



**PHOENIX**  
**TECHNOLOGY SERVICES**

January 12, 2016

Oil Conservation Division  
State of New Mexico  
811 S. First St.  
Artesia, New Mexico 88210

Dear District 2 - Artesia

Attention: Regulatory Department

Re: Apache Corporation  
NFE Federal Com #48H  
Eddy County, NM  
API #30-015-43442  
Job No. 1514802

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

**FEB 17 2016**

**RECEIVED**

Enclosed please find the Survey Data Certification, and the original Plat and one copy of the Survey Report performed on the above referenced Well by Phoenix Technology Services, Inc. (P-5 No. 664171). Other information required by your office is as follows:

| Name & Title of Surveyor | Drain Hole Number | Surveyed Depths |        | Dates Performed |          | Type of Survey |
|--------------------------|-------------------|-----------------|--------|-----------------|----------|----------------|
|                          |                   | From            | To     | Start           | End      |                |
| Mike Miller              | 48H               | 4,693           | 10,095 | 12/29/15        | 01/03/16 | MWD            |

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Best Regards,

*Claudia Carreon*

Claudia Carreon  
Operations Administrator

Certified mail receipt number: 7015 0640 0000 9907 5241

Phoenix Technology Services  
SURVEY DATA CERTIFICATION



PHOENIX JOB NUMBER

1514802

OPERATOR

Apache

WELL NAME NFE Federal COM #48H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-43442

PROPOSED DIRECTION

89.61

| TIE-IN DATA |             |        |         |         |          |        |
|-------------|-------------|--------|---------|---------|----------|--------|
| MEASURED    | VERTICAL    |        |         | N-S     | E-W      | DATA   |
| DEPTH       | DEPTH       | INCLIN | AZIMUTH | COORD   | COORD    | SOURCE |
| 4,612. ft   | 4,611.65 ft | 0.71   | 39.31   | 6.07 ft | 15.58 ft | Gyro   |

| FIRST     | FIRST       |        |         |
|-----------|-------------|--------|---------|
| SURVEY    | SURVEY      |        |         |
| DATE      | DEPTH       | INCLIN | AZIMUTH |
| 29-Dec-15 | 4,693.00 ft | 1.70   | 72.60   |

SURVEY INSTRUMENT

TYPE

Phoenix MWD

| LAST     | LAST         |        |         |
|----------|--------------|--------|---------|
| SURVEY   | SURVEY       |        |         |
| DATE     | DEPTH        | INCLIN | AZIMUTH |
| 3-Jan-16 | 10,095.00 ft | 92.30  | 91.90   |

TO THE BEST OF MY KNOWLEDGE I  
CERTIFY THIS SURVEY DATA TO BE  
TRUE AND CORRECT.

| PROJECTED | PROJECTED    |        |         |
|-----------|--------------|--------|---------|
| TD SURVEY | TD SURVEY    |        |         |
| DATE      | DEPTH        | INCLIN | AZIMUTH |
| 3-Jan-16  | 10,170.00 ft | 92.30  | 91.90   |

Mike Miller

PRINT YOUR NAME ABOVE

*Mike Miller*

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

| TOTAL CORRECTION USED | 7.41 |
|-----------------------|------|
| DECLINATION OR GRID   | GRID |

1/3/2016

TODAY'S DATE

MWD SUPERVISOR 1

Mike Miller

DIRECTIONAL DRILLER 1

Steven Hawkins

MWD SUPERVISOR 2

Bill Oehlert

DIRECTIONAL DRILLER 2

Brad Jones

12329 Cutten Rd., Houston, Texas 777066

(713)337-0600 (Voice), (713)337-0599 (Fax)



## **Apache Corporation**

Eddy County, NM (NAD27 NME)

NFE Federal COM

#48H

OH / Job #1514802

Design: Surveys (Capstar 119)

## **Standard Survey Report**

03 January, 2016

**NM OIL CONSERVATION**  
ARTESIA DISTRICT

FEB 17 2016

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# Phoenix Technology Services LP

## Survey Report



|           |                             |                              |                                |
|-----------|-----------------------------|------------------------------|--------------------------------|
| Company:  | Apache Corporation          | Local Co-ordinate Reference: | Well #48H                      |
| Project:  | Eddy County, NM (NAD27 NME) | TVD Reference:               | KB @ 3774.00usft (Capstar 119) |
| Site:     | NFE Federal COM             | MD Reference:                | KB @ 3774.00usft (Capstar 119) |
| Well:     | #48H                        | North Reference:             | Grid                           |
| Wellbore: | OH / Job #1514802           | Survey Calculation Method:   | Minimum Curvature              |
| Design:   | Surveys (Capstar 119)       | Database:                    | Compass 5000 GCR               |

|             |                                      |               |                |
|-------------|--------------------------------------|---------------|----------------|
| Project     | Eddy County, NM (NAD27 NME)          |               |                |
| Map System: | US State Plane 1927 (Exact solution) | System Datum: | Mean Sea Level |
| Geo Datum:  | NAD 1927 (NADCON CONUS)              |               |                |
| Map Zone:   | New Mexico East 3001                 |               |                |

