Old Erie Landfill Soil Vapor Report

**TO:** CDPHE
Mail Code HMWMD-CP-B2
4300 Cherry Creek Drive South
Denver, CO 80246-1530

We are sending you:

☒ Attached ☐ Drawings ☐ Change Order
☐ Prints ☐ Plans ☐ Specifications
☐ Samples ☐ Other :

| COPIES | DATE | NO. | DESCRIPTION |
|---|---|---|---|
| 1 | 9/14/07 | | Supplemental Soil Investigation - Property South of the Old Erie LF |
| | | | |
| | | | |
| | | | |
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| | | | |

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit 3 copies for distribution
☐ As requested ☐ Return for corrections ☐ Return _ corrected prints
☐ For review and comment ☐
☐ FOR BIDS DUE ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS

RECEIVED
SEP 19 2007
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

COPIES TO: File

SIGNED: C. Irvin

Christel Irvin, Technical Editor

File -

COLORADO DEPARTMENT of HEALTH 4210 East 11th Ave - Denver, CO. 80220

Weld Erie - Columbine

File Copy
Transmittal I.D.#.

# COLORADO DEPARTMENT OF HEALTH

Richard D. Lamm
Governor

Thomas M. Vernon, M.D.
Executive Director

SW/WLO/DRL 22

January 23, 1986

Western Disposal
2560 49th Street
P.O. Box 9100
Boulder, Colorado 80301-9100

Attn: Danny L. Souders

Re: Purchase of Columbine Landfill by Western Disposal

Dear Mr. Souders:

On December 12, 1985, the Waste Management Division of the Colorado Department of Health received your letter dated December 11th which indicated that Western Disposal had purchased the Columbine Landfill from the Keirnes Corporation. You should be aware that this purchase is considered a substantial change in operation which requires an amendment to the existing Certificate of Designation. Substantial change in operation is defined as -- any redesign or planned construction which would significantly change the planned design performance of a facility for solid waste disposal as originally designated, the addition of a category of wastes or other waste handling processes that have not been previously reviewed and accepted as complying with these regulations, or the selling or transferring of the certificate of designation to a new operator.

Based upon this information, your company must request, from the Weld County Board of County Commissioners, a change in the existing Certificate of Designation. Prior to their approval the Commissioners must receive a recommendation for approval from this Department. Therefore, please provide information which adequately and correctly addresses subsection 4.7.1 of the Regulations Pertaining to Solid Waste Disposal Sites and Facilities. This regulation specifically requires information regarding the qualification, names and addresses of the persons operating the facility and who have the authority to take corrective action in the event of non-compliance with these regulations.

Further, because of this purchase, does your company intend to continue using the operational plan already on file or will a new plan be submitted? Please be aware new, or revised plans intended for use will again constitute a substantial change and require an amended Certificate of Designation.

| | | |
|---|---|---|
| Prepared by: Chuck Stewart | Approved by: | Legal Concurrence: |
| Date: 1/23/86 | Date: 1-23-86 | Date: |
| Executive Director's Action: | Signed: RJ | Date Mailed: |
| | Returned unsigned: | Date: |

If you have any questions, please contact me at 320-8333, ext. 4364.

Sincerely,

Scott H. Winters

Scott H. Winters
Geologist
Waste Management Division

SW:ct

cc: Wes Potter; Weld County Health Department
Weld County Board of County Commissioners

SW/WLD/DRL 2.2

HEARING CERTIFICATION DOCKET #82-77

RE: USE BY SPECIAL REVIEW, SANITARY LANDFILL AND CERTIFICATE OF DESIGNATION FOR COLORADO LANDFILL, INC.

A public hearing was conducted on May 4, 1983 at 2:00 P. M., with the following present:

| | |
|---|---|
| Chuck Carlson | Chairman |
| John Martin | Pro Tem |
| Gene Brantner | Commissioner |
| Norman Carlson | Commissioner |
| Jacqueline Johnson | Commissioner |

Also present:

Acting Clerk to the Board, Tommie Antuna
Assistant County Attorney, R. Russell Anson and Lee Morrison
Planning Department Representative, Rod Allison

The following business was transacted:

I hereby certify that pursuant to a notice dated December 22, 1983, and duly published February 3, 1983, in the La Salle Leader, a public hearing was held for the purpose of considering a Use by Special Review for a sanitary landfill and Certificate of Designation for Colorado Landfill, Inc. R. Russell Anson, Assistant County Attorney, read the application and the requirements which the applicant must meet for a Use by Special Review Permit. Rod Allison, read the favorable recommendation of the Weld County Planning Commission. Mr. Allison brought it to the Board's attention that a petition had been submitted by residents of Erie and surrounding landowners, and also letters were submitted by surrounding landowners, which are showing objection to this proposal. Byron Keirnes, part-owner of Colorado Landfill, Inc., was present. He said that what his company proposes to do with this abandoned landfill is operate it for a relatively short period of time, somewhere between 10 and 18 months, and then properly close it. He said that this landfill had originally received a Certificate of Designation in 1971, it was operated as a solid waste disposal site until June, 1979, when the Certificate was revoked. He said he felt the best solution which has been brought forth, showing how to close the disposal site, is to operate the site as a landfill and generate sufficient revenues in order to apply the cover to properly close it. He said if a new Certificate of Designation is granted, his company will take the responsibility to operate the site and properly close it. He briefly commented on some of the things they have already completed, e.g., a fence surrounding the area to prevent unauthorized access and leveled an area on east side of property which has been used to install a tank battery for an oil and gas well. Mr. Keirnes said that at the end of operations the necessary cover will be applied, as required by State regulations, and the site will be returned to farmland or grassland which would be compatible with the surrounding area. Mr. Keirnes said that at the present time there is inadequate cover and improper drainage making the site environmentally unacceptable. He said that their operation would commence to close the site immediately. He briefly commented on his company's ability and expertise to close the site. Mr. Brad Keirnes, also with Colorado Landfill, Inc., said that after a very extensive review, the Colorado Department of Health recommended approval for the Certificate of Designation. After commenting about the proper closure of the Pratt site, Mr. Keirnes presented slides showing the present condition of the Pratt site. Let the record show that Assistant County Attorney R. Russell Anson was excused and replaced by Assistant County Attorney Lee Morrison. After the presentation of the slides Commissioner Brantner asked Mr. Keirnes when they would anticipate to begin to utilize that area. Mr. Keirnes said that they could not begin any operations on the site until a leachate collection system is designed and submitted to the State and the County for approval. When this is completed, operations will begin on the site. He said that their priority is to get the Pratt site cleaned up and closed as soon as possible. Jeffrey Dreyfuss, Erie resident, presented pictures which he said show that in the recent history of the Colorado Landfill, they were out of compliance with their present permit. Mr. Morrison pointed out that the pictures are already a part of the record so they do not have to be resubmitted. Mr. Dreyfuss said the pictures were taken April 9, 1983, and show animals wandering on the property, although the applicant claims that the site is totally fenced. He said all of the pictures were taken by local residents.

