



PHOENIX
TECHNOLOGY SERVICES

February 9, 2016

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

NM OIL CONSERVATION

ARTESIA DISTRICT

FEB 17 2016

Dear District 2 - Artesia

RECEIVED

Attention: Regulatory Department

Re: Apache Corporation
Hawk Federal Com #9H
Eddy County, NM
API #30-015-43520
Job No. 1610024

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	
Bernard Caldwell	9H	5,070	9,434	01/14/16	01/18/16	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

1610024

ENERGY COMPANY

Apache Corp

WELL NAME

Hawk Federal Com #9H

COUNTY & STATE

Eddy County, NM

API WELL NUMBER

30-015-43520

PROPOSED DIRECTION

279.41

TIE-IN DATA						
MEASURED	VERTICAL			N-S	E-W	DATA
DEPTH	DEPTH	INCLIN	AZIMUTH	COORD	COORD	SOURCE
5,035.00 ft	5,034.55 ft	0.99	309.87	33.05 N	2.95 W	Phoenix Gyro

FIRST	FIRST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
14-Jan-16	5,070.00 ft	1.00	319.10

SURVEY INSTRUMENT
TYPE

Phoenix MWD

LAST	LAST		
SURVEY	SURVEY		
DATE	DEPTH	INCLIN	AZIMUTH
18-Jan-16	9,434.00 ft	90.20	268.70

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
18-Jan-16	9,508.00 ft	90.20	268.70

Bernard Caldwell

PRINT YOUR NAME ABOVE

Bernard Caldwell

SIGN YOUR NAME ABOVE

MAGNETIC DECLINATION OR TOTAL GRID

TOTAL CORRECTION USED	7.30
DECLINATION OR GRID	GRID

01/19/16

TODAY'S DATE

MWD SUPERVISOR 1

Bernard Caldwell

DIRECTIONAL DRILLER 1

Michael Crall

MWD SUPERVISOR 2

Steve Poer

DIRECTIONAL DRILLER 2

David Eddins



Apache Corporation

Eddy County, NM (NAD27 NME)

Hawk Federal Com

#9H

OH / Job #1610024

Survey: Phoenix MWD Surveys

Standard Survey Report

19 January, 2016

NM OIL CONSERVATION
ARTESIA DISTRICT

FEB 17 2016

RECEIVED



Company:	Apache Corporation	Local Co-ordinate Reference:	Well #9H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3967.00usft (Capstar 114)
Site:	Hawk Federal Corn	MD Reference:	KB @ 3967.00usft (Capstar 114)
Well:	#9H	North Reference:	Grid
Wellbore:	OH / Job #1610024	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	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	Hawk Federal Corn		
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Site Position:	Map	Northing:	678,926.80 usft	Latitude:	32° 51' 56.07367 N
From:		Easting:	643,794.70 usft	Longitude:	103° 51' 54.07565 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.25 °

Well	#9H					
Well Position	+N/-S	0.00 usft	Northing:	679,691.30 usft	Latitude:	32° 52' 3.68870 N
	+E/-W	0.00 usft	Easting:	642,644.60 usft	Longitude:	103° 52' 7.52019 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,956.00 usft

Wellbore	OH / Job #1610024				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/31/2015	7.55	60.82	48,559

Design	Surveys (Capstar 114)				
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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	279.41

Survey Program		Date	1/19/2016		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
100.00	5,035.00	Phoenix Gyro Surveys (OH / Job #161002	PHX_SPT_GTD	PHX Continuous north-seeking gyro	
5,070.00	9,508.00	Phoenix MWD Surveys (OH / Job #161002	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)
	5,035.00	0.99	309.87	5,034.55	33.05	-2.95	8.31	0.00	0.00	0.00
Tie In to Phoenix Gyro Surveys	5,070.00	1.00	319.10	5,069.55	33.47	-3.38	8.81	0.46	0.03	26.37
First Phoenix MWD Survey	5,113.00	2.90	318.90	5,112.52	34.58	-4.34	9.94	4.42	4.42	-0.47
	5,155.00	8.10	317.30	5,154.31	37.56	-7.05	13.10	12.39	12.38	-3.81
	5,198.00	14.50	317.00	5,196.46	43.73	-12.78	19.76	14.88	14.88	-0.70
	5,241.00	20.80	320.20	5,237.41	53.54	-21.35	29.82	14.82	14.65	7.44
	5,283.00	25.10	316.50	5,276.08	65.74	-32.26	42.57	10.79	10.24	-8.81

