

**BW - \_\_\_\_\_ 28 \_\_\_\_\_**

**SUBSIDENCE  
MONITORING  
REPORTS**

**DATE:**



**Chavez, Carl J, EMNRD**

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**From:** Wayne Price <wayneprice@q.com>  
**Sent:** Thursday, January 17, 2019 10:07 AM  
**To:** Chavez, Carl J, EMNRD  
**Cc:** Wayne Price; Boone, Teresa; Jill Best; Terry Asel  
**Subject:** [EXT] Key Bw-028 Subsidence Report  
**Attachments:** State #1 (Eunice) Vertical Subsidence Table 1-15-19.pdf,pdf; ATT00001.txt

Dear Carl,

Please find attached the latest subsidence report. From my evaluation I see no issue at this time. Please include in our OCD file.

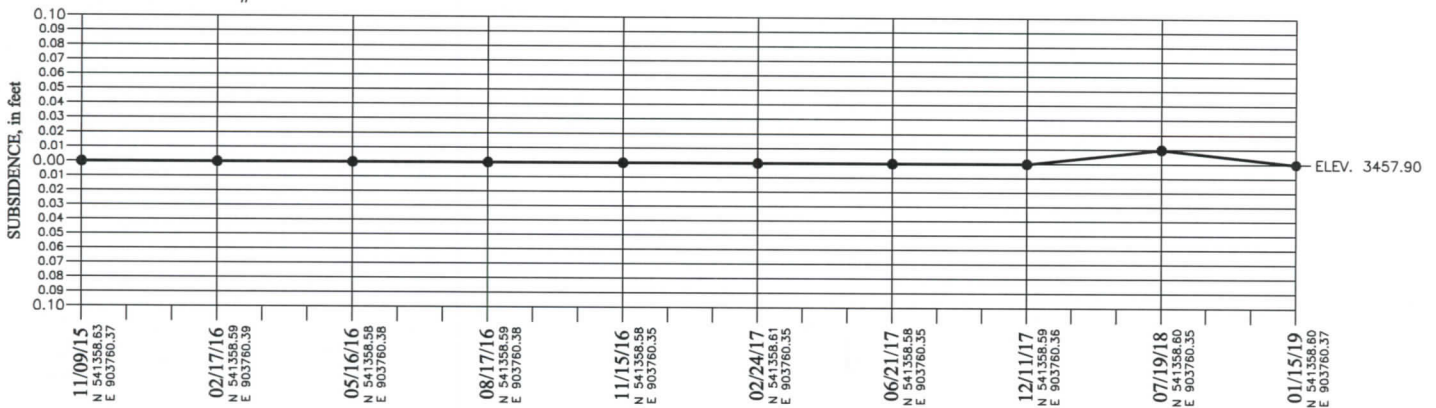


# VERTICAL SUBSIDENCE TABLE

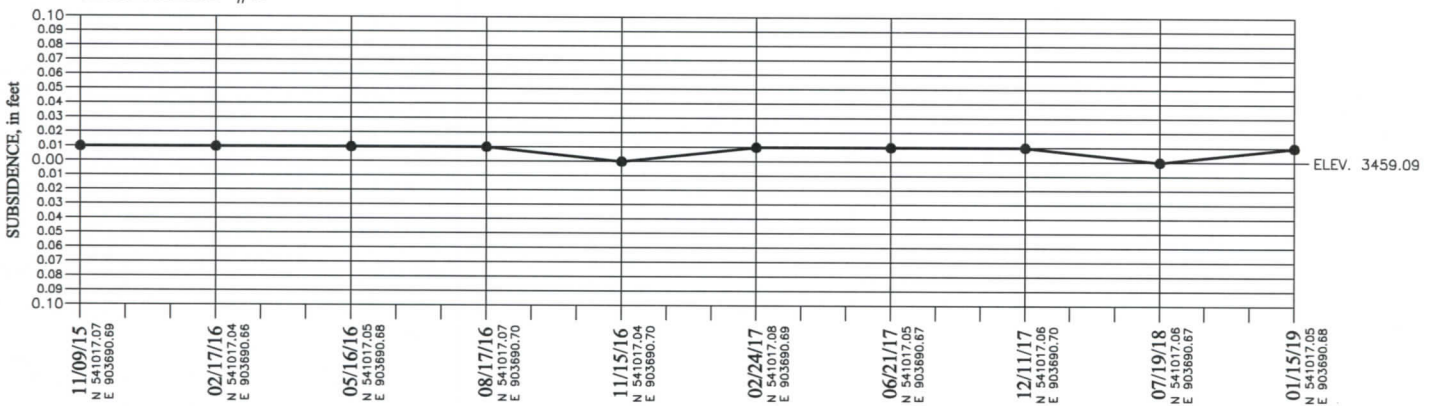
## KEY ENERGY SERVICES, LLC. – STATE #1

NEW MEXICO EAST NAD 83

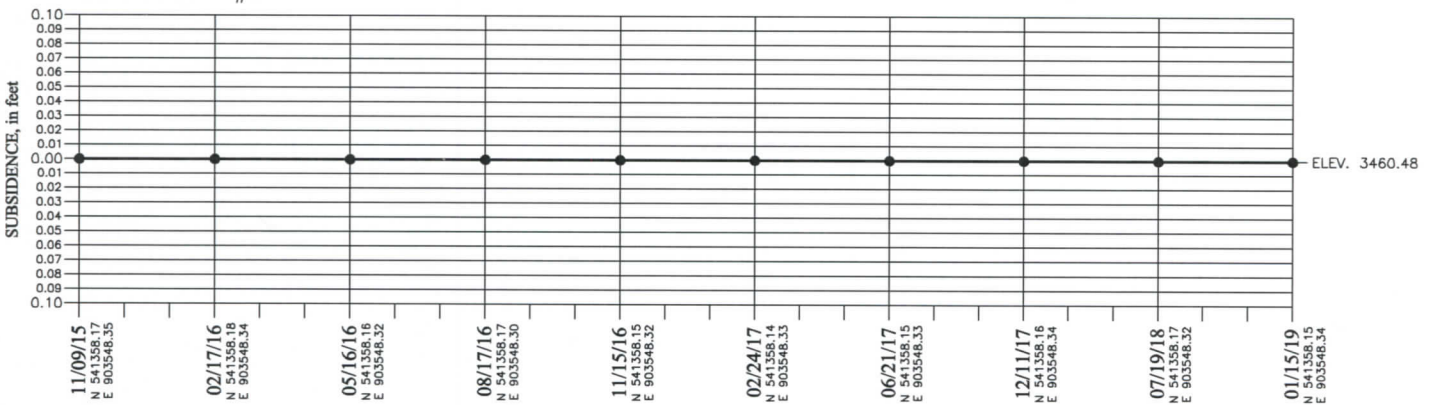
MONUMENT #1



MONUMENT #2



MONUMENT #3



### SURVEYORS CERTIFICATE

I, TERRY J. ASEI, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

*Terry J. Asel* 1/16/2019  
Terry J. Asel N.M. R.P.L.S. No. 15079

BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CVO320  
ELEV. = 3434.37

## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Asel Surveying

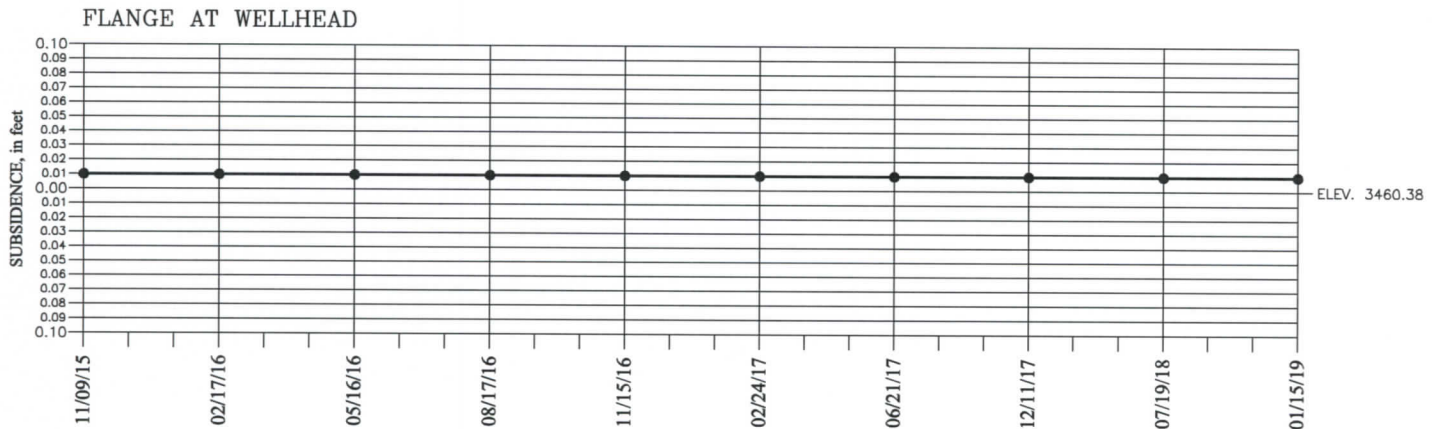
P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146



Survey Date: 01/15/19	Sheet 1 of 2 Sheets
W.O. Number: 190115MS	Drawn By: KA Rev:
Date: 01/16/19	190115MS Scale: 1"=1000'



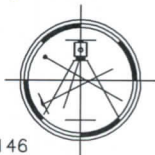
# VERTICAL ELEVATION TABLE KEY ENERGY SERVICES, LLC. – STATE #1



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*Terry J. Asel* 1/16/2019  
Terry J. Asel, N.M. R.P.L.S. No. 15079



Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146

BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CVO320  
ELEV. = 3434.37

## KEY ENERGY SERVICES, LLC.

ELEVATIONS FOR THE KEY ENERGY SERVICES, LLC.  
– EUNICE STATE #1 WELL IN SECTION 15,  
TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M.,  
LEA COUNTY, NEW MEXICO

Survey Date: 01/15/19	Sheet 2 of 2 Sheets
W.O. Number: 190115MS	Drawn By: KA Rev:
Date: 01/16/19	190115MS Scale: 1"=1000'



## Chavez, Carl J, EMNRD

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Friday, June 23, 2017 8:10 AM  
**To:** 'Ramirez, Ana O'  
**Cc:** Griswold, Jim, EMNRD; Brown, Maxey G, EMNRD  
**Subject:** BW-28 (Key Energy Services, L.L.C. State Brine Well #1 API# 30-025-33547) Q2 2017 Subsidence Monitoring Report  
**Attachments:** State #1 (Eunice) Vertical Subsidence Table 6-21-17.pdf

Ms. Ramirez:

The New Mexico Oil Conservation Division (OCD) is in receipt of the above subject subsidence monitoring report.

Based on an evaluation of the report, OCD believes the historical data warrants a reduced survey frequency schedule.

Please propose a new schedule to OCD for evaluation and approval.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)  
New Mexico Oil Conservation Division  
Energy Minerals and Natural Resources Department  
1220 South St Francis Drive  
Santa Fe, New Mexico 87505  
Ph. (505) 476-3490  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)

**“Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?” (To see how, go to: <http://www.emnrd.state.nm.us/OCD> and see “Publications”)**

---

**From:** Ramirez, Ana O [mailto:[aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)]  
**Sent:** Friday, June 23, 2017 7:27 AM  
**To:** Chavez, Carl J, EMNRD <[CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)>  
**Subject:** State Brine Well # 1 Q2 2017 Subsidence monitoring report - Key Energy Services

Good morning Mr. Chavez,

On behalf of Key Energy Services, I would like to submit the 2nd quarter 2017 subsidence monitoring report for the State # 1 Brine Station in Section 15, Township 21S, range 37e, NMPM, Lea County, New Mexico.

Feel free to contact me if you have further comments or questions,

Respectfully,

**Ana Ramirez** | **Key Energy Services** | Environmental Specialist  
12400 W. Interstate 20 E. Odessa, TX 79765  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

Doing it the right way. *theKeyWay*. Every time.

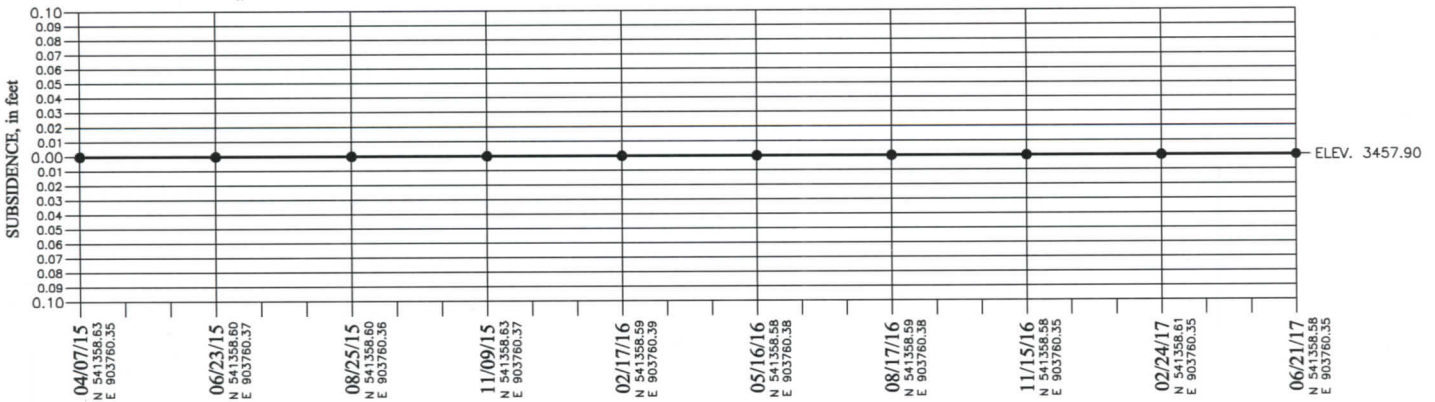


# VERTICAL SUBSIDENCE TABLE

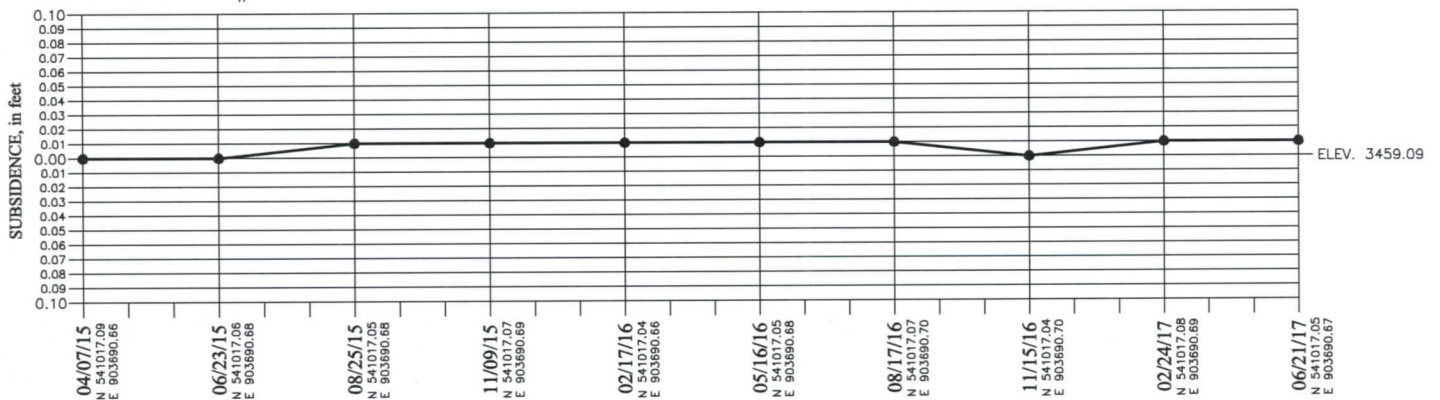
## KEY ENERGY SERVICES, LLC. – STATE #1

### NEW MEXICO EAST NAD 83

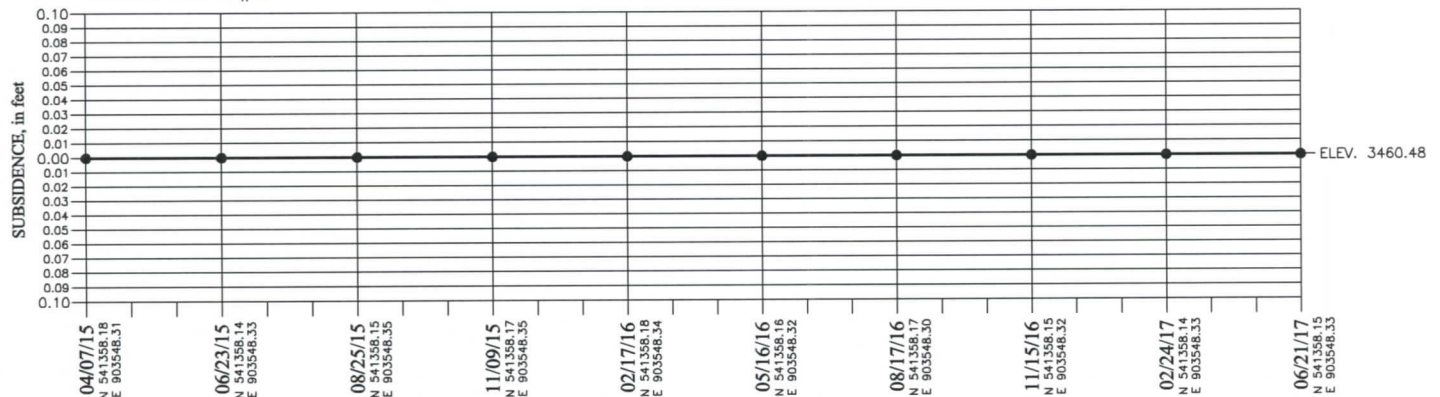
MONUMENT #1



MONUMENT #2



MONUMENT #3



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*Terry J. Asel* 6/22/2017  
Terry J. Asel N.M. R.P.L.S. No. 15079



BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CV0320  
ELEV. = 3434.37

## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Asel Surveying

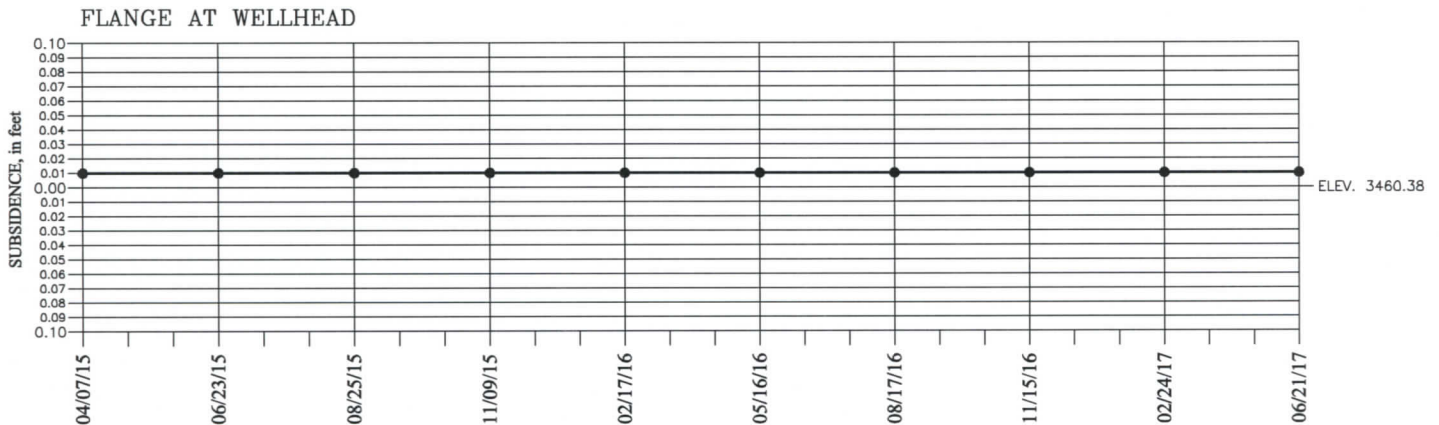
P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146

Survey Date: 06/21/17	Sheet 1 of 2 Sheets
W.O. Number: 170621MS	Drawn By: KA Rev:
Date: 06/21/17	170621MS Scale: 1"=1000'



# VERTICAL ELEVATION TABLE

## KEY ENERGY SERVICES, LLC. – STATE #1



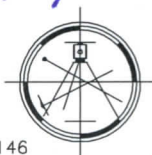
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*Terry J. Asel* 6/22/2017  
 Terry J. Asel N.M. R.P.L.S. No. 15079

Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
 HOBBS, NEW MEXICO – 575-393-9146



BASIS OF ELEVATIONS: US C & GS BENCH MARK  
 "L-98 1935" – CVO320  
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 – EUNICE STATE #1 WELL IN SECTION 15,  
 TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M.,  
 LEA COUNTY, NEW MEXICO

Survey Date: 06/21/17	Sheet 2 of 2 Sheets
W.O. Number: 170621MS	Drawn By: KA Rev:
Date: 06/21/17	170621MS Scale: 1"=1000'



## Chavez, Carl J, EMNRD

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Tuesday, June 27, 2017 7:22 AM  
**To:** 'Coligan, Maren'  
**Cc:** Griswold, Jim, EMNRD  
**Subject:** RE: BW-28 (Key Energy Services, L.L.C. State Brine Well #1 API# 30-025-33547) Q2 2017 Subsidence Monitoring Report

Maren:

Approved.

