GTLT - 4

AmeriCulture
Nos. 3 & SEA-1
ULs: G&A
6&7-25S-19W
Hidalgo County

DRILLED: 2002 & 1996

Hi Roy,
Sorry So long. Let me know if there are any deficiencies. Please Keep logs in drawer for 90 days thanks -
Damon

5-9-02

Hi Roy,
Here are the revised table and figures including the AMEX Temperature gradient holes within 1.0 mile of the injection site. See the footnote under the table for gradient well construction information. Thanks for everything. Let me know if you need anything else.
Take care,
Damon Seawright

Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

June 12, 2002

TO: Distribution List

FROM: John H. Kersten
Acting Manager, Golden Field Office

SUBJECT: PRE-DECISIONAL DRAFT ENVIRONMENTAL ASSESSMENT
SMALL-SCALE GEOTHERMAL POWER PLANT AND DIRECT-USE GEOTHERMAL
APPLICATION AT AMERICULTURE, INC., COTTON CITY, NM (DOE/EA 1396)

The subject pre-decisional draft environmental assessment (EA) is enclosed for your review. The Department of Energy, Golden Field Office has prepared this document in accordance with the National Environmental Policy Act (NEPA) and DOE's NEPA implementing regulations. DOE distributed a request for public and agency comments dated November 1, 2001, to approximately 25 federal, state, and local agencies, interested organizations, and individuals. DOE received two comments in response to this request. These comments have been incorporated into the draft EA.

Proposed Action

DOE's Proposed Action is to provide partial funding for two project components located within the Lightning Dock Known Geothermal Resource Area near Animas and Cotton City, NM, approximately 16 miles southwest of Lordsburg, NM. The Proposed Action would use an existing geothermal well (AmeriCulture State 1), which is currently used for heating AmeriCulture's fish hatchery operation. The first project component would involve the construction and operation of a small-scale (approximately one megawatt) geothermal power plant. The second project component would utilize either geothermal fluid directly from the existing well or geothermal fluid exhausted from the new power plant as the heating source for the hatchery. Spent fluid would be re-injected into the geothermal reservoir.

Request for Comments

Consistent with NEPA implementing guidelines, it is DOE's policy to integrate community and public concerns into its decision-making processes. Comments on this draft EA will be accepted for a period of 30 days. Please submit any comments by Friday, July 12, 2002, to:

Steve Blazek
NEPA Compliance Officer
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393
(303) 275-4723 (303) 275- 4788 (fax) steve_blazek@nrel.gov

DOE will review and consider all comments prior to making any final decision. Thank you for your interest and participation in DOE's NEPA process.

Sincerely,

John H. Kersten
Acting Manager, Golden Field Office

Distribution:
Damon Seawright, AmeriCulture
Henry Mlcak, Exergy, Inc.
Mark Morolli, Exergy
Dale Burgett
Thomas W. McCants
Peter Maggiore, NMED
Micheal P. Jansky, EPA
Joseph Torrez, BLM
Rodger Anderson, NMOCD
Roy Johnson, NMOCD
Tim Gum, NMOCD
Mike Matush, NMSLO
Office of the State Engineer
Tommy Townsend, Phelps Dodge

NEW MEXICO ENERGY, MINERALS and
NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
BETTY RIVERA
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

Administrative Order No. GIW-15

THE APPLICATION OF AMERICULTURE, INC.
FOR ONE GEOTHERMAL INJECTION WELL,
HIDALGO COUNTY, NEW MEXICO

ADMINISTRATIVE ORDER OF
THE OIL CONSERVATION DIVISION

Under the provisions of Rule 503 of the New Mexico Oil Conservation Division Rules and Regulations, Geothermal Resources, AmeriCulture, Inc. made application on April 11, 2002 for authority to complete for injection purposes into a geothermal reservoir its AmeriCulture, Inc. Well No. 3 located in Unit G, Section 6, Township 25 South, Range 19 West, NMPM, Hidalgo County, New Mexico.

THE DIRECTOR FINDS THAT:

(1) The application has been duly filed pursuant to the provisions of the Geothermal Resources Rules and Regulations.

(2) That all offsetting owners of geothermal leases within a one-half mile radius of the proposed injection well have been notified by Certified Mail.

(3) All the requirements of Rule 503 have been complied with.

(4) The proposed injection well is in the interest of conservation and will prevent waste and protect correlative rights and that the subject well is cased and cemented and shall be equipped in such a manner as to prevent danger to natural resources including geothermal resources, underground water supplies and surface resources.

(5) The proposed geothermal injection well should be approved.

IT IS THEREFORE ORDERED THAT:

(1) The applicant herein, AmeriCulture, Inc., is hereby authorized to complete its AmeriCulture, Inc. Well No. 3 located in Unit G, Section 6, Township 25 South, Range 19 West, NMPM, Hidalgo County, New Mexico, in such a manner as to permit the injection of fluids into the Gila Conglomerate through a perforated interval located from 150 feet to 300 feet.

(2) Injection shall be through tubing and surface injection pressure shall not exceed 20 psi.

(3) Monthly injection for the above-described well shall be filed with the Division in accordance with Rule 210 of the Geothermal Resources Rules and Regulations.

(4) The applicant will obtain and file with the Division's District Office a water analysis of the proposed injection zone prior to any injection of fluids.

(5) Surveillance of the above-described well shall be conducted as required by Rule 505 of the Geothermal Rules and Regulations to ensure that all injected fluids are being confined to the intended zone of injection.

IT IS FURTHER ORDERED THAT:

Jurisdiction of this cause is hereby retained by the Division for such further order or orders as may been deemed necessary or convenient for the prevention of waste and/or the protection of correlative rights, and for the protection of natural resources and the environment. Upon failure of the applicant to comply with any requirement of this order, the Division may terminate the authority hereby granted.

APPROVED AT Santa Fe, New Mexico on this 17th day of June, 2002.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Lori Wrotenbery

LORI WROTENBERY
Director

By REJ

LW/REJ

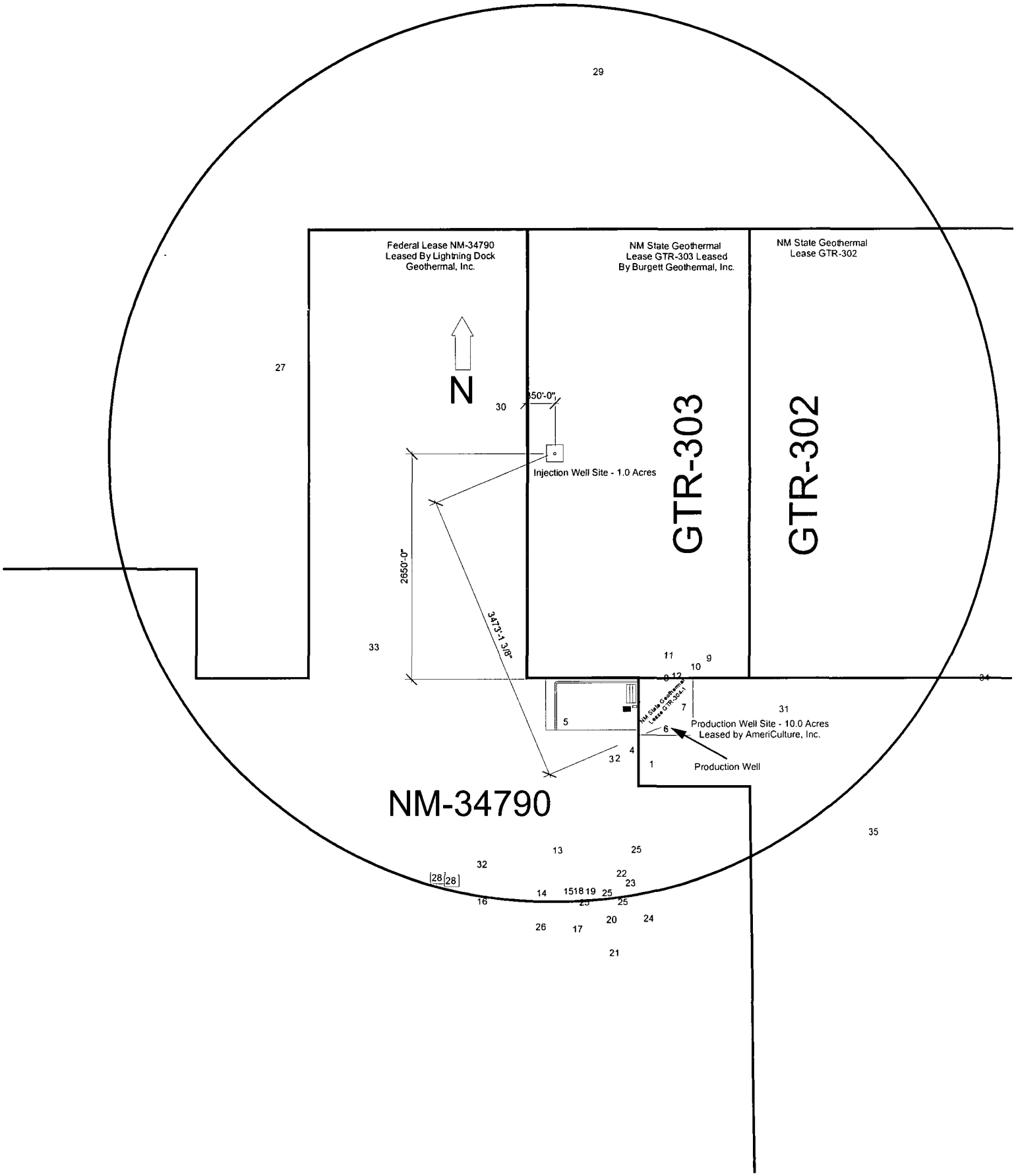
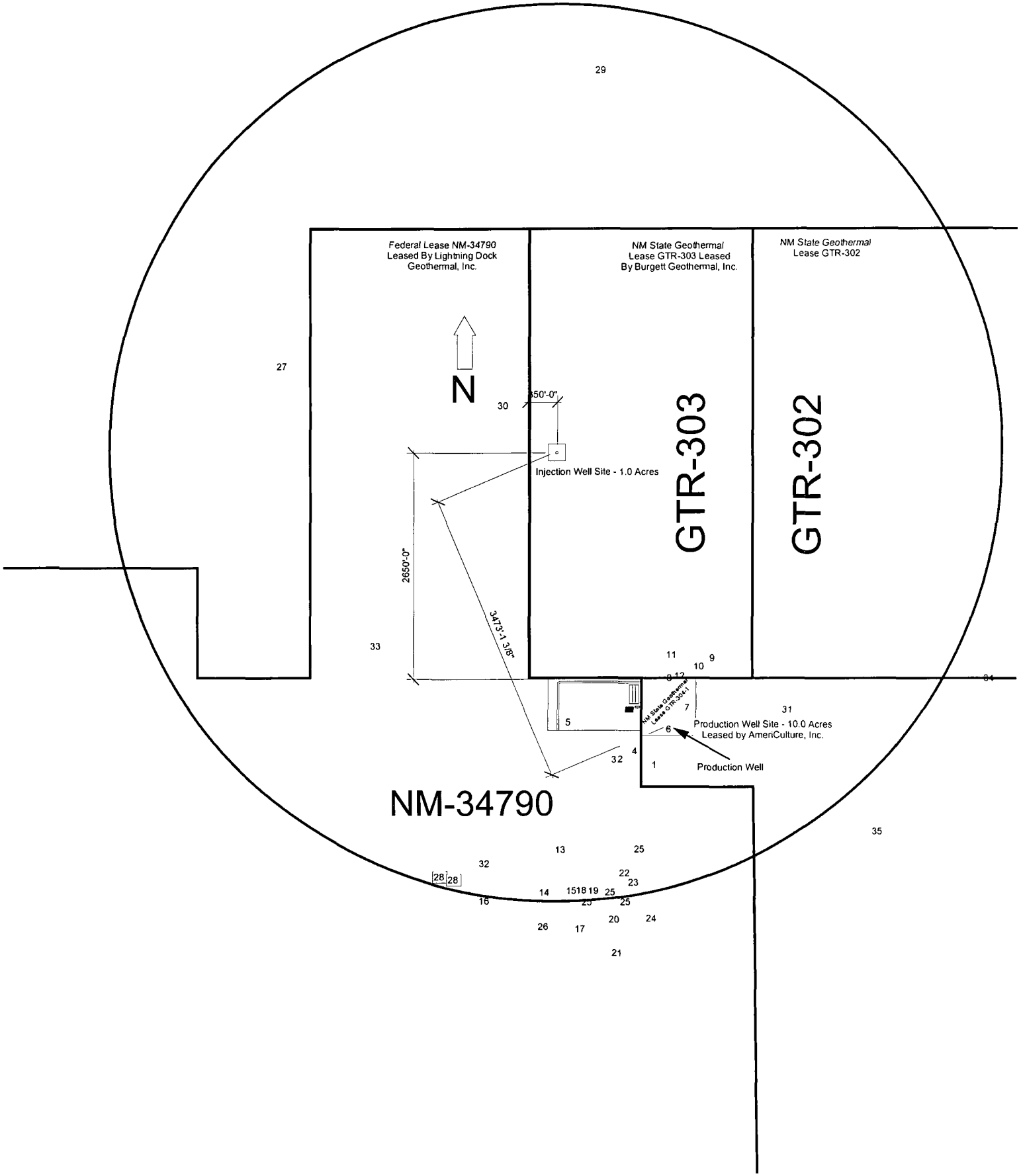


