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**ANNUAL
MONITORING
REPORT**

02/2005

**2004 ANNUAL GROUNDWATER REPORT
NAVAJO SITES VOLUME III
EL PASO FIELD SERVICES**

TABLE OF CONTENTS

| METER or LINE ID | SITE NAME | TOWNSHIP | RANGE | SECTION | UNIT |
|---------------------|-------------------------------|----------|-------|---------|------|
| 71816 | *Jennepah #1 | 28N | 09W | 36 | H |
| 95608 | Gallegos Canyon Unit #124E | 28N | 12W | 35 | N |

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* Jennepah #1 Site was closed by Navajo Nation EPA in March 2004, and by NMOCD in October 2004.



MWH
MONTGOMERY WATSON HARZA

3-D TopoQuads Copyright © 1999 DeLorme Vermont, ME 04996 3 mi Scale: 1 : 600,000 Detail: 2:4 Datum: WGS84

LIST OF ACRONYMS

| | |
|-----------------|---|
| B | benzene |
| btoc | below top of casing |
| E | ethylbenzene |
| EPFS | El Paso Field Services |
| ft | foot/feet |
| GWEL | groundwater elevation |
| ID | identification |
| MW | monitoring well |
| PSH | phase-separated hydrocarbons |
| NMWQCC | New Mexico Water Quality Control Commission |
| T | toluene |
| TOC | top of casing |
| NA | not applicable |
| NE | not established |
| NM | not measured |
| NMOCD | New Mexico Oil Conservation Division |
| NS | not sampled |
| ORC | oxygen-releasing compound |
| ppb | parts per billion |
| $\mu\text{g/L}$ | micrograms per liter |
| X | total xylenes |

**EPFS GROUNDWATER SITES
2004 ANNUAL GROUNDWATER REPORT**

**GCU #124E
Meter Code: 95608**

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SITE DETAILS

| | | | | | | | | |
|-------------------------------|--------------|-----------------------|---------------|------------------|------------------|----|--------------|---|
| Legal Description: | Town: | 28N | Range: | 12W | Sec: | 35 | Unit: | N |
| NMOCD Haz Ranking: | 20 | Land Type: | Navajo | Operator: | Amoco Production | | | |

PREVIOUS ACTIVITIES

| | | | | | |
|------------------------------------|--------|---------------------------|--------------------|-----------------------------------|--------|
| Site Assessment: | Jan/95 | Excavation: | Oct/95 (196 cy) | Soil Boring: | Mar/98 |
| Monitor Well: | Jun/98 | Geoprobe: | NA | Additional MWs: | * |
| Downgradient MWs: | * | Replace MW: | NA | Quarterly Initiated: | Jun/98 |
| ORC Nutrient Injection: | NA | Re-Excavation: | NA | PSH Removal Initiated: | Apr/99 |
| Annual Initiated: | NA | Quarterly Resumed: | NA | | |

* Attempts were made in November 2000 to install additional wells that resulted in dry holes.

SUMMARY OF 2004 ACTIVITIES

MW-1: Quarterly free-product removal and water level monitoring was performed in 2004.

Site-Wide Activities: A technology review and data assessment were performed to evaluate free-product removal protocol and methodologies for sites with free-product.

SITE MAP

A site map (2004) is attached as Figure 1.

SUMMARY TABLES AND GRAPHS

- Product removal data from 2004 are summarized in Table 1.
- Historical analytical data and free-product removal data from MW-1 are presented graphically in Figures 2 and 3, respectively.
- Field documentation is presented in Attachment 1.

**EPFS GROUNDWATER SITES
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GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS

No subsurface activities were performed at this site during 2004.

DISPOSITION OF GENERATED WASTES

All phase-separated hydrocarbons were disposed of at the EPFS Kutz Separator located in Bloomfield, New Mexico.

ISOCONCENTRATION MAPS

No isoconcentration maps were generated for this site. However, the attached site map presents the depth to water and product removal data collected during 2004.