Thank you.

---

**From:** Coligan, Maren [mailto:mcoligan@keyenergy.com]  
**Sent:** Monday, June 26, 2017 10:45 AM  
**To:** Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>; Griswold, Jim, EMNRD <Jim.Griswold@state.nm.us>; Brown, Maxey G, EMNRD <MaxeyG.Brown@state.nm.us>  
**Cc:** Houston, Ken <KHouston@keyenergy.com>; Ramirez, Ana O <aramirez01@keyenergy.com>; Environmental <Environmental@keyenergy.com>  
**Subject:** RE: BW-28 (Key Energy Services, L.L.C. State Brine Well #1 API# 30-025-33547) Q2 2017 Subsidence Monitoring Report

Key proposes a semiannual schedule for subsidence monitoring at the State #1 Brine Well based on past monitoring data. Please let us know if the OCD approves of this schedule.

Thanks!

**Maren Coligan** | Key Energy Services | Environmental Director  
1301 McKinney Street, Suite 1800, Houston, Texas 77010  
o: 713.651.4825 | m: 281.979.4734 | [mcoligan@keyenergy.com](mailto:mcoligan@keyenergy.com)

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**From:** Ramirez, Ana O  
**Sent:** Friday, June 23, 2017 9:43 AM  
**To:** Coligan, Maren <[mcoligan@keyenergy.com](mailto:mcoligan@keyenergy.com)>  
**Cc:** Houston, Ken <[KHouston@keyenergy.com](mailto:KHouston@keyenergy.com)>  
**Subject:** FW: BW-28 (Key Energy Services, L.L.C. State Brine Well #1 API# 30-025-33547) Q2 2017 Subsidence Monitoring Report

Maren,

After submitting the Q2 subsidence monitoring for the State S, I received the communication below where they asking us to propose a new schedule for the NM subsidence monitoring. Currently is quarterly so we can propose a semiannual schedule for evaluation approval.

Please let me know if you have further comments or questions,

Thanks,

**Ana Ramirez** | Key Energy Services | Environmental Specialist



12400 W. Interstate 20 E. Odessa, TX 79765  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

Doing it the right way. *theKeyWay*. Every time.

---

**From:** Chavez, Carl J, EMNRD [  
**Sent:** Friday, June 23, 2017 9:10 AM  
**To:** Ramirez, Ana O <[aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)>  
**Cc:** Griswold, Jim, EMNRD <[Jim.Griswold@state.nm.us](mailto:Jim.Griswold@state.nm.us)>; Brown, Maxey G, EMNRD <[MaxeyG.Brown@state.nm.us](mailto:MaxeyG.Brown@state.nm.us)>  
**Subject:** BW-28 (Key Energy Services, L.L.C. State Brine Well #1 API# 30-025-33547) Q2 2017 Subsidence Monitoring Report

Ms. Ramirez:

The New Mexico Oil Conservation Division (OCD) is in receipt of the above subject subsidence monitoring report.

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Please propose a new schedule to OCD for evaluation and approval.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)  
New Mexico Oil Conservation Division  
Energy Minerals and Natural Resources Department  
1220 South St Francis Drive  
Santa Fe, New Mexico 87505  
Ph. (505) 476-3490  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)

**“Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?” (To see how, go to: <http://www.emnrd.state.nm.us/OCD> and see “Publications”)**

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**Sent:** Friday, June 23, 2017 7:27 AM  
**To:** Chavez, Carl J, EMNRD <[CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)>  
**Subject:** State Brine Well # 1 Q2 2017 Subsidence monitoring report - Key Energy Services

Good morning Mr. Chavez,

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Feel free to contact me if you have further comments or questions,

Respectfully,

**Ana Ramirez** | **Key Energy Services** | Environmental Specialist  
12400 W. Interstate 20 E. Odessa, TX 79765  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

Doing it the right way. *theKeyWay*. Every time.





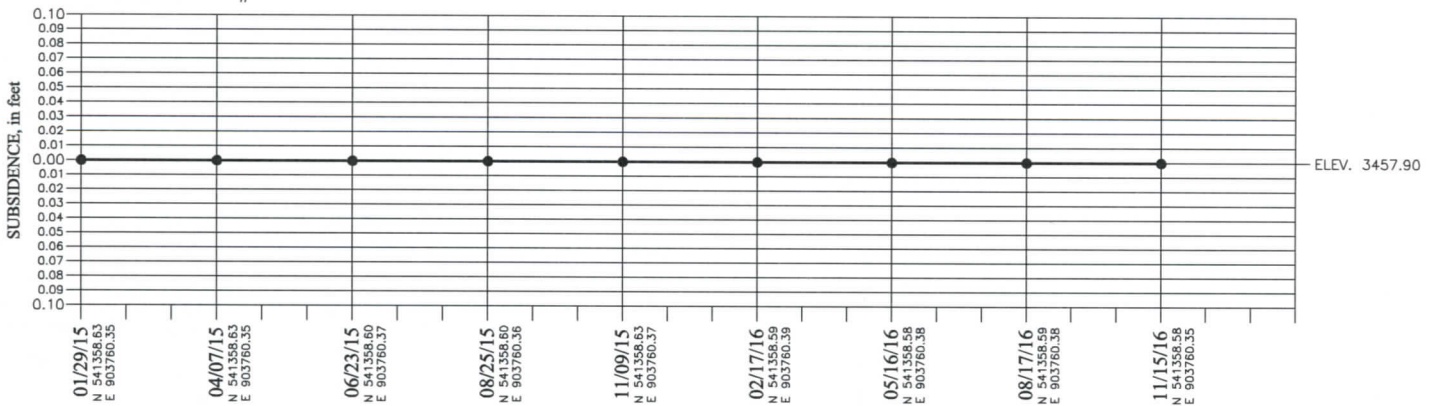


# VERTICAL SUBSIDENCE TABLE

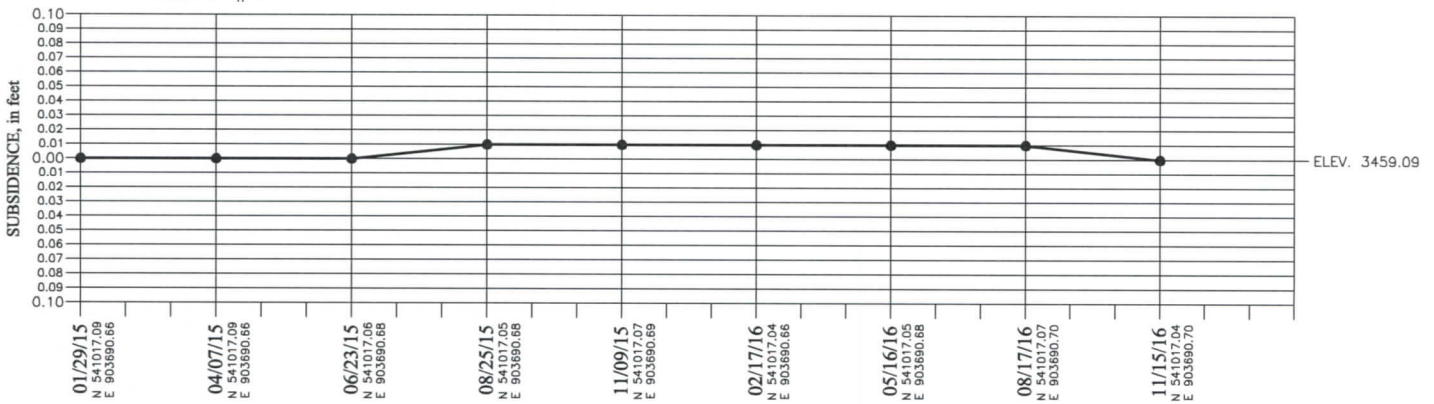
## KEY ENERGY SERVICES, LLC. – STATE #1

NEW MEXICO EAST NAD 83

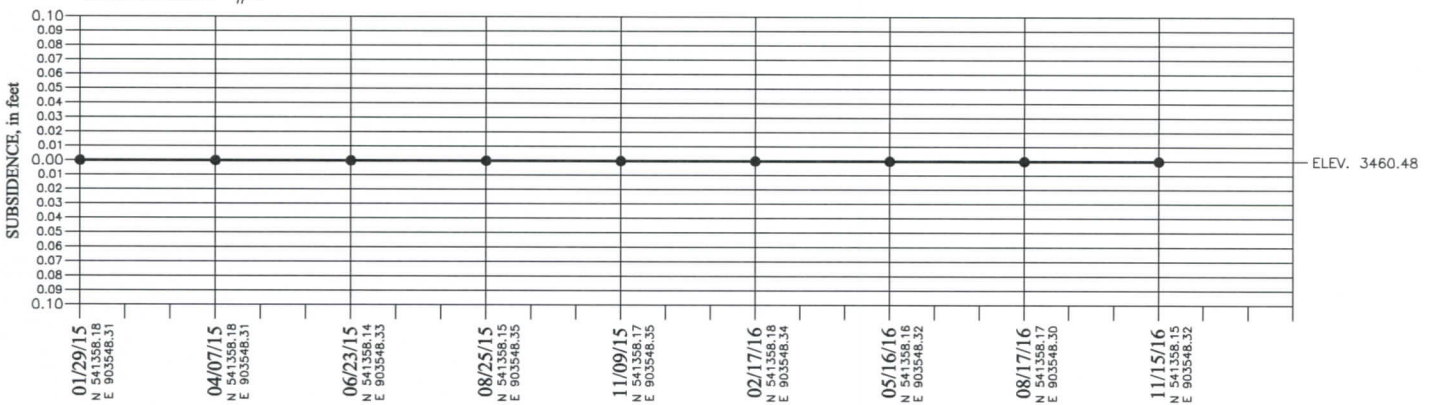
MONUMENT #1



MONUMENT #2



MONUMENT #3



### SURVEYORS CERTIFICATE

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*Terry J. Asel* 11/16/2016  
Terry J. Asel, N.M. R.P.L.S. No. 15079

BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CV0320  
ELEV. = 3434.37

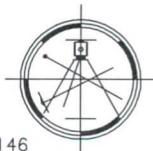
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Survey Date: 11/15/16	Sheet 1 of 1 Sheets
W.O. Number: 161115MS	Drawn By: KA Rev:
Date: 11/16/16	161115MS Scale: 1"=1000'

Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146



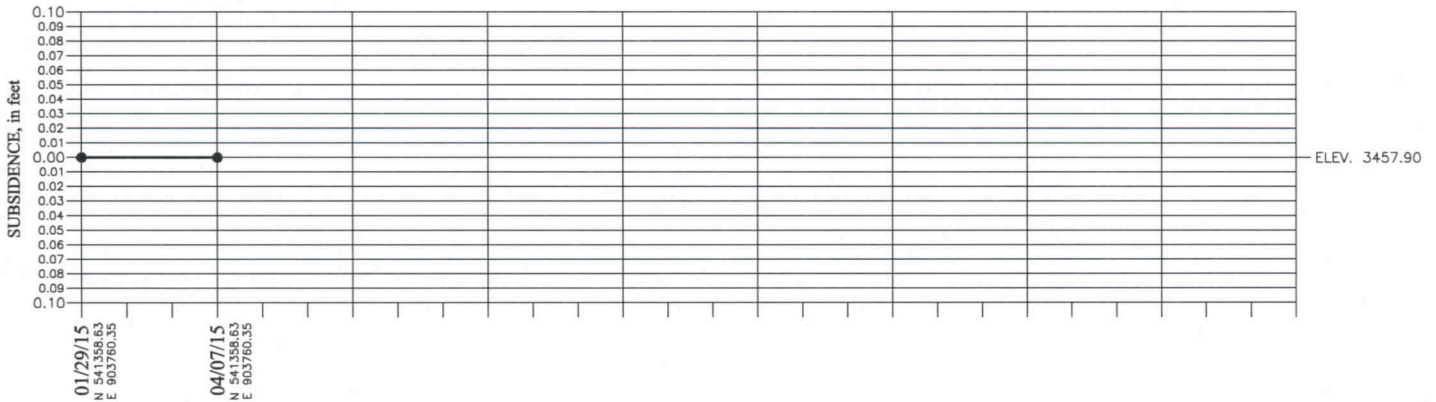


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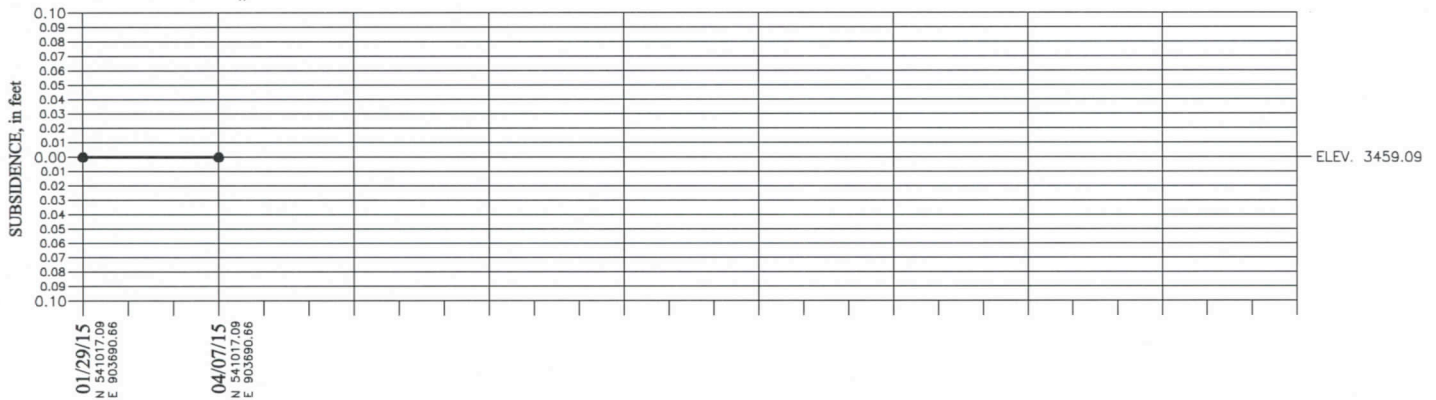
## KEY ENERGY SERVICES, LLC. – STATE #1

### NEW MEXICO EAST NAD 83

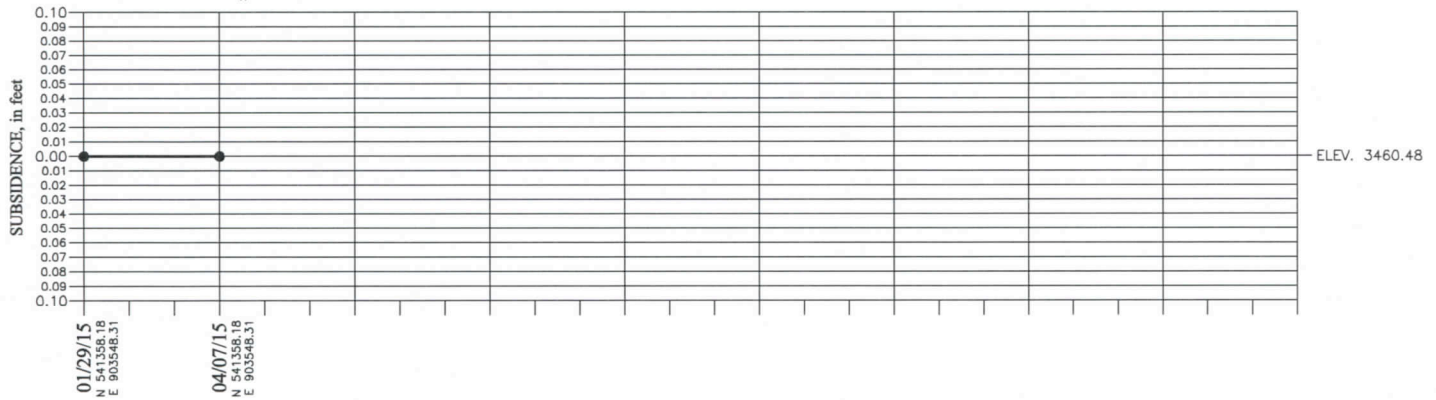
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MONUMENT #2



MONUMENT #3



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BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CV0320  
ELEV. = 3434.37

Terry J. Asel N.M. R.P.L.S. No. 15079

Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146



## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 04/07/15	Sheet 1 of 1 Sheets
W.O. Number: 150129MS-b	Drawn By: KA Rev:
Date: 04/28/15	150129MS-b Scale: 1"=1000'



## Griswold, Jim, EMNRD

---

**From:** Crenshaw, Desiree <dcrenshaw@keyenergy.com>  
**Sent:** Wednesday, June 24, 2015 1:51 PM  
**To:** Griswold, Jim, EMNRD  
**Cc:** Stauffer, Brad; Bach, Daniel  
**Attachments:** State #1 (Eunice) Vertical Subsidence Table 6-23-15.pdf

Jim –

Attached is the second quarter subsidence data for the Key Energy Services Eunice State # 1. The current readings show no movement. Please call me if you have any questions.