Figure 2. Permitted and unpermitted wells within 1.0 mile of proposed injection well site. Circle represents 1.0 mile radius. Numbers correspond to permitted wells listed in Table 1. Wells having boxed numbers or the same numbers have locations are accurate to the quarter-quarter-quarter section, but precise location is not indicated. Some wells slightly outside the 1.0 mile radius were included.



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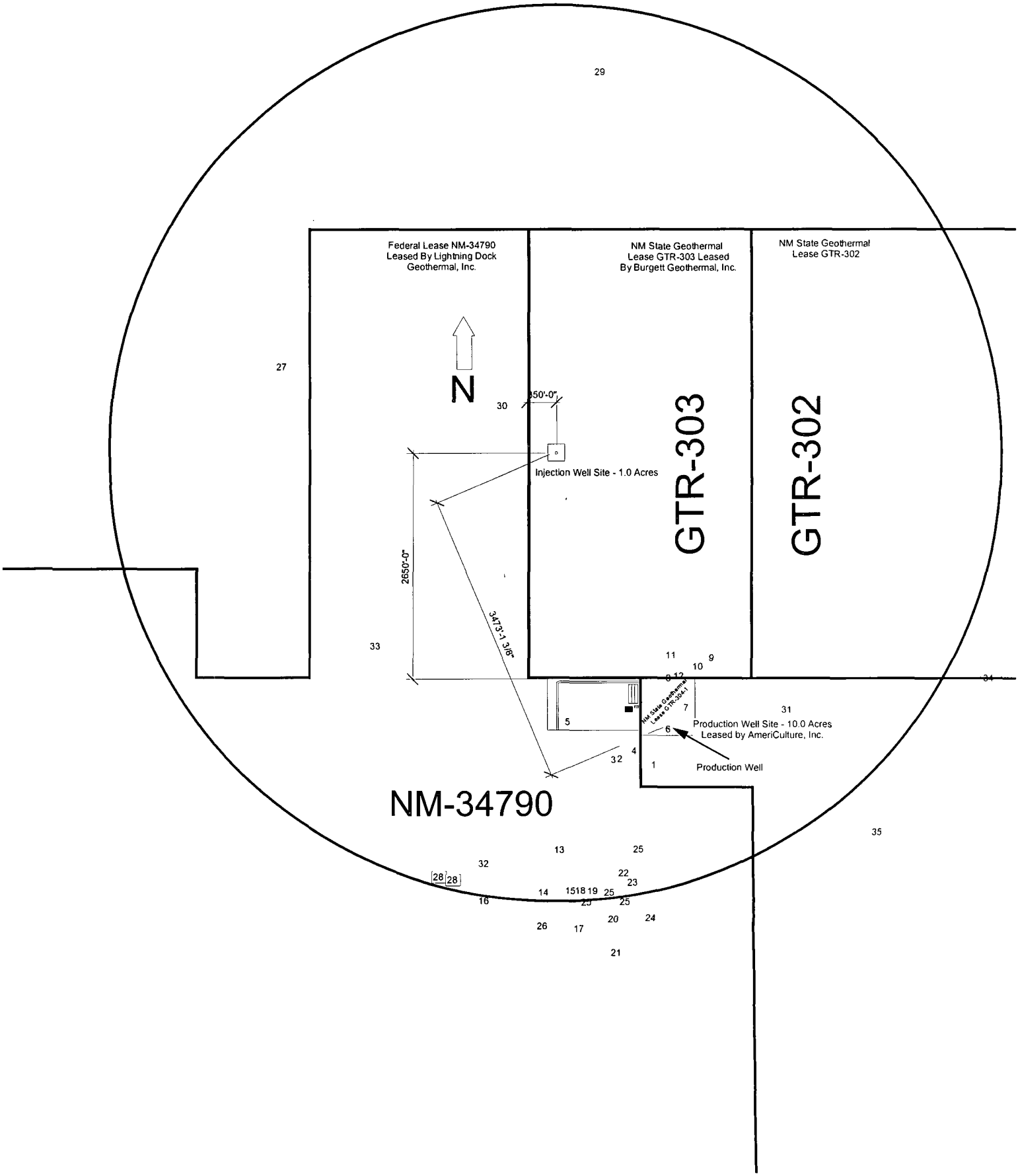

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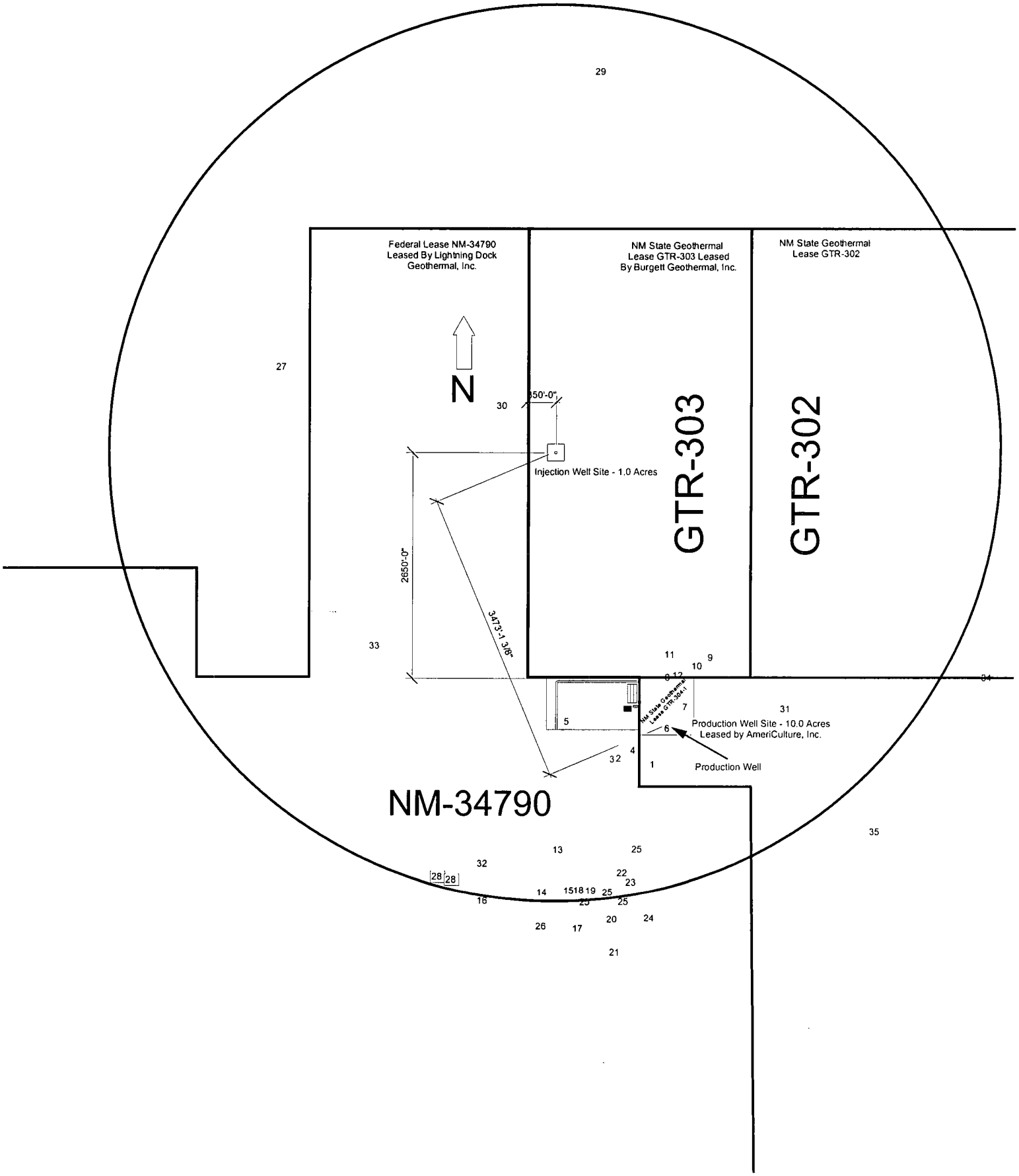

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Table 1. Perforated or open hole intervals for wells within 1.0 mile radius of proposed injection well.