Mr. Dreyfuss made other statements concerning the pictures which were presented to the Board. He said that at the Planning Commission meeting, Mr. Brad Keirnes had said that recent amounts of moisture had prevented them from covering the trash, but he felt that perhaps the dump should have been closed for that period of time where they were unable to cover the trash. Mr. Dreyfuss said he feels that the County Commissioners are condoning the way the present site has been run. He said that residents of Erie are concerned that because some of the wells are so shallow, they will get some of the runoff not only from the present site, but the expansion as well. Mr. Dreyfuss said that the quoted sum to cover the site was $100,000, and he requested that the County Engineer verify this figure. Mr. Dreyfuss commented on his concerns of the amount of truck traffic coming in from other counties. After further comments, Mr. Dreyfuss also requested that if this proposal is approved, that the Board add a stipulation that this be the last expansion that this landfill would go through. David Louis, Mayor of Erie, came forward to offer comments. He said that the Erie Board of Trustees was in opposition to any expansion or any recreation of any new landfill dumps. Mr. Louis said he concurs with the comments made by Mr. Dreyfuss. He commented on the number of sea gulls in the area. He said that on April 2, 1983, he had counted a large number of sea gulls present within the landfill site. He said sea gulls present a lethal hazard to aviation and there is an airport within 10,000 feet of the site. Mr. Louis said that large sealed drums were seen being deposited at the current landfill, which is in violation of the permit. Mr. Louis said that there is no system to prevent violations at the site, there is just a sign asking that people comply with the rules, which he compared with having a sign on the outside of a bank asking people not to rob the bank. Mr. Louis commented on the high amount of dust in the area. After further comments by Mr. Louis, Commissioner N. Carlson said that in 1977-1979 when the Board was attempting to close an expansion, the Town of Erie was opposed to the closing. He said he feels this site needs to be properly closed as soon as possible. C. Carlson, Chairman, said there were more birds at the airport than at the landfill. He said that according to the State Health Department, the Keirnes run one of the finest operations in the State. Kathy Meador, Planning Commission member for Town of Erie, alleged that there is non-compliance at the landfill, saying that liquid waste materials have been accepted since 1981. She questioned if this landfill is only for Weld County. She presented documents to the Board which they had received from the Weld County Health Department and the State Health Department. Ms. Meador voiced concerns about the water. She concurred with the previous speakers about the truck traffic. Ms. Meador said asbestos & tires are being dumped at the site. She said that State regulations forbid tires from being put into a landfill because they cannot be buried, they always rise to the surface, collecting bacteria and viruses which can cause disease. Lee Morrison asked for the Section number concerning the tires. Ms. Meador said she would try to find it for him. She said that the residents of Erie do not feel that the cleanup of this area should cost $100,000. She said they are willing to clean it up. Commissioner N. Carlson asked why this had not been done earlier. Ms. Meador said she could ask this question of the State Health Department, why haven't they had this landfill cleaned up earlier. Beverly Cameron, resident of Erie, briefly commented on the increase in trash since the fence has been put up. She said that a letter had been mailed to the Board on behalf of the Homeowners Association on April 14, 1983, asking the Board to consider their opposition to this proposal. She asked that if this is approved, that it be approved with strict conditions and that it should be inspected periodically. Let the record reflect that Russell Anson, Assistant County Attorney, is now back. Ms. Cameron asked what is being done with the surcharge collected. Commissioner N. Carlson explained that the money only goes so far and it can't all be done in one year. He noted which roads have been maintained with the 10% surcharge which the County has received. Don Branham, Erie resident, said he feels that this is becoming a regional dump area. He voiced his objections to this proposal. He said he is concerned that the closing will take longer than the 18 months and the County will extend the time for closing again. C. Carlson, Chairman, said that the projected time is 10 to 18 months, but it will be closed when it is completed whether it is sooner than the projected time or a little longer. Paula Rubin, Erie resident, and a member of the Board of Trustees, said she supported arguments already presented to the Commissioners. Charlotte Kramer, resident of Erie, brought up points from the Comprehensive Plan. She quoted from specific pages of the Plan. Ms. Kramer said she was concerned about the trucks not maintaining the

TAPE CHANGE #83-40

speed limit on the County roads and she is further concerned about the trash being dumpted on the roadside. She asked if the County is responsible for picking up this trash. C. Carlson, Chairman, said that the County is not responsible for this, but he admonished the people to get the license plate number and some type of personal identification. Commissioner Brantner said that a personal identification of the person is needed for prosecution. Ms. Kramer also asked if this dump could be limited to Weld County residents only. Chairman C. Carlson said that this is not possible, this is a public facility. Lynn Peterson came forward to voice her concerns about the truck traffic, she is fearful that the lives of the children are in danger. Kathy Meador presented more comments. John Mazzini voiced his objections to this proposal also. Brad Keirnes addressed the objections raised. He said that the present operation is a regional landfill. He said that due to extreme weather conditions, the waste could not be covered immediately. Mr. Keirnes then commented about the tank trucks at the site. He said that the waste is a sludge with solid content greater than 20%. Mr. Keirnes said that the Colorado State Patrol has been contacted many times regarding the monitoring of traffic on those access roads. Commissioner Brantner asked Mr. Keirnes how they were handling the tires. Mr. Keirnes said they were co-disposing of them with the waste. He said he was not aware of anything in the regulations which states that tires cannot be accepted. He said if they did not accept them, they would probably end up in a gully somewhere. Mr. Dreyfuss came forward again with questions for Mr. Keirnes and he also asked why the dump was not closed when the weather was too bad. Ms. Kramer again brought up questions about the Comprehensive Plan. Rod Allison said he felt she was misinterpreting the Plan. Mr. Anson said that the Comprehensive Plan is used as a guideline to be used in developing the Ordinance. Ms. Meador posed more questions which the Board and Mr. Keirnes answered. Mr. Ned Noack, Geologist for the State Health Department, came forward to respond to questions regarding the Pratt property site. He said that this site could be operated as a landfill and still protect the public health. He said the existing Erie Landfill, which was originally designated in 1979, allows special wastes-like sludges with percent solids greater than 20%. Tires were included in the original designation which was approved by both the State and Weld County Commissioners. He said the sludges have been verified by testing to have a solid content of greater than 20%. Mr. Noack commented on inspection procedures. The Chairman asked for questions or comments from the Board. Mr. Anson said there were no comments on the legal part of this proposal. He made comments regarding the requirements in the Zoning Ordinance for a Use by Special Review and also the additional requirements of the Certificate of Designation. Commissioner Brantner commented on the various types of recycling which have been tried and failed due to the high cost involved. He commented further about how landfills were started. He said that this was a very hard decision to make. Commissioner Brantner moved to approve the Use by Special Review Permit for Colorado Landfill, Inc. and include the conditions as listed, and also to approve the Certificate of Designation. Commissioner N. Carlson seconded the motion. After further comments by the Board and Mr. Anson, the motion carried with Commissioners Brantner, N. Carlson, Johnson and Chairman C. Carlson voting Yea and Commissioner Martin voting Nay.