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #9H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3967.00usft (Capstar 114)
Site:	Hawk Federal Com	MD Reference:	KB @ 3967.00usft (Capstar 114)
Well:	#9H	North Reference:	Grid
Wellbore:	OH / Job #1610024	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	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)
5,326.00	29.70	312.20	5,314.25	79.52	-46.44	58.81	11.64	10.70	-10.00
5,369.00	33.80	310.00	5,350.81	94.37	-63.50	78.07	9.91	9.53	-5.12
5,411.00	38.40	306.00	5,384.74	109.55	-83.02	99.81	12.30	10.95	-9.52
5,454.00	42.10	304.30	5,417.56	125.53	-105.74	124.84	8.98	8.60	-3.95
5,496.00	46.30	304.50	5,447.66	142.07	-129.89	151.37	10.01	10.00	0.48
5,539.00	50.50	304.40	5,476.20	160.26	-156.40	180.50	9.77	9.77	-0.23
5,582.00	53.60	304.50	5,502.64	179.44	-184.36	211.21	7.21	7.21	0.23
5,624.00	57.90	304.50	5,526.27	199.09	-212.96	242.65	10.24	10.24	0.00
5,667.00	63.40	303.50	5,547.34	220.04	-244.03	276.72	12.95	12.79	-2.33
5,710.00	68.10	303.10	5,565.00	241.55	-276.79	312.56	10.96	10.93	-0.93
5,752.00	72.80	302.70	5,579.05	263.04	-310.01	348.85	11.23	11.19	-0.95
5,795.00	78.20	302.40	5,589.81	285.43	-345.09	387.11	12.58	12.56	-0.70
5,837.00	83.20	303.00	5,596.60	307.82	-379.96	425.17	11.99	11.90	1.43
5,854.00	85.70	302.90	5,598.24	317.02	-394.15	440.68	14.72	14.71	-0.59
5,877.00	88.20	303.00	5,599.46	329.51	-413.42	461.74	10.88	10.87	0.43
5,920.00	91.30	303.50	5,599.65	353.09	-449.38	501.06	7.30	7.21	1.16
5,963.00	91.70	303.50	5,598.53	376.81	-485.22	540.30	0.93	0.93	0.00
6,005.00	91.20	302.40	5,597.46	399.65	-520.46	578.79	2.88	-1.19	-2.62
6,048.00	91.40	301.30	5,596.49	422.33	-556.97	618.53	2.60	0.47	-2.56
6,091.00	91.40	300.70	5,595.44	444.47	-593.82	658.50	1.39	0.00	-1.40
6,133.00	91.50	299.20	5,594.38	465.43	-630.20	697.82	3.58	0.24	-3.57
6,261.00	90.80	295.30	5,591.81	524.02	-743.95	819.61	3.09	-0.55	-3.05
6,389.00	89.30	292.50	5,591.69	575.87	-860.96	943.52	2.48	-1.17	-2.19
6,517.00	90.00	287.10	5,592.48	619.21	-981.34	1,069.38	4.25	0.55	-4.22
6,645.00	89.30	279.70	5,593.26	648.85	-1,105.77	1,196.97	5.81	-0.55	-5.78
6,773.00	88.50	275.20	5,595.72	665.44	-1,232.63	1,324.84	3.57	-0.63	-3.52
6,901.00	89.00	271.10	5,598.51	672.47	-1,360.38	1,452.02	3.23	0.39	-3.20
7,029.00	90.80	270.40	5,598.73	674.15	-1,488.36	1,578.55	1.51	1.41	-0.55
7,156.00	91.00	270.40	5,596.74	675.03	-1,615.34	1,703.97	0.16	0.16	0.00
7,284.00	91.40	271.00	5,594.06	676.60	-1,743.30	1,830.47	0.56	0.31	0.47
7,412.00	90.70	271.70	5,591.71	679.61	-1,871.24	1,957.18	0.77	-0.55	0.55
7,540.00	89.90	269.90	5,591.04	681.40	-1,999.22	2,083.73	1.54	-0.63	-1.41
7,668.00	89.30	270.70	5,591.94	682.07	-2,127.22	2,210.11	0.78	-0.47	0.63
7,795.00	90.70	270.00	5,591.94	682.85	-2,254.21	2,335.52	1.23	1.10	-0.55
7,923.00	90.60	270.00	5,590.48	682.85	-2,382.20	2,461.79	0.08	-0.08	0.00
8,051.00	90.90	270.10	5,588.81	682.96	-2,510.19	2,588.08	0.25	0.23	0.08
8,179.00	91.10	268.80	5,586.58	681.73	-2,638.16	2,714.13	1.03	0.16	-1.02
8,308.00	92.90	269.00	5,582.07	679.25	-2,767.06	2,840.88	1.40	1.40	0.16
8,435.00	92.00	269.50	5,576.64	677.59	-2,893.93	2,965.77	0.81	-0.71	0.39
8,563.00	92.30	268.30	5,571.84	675.14	-3,021.81	3,091.53	0.97	0.23	-0.94
8,690.00	91.40	268.50	5,567.74	671.59	-3,148.69	3,216.13	0.73	-0.71	0.16
8,818.00	90.20	269.00	5,565.96	668.80	-3,276.65	3,341.90	1.02	-0.94	0.39
8,946.00	92.00	268.50	5,563.50	666.01	-3,404.59	3,467.67	1.46	1.41	-0.39

