NM1-62

Permit Application

Volume 4 Part 10 of 11

COMPLETION REPORT
SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC.
LEA COUNTY, NEW MEXICO

ATTACHMENT B

OFFICE OF THE STATE ENGINEER WELL RECORDS AND LOGS

John R. D Antonio, Jr., P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 441896
File Nbr: CP 01028

OCT 0 2 2009

Oct. 01, 2009

JOE CARILLO
SUNDANCE SERVICES, INC.
1001 6TH STREET
EUNICE, NM 88231

Greetings:

Enclosed is your copy of the Monitoring Well Permits which have been approved. In accordance with the conditions of approval, the wells can only be tested for 10 cumulative days, and the wells are to be plugged on or before 10/31/2010, unless a permit to use the water is acquired from this office.

Sincerely,

Margaret Wolf
(505)622-6521

Enclosure

explore

OCT 0 2 2009

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO MONITOR

SPECIFIC CONDITIONS OF APPROVAL

4 No water shall be appropriated and beneficially used under this permit.

B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.

C Driller's well record must be filed with the State Engineer within 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

LOG The Point of Diversion CP 01028 POD1 must be completed and the Well Log filed on or before 10/31/2010.

LOG The Point of Diversion CP 01028 POD2 must be completed and the Well Log filed on or before 10/31/2010.

LOG The Point of Diversion CP 01028 POD3 must be completed and the Well Log filed on or before 10/31/2010.

LOG The Point of Diversion CP 01028 POD4 must be completed and the Well Log filed on or before 10/31/2010.

LOG The Point of Diversion CP 01028 POD5 must be completed and the Well Log filed on or before 10/31/2010.

LOG The Point of Diversion CP 01028 POD6 must be completed and the Well Log filed on or before 10/31/2010.

No water shall be diverted from these wells except for testing purposes which shall not exceed ten (ten) cumulative days unless a permit to use water from these wells is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed wells shall be drilled at least 660 feet from all wells of other ownership.

The wells shall be constructed, maintained and operated that each water shall be confined to the aquifer in which it is encountered.

Trn Desc: CP 01028

File Number: CP 01028
Trn Number: 441896

OCT 0 2 2009

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO MONITOR

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 09/28/2009	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 01 day of Oct A.D., 2009

John R. D Antonio, Jr., P.E. , State Engineer

By: mjw
for Kenneth M. Fresquez

Trn Desc: CP 01028

File Number: CP 01028
Trn Number: 441896

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

OZ-27462
30

1. APPLICANT:

Name: Sundance Services Inc. Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager Home Phone: _____
Address: 1001 6th Street
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Core Hole CH-1

A. SW 1/4 NE 1/4 SW 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 52.89 s Longitude: 103 d 6 m 10.21 s

D. East 920923 F (m), North 528910 F (m), UTM Zone 13, NAD 83 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): _____

3. WELL INFORMATION:

Approximate depth 150 feet; Outside diameter of casing ___ inches.
Name of well driller and driller license number Rodgers - NMWD 225

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

Geotechnical continuous core

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11:34

Do Not Write Below This Line

File Number: CP-1028 POD1 Trn Number: 441896
Form: wr-07 page 1 of 2

OCT 02 2009

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

02-27462
30

1. APPLICANT:

Name: Sundance Services Inc. Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager Home Phone: _____
Address: 1001 6th Street
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Core Hole CH-2

A. ~~SW~~ NW 1/4 SE 1/4 SW 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 40.77 s Longitude: 103 d 6 m 10.37 s

D. East 920923 F (m), North 527685 F (m), UTM Zone 13, NAD 83 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): _____

3. WELL INFORMATION:

Approximate depth 150 feet; Outside diameter of casing ___ inches.
Name of well driller and driller license number Rodgers - NMWD 225

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

Geotechnical continuous core

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11:34

Do Not Write Below This Line

File Number: CP-1028 POD2 Trn Number: 441896
Form: wr-07 page 1 of 2

OCT 0 2 2009

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

02-27462
30

1. APPLICANT:

Name: Sundance Services Inc. Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager Home Phone: _____
Address: 1001 6th Street
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Core Hole CH-3

A. SW 1/4 SE 1/4 SW 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 36.97 s Longitude: 103 d 6 m 6.86 s

D. East 921229 F (m), North 527304 F (m), UTM Zone 13, NAD 83 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): _____

3. WELL INFORMATION:

Approximate depth 80 feet; Outside diameter of casing ___ inches.
Name of well driller and driller license number Rodgers - NMWD 225

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

Geotechnical continuous core

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11: 34

Do Not Write Below This Line

File Number: CP-1028 POD3 Trn Number: 441896
Form: wr-07 page 1 of 2

OCT 0 2 2009

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

02 27402 30

1. APPLICANT:

Name: Sundance Services Inc. Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager Home Phone: _____
Address: 1001 6th Street
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Core Hole CH-4

A. ~~SW~~ SE 1/4 SW 1/4 SE 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 37.19 s Longitude: 103 d 5 m 50.21 s

D. East 922655 F (m), North 527343 F (m), UTM Zone 13, NAD 83 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): _____

3. WELL INFORMATION:

Approximate depth 80 feet; Outside diameter of casing ___ inches.
Name of well driller and driller license number Rodgers - NMWD 225

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

Geotechnical continuous core

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11: 34

Do Not Write Below This Line

File Number: CP-1028 POD4 Trn Number: 441896
Form: wr-07 page 1 of 2

OCT 0 2 2009

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

02 27462
30

1. APPLICANT:

Name: Sundance Services Inc. Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager Home Phone: _____
Address: 1001 6th Street

City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Geotech GB-1

A. SE 1/4 NE 1/4 SW 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 50.7 s Longitude: 103 d 6 m 1.44 s

D. East 921677 F (m), North 528697 F (m), UTM Zone 13, NAD 83 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): _____

3. WELL INFORMATION:

Approximate depth 60 feet; Outside diameter of casing ___ inches.
Name of well driller and driller license number Rodgers - NMWD 225

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

Geotechnical hollow stem

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11:34

Do Not Write Below This Line

File Number: CP-1028 POD5 Trn Number: 441896

Form: wr-07 page 1 of 2

OCT 02 2009

File Number: _____
(For OSE Use Only)

02-27402
30"

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

1. APPLICANT:

Name: Sundance Services Inc. Work Phone: 575-394-2511
Contact: Mr. Joe Carillo, Plant Manager Home Phone: _____
Address: 1001 6th Street
City: Eunice State: NM Zip: 88231

2. LOCATION OF WELL (A, B, C, or D required, E or F if known): Geotech GB-2

A. SE 1/4 NE 1/4 SE 1/4 Section: 30 Township: 21S Range: 38E N.M.P.M.
in Lea County.

B. X = _____ feet, Y = _____ feet, N.M. Coordinate System
_____ Zone in the _____ Grant.
U.S.G.S. Quad Map _____

C. Latitude: 32 d 26 m 50.58 s Longitude: 103 d 5 m 31.9 s

D. East 924209 F (m), North 528714 F (m), UTM Zone 13, NAD 83 (27 or 83)

E. Tract No. _____, Map No. _____ of the _____ Hydrographic Survey

F. Lot No. _____, Block No. _____ of Unit/Tract _____ of the
_____ Subdivision recorded in _____ County.

G. Other: _____

H. Give State Engineer File Number of existing well: _____

I. On land owned by (required): _____

3. WELL INFORMATION:

Approximate depth 35 feet; Outside diameter of casing ___ inches.
Name of well driller and driller license number Rodgers - NMWD 225

4. ADDITIONAL STATEMENT OR EXPLANATIONS:

Geotechnical hollow stem

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11:34

Do Not Write Below This Line

File Number: CP-1028 POD6 Trn Number: 441896

Form: wr-07 page 1 of 2

OCT 0 2 2009

File Number: _____
(For OSE Use Only)

NEW MEXICO OFFICE OF THE STATE ENGINEER
APPLICATION FOR PERMIT
TO DRILL AN EXPLORATORY WELL

ACKNOWLEDGEMENT

(I, We) Joe Carillo for Sundance Services, Inc. affirm that the
(Please Print)
foregoing statements are true to the best of my knowledge and belief.

