

**GW349**

**GENERAL  
CORRESPONDENCE**

**2005**

## Chavez, Carl J, EMNRD

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**From:** Wynn, Tom R [Tom.R.Wynn@conocophillips.com]  
**Sent:** Tuesday, June 14, 2011 1:54 PM  
**To:** VonGonten, Glenn, EMNRD  
**Cc:** Chavez, Carl J, EMNRD; 'Pope, Greg'

Mr. Glenn VonGonten:

Per our teleconference today, ConocoPhillips (COP) requested that the sampling frequency at Line NM1-1 (AP – 10) and East Hobbs Junction (AP – 15) move from a quarterly to semi annually. The request comes after COP installed four six inch recovery wells at Line NM1-1 and has demonstrated that the additional recovery wells have improved product recovery rates. The plumes at both project sites appear to be stable and that quarterly sampling is not necessary to move the projects forward. The New Mexico OCD approved the sample frequency change from quarterly to semi annual for both projects. The next sampling event on a semi annual basis will occur in October 2011 and will be followed by an annual report for both projects.

ConocoPhillips and Tetra Tech appreciated the time provided by the NMOCD to discuss these projects and we look forward to discussing additional projects with you in the near future.

Regards,

Tom Wynn

Thomas (Tom) Wynn  
ConocoPhillips  
Site Manager  
Risk Management and Remediation  
1608-01 Phillips Building  
420 S. Keeler  
Bartlesville, OK 74004  
Voice: 918-661-0310  
Fax: 918-662-4192  
Cell: 918-876-2337  
E-mail: [tom.r.wynn@conocophillips.com](mailto:tom.r.wynn@conocophillips.com)

GW 349

 **ConocoPhillips**

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**LINE NM1-1  
REMEDIATION SITE  
Hobbs, New Mexico**

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**OPERATION & MAINTENANCE  
PERFORMED BY**

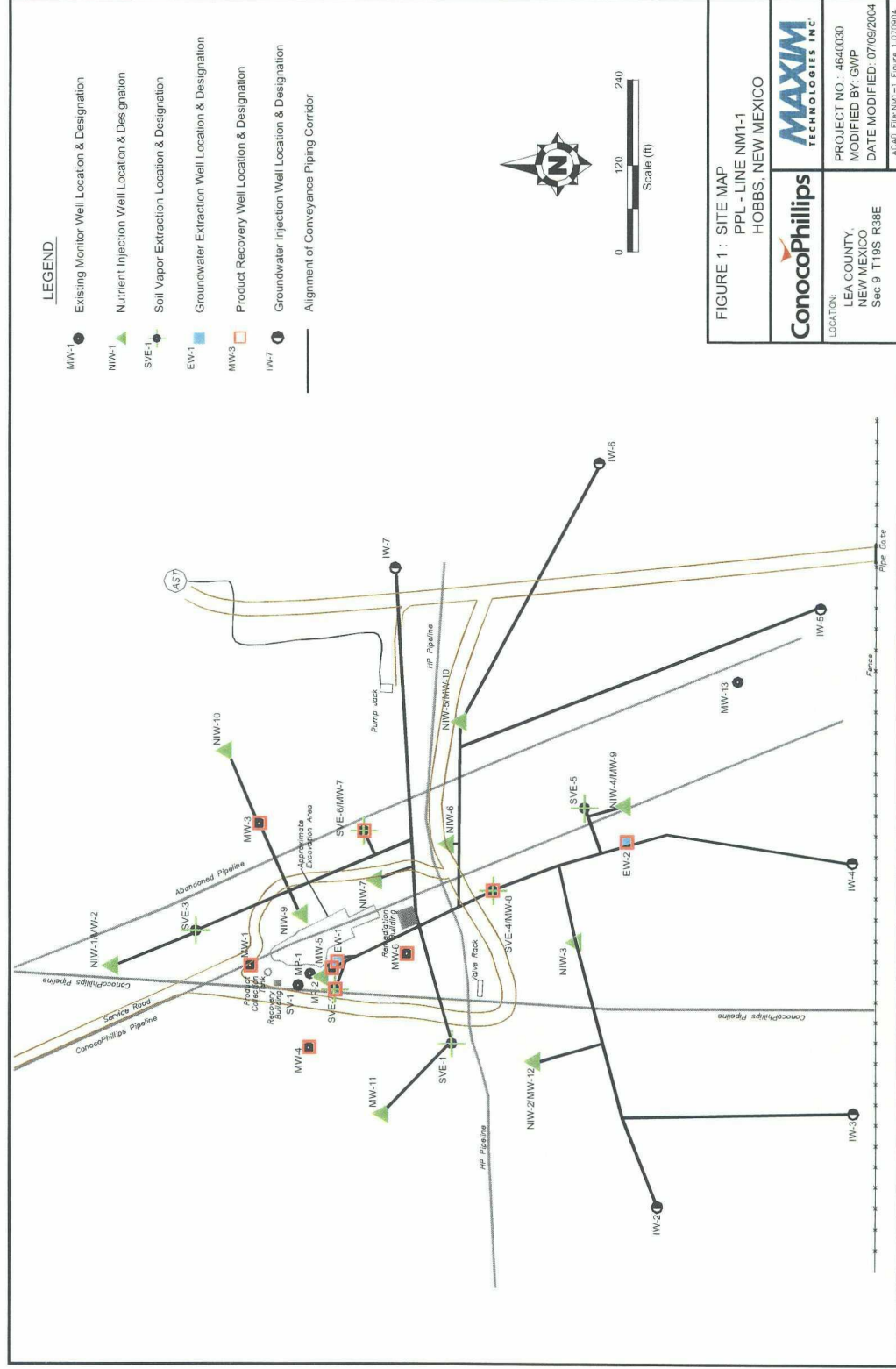


### **Project History**

- Project activities commenced at the site in 1999 following the discovery of a release of crude oil from gathering line NM1-1.
- Assessment and remediation activities have been conducted at the site to define and address the crude oil impacts.
- An abatement action was enacted consisting of the installation of a comprehensive soil and groundwater remediation system.
- The remediation system consists of a crude oil recovery system using pneumatic skimmer pumps, a groundwater extraction, treatment and re-injection system, and an enhanced-bioremediation system consisting of bio-venting and nutrient injection.
- Recovered and treated groundwater is re-injected into the aquifer utilizing on-site groundwater injection wells according to a discharge permit issued by the OCD.
- Recovered crude oil is transferred to an on-site storage tank and periodically transported to the Gaines Pump Station where it is injected into the main crude oil pipeline.



### Site Layout



**Site Facilities**

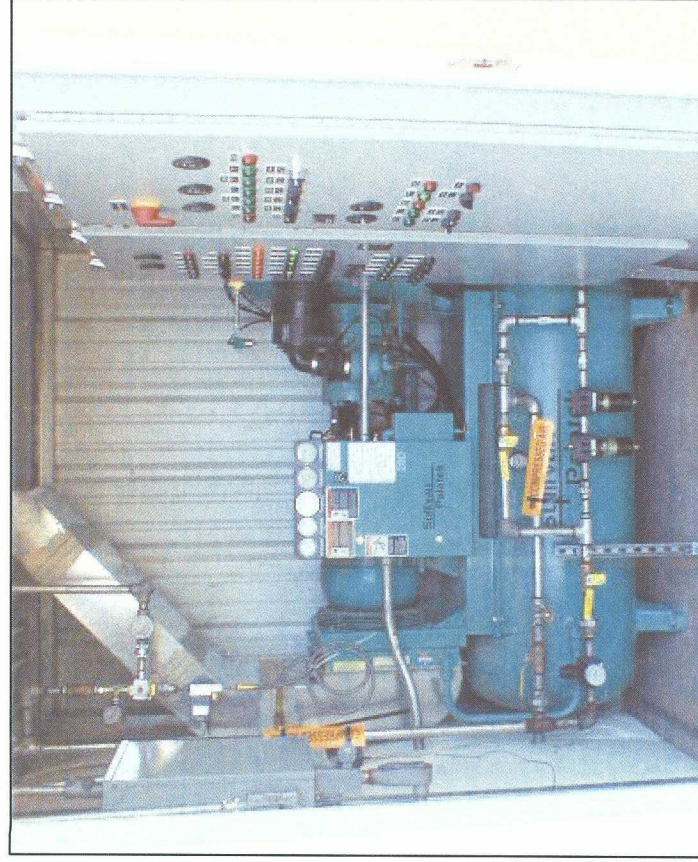
- Main remediation building with soil vapor extraction (SVE) blower system; air compressor; nutrient injection system; oil/water separator (OWS); air stripper tower and water filtration system; SVE, nutrient injection, and groundwater extraction and re-injection well headers; two 3,000 gallon GAC vessels; a 525 gallon oil storage tank and secondary containment for OWS; and associated electrical controls.
- Secondary remediation shed with standby air compressor, recovery well headers, electrical controls and supplies storage.
- 140-barrel crude oil storage tank with secondary containment berm and perimeter security fencing.

## Main Remediation Building





**Primary Air Compressor and  
System Controls Room**

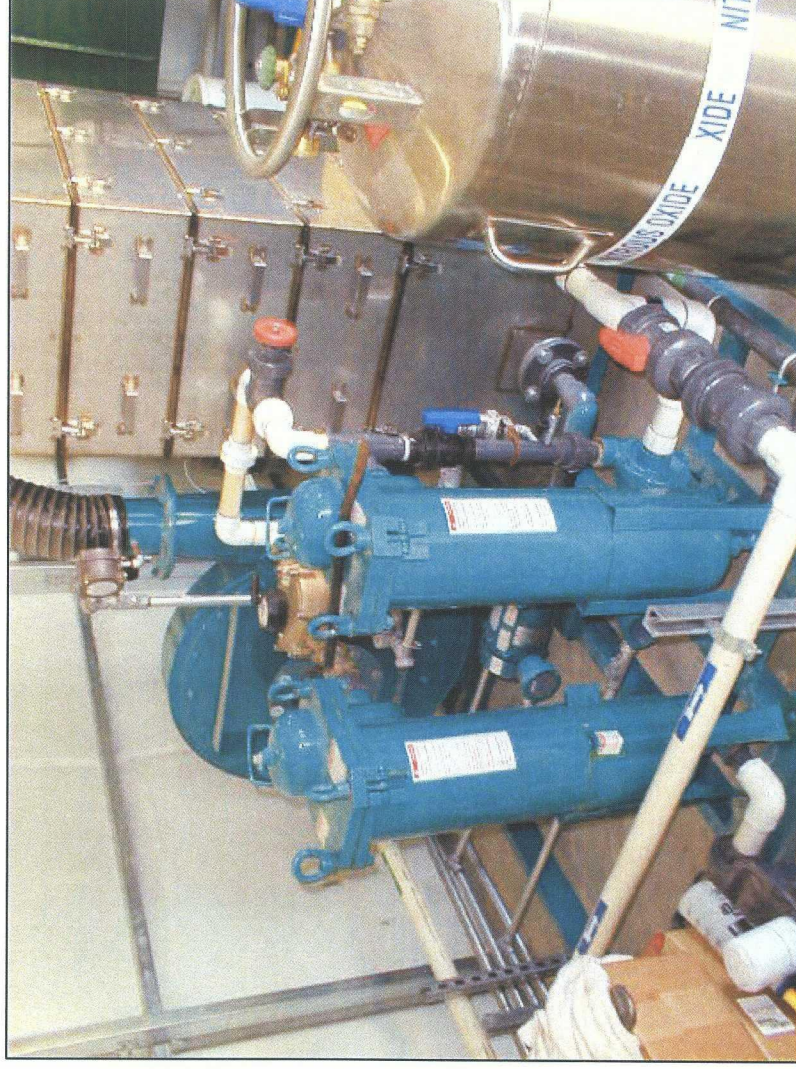


**Main Remediation System  
Components Room**





## Groundwater Extraction and Treatment System Air Stripping and Filtration



## Groundwater Extraction and Treatment System Oil/Water Separator





## Groundwater Extraction and Treatment System GAC Vessels



**Roton EN14 Explosion-Proof  
Regenerative Blower Skid**





## Groundwater Re-injection & Nutrient Injection Flow Control Headers



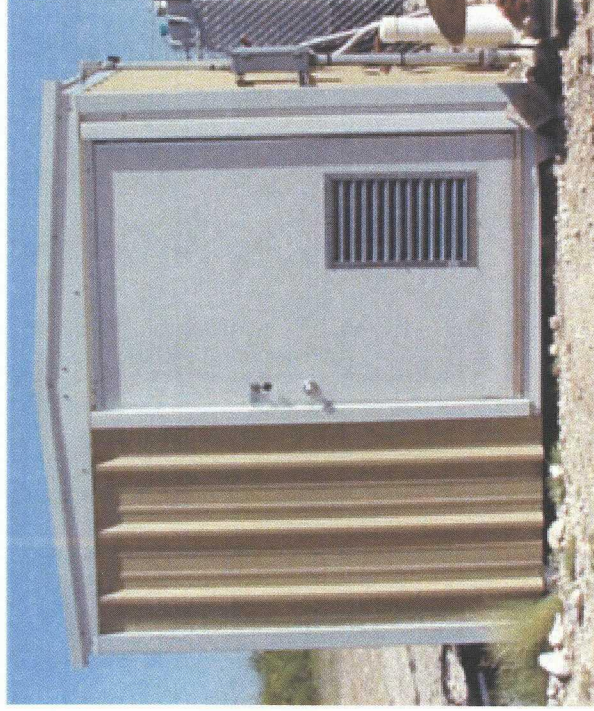




## Line NM1-1 Remediation Site

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Secondary Remediation  
Shed With Standby  
Compressor