|      |                 |  |  |
|------|-----------------|--|--|
| Site | NFE Federal COM |  |  |
|------|-----------------|--|--|

|                       |           |              |                 |                   |                     |
|-----------------------|-----------|--------------|-----------------|-------------------|---------------------|
| Site Position:        |           | Northing:    | 673,264.70 usft | Latitude:         | 32° 51' 0.49036 N   |
| From:                 | Map       | Easting:     | 633,303.50 usft | Longitude:        | 103° 53' 57.34966 W |
| Position Uncertainty: | 0.00 usft | Slot Radius: | 13-3/16 "       | Grid Convergence: | 0.24 °              |

|                      |           |                     |           |                 |               |                     |
|----------------------|-----------|---------------------|-----------|-----------------|---------------|---------------------|
| Well                 |           | #48H                |           |                 |               |                     |
| Well Position        | +N/-S     | 0.00 usft           | Northing: | 678,787.90 usft | Latitude:     | 32° 51' 55.33914 N  |
|                      | +E/-W     | 0.00 usft           | Easting:  | 628,390.40 usft | Longitude:    | 103° 54' 54.68576 W |
| Position Uncertainty | 0.00 usft | Wellhead Elevation: | usft      | Ground Level:   | 3,763.00 usft |                     |

|          |                   |  |  |  |  |
|----------|-------------------|--|--|--|--|
| Wellbore | OH / Job #1514802 |  |  |  |  |
|----------|-------------------|--|--|--|--|

|           |            |             |                 |               |                     |
|-----------|------------|-------------|-----------------|---------------|---------------------|
| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|           | HDGM       | 12/21/2015  | 7.63            | 60.78         | 48,531              |

|        |                       |  |  |  |  |
|--------|-----------------------|--|--|--|--|
| Design | Surveys (Capstar 119) |  |  |  |  |
|--------|-----------------------|--|--|--|--|

|              |     |        |        |               |      |
|--------------|-----|--------|--------|---------------|------|
| Audit Notes: |     |        |        |               |      |
| Version:     | 1.0 | Phase: | ACTUAL | Tie On Depth: | 0.00 |

|                   |                         |              |              |               |
|-------------------|-------------------------|--------------|--------------|---------------|
| Vertical Section: | Depth From (TVD) (usft) | +N/-S (usft) | +E/-W (usft) | Direction (°) |
|                   | 0.00                    | 0.00         | 0.00         | 89.61         |

|                |               |                                             |              |                                  |  |
|----------------|---------------|---------------------------------------------|--------------|----------------------------------|--|
| Survey Program | Date 1/3/2016 |                                             |              |                                  |  |
| From (usft)    | To (usft)     | Survey (Wellbore)                           | Tool Name    | Description                      |  |
| 113.00         | 4,612.00      | Scientific Gyro Surveys (OH / Job #1514802) | NS-GYRO-MS   | North sensing gyrocompassing m/s |  |
| 4,693.00       | 10,170.00     | Phoenix MWD Surveys (OH / Job #1514802)     | PHX+MWD+HDGM | PHX+OWSG MWD + HDGM              |  |

|        |                       |                 |             |                       |              |              |                         |                         |                        |                       |
|--------|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Survey | Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
|        | 0.00                  | 0.00            | 0.00        | 0.00                  | 0.00         | 0.00         | 0.00                    | 0.00                    | 0.00                   | 0.00                  |
|        | 113.00                | 0.26            | 136.42      | 113.00                | -0.19        | 0.18         | 0.18                    | 0.23                    | 0.23                   | 0.00                  |
|        | 142.00                | 0.27            | 180.44      | 142.00                | -0.30        | 0.22         | 0.22                    | 0.69                    | 0.03                   | 151.79                |
|        | 229.00                | 0.35            | 150.75      | 229.00                | -0.74        | 0.35         | 0.34                    | 0.20                    | 0.09                   | -34.13                |
|        | 319.00                | 0.52            | 156.35      | 319.00                | -1.35        | 0.65         | 0.64                    | 0.19                    | 0.19                   | 6.22                  |
|        | 495.00                | 0.78            | 138.61      | 494.98                | -2.98        | 1.76         | 1.74                    | 0.19                    | 0.15                   | -10.08                |
|        | 526.00                | 0.80            | 136.67      | 525.98                | -3.30        | 2.05         | 2.03                    | 0.11                    | 0.06                   | -6.26                 |
|        | 611.00                | 0.76            | 138.47      | 610.97                | -4.15        | 2.83         | 2.80                    | 0.06                    | -0.05                  | 2.12                  |
|        | 696.00                | 0.79            | 133.29      | 695.97                | -4.98        | 3.63         | 3.60                    | 0.09                    | 0.04                   | -6.09                 |
|        | 781.00                | 0.73            | 124.10      | 780.96                | -5.68        | 4.50         | 4.47                    | 0.16                    | -0.07                  | -10.81                |