TAPE CHANGE #83-41

APPROVED:

BOARD OF COUNTY COMMISSIONERS
WELD COUNTY, COLORADO

Chuck Carlson (AYE)
Chuck Carlson, Chairman

John T. Martin (NAY)
John T. Martin, Pro-Tem

Gene R. Brantner (AYE)
Gene R. Brantner

Norman Carlson (AYE)
Norman Carlson

Jacqueline Johnson (AYE)
Jacqueline Johsn

ATTEST: Mary Ann Feuerstein
Weld County Clerk and Recorder
and Clerk to the Board

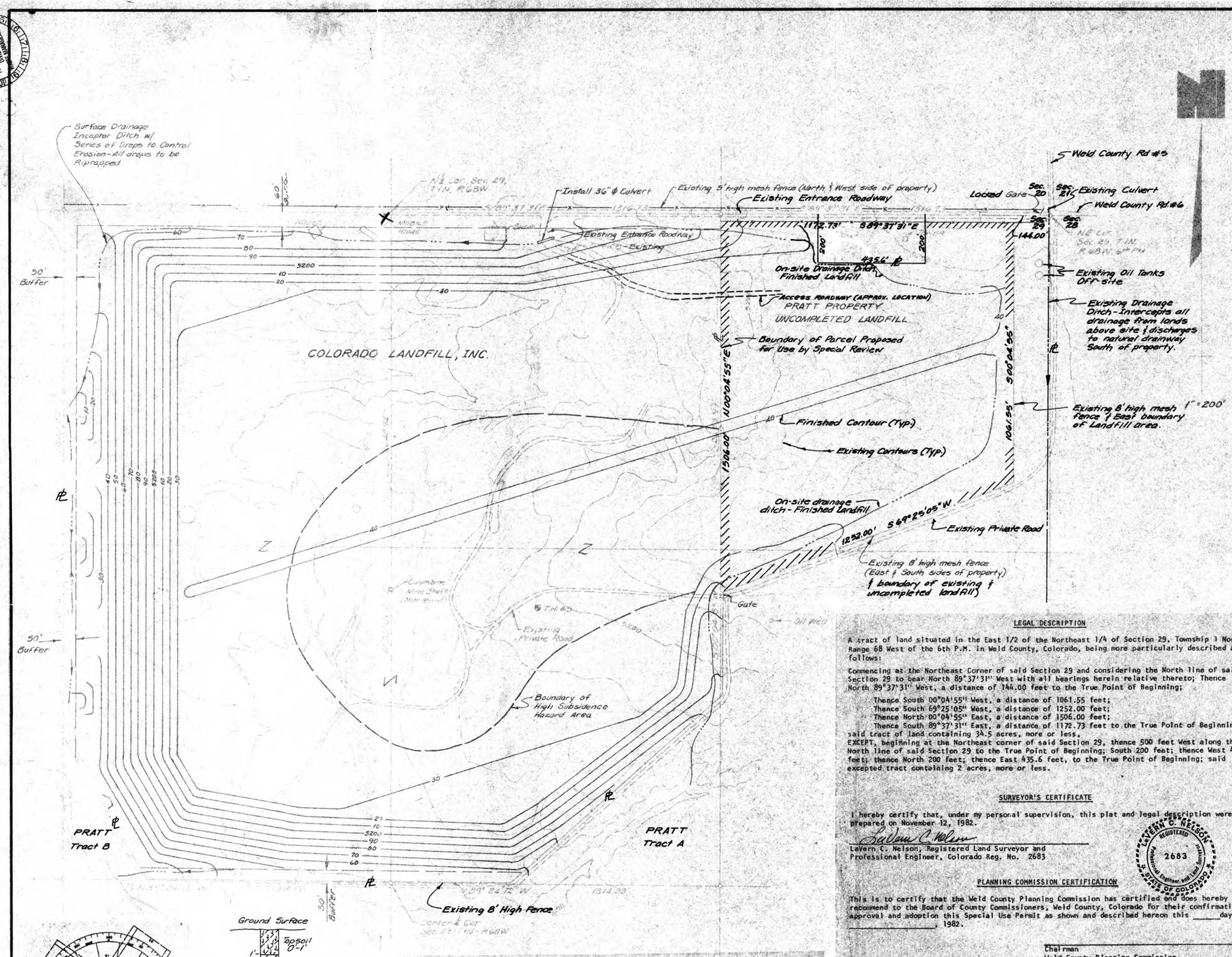
By: Jonnie Gutierrez
Deputy County Clerk

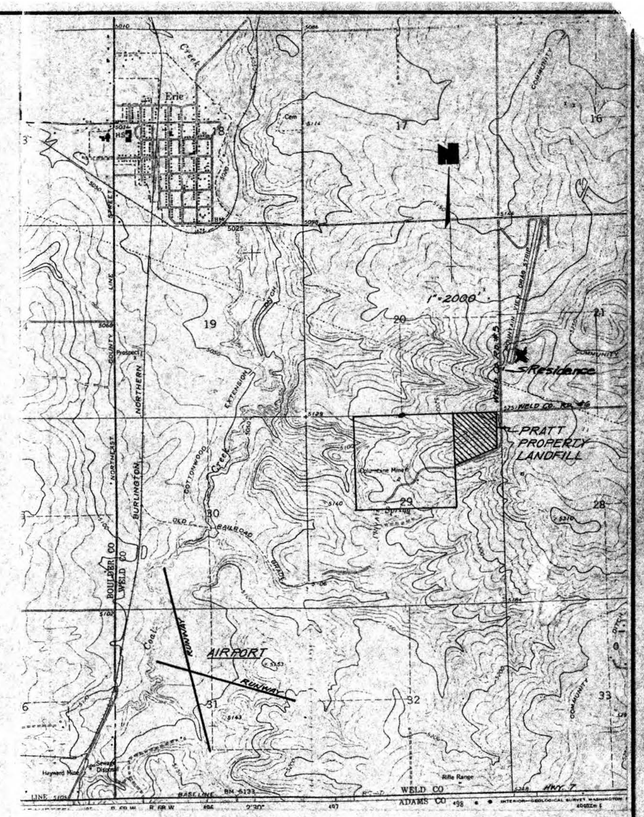
TAPE #83-39, #83-40 and #83-41

DOCKET #82-77

LHR 187

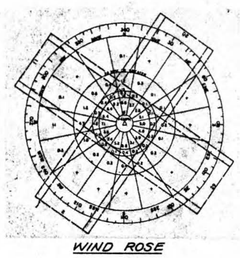
DAY FILE: May 16, 1983



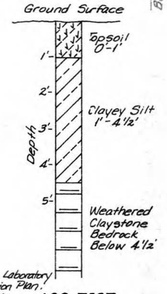




## VICINITY MAP

SCALE 1" = 2000'



WIND ROSE




See also Empire Laboratory Letter in Operation Plan. Typical Soil Profile of the Area.