Well Number	Total Depth	Open or Perforated Interval	Notes
See Fig. 2	*ft*	*ft*	
1	200	Not Reported	
2	93	50-90	
3	250	65-100	
4	93	50-90	
5	223	60-223	
6	399	283-399	
7	910	583-910	
8	440	265-440	
9	562	290-562	
10	440	275-440	
11	400	Not Reported	
12	375	280-375	
13	225	90-225	
14	260	122-144	
15	600	90-105	
16	275	Not Reported	
17	275	90-225	
18	115	90-115	
19	85	80-85	
20	175	90-175	
21	130	90-130	
22	110	Not Reported	
23	90	Not Reported	
24	110	6-110	
26	1400	60-223	
27	205	109-205	
25.A	150	45-150	
25.B	83	50-82	
25.C	106	Not Reported	
25.D	95	42-90	
28.A	120	Not Reported	
28.B	32	Not Reported	
29	164	*(see below)	AMEX AN-101
30	162	*(see below)	AMEX AN-103
31	520	*(see below)	AMEX AN-104
32	821	*(see below)	AMEX 672-227
33	1001	*(see below)	AMEX 672-225
34	932	*(see below)	AMEX 672-206
35	177	*(see below)	AMEX AN-105

*All AMEX wells were for temperature gradient and heat flow data collection. Wells were cased with either 1" PVC or 2" steel pipe which was capped at the bottom of the string. The annular space was filled with a mixture of some or all of the following: cuttings, slurry, and cement. The casings strings were then filled with fresh water, allowed to equilibrate, and, after temperature logs were taken, were plugged at the surface with cement.

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13	225	90-225	
14	260	122-144	
15	600	90-105	
16	275	Not Reported	
17	275	90-225	
18	115	90-115	
19	85	80-85	
20	175	90-175	
21	130	90-130	
22	110	Not Reported	
23	90	Not Reported	
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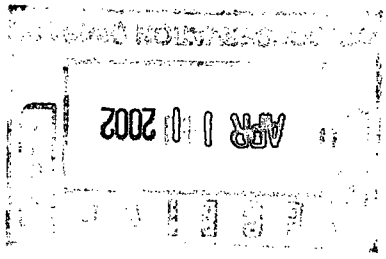
Rec'd 4-11-2002

AmeriCulture

888-845-2742
505 548-2328



April 8, 2002

Roy Johnson
Senior Petroleum Geologist, Supervisor District IV
1220 S. St. Francis Dr.
Santa Fe, NM 87505

Dear Roy,

Please find attached herewith duplicate copies of Form G-112, together with all attachments referred to in Rule G-503, pertaining to proposed drilling and operational activities involving the production of geothermal fluids at our State Geothermal Lease GTR-304-1 and reinjection of said fluids at a suitable location on State of New Mexico Trust Land to the north of our facility.

The fluids will be used for the generation of electricity and direct use purposes. Reinjected fluids will be thermally-depleted, but will otherwise be chemically unaltered from their original state. AmeriCulture, under consultation with Jim Witcher of NMSU, maintains that thermal, chemical, operational, and geological factors favor the proposed injection site location. This is the same location discussed by you, Dale Burgett, and myself in September at the AmeriCulture production facility.

This letter, together with relevant attachments, has been sent to all parties listed below on the copy list. Should you find any deficiencies, please call me and I will remedy the situation immediately. Thank-you.

Sincerely,

Damon Seawright
Vice President
AmeriCulture, Inc.

CC: Jami Bailey, Oil Gas, and Minerals Division of NM State Land Office
Amy Leuders, BLM
Dale Burgett, Burgett Geothermal, Inc.
Roy Cunniff, Lightning Dock Geothermal Inc.
Thomas McCants
Gary Seawright, AmeriCulture, Inc.

AmeriCulture Inc.
HC 65 Box 260 C, Animas, NM 88020 • Ph: 888.TILAPIA Fax: 505.548.2631
e-mail: americulture@vtc.net • www.americulture.com

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-112
Adopted 10-1-7
Revised 10-1-7

RECEIVED
APR 11 2002

APPLICATION TO PLACE WELL ON INJECTION GEOTHERMAL RESOURCES AREA

Operator: AmeriCulture, Inc.		Address: HC 65 Box 260C, Animas, NM 88020	
Lease Name: AmeriCulture, Inc.	Well No.: 3	Field: Lightning Dock	County: Hidalgo

Location: Unit Letter G ; Well is Located 2290' Feet From The East Line And 2650' Feet From The South Line, Section 6 Township 25S Range 19W NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
Conductor Pipe	20"	20'	13	surface	
Surface Casing	13-3/8"	150' or top of formation	70	surface	Surface Return
Long String: Punch perforated	9-5/8"	Formation dependent			
Tubing			Name, Model and Depth of Tubing Packer		

Name of Proposed Injection Formation: Gila Conglomerate	Top of Formation	Bottom of Formation
Is Injection Through Tubing, Casing, or Annulus? Casing	Perforations or Open Hole? Perforations	Proposed Interval(s) of Injection 150-300'
Is This a New Well Drilled For Injection? Yes	If Answer is No, For What Purpose was Well Originally Drilled?	Has Well Ever Been Perforated in Any Zone Other Than the Proposed Injection Zone?

List All Such Perforated Intervals and Sacks of Cement used to Seal Off or Squeeze Each

Depth of Bottom of Deepest Fresh Water Zone in This Area	Is This Injection for Purpose of Pressure Maintenance or Water Disposal? (See Rules 501 and 502)				Pressure Maintenance	
Anticipated Daily Injection Volume: 1,584,000 gal	Minimum: 1,440,000 gal	Maximum: 1,728,000 gal	Open or Closed Type System	Is Injection to be by Gravity or Pressure? Gravity		Approx. Pressure (psi)
Answer Yes or No Whether the Following Waters are Mineralized to such a Degree as to be Unfit for Domestic, Stock, Irrigation, or Other General Use			Water to be Injected: No	Natural Water in Injection Zone: No		Are Water Analyses Attached? Yes

Name and Address of Surface Owner (or Lessee, if State or Federal Land):
Burgett Geothermal Inc. (Mr. Dale Burgett) - Lessee of GTR-303; Mr. Thomas McCants - Surface Lessee (agriculture)

List Names and Addresses of all Operators Within One-Half (½) Mile of This Injection Well:
Burgett Geothermal; Attn: Mr. Dale Burgett; Box 265A Animas, NM 88020 Phone: (505)-548-2353

Mr. Thomas McCants; Box 265 Animas, NM 88020 Phone: (505)-548-2260

Lightning Dock Geothermal, Inc. ; Attn: Mr. Roy Cunniff; 224 W. Greening Ave., Las Cruces, NM 88005 Phone: (505) 523-7908

Have Copies of this Application Been Sent to Each Operator Within One-Half Mile of this Well?	Yes [X] No [ ]		
Are the Following Items Attached to this Application (see Rule 503)	Plat of Area: Yes [X] No [ ]	Electrical Log: Yes [ ] No [X]	Diagrammatic Sketch of Well: Yes [X] No [ ]

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

Damon E. Seawright, Vice President — April 8, 2002

(Signature) (Title) (Date)

NOTE: Should waivers from all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Division will hold the application for a period of 20 days from the date of receipt by the Division's Santa Fe office. If at the end of the 20-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing. If the applicant so requests, this

OCD

SAMPLE PROGRESS REPORT

SWAT Lab - New Mexico State Univ.
Date: 11-10-2000 Time: 15:31:47

Sample I.D. AB18968
Status: Analyses incomplete
Purchase order number:
User Code No.:
Client Code: WITCHER
Sample collector: JAMES WITCHER
Req ID#:

Date collected: 10/30/00
Date submitted: 10/30/00
Due date: 11/27/00
Specification checking: off
sample description: Seawright Geothermal

Submit:

Analysis	Result	Unit	Finished	Anl
pH of water	8.11		10/30/00	JH
Total Dissolved Solids	1071	mg/L	11/01/00	BJH
Bicarbonate	2.27	meq/L	11/06/00	LJC
Sodium by ICP-	319	mg/L	11/02/00	BJH
Calcium by ICP-	22.7	mg/L	11/02/00	BJH
Magnesium by ICP-	0.1	mg/L	11/02/00	BJH
Potassium by ICP-	14.7	mg/L	11/02/00	BJH
Chloride by Autoanalyzer	80	mg/L	11/07/00	LJC
Sulfate	462	mg/L	11/02/00	RLM
Fluoride by electrode	---			
Bromide by Ion Chrom-	Not detected	mg/L	11/01/00	HM
Arsenic by ICP-	Not detected	mg/L	11/02/00	BJH
Silica by ICP	42.0	mg/L	11/02/00	BJH
Strontium by ICP	0.45	mg/L	11/09/00	BJH
Lithium by ICP-	---			
Boron by ICP-	0.37	mg/L	11/02/00	BJH
Iron by ICP-	1.14	mg/L	11/02/00	BJH
pH of water LCS	8.25		10/30/00	JH
pH of water duplicate	8.11		10/30/00	JH
pH of water RPD	0.000		10/31/00	BJH

End of progress report on sample: AB18968

INJECTION WELL EXERGY-AMERICULTURE PROJECT
LIGHTNING DOCK KGRA, ANIMAS VALLEY, NEW MEXICO

A geothermal injection well that is suitable for a maximum daily capacity of 1.7 million gallons of 135° F of 1,100 mg/L total dissolved solids (TDS) is proposed to be installed and operated near the center of section 6, Township 25 South, Range 19 West at a location 2,310 feet from the east line of section 6 and 2,700 feet from the south line of section 6 (Figures 1, 2, and 3). The proposed location is located approximately 3,445 feet north northwest of the AmeriCulture 1 State production well and approximately 3,180 feet northwest of the nearest production well, Burgett B. The well is sited in the northwest corner of NM lease GTR-303 and 350 feet inbound of the west and north lease boundaries. The geothermal lessee is Mr. Dale Burgett and the surface agriculture lessee is Mr. Thomas McCants.

The proposed well is located in the western portion of a north-flowing outflow plume of the Lighting Dock geothermal system. Natural outflow plume reservoir temperatures at the injection site are projected to range from 120-160° F at less than 1,000 feet depth. The exact natural chemistry of thermal fluids at this location is not known with certainty. A natural mix of non-thermal fluids and outflow plume geothermal fluids may exist at this site. If so, in situ fluid TDS may be less than the planned 1,100 mg/L injectate. However, chloride and silica concentration maps for alluvial ground water in the Animas Valley outline the outflow plume very well and indicate that the planned injection site is within the dominant geothermal flow to the north (Figures 4 through 7). The proposed injection well site is located within the boundaries of the geochemical and thermal anomaly expressions of the outflow plume.

Pump test data from the AmeriCulture 1 Federal well, regional Bouguer gravity data, and deep borehole data suggest that the injection site is separated from the area of the Burgett and AmeriCulture production wells by an "impermeable" reservoir boundary that probably trends north to northeast along a zone starting at a location between the AmeriCulture Federal well and the AmeriCulture 1 production well. The sharp temperature change along the western boundary of the outflow plume may be reflective of this boundary (Figures 6 and 7). The boundary may be a fault zone or a lateral change in alluvial fan deposits to less permeable deposits toward the basin center. This zone is an impediment to outflow on the west and limits thermal (and chemical) mixing and dispersion. Injection will be done in the "Gila Conglomerate" basin fill and Tertiary volcanics, if the later are encountered.