_____ _____
Applicant Signature Applicant Signature

ACTION OF STATE ENGINEER

This application is approved/~~denied/partial~~xxxxxxxxxxxxxxxxxxxxxxxx provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare, and further subject to the following conditions: _____

see attached conditions of approval

Witness my hand and seal this 1st day of October, 20 09

John R. D'Antonio, Jr., P.E., State Engineer

for By: _____
Kenneth M. Fresquez, District II Manager

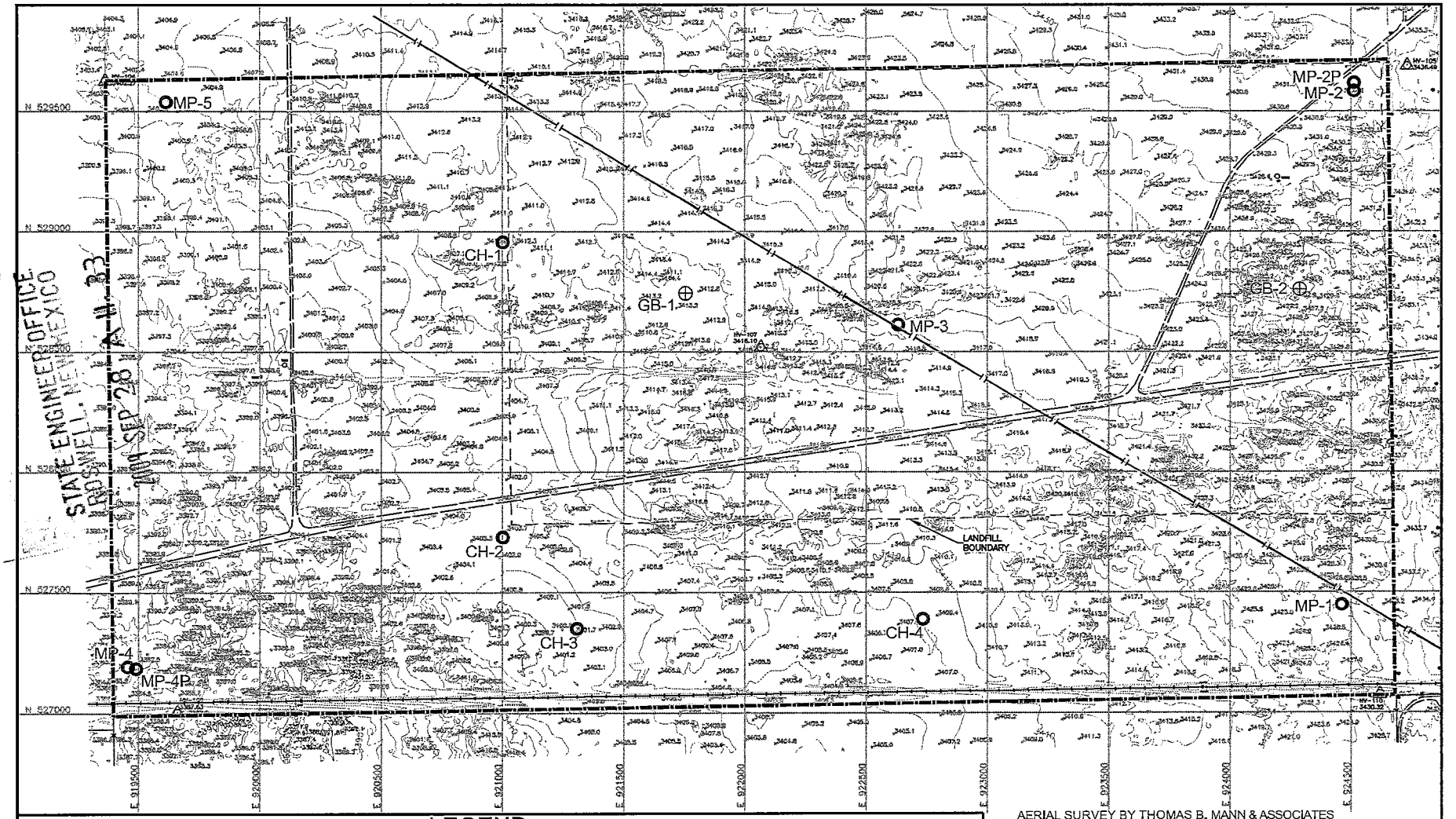
STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2009 SEP 28 A 11:34

Do Not Write Below This Line

File Number: CP-1028 Trn Number: 441896

Form: wr-07 page 2 of 2

OCT 02 2009



LEGEND

- LANDFILL BOUNDARY
- FENCE
- SECTION, 1/4 SECTION LINE
- UNPAVED ROAD
- POST
- POWER POLE
- LIGHT POLE
- MISC./UNIDENTIFIED OBJECT
- RAILROAD TRACK
- PIPE CULVERT
- BOX CULVERT
- STORAGE TANK
- CONCRETE SLAB
- EXISTING WATER SUPPLY PIPELINE
- × 5835.1 — SPOT ELEVATION
- 3460 — INTERMEDIATE CONTOUR
- 3440 — INDEX CONTOUR
- INTERMEDIATE DEPRESSION
- INDEX DEPRESSION
- PROJECT BOUNDARY
- CONTROL POINT
- N 529000 — GRID LINE/LABEL
- GB-1 — PROPOSED GEOTECHNICAL BOREHOLE LOCATION
- CH-1 — PROPOSED CORE HOLE LOCATION
- MP-1 — EXISTING BOREHOLE LOCATION
- MP-2P — EXISTING MONITORING WELL LOCATION

NORTH

0' 300' 600'

AERIAL SURVEY BY THOMAS B. MANN & ASSOCIATES
AERIAL MAPPING SERVICES
5115 COPPER NE, ALBUQUERQUE, NM 87108
DATE OF PHOTOGRAPHY 10-01-08

LOCATIONS OF SUPPLEMENTAL GEOTECHNICAL BORINGS AND CORE HOLES

SUNDANCE WEST
SUNDANCE SERVICES INC.
LEA COUNTY, NEW MEXICO

Gordon Environmental, Inc.
Consulting Engineers
213 S. Camino del Pueblo
Bernalillo, New Mexico, USA
Phone: 505-867-6990
Fax: 505-867-6991

DATE: 09/17/09	CAD: MP BOREHOLES W GEOTECH BORINGS.dwg	PROJECT #: 530.01.01
DRAWN BY: MLH	REVIEWED BY: IKG	FIGURE 4
APPROVED BY: IKG	gei@gordonenvironmental.com	

Drawing:P:\acad 2003\530.01.01\FIGURES\MP BOREHOLES W GEOTECH BORINGS.dwg
Date/Time:Sep. 17, 2009-09:44:03

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OCT 0 2 2009

OFFICIAL RECEIPT NUMBER: 02-27462 DATE: September 30, 2009 FILE NO.: CP- Expl

TOTAL: 30.00 RECEIVED: Thirty and 00/100 DOLLARS CHECK NO.: 5993 CASH: ——

PAYOR: Gordon Environmental ADDRESS: 213 S. Camino Del Pueblo CITY: Bernalillo STATE: NM

ZIP: 87004 RECEIVED BY: MSpurlock

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; **yellow** copy to Water Rights, Santa Fe Office, and **goldenrod** copy for district file. If you make a mistake, void original and all copies and submit to Program Support/ASD along with valid receipts.

A. Ground Water Rights Filing Fees

___ 1.	Declaration of Water Right	$ 1.00
___ 2.	Application to Appropriate: Domestic (72-12-1.1)	$125.00
___ 3.	Application for Stock Well	$ 5.00
___ 4.	Application to Repair or Deepen (72-12-1.1)	$ 75.00
___ 5.	Application for Replacement 72-12-1.1 Well	$ 75.00
___ 6.	Application for Supplemental 72-12-1 Well	$ 125.00
___ 7.	Application to Change Purpose of Use of 72-12-1 Well	$ 75.00
___ 8.	Application to Appropriate Irrig., Mun., Ind., or Comm. Use	$ 25.00
___ 9.	Application for Supplemental Well	$ 25.00
___10.	Application to Change Location of Non 72-12-1 Well	$ 25.00
___11.	Application to Change Place or Purpose of Use	$ 25.00
___12.	Application to Change Location of Well and Place and/or Purpose of Use	$ 50.00
___13.	Application to Combine Wells and/or Use	$ 25.00
___14.	Application for Extension of Time	$ 25.00
___15.	Proof of Completion of Well	$ 25.00
___16.	Proof of Application to Beneficial Use	$ 25.00
___17.	Application for Plan of Replacement	$ 25.00
___18.	Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water	$ 50.00
1X 19.	Application for Test, Exploratory, or Observation Well	$ 5.00
___20.	Change of Ownership	$ 2.00