# Phoenix Technology Services LP

## Survey Report



|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #48H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3774.00usft (Capstar 119) |
| <b>Site:</b>     | NFE Federal COM             | <b>MD Reference:</b>                | KB @ 3774.00usft (Capstar 119) |
| <b>Well:</b>     | #48H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH / Job #1514802           | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Capstar 119)       | <b>Database:</b>                    | Compass 5000 GCR               |

| Survey                            |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)             | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 952.00                            | 0.83            | 108.62      | 951.94                | -6.69        | 6.58         | 6.53                    | 0.14                    | 0.06                   | -9.05                 |
| 1,122.00                          | 0.88            | 90.36       | 1,121.92              | -7.09        | 9.05         | 9.00                    | 0.16                    | 0.03                   | -10.74                |
| 1,208.00                          | 1.28            | 93.29       | 1,207.91              | -7.15        | 10.67        | 10.62                   | 0.47                    | 0.47                   | 3.41                  |
| 1,293.00                          | 1.35            | 88.44       | 1,292.89              | -7.18        | 12.62        | 12.57                   | 0.15                    | 0.08                   | -5.71                 |
| 1,378.00                          | 1.34            | 69.99       | 1,377.86              | -6.81        | 14.56        | 14.51                   | 0.51                    | -0.01                  | -21.71                |
| 1,463.00                          | 1.26            | 95.62       | 1,462.84              | -6.56        | 16.42        | 16.37                   | 0.68                    | -0.09                  | 30.15                 |
| 1,549.00                          | 1.25            | 99.77       | 1,548.82              | -6.81        | 18.28        | 18.24                   | 0.11                    | -0.01                  | 4.83                  |
| 1,634.00                          | 0.99            | 101.81      | 1,633.80              | -7.12        | 19.92        | 19.87                   | 0.31                    | -0.31                  | 2.40                  |
| 1,719.00                          | 0.76            | 99.24       | 1,718.80              | -7.36        | 21.19        | 21.14                   | 0.27                    | -0.27                  | -3.02                 |
| 1,804.00                          | 0.65            | 109.29      | 1,803.79              | -7.61        | 22.20        | 22.15                   | 0.19                    | -0.13                  | 11.82                 |
| 1,889.00                          | 0.56            | 111.37      | 1,888.78              | -7.92        | 23.05        | 22.99                   | 0.11                    | -0.11                  | 2.45                  |
| 2,060.00                          | 0.27            | 105.03      | 2,059.78              | -8.33        | 24.21        | 24.16                   | 0.17                    | -0.17                  | -3.71                 |
| 2,145.00                          | 0.14            | 95.84       | 2,144.78              | -8.39        | 24.51        | 24.45                   | 0.16                    | -0.15                  | -10.81                |
| 2,315.00                          | 0.06            | 76.26       | 2,314.78              | -8.39        | 24.80        | 24.75                   | 0.05                    | -0.05                  | -11.52                |
| 2,485.00                          | 0.08            | 325.59      | 2,484.78              | -8.27        | 24.82        | 24.77                   | 0.07                    | 0.01                   | -65.10                |
| 2,656.00                          | 0.31            | 276.77      | 2,655.78              | -8.12        | 24.30        | 24.24                   | 0.15                    | 0.13                   | -28.55                |
| 2,741.00                          | 0.38            | 269.91      | 2,740.78              | -8.09        | 23.79        | 23.73                   | 0.10                    | 0.08                   | -8.07                 |
| 2,826.00                          | 0.39            | 272.20      | 2,825.77              | -8.08        | 23.21        | 23.16                   | 0.02                    | 0.01                   | 2.69                  |
| 2,911.00                          | 0.41            | 263.87      | 2,910.77              | -8.10        | 22.62        | 22.57                   | 0.07                    | 0.02                   | -9.80                 |
| 2,996.00                          | 0.42            | 280.61      | 2,995.77              | -8.08        | 22.01        | 21.96                   | 0.14                    | 0.01                   | 19.69                 |
| 3,081.00                          | 0.48            | 281.98      | 3,080.77              | -7.95        | 21.36        | 21.31                   | 0.07                    | 0.07                   | 1.61                  |
| 3,167.00                          | 0.69            | 277.51      | 3,166.76              | -7.80        | 20.49        | 20.44                   | 0.25                    | 0.24                   | -5.20                 |
| 3,252.00                          | 0.84            | 288.41      | 3,251.75              | -7.54        | 19.40        | 19.34                   | 0.25                    | 0.18                   | 12.82                 |
| 3,422.00                          | 1.23            | 344.76      | 3,421.73              | -5.39        | 17.73        | 17.70                   | 0.61                    | 0.23                   | 33.15                 |
| 3,508.00                          | 1.23            | 342.61      | 3,507.71              | -3.62        | 17.21        | 17.19                   | 0.05                    | 0.00                   | -2.50                 |
| 3,593.00                          | 1.01            | 340.73      | 3,592.69              | -2.04        | 16.70        | 16.68                   | 0.26                    | -0.26                  | -2.21                 |
| 3,678.00                          | 0.70            | 332.76      | 3,677.69              | -0.87        | 16.21        | 16.20                   | 0.39                    | -0.36                  | -9.38                 |
| 3,848.00                          | 0.53            | 328.52      | 3,847.68              | 0.72         | 15.32        | 15.33                   | 0.10                    | -0.10                  | -2.49                 |
| 3,933.00                          | 0.46            | 327.72      | 3,932.67              | 1.35         | 14.94        | 14.95                   | 0.08                    | -0.08                  | -0.94                 |
| 4,018.00                          | 0.45            | 334.85      | 4,017.67              | 1.94         | 14.61        | 14.63                   | 0.07                    | -0.01                  | 8.39                  |
| 4,104.00                          | 0.39            | 343.29      | 4,103.67              | 2.53         | 14.39        | 14.40                   | 0.10                    | -0.07                  | 9.81                  |
| 4,189.00                          | 0.35            | 13.07       | 4,188.67              | 3.05         | 14.36        | 14.38                   | 0.23                    | -0.05                  | 35.04                 |
| 4,274.00                          | 0.23            | 8.21        | 4,273.66              | 3.48         | 14.44        | 14.47                   | 0.14                    | -0.14                  | -5.72                 |
| 4,359.00                          | 0.33            | 12.66       | 4,358.66              | 3.88         | 14.52        | 14.55                   | 0.12                    | 0.12                   | 5.24                  |
| 4,444.00                          | 0.45            | 19.35       | 4,443.66              | 4.44         | 14.69        | 14.72                   | 0.15                    | 0.14                   | 7.87                  |
| 4,529.00                          | 0.70            | 26.71       | 4,528.66              | 5.22         | 15.03        | 15.07                   | 0.31                    | 0.29                   | 8.66                  |
| 4,612.00                          | 0.71            | 39.31       | 4,611.65              | 6.07         | 15.58        | 15.62                   | 0.19                    | 0.01                   | 15.18                 |
| Tie In to Scientific Gyro Surveys |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,693.00                          | 1.70            | 72.60       | 4,692.63              | 6.82         | 17.05        | 17.09                   | 1.45                    | 1.22                   | 41.10                 |
| First Phoenix MWD Survey          |                 |             |                       |              |              |                         |                         |                        |                       |
| 4,735.00                          | 6.50            | 96.40       | 4,734.51              | 6.74         | 20.01        | 20.05                   | 11.89                   | 11.43                  | 56.67                 |
| 4,778.00                          | 12.30           | 97.80       | 4,776.92              | 5.84         | 26.97        | 27.01                   | 13.50                   | 13.49                  | 3.26                  |
| 4,820.00                          | 18.30           | 96.80       | 4,817.41              | 4.45         | 37.96        | 37.99                   | 14.30                   | 14.29                  | -2.38                 |