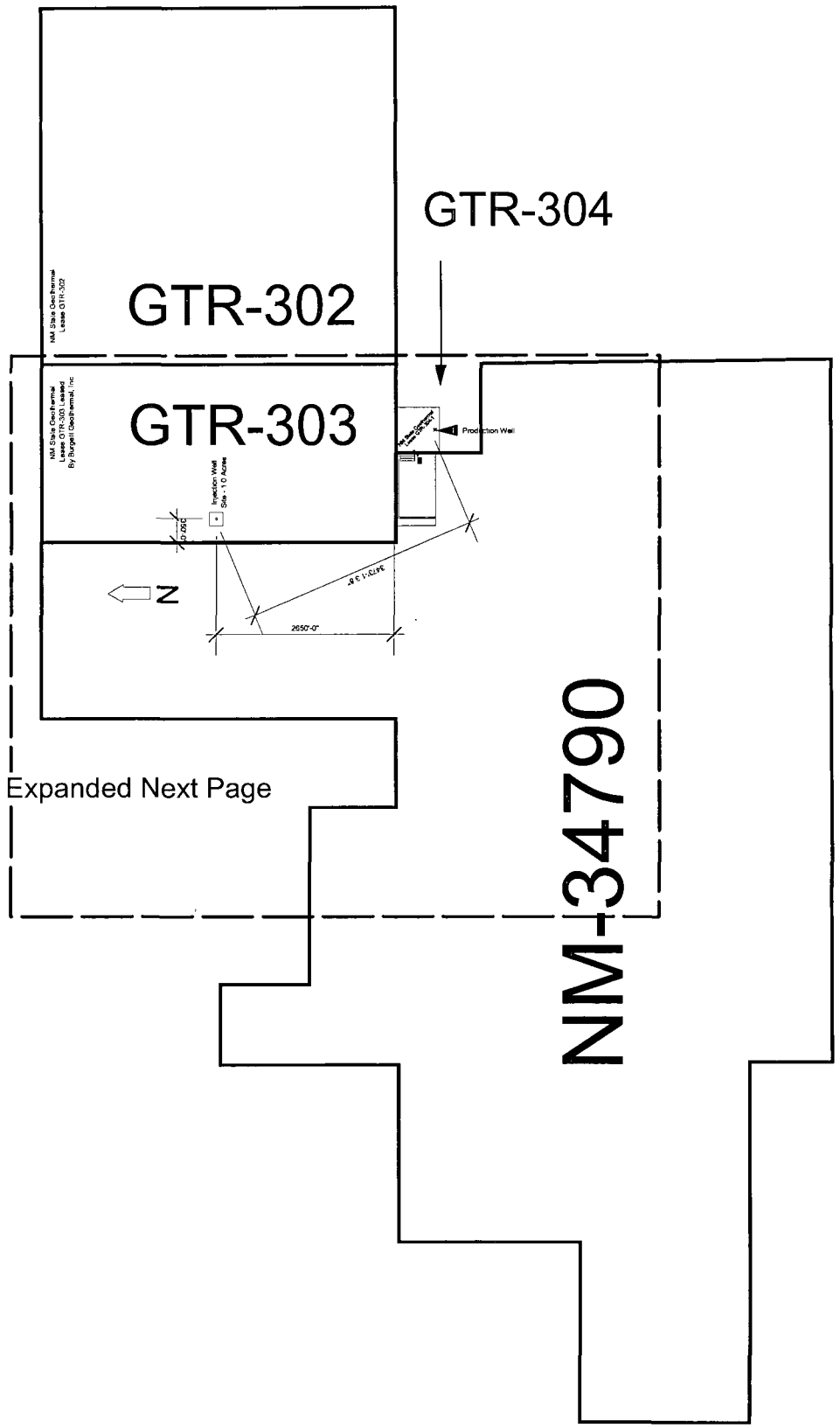


Figure 1. Local Geothermal leases showing production well and proposed injection well site.

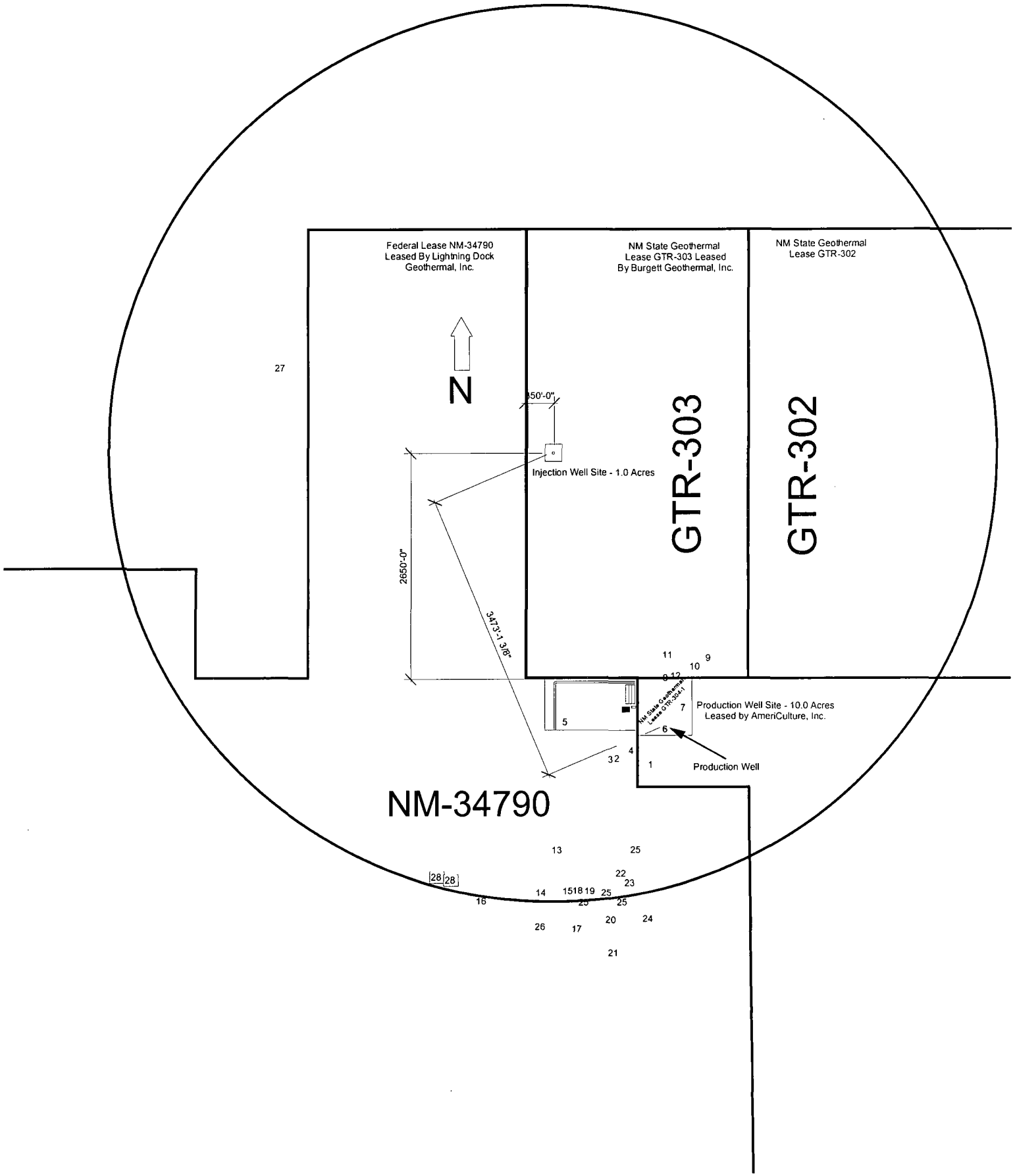


Figure 2. Permitted wells within 1.0 mile of proposed injection well site. Circle represents 1.0 mile radius. Numbers correspond to permitted wells listed in Table 1. Wells having boxed numbers or the same numbers have locations are accurate to the quarter-quarter-quarter section, but precise location is not indicated. Some wells slightly outside the 1.0 mile radius were included.

Table 1. Perforated or open hole intervals for wells within 1.0 mile radius of proposed injection well.

Well Number *See Fig. 2*	Total Depth *ft*	Open or Perforated Interval *ft*
1	200	Not Reported
2	93	50-90
3	250	65-100
4	93	50-90
5	223	60-223
6	399	283-399
7	910	583-910
8	440	265-440
9	562	290-562
10	440	275-440
11	400	Not Reported
12	375	280-375
13	225	90-225
14	260	122-144
15	600	90-105
16	275	Not Reported
17	275	90-225
18	115	90-115
19	85	80-85
20	175	90-175
21	130	90-130
22	110	Not Reported
23	90	Not Reported
24	110	6-110
26	1400	60-223
27	205	109-205
25.A	150	45-150
25.B	83	50-82
25.C	106	Not Reported
25.D	95	42-90
28.A	120	Not Reported
28.B	32	Not Reported

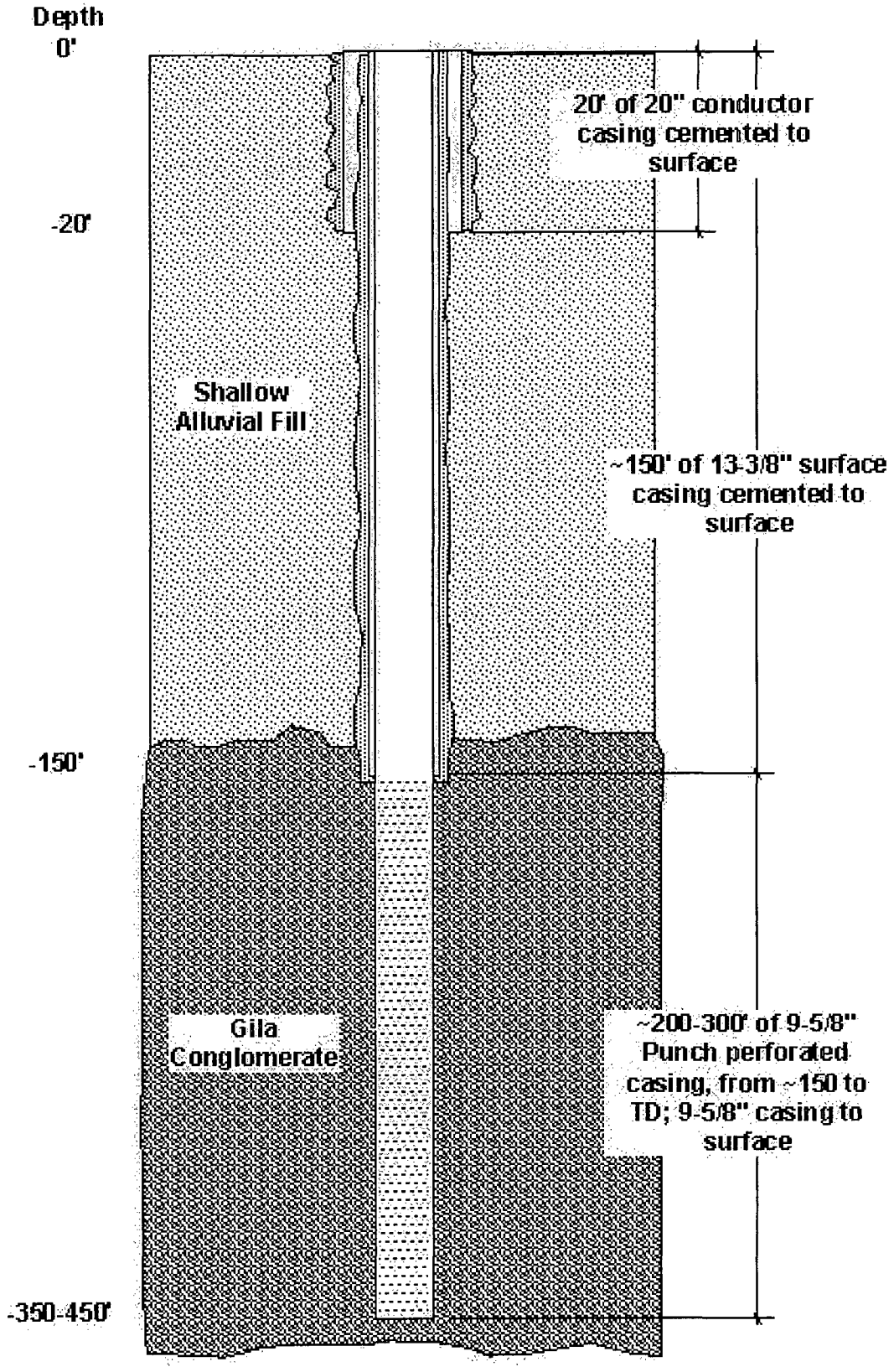


Figure 3. Diagrammatic sketch of the proposed injection well.