CONCLUSIONS

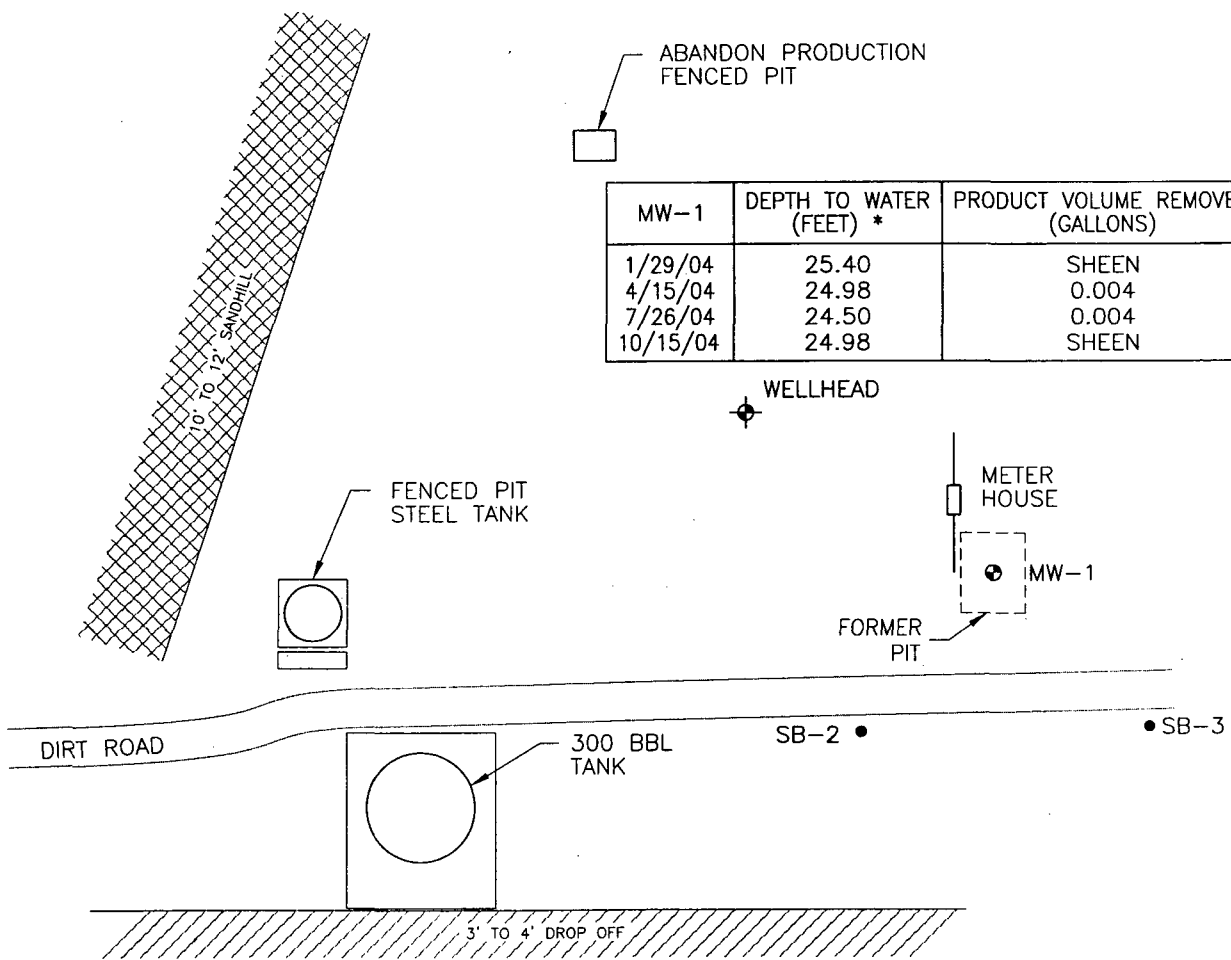
- Free-product recovery efforts at MW-1, utilizing a passive skimmer, resulted in removal of less than 0.01 gallons of free-phase hydrocarbons during 2004, bringing the cumulative total volume recovered to date to approximately 19.01 gallons. During two of the four quarterly monitoring events, only an oily sheen was detected in the water from the well.
- The majority of free-product was removed from MW-1 by 2002 (approximately 19 gallons); In 2003 and 2004, a total of only 0.03 gallons of product have been removed and often only an oily sheen is detected on the water. The passive skimmer is no longer necessary for product removal in this well.
- Based on the technology review and free-product removal data for this site, it was concluded that a skimmer is no longer necessary for this site; oil-absorbent socks may be the most efficient and cost-effective product removal technique in MW-1 at this time.