B. Surface Water Rights Filing Fees

___ 1.	Declaration of Water Right	$ 10.00
___ 2.	Amended Declaration	$ 25.00
___ 3.	Declaration of Livestock Water Impoundment	$ 10.00
___ 4.	Application for Livestock Water Impoundment	$ 10.00
___ 5.	Application to Appropriate	$ 25.00
___ 6.	Notice of Intent to Appropriate	$ 25.00
___ 7.	Application to Change Point of Diversion	$ 100.00
___ 8.	Application to Change Place and/or Purpose of Use	$ 100.00
___ 9.	Application to Change Point of Diversion and Place and/or Purpose of Use	$ 200.00
___10.	Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water	$ 200.00
___11.	Application for Extension of Time	$ 50.00
___12.	Supplemental Well to a Surface Right	$ 100.00
___13.	Return Flow Credit	$ 100.00
___14.	Proof of Completion of Works	$ 25.00
___15.	Proof of Application of Water to Beneficial Use	$ 25.00
___16.	Water Development Plan	$100.00
___17.	Change of Ownership	$ 5.00

C. Miscellaneous Fees

___ 1.	Application for Well Driller's License	$50.00
___ 2.	Application for Renewal of Well Driller's License	$50.00
___ 3.	Application to Amend Well Driller's License	$50.00

D. Reproduction of Documents

_____ @ 0.20¢/copy $_____

_____ Map(s) $_____

E. Certification $_____

E. Other $_____

G. Comments:

_____

_____

_____

_____

_____

_____

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
1	CP 1028
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Sundance Services Inc.; Contact Mr. Joe Carillo, Plant Manager	575-394-2511
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1001 6th Street	Eunice, NM 88231

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	26	52.89	N
LONGITUDE	103	6	10.21	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SW ¼	NE ¼	SW ¼	¼	30	21 ☐ NORTH ☑ SOUTH	38 ☑ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
in Lea County			

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD225	John Aguirre	Rodgers & Co., Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/3/09	10/9/09		154	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow stem auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
	n/a

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
			See attached	☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well CH-1.
No groundwater was encountered so bore hole was grouted by filling with 5% bentonite/Portland cement.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

11/17/09

SIGNATURE OF DRILLER — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
2	CP 1028
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Sundance Services Inc.; Contact Mr. Joe Carillo, Plant Manager	575-394-2511
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1001 6th Street	Eunice, NM 88231

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	26	40.77	N
LONGITUDE	103	6	10.37	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
NW ¼	SE ¼	SW ¼	¼	30	21 ☐ NORTH ☑ SOUTH	38 ☑ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
in Lea County			

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD225	John Aguirre	Rodgers & Co., Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/4/09	10/8/09		149	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow stem auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
	n/a

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
			See attached	☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well CH-2.
No groundwater was encountered so bore hole was grouted by filling with 5% bentonite/Portland cement.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

11/17/09

SIGNATURE OF DRILLER — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
3	CP 1028
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Sundance Services Inc.; Contact Mr. Joe Carillo, Plant Manager	575-394-2511
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1001 6th Street	Eunice, NM 88231

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	26	36.97	N
LONGITUDE	103	6	6.86	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SW ¼	SE ¼	SW ¼	¼	30	21 ☐ NORTH ☑ SOUTH	38 ☑ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
in Lea County			

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD225	John Aguirre	Rodgers & Co., Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/6/09	10/10/09		79	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow stem auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
	n/a

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
			See attached	☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST

METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well CH-3.
No groundwater was encountered so bore hole was grouted by filling with 5% bentonite/Portland cement.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

11/17/09

SIGNATURE OF DRILLER — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
4	CP 1028
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Sundance Services Inc.; Contact Mr. Joe Carillo, Plant Manager	575-394-2511
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1001 6th Street	Eunice, NM 88231

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	26	37.19	N
LONGITUDE	103	5	50.21	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SE ¼	SW ¼	SE ¼	¼	30	21 ☐ NORTH ☑ SOUTH	38 ☑ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
in Lea County			

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD225	John Aguirre	Rodgers & Co., Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/8/09	10/10/09		79	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow stem auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
	n/a

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED
☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
			See attached	☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well CH-4.
No groundwater was encountered so bore hole was grouted by filling with 5% bentonite/Portland cement.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

11/17/09

SIGNATURE OF DRILLER — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
5	CP 1028
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Sundance Services Inc.; Contact Mr. Joe Carillo, Plant Manager	575-394-2511
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1001 6th Street	Eunice, NM 88231

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	26	50.70	N
	LONGITUDE	103	6	1.44	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SE ¼	NE ¼	SW ¼	¼	30	21 ☐ NORTH ☑ SOUTH	38 ☑ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
in Lea County			
HYDROGRAPHIC SURVEY		**MAP NUMBER**	**TRACT NUMBER**

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD225	John Aguirre	Rodgers & Co., Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/9/09	10/10/09		46	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow stem auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
	n/a

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
			See attached	☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well GB-1.
No groundwater was encountered so bore hole was grouted by filling with 5% bentonite/Portland cement.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

11/17/09

SIGNATURE OF DRILLER — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
6	CP 1028
WELL OWNER NAME(S)	**PHONE (OPTIONAL)**
Sundance Services Inc.; Contact Mr. Joe Carillo, Plant Manager	575-394-2511
WELL OWNER MAILING ADDRESS	**CITY / STATE / ZIP**
1001 6th Street	Eunice, NM 88231

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	26	50.58	N
	LONGITUDE	103	5	31.90	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SE ¼	NE ¼	SE ¼	¼	30	21 ☐ NORTH ☑ SOUTH	38 ☑ EAST ☐ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT
in Lea County			

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD225	John Aguirre	Rodgers & Co., Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
10/9/09	10/10/09		46	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): n/a

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow stem auger

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)
	n/a

FOR OSE INTERNAL USE

WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☑ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
			See attached	☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:

Well GB-2.
No groundwater was encountered so bore hole was grouted by filling with 5% bentonite/Portland cement.

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

11/17/09

SIGNATURE OF DRILLER — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

COMPLETION REPORT
SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC.
LEA COUNTY, NEW MEXICO

ATTACHMENT C

OCD APPROVAL OF SUPPLEMENTAL DRILLING PLAN

Pamela Gonzales

From: Keith Gordon
Sent: Thursday, November 19, 2009 3:37 PM
To: Pamela Gonzales
Subject: FW: SSI West Corehole Locations

From: Jones, Brad A., EMNRD [mailto:brad.a.jones@state.nm.us]
Sent: Thursday, September 17, 2009 10:31 AM
To: lawearth@earthlink.net
Cc: Michael Hermann; Keith Gordon
Subject: RE: SSI West Corehole Locations

Larry,

The Oil Conservation Division (OCD) has reviewed the drilling plan, dated September 8, 2009, and the revision, submitted today via email, and determined that the proposal is adequate to proceed with the site investigation. It should be understood that any area that is proposed for activities (landfarming, evaporation ponds, treatment facilities, waste stabilization, etc…) permitted under 19.15.36 NMAC must be properly assessed for siting prior to the submittal of the application. Please provide directions and maps to the proposed site and a confirmed start time and date for the drilling activities. If you have any questions regarding this matter, please do not hesitate to contact me.

Brad

Brad A. Jones
Environmental Engineer
Environmental Bureau
NM Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505
E-mail: brad.a.jones@state.nm.us
Office: (505) 476-3487
Fax: (505) 476-3462

From: lawearth [mailto:lawearth@earthlink.net]
Sent: Thursday, September 17, 2009 9:30 AM
To: Jones, Brad A., EMNRD
Cc: 'Michael Hermann'; 'Keith Gordon'
Subject: SSI West Corehole Locations

Hi Brad – attached is a map of the supplemental borings showing the proposed locations of core holes CH-3 and CH-4.

Keith has a meeting regarding this site at 10am today. If there is any chance that you could complete your approval e-mail before then, it would be greatly appreciated.

Thank you very much for your assistance. Please let me know if you have any questions.