Main 140-bbl Crude Oil  
Storage Tank



**Remediation Wells**

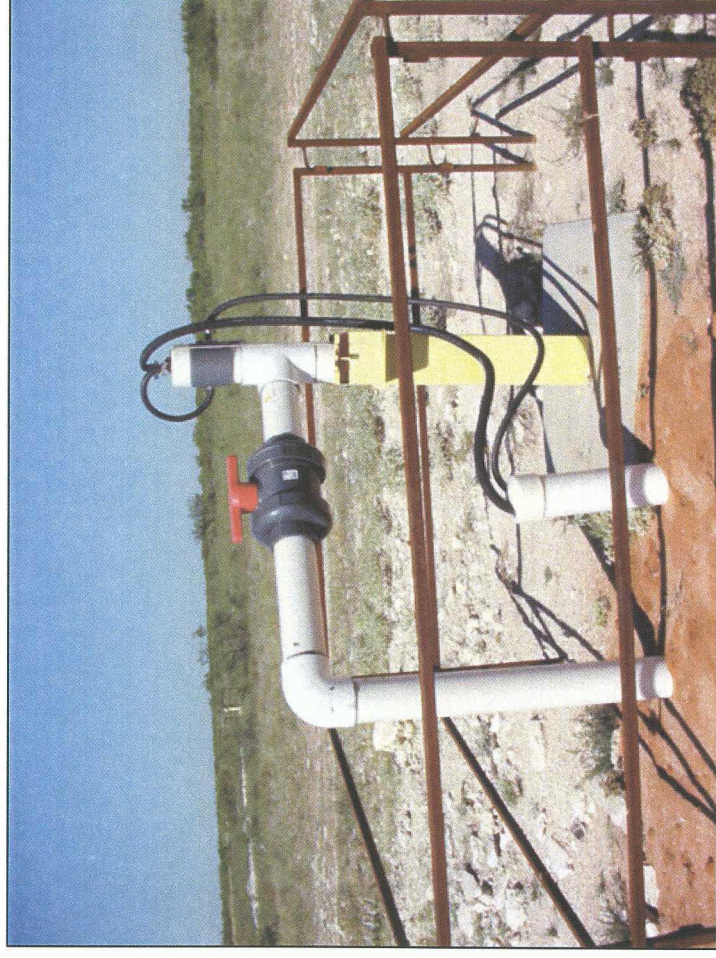
- Five (5) crude oil recovery wells only with pneumatic skimmer pumps.
- Three (3) dual phase wells with pneumatic skimmer pumps for crude oil recovery and SVE bioventing.
- Six (6) SVE wells for bioventing only.
- Ten (10) nutrient injection wells for nitrous oxide injection only.
- Two (2) groundwater extraction wells with submersible groundwater pumps and oil skimmer pumps also.
- Six (6) groundwater re-injection wells.



**Crude Oil Recovery Well With  
Pneumatic Skimmer Pump**



**Dual-Phase Recovery Well  
With SVE & Skimmer Pump**





## Nutrient Injection Well

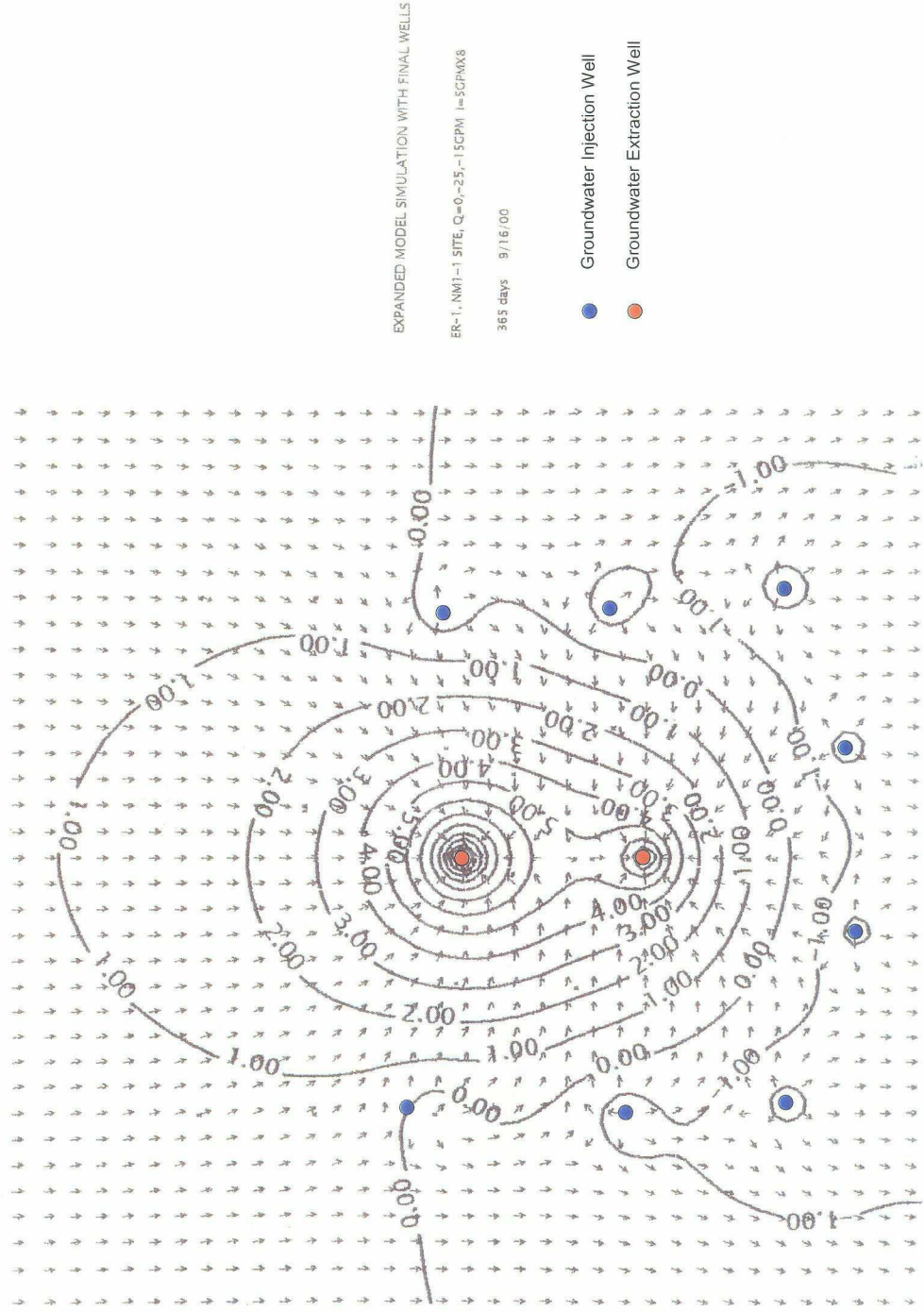




**Initial Groundwater Modeling Parameters**

- Hydraulic Conductivity (K) =  $1.4 \times 10^{-3}$  cm/sec (3.97 feet/day).
- Hydraulic Gradient (*i*) = 0.0047 feet/foot.
- Average Velocity (*v*) = 27 feet/year.
- Effective Porosity (*n<sub>e</sub>*) = 25%.
- Bulk Density = 1.54 g/mL
- Groundwater Depth = 22 feet below ground surface.
- Pumping Rate (Q) = 25 gpm @ EW-1 + 15 gpm @ EW-2
- Injection Rate = 5 gpm X 8 injection wells

**Groundwater Model Simulation Output**



## Line NM1-1 Remediation Site

 **ConocoPhillips**

### Actual Groundwater Parameters

*Actual Groundwater Parameters* = 0.0015 – 0.0027 feet/foot.

- Hydraulic Gradient = south-southeast
- Flow Direction = 30 – 36 feet below ground surface.
- Groundwater Depth = 1.5 – 10.4 gpm @ EW-1
- Pumping Rate (Q) = 0.3 – 2.4 gpm @ EW-2