**EPFS GROUNDWATER SITES
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Meter Code: 95608**

RECOMMENDATIONS

- EPFS recommends removal of the passive skimmer.
- If free-product is not present during the quarterly monitoring, EPFS recommends that a groundwater sample be collected from MW-1 and analyzed for BTEX constituents.
- If measurable free-product is detected, EPFS recommends installation of an oil-absorbent sock in MW-1 to facilitate free-product removal during 2005. EPFS will continue quarterly free-product recovery efforts at MW-1; however, the frequency of monitoring will be adjusted based on the amount of product recovered during the monitoring visits.
- MW-1 will be sampled until BTEX constituents approach federal and NMOCD standards. Sampling will continue on a quarterly basis until BTEX concentrations are below federal standards for three consecutive quarters, and NMOCD standards for four consecutive quarters.
- Following approval for closure by both the Navajo Nation EPA and NMOCD; the monitoring well will be removed according to the approved EPFS Monitoring Well Abandonment Plan.



LEGEND

- ⊕ MW-1 Approximate Monitoring Well Location and Number
- Dry 2000 Borehole

0 60
SCALE: 1"=60'

GALLEGOS CANYON UNIT 124E
METER 95608
2004

GROUNDWATER SITES
EL PASO FIELD SERVICES

FIGURE 1

TABLE 1

SUMMARY OF FREE-PRODUCT REMOVAL DURING 2004
GCU #124E (METER #95608)

| Site Name | Monitoring Well | Removal Date | Depth to Product (feet btoc) | Depth to Water (feet btoc) | Product Thickness (feet) | Volume of Product Removed (gallons) | Cummulative Volume of Product Removed (gallons) |
|-----------|-----------------|--------------|------------------------------|----------------------------|--------------------------|-------------------------------------|---|
| GCU #124E | 1 | 1/29/04 | NA | 25.40 | 0.00 | 0.000 | 19.00 |
| GCU #124E | 1 | 4/15/04 | NA | 24.98 | 0.00 | 0.004 | 19.01 |
| GCU #124E | 1 | 7/26/04 | NA | 24.50 | 0.00 | 0.004 | 19.01 |
| GCU #124E | 1 | 10/15/04 | NA | 24.98 | 0.00 | 0.000 | 19.01 |

FIGURE 2
HISTORIC BTX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
GCU #124E
MW-1