# Phoenix Technology Services LP

## Survey Report



|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #48H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3774.00usft (Capstar 119) |
| <b>Site:</b>     | NFE Federal COM             | <b>MD Reference:</b>                | KB @ 3774.00usft (Capstar 119) |
| <b>Well:</b>     | #48H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH / Job #1514802           | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Capstar 119)       | <b>Database:</b>                    | Compass 5000 GCR               |

| Survey                |                 |             |                       |              |              |                         |                         |                        |                       |
|-----------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 4,863.00              | 23.70           | 97.40       | 4,857.54              | 2.54         | 53.24        | 53.26                   | 12.57                   | 12.56                  | 1.40                  |
| 4,906.00              | 27.50           | 97.70       | 4,896.31              | 0.10         | 71.66        | 71.66                   | 8.84                    | 8.84                   | 0.70                  |
| 4,948.00              | 31.10           | 95.50       | 4,932.94              | -2.24        | 92.07        | 92.05                   | 8.95                    | 8.57                   | -5.24                 |
| 4,991.00              | 35.60           | 93.90       | 4,968.85              | -4.16        | 115.63       | 115.59                  | 10.66                   | 10.47                  | -3.72                 |
| 5,033.00              | 39.10           | 91.50       | 5,002.23              | -5.34        | 141.07       | 141.03                  | 9.02                    | 8.33                   | -5.71                 |
| 5,076.00              | 43.30           | 89.80       | 5,034.58              | -5.64        | 169.38       | 169.34                  | 10.11                   | 9.77                   | -3.95                 |
| 5,119.00              | 47.30           | 89.30       | 5,064.82              | -5.40        | 199.94       | 199.90                  | 9.34                    | 9.30                   | -1.16                 |
| 5,161.00              | 50.70           | 88.60       | 5,092.37              | -4.81        | 231.63       | 231.59                  | 8.19                    | 8.10                   | -1.67                 |
| 5,203.00              | 54.50           | 88.20       | 5,117.87              | -3.88        | 264.97       | 264.94                  | 9.08                    | 9.05                   | -0.95                 |
| 5,246.00              | 59.40           | 88.70       | 5,141.32              | -2.91        | 300.99       | 300.97                  | 11.44                   | 11.40                  | 1.16                  |
| 5,289.00              | 65.40           | 89.40       | 5,161.23              | -2.28        | 339.08       | 339.05                  | 14.03                   | 13.95                  | 1.63                  |
| 5,331.00              | 68.40           | 90.70       | 5,177.71              | -2.32        | 377.70       | 377.68                  | 7.69                    | 7.14                   | 3.10                  |
| 5,374.00              | 74.30           | 91.10       | 5,191.45              | -2.96        | 418.42       | 418.39                  | 13.75                   | 13.72                  | 0.93                  |
| 5,417.00              | 80.30           | 90.80       | 5,200.90              | -3.66        | 460.35       | 460.31                  | 13.97                   | 13.95                  | -0.70                 |
| 5,460.00              | 86.60           | 90.00       | 5,205.80              | -3.95        | 503.04       | 503.00                  | 14.77                   | 14.65                  | -1.86                 |
| 5,502.00              | 88.50           | 90.30       | 5,207.60              | -4.06        | 545.00       | 544.96                  | 4.58                    | 4.52                   | 0.71                  |
| 5,630.00              | 90.20           | 91.90       | 5,209.05              | -6.52        | 672.96       | 672.90                  | 1.82                    | 1.33                   | 1.25                  |
| 5,758.00              | 89.10           | 90.50       | 5,209.83              | -9.20        | 800.93       | 800.84                  | 1.39                    | -0.86                  | -1.09                 |
| 5,886.00              | 87.70           | 88.80       | 5,213.41              | -8.42        | 928.87       | 928.79                  | 1.72                    | -1.09                  | -1.33                 |
| 6,014.00              | 88.90           | 89.40       | 5,217.20              | -6.41        | 1,056.79     | 1,056.72                | 1.05                    | 0.94                   | 0.47                  |