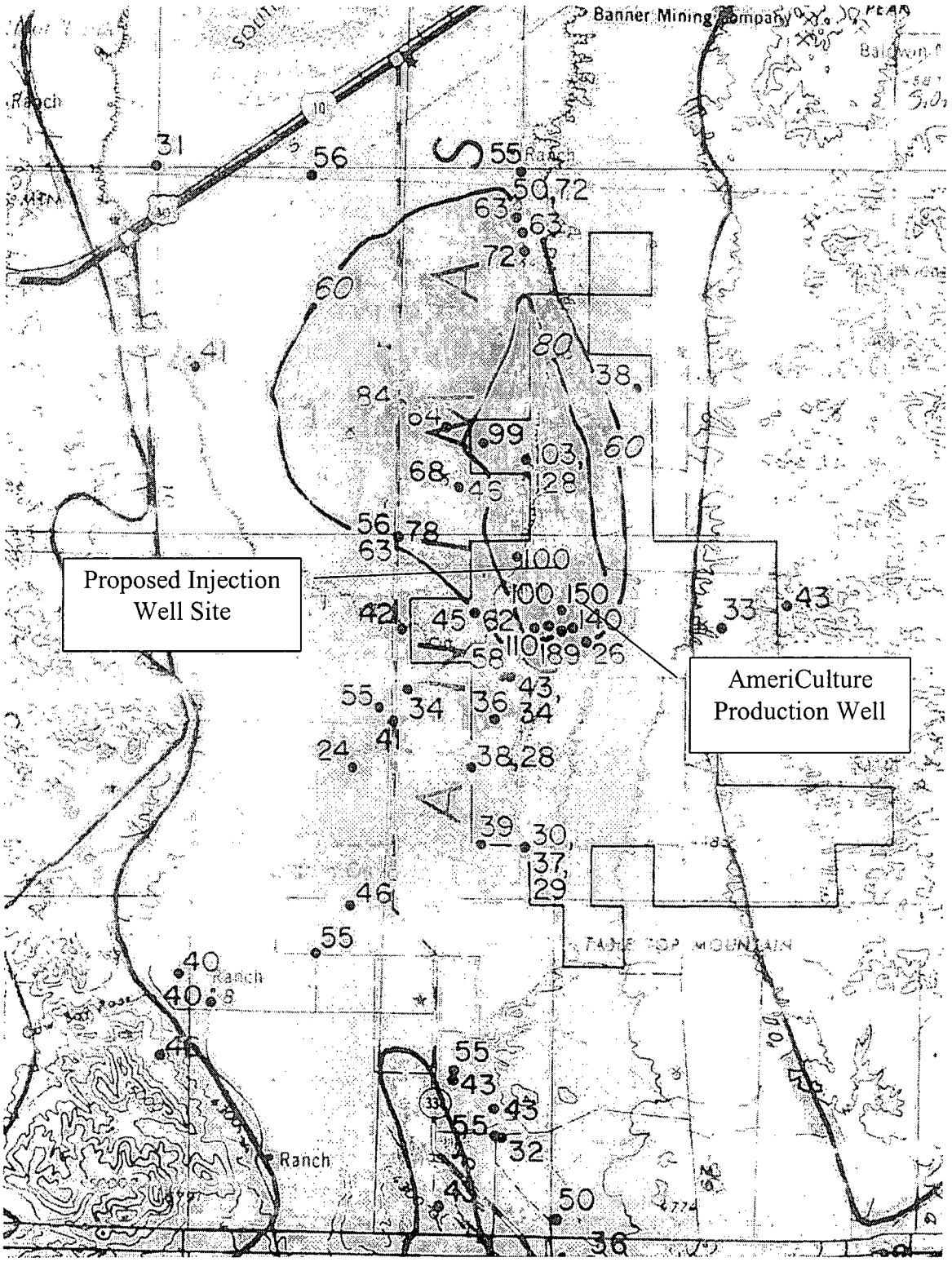


Figure 4. Regional SiO2 concentration map (O'brien and Stone, NM Bureau of Mines Open File Report 131).

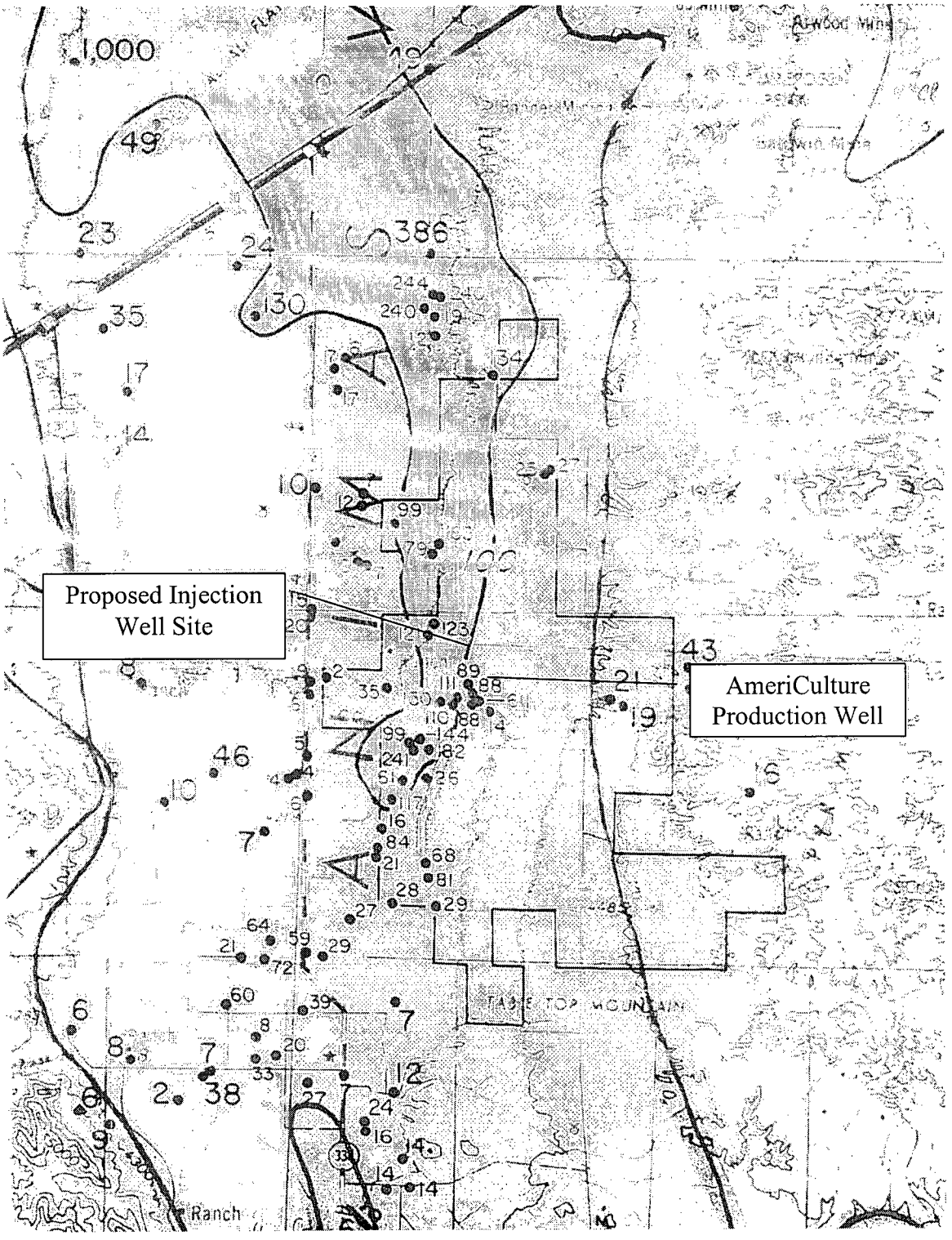


Figure 5. Regional chloride concentration map (O'brien and Stone, NM Bureau of Mines Open File Report 131).