Thanks,

**Desireé Crenshaw** | **Key Energy Services** | Environmental Specialist  
6 Desta Dr. Suite 4300 Midland, TX 79705  
o: 432.488.2934 | m: 432.258.1044 | [dcrenshaw@keyenergy.com](mailto:dcrenshaw@keyenergy.com)

Doing it the right way. *theKeyWay*. Every time.

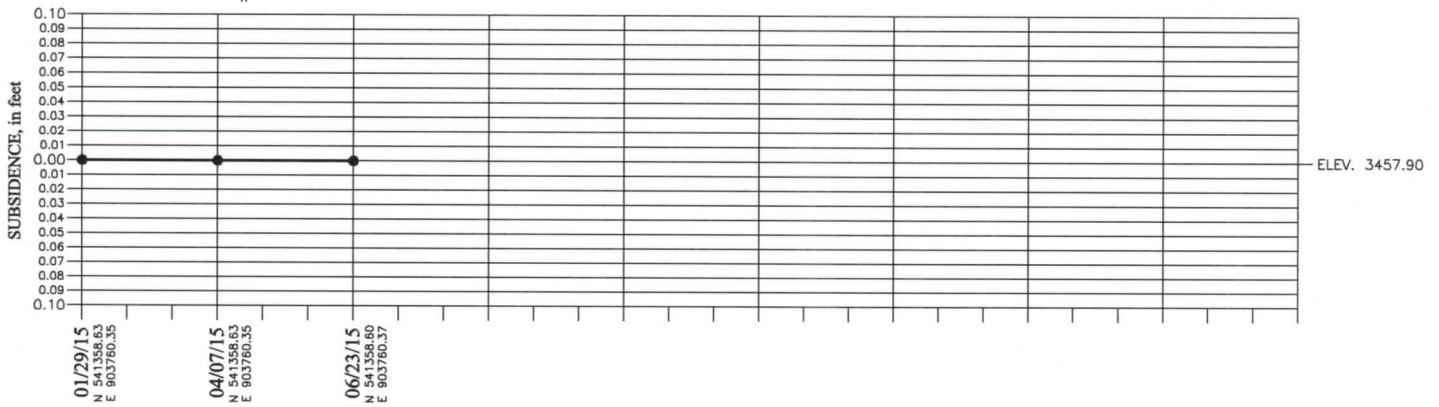


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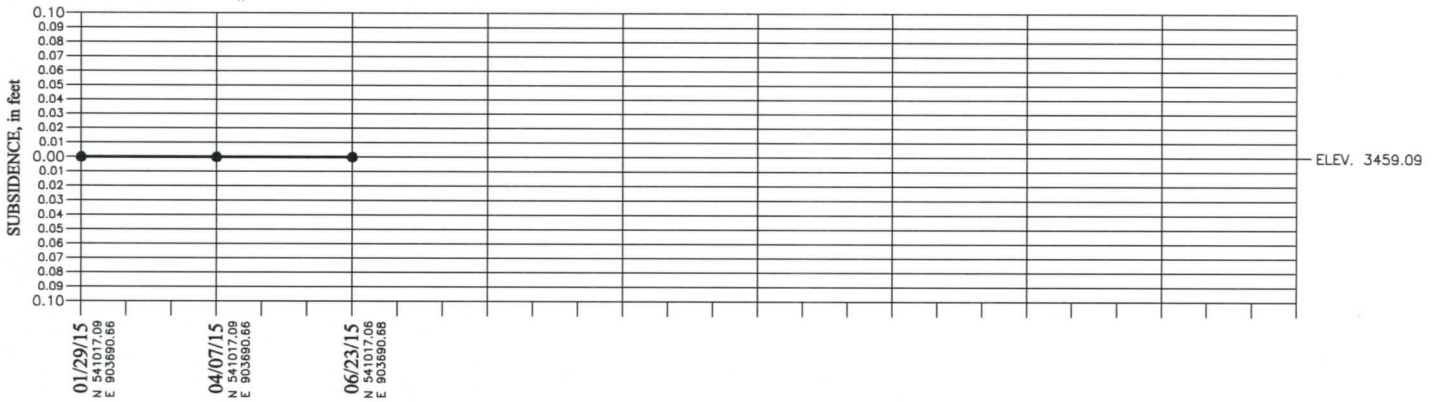
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NEW MEXICO EAST NAD 83

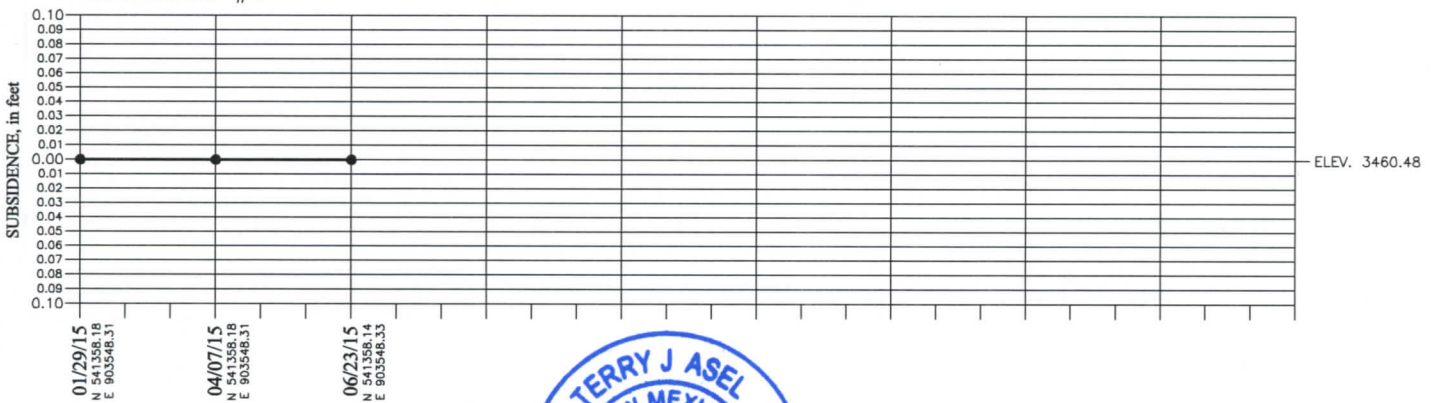
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MONUMENT #2



MONUMENT #3



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*Terry J. Asel* 6/24/2015  
Terry J. Asel N.M. R.P.L.S. No. 15079



BASIS OF ELEVATIONS: US C & GS BENCH MARK  
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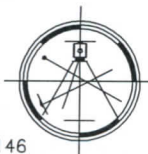
## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 06/23/15	Sheet 1 of 1 Sheets
W.O. Number: 150129MS-b	Drawn By: KA Rev:
Date: 06/23/15	150129MS-b Scale: 1"=1000'

Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146



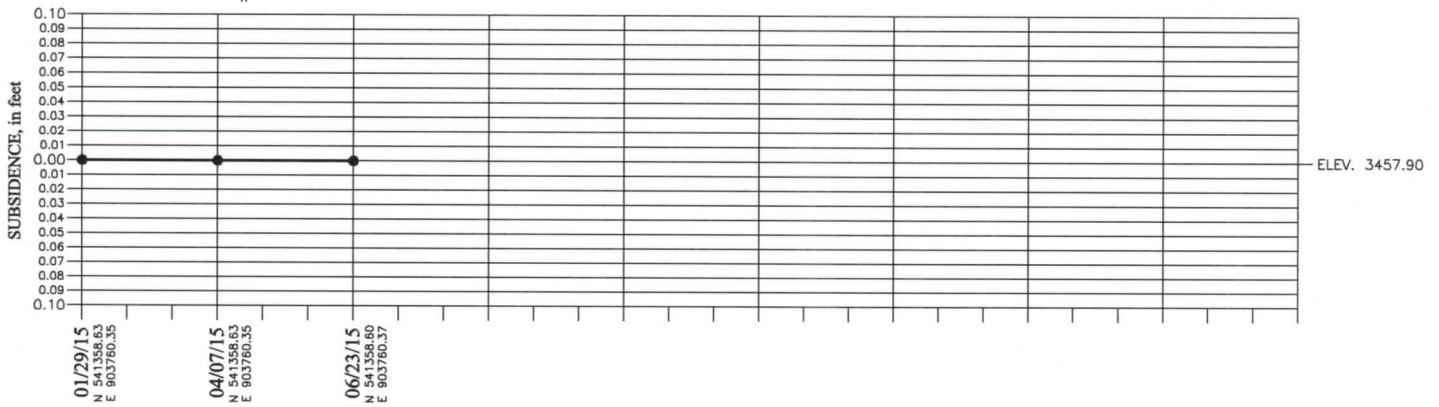


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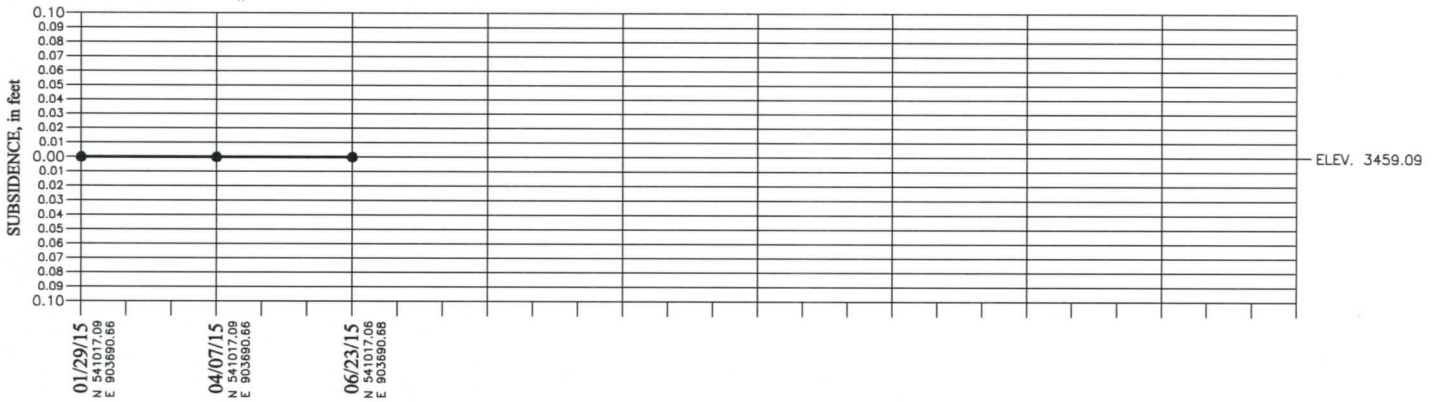
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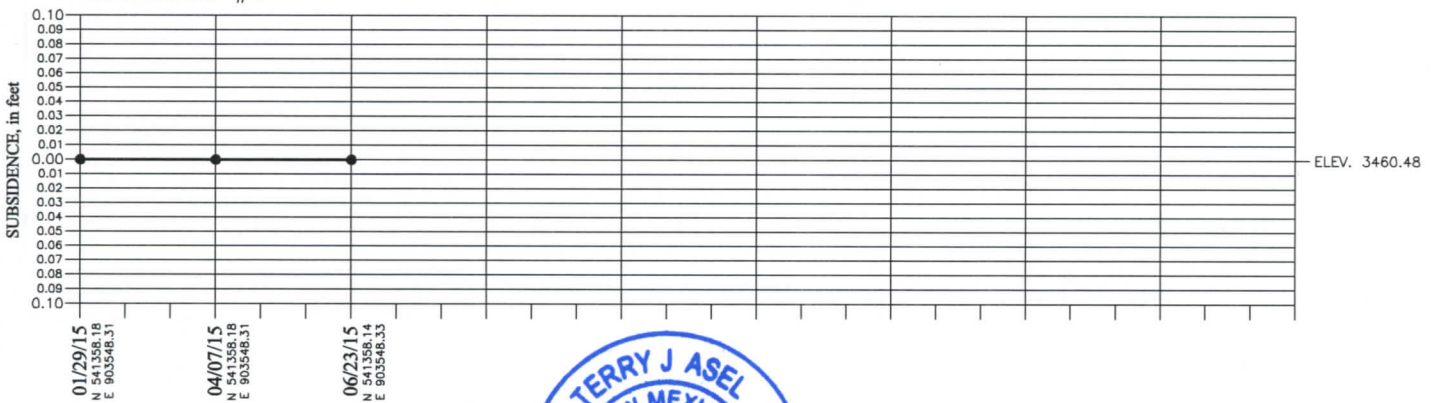
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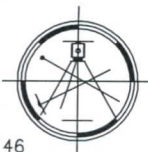
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SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 06/23/15	Sheet 1 of 1 Sheets
W.O. Number: 150129MS-b	Drawn By: KA Rev:
Date: 06/23/15	150129MS-b Scale: 1"=1000'

Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBS, NEW MEXICO – 575-393-9146





## Griswold, Jim, EMNRD

---

**From:** Ramirez, Ana O <aramirez01@keyenergy.com>  
**Sent:** Thursday, October 15, 2015 8:52 AM  
**To:** Griswold, Jim, EMNRD  
**Subject:** Subsidence monitoring (Q3) State Brine Well # 1. NM  
**Attachments:** State #1 (Eunice) Vertical Subsidence Table 8-25-15.pdf

Good morning,

This is Ana Ramirez with the environmental department at Key Energy Services.

Please find attached the third quarter Subsidence monitoring for Eunice State Brine Well #1 Well in Section 15, Township 21S, range 37e, NMPM, Lea County, New Mexico.

Feel free to contact me if you have any comments or questions.

Regards,

**Ana Ramirez** | **Key Energy Services** | Environmental Specialist  
6 Desta Dr. Suite 4300 Midland, TX 79705  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

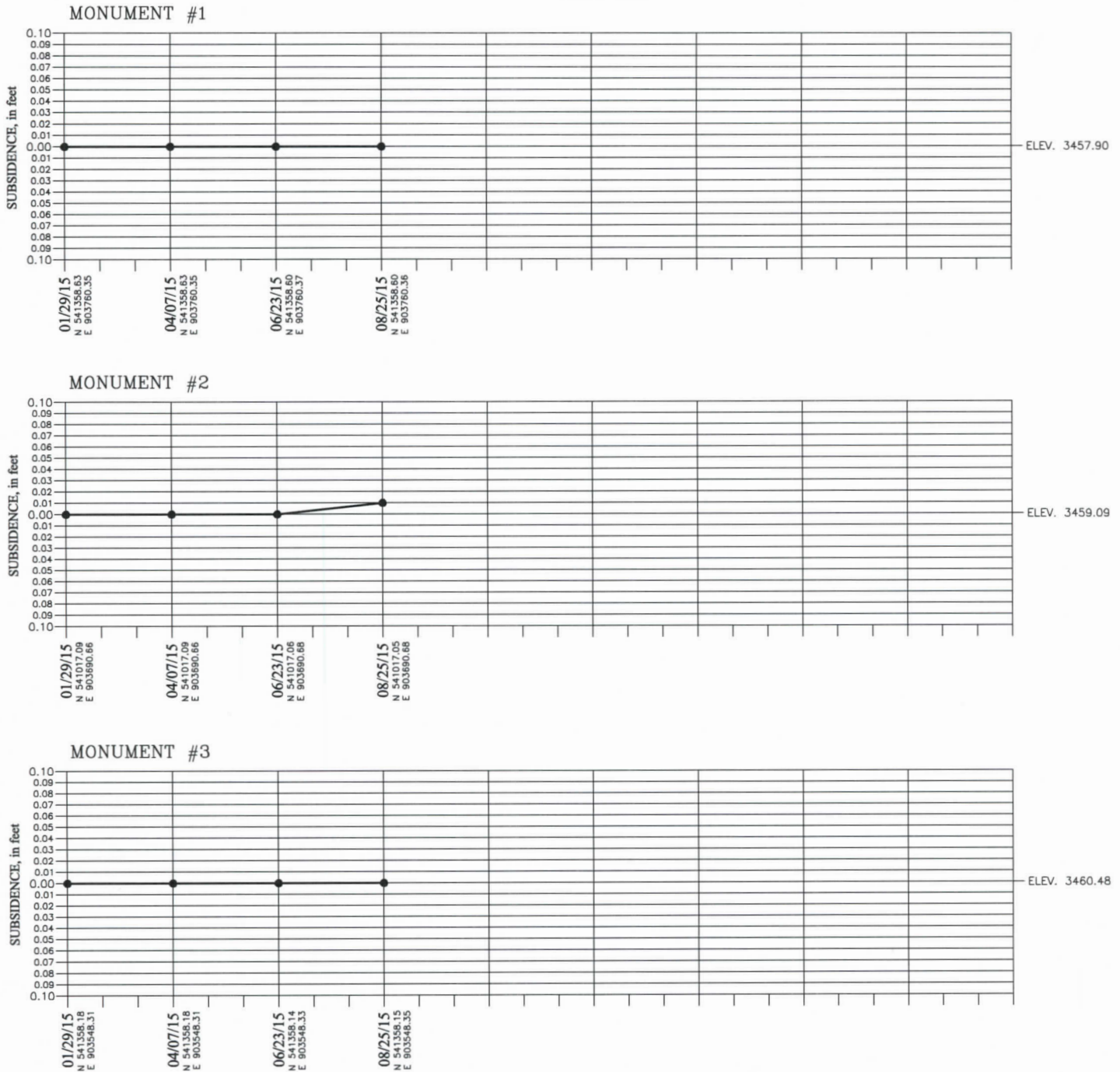
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# VERTICAL SUBSIDENCE TABLE

## KEY ENERGY SERVICES, LLC. – STATE #1

NEW MEXICO EAST NAD 83



### SURVEYORS CERTIFICATE

I, TERRY J. ASEL, NEW MEXICO PROFESSIONAL SURVEYOR NO. 15079, DO HEREBY CERTIFY THAT I CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND MEETS THE "MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO" AS ADOPTED BY THE NEW MEXICO STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND SURVEYORS.