| 6,142.00              | 87.60           | 88.10       | 5,221.11              | -3.62        | 1,184.69     | 1,184.64                | 1.44                    | -1.02                  | -1.02                 |
| 6,269.00              | 88.90           | 88.50       | 5,224.99              | 0.15         | 1,311.58     | 1,311.55                | 1.07                    | 1.02                   | 0.31                  |
| 6,397.00              | 86.60           | 88.20       | 5,230.02              | 3.83         | 1,439.42     | 1,439.41                | 1.81                    | -1.80                  | -0.23                 |
| 6,525.00              | 87.80           | 89.30       | 5,236.27              | 6.62         | 1,567.23     | 1,567.24                | 1.27                    | 0.94                   | 0.86                  |
| 6,653.00              | 88.10           | 89.00       | 5,240.85              | 8.51         | 1,695.13     | 1,695.15                | 0.33                    | 0.23                   | -0.23                 |
| 6,780.00              | 88.40           | 88.20       | 5,244.73              | 11.61        | 1,822.03     | 1,822.07                | 0.67                    | 0.24                   | -0.63                 |
| 6,908.00              | 89.80           | 88.60       | 5,246.74              | 15.19        | 1,949.96     | 1,950.02                | 1.14                    | 1.09                   | 0.31                  |
| 7,036.00              | 87.70           | 89.40       | 5,249.53              | 17.42        | 2,077.91     | 2,077.98                | 1.76                    | -1.64                  | 0.63                  |
| 7,164.00              | 88.50           | 89.40       | 5,253.77              | 18.76        | 2,205.83     | 2,205.90                | 0.63                    | 0.63                   | 0.00                  |
| 7,292.00              | 89.10           | 90.80       | 5,256.45              | 18.54        | 2,333.80     | 2,333.87                | 1.19                    | 0.47                   | 1.09                  |
| 7,420.00              | 88.20           | 91.30       | 5,259.47              | 16.19        | 2,461.74     | 2,461.79                | 0.80                    | -0.70                  | 0.39                  |
| 7,547.00              | 87.10           | 90.20       | 5,264.68              | 14.53        | 2,588.62     | 2,588.65                | 1.22                    | -0.87                  | -0.87                 |
| 7,675.00              | 87.60           | 88.60       | 5,270.60              | 15.87        | 2,716.47     | 2,716.51                | 1.31                    | 0.39                   | -1.25                 |
| 7,803.00              | 89.10           | 89.20       | 5,274.28              | 18.33        | 2,844.39     | 2,844.45                | 1.26                    | 1.17                   | 0.47                  |
| 7,931.00              | 90.40           | 90.00       | 5,274.84              | 19.22        | 2,972.38     | 2,972.44                | 1.19                    | 1.02                   | 0.63                  |
| 8,058.00              | 88.60           | 89.20       | 5,275.95              | 20.11        | 3,099.36     | 3,099.43                | 1.55                    | -1.42                  | -0.63                 |
| 8,186.00              | 89.40           | 90.10       | 5,278.18              | 20.89        | 3,227.34     | 3,227.41                | 0.94                    | 0.63                   | 0.70                  |
| 8,314.00              | 90.30           | 90.60       | 5,278.52              | 20.11        | 3,355.34     | 3,355.39                | 0.80                    | 0.70                   | 0.39                  |
| 8,442.00              | 90.60           | 90.40       | 5,277.51              | 18.99        | 3,483.33     | 3,483.38                | 0.28                    | 0.23                   | -0.16                 |
| 8,570.00              | 90.40           | 89.80       | 5,276.39              | 18.77        | 3,611.32     | 3,611.36                | 0.49                    | -0.16                  | -0.47                 |
| 8,697.00              | 89.00           | 89.80       | 5,277.06              | 19.21        | 3,738.32     | 3,738.36                | 1.10                    | -1.10                  | 0.00                  |
| 8,825.00              | 90.00           | 90.30       | 5,278.18              | 19.10        | 3,866.31     | 3,866.35                | 0.87                    | 0.78                   | 0.39                  |
| 8,953.00              | 89.20           | 90.00       | 5,279.07              | 18.76        | 3,994.30     | 3,994.34                | 0.67                    | -0.63                  | -0.23                 |
| 9,081.00              | 86.90           | 87.30       | 5,283.43              | 21.77        | 4,122.17     | 4,122.23                | 2.77                    | -1.80                  | -2.11                 |