LOG-TEST HOLE #5

### ADJOINING OWNERSHIP

| LOCATION | OWNER |
|---|---|
| S1/2 SW1/4 Section 20 | Daniel R. Horst |
| SE1/4 Section 20 | Richard Cosslett, et al |
| SW1/4 Section 21 | Daniel R. & Jacqueline S. Horst |
| W1/2 Section 28 | Richard Cosslett, et al |
| E1/2 NE1/4 Section 29 | Kenneth E. Pratt & Karen K. Landers |
| S1/2 Section 29 | |
| W1/2 NW1/4 Section 29 | |
| W1/2 NE1/4 Section 29 | Colorado Landfill, Inc.* |
| E1/2 NW1/4 Section 29 | |
| A part of NE1/4 Section 29 (2 A.) | Stanley Commercial Radio Co. |

*Except Tracts A & B shown on Plat (See legal descriptions in Operations Plan)-Kenneth E. Pratt

All of the above are in Township 1 North, Range 68 West, 6th P.M., Weld County, Colorado.

### LEGAL DESCRIPTION

A tract of land situated in the East 1/2 of the Northeast 1/4 of Section 29, Township 1 North, Range 68 West of the 6th P.M. in Weld County, Colorado, being more particularly described as follows:

Commencing at the Northeast Corner of said Section 29 and considering the North line of said Section 29 to bear North 89°37'31" West with all bearings herein relative thereto; Thence North 89°37'31" West, a distance of 144.00 feet to the True Point Of Beginning;

Thence South 00°04'55" West, a distance of 1061.55 feet;
Thence South 69°25'05" West, a distance of 1252.00 feet;
Thence North 00°04'55" East, a distance of 1506.00 feet;
Thence South 89°37'31" East, a distance of 1172.73 feet to the True Point of Beginning, said tract of land containing 34.5 acres, more or less,
EXCEPT, beginning at the Northeast corner of said Section 29, thence 500 feet West along the North line of said Section 29 to the True Point of Beginning; South 200 feet; thence West 435.6 feet; thence North 200 feet; thence East 435.6 feet, to the True Point of Beginning; said excepted tract containing 2 acres, more or less.

### SURVEYOR'S CERTIFICATE

I hereby certify that, under my personal supervision, this plat and legal description were prepared on November 12, 1982.

LaVern C. Nelson, Registered Land Surveyor and Professional Engineer, Colorado Reg. No. 2683

LAVERN C. NELSON REGISTERED 2683 Professional Engineer and Land Surveyor STATE OF COLORADO

### PLANNING COMMISSION CERTIFICATION

This is to certify that the Weld County Planning Commission has certified and does hereby recommend to the Board of County Commissioners, Weld County, Colorado for their confirmation, approval and adoption this Special Use Permit as shown and described hereon this _____ day of _____, 1982.

Chairman
Weld County Planning Commission

### BOARD OF COUNTY COMMISSIONERS CERTIFICATE

This is to certify that the Board of County Commissioners, Weld County, Colorado does hereby confirm and adopt this Special Use Permit as shown and described hereon this _____ day of _____, 1982.

Chairman
Board of County Commissioners

ATTEST: _____
County Clerk

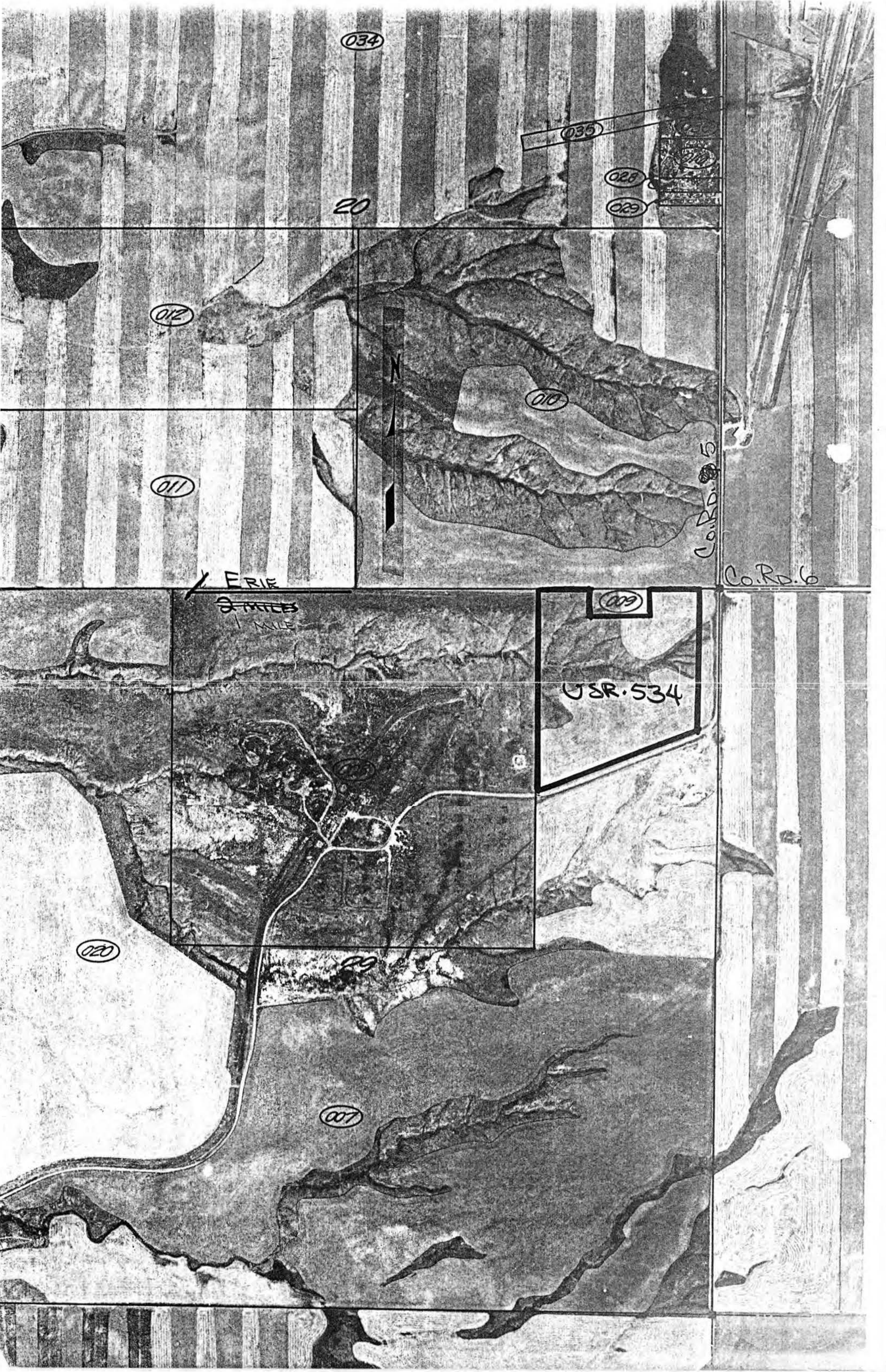
BY: _____
Deputy

RECORDED BY: _____ Date: _____
County Recorder

### PROPERTY OWNER'S APPROVAL

The undersigned major property owner(s) within this Special Use Permit do hereby agree to the Development Standards as described hereon this _____ day of _____, 1982.