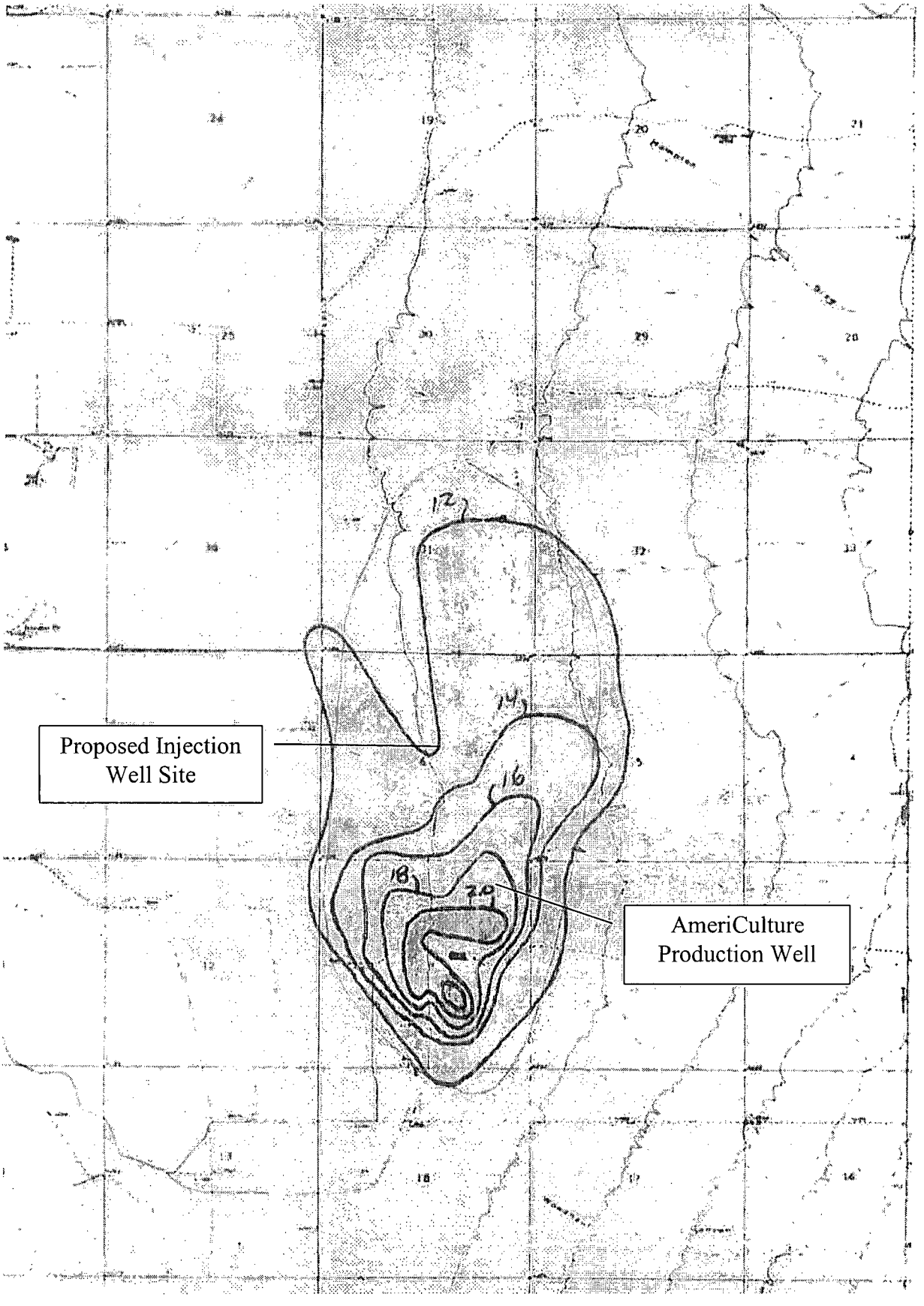


Figure 6. Regional ground temperature (°C) at 1 meter depth at the Lighting Dock Geothermal Anomaly.

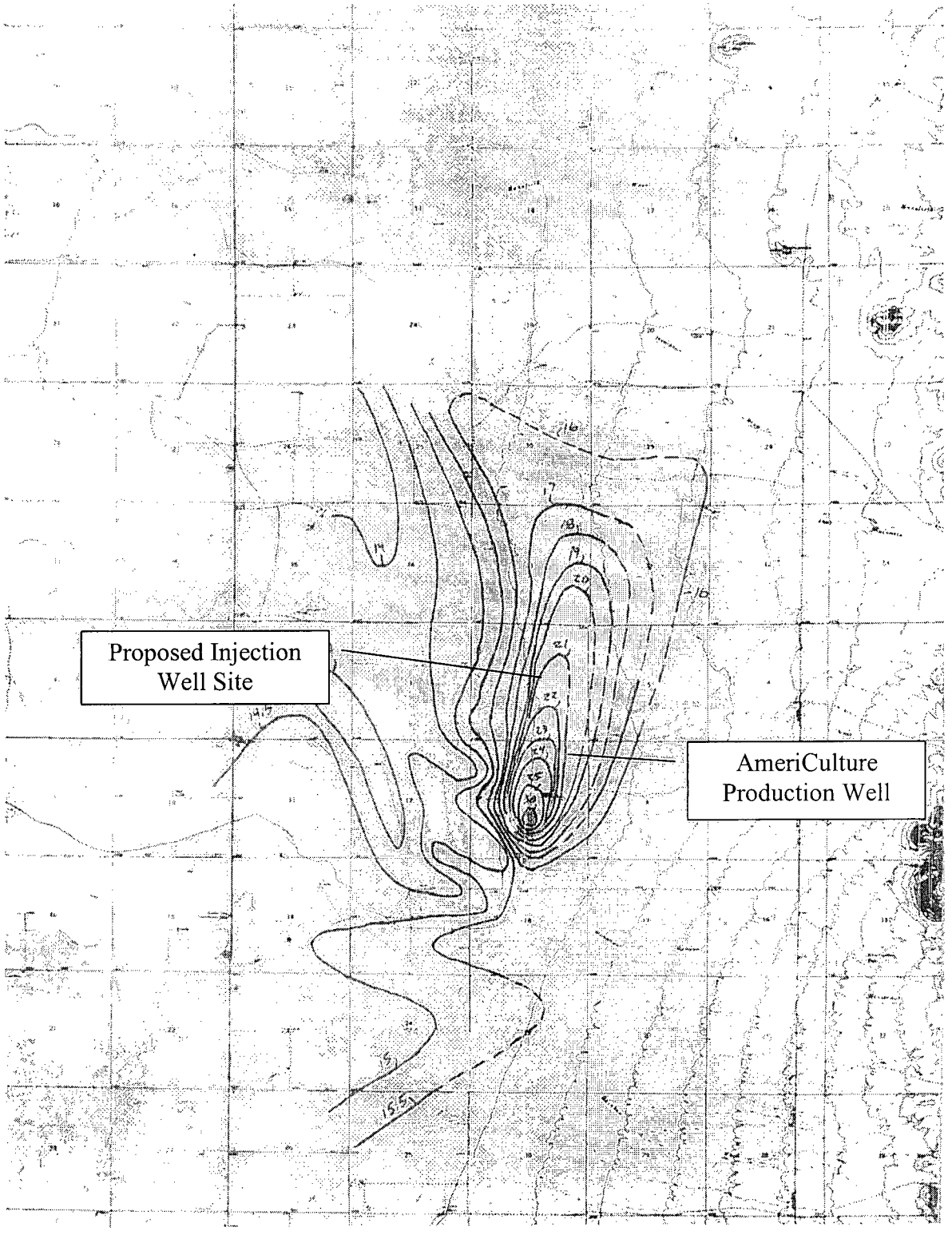


Figure 7. Regional ground temperature (°C) at 2 meter depth at the Lighting Dock Geothermal Anomaly.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form C-112
Adopted 10-1-7
Revised 10-1-7

APPLICATION TO PLACE WELL ON INJECTION GEOTHERMAL RESOURCES AREA

Operator: AmeriCulture, Inc.			Address: HC 65 Box 260C, Animas, NM 88020		
Lease Name: AmeriCulture, Inc.	Well No.: 3		Field: Lightning Dock		County: Hidalgo
Location: Unit Letter ____ ; Well is Located 2290' Feet From The East Line And 2650' Feet From The South Line, Section 6 Township 25S Range 19W NMPM.					

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
Conductor Pipe	20"	20'	13	surface	
Surface Casing	13-3/8"	150' or top of formation	70	surface	Surface Return
Long String: Punch perforated	9-5/8"	Formation dependent			
Tubing			Name, Model and Depth of Tubing Packer		

Name of Proposed Injection Formation: Gila Conglomerate	Top of Formation	Bottom of Formation
Is Injection Through Tubing, Casing, or Annulus? Casing	Perforations or Open Hole? Perforations	Proposed Interval(s) of Injection: 150-300'
Is This a New Well Drilled For Injection? Yes	If Answer is No, For What Purpose was Well Originally Drilled?	Has Well Ever Been Perforated in Any Zone Other Than the Proposed Injection Zone?

List All Such Perforated Intervals and Sacks of Cement used to Seal Off or Squeeze Each

Depth of Bottom of Deepest Fresh Water Zone in This Area	Is This Injection for Purpose of Pressure Maintenance or Water Disposal? (See Rules 501 and 502)				Pressure Maintenance
Anticipated Daily Injection Volume: 1,584,000 gal	Minimum: 1,440,000 gal	Maximum: 1,728,000 gal	Open or Closed Type System	Is Injection to be by Gravity or Pressure? Gravity	Approx. Pressure (psi)
Answer Yes or No Whether the Following Waters are Mineralized to such a Degree as to be Unfit for Domestic, Stock, Irrigation, or Other General Use:	Water to be Injected: No		Natural Water in Injection Zone: No		Are Water Analyses Attached? Yes

Name and Address of Surface Owner (or Lessee, if State or Federal Land)
Burgett Geothermal Inc. (Mr. Dale Burgett) - Lessee of GTR-303; Mr. Thomas McCants - Surface Lessee (agriculture)

List Names and Addresses of all Operators Within One-Half (½) Mile of This Injection Well
Burgett Geothermal; Attn: Mr. Dale Burgett; Box 265A Animas, NM 88020 Phone: (505)-548-2353

Mr. Thomas McCants; Box 265 Animas, NM 88020 Phone: (505)-548-2260

Lightning Dock Geothermal, Inc. ; Attn: Mr. Roy Cunniff; 224 W. Greening Ave., Las Cruces, NM 88005 Phone: (505) 523-7908

Have Copies of this Application Been Sent to Each Operator Within One-Half Mile of this Well?	Yes [X] No [ ]		
Are the Following Items Attached to this Application (see Rule 503)	Plat of Area: Yes [X] No [ ]	Electrical Log: Yes [ ] No [X]	Diagrammatic Sketch of Well: Yes [X] No [ ]

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

(Signature) Damon E. Seawright, Vice President (Title) April 8, 2002 (Date)

NOTE: Should waivers from all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Division will hold the application for a period of 20 days from the date of receipt by the Division's Santa Fe office. If at the end of the 20-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing. If the applicant so requests, [illegible]

OCD

SAMPLE PROGRESS REPORT

SWAT Lab - New Mexico State Univ.
Date: 11-10-2000 Time: 15:31:47

Sample I.D. AB18968
Status: Analyses incomplete
Purchase order number:
User Code No.:
Client Code: WITCHER
Sample collector: JAMES WITCHER
Req ID#:

Date collected: 10/30/00
Date submitted: 10/30/00
Due date: 11/27/00
Specification checking: off
Sample description: Seawright Geothermal

Submit:

Analysis	Result	Unit	Finished	An
pH of water	8.11		10/30/00	JH
Total Dissolved Solids	1071	mg/L	11/01/00	BJH
Bicarbonate	2.27	meq/L	11/06/00	LJC
Sodium by ICP-	319	mg/L	11/02/00	BJH
Calcium by ICP-	22.7	mg/L	11/02/00	BJH
Magnesium by ICP-	0.1	mg/L	11/02/00	BJH
Potassium by ICP-	14.7	mg/L	11/02/00	BJH
Chloride by Autoanalyzer	80	mg/L	11/07/00	LJC
Sulfate	462	mg/L	11/02/00	RLM
Fluoride by electrode	---			
Bromide by Ion Chrom-	Not detected	mg/L	11/01/00	HM
Arsenic by ICP-	Not detected	mg/L	11/02/00	BJH
Silica by ICP	42.0	mg/L	11/02/00	BJH
Strontium by ICP	0.45	mg/L	11/09/00	BJH
Lithium by ICP-	---			
Boron by ICP-	0.37	mg/L	11/02/00	BJH
Iron by ICP-	1.14	mg/L	11/02/00	BJH
pH of water LCS	8.25		10/30/00	JH
pH of water duplicate	8.11		10/30/00	JH
pH of water RPD	0.000		10/31/00	BJH

End of progress report on sample: AB18968

INJECTION WELL EXERGY-AMERICULTURE PROJECT
LIGHTNING DOCK KGRA, ANIMAS VALLEY, NEW MEXICO

A geothermal injection well that is suitable for a maximum daily capacity of 1.7 million gallons of 135° F of 1,100 mg/L total dissolved solids (TDS) is proposed to be installed and operated near the center of section 6, Township 25 South, Range 19 West at a location 2,310 feet from the east line of section 6 and 2,700 feet from the south line of section 6 (Figures 1, 2, and 3). The proposed location is located approximately 3,445 feet north northwest of the AmeriCulture 1 State production well and approximately 3,180 feet northwest of the nearest production well, Burgett B. The well is sited in the northwest corner of NM lease GTR-303 and 350 feet inbound of the west and north lease boundaries. The geothermal lessee is Mr. Dale Burgett and the surface agriculture lessee is Mr. Thomas McCants.