|                  |                             |                                     |                                |
|------------------|-----------------------------|-------------------------------------|--------------------------------|
| <b>Company:</b>  | Apache Corporation          | <b>Local Co-ordinate Reference:</b> | Well #48H                      |
| <b>Project:</b>  | Eddy County, NM (NAD27 NME) | <b>TVD Reference:</b>               | KB @ 3774.00usft (Capstar 119) |
| <b>Site:</b>     | NFE Federal COM             | <b>MD Reference:</b>                | KB @ 3774.00usft (Capstar 119) |
| <b>Well:</b>     | #48H                        | <b>North Reference:</b>             | Grid                           |
| <b>Wellbore:</b> | OH / Job #1514802           | <b>Survey Calculation Method:</b>   | Minimum Curvature              |
| <b>Design:</b>   | Surveys (Capstar 119)       | <b>Database:</b>                    | Compass 5000 GCR               |

| Survey                          |                 |             |                       |              |              |                         |                         |                        |                       |
|---------------------------------|-----------------|-------------|-----------------------|--------------|--------------|-------------------------|-------------------------|------------------------|-----------------------|
| Measured Depth (usft)           | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Vertical Section (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) |
| 9,208.00                        | 88.00           | 87.80       | 5,289.08              | 27.20        | 4,248.93     | 4,249.02                | 0.95                    | 0.87                   | 0.39                  |
| 9,336.00                        | 88.40           | 87.60       | 5,293.10              | 32.33        | 4,376.76     | 4,376.88                | 0.35                    | 0.31                   | -0.16                 |
| 9,464.00                        | 89.40           | 87.10       | 5,295.55              | 38.25        | 4,504.60     | 4,504.76                | 0.87                    | 0.78                   | -0.39                 |
| 9,592.00                        | 87.30           | 89.00       | 5,299.24              | 42.60        | 4,632.46     | 4,632.64                | 2.21                    | -1.64                  | 1.48                  |
| 9,719.00                        | 89.20           | 89.90       | 5,303.12              | 43.82        | 4,759.39     | 4,759.58                | 1.66                    | 1.50                   | 0.71                  |
| 9,847.00                        | 90.40           | 90.70       | 5,303.57              | 43.15        | 4,887.38     | 4,887.56                | 1.13                    | 0.94                   | 0.63                  |
| 9,974.00                        | 91.40           | 91.30       | 5,301.57              | 40.93        | 5,014.34     | 5,014.51                | 0.92                    | 0.79                   | 0.47                  |
| 10,095.00                       | 92.30           | 91.90       | 5,297.66              | 37.56        | 5,135.23     | 5,135.37                | 0.89                    | 0.74                   | 0.50                  |
| <b>Final Phoenix MWD Survey</b> |                 |             |                       |              |              |                         |                         |                        |                       |
| 10,170.00                       | 92.30           | 91.90       | 5,294.65              | 35.07        | 5,210.13     | 5,210.25                | 0.00                    | 0.00                   | 0.00                  |
| <b>Projection to TD</b>         |                 |             |                       |              |              |                         |                         |                        |                       |

| Design Annotations    |                       |                   |              |                                   |
|-----------------------|-----------------------|-------------------|--------------|-----------------------------------|
| Measured Depth (usft) | Vertical Depth (usft) | Local Coordinates |              | Comment                           |
|                       |                       | +N/-S (usft)      | +E/-W (usft) |                                   |
| 4,612.00              | 4,611.65              | 6.07              | 15.58        | Tie In to Scientific Gyro Surveys |
| 4,693.00              | 4,692.63              | 6.82              | 17.05        | First Phoenix MWD Survey          |
| 10,095.00             | 5,297.66              | 37.56             | 5,135.23     | Final Phoenix MWD Survey          |
| 10,170.00             | 5,294.65              | 35.07             | 5,210.13     | Projection to TD                  |

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (505) 392-6161 Fax: (505) 393-0720

DISTRICT II  
811 S. First St., Aztec, NM 87410  
Phone: (505) 748-1283 Fax: (505) 748-9720

DISTRICT III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 354-6178 Fax: (505) 354-6170