Terry J. Asel N.M. R.P.L.S. No. 15079

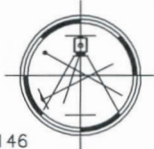
BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CVO320  
ELEV. = 3434.37

## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBBS, NEW MEXICO – 575-393-9146



Survey Date: 08/25/15	Sheet 1 of 1 Sheets
W.O. Number: 150825MS	Drawn By: KA Rev:
Date: 08/26/15	150825MS Scale: 1"=1000'

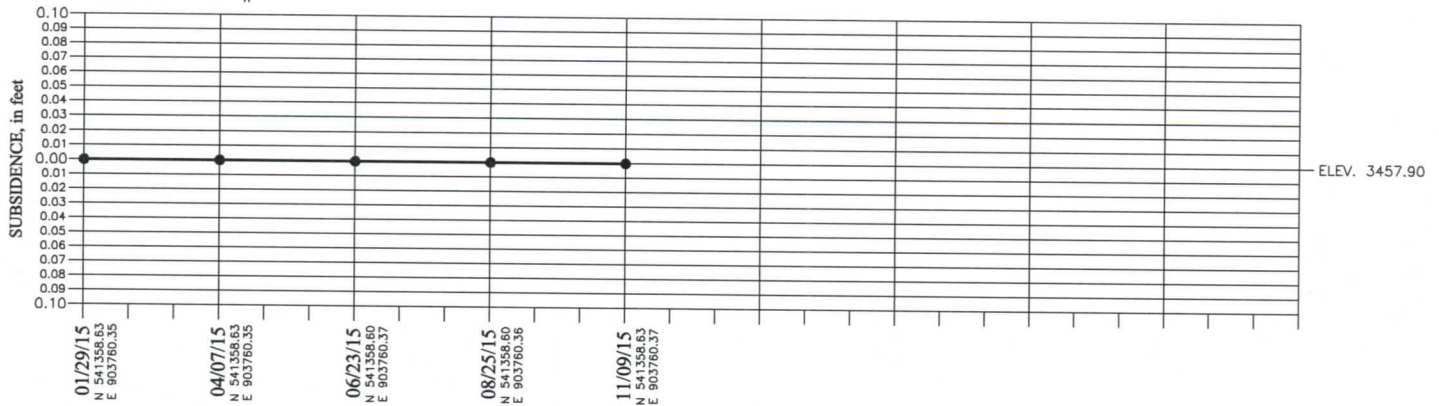


# VERTICAL SUBSIDENCE TABLE

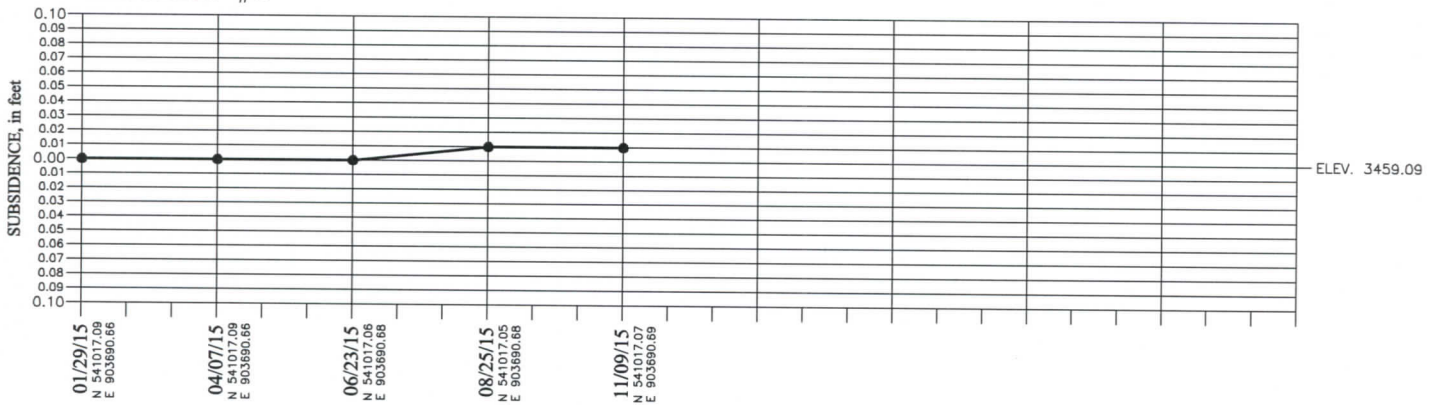
## KEY ENERGY SERVICES, LLC. – STATE #1

NEW MEXICO EAST NAD 83

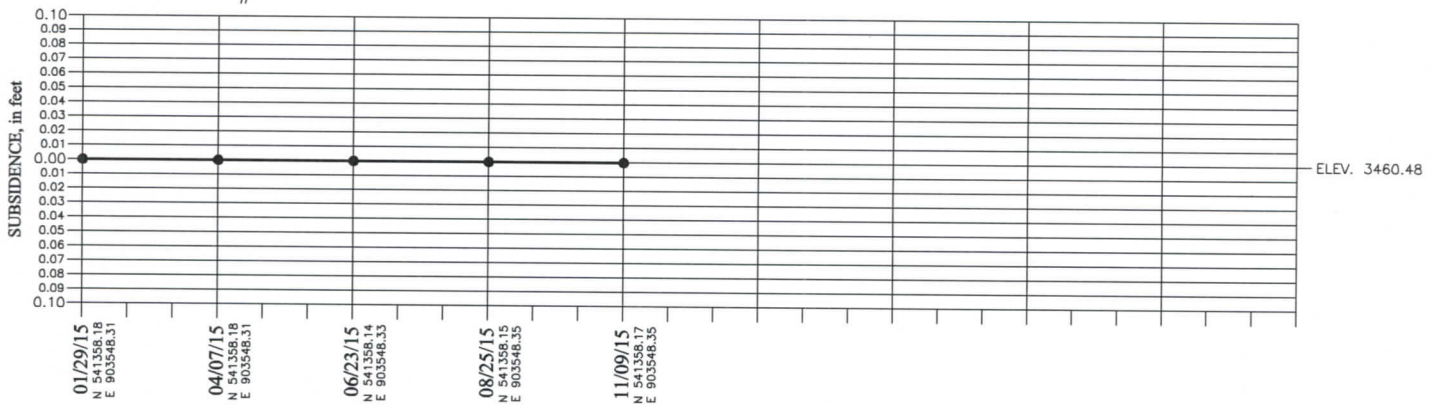
MONUMENT #1



MONUMENT #2



MONUMENT #3



### SURVEYORS CERTIFICATE

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*Terry J. Asel* 11/10/2015  
Terry J. Asel N.M. R.P.L.S. No. 15079



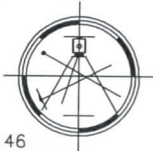
BASIS OF ELEVATIONS: US C & GS BENCH MARK  
"L-98 1935" – CVO320  
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## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

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HOBBES, NEW MEXICO – 575-393-9146



Survey Date: 11/09/15	Sheet 1 of 1 Sheets
W.O. Number: 151109MS	Drawn By: KA Rev:
Date: 11/09/15	151109MS Scale: 1"=1000'



## Chavez, Carl J, EMNRD

---

**From:** Griswold, Jim, EMNRD  
**Sent:** Tuesday, August 23, 2016 8:06 AM  
**To:** Chavez, Carl J, EMNRD  
**Subject:** FW: State Brine Well # 1 Q3 2016 Subsidence monitoring report - Key Energy Services  
**Attachments:** State #1 (Eunice) Vertical Subsidence Table 8-17-16.pdf

### Jim Griswold

*Environmental Bureau Chief*  
EMNRD/Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505.476.3465  
email: [jim.griswold@state.nm.us](mailto:jim.griswold@state.nm.us)

---

**From:** Ramirez, Ana O [<mailto:aramirez01@keyenergy.com>]  
**Sent:** Monday, August 22, 2016 3:48 PM  
**To:** Griswold, Jim, EMNRD  
**Subject:** State Brine Well # 1 Q3 2016 Subsidence monitoring report - Key Energy Services

Good afternoon Mr. Griswold,

On behalf of Key Energy Services, I would like to submit the 3<sup>rd</sup>. quarter 2016 subsidence monitoring report for the State # 1 Brine Station in in Section 15, Township 21S, range 37e, NMPM, Lea County, New Mexico.

Feel free to contact me if you have further comments or questions,

Respectfully,

**Ana Ramirez** | **Key Energy Services** | Environmental Specialist  
12400 W. Interstate 20 E. Odessa, TX 79765  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

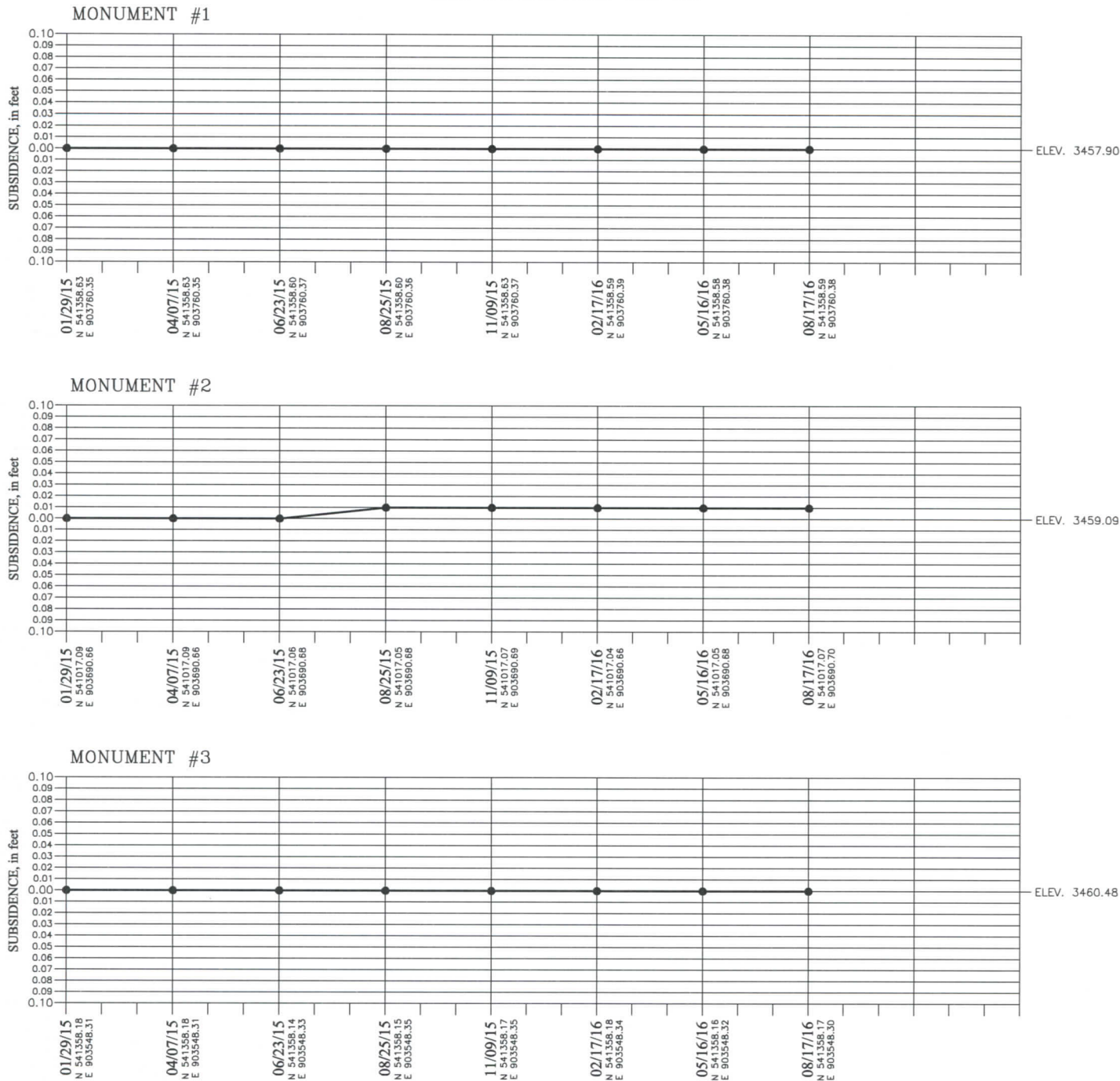
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# VERTICAL SUBSIDENCE TABLE

## KEY ENERGY SERVICES, LLC. – STATE #1

### NEW MEXICO EAST NAD 83



#### SURVEYORS CERTIFICATE

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*Terry J. Asel* 8/22/2016  
Terry J. Asel N.M. R.P.L.S. No. 15079



Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
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## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 08/17/16	Sheet 1 of 1 Sheets
W.O. Number: 160817MS	Drawn By: KA Rev:
Date: 08/18/16	160817MS Scale: 1"=1000'



## Chavez, Carl J, EMNRD

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### Jim Griswold

*Environmental Bureau Chief*  
EMNRD/Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505.476.3465  
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Good afternoon Mr. Griswold,

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12400 W. Interstate 20 E. Odessa, TX 79765  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

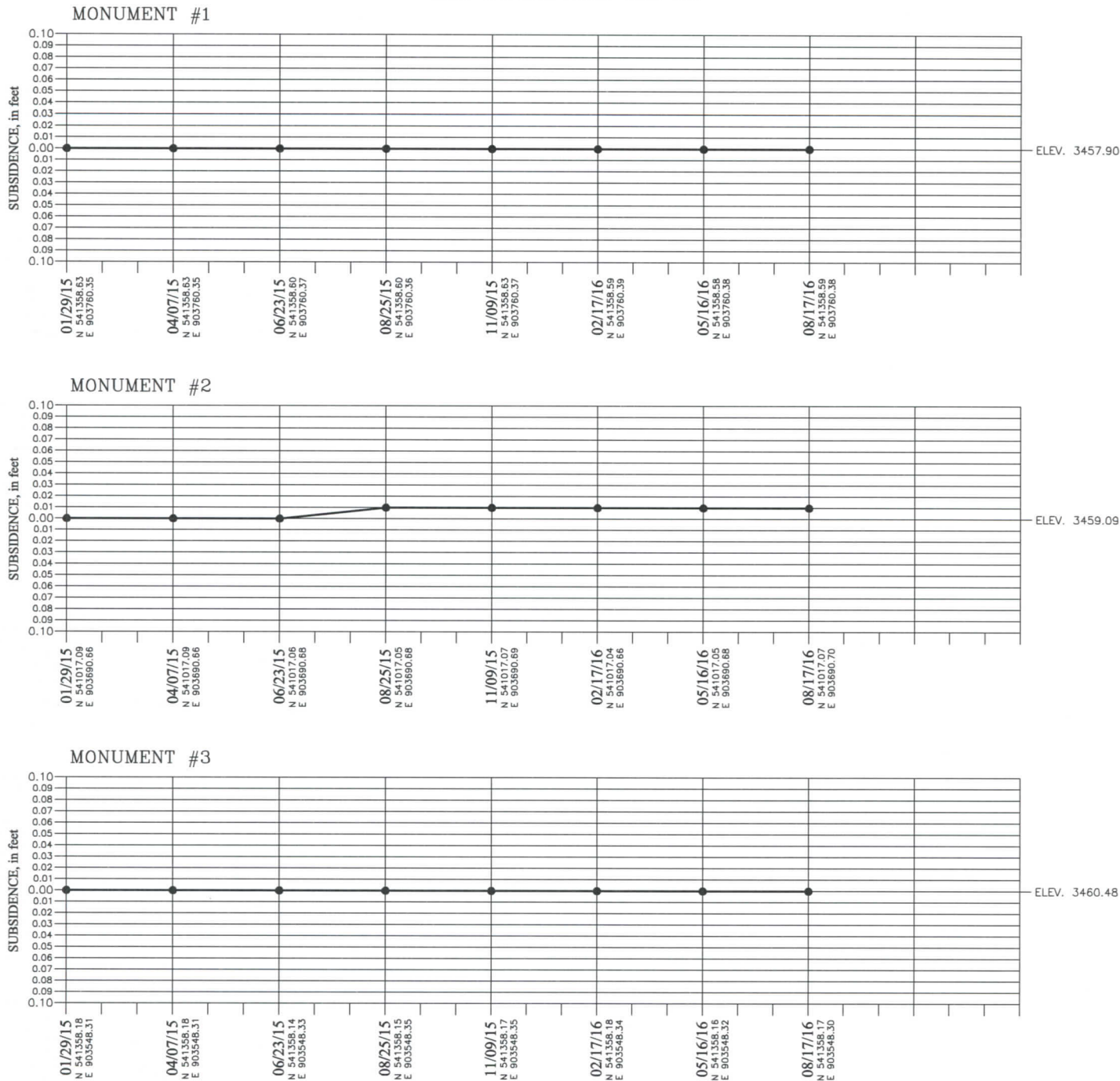
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# VERTICAL SUBSIDENCE TABLE

## KEY ENERGY SERVICES, LLC. – STATE #1

### NEW MEXICO EAST NAD 83



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ELEV. = 3434.37

*Terry J. Asel* 8/22/2016  
Terry J. Asel N.M. R.P.L.S. No. 15079



Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBBS, NEW MEXICO – 575-393-9146



## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 08/17/16	Sheet 1 of 1 Sheets
W.O. Number: 160817MS	Drawn By: KA Rev:
Date: 08/18/16	160817MS Scale: 1"=1000'



## Chavez, Carl J, EMNRD

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### Jim Griswold

*Environmental Bureau Chief*  
EMNRD/Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505.476.3465  
email: [jim.griswold@state.nm.us](mailto:jim.griswold@state.nm.us)

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Feel free to contact me if you have further comments or questions,

Respectfully,

**Ana Ramirez** | **Key Energy Services** | Environmental Specialist  
12400 W. Interstate 20 E. Odessa, TX 79765  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