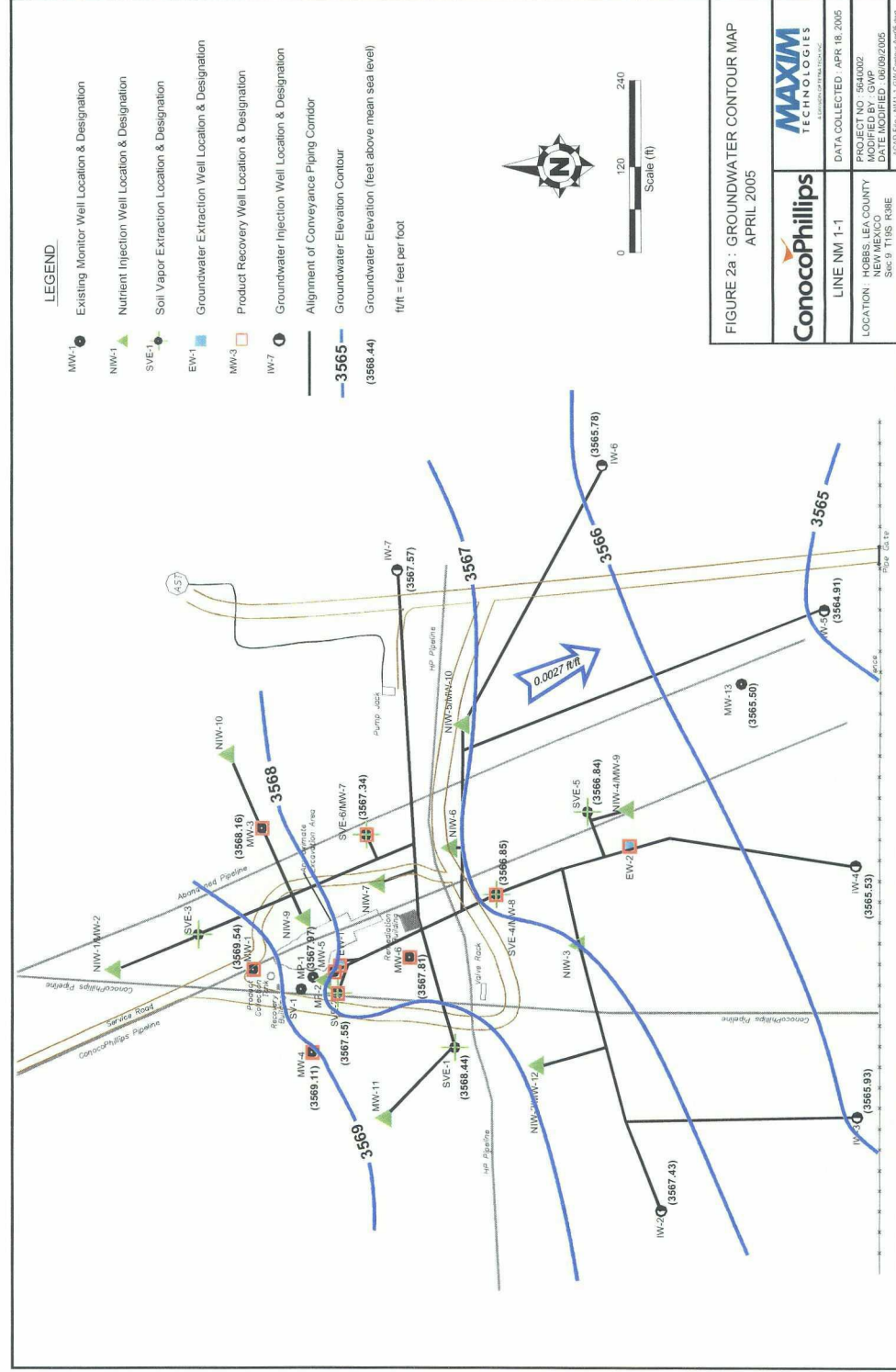


## Line NM1-1 Remediation Site

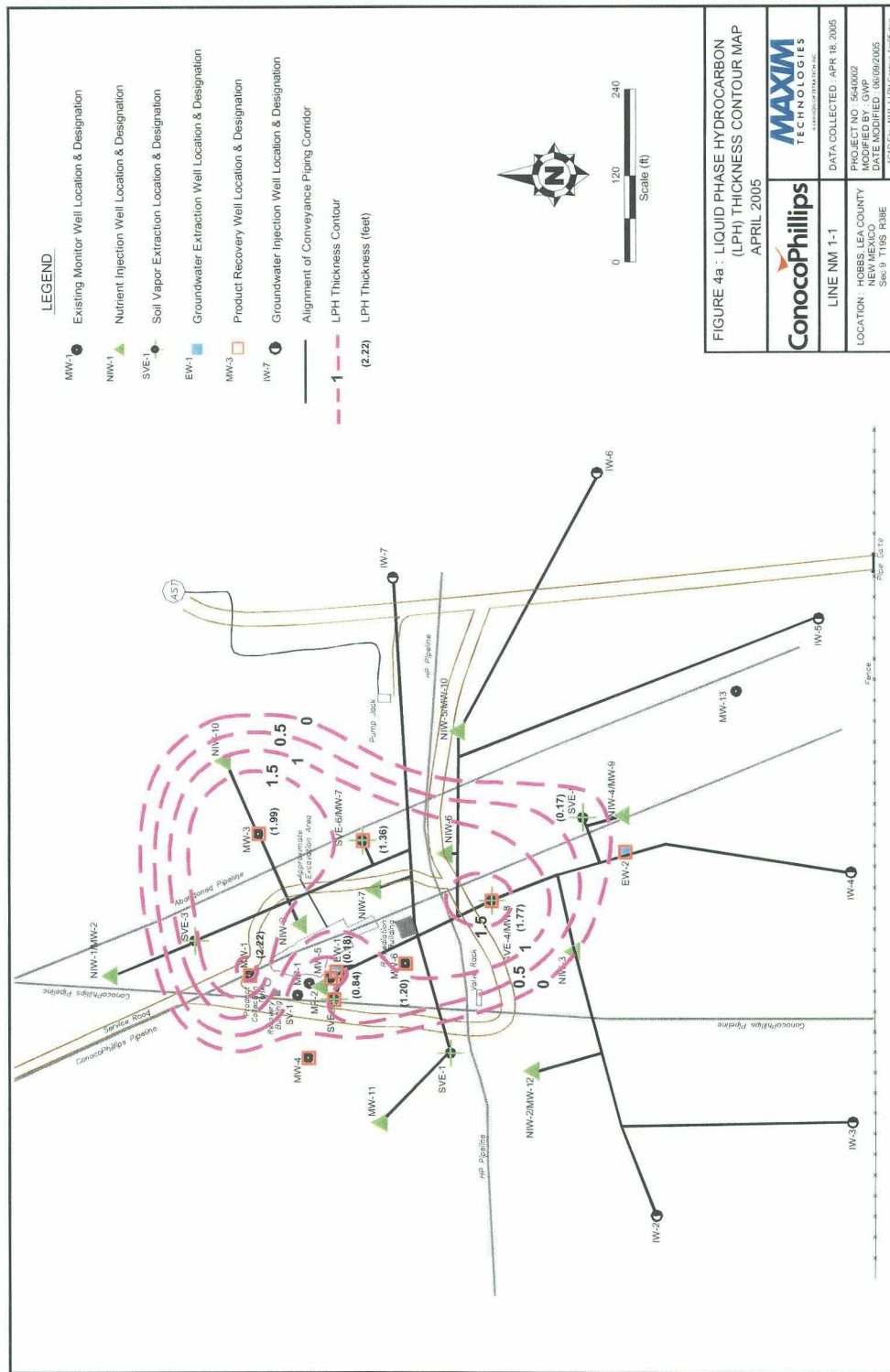
### Groundwater Elevations & Liquid-Phase Hydrocarbon (LPH) Thickness Table

| Well<br>Number | Sample<br>Date | Casing<br>Elevation | Depth to<br>Water | Depth to<br>L.P.H. | L.P.H.<br>Thickness | L.P.H.<br>Thickness X<br>0.8 | Adjusted<br>Depth<br>to Water | Groundwater<br>Elevation | Jan-Apr<br>GW Elev<br>Diff | Jan-Apr<br>L.P.H.<br>ThickDiff | Apr04-05<br>GW Elev<br>Diff | Apr04-05<br>L.P.H.<br>ThickDiff |
|----------------|----------------|---------------------|-------------------|--------------------|---------------------|------------------------------|-------------------------------|--------------------------|----------------------------|--------------------------------|-----------------------------|---------------------------------|
| MW-1           | 04/18/05       | 3603.30             | 35.54             | 33.32              | 2.22                | 1.78                         | 33.76                         | 3569.54                  | -0.76                      | 1.78                           | 4.48                        | -2.56                           |
| MW-2           | NM             | 3601.57             |                   |                    | 0.00                |                              |                               |                          |                            |                                |                             |                                 |
| MW-3           | 04/18/05       | 3602.77             | 36.20             | 34.21              | 1.99                | 1.59                         | 34.61                         | 3568.16                  | -0.76                      | 0.28                           | 4.46                        | -1.78                           |
| MW-4           | 04/18/05       | 3601.70             | 32.59             | 32.59              | 0.00                | 0.00                         | 32.59                         | 3569.11                  | -0.35                      | -0.01                          | 4.28                        | -2.54                           |
| MW-5           | 04/18/05       | 3601.54             | 33.71             | 33.53              | 0.18                | 0.14                         | 33.57                         | 3567.97                  | -0.43                      | -0.11                          | 4.27                        | -2.99                           |
| MW-6           | 04/18/05       | 3599.83             | 32.98             | 31.78              | 1.20                | 0.96                         | 32.02                         | 3567.81                  | -0.40                      | 0.06                           | 4.13                        | -2.55                           |
| MW-7           | 04/18/05       | 3602.11             | 35.86             | 34.50              | 1.36                | 1.09                         | 34.77                         | 3567.34                  | -0.60                      | 0.64                           | 4.14                        | 0.27                            |
| MW-8           | 04/18/05       | 3598.87             | 33.44             | 31.67              | 1.77                | 1.42                         | 32.02                         | 3566.85                  | -0.35                      | -0.14                          | 4.02                        | -2.44                           |
| MW-9           | NM             | 3601.05             |                   |                    | 0.00                |                              |                               |                          |                            |                                |                             |                                 |
| MW-10          | NM             | 3602.96             |                   |                    | 0.00                |                              |                               |                          |                            |                                |                             |                                 |
| MW-11          | NM             | 3600.67             |                   |                    | 0.00                |                              |                               |                          |                            |                                |                             |                                 |
| MW-12          | NM             | 3599.35             |                   |                    | 0.00                |                              |                               |                          |                            |                                |                             |                                 |
| MW-13          | 04/18/05       | 3601.67             | 36.17             |                    | 0.00                | 0.00                         | 36.17                         | 3565.50                  | -0.14                      |                                | 3.58                        |                                 |
| IW-2           | 04/18/05       | 3597.87             | 30.44             |                    | 0.00                | 0.00                         | 30.44                         | 3567.43                  | 0.12                       |                                | 3.35                        |                                 |
| IW-3           | 04/18/05       | 3597.30             | 31.37             |                    | 0.00                | 0.00                         | 31.37                         | 3565.93                  | 0.04                       |                                | 2.81                        |                                 |
| IW-4           | 04/18/05       | 3596.13             | 30.60             |                    | 0.00                | 0.00                         | 30.60                         | 3565.53                  | -0.01                      |                                | 3.25                        |                                 |
| IW-5           | 04/18/05       | 3599.89             | 34.98             |                    | 0.00                | 0.00                         | 34.98                         | 3564.91                  | -0.07                      |                                | 3.48                        |                                 |
| IW-6           | 04/18/05       | 3599.71             | 33.93             |                    | 0.00                | 0.00                         | 33.93                         | 3565.78                  | -0.39                      |                                | 4.00                        |                                 |
| IW-7           | 04/18/05       | 3600.64             | 33.07             |                    | 0.00                | 0.00                         | 33.07                         | 3567.57                  | -0.71                      |                                | 4.29                        |                                 |
| SVE-1          | 04/18/05       | 3598.68             | 30.24             |                    | 0.00                | 0.00                         | 30.24                         | 3568.44                  | -0.23                      |                                | 3.76                        |                                 |
| SVE-2          | 04/18/05       | 3601.17             | 34.29             | 33.45              | 0.84                | 0.67                         | 33.62                         | 3567.55                  |                            |                                |                             |                                 |
| SVE-3          | NM             | 3601.40             |                   |                    |                     |                              |                               |                          |                            |                                |                             |                                 |
| SVE-5          | 04/18/05       | 3600.54             | 33.84             | 33.67              | 0.17                | 0.14                         | 33.70                         | 3566.84                  | -0.30                      | 0.05                           | 3.90                        | -3.52                           |
| EW-1           | NM             | 3598.57             |                   |                    |                     |                              |                               |                          |                            |                                |                             |                                 |
| EW-2           | NM             | 3597.95             |                   |                    |                     |                              |                               |                          |                            |                                |                             |                                 |
| MP-1           | 04/18/05       | 3601.87             | 21.90             |                    | 0.00                | 0.00                         | 21.90                         |                          |                            |                                |                             |                                 |
| MP-2           | NM             | 3601.87             |                   |                    |                     |                              |                               |                          |                            |                                |                             |                                 |
| SV-1           | 04/18/05       | 3602.16             | 22.86             |                    | 0.00                | 0.00                         | 22.86                         |                          |                            |                                |                             |                                 |