Company:	Apache Corporation	Local Co-ordinate Reference:	Well #9H
Project:	Eddy County, NM (NAD27 NME)	TVD Reference:	KB @ 3967.00usft (Capstar 114)
Site:	Hawk Federal Com	MD Reference:	KB @ 3967.00usft (Capstar 114)
Well:	#9H	North Reference:	Grid
Wellbore:	OH / Job #1610024	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Capstar 114)	Database:	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)
9,073.00	92.20	270.20	5,558.84	664.57	-3,531.49	3,592.63	1.35	0.16	1.34
9,201.00	91.30	269.70	5,554.93	664.46	-3,659.43	3,718.82	0.80	-0.70	-0.39
9,329.00	90.70	267.80	5,552.70	661.67	-3,787.37	3,844.59	1.56	-0.47	-1.48
9,434.00	90.20	268.70	5,551.88	658.46	-3,892.32	3,947.60	0.98	-0.48	0.86
Final Phoenix MWD Survey									
9,508.00	90.20	268.70	5,551.62	656.78	-3,966.30	4,020.31	0.00	0.00	0.00
Projection to TD									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,035.00	5,034.55	33.05	-2.95	Tie In to Phoenix Gyro Surveys
5,070.00	5,069.55	33.47	-3.38	First Phoenix MWD Survey
9,434.00	5,551.88	658.46	-3,892.32	Final Phoenix MWD Survey
9,508.00	5,551.62	656.78	-3,966.30	Projection to TD

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
511 S. First St., Artesia, NM 88210
Phone: (575) 748-1287 Fax: (575) 748-7420

DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87411
Phone: (505) 334-6178 Fax: (505) 334-6170

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87506
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