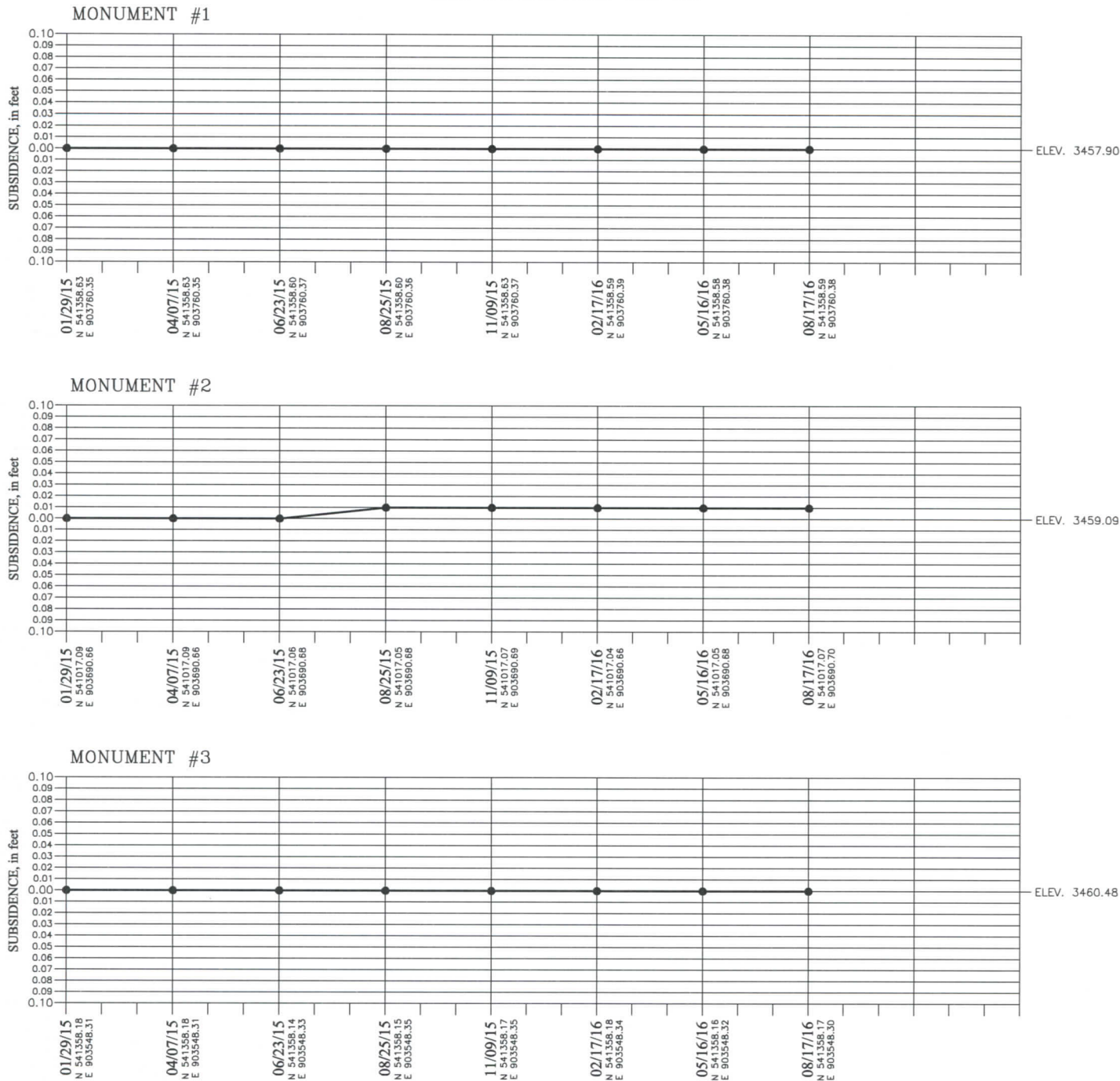
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# VERTICAL SUBSIDENCE TABLE

## KEY ENERGY SERVICES, LLC. – STATE #1

### NEW MEXICO EAST NAD 83



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ELEV. = 3434.37

*Terry J. Asel* 8/22/2016  
Terry J. Asel N.M. R.P.L.S. No. 15079



Asel Surveying

P.O. BOX 393 – 310 W. TAYLOR  
HOBBBS, NEW MEXICO – 575-393-9146



## KEY ENERGY SERVICES, LLC.

SUBSIDENCE MONITORING FOR THE KEY ENERGY SERVICES, LLC. – EUNICE STATE #1 WELL IN SECTION 15, TOWNSHIP 21 SOUTH, RANGE 37 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

Survey Date: 08/17/16	Sheet 1 of 1 Sheets
W.O. Number: 160817MS	Drawn By: KA Rev:
Date: 08/18/16	160817MS Scale: 1"=1000'



## Chavez, Carl J, EMNRD

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**From:** Griswold, Jim, EMNRD  
**Sent:** Monday, June 20, 2016 3:17 PM  
**To:** Chavez, Carl J, EMNRD  
**Subject:** FW: Key Energy Services - State Brine Well # 1 - Subsidence monitoring 2nd Quarter 2016  
**Attachments:** Subsidence Monitoring Eunice State #1 5-16-16.pdf

### Jim Griswold

*Environmental Bureau Chief*  
EMNRD/Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505.476.3465  
email: [jim.griswold@state.nm.us](mailto:jim.griswold@state.nm.us)

---

**From:** Ramirez, Ana O [<mailto:aramirez01@keyenergy.com>]  
**Sent:** Tuesday, May 17, 2016 4:07 PM  
**To:** Griswold, Jim, EMNRD  
**Subject:** Key Energy Services - State Brine Well # 1 - Subsidence monitoring 2nd Quarter 2016

Mr. Griswold,

Please find attached the 2nd quarter 2016 Subsidence monitoring survey for Key Energy Services, LLC – State Brine Well # 1 in Section 15, Township 21 South, Range 37 east, NMPPM, Lea County, New Mexico. Permit No. BW-28.

Please feel free to contact me if you have further comments or questions,

Regards,

**Ana Ramirez** | **Key Energy Services** | Environmental Specialist  
6 Desta Dr. Suite 4300 Midland, TX 79705  
o: 432.571.7203 | m: 432.234.6959 | [aramirez01@keyenergy.com](mailto:aramirez01@keyenergy.com)

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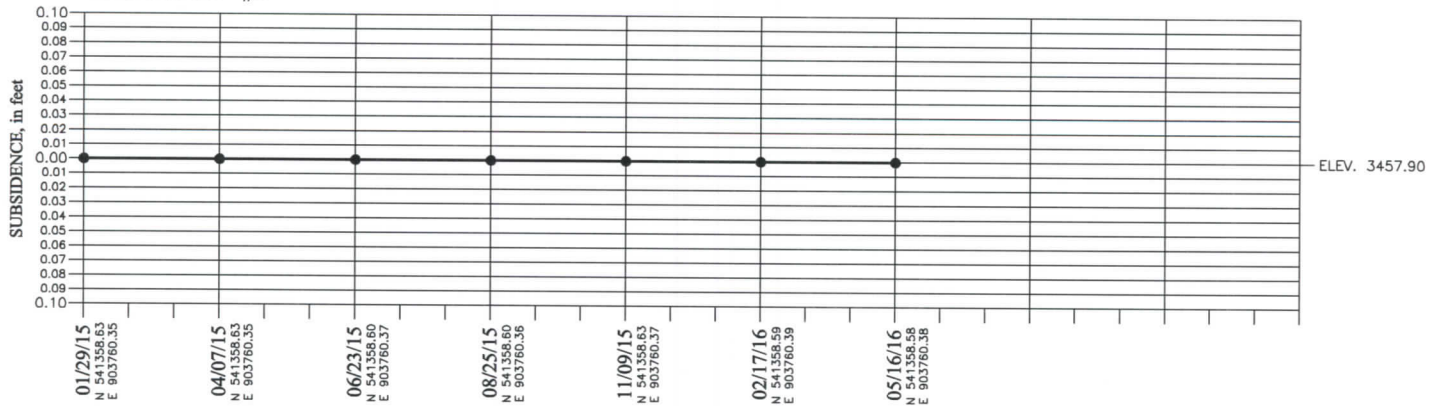


# VERTICAL SUBSIDENCE TABLE

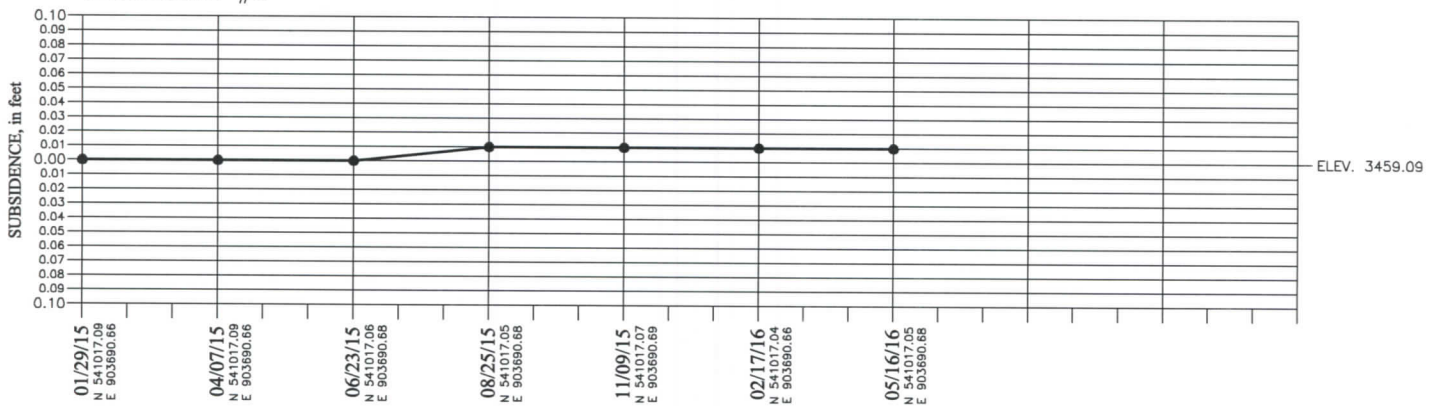
## KEY ENERGY SERVICES, LLC. – STATE #1

### NEW MEXICO EAST NAD 83

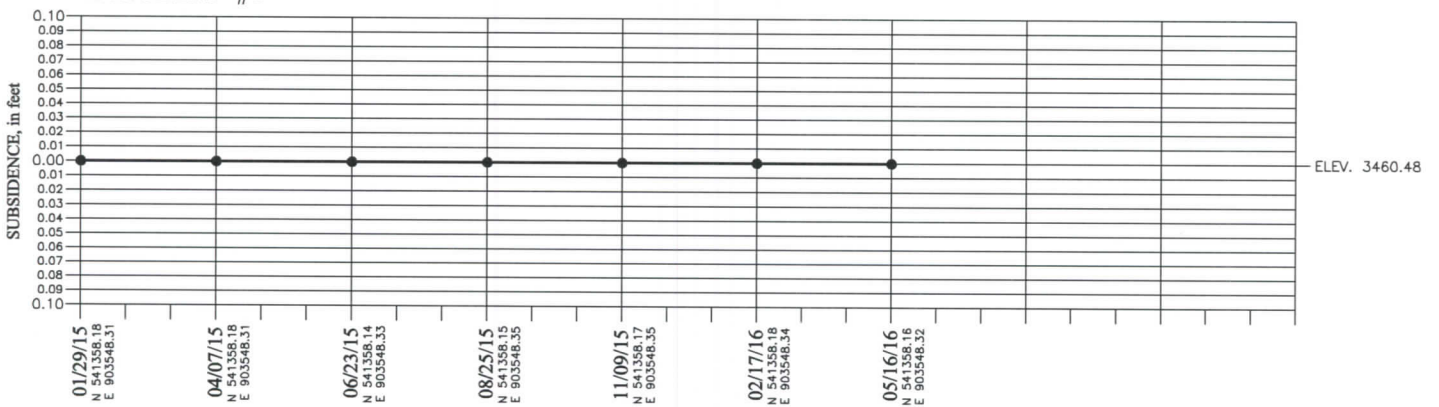
**MONUMENT #1**



**MONUMENT #2**



**MONUMENT #3**



**SURVEYORS CERTIFICATE**

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*Terry J. Asel* 5/17/2016  
 Terry J. Asel N.M. R.P.L.S. No. 15079

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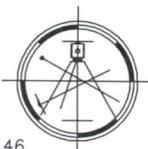


## KEY ENERGY SERVICES, LLC.

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Asel Surveying

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Survey Date: 05/16/16	Sheet 1 of 1 Sheets
W.O. Number: 160516MS	Drawn By: KA Rev:
Date: 05/17/16	160516MS Scale: 1"=1000'



**Chavez, Carl J, EMNRD**

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Friday, November 14, 2008 4:38 PM  
**To:** 'ziatransports@gmail.com'; 'jrmillett@gmail.com'; 'rharrisnm@aim.com'; 'gandy2@leaco.net'; 'seay04@leaco.net'; 'iwcarsbad@plateautel.net'; 'Patterson, Bob'; 'Dimas Herrera'; 'gil@mull.us'; 'David Pyeatt'; 'Wayne E Roberts'; 'Dennis L Shearer'; 'garymschubert@aol.com'; 'dgibson@keyenergy.com'; 'Clay Wilson'; 'Prather, Steve'; 'Ronnie D Devore'  
**Cc:** Hill, Larry, EMNRD; Gum, Tim, EMNRD; Price, Wayne, EMNRD  
**Subject:** Brine Well Moratorium Press Release Today  
**Attachments:** PR-OCD Brine Well Moratorium.pdf

FYI, please see the attached NM OCD Press Release issued today. Thank you.

Carl J. Chavez, CHMM  
New Mexico Energy, Minerals & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 South St. Francis Dr., Santa Fe, New Mexico 87505  
Office: (505) 476-3491  
Fax: (505) 476-3462  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)  
Website: <http://www.emnrd.state.nm.us/oed/index.htm>  
(Pollution Prevention Guidance is under "Publications")





## New Mexico Energy, Minerals and Natural Resources Department

---

**Bill Richardson**  
Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



November 14, 2008

### NEWS RELEASE

**Contact:** Jodi McGinnis Porter,  
Public Information Officer 505.476.3226

### **Energy, Minerals and Natural Resources Cabinet Secretary Prukop Orders a Six Month Moratorium on New Brine Wells** ***Oil Conservation Division to Investigate Brine Well Collapses and Provide Recommendations***

SANTA FE, NM – Secretary Joanna Prukop today ordered the Oil Conservation Division to place a six month moratorium on any new brine well applications located in geologically sensitive areas. Secretary Prukop's action comes following the second brine well collapse in less than four months in southeastern New Mexico. The Secretary has also directed the Oil Conservation Division to work with the Environmental Protection Agency, other states, technical experts and oil and gas industry representatives to examine the causes of recent collapses, and provide a report with recommendations to the Oil Conservation Commission for a safe path forward. The report should be completed by May 1, 2009.

"I am deeply concerned by these two serious incidents and we are taking action to ensure the safety of our citizens and to protect the environment," stated Secretary Prukop.

Brine wells are an essential part of the oil and gas drilling industry, particularly in the southeastern part of the state. Oil and gas operators use brine water in the drilling process. Brine is saturated salt water which can be more salty than sea water. Brine is created by injecting fresh water into salt formations, allowing the water to absorb the salt and then pumping it out of the well. This method creates an underground cavity.

"The moratorium will provide time to properly evaluate the causes of the recent collapses and to discuss the development of new rules or guidelines to ensure the safety and stability of brine well systems," added Secretary Prukop.

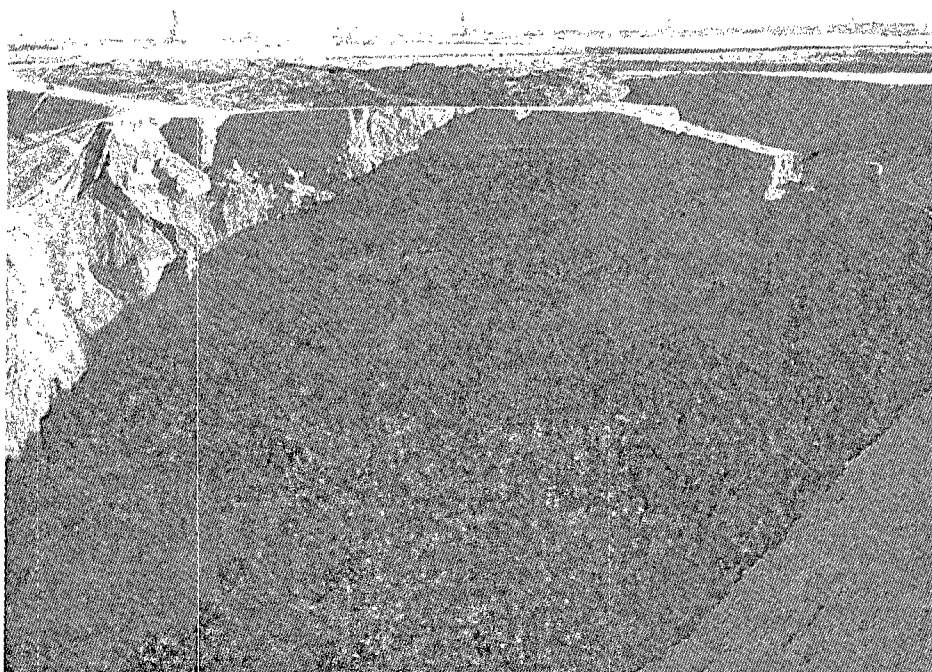
The moratorium will only affect new wells and will not impact existing wells and facilities.