Larry M. Coons, P.E., P.Hg., D.E.E.
Project Director
Gordon Environmental Inc.
Phone: 505-294-7227
Fax: 505-294-7712
Mobile: 505-379-9539

COMPLETION REPORT
SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC.
LEA COUNTY, NEW MEXICO

ATTACHMENT D

LOGS FOR COREHOLES CH-1 THROUGH CH-4 AND GEOTECHNICAL BORINGS GB-1 AND GB-2

GORDON ENVIRONMENTAL INC. *Soil/Rock Coring Log* *Page 1 of 2*

Depth (ft)	Boring Operation	% Core Recovery	Drill Time: Clock Time	Drill Time: Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C	25	10/3/09 0957								HSA continuous core w/ 6.5" OD HSA and 3.5" OD (2.5" ID) 5' continous sampler	**SAND; fine; reddish tan; slightly moist to 4'**
		100										**SAND; silty v. fine to fine; reddish brown; slightly moist; thin brown clay lenses @ 4'; caliche @ 5'**
10			1005								Variable caliche/ caliche cementation	
20			1024								Gravel to ½" @ 27'	
30			1035								Caliche stringers/ lenses	
40			1047								Gravel to 1" @ 43' to 44'	**SAND; v. fine to fine; pinkish tan; dry to slightly moist**
50			1104								Grey clay lenses/ inclusions; dry	**CLAYSTONE [CHINLE FM]; variable silt; reddish brown; dry to slightly moist**
60			1315									**CLAYSTONE; red to purple; dry**
70			1359									
80			1450								Grey clay lenses/ inclusions; dry	
90			1536									
			10/3/09 0750									
100			0818									

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
R - Rotary cuttings
C - Continuous core (as specified)

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

LOGGED BY **L Coons**
DRILLER **Rodgers - John Aguirre**
DATE COMPLETED **10/9/09**
RIG/BORING TYPE **CME 75 HSA/Core**
SURFACE ELEVATION **3410.89**
PROJECT **SSI - West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N528975.8 E921004.5 (NAD83)**

CORING LOG

CH-1

(1 of 2)

GORDON ENVIRONMENTAL INC. *Soil/Rock Coring Log* *Page 2 of 2*

Depth (ft)	Boring Operation	% Core Recovery	Drill Time: Clock Time	Drill Time: Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
100	A/C		10/4/09								very dense; slow drilling	**CLAYSTONE; reddish brown; dry**
		75	0857									
110		50	0944									
		50	1019								Grey clay lenses/ inclusions; dry	
120		100	1103									
			1215	33								
			1248									
			1259	60								
130			1359									
			1413	45								
			1458									
			1510	45							Tripped out augers on 10/5/09 @ 0850	
140			1555									
			10/9/09 1409	85							Driller added ~ 1.5 gal each of Quick Foam and Con Det to facilitate drilling on 10/9/09	
		75	1534									
			1544	9								
150		100	1553								Thin (6") layers of moderately indurated siltsone; reddish brown; dry @ 148'	
			1605									
		100	1628	23				13	CL			
												TD = 154'@ 1628 on 10/9/09
160												**Plugged boring to surface on 10/9/09 w/ 5% bentonite grout mixture**
170												
180												
190												
200												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
R - Rotary cuttings
C - Continuous core (as specified)

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

LOGGED BY **L Coons**
DRILLER **Rodgers - John Aguirre**
DATE COMPLETED **10/9/09**
RIG/BORING TYPE **CME 75 HSA/Core**
SURFACE ELEVATION **3410.89**
PROJECT **SSI - West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N528975.8 E921004.5 (NAD83)**

CORING LOG

CH-1

(2 of 2)

GORDON ENVIRONMENTAL INC. *Soil/Rock Coring Log* Page 1 of 2

Depth (ft)	Boring Operation	% Core Recovery	Drill Time: Clock Time	Drill Time: Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C	0	10/5/09 1328 1330								HSA continuous core w/ 6.5" OD HSA and 3.5" OD (2.5" ID) 5' continous sampler	**SAND; v. fine to fine; rust tan; slightly moist to moist; soft**
			1456 1502	2							Soft to medium hardness	**SAND; silty v. fine to fine; rust tan; dry to slightly moist; minor caliche**
10		25	1508 1515	6								
		25	1519 1522	7							Moderately indurated; grey-rust to tan	
20		50	1528 1532	3							Soft	**CALICHE; silty v. fine to fine; pinkish white to white; dry to slightly moist**
			1537 1539	4								
30			1546 1548	2							Minor gravel to 1" dia; lt tan	
			1553 1555	2								
40			1600 1606	2							Friable	SILT/SILTSTONE; gravelly; reddish brown; dry
			10/6/09 0745	6							Gravel to 1"; minor black mafic(?) inclusions	**CLAYSTONE [CHINLE FM]; silty w/ gravel; reddish brown w/ grey clay inclusions; dry**
50		75	0752 0757 0804	7								
			0757 0804	7							Moderatley dense; plastic	**CLAYSTONE; reddish brown; dry**
60			0810 0826	16								
			0833 0844	11								
70			0849 0902	13							Grey clay inclusions w/ mafic dentrites	
			0910 0920	10								
80			0927 0938	11							[change to combination bit]	
			10/7/09 1240 1250	10								
90			1257 1321	24								
			1332 1350	18							Grey clay lenses/ inclusions; dry	
100			1404 1422	18								

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
R - Rotary cuttings
C - Continuous core (as specified)

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

CORING LOG

CH-2

(1 of 2)

F:\GEI\Templates\Soil-Rock Coring Log

LOGGED BY **L Coons**
DRILLER **Rodgers - John Aguirre**
DATE COMPLETED **10/8/09**
RIG/BORING TYPE **CME 75 HSA/Core**
SURFACE ELEVATION **3403.4**
PROJECT **SSI - West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N527727.1 E921002.4 (NAD83)**

GORDON ENVIRONMENTAL INC. *Soil/Rock Coring Log* *Page 2 of 2*

Depth (ft)	Boring Operation	% Core Recovery	Drill Time: Clock Time	Drill Time: Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
100	A/C		1431 1452								Very dense; slow drilling	**CLAYSTONE; reddish brown; dry**
		100	1502 1528	19								
110		100	1539 1558	26								
		100	10/8/09 0756 0839	19								
120		75	0854 0933	42							Very dense; plastic`	
		75	0947 1030	39								
130		50	1047 1100	43								
		75	1228 1306	13								
140			1353 1405	22							Driller added ~ 1.5 gal of Quick Foam to facilitate drilling on 10/8/09	
			1419 1425	12							Thin (6") layers of moderately indurated siltsone; reddish brown; dry @ 145'	
150				6 (4')				8	CL			**TD = 149'@ 1425 on 10/8/09** **Plugged boring to surface on 10/8/09 w/ 5% bentonite grout mixture**
160												
170												
180												
190												
200												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
R - Rotary cuttings
C - Continuous core (as specified)

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

LOGGED BY **L Coons**
DRILLER **Rodgers - John Aguirre**
DATE COMPLETED **10/8/09**
RIG/BORING TYPE **CME 75 HSA/Core**
SURFACE ELEVATION **3403.40**
PROJECT **SSI - West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N527727.1 E921002.4 (NAD83)**

CORING LOG

CH-2

(2 of 2)

F:\GEI\Templates\Soil-Rock Coring Log

GORDON ENVIRONMENTAL INC. *Soil/Rock Coring Log* *Page 1 of 1*

Depth (ft)	Boring Operation	% Core Recovery	Drill Time: Clock Time	Drill Time: Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C		10/10/09 0837 0838								HSA continuous core w/ 6.5" OD HSA and 3.5" OD (2.5" ID) 5' continous sampler	**SAND; v. fine to fine; yellow tan to rust tan; slightly moist; soft**
		30	0843 0845	1							Lighlty indurated @ 4'	**SAND; silty v. fine to fine; red to pinkish tan; slightly moist**
10		100	0848 0850	2							Root fibers	**CALICHE; silty v. fine to fine; pinkish white to light tan; dry to slightly moist**
		100	0853 0855	2								
20		100	0858 0859	2							Variable induration	
		60	0903 0904	1								
30		50	0908 0909	1								
		30	0913 0914	1							Minor gravel to 1/4" to ½" dia @ 35'; soft	
40		30	0917 0918	1							Gravel 1/4" to ½"	**SAND; gravelly fine to v. coarse; minor silt; reddish brown; slightly moist**
		100	0923 0924	1							Gravel to 1"; minor black mafic(?) inclusions	**SILT/SILTSTONE [CHINLE FM]; gravelly; reddish brown; dry to slightly moist**
50			0928 0930	1							Fine to medium sandy; s. moist	
			0936 0938	2							Clay and gravel @ 54'; dry	
60			0943 0949	2							Mod. dense; plastic	**CLAYSTONE; reddish brown; dry**
			0953 1002	9							Mod. soft; fissle; micaceous	**SILTSTONE; v. fine sandy; reddish brown; dry to slightly moist**
70			1009 1014	6							Dense; plastic	**CLAYSTONE; silty w/ gravel; reddish brown w/ grey clay inclusions; dry**
			1019 1030	9								
80				5 (4')				20	ML			**TD = 79'@ 1030 on 10/10/09**
												Plugged boring to surface on 10/10/09 w/ 5% bentonite grout mixture
90												
100												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
R - Rotary cuttings
C - Continuous core (as specified)