DISTRICT IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|                                       |                                            |                                               |
|---------------------------------------|--------------------------------------------|-----------------------------------------------|
| API Number<br><b>30-015-43442</b>     | Pool Code<br><b>96831</b>                  | Pool Name<br><b>Cedar Lake; Glorieta-Yeso</b> |
| Property Code<br><b>308724 314794</b> | Property Name<br><b>NFE FEDERAL COM</b>    | Well Number<br><b>48H</b>                     |
| OGRID No.<br><b>873</b>               | Operator Name<br><b>APACHE CORPORATION</b> | Elevation<br><b>3763'</b>                     |

Surface Location

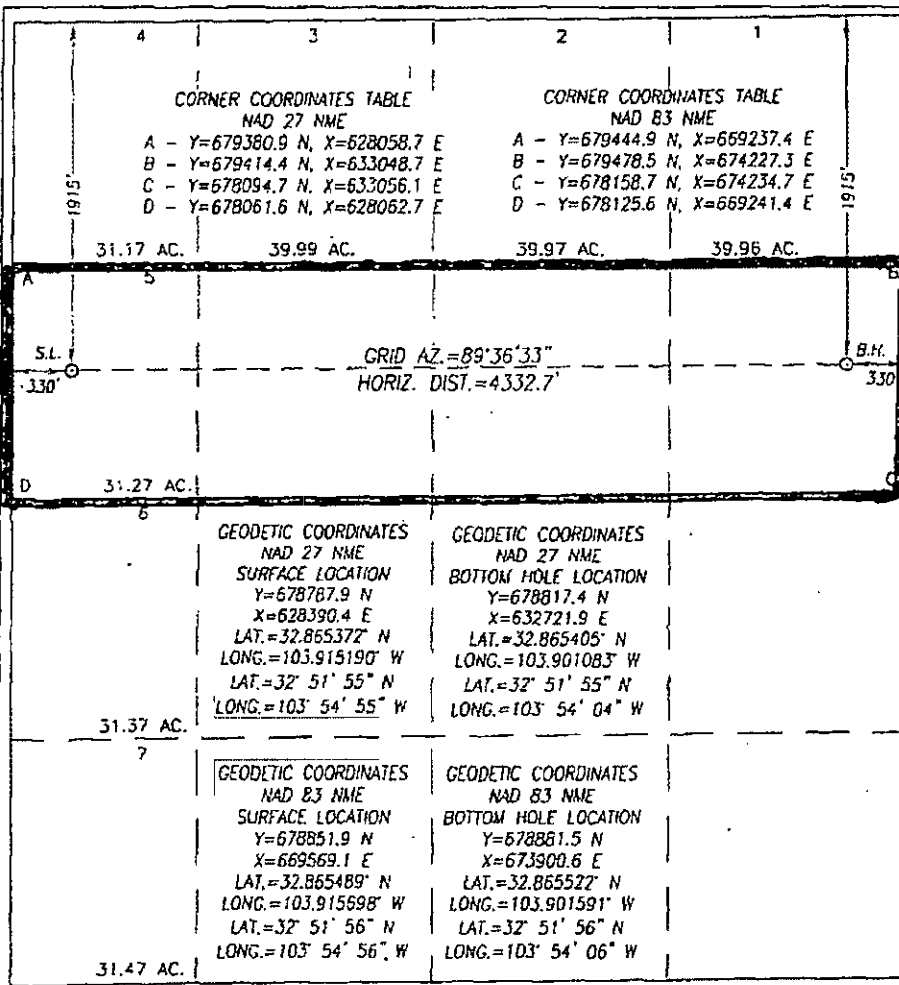
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| 5             | 6       | 17-S     | 31-E  |         | 1915          | NORTH            | 330           | WEST           | EDDY   |

Bottom Hole Location If Different From Surface

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| H             | 6       | 17-S     | 31-E  |         | 1915          | NORTH            | 330           | EAST           | EDDY   |

| Dedicated Acres | Join or Infill | Consolidation Code | Order No. |
|-----------------|----------------|--------------------|-----------|
| <b>151.27</b>   |                |                    |           |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

*Sorina L. Flores* 2/11/15  
Signature Date

*Sorina L. Flores*  
Printed Name:

*sorina.flores@apachecorp.com*  
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