### Groundwater Elevation Contour Map – April 18, 2005

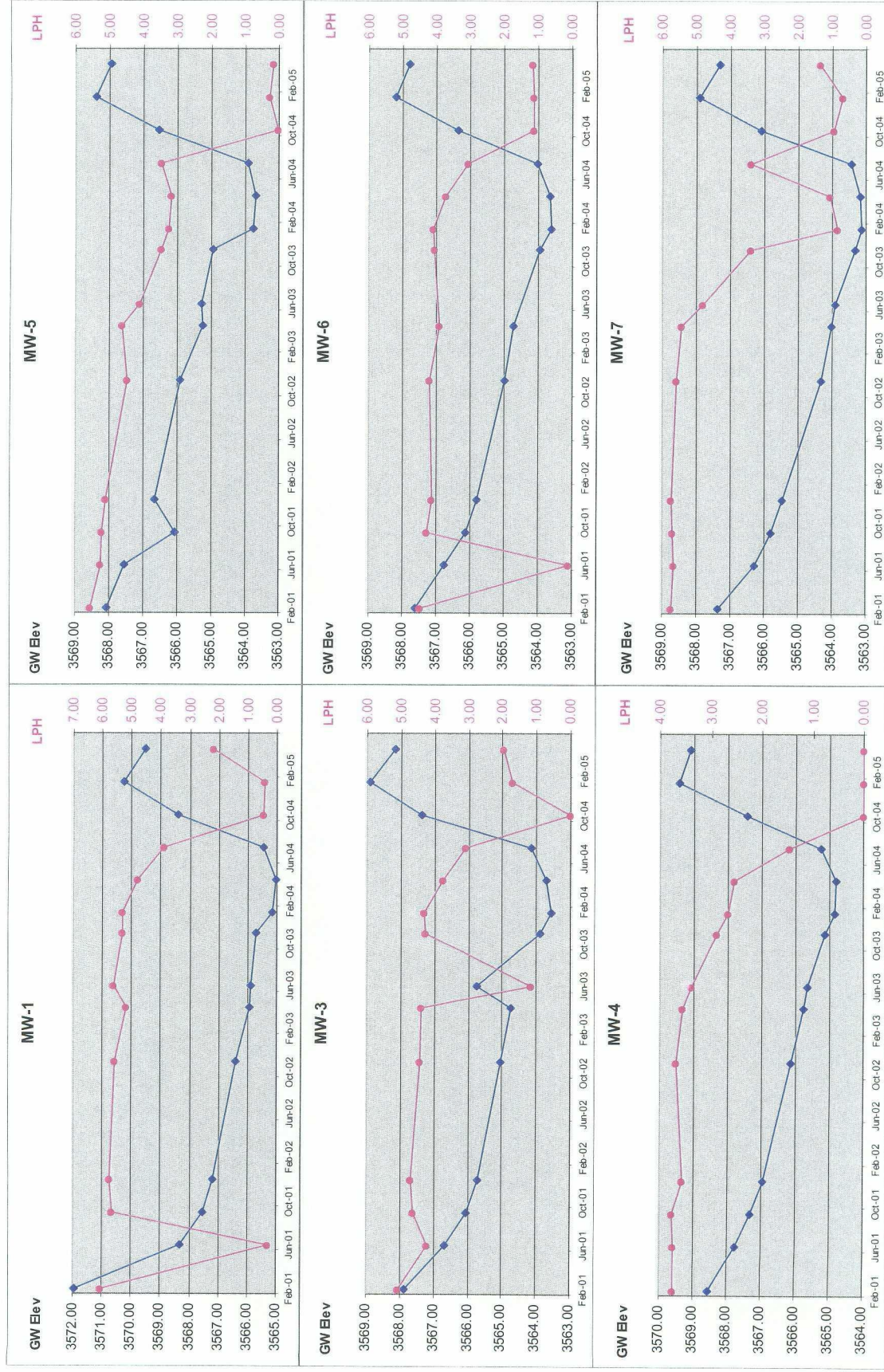


**Liquid Phase Hydrocarbon Thickness Contour Map – April 18, 2005**



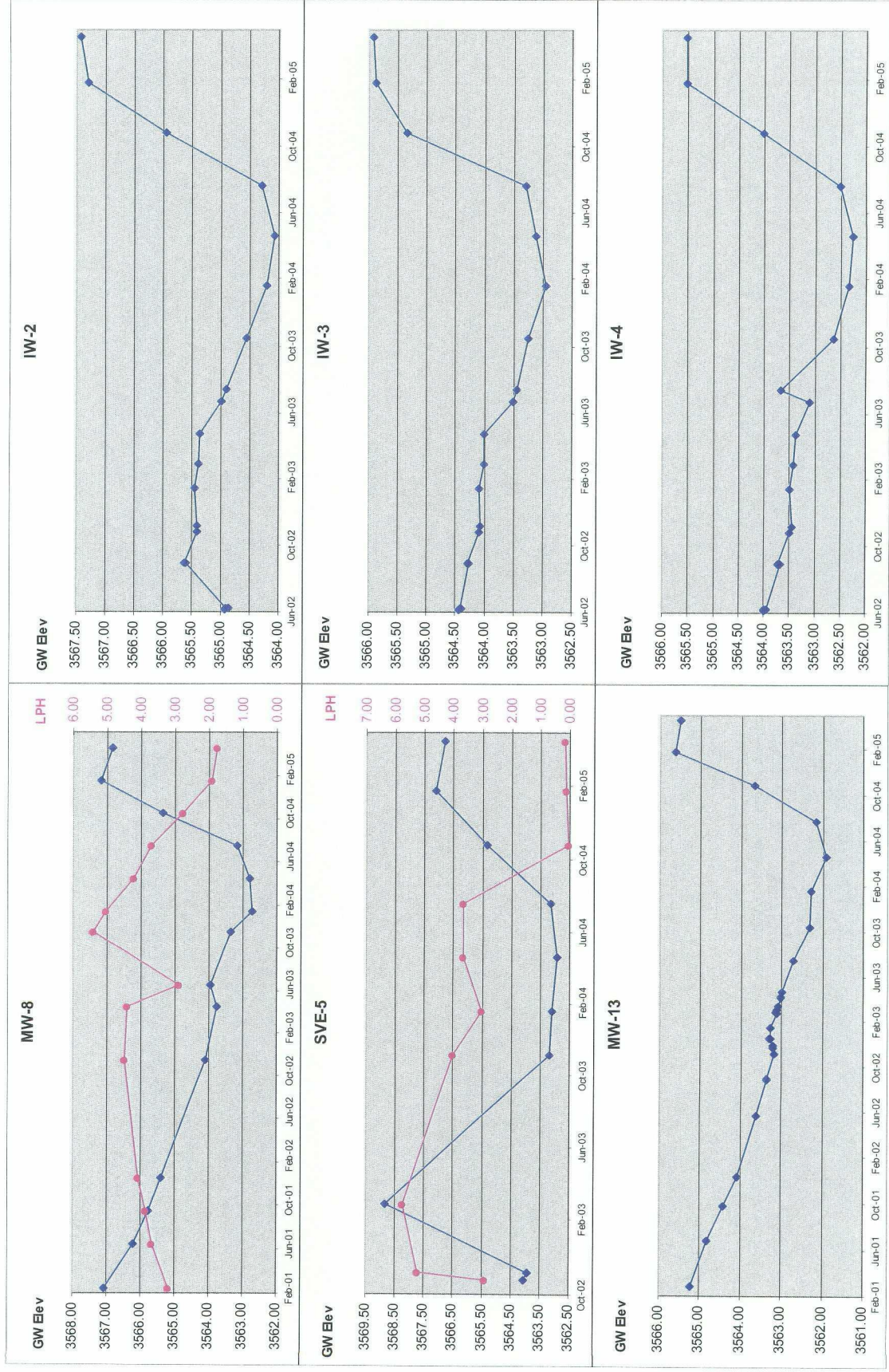


### Hydrographs



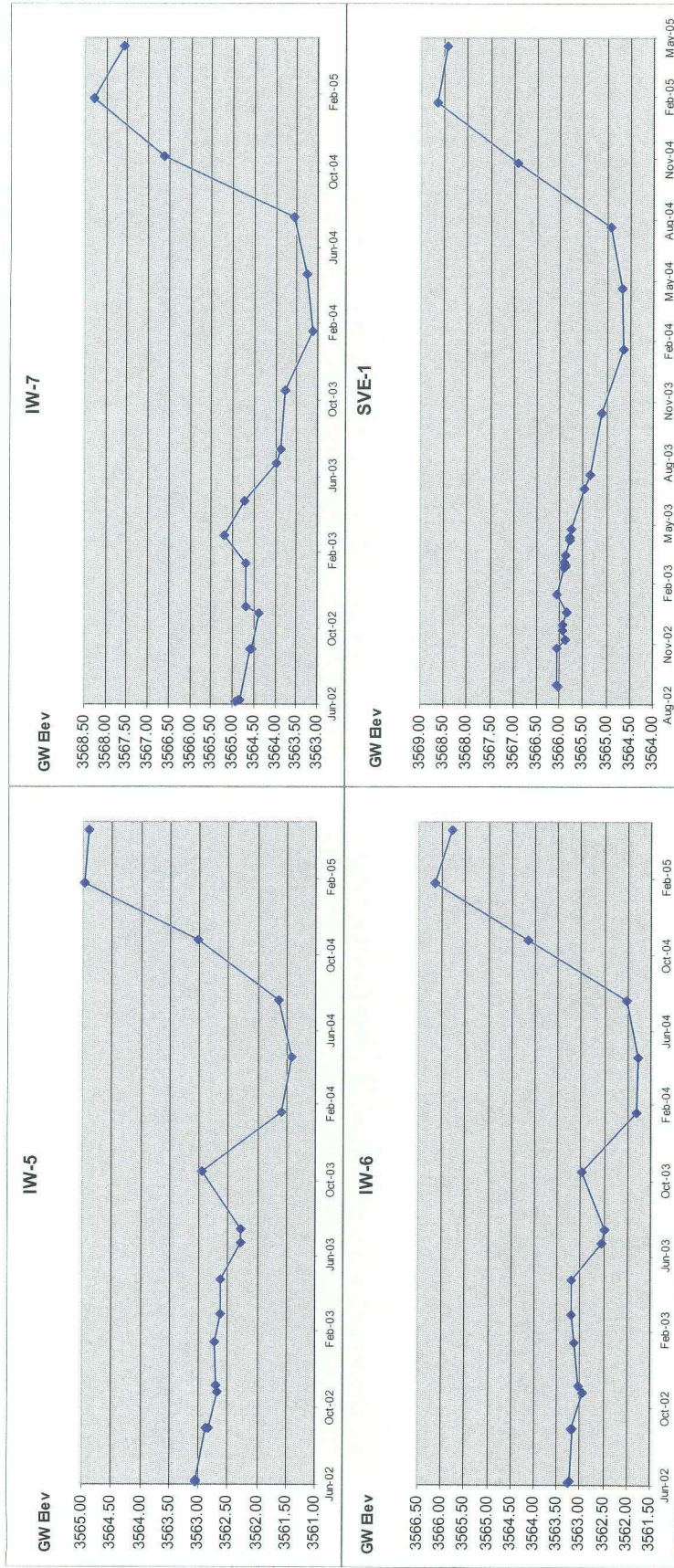


***Hydrographs***





### Hydrographs





## Groundwater Analytical Data Summary

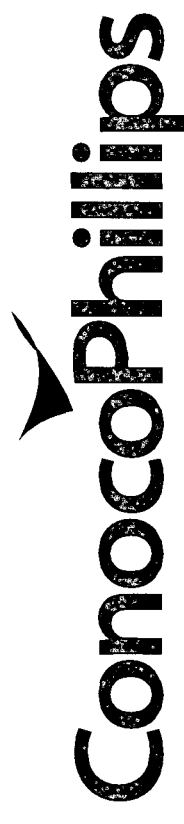
| Well Number | Sample Date | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | Total BTEX (µg/L) | TPH-CRO (mg/L) | TPH-DRO (mg/L) |
|-------------|-------------|----------------|----------------|---------------------|----------------|-------------------|----------------|----------------|
| MW-13       | 10/26/04    | 14             | <1.0           | 300                 | <3.0           | 314               | 1.2            | 3.0            |
| MW-13       | 01/25/05    | 1,000          | <1.0           | 1,400               | <3.0           | 2,400             | 4.7            | 0.79           |
| MW-13       | 04/19/05    | 1,400          | <1.0           | 780                 | <3.0           | 2,180             | 4.9            | 0.90           |
| IW-2        | 04/20/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.20          |
| IW-2        | 07/21/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| IW-2        | 10/26/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| IW-2        | 01/25/05    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.062          |
| IW-2        | 04/19/05    | <1.0           | <1.0           | 1.3                 | <3.0           | 1.3               | <0.10          | 5.2            |
| IW-3        | 04/20/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.20          |
| IW-3        | 07/21/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.061          |
| IW-3        | 10/26/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.072          |
| IW-3        | 01/25/05    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| IW-3        | 04/19/05    | 1.5            | 2.4            | 5.0                 | 7.4            | 16.3              | 0.27           | 14             |
| IW-4        | 04/20/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.20          |
| IW-4        | 07/21/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| IW-4        | 10/26/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.082          |
| IW-4        | 01/25/05    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.31           |
| IW-4        | 04/19/05    | 2.6            | 3.0            | 5.4                 | 8.2            | 19.2              | 0.33           | 10             |
| IW-5        | 04/20/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.25           |
| IW-5        | 07/21/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 2.7            |
| IW-5        | 10/26/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.048          |
| IW-5        | 01/25/05    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.43           |
| IW-5        | 04/19/05    | 1.1            | 1.2            | 1.4                 | <3.0           | 3.7               | <0.10          | 2.0            |
| IW-6        | 10/26/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 1.4            |
| IW-6        | 01/25/05    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.76           |
| IW-6        | 04/19/05    | 3.1            | 3.0            | 4.7                 | <3.0           | 10.8              | 0.19           | 2.0            |
| IW-7        | 04/20/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 1.7            |
| IW-7        | 07/21/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 18             |
| IW-7        | 10/26/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 3.3            |
| IW-7        | 01/25/05    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.21           |
| IW-7        | 04/19/05    | 1.4            | 4.2            | 8.7                 | 6.7            | 21.0              | 0.55           | 2.10           |
| SVE-1       | 04/20/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.20          |
| SVE-1       | 07/21/04    | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.059          |
| SVE-1       | 10/26/04    | 79             | 2.8            | <1.0                | <3.0           | 81.8              | 0.32           | 0.099          |
| SVE-1       | 01/25/05    | 62             | 3.4            | 1.9                 | 12             | 79.3              | 0.41           | 0.34           |
| SVE-1       | 04/19/05    | 54             | 1.4            | 1.7                 | 8              | 64.8              | 0.21           | 0.048          |

Notes:  
µg/L = micrograms per liter  
mg/L = milligrams per liter

BDL = below detection limit  
D = duplicate sample

**Recommended Path Forward**

- Pipeline excavation backfill.
- Request variance to permanently discontinue operation of groundwater extraction, treatment and re-injection system.
- Request variance to temporarily discontinue operation of enhanced bioremediation system with option to use for residual removal once plume reduction is realized.
- Optimize crude oil recovery system with focus on physical removal of crude oil using skimmer system and reduce amount of groundwater recovery.
- Continue quarterly groundwater monitoring and annual reporting.



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# **EAST HOBBS JUNCTION REMEDIATION SITE Hobbs, New Mexico**

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**OPERATION & MAINTENANCE  
PERFORMED BY**





### **Project History**

- Project activities commenced at the site in January of 2000 following the discovery of a release of crude oil from a gathering line at East Hobbs Junction.
- Assessment and remediation activities have been conducted at the site to define and address the crude oil impacts.
- An abatement action was enacted consisting of the installation of a comprehensive soil and groundwater remediation system.
- The remediation system consists of a crude oil recovery system using pneumatic skimmer pumps, a soil vapor extraction (SVE) system, and an air sparging system.
- The SVE system at East Hobbs Junction is operated under permit from the New Mexico Air Quality Bureau.
- Recovered crude oil and water is transferred to an on-site storage tank and periodically transported off-site for recycling and disposal.

**LEGEND**

- MTW-1 Temporary Monitoring Well Location and Designation
- MW-1 Existing Monitor Well Location and Designation
- SVE-1 Soil Vapor Extraction Location and Designation
- SP-2 Sparge Well Location and Designation
- RW-1 Product Recovery Well Location and Designation
- Alignment of Conveyance Piping Corridor
- aband. = well abandoned

Note: Site is restricted to public access.

**FIGURE 1: SITE MAP**  
EAST HOBBS JUNCTION  
HOBBS, NEW MEXICO

**ConocoPhillips**  
LEA COUNTY,  
NEW MEXICO  
Sec 8 T19S R38E

PROJECT NO. 5640001  
MODIFIED BY: GWP  
DATE MODIFIED: 06/13/2005  
ACAD File ENH Figure 1.061305

The map shows the site layout with various wells (MTW-1, MW-1, SVE-1, SP-2, RW-1) and conveyance piping corridors. It also includes property boundaries for D.A. Cochran Property and Occidental Permian Ltd. Property. A scale bar indicates distances up to 200 feet, and a north arrow is provided for orientation.

**Site Facilities**

- Main remediation building with SVE blower system, air compressor, SVE and air sparge well headers, and associated electrical controls .
- Secondary remediation shed with standby air compressor, recovery well headers, electrical controls and supplies storage.
- 140-barrel crude oil storage tank with secondary containment berm and perimeter security fencing.