CORING LOG

CH-3

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

LOGGED BY **L Coons**
DRILLER **Rodgers - John Aguirre**
DATE COMPLETED **10/10/09**
RIG/BORING TYPE **CME 75 HSA/Core**
SURFACE ELEVATION **3401.30**
PROJECT **SSI - West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N527335.9 E921307.5 (NAD83)**

F:\GEI\Templates\Soil-Rock Coring Log

GORDON ENVIRONMENTAL INC. *Soil/Rock Coring Log* *Page 1 of 1*

Depth (ft)	Boring Operation	% Core Recovery	Drill Time: Clock Time	Drill Time: Elapsed Time per 5 feet (min)	Sample Interval	Rig Blow Counts (per foot)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Graphical Log	Comments	Visual Field Classification
0	A/C		10/10/09 1218 1219								HSA continuous core w/ 6.5" OD HSA and 3.5" OD (2.5" ID) 5' continous sampler	**SAND; v. fine to fine; yellow tan to rust tan; slightly moist; soft**
		20	1221 1223	1							Lighlty indurated @ 4' Root fibers	**SAND; silty v. fine to fine; red to pinkish tan; slightly moist**
10		100	1226 1228	2								
		100	1232 1234	2								**CALICHE; silty v. fine to fine; white to light tan to buff; dry to slightly moist**
20		100	1237 1238	2							Variable induration	
		50	1241 1242	1								
												SAND/SANDSTONE; gravelly fine to coarse; silt; red-brown; dry
30		100	1246 1248	1							Gravel 1/4" to ½"	**SILT/SILTSTONE [CHINLE FM]; v. fine sandy w/ gravel; reddish brown; slightly moist**
			1251 1252	2								
40			1255 1257	1							Conglomerate @ 39'	
			1300 1306	2							Mod. dense; plastic	**CLAYSTONE; reddish to purple brown; grey clay inclusions; dry**
50			1311 1315	6								
			1331 1336	4							Clay and gravel @ 54'; dry	**SANDSTONE; SILTY v. fine sandy; micaceous greenish grey to greyish tan; dry**
60			1340 1356	5								
			1400 1409	16				5	SM		Fissle; hard drilling	
70			1414 1431	9							Mafic dendrites along fissle surfaces @ ~15 deg from horizontal; rust-colored lenses	
			1435 1448	17								
80				13 (4')								**TD = 79'@ 1448 on 10/10/09** **Plugged boring to surface on 10/10/09 w/ 5% bentonite grout mixture**
90												
100												

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
R - Rotary cuttings
C - Continuous core (as specified)

CORING LOG

CH-4

GROUNDWATER

DEPTH	HOUR	DATE
NONE		

LOGGED BY **L Coons**
DRILLER **Rodgers - John Aguirre**
DATE COMPLETED **10/10/09**
RIG/BORING TYPE **CME 75 HSA/Core**
SURFACE ELEVATION **3408.44**
PROJECT **SSI - West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N527368.1 E922734.7 (NAD83)**

F:\GEI\Templates\Soil-Rock Coring Log

GORDON ENVIRONMENTAL INC. *Soil Boring Log*

Depth (ft)	Lab Permeability (cm/sec)	Graphical Log	Interval	Sample	Rig Blow Counts (per 6 inches)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Comments	Visual Field Classification
0				A						**SAND; v. fine to fine; rust-tan; s. moist**
5									*Lightly indurated*	**SAND; silty v. fine to fine; brown; s. moist**
10										
15										**CALICHE; silty v. fine to fine sandy; pinkish white to buff**
20			X	r A	*21,47* *50+*	*80.2*	*12*	*SC*	*Lab Permeability = 9.36E-05 cm/s*	
25										
30										
35										
40										**SILT/SILTSTONE [CHINLE FM]; v. fine sandy; reddish brown; s. moist**
45			X	r	*28,50+* *50+*	*104.7*	*12*	*CL*	*Plastic; dense* *Lab Permeability = 2.32E-06 cm/s*	**CLAYSTONE; reddish brown; dry**
50									**TD @ 46'** **Plugged boring to surface on 10/10/09 w/ 5% bentonite grout mixture**	

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
s - 2" OD 1.38" ID tube sample
u - 3" OD 2.42" ID tube sample
r - 3" OD 2.42" ID ring sample

BORING LOG

GB-1

GROUNDWATER

DEPTH	HOUR	DATE
None		

KEY

X = Sample Interval

LOGGED BY **L Coons**
DRILLER **Rodgers - J Aguirre**
DATE COMPLETED **10/10/09**
RIG/BORING TYPE **CME 75 HSA**
SURFACE ELEVATION **3412.93**
PROJECT **SSI-West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N528728.0 E921756.6 (NAD83)**

GORDON ENVIRONMENTAL INC. *Soil Boring Log*

Depth (ft)	Lab Permeability (cm/sec)	Graphical Log	Interval	Sample	Rig Blow Counts (per 6 inches)	Lab Dry Density (lb/cf)	Lab Moisture (% Dry Wt)	Lab Unified Soil Classification	Comments	Visual Field Classification
0				A						**SAND; v. fine to fine; medium tan; s. moist**
5			X	s A	6, 9 10,11		5	SM	*Minor gravel to 1-1/2"*	
10			X	s A	11,14 6, 8					**CALICHE; silty v. fine to fine sandy; light buff; dry to s. moist**
15			X	r A	18,50+ 50+	94.8	8	SM	*Lab Permeability = 2.90E-04 cm/s*	
20			X	s A	40,50+					
25			X	s A	25,50+					
30			X	s A	50+,50+				*Caliche cementation*	**SAND/SANDSTONE; light pinkish tan; dry**
35			X	s A	50+,50+					
40			X	s A	50+,50+					**SILT/SILTSTONE [CHINLE FM]; v. fine sandy w/ gravel; reddish brown; dry to s. moist**
45			X	r	50+/3"					
50									**TD @ 46'** **Plugged boring to surface on 10/10/09 w/ 5% bentonite grout mixture**	

SAMPLE TYPE

A - Auger cuttings: NR = No recovery
s - 2" OD 1.38" ID tube sample
u - 3" OD 2.42" ID tube sample
r - 3" OD 2.42" ID ring sample

BORING LOG

GB-2

GROUNDWATER

DEPTH	HOUR	DATE
None		

KEY

X = Sample Interval

LOGGED BY **L Coons**
DRILLER **Rodgers - J Aguirre**
DATE COMPLETED **10/10/09**
RIG/BORING TYPE **CME 75 HSA**
SURFACE ELEVATION **3427.14**
PROJECT **SSI-West**
PROJECT NUMBER **530.01.01/02**
LOCATION **N528754.4 E924295.0 (NAD83)**

COMPLETION REPORT
SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC.
LEA COUNTY, NEW MEXICO

ATTACHMENT E

BOREHOLE PLUGGING CERTIFICATION BY RODGERS ENVIRONMENTAL SERVICES, INC.

RODGERS ENVIRONMENTAL SERVICES, INC.

BOREHOLE PLUGGING REPORT

Project: Sundance Services Inc page 1 of 1

Client: Gordon Environ. Borings: CH-1, CH-2, CH-3, CH-4, GB-1, and GB-2

Job No.: 598 Meas. Pt.: ground surface Date: Oct 6 - 10, 2009

Bore No.	Date	Dia. in.	Depth, ft	Depth to Water, ft	Soil Samples	Theoretical Bore Volume ft^3	Approx. Grout Volume ft^3
CH-1	10/9/09	7-1/4	150	n/a	cont. core	43	42
CH -2	10/6/09	7-1/4	150	n/a	cont. core	43	45
CH -3	10/7/09	7-1/4	80	n/a	spt @ 5'	23	20
CH -4	10/8/09	7-1/4	80	n/a	spt @ 5'	23	12
GB-1	10/10/09	7-1/4	40	n/a	spt @ 5'	11.5	15
GB-2	10/10/08	7-1/4	40	n/a	spt @ td	11.5	21

Notes: Bores drilled by hollow stem auger.

Boreholes grouted through auger from bottom to ground surface.