| REVISIONS: | DATE: November 12, 1982<br>SCALE: As Noted | DESIGNED:<br>CHECKED:<br>APPROVED: | PROJECT NO. 2017 | NELSON ENGINEERS<br>520 GREELEY NATIONAL PLAZA<br>GREELEY, COLO. 80631 PHONE: 356-6362 | PRATT PROPERTY LANDFILL | COLORADO LANDFILL, INC.<br>EXHIBIT A | SHEET 1 / SHEETS | SHEET 1 |
|---|---|---|---|---|---|---|---|---|


034
035
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Co. Rd. 15
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Erie
~~2 miles~~
1 mile
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USR. 534
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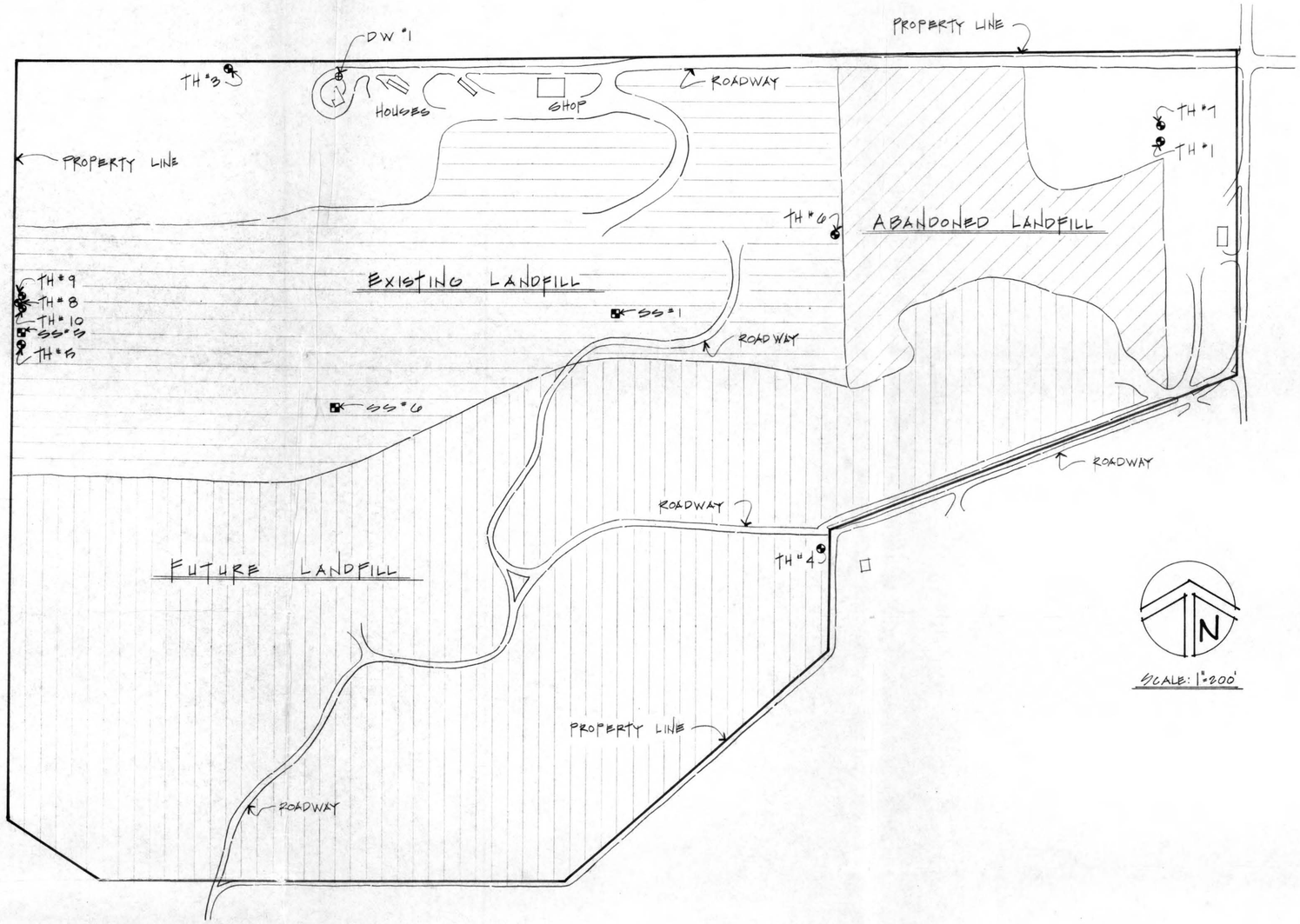
29
007




## LEGEND

| TEST HOLE | DATE DRILLED | |
|---|---|---|
| TH #1 | JAN. 83 | RECOMPLETED SEPT. 83 |
| TH #2 | JAN. 83 | ABANDONED MAY 83 |
| TH #3 | JAN. 83 | |
| TH #4 | JAN. 83 | |
| TH #5 | JAN. 83 | |
| TH #6 | APRIL 83 | |
| TH #7 | SEPT. 83 | |
| TH #8 | SEPT. 83 | |
| TH #9 | SEPT. 83 | REDRILLED AT TH #2 LOCATION |
| TH #10 | SEPT. 83 | NOT COMPLETED |
| DW #1 | DOMESTIC WELL | |
| SS #1 | SURFACE SAMPLE SITE #1 | |
| SS #5 | SURFACE SAMPLE SITE #5 | |
| SS #6 | SURFACE SAMPLE SITE #6 | |

| NO. | DATE | BY | REMARKS |
|---|---|---|---|
| 1 | 4-18-84 | DPS | ADDITION OF SURFACE SAMPLE SITE #6 |

REVISIONS

APPROVED FOR CONSTRUCTION:

JAMES H. STEWART & ASSOCIATES
CONSULTING ENGINEERS
FORT COLLINS, COLORADO • 80521

ENGINEER: DPS | DESIGNED: | CHECKED: DPS | DRAWN: MDL | SURVEY: NONE | SCALE: 1"=200'
DATE: | DATE: | DATE: 2-9-84 | DATE: 2-9-84

CLIENT: COLORADO LANDFILL, INC.