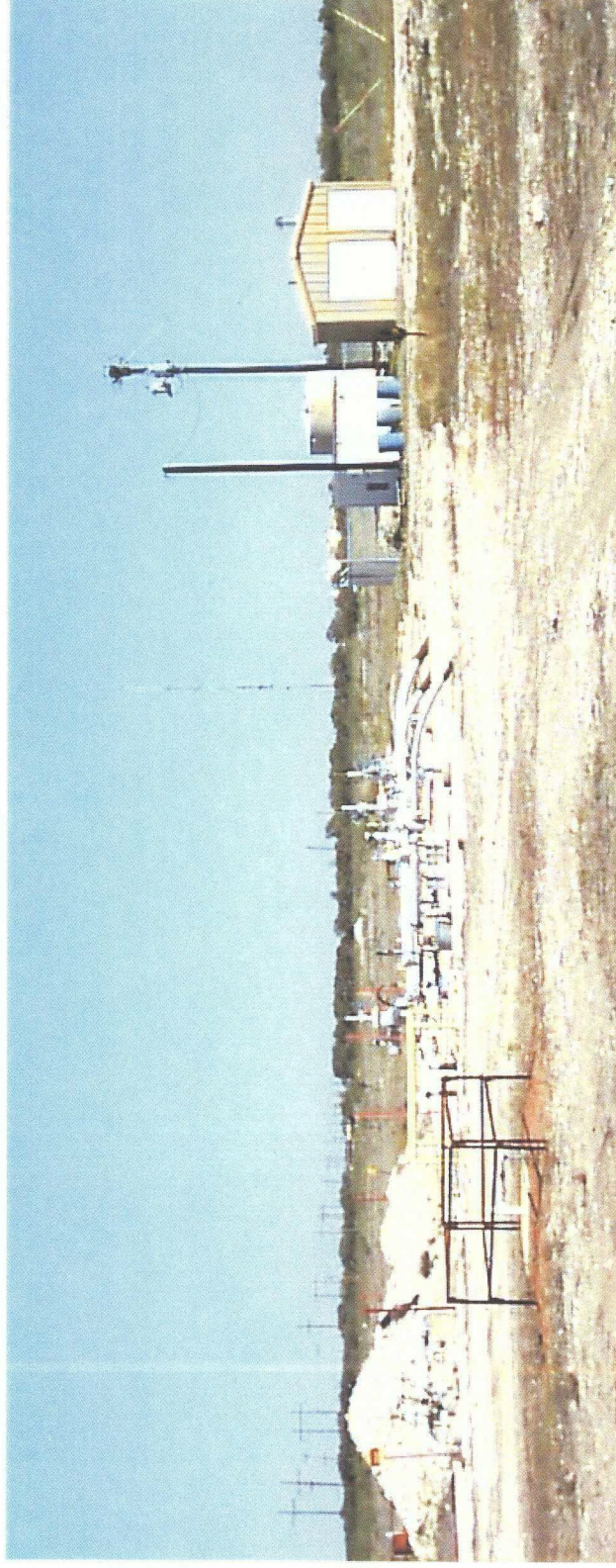




## East Hobbs Junction Remediation Site

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Main Remediation Building, Secondary Remediation Shed,  
140-bbl Crude Oil Storage Tank, Air Sparge Well, and  
Production Pipeline Header Junction







## East Hobbs Junction Remediation Site

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Main & Secondary  
Remediation Sheds, 140-bbl  
Crude Oil Storage Tank



Remediation System  
Control Panel



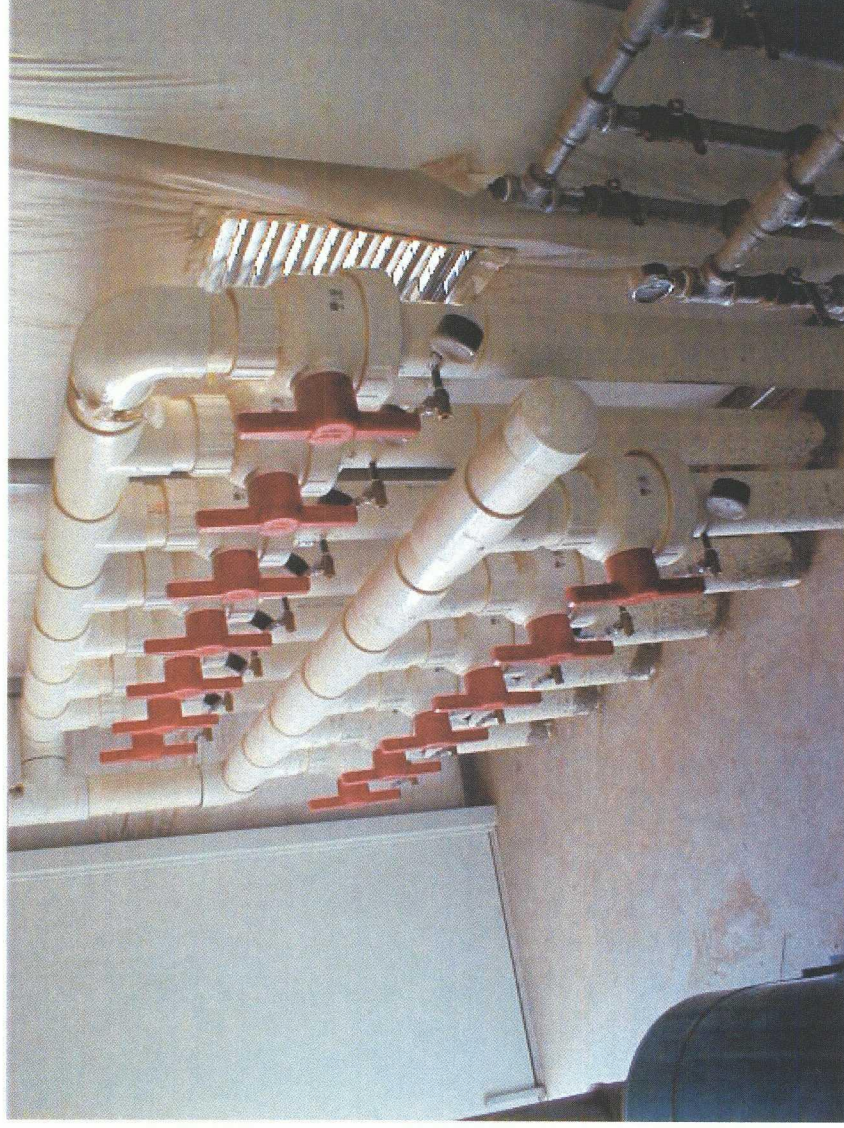


**Roots 615 URAI Positive  
Displacement Blower Assembly**





## Soil Vapor Extraction Flow Control Header





## Air Sparging Flow Control Header



**Remediation Wells**

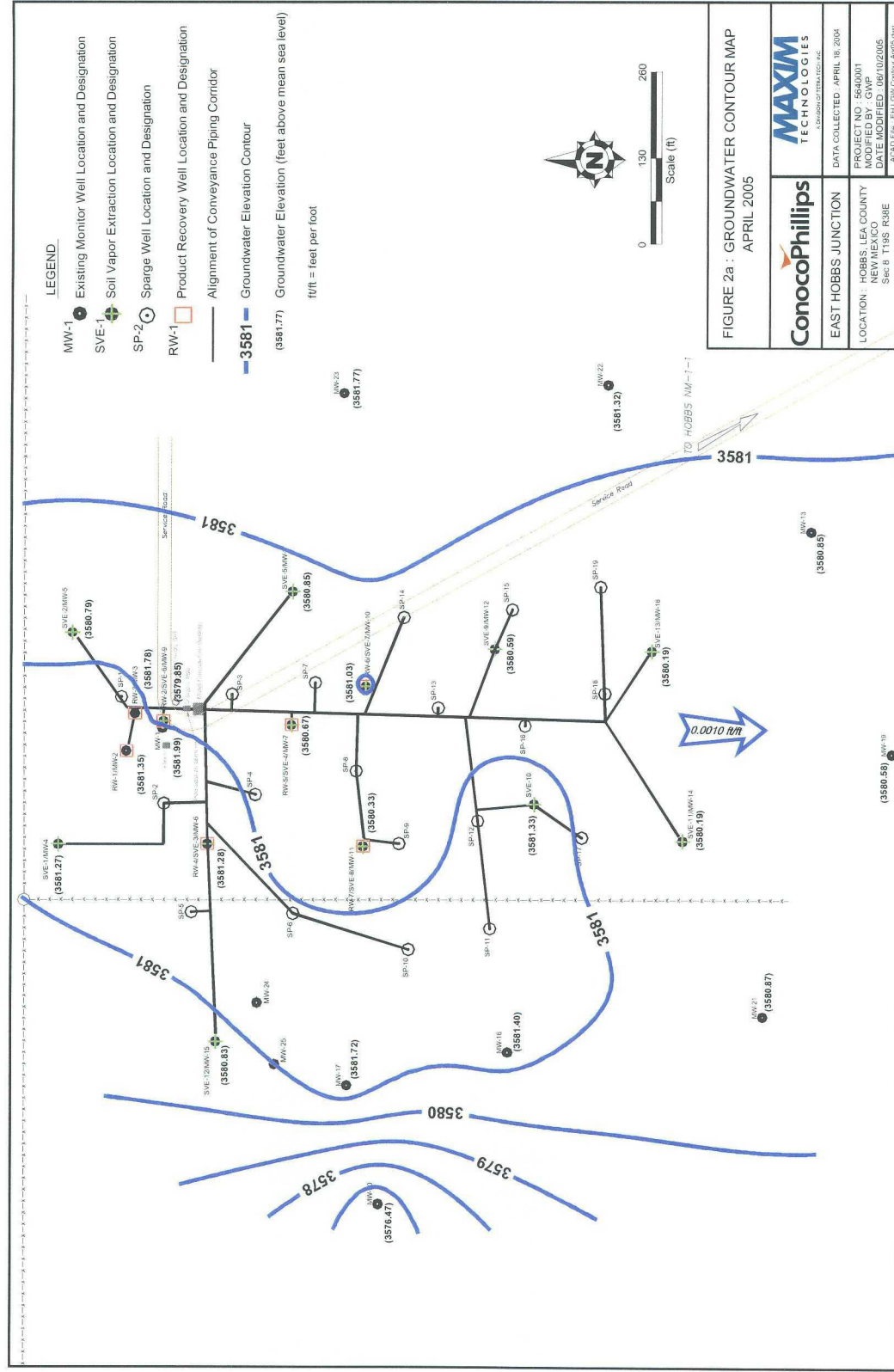
- Two (2) crude oil recovery wells only with pneumatic skimmer pumps.
- Five (5) dual phase wells with pneumatic skimmer pumps for crude oil recovery and SVE.
- Eight (8) SVE wells only.
- Nineteen (19) air sparge wells.
- Twelve (12) groundwater monitoring wells.