All boreholes grouted with 5% bentonite/cement grout

Rig: CME 75

Crew: John Aguirre, Juan Barraza

Report Prepared by: Jeff Watson

COMPLETION REPORT
SUPPLEMENTAL DRILLING AND SAMPLING

SUNDANCE SERVICES, INC.
LEA COUNTY, NEW MEXICO

ATTACHMENT F

AMEC SOILS LABORATORY REPORT

amec

Client: Gordon Environmental, Inc.
213 Camino del Pueblo
Bernalillo, NM 87004-

Attention: Larry Coons
Project Name: SSI West

Eunice, NM

Project Manager: Herman Garcia

Report Date: October 23, 2009

Project #: 8-519-005168
Work Order #: 2
Sampled By: Client
Date Sampled:

Sieve Analaysis (ASTM C117-04/C136-06)
Plasticity Index (ASTM D4318-05)
Soil Classification (ASTM D2487-06)

SOILS / AGGREGATES

Sample Location	Soil Class.	L.L.	P.I.	#200	#100	#50	#40	#30	#16	#10	#8	#4	1/4"	3/8"	1/2"	3/4'	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	6"	12"	Lab Number
GB-1 @ 15 - 20'	SC-SM	24	5	33	55	90	96	98	98	99	99	99		100											9-1213-01
GB-1 @ 20'	SC	42	18	29	47	70	74	76	78	79	80	83		87	88	93	100								9-1213-02
GB-1 @ 40 - 45'	CL	30	14	56	67	79	82	86	92	95	96	99		100											9-1213-03
GB-1 @ 45'	CL	46	28	80	92	97	98	98	99	99	99	100													9-1213-04
GB-2 @ 5'	SM	20	2	24	54	92	97	98	99	99	99	99		100											9-1213-05
GB-2 @ 10 - 20'	SM	NV	NP	27	46	80	85	88	91	93	94	97		100											9-1213-06
GB-2 @ 15'	SM	29	5	23	47	88	95	97	98	99	99	99		100											9-1213-07
CH-1 @ 154'	CL	38	16	65	77	96	99	100																	9-1213-08
CH-2 @ 149'	CL	30	11	73	78	91	97	99	100																9-1213-09
CH-3 @ 79'	ML	44	13	75	83	95	98	99	100																9-1213-10
CH-4 @ 64'	SM	24	3	30	53	67	73	81	94	96	97	99		100											9-1213-11

Reviewed By:

Distribution: Client: ✓ File: ✓ Supplier: ✓ Other: Addressee (2)
Email:

AMEC Earth Environmental, Inc.
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371

www.amec.com

Client:	Gordon Environmental, Inc. 213 Camino del Pueblo Bernalillo, NM 87004-	**Report Date:**	November 04, 2009
		Project #:	8-519-005168
		Report #:	1003
Attn:	Larry Coons	**Work Order #:**	2
Project Name:	SSI West	**Sampled By:**	Client
		Date Sampled:	
	Eunice, NM		
Project Manager:	Herman Garcia		

SOILS / AGGREGATES

MOISTURE CONTENT OF SOIL (ASTM D2216-05) AND IN-SITU DENSITY

Lab #	Color & Type of Material	Sample Source	Test Method	Oven Temp. (C)	Mass less than Min Req.	Material Type *	Moisture (%)	Dry Density (pcf)
9-1213-01		GB-1 @ 15 - 20'	A	110			10	
9-1213-02		GB-1 @ 20'	A	110			12	80.2
9-1213-03		GB-1 @ 40 - 45'	A	110			9	
9-1213-04		GB-1 @ 45'	A	110			12	114.6
9-1213-05		GB-2 @ 5'	A	110			5	
9-1213-06		GB-2 @ 10 - 20'	A	110			3	
9-1213-07		GB-2 @ 15'	A	110			8	80.3
9-1213-08		CH-1 @ 154'	A	110			13	
9-1213-09		CH-2 @ 149'	A	110			8	
9-1213-10		CH-3 @ 79'	A	110			20	
9-1213-11		CH-4 @ 64'	A	110			5	

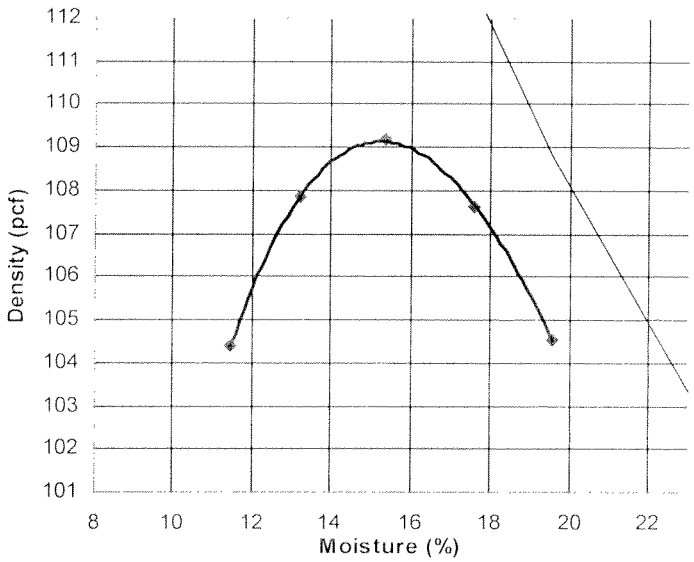
*Sample contains more than one type of material.

Reviewed By:

Distribution: Client ✔ File: ✔ Supplier: ✔ Other: Addressee (2)
Email:

AMEC Earth Environmental, Inc
8519 Jefferson NE
Albuquerque, NM 87113
Tel 5058211801
Fax 5058217371
www.amec.com

Client:	Gordon Environmental, Inc. 213 Camino del Pueblo Bernalillo, NM 87004-	**Report Date:**	October 23, 2009
		Project #:	8-519-005168
		Work Order #:	2
Attn:	Larry Coons	**Lab #:**	9-1213-01
Project Name:	SSI West	**Sampled By:**	Client
		Date Sampled:	
	Eunice, NM	**Visual Description of Material:**	
		Sample Source:	GB-1 @ 15 - 20'
Project Manager:	Herman Garcia	SOILS / AGGREGATES	



Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	99%
#8	99%
#10	99%
#16	98%
#30	98%
#40	96%
#50	90%
#100	55%
#200	33%

Moisture Density Relationship: (ASTM D698-07) Method: A

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 109.1

Optimum Moisture: 15.2

Plasticity Index (ASTM D4318-05)

Liquid Limit: 24

Plastic Limit: 19

Plasticity Index: 5

Preperation Method: Dry Liquid Limit Method: A

PI Air Dried.

Soil Classification (ASTM D2487-06) SC-SM

Reviewed By: _____

Jan

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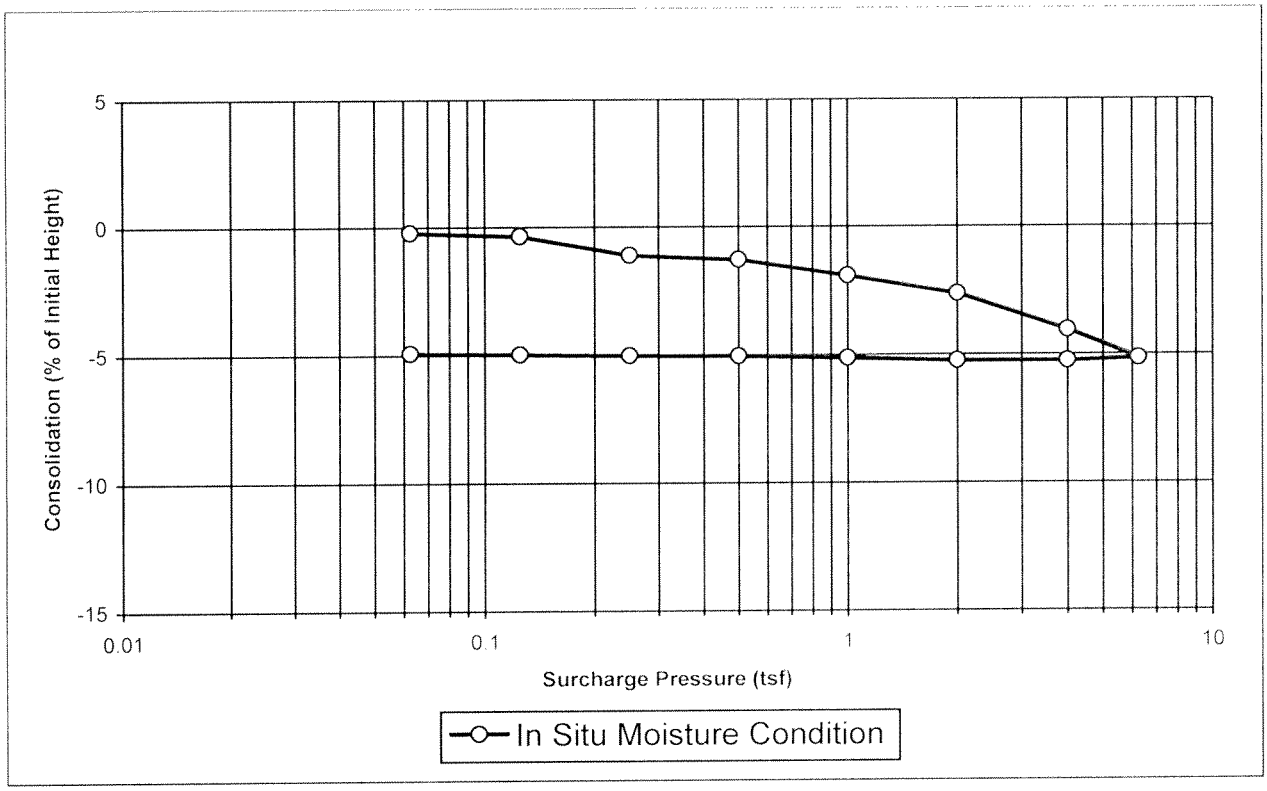
Tel 5058211801
Fax 5058217371 www.amec.com