Below are photographs of the two recent collapses:



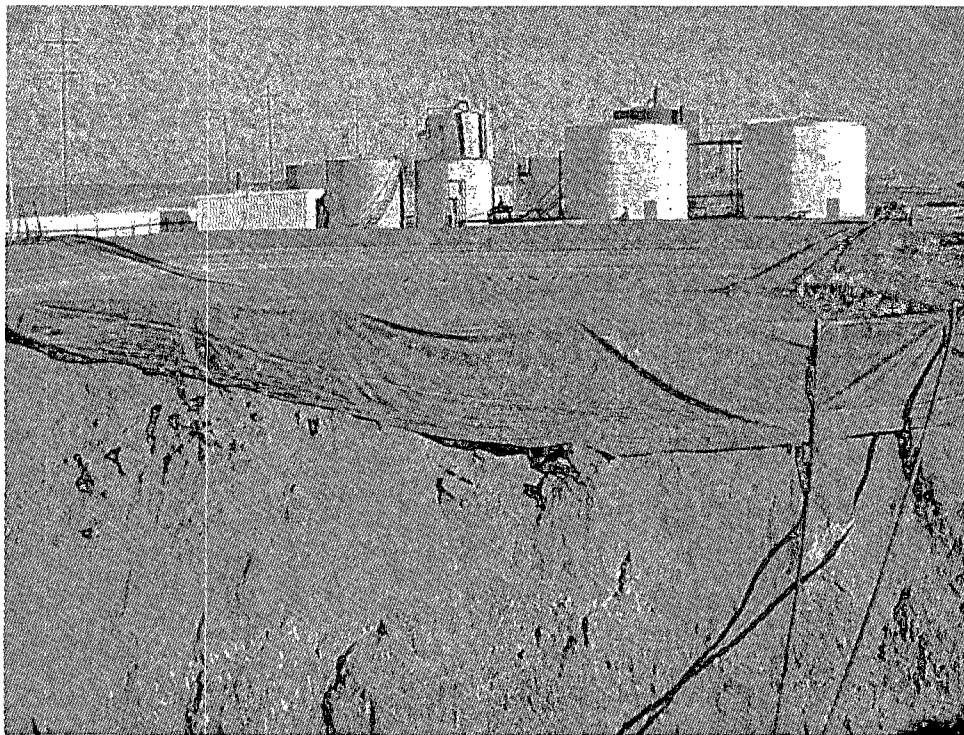


**Loco Hills brine well collapse, morning, November 7, 2008, sinkhole with fresh water pond in foreground.**  
Photo courtesy of Oil Conservation Division

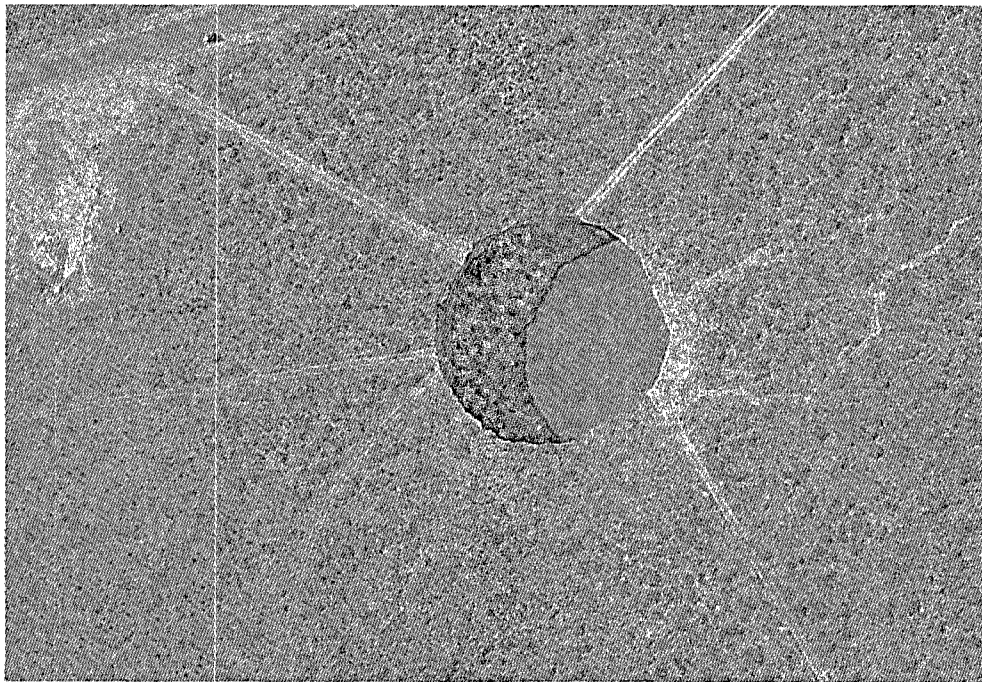


**Loco Hills brine well collapse, morning, November 7, 2008 sinkhole.**  
Photo courtesy of Oil Conservation Division



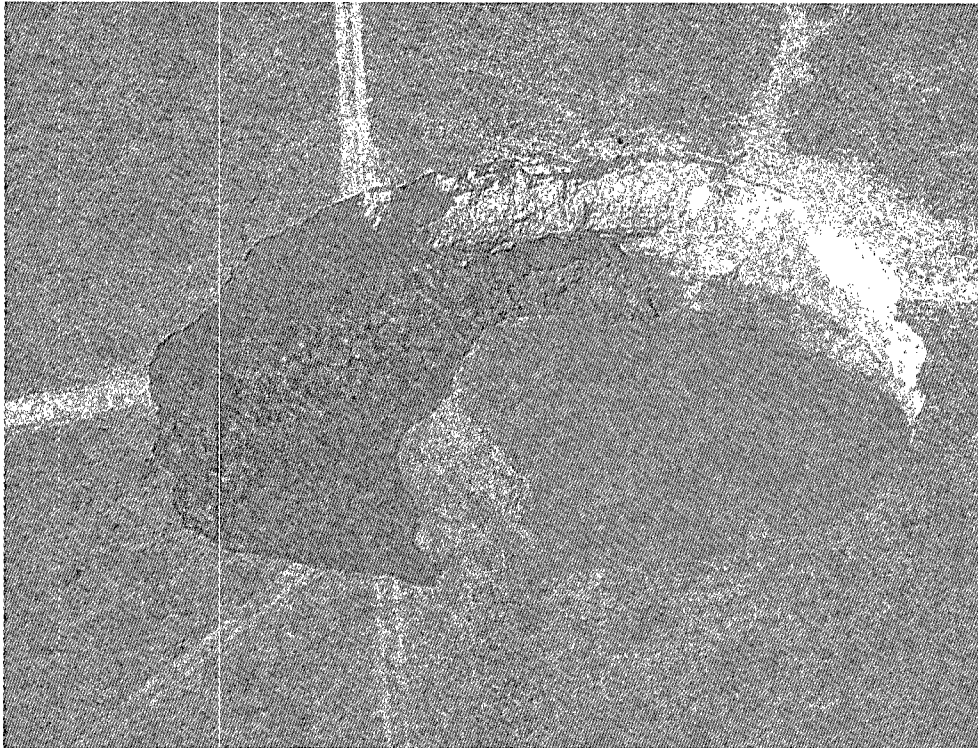


**Loco Hills brine well collapse**, morning, November 7, 2008 status of fresh water pond.  
Photo courtesy of Oil Conservation Division



**Artesia brine well collapse**, morning, July 20, 2008 at 10:44 am.  
Photo courtesy of National Cave and Karst Research Institute





**Artesia brine well collapse** morning, July 22, 2008  
Photo courtesy of National Cave and Karst Research Institute

#30#

*The Energy, Minerals and Natural Resources Department provides resource protection  
and renewable energy resource development services to the public and other state agencies.*

Oil Conservation Division  
1220 South St. Francis Drive • Santa Fe, New Mexico 87505  
Phone (505) 476-3440 • Fax (505) 476-3462 • [www.emnrd.state.nm.us/OCD](http://www.emnrd.state.nm.us/OCD)





**Chavez, Carl J, EMNRD**

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Wednesday, November 12, 2008 11:50 AM  
**To:** 'ziatransports@gmail.com'; 'jrmillett@gmail.com'; 'Patterson, Bob'; Philliber, Mark; 'rharrisnm@aim.com'; 'gandy2@leaco.net'; 'David Pyeatt'; 'garymschubert@aol.com'  
**Cc:** Price, Wayne, EMNRD; Sanchez, Daniel J., EMNRD; Hill, Larry, EMNRD; Gum, Tim, EMNRD  
**Subject:** Brine Well Sonar Testing Requirement with this season's upcoming MIT Schedule 2009

Gentlemen:

Re: MITs and OCD Sonar Test Requirement

Good morning. It is that time of season when the OCD requests your proposed MIT schedule. The OCD is requiring a sonar test in addition to the MIT this season. The OCD objective is to complete the MITs on or before July 31, 2009. If circumstances require it, the deadline for MITs may be extended to on or before October 31, 2009. Please contact me within 30 days to schedule your MIT and sonar test with date and time that you prefer. Note that brine well operators scheduled for the annual OCD 4-hr. formation MIT may conduct the EPA 5-Yr. 30 minute MIT (+/- 10% to pass) at 300 – 500 psig on casing in lieu of the OCD annual formation MIT this season.

After reviewing the site files and your responses to the recent OCD questionnaire following the Jims Water Service (BW-5) brine well collapse SE of Artesia in Eddy County on 7/16/2008, and the more recent collapse at Loco Hills (BW-21) in Eddy County on 11/3/2008, the OCD is requiring Sonar Testing along with your MIT this season to assess the configuration of your brine well cavern and any threats to public health and safety in your areas. The OCD is focused on the maturity of brine wells and the "Calculation" from the recent questionnaire attempts to assess brine well maturity by comparing the total brine production relative to the depth of the brine well casing shoe. This is one of the reasons why fresh water and brine well production record reporting to the OCD is so critical. Any operators that are planning to plug and abandon their brine wells are required by the OCD to conduct a sonar test of the well in advance of plugging and abandonment. Also, the OCD requires that the brine cavern be filled with brine fluid as this adds structural stability to the cavern and well. This will be required in a C-103 approved with conditions by the OCD. Currently, 3 brine well operators have been required by the OCD to conduct sonar testing within 30 days due to the maturity issue mentioned above. The OCD is continuing to assess its EPA Class III Brine Well program and will keep you updated on improvements and/or changes as needed.

If you feel that your brine well is too new to require sonar testing or a sonar was recently completed at your brine well, please provide the basis for requesting an exemption to this OCD sonar test requirement ASAP for OCD approval.

Please contact me if you have questions. Thanks in advance for your cooperation in this matter.

Carl J. Chavez, CHMM  
New Mexico Energy, Minerals & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 South St. Francis Dr., Santa Fe, New Mexico 87505  
Office: (505) 476-3491  
Fax: (505) 476-3462  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)  
Website: <http://www.emnrd.state.nm.us/oed/index.htm>  
(Pollution Prevention Guidance is under "Publications")

11/12/2008



# New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

Joanna Prukop  
Cabinet Secretary  
Reese Fullerton  
Deputy Cabinet Secretary

Mark Fesmire  
Division Director  
Oil Conservation Division



## OIL CONSERVATION DIVISION BRINE WELL INFORMATION REQUEST

### GENERAL INFORMATION:

Operator Name Key Energy Services Well Name(s) State 5  
API Number 30 025 33547 Brine Well Permit # 028  
Date Permit Expires? September 2012

Location: Section 15 Ts 21S Rg 37E  
FNL 1340' FSL \_\_\_\_\_ FEL \_\_\_\_\_ FWL 330'  
GPS of well(s): Lat: 32° 29' 0.25" Long: 103° 09' 30.8"

Have you reviewed and understand all of your permit conditions? Yes ☒ No ☐  
Are you presently deficient of any condition in your permit? Yes ☐ No ☒ Don't know ☐  
Do you operate below grade tanks or pits at the site? Yes ☐ No ☒  
Do all tanks, including fresh water tanks, have secondary containment? Yes ☒ No ☐  
Do you think you have the expertise, knowledge and general understanding of what causes a brine well to collapse? Yes ☐ No ☒  
Do you think OCD should provide guidelines on subsidence and collapse issues? Yes ☒ No ☐

### SITING INFORMATION: *Please provide the following information and depict on 7.5 minute (1": 2000') USGS Quad Map. Limit search to one mile radius.*

Is the brine well located within a municipality or city limits? Yes ☐ No ☒

Distance and direction to nearest permanent structure, house, school, etc. if less than one mile:

More than 1 mile

Distance and direction to nearest water well if less than one mile:

More than 1 mile

Distance to nearest watercourse(s), floodplain, playa lake(s), or man-made canal(s) or pond(s) if less than one mile:

N/A

Distance and direction to nearest known karst features or mines if less than one mile:

N/A



Distance and direction to nearest producing oil or gas well(s) if less than one mile: Provide API Number: <u>300'E</u> <u>Chevron USA States #1 API 30 025 06586</u>
Distance and direction to nearest tank battery(ies) if less than one mile: <u>East .2 mile</u>
Distance and direction to nearest pipeline(s), including fresh water pipelines if less than one mile: <u>City of Eunice water line 200' west</u>
Distance and direction to nearest paved or maintained road or railroad if less than one mile: <u>250' west</u>
Depth to ground water found above the Salado (salt section), regardless of yield: <u>Approx 100'</u>
Name of aquifer(s): <u>Alluvium</u>
<b>WELL CONSTRUCTION:</b> Please provide the following information and attach a diagram depicting the brine well. Check box if attached: Copy of a current well diagram: Attached <input type="checkbox"/> Copy of formation record with tops: Attached <input checked="" type="checkbox"/> Copy of geophysical well logs if available: Attached <input type="checkbox"/> If not, well logs within one mile <input type="checkbox"/> <u>not Available</u>
Depth of the top of the salt below ground surface (feet): <u>1390'</u>
Depth to the bottom of the salt below ground surface (feet): <u>2445'</u>
Depth(s) to and thickness(es) of any anhydrite section(s) (located above the salt): <u>1262' to 1390' 128'</u>
Depth of casing(s) shoe below ground surface (feet): <u>1344'</u> Is the casing shoe set in the anhydrite or other layer above the salt? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Is the casing shoe set into the salt? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, how far into the salt? _____
Depth of tubing(s): <u>2074'</u>
Do you suspect that your cavern has partially caved in? Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know <input checked="" type="checkbox"/>
<b>OPERATIONS:</b> Please provide the following information.
Start date of brine well operation: <u>10-4-1996</u>
Total volume of fresh water injected into the brine well to date (bbls) and how determined: <u>Estimated 3,000,000 bbls</u>



Total volume of brine water produced (bbls) to date and how determined:

*From 1996-2001 Not Available*

*From July 2001 to September 2008 2,057,329 bbls*

Have you ever lost casing or tubing? If yes, please provide details.

Document attached ☒

Do you maintain a surface pressure on your well during idle times? Yes ☒ No ☐

Have you noticed large amounts of air built up during cavity pressurization? Yes ☐ No ☒

Have you ever noticed fluids or air/gas bubbling up around the casing during testing or normal operations? Yes ☐ No ☒

**MONITORING: Please provide the following information.**

Are you currently monitoring ground water contamination from your brine well or system?

Yes ☒ No ☐

*Visually*

Have you ever run a sonar log? Yes ☐ No ☒

If yes, please provide last date: \_\_\_\_\_

Provide cavern configuration (dimensions and volume) and method(s) used to estimate:

If sonar report please attach ☐ If other, please specify and provide a sketch of cavern: ☐

*Data Not Available*

Do you have a subsidence monitoring program in place? Yes ☒ No ☐

*Visual*

Do you have any geophysical monitoring devices, such as a seismic device positioned near your brine well? Yes ☐ No ☒

Have you submitted all of your monthly, quarterly, or annual reports to the OCD?

Yes ☒ No ☐

Have you failed a brine well mechanical integrity test (MIT)? If yes, please attach details and results. Attached ☐

*No*

Have you ever had a casing leak? Yes ☐ No ☒

Have you ever had a cavern leak? Yes ☐ No ☐ Don't know ☒

Have you ever exceeded the cavern fracture pressure? Yes ☐ No ☒ Don't know ☐

Do you know how to calculate your maximum pressure? Yes ☒ No ☐ Don't know ☐

Have you routinely looked for cracks or fissures in the ground surface around your brine well?

Yes ☒ No ☐

Do you have any minor or major cracks, fissures, tank settlement, line breakage from settlement or any minor subsidence. Yes ☐ No ☒

During operations have you experienced any ground vibration, ground movement, or well movement after opening or shutting valves, pump start-up, shut-down, etc.? Yes ☐ No ☒

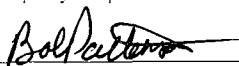


Have you ever experienced unexpected pressure gain or loss in the cavern? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, was there a difference in your normal flow rate? Yes <input type="checkbox"/> No <input type="checkbox"/>
Anytime during the past 5 years, have you experienced a noticeable difference between fresh water volume pumped into the well verses brine water produced? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Are you concerned about pulling the tubing due to the fact it may be difficult to re-enter the hole? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Are you concerned about running a sonar tool in fear of losing tool because of debris in hole? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Have you ever conducted a fly over of your well site? No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> if yes, please provide photo. <input type="checkbox"/> Photo(s) attached
<b>Calculation:</b> Please divide your estimated total volume of produced brine by 180,000 and multiply by 50. <b>Example:</b> If you have produced a total of 18,000,000 bbls of brine in the life time of the well then your calculation would be $18,000,000 / 180,000 = 100 \times 50 = 5000$ . 1. Provide the calculated number above here: <u>571.48</u> <i>Based on incomplete data</i> 2. Now provide the depth (ft) from the surface to your casing shoe: <u>1344</u>
Is the calculated number found in #1 above greater than #2? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Comments or recommendations for OCD:

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

Key Energy Services LLC  
Company Name-print name above

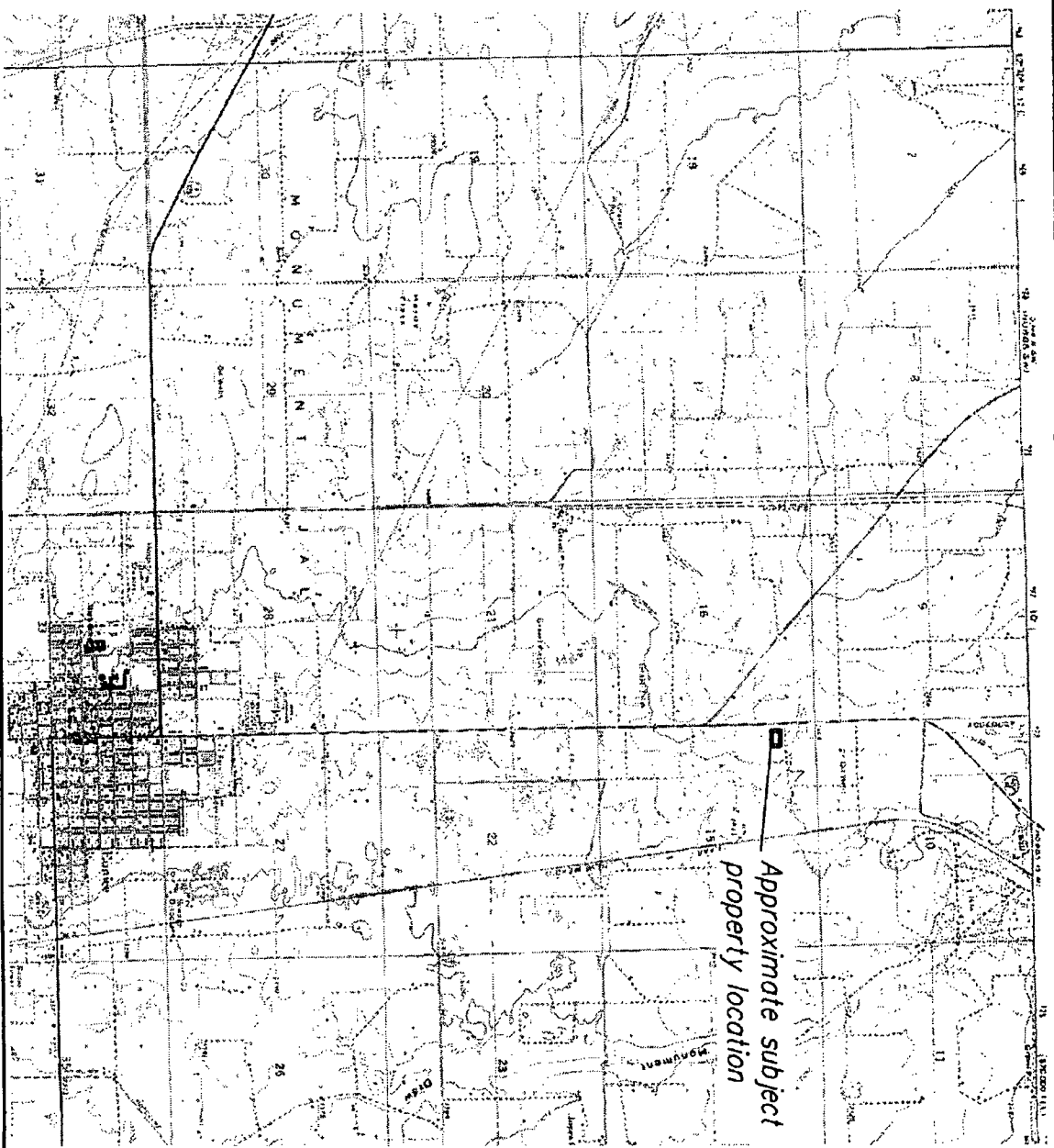
Bob Patterson  
Company Representative- print name

  
Company Representative- Signature

Title Area Manager

Date: 11-6-8





Approximate subject  
property location



0 2,000 4,000

Scale: 1"=4,000'

**Note:**  
Base map is the Eunice, New Mexico  
USGS 7.5 minute series (topographic  
maps (1969; photorevised 1979)

**Site Location Map**  
**Key Energy Discharge Plan BW-028**  
**Near Eunice, New Mexico**

**Figure 1**

5317308  
08-07

Revisions  
By: \_\_\_\_\_ Date: \_\_\_\_\_ Desc: \_\_\_\_\_  
By: \_\_\_\_\_ Date: \_\_\_\_\_ Desc: \_\_\_\_\_  
Copyright 2007 Souder, Miller & Associates - All Rights Reserved

Drawn: \_\_\_\_\_  
Checked: \_\_\_\_\_  
Approved: \_\_\_\_\_  
MLV  
D.E.  
D.E.