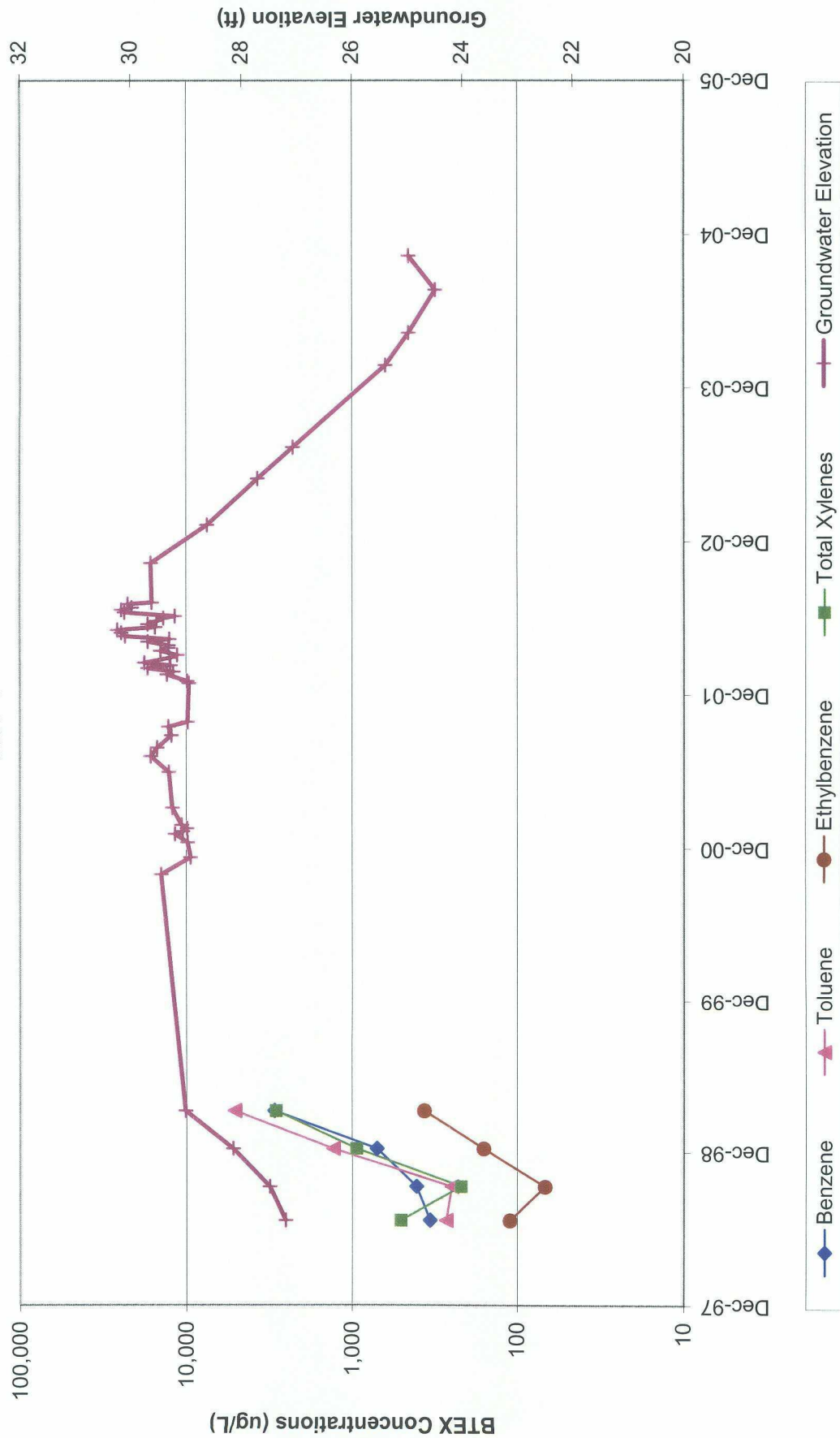
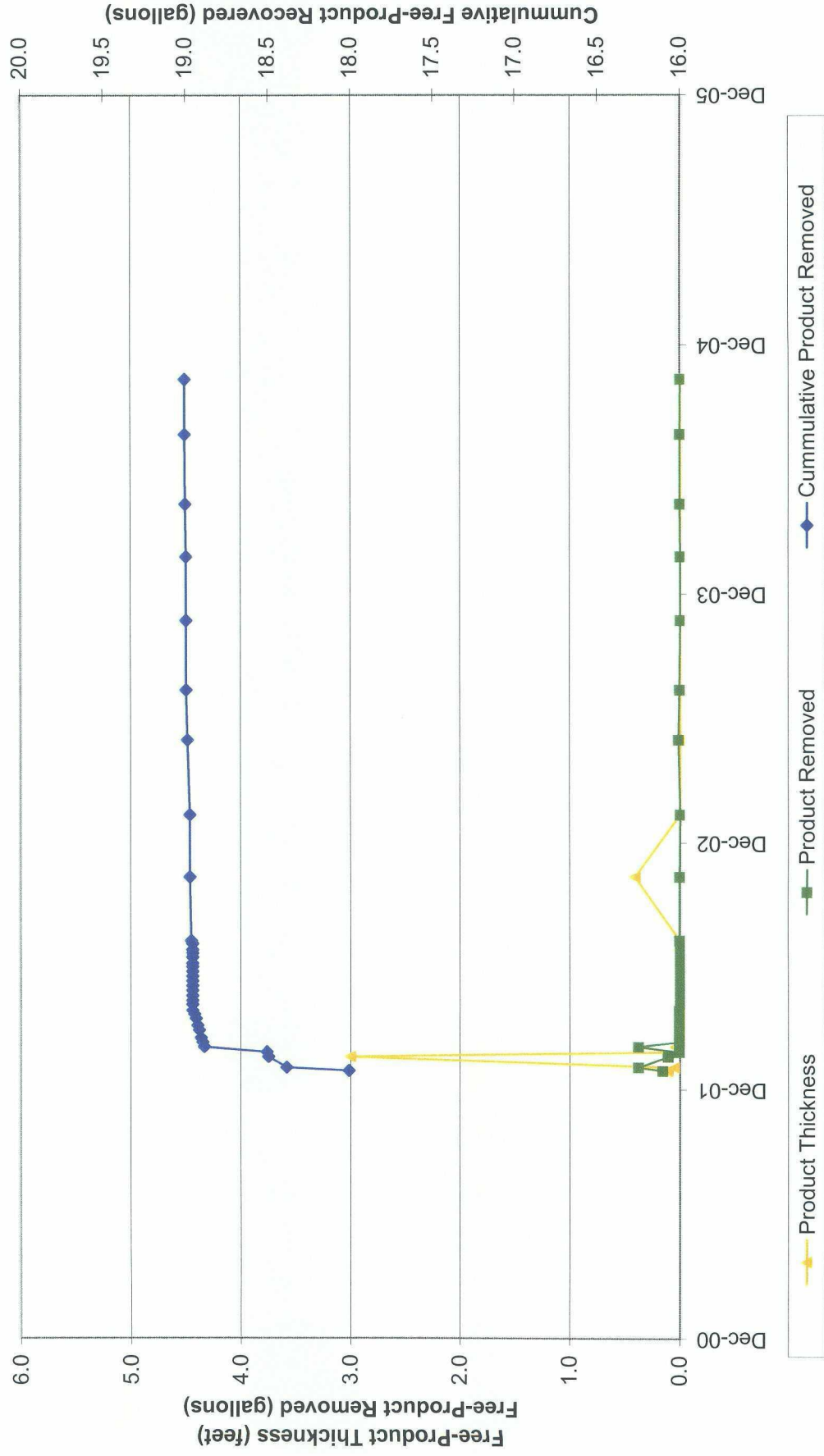