Client:	Gordon Environmental, Inc. 213 Camino Del Pueblo Bernalillo, NM 87004-	**Report Date:**	November 10, 2009
		Project #:	8-519-005168
		Work Order #:	2
Attn:	Larry Coons	**Lab #:**	9-1213-02
Project Name:	SSI West	**Sampled By:**	Client
		Date Sampled:	Unknown
	Eunice, NM	**Material:**	Silty Clayey Sand
		Sample Source:	GB-1 at 20 ft
Project Manager:	Herman Garcia	SOILS/AGGREGATES	

Measurement of Collapse Potential of Soils (ASTM D5333)

Sample Preparation: In Situ

Initial Volume (in^3):	4.60	**Final Volume (in^3):**	4.39
Initial Moisture (%):	17.7%	**Final Moisture (%)**	15.5%
Initial Dry Density (lb/ft^3):	80.3	**Final Dry Density (lb/ft^3):**	83.9
Initial Degree of Saturation:	45%	**Final Degree of Saturation:**	42%
Initial Void Ratio:	1.0	**Final Void Ratio:**	0.9
Estimated Specific Gravity:	2.600	**Saturated At:**	Not Saturated



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Email: ☐

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Tel (505) 821-1801
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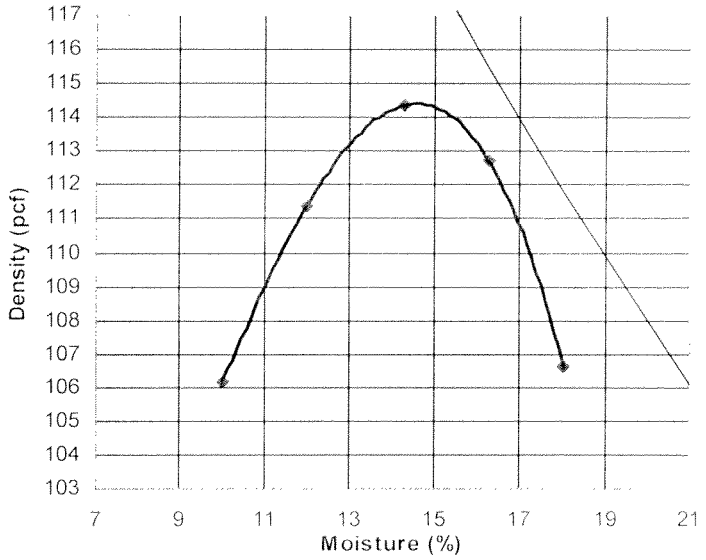
www.amec.com

Client:	Gordon Environmental, Inc. 213 Camino del Pueblo Bernalillo, NM 87004-	**Report Date:**	October 26, 2009
		Project #:	8-519-005168
		Work Order #:	2
Attn:	Larry Coons	**Lab #:**	9-1213-03
Project Name:	SSI West	**Sampled By:**	Client
		Date Sampled:	
	Eunice, NM	**Visual Description of Material:**	
Project Manager:	Herman Garcia	**Sample Source:**	GB-1 @ 40 - 45'

SOILS / AGGREGATES



Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	99%
#8	96%
#10	95%
#16	92%
#30	86%
#40	82%
#50	79%
#100	67%
#200	56%

Moisture Density Relationship: (ASTM D698-07) Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.651 Assumed

Maximum Density: 114 4

Optimum Moisture: 14 6

Plasticity Index (ASTM D4318-05)

Liquid Limit: 30

Plastic Limit: 16

Plasticity Index: 14

Preperation Method: Dry Liquid Limit Method: A

PI Air Dried.

Soil Classification (ASTM D2487-06) CL

Reviewed By: _____

Jan

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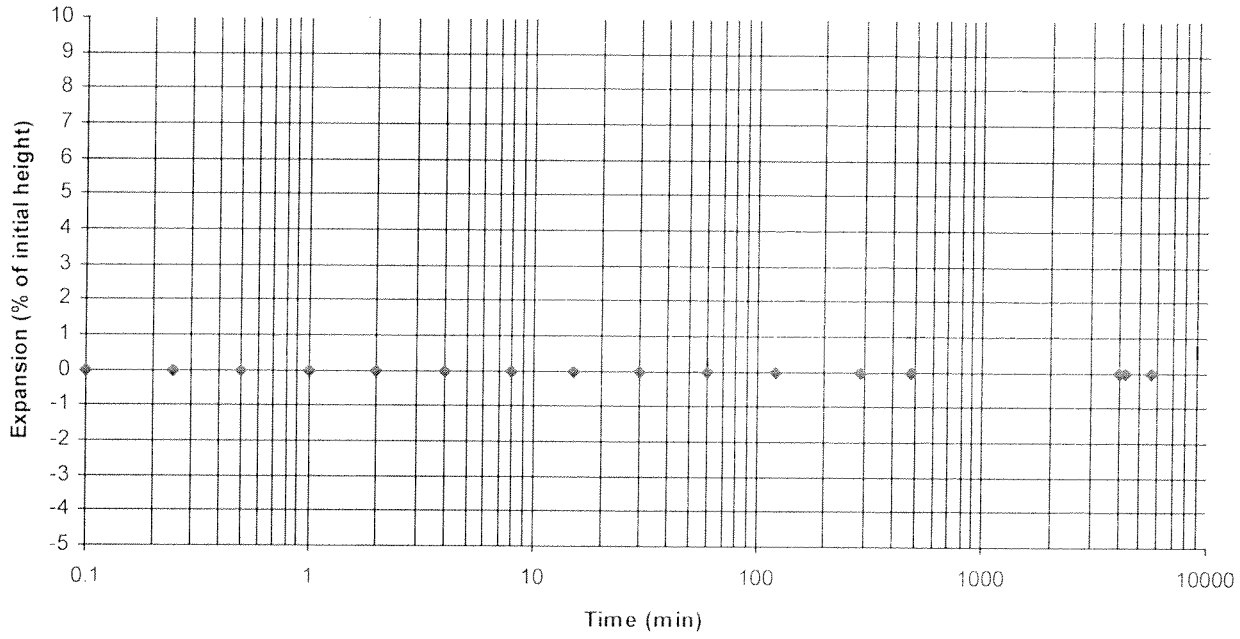
Client:	Gordon Environmental, Inc 213 Camino del Pueblo Bernalillo, NM 87004-	Report Date: November 05, 2009	
		Project #: 8-519-005168	
		Work Order #: 2	
Attn:	Larry Coons	Lab #: 9-1213-04	
Project Name:	SSI West	Sampled By: Client	
		Date Sampled:	
	Eunice, NM	Visual Description of Material:	
		Sample Source: GB-1 @ 45'	
Project Manager:	Herman Garcia	SOILS / AGGREGATES	

One-Dimensional Swell or Settlement Potential of Cohesive Soils (ASTM D4546-08)