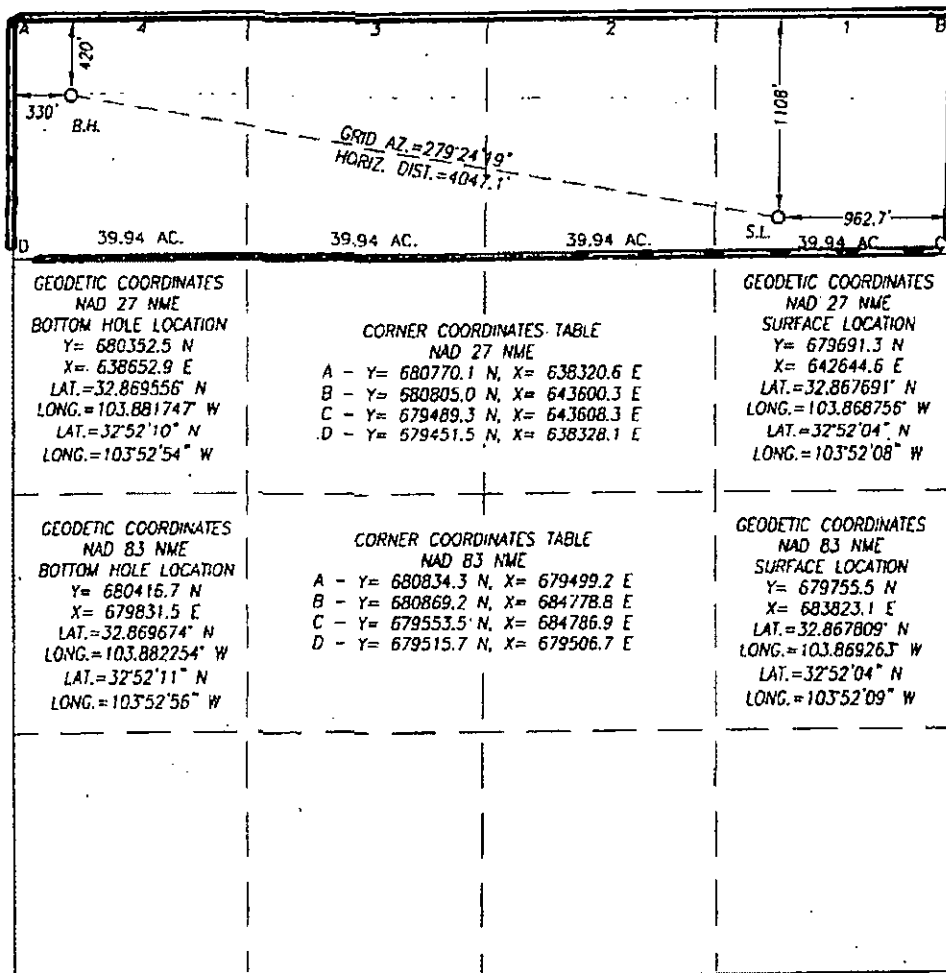
WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-43520	Pool Code 96831	Pool Name Cedar Lake; Glorieta-Yeso
Property Code 315724	Property Name HAWK FEDERAL COM	
OGRID No. 873	Operator Name APACHE CORPORATION	
	Well Number 9H	Elevation 3956'

Surface Location									
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	4	17-S	31-E		1108	NORTH	963	EAST	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
4	4	17-S	31-E		420	NORTH	330	WEST	EDDY
Dedicated Acres 159.76		Joint or Infill		Consolidation Code		Order No.			

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.