401 North Seventeenth Street, Suite 4  
Las Cruces, New Mexico 88005-8131  
(505) 847-0789 / 847-0680 (Fax)  
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DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

**OIL CONSERVATION DIVISION**  
2040 Pacheco St.  
Santa Fe, NM 87505

WELL API NO.  
30-025-33547

5. Indicate Type of Lease  
STATE ☒ FEE ☐

6. State Oil & Gas Lease No.  
MS 0004

**SUNDRY NOTICES AND REPORTS ON WELLS**  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A  
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"  
(FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name  
State

1. Type of Well:  
OIL WELL ☐ GAS WELL ☐ OTHER ☒ Brine

8. Well No.  
1

2. Name of Operator  
Gold Star SWD Ltd Company

9. Pool name or Wildcat  
BSW-Salado

3. Address of Operator  
Box 1480 Eunice, N.M. 88231

4. Well Location  
Unit Letter E : 1340 Feet From The N Line and 330 Feet From The W Line  
Section 15 Township 21S Range 37E NMPM Lea County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)  
DF 3469

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

**NOTICE OF INTENTION TO:**

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐  
OTHER: ☐

**SUBSEQUENT REPORT OF:**

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☒ PLUG AND ABANDONMENT ☐  
CASING TEST AND CEMENT JOB ☒  
OTHER: ☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

9-28-96 Spudded 4 Pm. Derrick Floor 11'. Drilled 12 1/4" hole.  
9-29-96 TD 1360' at 4:30 Pm. Ran 1344' 8 5/8" new 32# J55 casing, Float collar and Float Shoe, 5 Centralizers. Cement with 500 sx class C Premium W/ 4% Gel Mix and 300 sx class C Premium W/2% Calcium Chloride.  
9-29-96 Circulated 236 sx cement to pit.  
9-30-96 Pump cement plug down 12:30 AM.  
10-1-96 WOC 18 Hr. 7:30 PM. Start drilling 7 7/8" hole.  
10-2-96 TD 2200' at 6:00 AM.  
10-3-96 Move rig. Run 2074' 2 7/8" Fiberglass tubing.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Royce Crowell TITLE Mgr - Member DATE 10-4-96  
TYPE OR PRINT NAME Royce Crowell TELEPHONE NO. 394250

(This space for State Use)  
ORIGINAL SIGNED BY COUNTY SEXTON  
DISTRICT SUPERVISOR

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE OCT 11 1996

CONDITIONS OF APPROVAL, IF ANY:



Submit to Appropriate  
District Office  
State Lease - 6 copies  
Fee Lease - 5 copies  
DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico  
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

Form C-105  
Revised 1-1-89

WELL API NO.	30-025-33547
5. Indicate Type of Lease	STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.	MS0004
7. Lease Name or Unit Agreement Name	
State	
8. Well No.	1
9. Pool name or Wildcat	BSW-Salado <96173>

WELL COMPLETION OR RECOMPLETION REPORT AND LOG					
1a. Type of Well: OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input checked="" type="checkbox"/> OTHER <u>Brine</u>					
b. Type of Completion: NEW WELL <input checked="" type="checkbox"/> WORK OVER <input type="checkbox"/> DEEPEN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF RESVR <input type="checkbox"/> OTHER <input type="checkbox"/>					
2. Name of Operator Gold Star SWD Ltd Co.					
3. Address of Operator Box 1480 Eunice, N.M. 88231					
4. Well Location Unit Letter <u>E</u> : <u>1340</u> Feet From The <u>North</u> Line and <u>330</u> Feet From The <u>West</u> Line Section <u>15</u> Township <u>21S</u> Range <u>37E</u> NMPM Lea County					
10. Date Spudded <u>9-28-96</u>	11. Date T.D. Reached <u>10-2-96</u>	12. Date Compl. (Ready to Prod.) <u>10-4-96</u>	13. Elevations (DF& RKB, RT, GR, etc.) <u>DF 3469</u>	14. Elev. Casinghead <u>3458</u>	
15. Total Depth <u>2200'</u>	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By <u>X</u>	Rotary Tools	Cable Tools
19. Producing Interval(s), of this completion - Top, Bottom, Name <u>Top 1390 Bottom 2445 BSW Salado</u>					20. Was Directional Survey Made <u>Yes</u>
21. Type Electric and Other Logs Run <u>N/A</u>					22. Was Well Cored <u>NO</u>

23. CASING RECORD (Report all strings set in well)					
CASING SIZE	WEIGHT LB/FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
<u>8 5/8</u>	<u>32#</u>	<u>1360'</u>	<u>12 1/4</u>	<u>800 Sx.</u>	
<u>2 7/8</u>	<u>Fiberglass</u>	<u>2074</u>	<u>7 7/8</u>		

24. LINER RECORD				25. TUBING RECORD		
SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN	SIZE	DEPTH SET
					<u>2 7/8</u>	<u>2074</u>

26. Perforation record (interval, size, and number) <u>N/A</u>	27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.	
	DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
	<u>1360'</u>	<u>500 Sx Class C 4 1/2 Gal</u> <u>300 Sx Class C 2 1/2 Cal C1</u>

28. PRODUCTION							
Date First Production		Production Method (Flowing, gas lift, pumping - Size and type pump)				Well Status (Prod. or Shut-in)	
Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)	
29. Disposition of Gas (Sold, used for fuel, vented, etc.)						Test Witnessed By	

30. List Attachments			
31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief			
Signature	<u>Royce Crowell</u>	Printed Name	<u>Royce Crowell</u>
Title	<u>Mgr. Member</u>	Date	<u>10-4-96</u>



## INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-dri or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all sp tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is t filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STAT

## Southeastern New Mexico

## Northwestern New Mexico

T. Anhy _____	T. Canyon _____	T. Ojo Alamo _____	T. Penn. "B" _____
T. Salt _____	T. Strawn _____	T. Kirtland-Fruitland _____	T. Penn. "C" _____
B. Salt _____	T. Atoka _____	T. Pictured Cliffs _____	T. Penn. "D" _____
T. Yates _____	T. Miss _____	T. Cliff House _____	T. Leadville _____
T. 7 Rivers _____	T. Devonian _____	T. Menefee _____	T. Madison _____
T. Queen _____	T. Silurian _____	T. Point Lookout _____	T. Elbert _____
T. Grayburg _____	T. Montoya _____	T. Mancos _____	T. McCracken _____
T. San Andres _____	T. Simpson _____	T. Gallup _____	T. Ignacio Otzte _____
T. Glorieta _____	T. McKee _____	Base Greenhorn _____	T. Granite _____
T. Paddock _____	T. Ellenburger _____	T. Dakota _____	T. _____
T. Blinberry _____	T. Gr. Wash _____	T. Morrison _____	T. _____
T. Tubb _____	T. Delaware Sand _____	T. Todilto _____	T. _____
T. Drinkard _____	T. Bone Springs _____	T. Entrada _____	T. _____
T. Abo _____	T. _____	T. Wingate _____	T. _____
T. Wolfcamp _____	T. _____	T. Chinle _____	T. _____
T. Penn _____	T. _____	T. Permian _____	T. _____
T. Cisco (Bough C) _____	T. _____	T. Penn "A" _____	T. _____

## OIL OR GAS SANDS OR ZONES

No. 1, from.....to.....  
No. 2, from.....to.....  
No. 3, from.....to.....  
No. 4, from.....to.....

## IMPORTANT WATER SANDS

**Include data on rate of water inflow and elevation to which water rose in hole.**

No. 1, from ..... to ..... feet.  
No. 2, from ..... to ..... feet.  
No. 3, from ..... in ..... feet.

## LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness in Feet	Lithology	From	To	Thickness in Feet	Lithology
0	95	95	Caliche and Sand				
95	1262	1167	Red Bed				
1262	1390	128	Anhydrite				
1390	2200	810	Salt and Anhydrite				



DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

WELL API NO. 30-025-33547
5. Indicate Type of Lease STATE <input checked="" type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No. MS-0004

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	
1. Type of Well: OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/> BRINE <input type="checkbox"/>	7. Lease Name or Unit Agreement Name  STATE
2. Name of Operator GOLD STAR SWD LTD. CO.	8. Well No. 1
3. Address of Operator BOX 1480 EUNICE NM 88231	9. Pool name or Wildcat BSW-SALADO
4. Well Location Unit Letter <u>E</u> : <u>1340</u> Feet From The <u>N.</u> Line and <u>330</u> Feet From The <u>W.</u> Line Section <u>15</u> Township <u>21 S.</u> Range <u>37 E.</u> NMPM LEA County	
10. Elevation (Show whether DF, RKB, RT, GR, etc.)	

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐  
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDONMENT ☐  
CASING TEST AND CEMENT JOB ☐  
OTHER: ☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

03-17-00 PULL TUB. LOST 140' 2 7/8 FG. TUB.  
03-18-00 RUN 7 1/2 OD CUT RITE SHOE TO 1357'  
03-19-00 RUN SHOE TO 1361'  
03-20-00 RUN 6 3/4 BIT TI 1375'  
03-21-00 DRILL TO 1405'  
03-22-00 SHUTDOWN  
03-23-00 DRILL TO 1419'  
03-24-00 DROP TUB AND FISHED  
03-25-00 RUN 1402' 2 7/8 F.G. TUB. RIGDOWN.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

TITLE

DATE

TYPE OR PRINT NAME

TELEPHONE NO.

(This space for State Use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:



DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

WELL API NO.  
30-025-33547

5. Indicate Type of Lease  
STATE ☒ FEE ☐

6. State Oil & Gas Lease No.  
MS-0004

SUNDRY NOTICES AND REPORTS ON WELLS  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A  
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"  
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:  
OIL WELL ☐ GAS WELL ☐ OTHER ☐ BRINE

2. Name of Operator  
GOLD STAR SWD LTD. CO.

3. Address of Operator  
BOX 1480 EUNICE NM 88231

4. Well Location  
Unit Letter E : 1340 Feet From The N. Line and 330 Feet From The W. Line  
Section 15 Township 21 S. Range 37 E. NMPM LEA County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)

11.

Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐  
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDONMENT ☐  
CASING TEST AND CEMENT JOB ☐  
OTHER: ☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

04-10-00 PULL TUB. LOST 82' TUB.  
04-11-00 TRIED TO FISH TUB. RUN 6 1/8 CUT RITE SHOE.  
04-12-00 MILL TO 1349' RUN BIT & COLLARS  
04-13-00 DRILL TO 1439'  
04-14-00 RUN 1410' 2 7/8 FG TUB.  
RIGDOWN

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

TITLE

DATE

TYPE OR PRINT NAME

TELEPHONE NO.

(This space for State Use)

ORIGINAL SIGNED BY  
GARY WINK  
FIELD REP II

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:



DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

WELL API NO.  
30-025-33547

5. Indicate Type of Lease  
STATE ☒ FEE ☐

6. State Oil & Gas Lease No.  
MS-0004

SUNDRY NOTICES AND REPORTS ON WELLS  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A  
DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"  
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:  
OIL WELL ☐ GAS WELL ☐ OTHER ☐ BRINE

2. Name of Operator  
GOLD STAR SWD LTD. CO.

3. Address of Operator  
BOX 1480 EUNICE NM 88231

4. Well Location  
Unit Letter E : 1340 Feet From The N. Line and 330 Feet From The W. Line  
Section 15 Township 21 S. Range 37 E. NMPM LEA County

7. Lease Name or Unit Agreement Name

STATE

8. Well No.  
1

9. Pool name or Wildcat  
BSW-SALADO

10. Elevation (Show whether DF, RKB, RT, GR, etc.)

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data  
NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐  
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDONMENT ☐  
CASING TEST AND CEMENT JOB ☐  
OTHER: ☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

04-18-00 PULL TUB PARTED 21 JTS FROM TOP.  
04-19-00 FISHED TUB AND PULLED. CHANGE OUT FIBERGLASS TUB  
AND REPLACED WITH 2 7/8 STEEL IPC. SET AT 1410' RIGDOWN

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Royce Corrales TITLE Manager DATE 9-20-00

TYPE OR PRINT NAME Royce Corrales TELEPHONE NO. 394-2500

(This space for State Use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

CONDITIONS OF APPROVAL, IF ANY:



DISTRICT I  
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION  
2040 Pacheco St.  
Santa Fe, NM 87505

WELL API NO.  
30-025-33547

5. Indicate Type of Lease  
STATE ☒ FEE ☐

6. State Oil & Gas Lease No.  
MS-0004

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DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT"  
(FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well:  
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2. Name of Operator  
GOLD STAR SWD LTD. CO.

3. Address of Operator  
BOX 1480 EUNICE NM. 88231

4. Well Location  
Unit Letter E : 1340 Feet From The N. Line and 330 Feet From The W. Line

Section 15 Township 21 S. Range 37 E. NMPM LEA. County

10. Elevation (Show whether DF, RKB, RT, GR, etc.)

11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐  
OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☒ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ PLUG AND ABANDONMENT ☐  
CASING TEST AND CEMENT JOB ☐  
OTHER: ☐

12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

7-6-98 RIG UP PULLING UNIT, PULLED TUBING, 46 JTS. + 8 FT. 1351 FT.  
RUN SINKER BAR TO 1366 FT. .  
7-7-98 RIG UP REVERS UNIT, RUN USED 7 5/8. BIT TO 1362 FT. . RETURNED METAL CUTTINGS.  
PULLED BIT, BIT NO GOOD.  
7-8-98 RUN NEW 7 5/8 BIT. TIGHT PLACE AT 1329 FT. DRILLED FROM 1353 TO 1363 FT. .  
7-9-98 RUN 6 1/8 SHOE AND DRILLED TO 1371 FT. .  
7-10-98 RUN 6 1/8 BIT AND DRILLED TO 1475 FT. .  
7-11-98 RUN 1461 FT. OF 2 7/8 FIBER GLASS TUBING . RIGGED DOWN.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE R.E. Crowell TITLE MGR. DATE 7-25-98  
TYPE OR PRINT NAME R.E. CROWELL TELEPHONE NO. 394-2504

(This space for State Use)

ORIGINAL SIGNED BY

APPROVED BY R.E. CROWELL TITLE MGR. DATE 7-25-98

CONDITIONS OF APPROVAL, IF ANY:

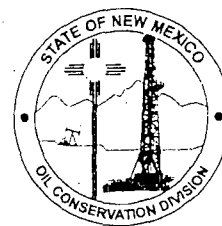


# New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

Joanna Prukop  
Cabinet Secretary  
Reese Fullerton  
Deputy Cabinet Secretary

Mark Fesmire  
Division Director  
Oil Conservation Division



Certified Receipt/Return Requested:


August 01, 2008

Attention Brine Well Operator(s):

One of the permitted brine wells has experienced a total collapse and created an enormous sinkhole. The well was located approximately 17 miles SE of Artesia, NM. on State Trust Land. The operator was Jim's Water Service and the brine well permit is BW-005. OCD has enclosed a press release with photos of the event.

The magnitude of this event warrants an immediate investigation of all brine wells in the state. Therefore, please find enclosed a "BRINE WELL INFORMATION REQUEST" form to be filled out and returned to this office no later than September 05, 2008. Failure to properly fill out and return the form in a timely manner may result in OCD requesting you shut down your operations until further notice. If you have any questions please do not hesitate to call me at 505-476-3490 or E-mail [wayne.price@state.nm.us](mailto:wayne.price@state.nm.us).

Sincerely,

  
Wayne Price  
Environmental Bureau Chief  
Oil Conservation Division

Attachments: (2)

Cc: EMNRD Cabinet Secretary-Joanna Prukop  
OCD Director-Mark Fesmire  
NMSLO- Brian Henington SF, Jim Carr-Carlsbad  
BLM-Carlsbad Office- Dave Herrell  
Eddy Co. Emergency Management-Joel Arnwine  
NM State Police -Roswell Sgt. Les Clements  
National Cave and Karst Research Institute- Dr. George Veni  
NMOSE-John Stewart  
Solution Mining Research Institute-John Voigt





## Price, Wayne, EMNRD

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**From:** Porter, Jodi, EMNRD  
**Sent:** Wednesday, July 23, 2008 5:00 PM  
**Subject:** PR-Secretary Prukop Proposes Stricter Conditions on Brine Wells State-wide  
**Attachments:** PR-OCD.Brine.Wells07.23.08.pdf



## New Mexico Energy, Minerals and Natural Resources Department

---

**Bill Richardson**  
Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



July 23, 2008

**NEWS RELEASE**

**Contact:** Jodi McGinnis Porter,  
Public Information Officer 505.476.3226

### **Energy, Minerals and Natural Resources Cabinet Secretary Joanna Prukop Proposes Stricter Conditions on Brine Wells State-wide**

#### **Artesia brine well collapse prompts statewide review**

SANTA FE, NM – Secretary Joanna Prukop has directed the Oil Conservation Division (OCD) to conduct a complete evaluation of the rules and regulations concerning brine wells, a method of creating saturated salt water used in oil and gas production. The OCD evaluation will include an internal audit and inspection of all existing brine wells in New Mexico. Secretary Prukop is considering strengthening oversight of brine wells to protect against well failures such as the recent collapse in Artesia that created a huge sinkhole and forced the closure of an Eddy County road.

"There are several brine wells in New Mexico and we must ensure that they are all properly monitored to ensure safety and stability," stated Cabinet Secretary Joanna Prukop. "We have now seen that these wells can collapse and the extensive damage such a collapse can generate."

The Oil Conservation Division is continuing to monitor and investigate the collapse of the brine well, located on state trust land 17.3 miles southeast of Artesia, which is still active. The well is owned by Jim's Water Service. County Road 217 remains closed as a safety precaution, and a command center is on site. Division engineers estimate that the well is approximately 300 to 400 feet in diameter, 70 feet to the water level, and the actual depth to the bottom is unknown.