PROJECT: COLUMBINE LANDFILL

UNIT: TEST HOLE LOCATIONS

JOB NUMBERS
J.H.S.&A. 3436-10-83 | CLIENT

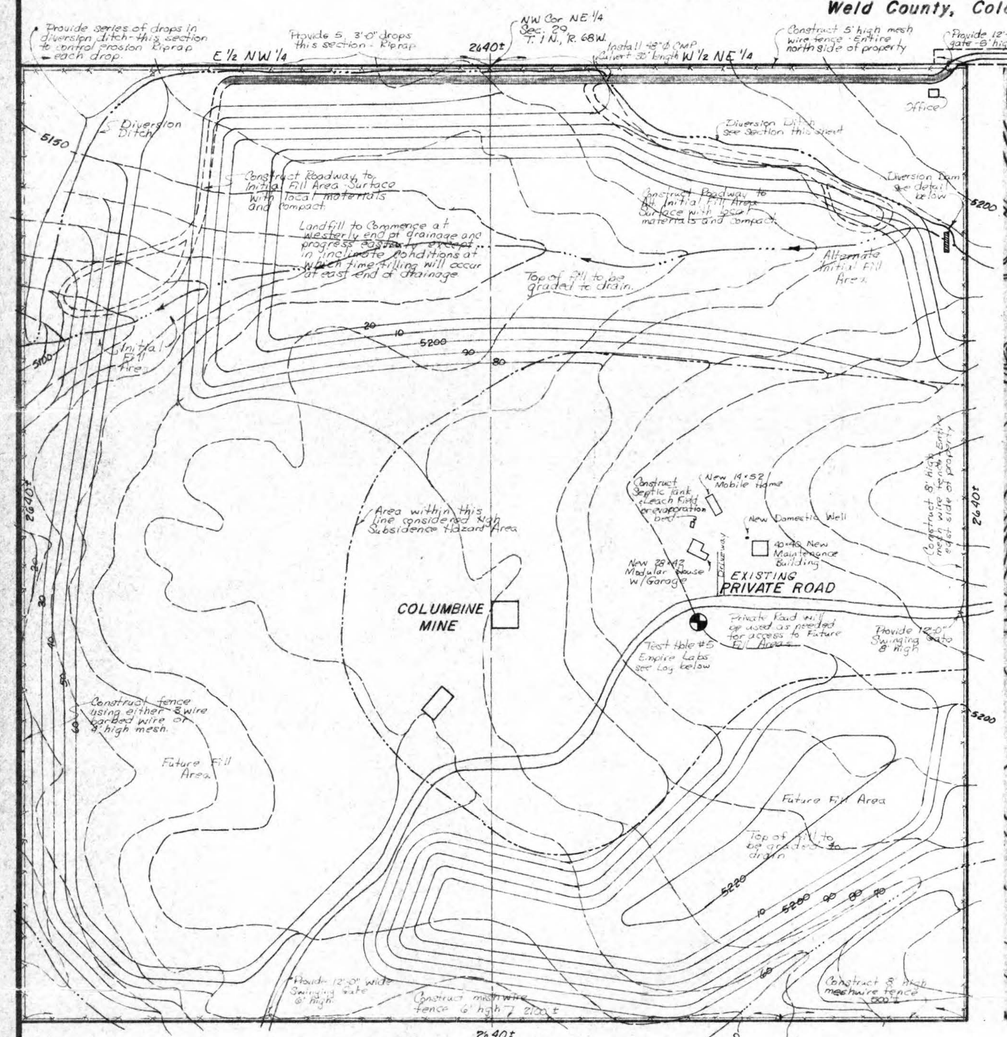
SHEET NUMBER
ONE OF TWO

SPECIAL USE PERMIT

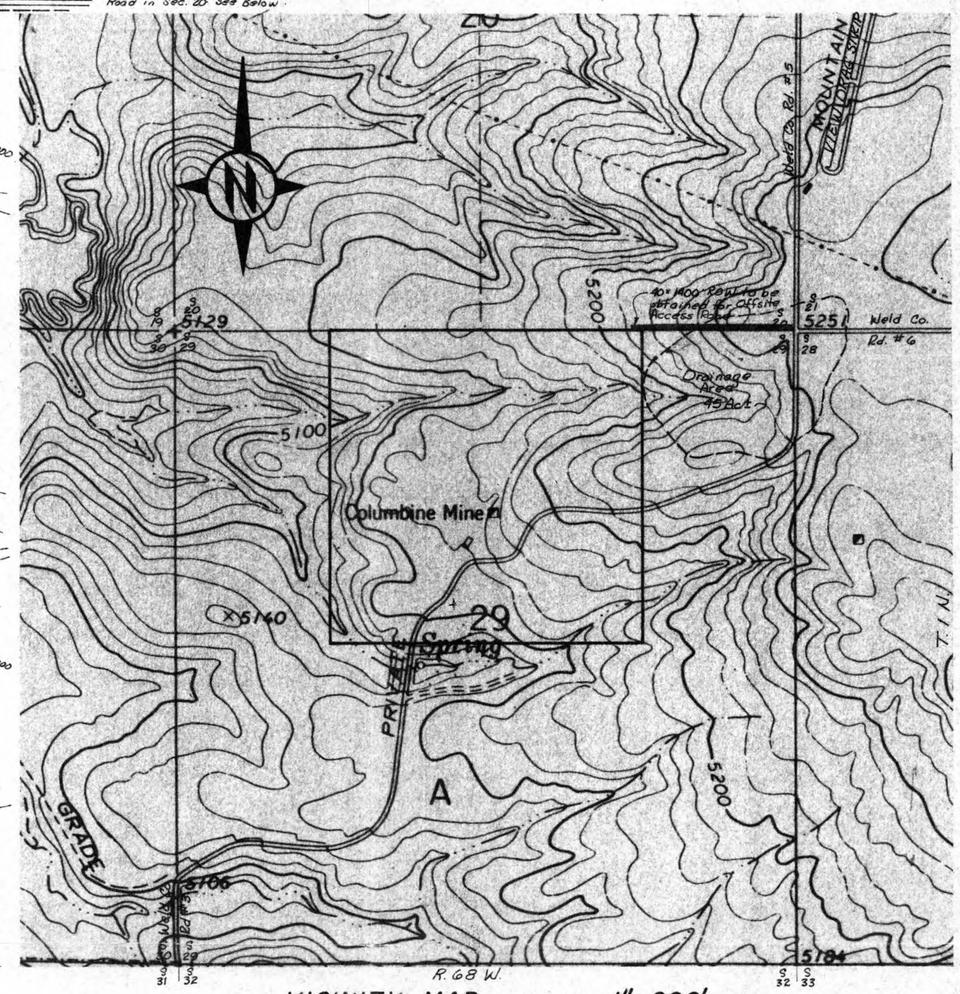
# SOUTHWEST WELD COUNTY LANDFILL SITE

**Located in the E1/2 NW1/4 and the W1/2 NE1/4 Section 29, Township 1 North, Range 68 West, 6th P.M.**

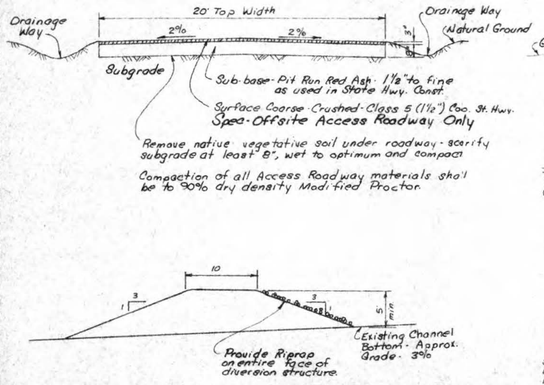
**Weld County, Colorado**



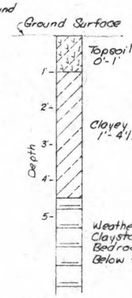

## SITE PLAN 1"=200'




## VICINITY MAP 1"=600'

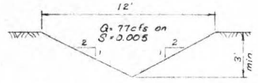



Section - Diversion Dam

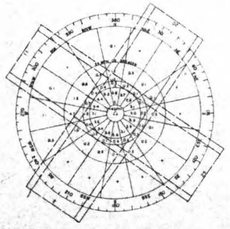



LOG - TEST HOLE #5

See also Empire Laboratory Letter in Operation Plan.