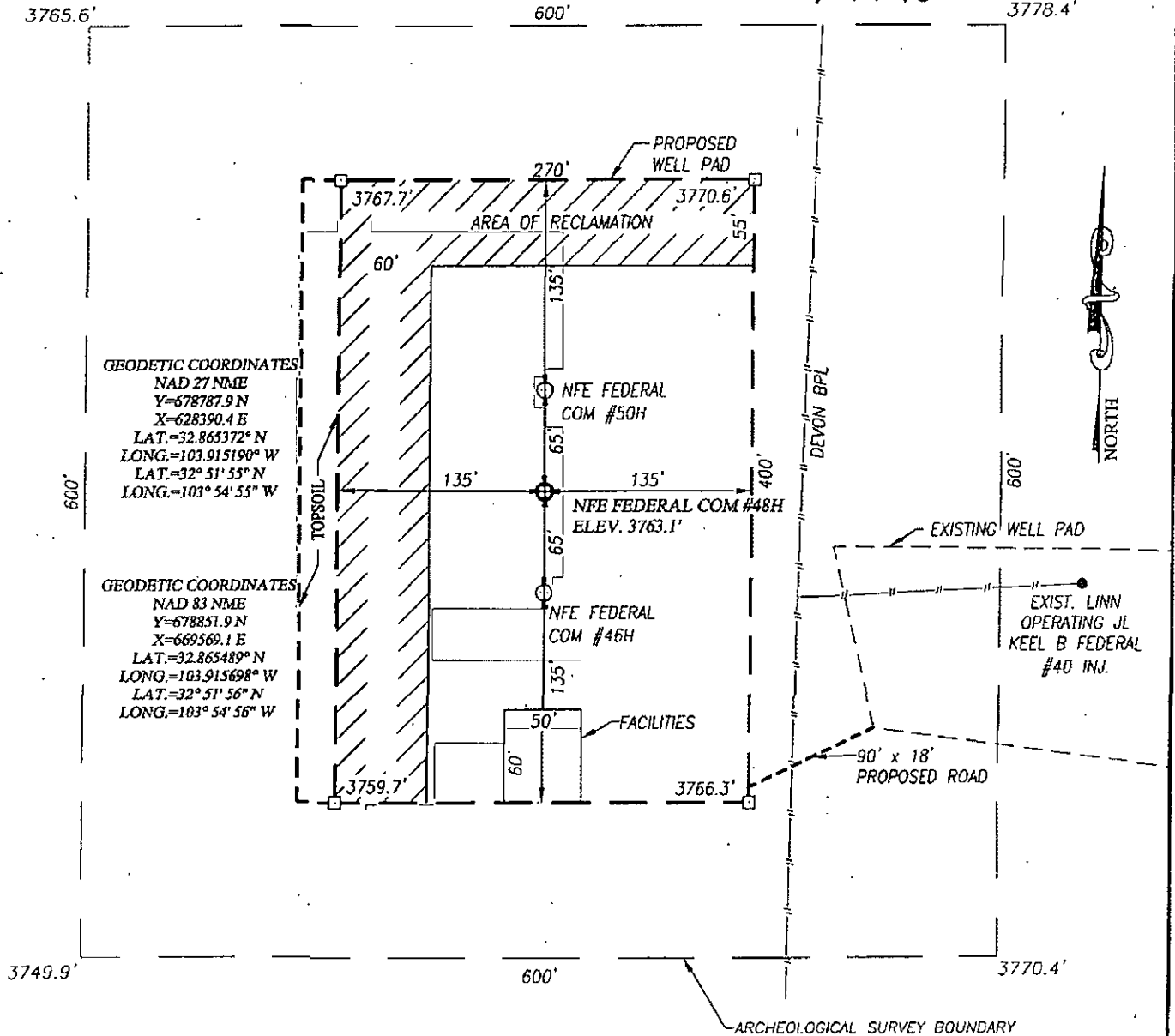
JANUARY 7, 2015

Date of Survey  
Signature & Seal of Professional Surveyor:

*Ronald J. Eidson* 03/05/2015  
Certificate Number: 12641  
Ronald J. Eidson 3239

LSL REL W.O. 14,11,1416 JWSC W.O. 15,12,2841

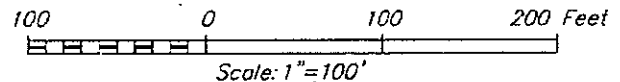
EXHIBIT #1A



NOTE:  
 1) SEE "LOCATION VERIFICATION MAP"  
 FOR PROPOSED ROAD LOCATION.

**DIRECTIONS TO NFE FEDERAL COM#48H:**

FROM THE INTERSECTION OF U.S. HWY. 82 AND CO. RD. 220 (SQUARE LAKE), GO NORTH ON CO. RD. 220 APPROX. 3.7 MILES. TURN RIGHT AND GO NORTHEAST ON LEASE ROAD APPROX. 0.5 MILES. TURN RIGHT AND GO EAST APPROX. 0.2 MILES. THEN CONTINUE ON ROAD SOUTHEAST APPROX. 0.4 MILES. TURN RIGHT AND GO SOUTH APPROX. 0.2 MILES TO EXISTING LINN OPERATING INJECTION WELL, FROM THE SOUTHWEST CORNER OF THE LOCATION. FOLLOW STAKED ROAD 90 FEET SOUTHWEST TO THIS LOCATION.



**APACHE CORPORATION**

NFE FEDERAL COM #48H WELL  
 LOCATED 1915 FEET FROM THE NORTH LINE  
 AND 330 FEET FROM THE WEST LINE OF SECTION 6,  
 TOWNSHIP 17 SOUTH, RANGE 31 EAST, N.M.P.M.,  
 EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES  
 SINCE 1946  
**JOHN WEST SURVEYING COMPANY**  
 412 N. DAL PASO HOBBS, N.M. 88240  
 (575) 393-3117 www.jwsc.biz  
 TBPLS# 10021000

|                     |                   |                     |
|---------------------|-------------------|---------------------|
| Survey Date: 1/7/15 | CAD Date: 1/29/15 | Drawn By: LSL       |
| W.O. No.: 15130284  | Rev.:             | Rel. W.O.: 14111416 |
|                     |                   | Sheet 1 of 1        |