## Groundwater Elevations & Liquid-Phase Hydrocarbon (LPH) Thickness Table

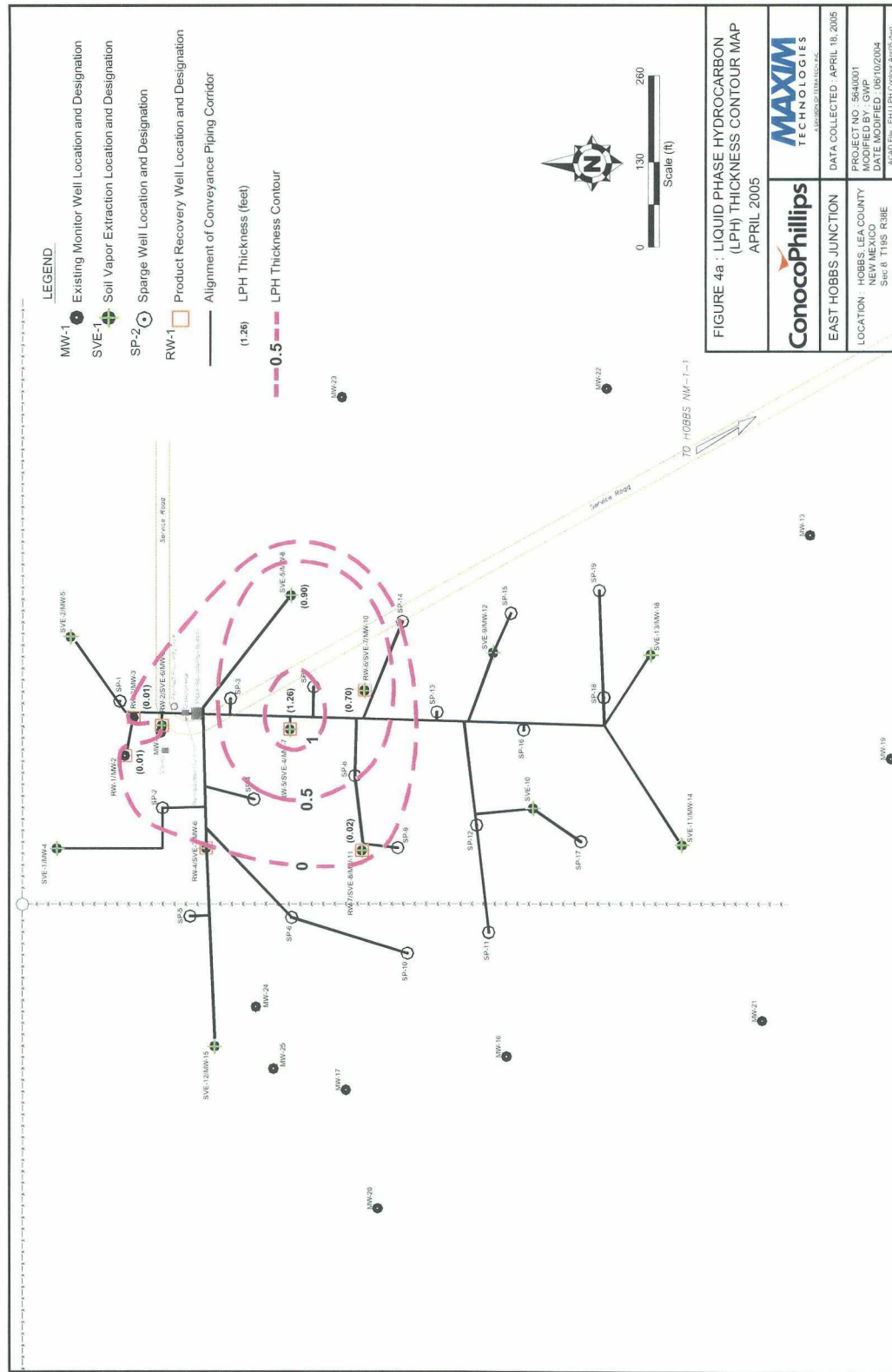
| Well Number | Sample Date | Casing Elevation | Depth to Water | Depth to L.P.H. | L.P.H. Thickness | L.P.H. Thickness X 0.8 | Adjusted Depth to Water | Groundwater Elevation | Jan-Apr05 GW Elev Diff | Jan-Apr05 L.P.H. ThickDiff | Apr04-05 GW Elev Diff | Apr04-05 L.P.H. ThickDiff |
|-------------|-------------|------------------|----------------|-----------------|------------------|------------------------|-------------------------|-----------------------|------------------------|----------------------------|-----------------------|---------------------------|
| MW-1        | 04/18/05    | 3606.28          | 24.29          |                 | 0.00             | 0.00                   | 24.29                   | 3581.99               |                        |                            |                       |                           |
| MW-2        | 04/18/05    | 3606.45          | 25.11          | 25.10           | 0.01             | 0.01                   | 25.10                   | 3581.35               | 0.32                   | 0.01                       | 2.52                  | -0.76                     |
| MW-3        | 04/18/05    | 3606.33          | 24.56          | 24.55           | 0.01             | 0.01                   | 24.55                   | 3581.78               | 0.36                   | -0.01                      | 2.93                  | -1.44                     |
| MW-4        | 04/18/05    | 3606.37          | 25.10          |                 | 0.00             | 0.00                   | 25.10                   | 3581.27               | 0.32                   |                            | 2.54                  |                           |
| MW-5        | 04/18/05    | 3604.90          | 24.11          |                 | 0.00             | 0.00                   | 24.11                   | 3580.79               | 0.41                   |                            | 2.82                  |                           |
| MW-6        | 04/18/05    | 3606.14          | 24.86          |                 | 0.00             | 0.00                   | 24.86                   | 3581.28               | 0.31                   | 0.00                       | 2.84                  | -0.33                     |
| MW-7        | 04/18/05    | 3605.50          | 25.84          | 24.58           | 1.26             | 1.01                   | 24.83                   | 3580.67               | 0.27                   | 1.24                       | 2.92                  | -0.99                     |
| MW-8        | 04/18/05    | 3604.92          | 24.79          | 23.89           | 0.90             | 0.72                   | 24.07                   | 3580.85               | 0.34                   | -0.04                      | 3.13                  | 0.45                      |
| MW-9        | 04/18/05    | 3605.75          | 25.90          |                 | 0.00             | 0.00                   | 25.90                   | 3579.85               | 0.33                   | 0.00                       | 3.04                  | -0.13                     |
| MW-10       | 04/18/05    | 3604.94          | 24.47          | 23.77           | 0.70             | 0.56                   | 23.91                   | 3581.03               | 0.32                   | 0.27                       | 3.01                  | -1.26                     |
| MW-11       | 04/18/05    | 3608.06          | 27.75          | 27.73           | 0.02             | 0.02                   | 27.73                   | 3580.33               | 0.30                   | 0.01                       | 2.76                  | -0.03                     |
| MW-12       | 04/18/05    | 3604.14          | 23.55          |                 | 0.00             | 0.00                   | 23.55                   | 3580.59               | 0.30                   |                            | 3.02                  |                           |
| MW-13       | 04/18/05    | 3604.31          | 23.46          |                 | 0.00             | 0.00                   | 23.46                   | 3580.85               | 0.18                   |                            | 3.49                  |                           |
| MW-14       | 04/18/05    | 3603.77          | 23.58          |                 | 0.00             | 0.00                   | 23.58                   | 3580.19               | 0.18                   |                            | 3.03                  |                           |
| MW-15       | 04/18/05    | 3609.23          | 28.40          |                 | 0.00             | 0.00                   | 28.40                   | 3580.83               | 0.32                   | 0.00                       | 2.64                  | -0.06                     |
| MW-16       | 04/18/05    | 3606.31          | 24.91          |                 | 0.00             | 0.00                   | 24.91                   | 3581.40               | 0.20                   |                            | 2.87                  |                           |
| MW-17       | 04/18/05    | 3609.03          | 27.31          |                 | 0.00             | 0.00                   | 27.31                   | 3581.72               | 0.26                   |                            |                       |                           |
| MW-18       | 04/18/05    | 3605.34          | 25.15          |                 | 0.00             | 0.00                   | 25.15                   | 3580.19               | 0.22                   |                            | 3.25                  |                           |
| MW-19       | 04/18/05    | 3606.69          | 26.11          |                 | 0.00             | 0.00                   | 26.11                   | 3580.58               | 0.09                   |                            | 3.29                  |                           |
| MW-20       | 04/18/05    | 3606.25          | 29.78          |                 | 0.00             | 0.00                   | 29.78                   | 3576.47               | 0.19                   |                            | 2.68                  |                           |
| MW-21       | 04/18/05    | 3603.51          | 22.64          |                 | 0.00             | 0.00                   | 22.64                   | 3580.87               | 0.06                   |                            | 3.04                  |                           |
| MW-22       | 04/18/05    | 3603.27          | 21.95          |                 | 0.00             | 0.00                   | 21.95                   | 3581.32               | 0.30                   |                            | 3.64                  |                           |
| MW-23       | 04/18/05    | 3604.62          | 22.85          |                 | 0.00             | 0.00                   | 22.85                   | 3581.77               | 0.40                   |                            | 3.49                  |                           |
| SVE-10      | 04/18/05    | 3605.12          | 23.79          |                 | 0.00             | 0.00                   | 23.79                   | 3581.33               | 0.22                   |                            | 2.83                  |                           |

**Groundwater Elevation Contour Map – April 18, 2005**





***Liquid Phase Hydrocarbon Thickness Contour Map – April 18, 2005***





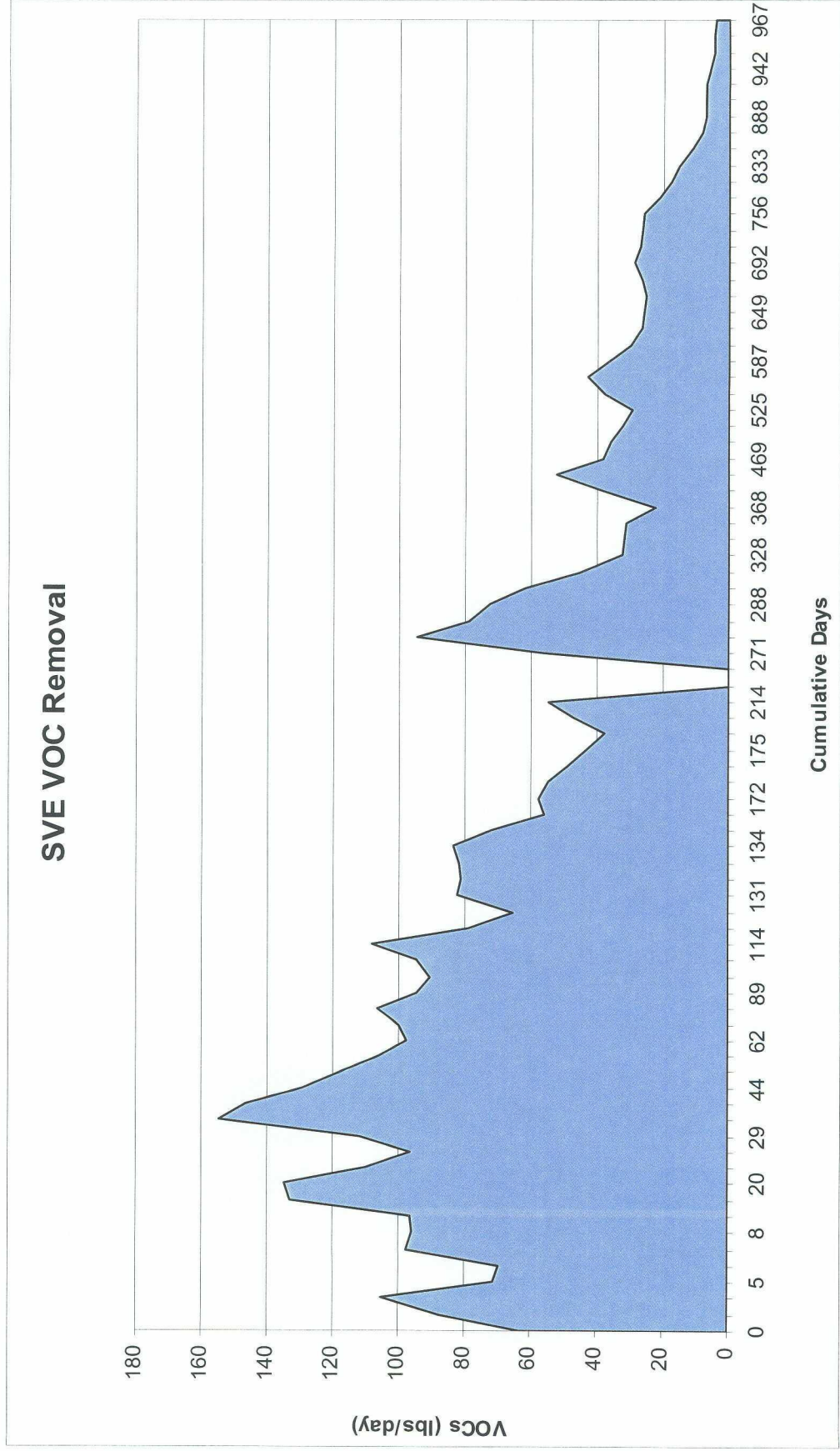
### SVE VOC Removal Details Table

| Date       | Total Time (days) | Effluent Concentration (ppm) | Flow Rate (SCFM) | "SnapShot" Discharge (lbs/day) | Average Discharge for Period (lbs/day) | Incremental Discharge (lbs) | Cumulative Discharge (lbs) | Incremental Time (Days) |
|------------|-------------------|------------------------------|------------------|--------------------------------|----------------------------------------|-----------------------------|----------------------------|-------------------------|
| 01/29/2004 | 469               | 147                          | 873              | 37.39                          | 38.40                                  | 1152.13                     | 27300.29                   | 30                      |
| 02/16/2004 | 487               | 142                          | 849              | 35.12                          | 35.74                                  | 643.33                      | 27943.62                   | 18                      |
| 02/25/2004 | 496               | 116                          | 861              | 29.10                          | 32.36                                  | 291.22                      | 28234.84                   | 9                       |
| 03/25/2004 | 525               | 114                          | 875              | 29.06                          | 29.32                                  | 850.14                      | 29084.99                   | 29                      |
| 04/14/2004 | 545               | 181                          | 875              | 46.14                          | 37.60                                  | 752.00                      | 29836.99                   | 20                      |
| 04/27/2004 | 558               | 158                          | 875              | 40.28                          | 43.21                                  | 561.71                      | 30398.70                   | 13                      |
| 05/26/2004 | 587               | 127                          | 875              | 32.37                          | 36.33                                  | 1053.44                     | 31452.13                   | 29                      |
| 06/09/2004 | 601               | 108                          | 875              | 27.53                          | 29.95                                  | 419.34                      | 31871.47                   | 14                      |
| 06/30/2004 | 622               | 97.6                         | 875              | 24.88                          | 26.21                                  | 550.31                      | 32421.78                   | 21                      |
| 07/27/2004 | 649               | 104                          | 875              | 26.51                          | 25.70                                  | 693.78                      | 33115.56                   | 27                      |
| 08/03/2004 | 656               | 94.2                         | 875              | 24.01                          | 25.26                                  | 176.83                      | 33292.40                   | 7                       |
| 08/24/2004 | 677               | 112                          | 875              | 28.55                          | 26.28                                  | 551.92                      | 33844.31                   | 21                      |
| 09/08/2004 | 692               | 114                          | 875              | 29.06                          | 28.81                                  | 432.08                      | 34276.40                   | 15                      |
| 09/20/2004 | 704               | 100                          | 875              | 25.49                          | 27.28                                  | 327.31                      | 34603.71                   | 12                      |
| 10/05/2004 | 719               | 109                          | 875              | 27.79                          | 26.64                                  | 399.58                      | 35003.29                   | 15                      |
| 11/11/2004 | 756               | 91.9                         | 875              | 23.43                          | 25.61                                  | 947.43                      | 35950.72                   | 37                      |
| 11/22/2004 | 767               | 72                           | 875              | 18.35                          | 20.89                                  | 229.79                      | 36180.51                   | 11                      |
| 12/29/2004 | 804               | 66                           | 875              | 16.82                          | 17.59                                  | 650.80                      | 36831.31                   | 37                      |
| 01/27/2005 | 833               | 54                           | 875              | 13.77                          | 15.29                                  | 443.55                      | 37274.87                   | 29                      |
| 02/14/2005 | 851               | 35.9                         | 875              | 9.15                           | 11.46                                  | 206.25                      | 37481.12                   | 18                      |
| 03/02/2005 | 867               | 29.1                         | 875              | 7.42                           | 8.28                                   | 132.56                      | 37613.68                   | 16                      |
| 03/23/2005 | 888               | 28.3                         | 875              | 7.21                           | 7.32                                   | 153.64                      | 37767.31                   | 21                      |
| 04/08/2005 | 904               | 26.5                         | 875              | 6.76                           | 6.98                                   | 111.76                      | 37879.07                   | 16                      |
| 04/12/2005 | 908               | 27.9                         | 875              | 7.11                           | 6.93                                   | 27.73                       | 37906.80                   | 4                       |
| 05/16/2005 | 942               | 18.2                         | 875              | 4.64                           | 5.88                                   | 199.78                      | 38106.58                   | 34                      |
| 05/23/2005 | 949               | 19.5                         | 875              | 4.97                           | 4.81                                   | 33.64                       | 38140.22                   | 7                       |
| 06/01/2005 | 958               | 17.1                         | 875              | 4.36                           | 4.66                                   | 41.98                       | 38182.20                   | 9                       |
| 06/10/2005 | 967               | 17.5                         | 875              | 4.46                           | 4.41                                   | 39.69                       | 38221.89                   | 9                       |

|                                           |           |                                              |       |
|-------------------------------------------|-----------|----------------------------------------------|-------|
| Estimated average pounds per day removed: | 39.53     | Total tons VOCs removed (Oct 2002-Oct 2003): | 11.45 |
| Estimated total pounds VOCs removed:      | 38,221.89 | Total tons VOCs removed (Nov 2003-Apr 2005): | 7.66  |
|                                           |           | Cumulative tons VOCs removed since startup:  | 19.11 |