Section - Diversion Ditch (typical)



Wind Rose

### NOTES

1. Build dam with level top from one side of natural drainage to other side.
2. Base of dam shall be scarified at least 8" and recompacted to 90% density prior to placement of fill for dam.
3. Earth fill in dam to be placed in 6" lifts and compacted to 90% of natural density.
4. Riprap to consist of approved imported rock or concrete rubble from landfill operation.
5. Mesh fence to be of 2"X4" welded steel wire mesh.
   8' high fence shall have posts every 8'---buried 4'.
   6' high fence shall have posts every 10'---buried 3'
   4' & 5' high fence shall have posts every 12'---buried 2'6"
6. Native soil suitable for cover to be removed and used for waste cover and the top 1'0" of claystone bedrock scarified and compacted before filling area with solid waste.
7. Foundations for Modular House and Maintenance Building to be placed on bedrock material.
8. Finished Landfill slopes to be approximately 3 to 1. Maximum landfill elevation as shown hereon are estimated. Actual finished elevations will be based upon the amount of cover material available on the site that will provide for a minimum of 2' on all finished fill areas and appropriate intermediate cover as defined in Operation Plan.

### ADJOINING OWNERSHIP

| LOCATION | OWNER |
|---|---|
| S1/2 SE1/4, SECTION 19 | UNION PACIFIC RESOURCES CORP. |
| N1/2 SW1/4, SECTION 20 | UNION PACIFIC RESOURCES CORP. |
| S1/2 SW1/4, SECTION 20 | H. SOL CERONSKY & JACK D. FEVER |
| SE1/4, SECTION 20 | RICHARD COSSLETT, ET.AL. |
| SW1/4, SECTION 21 | DANIEL & JACQUELINE HORST |
| W1/2, SECTION 28 | RICHARD COSSLETT, ET.AL. |
| E1/2 NE1/4, SECTION 29 | KENNETH & ANNA PRATT & KAREN LANDERS |
| S1/2, SECTION 29 | KENNETH & ANNA PRATT & KAREN LANDERS |
| W1/2 NW1/4, SECTION 29 | KENNETH & ANNA PRATT & KAREN LANDERS |
| E1/2, SECTION 30 | BARD LTD. |

### LEGAL DESCRIPTION

THE EAST HALF OF THE NORTHWEST QUARTER AND THE WEST HALF OF THE NORTHEAST QUARTER OF SECTION 29, TOWNSHIP 1 NORTH, RANGE 68 WEST OF THE 6th PRINCIPAL MERIDIAN, WELD COUNTY, COLORADO.

### SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT, UNDER MY PERSONAL SUPERVISION, THIS PLAT AND LEGAL DESCRIPTION WERE PREPARED ON JULY 11, 1979.

LAVERN C. NELSON, REGISTERED LAND SURVEYOR AND PROFESSIONAL ENGINEER, COLORADO REG. NO. 2683

LAVERN C. NELSON REGISTERED 2683 PROFESSIONAL ENGINEER STATE OF COLORADO

### PLANNING COMMISSION CERTIFICATION

THIS IS TO CERTIFY THAT THE WELD COUNTY PLANNING COMMISSION HAS CERTIFIED AND DOES HEREBY RECOMMEND TO THE BOARD OF COUNTY COMMISSIONERS, WELD COUNTY, COLORADO FOR THEIR CONFIRMATION, APPROVAL AND ADOPTION THIS SPECIAL USE PERMIT AS SHOWN AND DESCRIBED HEREON THIS_____DAY OF_____, 1979.

CHAIRMAN
WELD COUNTY PLANNING COMMISSION

### BOARD OF COUNTY COMMISSIONERS CERTIFICATE

THIS IS TO CERTIFY THAT THE BOARD OF COUNTY COMMISSIONERS, WELD COUNTY, COLORADO DOES HEREBY CONFIRM AND ADOPT THIS SPECIAL USE PERMIT AND DEVELOPMENT STANDARDS AS SHOWN AND DESCRIBED HEREON THIS_____DAY OF_____, 1979.

CHAIRMAN
BOARD OF COUNTY COMMISSIONERS

ATTEST:_____
COUNTY CLERK

BY:_____
DEPUTY

RECORDED BY:_____
COUNTY RECORDER DATE:

### PROPERTY OWNER'S APPROVAL

THE UNDERSIGNED MAJOR PROPERTY OWNER(S) WITHIN THIS SPECIAL USE PERMIT DO HEREBY AGREE TO THE DEVELOPMENT STANDARDS AS DESCRIBED HEREON THIS_____DAY OF _____, A.D., 1979.