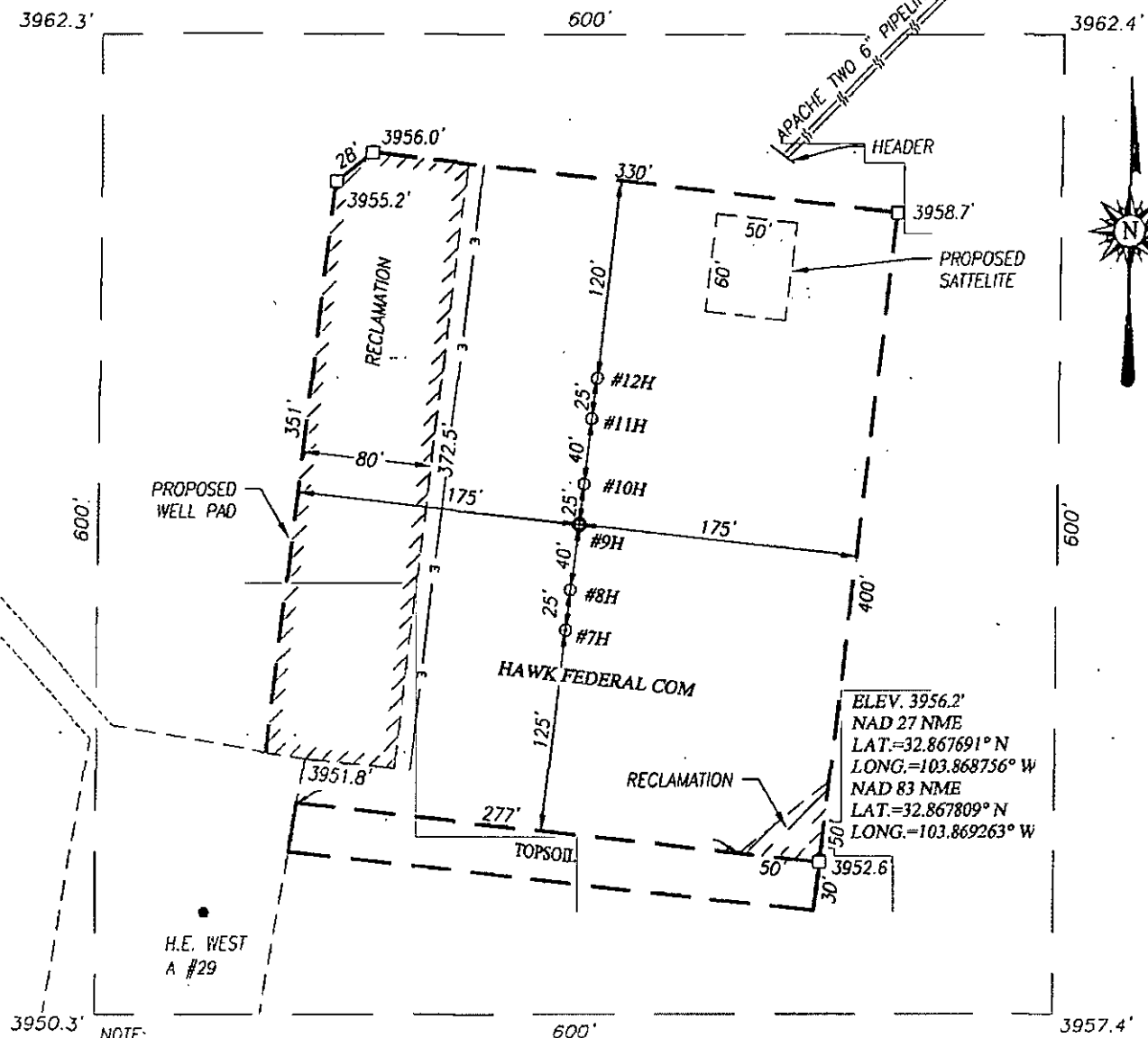
Sorina L. Flores 7/30/15
Signature Date
Sorina L. Flores
Printed Name
sorina.flores@apachecorp.com
E-mail Address

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.

DATE 05, 2015
Date of Survey
Signature & Seal of Professional Surveyor
Ronald J. Eidson 07/07/2015
Certificate Number **Gary G. Eidson 12641**
Ronald J. Eidson 0239
LSI. JWSC W.O.: 15.11 0679

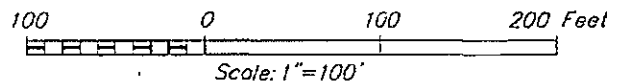
WELL SITE PLAN



NOTE:
1) SEE "TOPOGRAPHICAL AND ACCESS
ROAD MAP" FOR PROPOSED ROAD
LOCATION.

DIRECTIONS TO THIS LOCATION:

FROM THE INTERSECTION OF U.S. HWY. 82 AND ST. HWY 529,
GO WEST ON U.S. HWY. 82 APPROX. 1.0 MILE, TURN RIGHT
AND GO NORTH-NORTHEAST APPROX. 0.6 MILES, TURN LEFT
AND GO NORTH-NORTHWEST APPROX. 0.35 MILES, ROAD BENDS
RIGHT AND GO NORTH-NORTHWEST APPROX. 1.2 MILES, TURN
LEFT AND GO NORTH APPROX. 0.6 MILES TURN RIGHT AT
INTERSECTION AND GO EAST APPROX. 0.5 MILES, TURN LEFT AT
INTERSECTION GO NORTH APPROX 0.9 MILES, TURN RIGHT AND
GO EAST APPROX. 600 FEET, ROAD BENDS RIGHT AND GO 100
FEET TO LINN OPER. H.E. WEST A #29 WELL PAD THE SW COR
OF THIS PROP PAD IS ON THE #29 PAD.



APACHE CORPORATION

HAWK FEDERAL COM #9H WELL
LOCATED 1108 FEET FROM THE NORTH LINE
AND 963 FEET FROM THE EAST LINE OF SECTION 4,
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 PASSO HOBBES, N.M. 88240
(575) 393-3117 www.jwscbiz.com
TBLPLS# 10021000

Survey Date: 6/25/15

CAD Date: 7/2/15

Drawn By: LSL

W.O. No.: 15130764

Rev:

Rel. W.O.: 15110679

Sheet 1 of 1