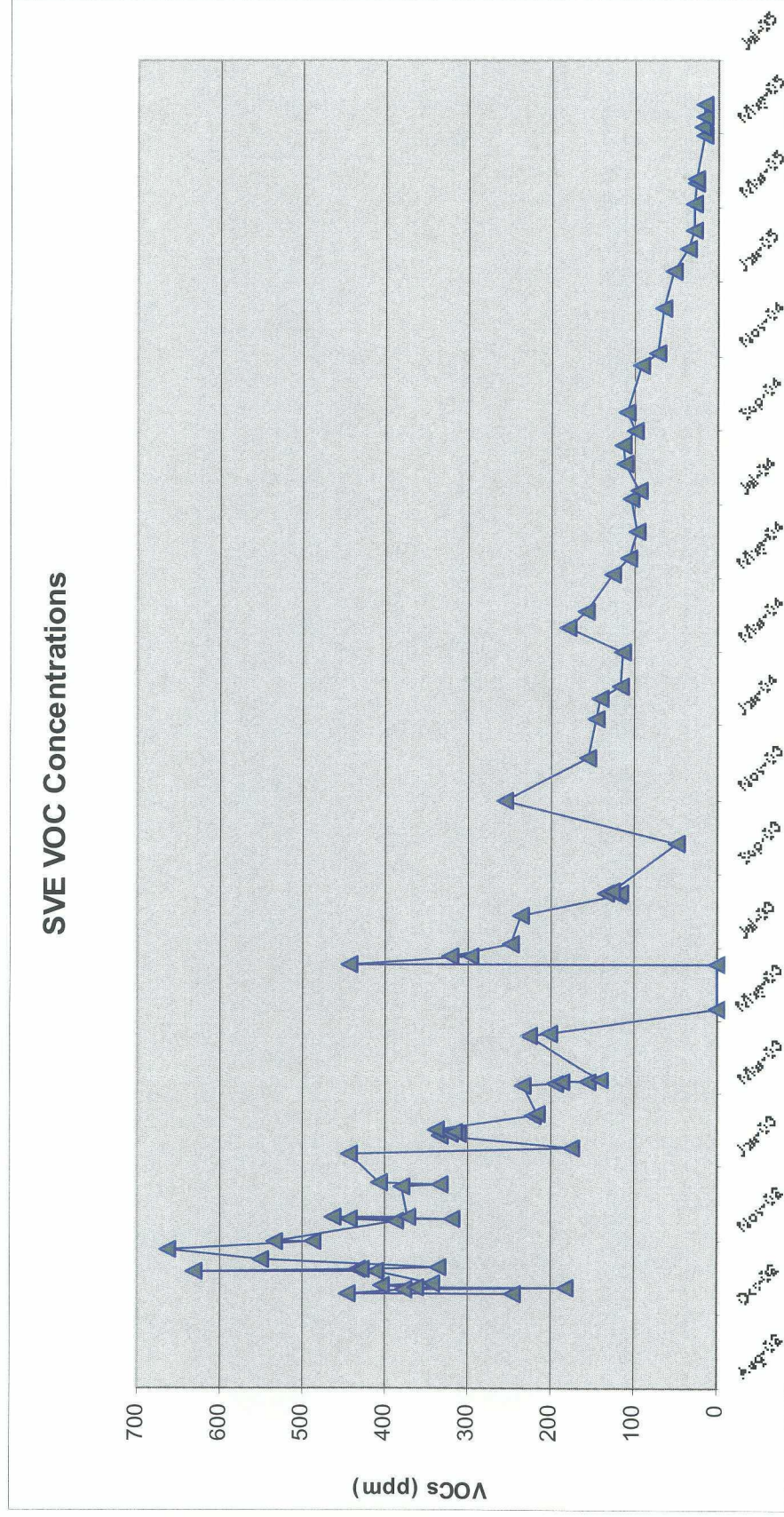
Notes and Calculations:  
VOC Discharge (lbs/day) = ((Co (ppm)\*(78 g/mole)/24.05)\*(1 g/1000 mg)\*(1 m<sup>3</sup>/35.31 cf)\*(1 lb/454 g)\*(Q (scfm)\*1440 min/day)  
Where:  
Co = Average Effluent VOC concentration (ppm) from previous time period  
Q = flow rate of effluent air (scfm)  
24.05 = gas law constant