The proposed well is located in the western portion of a north-flowing outflow plume of the Lighting Dock geothermal system. Natural outflow plume reservoir temperatures at the injection site are projected to range from 120-160° F at less than 1,000 feet depth. The exact natural chemistry of thermal fluids at this location is not known with certainty. A natural mix of non-thermal fluids and outflow plume geothermal fluids may exist at this site. If so, in situ fluid TDS may be less than the planned 1,100 mg/L injectate. However, chloride and silica concentration maps for alluvial ground water in the Animas Valley outline the outflow plume very well and indicate that the planned injection site is within the dominant geothermal flow to the north (Figures 4 through 7). The proposed injection well site is located within the boundaries of the geochemical and thermal anomaly expressions of the outflow plume.

Pump test data from the AmeriCulture 1 Federal well, regional Bouguer gravity data, and deep borehole data suggest that the injection site is separated from the area of the Burgett and AmeriCulture production wells by an "impermeable" reservoir boundary that probably trends north to northeast along a zone starting at a location between the AmeriCulture Federal well and the AmeriCulture 1 production well. The sharp temperature change along the western boundary of the outflow plume may be reflective of this boundary (Figures 6 and 7). The boundary may be a fault zone or a lateral change in alluvial fan deposits to less permeable deposits toward the basin center. This zone is an impediment to outflow on the west and limits thermal (and chemical) mixing and dispersion. Injection will be done in the "Gila Conglomerate" basin fill and Tertiary volcanics, if the later are encountered.

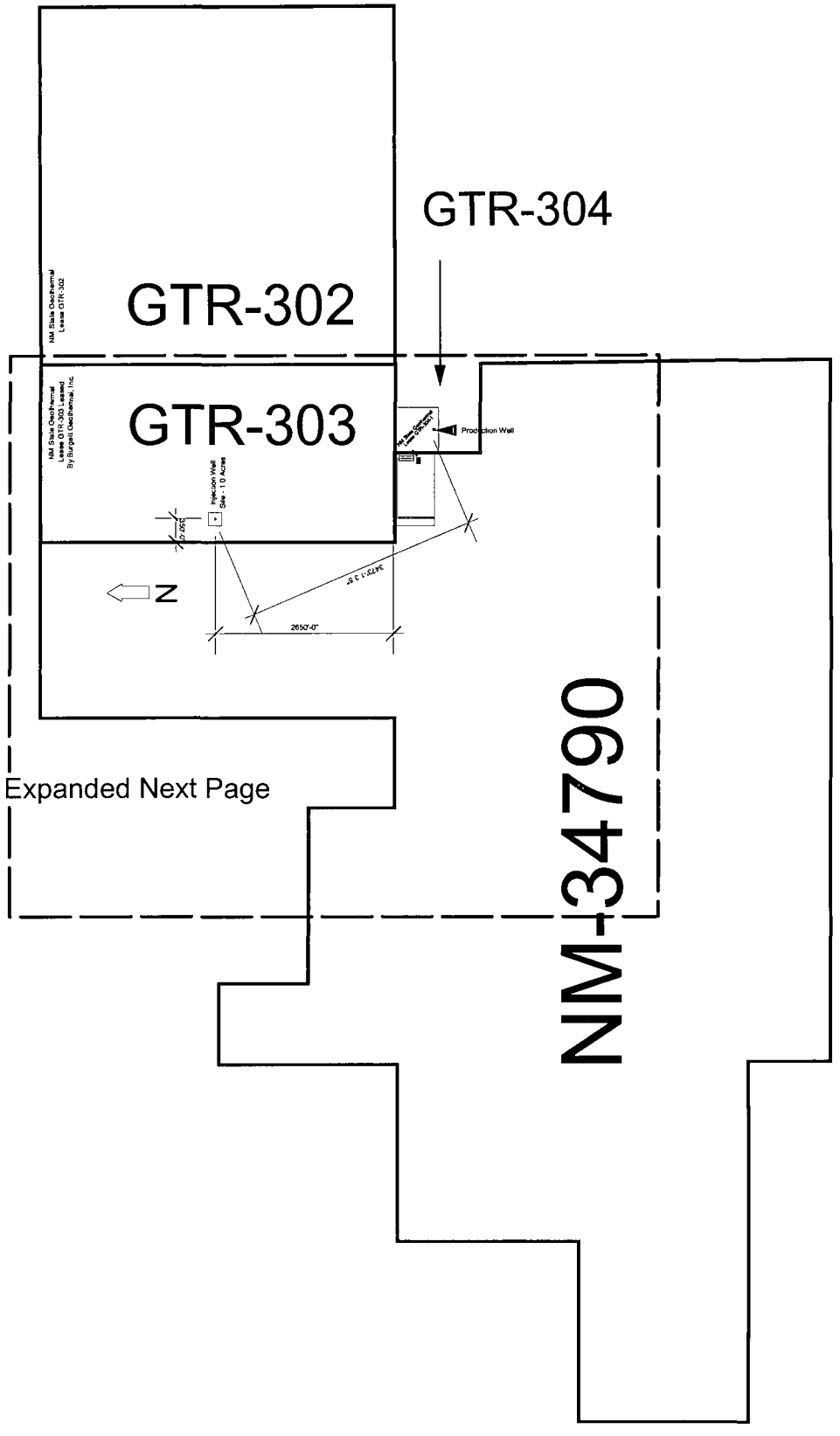


Figure 1. Local Geothermal leases showing production well and proposed injection well site.

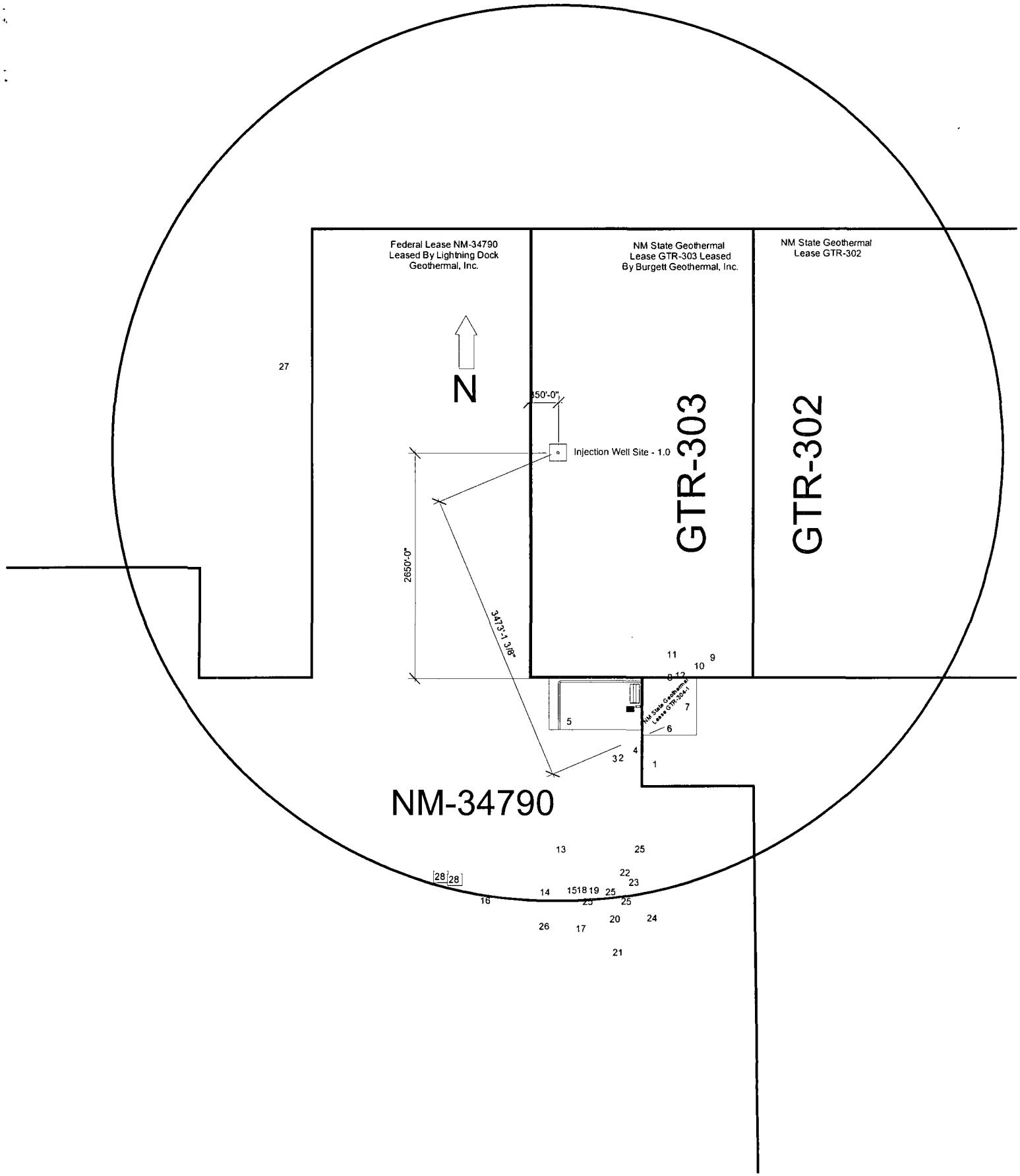


Figure 2. Permitted wells within 1.0 mile of proposed injection well site. Circle represents 1.0 mile radius. Numbers correspond to permitted wells listed in Table 1. Wells having boxed numbers or the same numbers have locations are accurate to the quarter-quarter-quarter section, but precise location is not indicated. Some wells slightly outside the 1.0 mile radius were included.

Table 1. Perforated or open hole intervals for wells within 1.0 mile radius of proposed injection well.