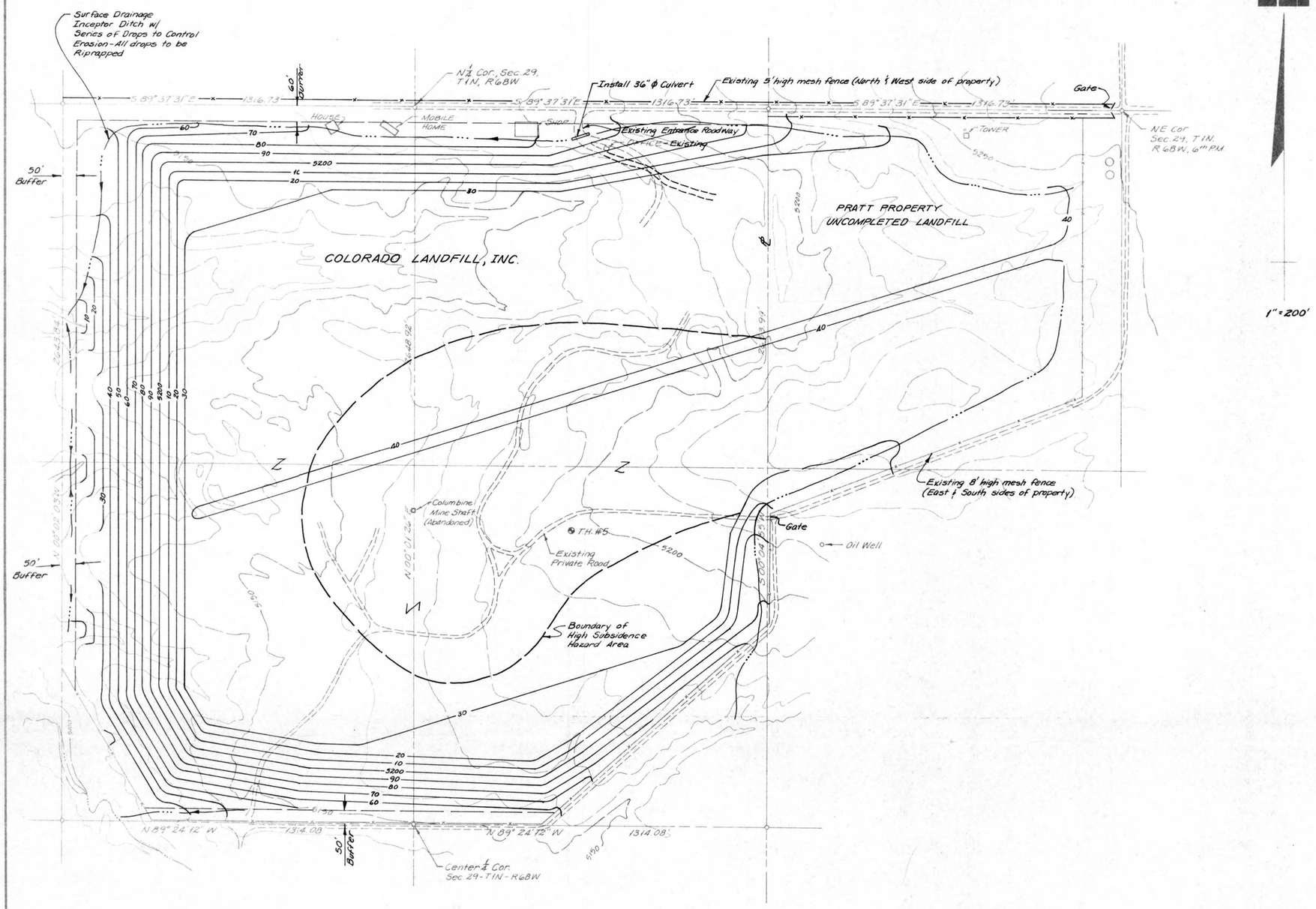
### DEVELOPMENT STANDARDS

1. The permitted use on the hereon described Special Use Permit area shall be a sanitary landfill. Additionally, appropriate equipment and structures may be permitted where clearly incidental and accessory to the landfill use as well as uses permitted in Section 3.3B of the Weld County Zoning Resolution.
2. Selection and placement of all liner materials shall be approved by qualified geotechnical personnel so that proper design will be achieved.
3. All phases of the landfill facilities and operations shall conform with all applicable County, State, and Federal Health Standards and Regulations and any other applicable rules and regulations of government bodies having jurisdiction on the premises.
   A. All phases of the operation must conform to maximum permissible noise levels as stated in 25-12-103, CRS, 1973.
   B. The applicant will be responsible for obtaining an emission permit for fugitive dust.
   C. The applicant shall be responsible for adhering to the provisions of the Colorado Air Pollution Control Commission's Regulation No. 2.
   D. There shall be no discharge of wastes into any streams, other bodies of water, or adjacent drainage systems without obtaining a National Pollution Discharge Elimination System Permit from the Colorado Department of Health.
   E. All phases of the operation must conform to 30-20-101 et. seq., CRS, 1973 for solid waste disposal sites and facilities.
4. Lighting provided for security and night operation on the site shall be designed so that the lighting will not adversely affect surrounding property owners.
5. All accesses shall have the approval of the Weld County Engineering Department. All accesses shall be constructed in accordance with the recommendations and/or requirements of the Weld County Engineering Department.
6. All design and construction shall conform to applicable local, state and national building codes.
7. All structures shall comply with the minimum setback requirements as defined in Section 3.14 of the Weld County Zoning Resolution.
8. The Special Use Permit area shall be maintained in such a manner so as to prevent soil erosion, fugitive dust and growth of noxious weeds. The site shall be maintained in such a manner as to present a neat and well kept appearance.
9. The site shall be appropriately fenced so as to control scattering of wind blown debris and confine all solid wastes discharged to the site. In addition to debris control, livestock and security fencing may be required.
10. Surface drainage diverted from historic patterns through the fill area shall be designed for a 100 year storm frequency (design approval by the Colorado Water Conservation Board).
11. Surface restoration shall be done concurrent with landfill activities where practicable. Restoration shall be done in accordance with Soil Conservation Service recommendations or with approval of the Soil Conservation Service.
12. The Special Use Permit shall be limited to the plans shown hereon and governed by the Development Standards stated above and all applicable Weld County Regulations. Any material deviations from the plans and/or Development Standards as shown or stated above shall require the approval of an amendment to the Special Use Permit by the Planning Commission and the Board of County Commissioners before such changes from the plans and/or Development Standards shall be permitted. Any other changes from the plans and/or Development Standards shall be filed in the office of the Department of Planning Services.

S.W. - Weld County
Laidlaw South

Exhibit A
~~Exhibit No. 2~~

79090




S. W. - Weld County
Laidlaw South

| REVISIONS: | DATE: September, 1982<br>SCALE: 1" = 200' | DESIGNED:<br>CHECKED:<br>APPROVED: | PROJECT NO. 9020 | NELSON ENGINEERS<br>520 GREELEY NATIONAL PLAZA<br>GREELEY, COLO. 80631 PHONE: 356-6362 | SOUTHWEST WELD COUNTY LANDFILL | COLORADO LANDFILL, INC.<br>EXHIBIT B | SHEET 1 / SHEETS 1 |
|---|---|---|---|---|---|---|---|

SW/OLD/OEL 2.4

**PRATT PROPERTY**
**CLOSURE PLAN**

**LAIDLAW WASTE SYSTEMS INC.**

Oberlink Copy

IC Project No. 2-1803

Prepared For:

Laidlaw Waste Systems Inc.
6015 East 58th Avenue
Commerce City, Colorado 80022

Prepared by:

Industrial Compliance, Inc.
511 Orchard Street
Golden, Colorado 80110

March 28, 1988

LAIDLAW WASTE SYSTEMS INC.

March 28, 1988

Mr. Steve Orzynski, P.E.
Public Health Engineer
Colorado Department of Health
Hazardous Materials and Waste Management Division
4210 East 11th Avenue
Denver, Colorado 80220

Subject: Transmittal of closure documents for the Pratt Property revegetation and monitoring.

Dear Mr. Orzynski:

The enclosed document fulfills the requirements set forth by Weld County and the Colorado Department of Health for the final closure of the Pratt Property adjacent to the Laidlaw South Landfill in Weld County, Colorado. Laidlaw Waste Systems Incorporated has committed to revegetating the property, installing a methane venting system and to continue monitoring for subsidence and ground-water quality at the property.

Laidlaw will complete the revegetation of the Pratt Property by June 1, 1988. Also, the proposed methane venting system will be installed at the Pratt Property by August 31, 1988.

Thank you for your time and please let us know if you have any questions or require any further information regarding the facility.

Sincerely,

Danamarie Schmitt

Danamarie Schmitt
Special Projects Manager
Laidlaw Waste Systems, Inc.

cc: Weld County Commissioners
Weld County Planning Department
Weld County Health Department

6015 EAST 58TH AVENUE, COMMERCE CITY, COLORADO 80022-3994 (303) 288-5558