FIGURE 3
HISTORIC FREE-PRODUCT RECOVERY
GCU #124E
MW-1



ATTACHMENT 1
FIELD DOCUMENTATION

PRODUCT RECOVERY

| | | | |
|------------------------|-----------------------------|--------------------|------------------|
| Project Name | San Juan Basin Ground Water | Project No. | 30001.0 |
| Project Manager | MJN | Date | January 29, 2004 |
| Client Company | MWH | | |
| Site Name | GCU 124 E | | |

| Well | Time | Depth to Product (ft) | Depth to Water (ft) | Product Thickness (ft) | Volume Removed |
|--|------|-----------------------|---------------------|------------------------|----------------|
| MW-1 | 0911 | - | *25.40 | - | - |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| * Water level not static, taken after pulling skimmer. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments

Pulled skimmer and it was full of water. Bailed 4 gallons of water from the well. There was a very thin layer of product on the top of the water. Raised the level of the skimmer again.

| | | |
|-------------------|--------------|------------------|
| Martin J. Nee | Date: | January 29, 2004 |
| Signature: | | |



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PRODUCT RECOVERY

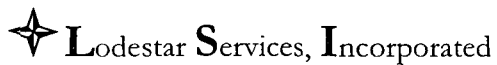
Project Name San Juan Basin Ground Water Project No. 30001.0
Project Manager MJN
Client Company MWH Date April 15, 2004
Site Name GCU 124 E

| Well | Time | Depth to Product (ft) | Depth to Water (ft) | Product Thickness (ft) | Volume Removed |
|--|------|-----------------------|---------------------|------------------------|----------------|
| MW-1 | 0911 | - | *24.98 | - | - |
| | | | | | |
| | | | | | |
| | | | | | |
| * Water level not static, taken after pulling skimmer. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments

Pulled and emptied skimmer. There was less than 1 oz product and water in skimmer. Replaced skimmer. No product in well.

Signature: Martin J. Nee Date: April 15, 2004



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PRODUCT RECOVERY

Project Name San Juan Basin Ground Water Project No. 30001.0
Project Manager MJN
Client Company MWH Date July 26, 2004
Site Name GCU 124 E

| Well | Time | Depth to Product (ft) | Depth to Water (ft) | Product Thickness (ft) | Volume Removed |
|--|------|-----------------------|---------------------|------------------------|------------------------|
| MW-1 | 1620 | - | *24.50 | - | < 1 oz |
| | | | | | Bailed 4 gallons water |
| | | | | | |
| | | | | | |
| * Water level not static, taken after pulling skimmer. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments

Pulled and emptied skimmer. There was less than 1 oz product and water in skimmer. Replaced skimmer. No product in well. Bailed 4 gallons water from well. Final water level after bailing water was 26.05 BTOC.

Signature: Martin J. Nee Date: July 26, 2004



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PRODUCT RECOVERY

Project Name San Juan Basin Ground Water Project No. 30001.0
Project Manager MJN
Client Company MWH Date October 15, 2004
Site Name GCU 124 E

| Well | Time | Depth to Product (ft) | Depth to Water (ft) | Product Thickness (ft) | Volume Removed |
|--|------|-----------------------|---------------------|------------------------|----------------|
| MW-1 | 0955 | - | *24.98 | - | - |
| | | | | | |
| | | | | | |
| | | | | | |
| * Water level not static, taken after pulling skimmer. | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Comments

Pulled and emptied skimmer. Bailed 4 gallons water from well. There did not appear to be any product in the well or on the water that was bailed from the well. There was oily paraffin on the passive skimmer and a thick sheen on the developed water. Reinstalled skimmer. Final water level after bailing water was 26.25 BTOC.

Signature: Martin J. Nee Date: October 15, 2004