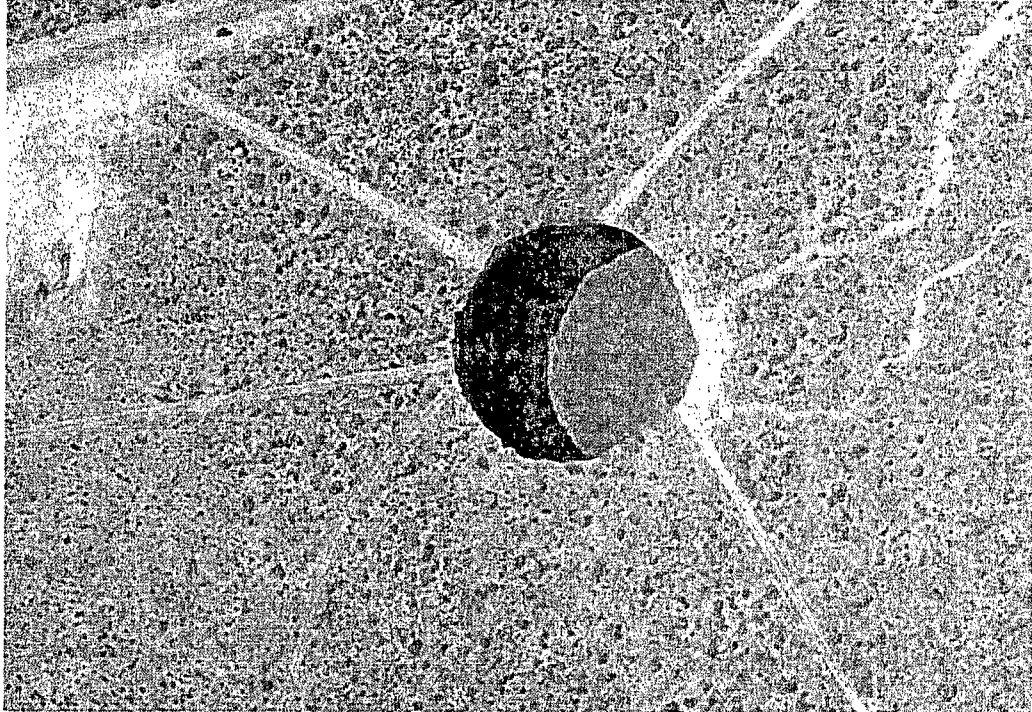
Scientists from the Oil Conservation Division, the Bureau of Land Management, State Land Office, the New Mexico



Bureau of Geology and Mineral Resources, and the National Cave & Karst Research Institute are all working together to assess horizontal and vertical movements to project any future subsidence. Work on a protective fence and keep-out signage began yesterday with completion expected on Friday.

In a related issue, the Oil Conservation Division has also been closely monitoring a brine well operated by I & W, Inc located in Carlsbad, NM. Yesterday, following ongoing inquiries from OCD the operator decided voluntarily to stop operation of the well. The division will work with I & W, Inc. to ensure that the well is properly plugged, permanently abandoned, and monitored for the long term.

Images provided on the brine well collapse are courtesy of National Cave and Karst Research Institute:



Morning, July 20, 2008 at 10:44 am.  
courtesy of National Cave and Karst Research Institute





# New Mexico Energy, Minerals and Natural Resources Department

**Bill Richardson**  
Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



## OIL CONSERVATION DIVISION BRINE WELL INFORMATION REQUEST

### GENERAL INFORMATION:

Operator Name \_\_\_\_\_ Well Name(s) \_\_\_\_\_  
API Number \_\_\_\_\_ Brine Well Permit # \_\_\_\_\_  
Date Permit Expires? \_\_\_\_\_  
  
Location: Section \_\_\_\_\_ Ts \_\_\_\_\_ Rg \_\_\_\_\_  
FNL \_\_\_\_\_ FSL \_\_\_\_\_ FEL \_\_\_\_\_ FWL \_\_\_\_\_  
GPS of well(s): Lat: \_\_\_\_\_ Long: \_\_\_\_\_

Have you reviewed and understand all of your permit conditions? Yes ☐ No ☐  
Are you presently deficient of any condition in your permit? Yes ☐ No ☐ Don't know ☐  
Do you operate below grade tanks or pits at the site? Yes ☐ No ☐  
Do all tanks, including fresh water tanks, have secondary containment? Yes ☐ No ☐  
Do you think you have the expertise, knowledge and general understanding of what causes a brine well to collapse? Yes ☐ No ☐  
Do you think OCD should provide guidelines on subsidence and collapse issues? Yes ☐ No ☐

**SITING INFORMATION:** *Please provide the following information and depict on 7.5 minute (1": 2000') USGS Quad Map. Limit search to one mile radius.*

Is the brine well located within a municipality or city limits? Yes ☐ No ☐

Distance and direction to nearest permanent structure, house, school, etc. if less than one mile:

Distance and direction to nearest water well if less than one mile:

Distance to nearest watercourse(s), floodplain, playa lake(s), or man-made canal(s) or pond(s) if less than one mile:

Distance and direction to nearest known karst features or mines if less than one mile:





Distance and direction to nearest producing oil or gas well(s) <i>if less than one mile:</i> Provide API Number:
Distance and direction to nearest tank battery(ies) <i>if less than one mile:</i>
Distance and direction to nearest pipeline(s), including fresh water pipelines <i>if less than one mile:</i>
Distance and direction to nearest paved or maintained road or railroad <i>if less than one mile:</i>
Depth to ground water found above the Salado (salt section), regardless of yield:
Name of aquifer(s):
<b>WELL CONSTRUCTION:</b> <i>Please provide the following information and attach a diagram depicting the brine well. Check box if attached:</i> Copy of a current well diagram: Attached <input type="checkbox"/> Copy of formation record with tops: Attached <input type="checkbox"/> Copy of geophysical well logs if available: Attached <input type="checkbox"/> If not, well logs within one mile <input type="checkbox"/>
Depth of the top of the salt below ground surface (feet):
Depth to the bottom of the salt below ground surface (feet):
Depth(s) to and thickness(es) of any anhydrite section(s) (located above the salt):
Depth of casing(s) shoe below ground surface (feet): _____ Is the casing shoe set in the anhydrite or other layer above the salt? Yes <input type="checkbox"/> No <input type="checkbox"/> Is the casing shoe set into the salt? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, how far into the salt? _____
Depth of tubing(s):
Do you suspect that your cavern has partially caved in? Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know <input type="checkbox"/>
<b>OPERATIONS:</b> <i>Please provide the following information.</i>
Start date of brine well operation:
Total volume of fresh water injected into the brine well to date (bbls) and how determined:



Total volume of brine water produced (bbls) to date and how determined:
Have you ever lost casing or tubing? If yes, please provide details. Document attached <input type="checkbox"/>
Do you maintain a surface pressure on your well during idle times? Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you noticed large amounts of air built up during cavity pressurization? Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you ever noticed fluids or air/gas bubbling up around the casing during testing or normal operations? Yes <input type="checkbox"/> No <input type="checkbox"/>
<b>MONITORING: Please provide the following information.</b>
Are you currently monitoring ground water contamination from your brine well or system? Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you ever run a sonar log? Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, please provide last date: _____
Provide cavern configuration (dimensions and volume) and method(s) used to estimate: If sonar report please attach <input type="checkbox"/> If other, please specify and provide a sketch of cavern: <input type="checkbox"/>
Do you have a subsidence monitoring program in place? Yes <input type="checkbox"/> No <input type="checkbox"/>
Do you have any geophysical monitoring devices, such as a seismic device positioned near your brine well? Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you submitted all of your monthly, quarterly, or annual reports to the OCD? Yes <input type="checkbox"/> No <input type="checkbox"/>
Have you failed a brine well mechanical integrity test (MIT)? If yes, please attach details and results. Attached <input type="checkbox"/>
Have you ever had a casing leak? Yes <input type="checkbox"/> No <input type="checkbox"/> Have you ever had a cavern leak? Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know <input type="checkbox"/> Have you ever exceeded the cavern fracture pressure? Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know <input type="checkbox"/> Do you know how to calculate your maximum pressure? Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know <input type="checkbox"/>
Have you routinely looked for cracks or fissures in the ground surface around your brine well? Yes <input type="checkbox"/> No <input type="checkbox"/>
Do you have any minor or major cracks, fissures, tank settlement, line breakage from settlement or any minor subsidence. Yes <input type="checkbox"/> No <input type="checkbox"/>
During operations have you experienced any ground vibration, ground movement, or well movement after opening or shunting valves, pump start-up, shut-down, etc.? Yes <input type="checkbox"/> No <input type="checkbox"/>



Have you ever experienced unexpected pressure gain or loss in the cavern?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
If Yes, was there a difference in your normal flow rate?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Anytime during the past 5 years, have you experienced a noticeable difference between fresh water volume pumped into the well verses brine water produced? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Are you concerned about pulling the tubing due to the fact it may be difficult to re-enter the hole? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Are you concerned about running a sonar tool in fear of losing tool because of debris in hole? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Have you ever conducted a fly over of your well site? No <input type="checkbox"/> Yes <input type="checkbox"/> if yes, please provide photo. <input type="checkbox"/> Photo(s) attached		
<b>Calculation:</b> Please divide your estimated total volume of produced brine by 180,000 and multiply by 50. <b>Example:</b> If you have produced a total of 18,000,000 bbls of brine in the life time of the well then your calculation would be $18,000,000 / 180,000 = 100 \times 50 = 5000$ .		
1. Provide the calculated number above here: _____ 2. Now provide the depth (ft) from the surface to your casing shoe: _____		
Is the calculated number found in #1 above greater than #2? Yes <input type="checkbox"/> No <input type="checkbox"/>		
Comments or recommendations for OCD:		

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

Company Name-print name above

Company Representative- print name

Company Representative- Signature

Title \_\_\_\_\_

Date: .



**Chavez, Carl J, EMNRD**

---

**From:** Chavez, Carl J, EMNRD  
**Sent:** Friday, July 25, 2008 4:21 PM  
**To:** Hansen, Edward J., EMNRD; Price, Wayne, EMNRD  
**Cc:** Sanchez, Daniel J., EMNRD  
**Subject:** RE: PR-Secretary Prukop Proposes Stricter Conditions on Brine Wells State-wide  
**Attachments:** image001.jpg; image007.jpg

Ed, Wayne, et. al:

Based on my records and knowledge of current activities at NMOCD BWs, my tally is as follows:

There are a total of 15 active UIC Class III Brine Well Permits (excluding BW-5 JWS & BW-6 I&W)

There are currently 13 active UIC Class III Brine Wells in operation (BW-2; BW-4; BW-8; BW-9; BW-12; BW-13; BW-22; BW-25; BW-27 Wells-1 & 2; BW-28; BW-30; and BW-31)

There are currently 6 brine wells that have actually been PA'd including: BW-5 JWS Collapse w/ Site Closure; BW-6 Eugenie #2; BW-21 Loco Hills Well #1 recently PA'd; BW-26 Salado Brine Sales; BW-29 Marbob; & William Brininstool.

There are currently 3 pending PAs of BWs including: BW-6 Eugenie #1 w/ Site Closure; BW-18 Key w/ redrill; and BW-19 Key w/ redrill.

There are currently 5 inactive brine wells (BW-5 Collapse w/ Site Closure; BW-6 needs PA Eugenie #1 w/ Site Closure; BW-18 needs PA w/ redrill; BW-19 needs PA w/ redrill; and BW21 needs redrill)

Let me know how we need to straighten RBDMS out. Please contact me if you have questions. Thanks.

Carl J. Chavez, CHMM  
New Mexico Energy, Minerals & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 South St. Francis Dr., Santa Fe, New Mexico 87505  
Office: (505) 476-3491  
Fax: (505) 476-3462  
E-mail: [CarlJ.Chavez@state.nm.us](mailto:CarlJ.Chavez@state.nm.us)  
Website: <http://www.emnrd.state.nm.us/ocd/index.htm>  
(Pollution Prevention Guidance is under "Publications")

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**From:** Hansen, Edward J., EMNRD  
**Sent:** Wednesday, July 23, 2008 5:56 PM  
**To:** Price, Wayne, EMNRD  
**Cc:** Chavez, Carl J, EMNRD  
**Subject:** FW: PR-Secretary Prukop Proposes Stricter Conditions on Brine Wells State-wide

Wayne,  
Jane and I tallied these numbers off of RBDMS (you may want to double check).

---

**From:** Hansen, Edward J., EMNRD  
**Sent:** Wednesday, July 23, 2008 5:54 PM  
**To:** Porter, Jodi, EMNRD  
**Subject:** RE: PR-Secretary Prukop Proposes Stricter Conditions on Brine Wells State-wide

Jodi,

We counted (from our database: RBDMS):

16 Active Brine Wells

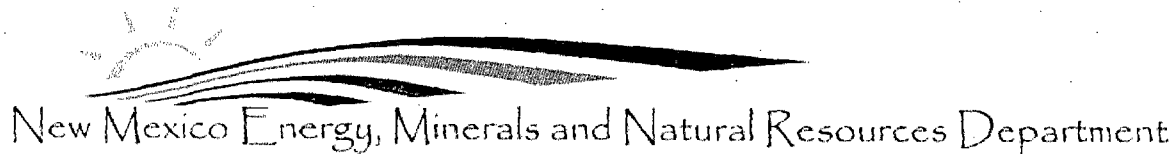
11 Plugged and Abandoned Brine Wells

2 Inactive Brine Wells

---



**From:** Porter, Jodi, EMNRD  
**Sent:** Wednesday, July 23, 2008 5:00 PM  
**Subject:** PR-Secretary Prukop Proposes Stricter Conditions on Brine Wells State-wide



**Bill Richardson**  
Governor

**Joanna Prukop**  
Cabinet Secretary  
**Reese Fullerton**  
Deputy Cabinet Secretary

**Mark Fesmire**  
Division Director  
Oil Conservation Division



July 23, 2008

**NEWS RELEASE**

**Contact:** Jodi McGinnis Porter,  
Public Information Officer 505.476.3226

## **Energy, Minerals and Natural Resources Cabinet Secretary Joanna Prukop Proposes Stricter Conditions on Brine Wells State-wide**

### **Artesia brine well collapse prompts statewide review**

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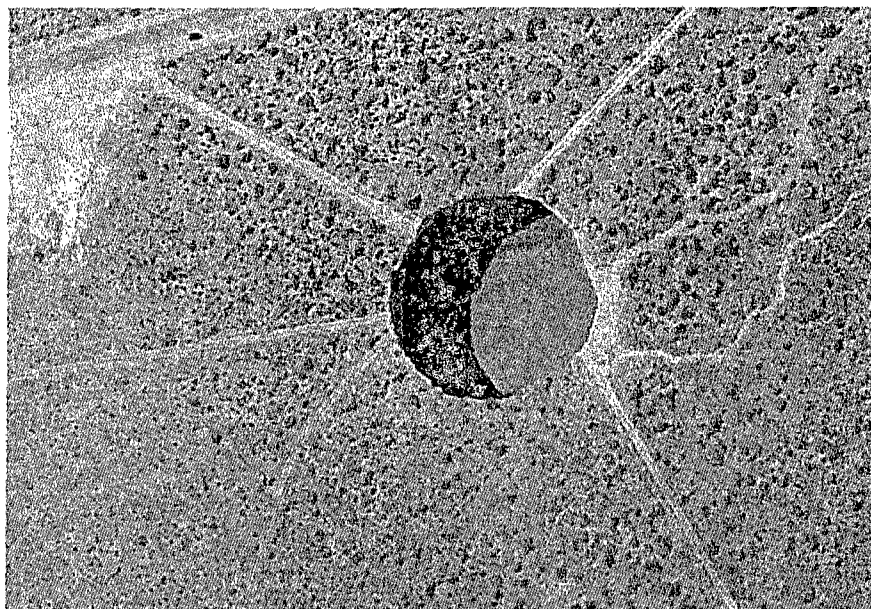
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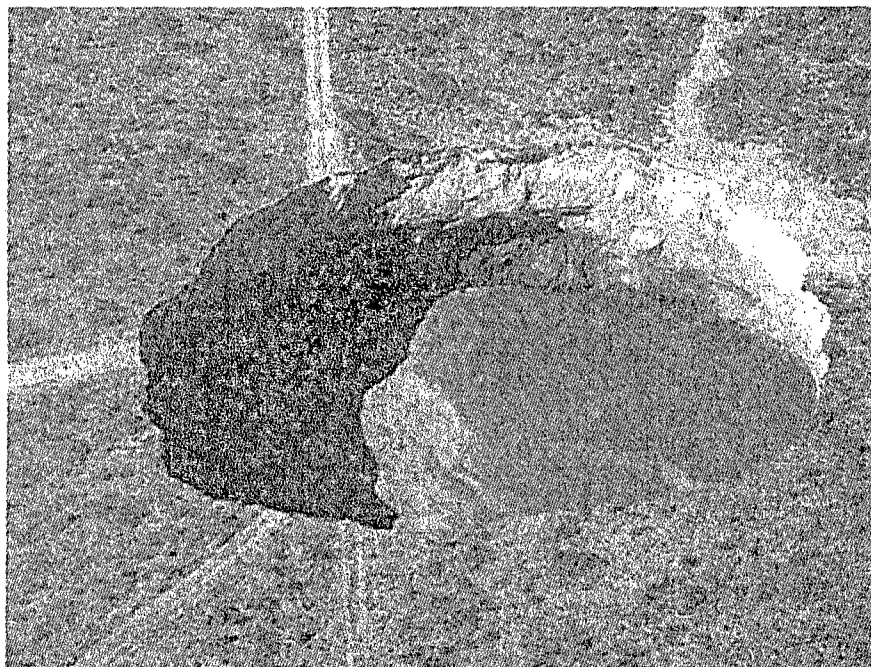
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Images provided on the brine well collapse are courtesy of National Cave and Karst Research Institute:





Morning, July 20, 2008 at 10:44 am.  
courtesy of National Cave and Karst Research Institute



Morning, July 22, 2008  
courtesy of National Cave and Karst Research Institute

#30#

*The Energy, Minerals and Natural Resources Department provides resource protection  
and renewable energy resource development services to the public and other state agencies.*

Oil Conservation Division  
1220 South St. Francis Drive • Santa Fe, New Mexico 87505  
Phone (505) 476-3440 • Fax (505) 476-3462 • [www.emnrd.state.nm.us/OCD](http://www.emnrd.state.nm.us/OCD)



jodi

Jodi McGinnis Porter  
Public Information Officer  
Energy, Minerals and Natural Resources Department (EMNRD)  
1220 South St. Francis Drive  
Santa Fe, NM 87505  
Phone: (505) 476-3226

7/20/2008



Fax: (505) 476-3220  
Cell: (505) 690-1689  
E-mail: [jodi.porter@state.nm.us](mailto:jodi.porter@state.nm.us)  
Website: [www.emnrd.state.nm.us](http://www.emnrd.state.nm.us)