**SVE VOC Removal Rate Graph**





**SVE VOC Effluent Concentrations Graph**



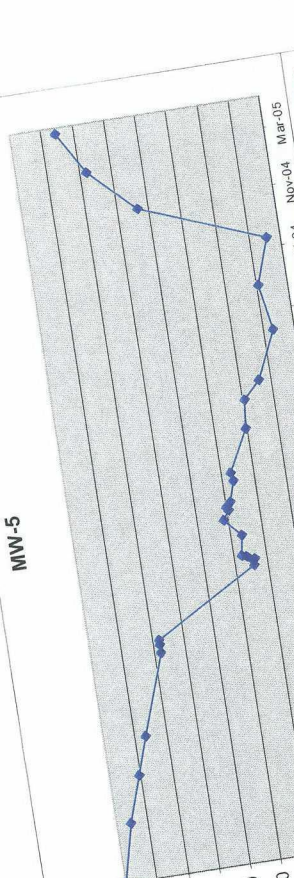


# East Hobbs Junction Remediation Site

**ConocoPhillips**

**Hydrographs**

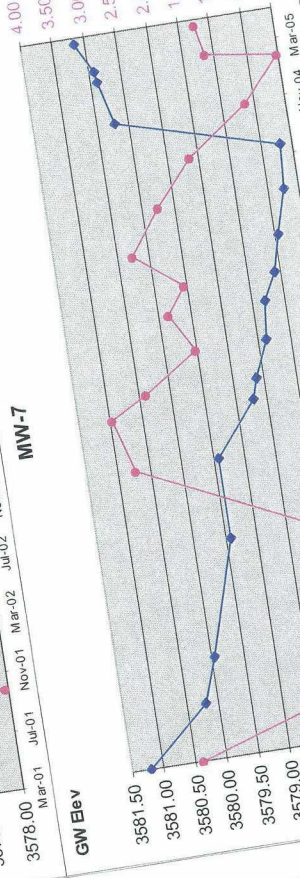
MW-5



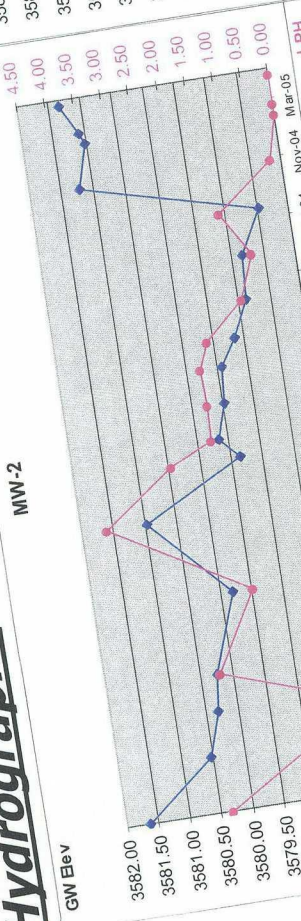
MW-6



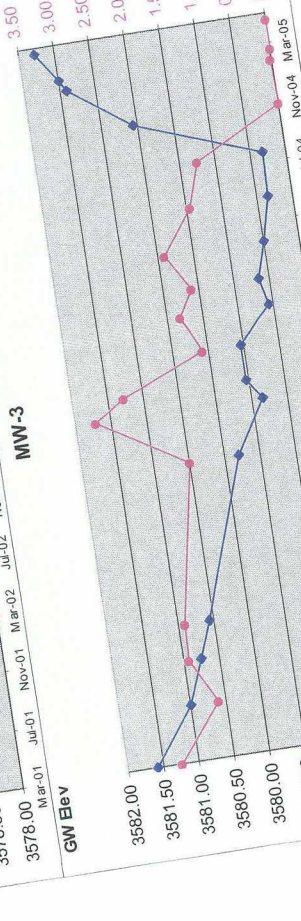
MW-7



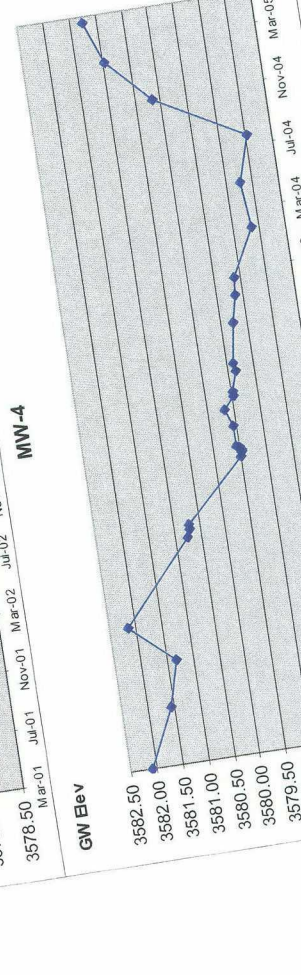
MW-2



MW-3

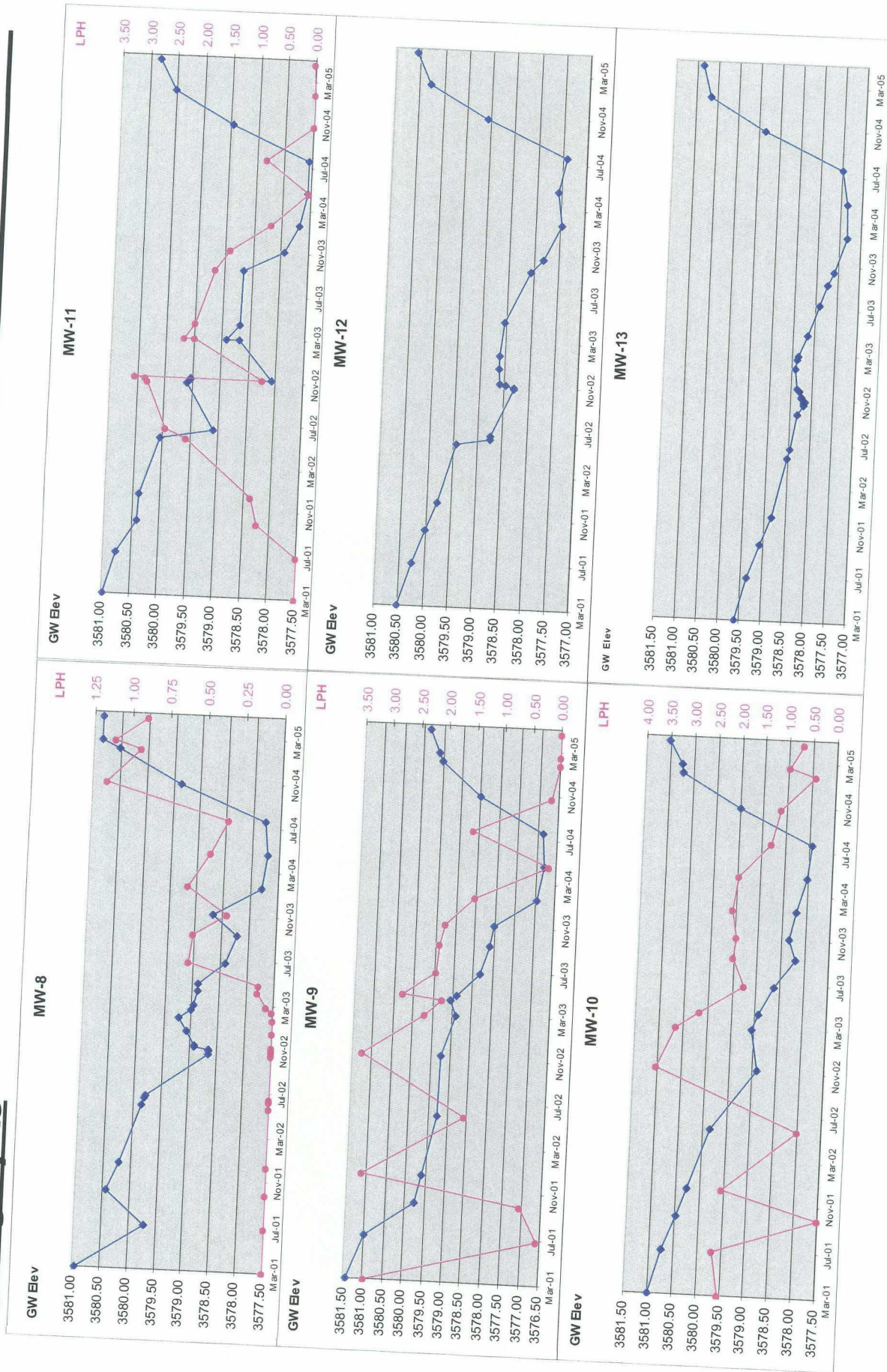


MW-4



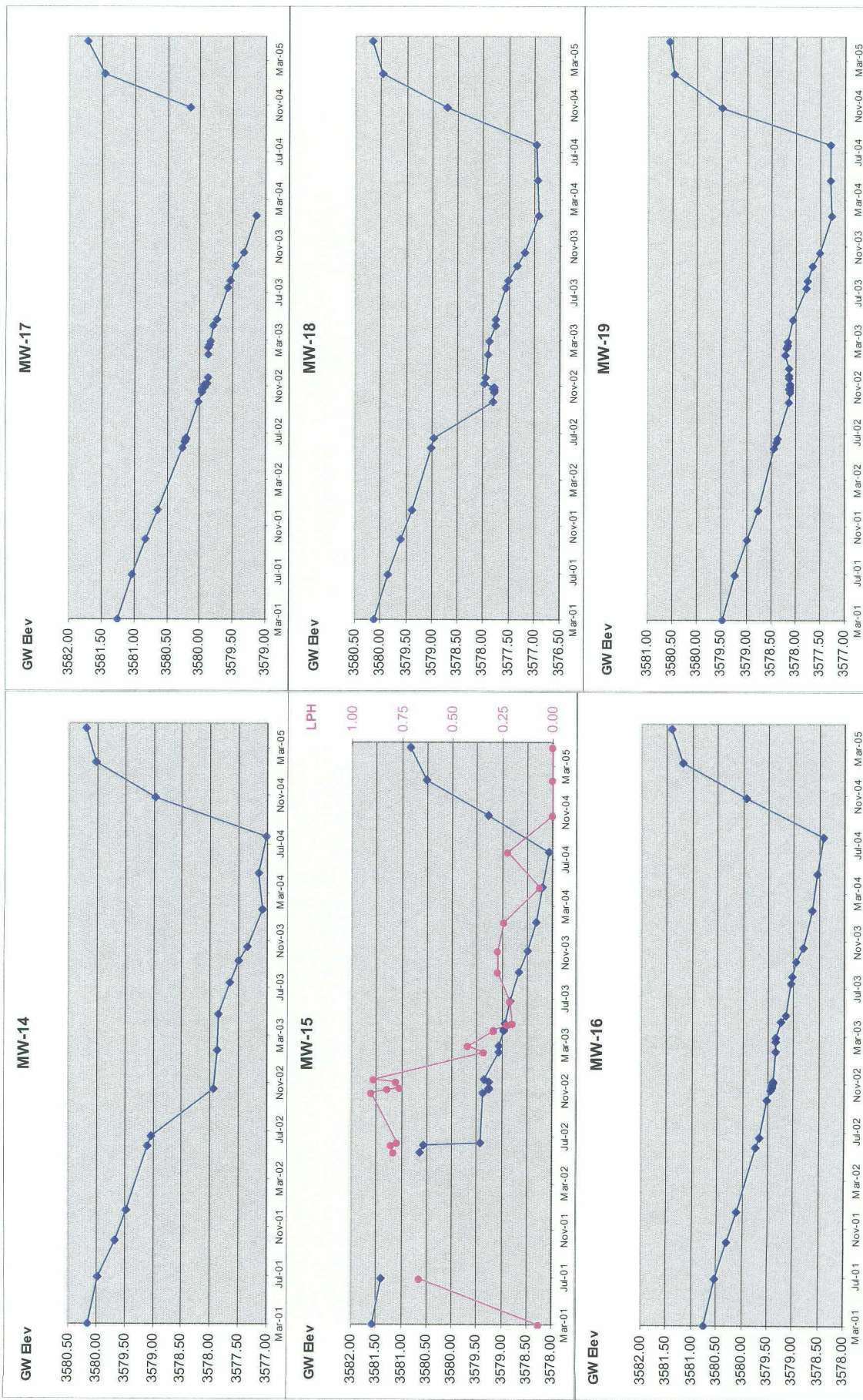


### Hydrographs





### Hydrographs

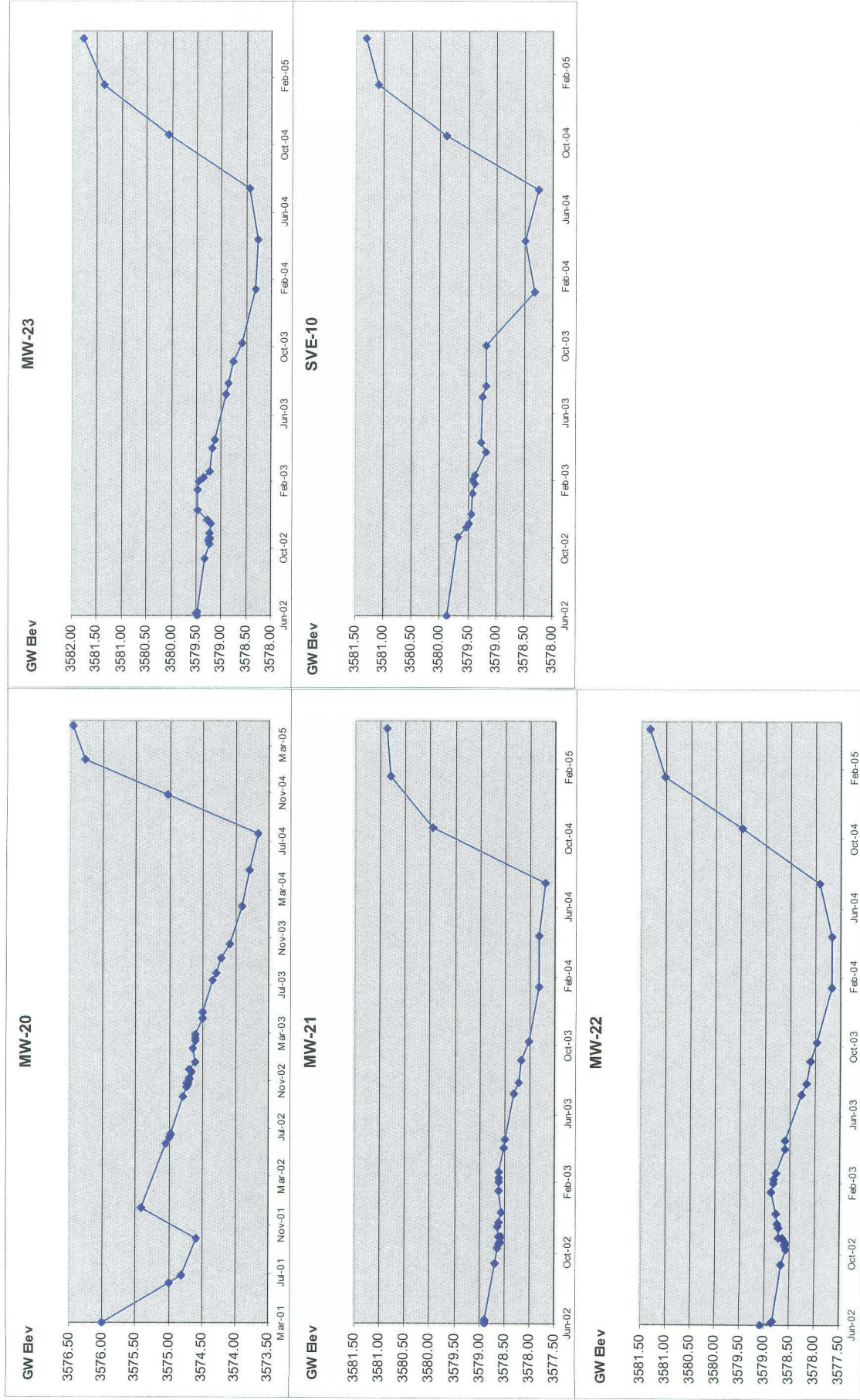






# East Hobbs Junction Remediation Site

## Hydrographs



## Groundwater Analytical Data Summary

| Well Number | Sample Date | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | Total BTEX (µg/L) | TPH-CRO (mg/L) | TPH-DRO (mg/L) |
|-------------|-------------|----------------|----------------|---------------------|----------------|-------------------|----------------|----------------|
| MW-4        | 07/22/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-4        | 10/28/2004  | 2.0            | <1.0           | <1.0                | <3.0           | 2                 | <0.10          | 0.19           |
| MW-4        | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.19           |
| MW-4        | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-5        | 07/23/2004  | 11             | 10             | 1.2                 | <3.0           | 22.2              | 0.13           | <0.048         |
| MW-5        | 10/28/2004  | 28             | 29             | 1.5                 | 8.1            | 66.6              | 0.20           | 0.077          |
| MW-5        | 01/26/2005  | 8.9            | 9.1            | 2.0                 | 4.9            | 24.9              | <0.10          | 0.069          |
| MW-5        | 04/20/2005  | 79.0           | 36.0           | <1.0                | 43.0           | 158.0             | 0.4            | 0.064          |
| MW-12       | 07/23/2004  | 3,200          | <1.0           | 66                  | 160            | 3,426             | 12             | 0.33           |
| MW-12       | 10/28/2004  | 3,200          | 16             | 46                  | 140            | 3,402             | 14             | 0.52           |
| MW-12       | 01/27/2005  | 4,000          | <2.0           | 66                  | 130            | 4,196             | 15             | 1.2            |
| MW-12       | 04/21/2005  | 2,700          | 41             | 120                 | 140            | 3,001             | 12             | 1.2            |
| MW-13       | 07/22/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-13       | 10/27/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-13       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-13       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-14       | 07/22/2004  | 4              | <1.0           | <1.0                | <3.0           | 4                 | <0.10          | 0.059          |
| MW-14       | 10/28/2004  | 2.4            | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-14       | 01/26/2005  | 6.1            | <1.0           | <1.0                | <3.0           | 6.1               | <0.10          | <0.048         |
| MW-14       | 04/20/2005  | 4.4            | <1.0           | <1.0                | <3.0           | 4.4               | <0.10          | 0.086          |
| MW-16       | 07/21/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-16       | 10/26/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.087          |
| MW-16       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-16       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.080          |
| MW-17       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-17       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-18       | 07/22/2004  | 530            | <1.0           | 110                 | 70             | 700               | 4.0            | 0.150          |
| MW-18       | 10/28/2004  | 300            | <1.0           | 8.7                 | 19             | 327.7             | 1.6            | 0.12           |
| MW-18       | 01/26/2005  | 310            | <1.0           | 14                  | 24             | 348               | 1.8            | 0.15           |
| MW-18       | 04/20/2005  | 550            | <1.0           | 49                  | 31             | 630               | 2.7            | 0.15           |

| Well Number | Sample Date | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | Total BTEX (µg/L) | TPH-CRO (mg/L) | TPH-DRO (mg/L) |
|-------------|-------------|----------------|----------------|---------------------|----------------|-------------------|----------------|----------------|
| MW-19       | 07/22/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-19       | 10/27/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-19       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-19       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.10           |
| MW-20       | 07/21/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-20       | 10/26/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-20       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-20       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-21       | 07/21/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-21       | 10/26/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.090          |
| MW-21       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-21       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.25           |
| MW-22       | 07/22/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-22       | 10/27/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-22       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-22       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-23       | 07/22/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-23       | 10/27/2004  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-23       | 01/26/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | <0.048         |
| MW-23       | 04/20/2005  | <1.0           | <1.0           | <1.0                | <3.0           | BDL               | <0.10          | 0.089          |
| MW-24       | 07/22/2004  | 400            | 36             | 37                  | 35             | 508               | 2.2            | 0.45           |
| MW-24       | 10/27/2004  | 48             | 4.9            | 11                  | <3.0           | 63.9              | 0.65           | 0.33           |
| MW-24       | 01/26/2005  | 80             | <1.0           | 17                  | 12             | 109               | 0.65           | 0.32           |
| MW-24       | 04/20/2005  | 150            | <1.0           | 38                  | 14             | 202               | 2.20           | 0.53           |
| MW-25       | 07/22/2004  | 5.8            | <1.0           | 28                  | 25             | 58.8              | 0.71           | 0.094          |
| MW-25       | 10/27/2004  | 7.1            | <1.0           | 36                  | 9.9            | 53.0              | 0.63           | 0.35           |
| MW-25       | 01/26/2005  | 3.4            | <1.0           | 25                  | 8.9            | 37.3              | 0.28           | 0.29           |
| MW-25       | 04/20/2005  | 7.4            | 3.6            | 55                  | 16             | 82.0              | 0.60           | 0.23           |
| SVE-10      | 07/23/2004  | 27             | <1.0           | 14                  | <3.0           | 91                | 0.46           | 0.48           |
| SVE-10      | 10/28/2004  | 74             | 1.5            | 10                  | 7.8            | 43.3              | 0.40           | 1.2            |
| SVE-10      | 01/27/2005  | 12             | <1.0           | 12                  | <3.0           | 24                | 0.19           | 0.68           |
| SVE-10      | 04/20/2005  | <1.0           | <1.0           | 14                  | <3.0           | 14                | 0.12           | 0.35           |

Notes:  
 µg/L = micrograms per liter  
 mg/L = milligrams per liter  
 BDL = below detection limit  
 D = duplicate sample



**Recommended Path Forward**

- Pipeline excavation backfill.
- Request variance to temporarily discontinue operation of SVE and air sparge systems with option to use for residual removal once plume reduction is realized.
- Optimize crude oil recovery system with focus on physical removal of crude oil using skimmer system and reduce amount of groundwater recovery.
- Continue quarterly groundwater monitoring and annual reporting.