Initial Volume (cu.in.):	4.58	Final Volume (cu.in.):	4.58
Initial Moisture (%):	9.6%	Final Moisture (%):	17.3%
Initial Dry Density (pcf):	104.7	Final Dry Density (pcf):	104.7
Final Degree Saturation:	79%	Initial Degree of Saturation:	44%
Initial Void Ratio:	0.6	Final Void Ratio:	0.6
Moisture pick-up (% Dry weight.):	7.7%	Moisture pick-up (% in volume):	12.9%
Estimated Specific Gravity:	2.651	Load:	1 tsf
Type of Water Used:	Distilled Water	Swell (% of Initial Height):	0.0%

Expansion - Log Time Curve



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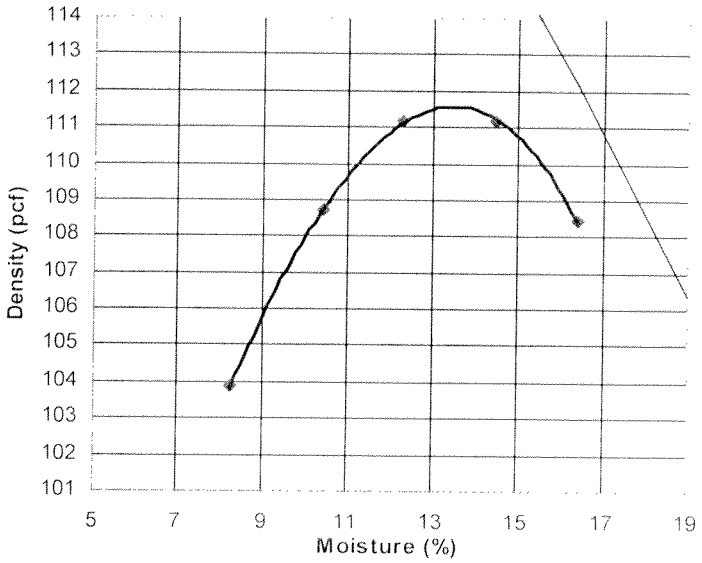
Tel 5058211801
Fax 5058217371
www.amec.com

Client:	Gordon Environmental, Inc. 213 Camino del Pueblo Bernalillo, NM 87004-	**Report Date:**	October 26, 2009
		Project #:	8-519-005168
		Work Order #:	2
Attn:	Larry Coons	**Lab #:**	9-1213-06
Project Name:	SSI West	**Sampled By:**	Client
		Date Sampled:	
	Eunice, NM	**Visual Description of Material:**	
Project Manager:	Herman Garcia	**Sample Source:**	GB-2 @ 10 - 20'

SOILS / AGGREGATES



Sieve Analysis (ASTM C117-04/C136-06)

200 Wash Procedure: A

Sieve Size	Passing
3/8in.	100%
#4	97%
#8	94%
#10	93%
#16	91%
#30	88%
#40	85%
#50	80%
#100	46%
#200	27%

Moisture Density Relationship: (ASTM D698-07) Method: B

Preparation Method: Dry Rammer Type: Mechanical

Specific Gravity: 2.551 Assumed

Maximum Density: 111.6

Optimum Moisture: 13.5

Plasticity Index (ASTM D4318-05)

Liquid Limit: NV

Plastic Limit: NV

Plasticity Index: NP

Preperation Method: Dry Liquid Limit Method: A

PI Air Dried.

Soil Classification (ASTM D2487-06) SM

Reviewed By:

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Distribution: Client ✓ File: ✓ Supplier: ✓ Other: Addressee (2)

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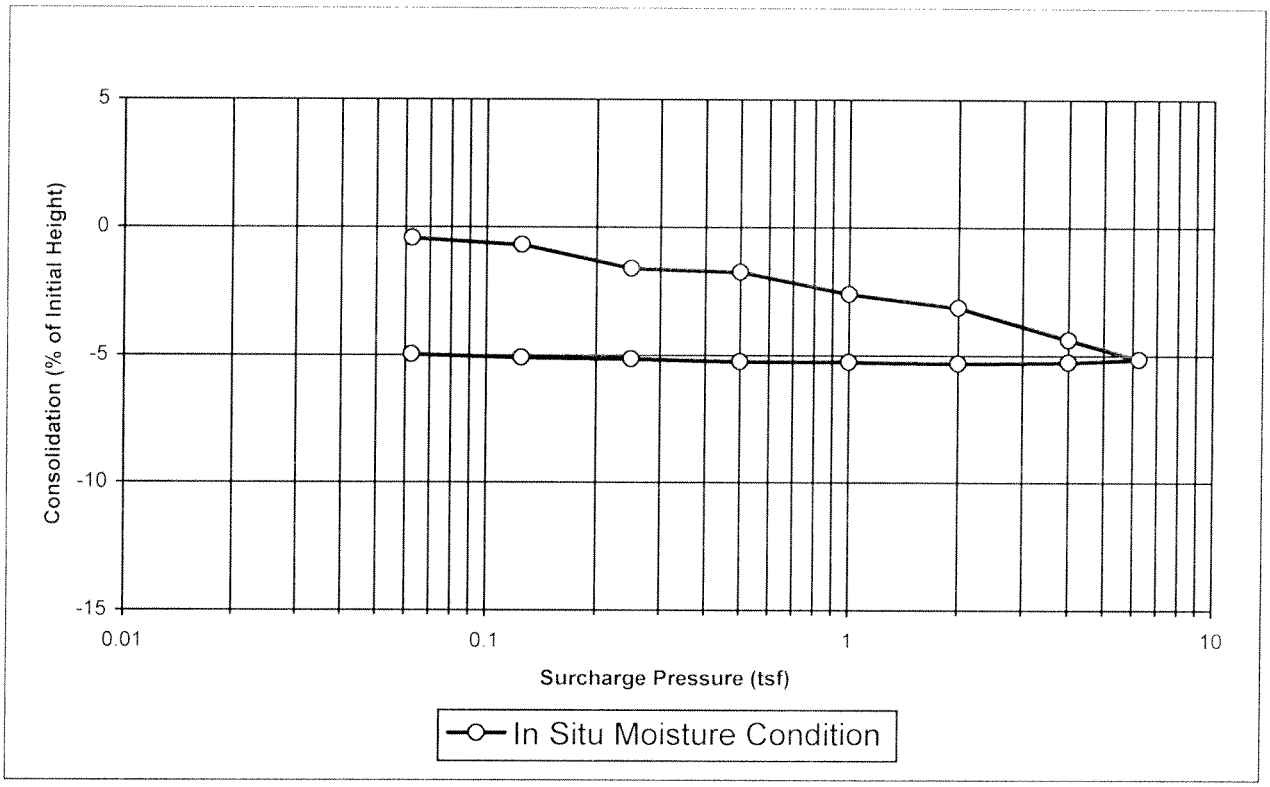
Client:	Gordon Environmental, Inc. 213 Camino Del Pueblo Bernalillo, NM 87004-	**Report Date:**	November 10, 2009
		Project #:	8-519-005168
		Work Order #:	2
Attn:	Larry Coons	**Lab #:**	9-1213-07
Project Name:	SSI West	**Sampled By:**	Client
		Date Sampled:	Unknown
	Eunice, NM	**Material:**	Silty Clayey Sand
		Sample Source:	GB-2 at 15 ft
Project Manager:	Herman Garcia	SOILS/AGGREGATES	

Measurement of Collapse Potential of Soils (ASTM D5333)

Sample Preparation: In Situ

Initial Volume (in^3):	4.60	**Final Volume (in^3):**	4.40
Initial Moisture (%):	17.7%	**Final Moisture (%)**	15.5%
Initial Dry Density (lb/ft^3):	80.3	**Final Dry Density (lb/ft^3):**	83.7
Initial Degree of Saturation:	45%	**Final Degree of Saturation:**	42%
Initial Void Ratio:	1.0	**Final Void Ratio:**	0.9
Estimated Specific Gravity:	2.600	**Saturated At:**	Not Saturated



Reviewed By: _____
Jan

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Email: ☐

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Client:	Gordon Environmental, Inc. 213 Camino Del Pueblo Bernalillo. NM 87004-
Attn:	Larry Coons
Project Name:	SSI West
	Eunice, NM
Project Manager:	Herman Garcia

Calculated Porosities

Lab #	Test Sample	%
9-1213-02	K_{sat}	50.6
9-1213-02	Settlement	50.5
9-1213-04	K_{sat}	29.4
9-1213-04	Swell	39.9
9-1213-07	K_{sat}	41.6
9-1213-07	Settlement	29.9

Based on a specific gravity of 2.6 g/cm^3. Note that the Ksat and settlement for lab number 9-1213-04 were taken from different ring samples