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14	260	122-144
15	600	90-105
16	275	Not Reported
17	275	90-225
18	115	90-115
19	85	80-85
20	175	90-175
21	130	90-130
22	110	Not Reported
23	90	Not Reported
24	110	6-110
26	1400	60-223
27	205	109-205
25.A	150	45-150
25.B	83	50-82
25.C	106	Not Reported
25.D	95	42-90
28.A	120	Not Reported
28.B	32	Not Reported

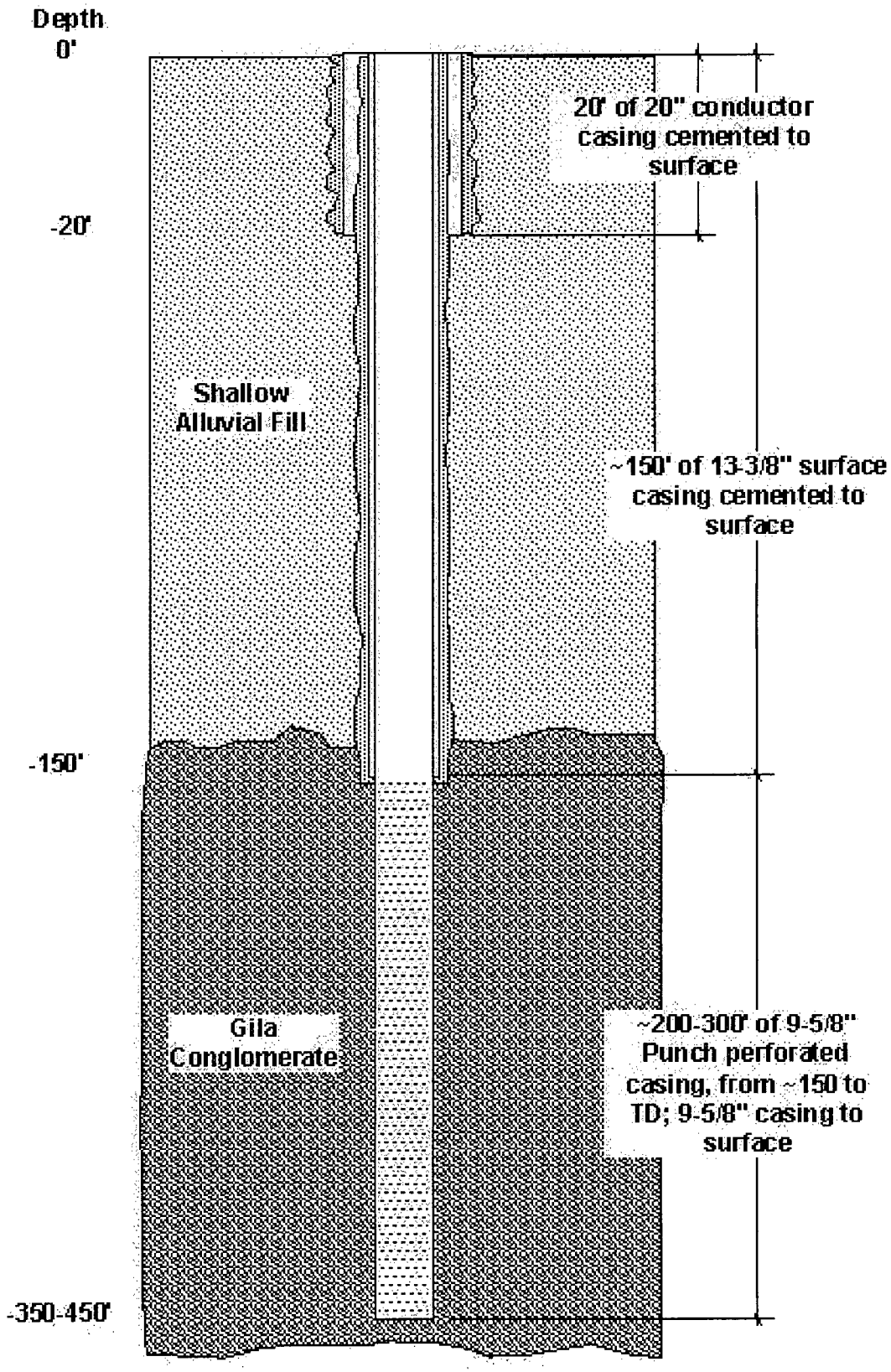


Figure 3. Diagrammatic sketch of the proposed injection well.

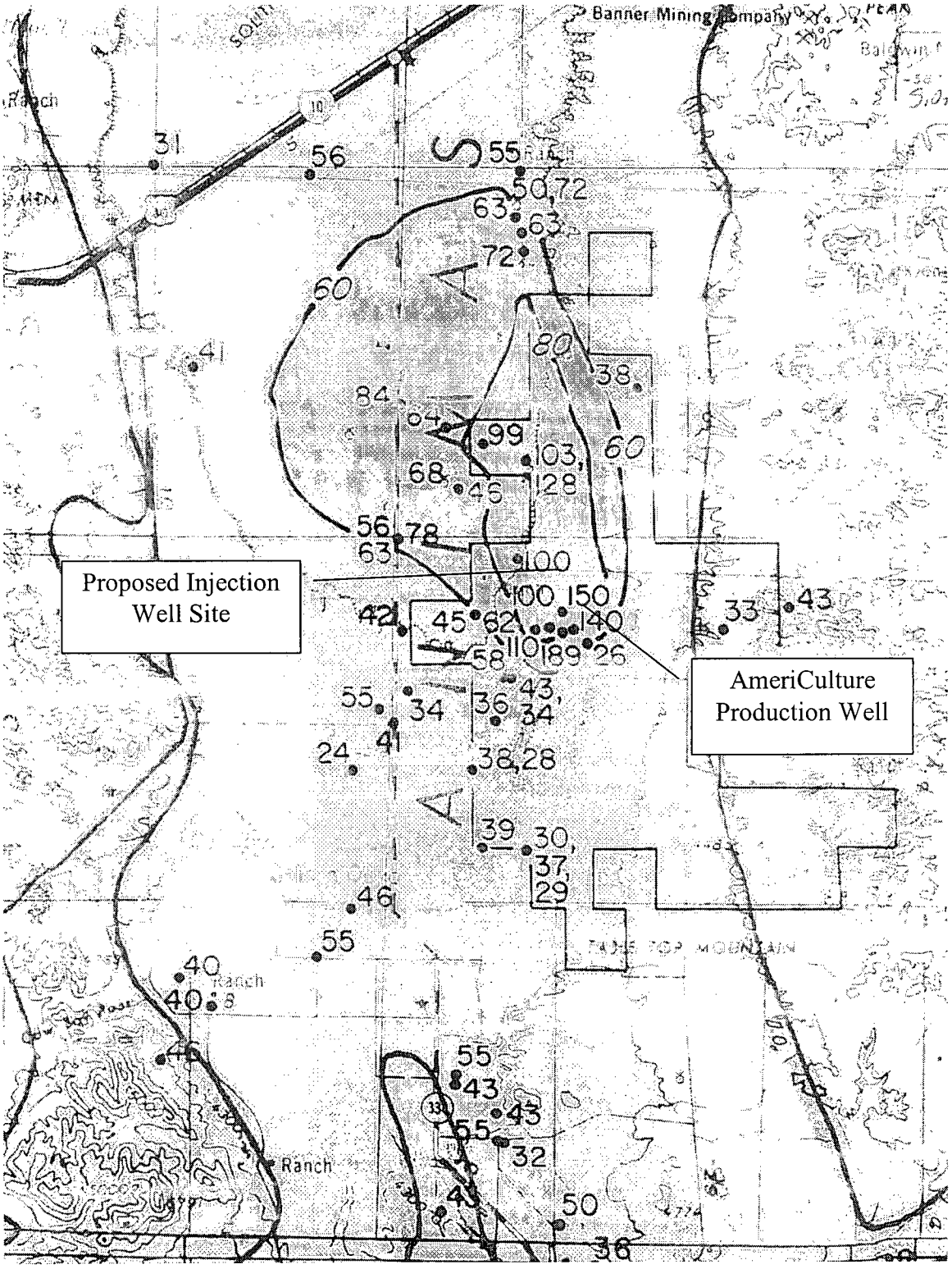


Figure 4. Regional SiO2 concentration map (O'brien and Stone, NM Bureau of Mines Open File Report 131).

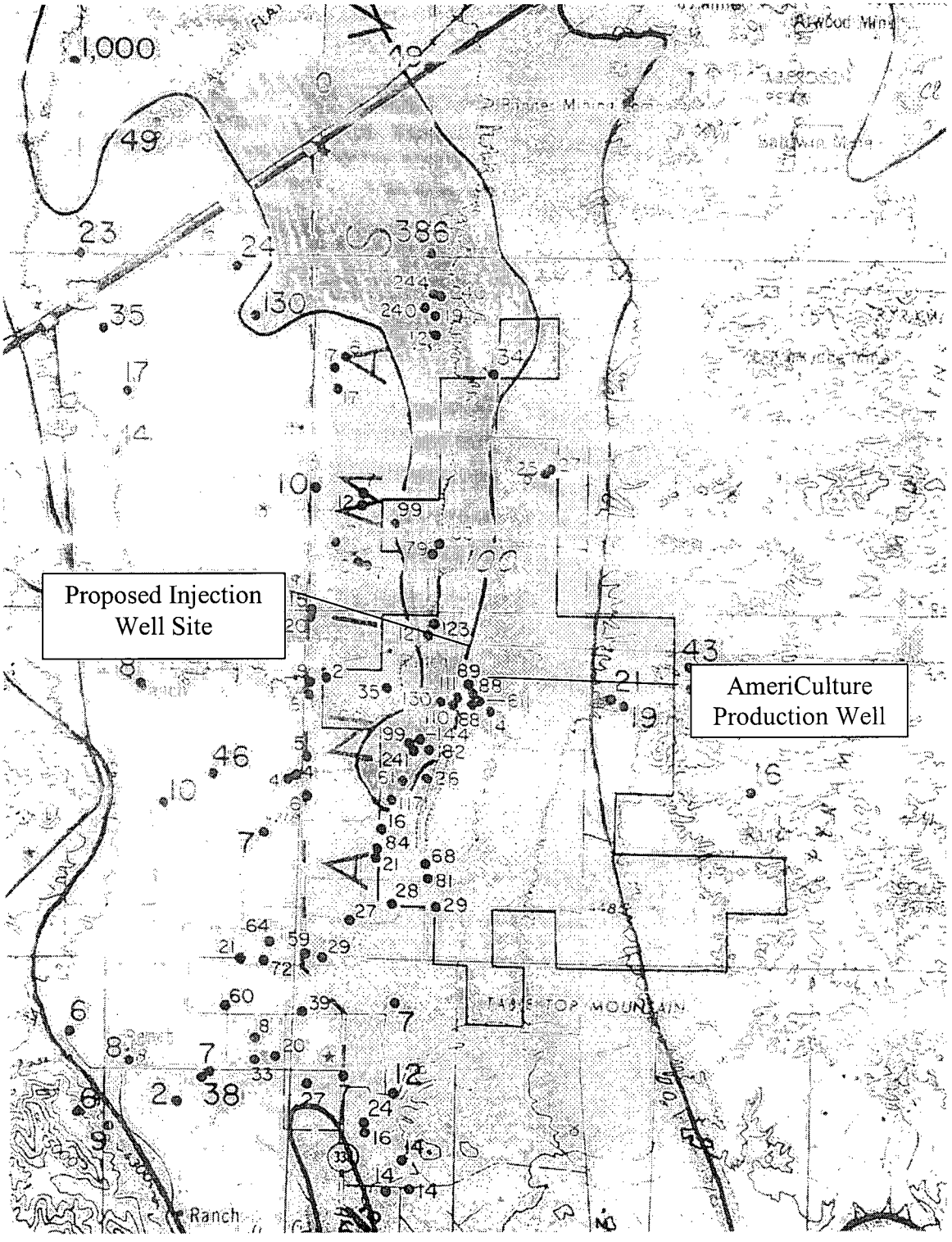


Figure 5. Regional chloride concentration map (O'brien and Stone, NM Bureau of Mines Open File Report 131).

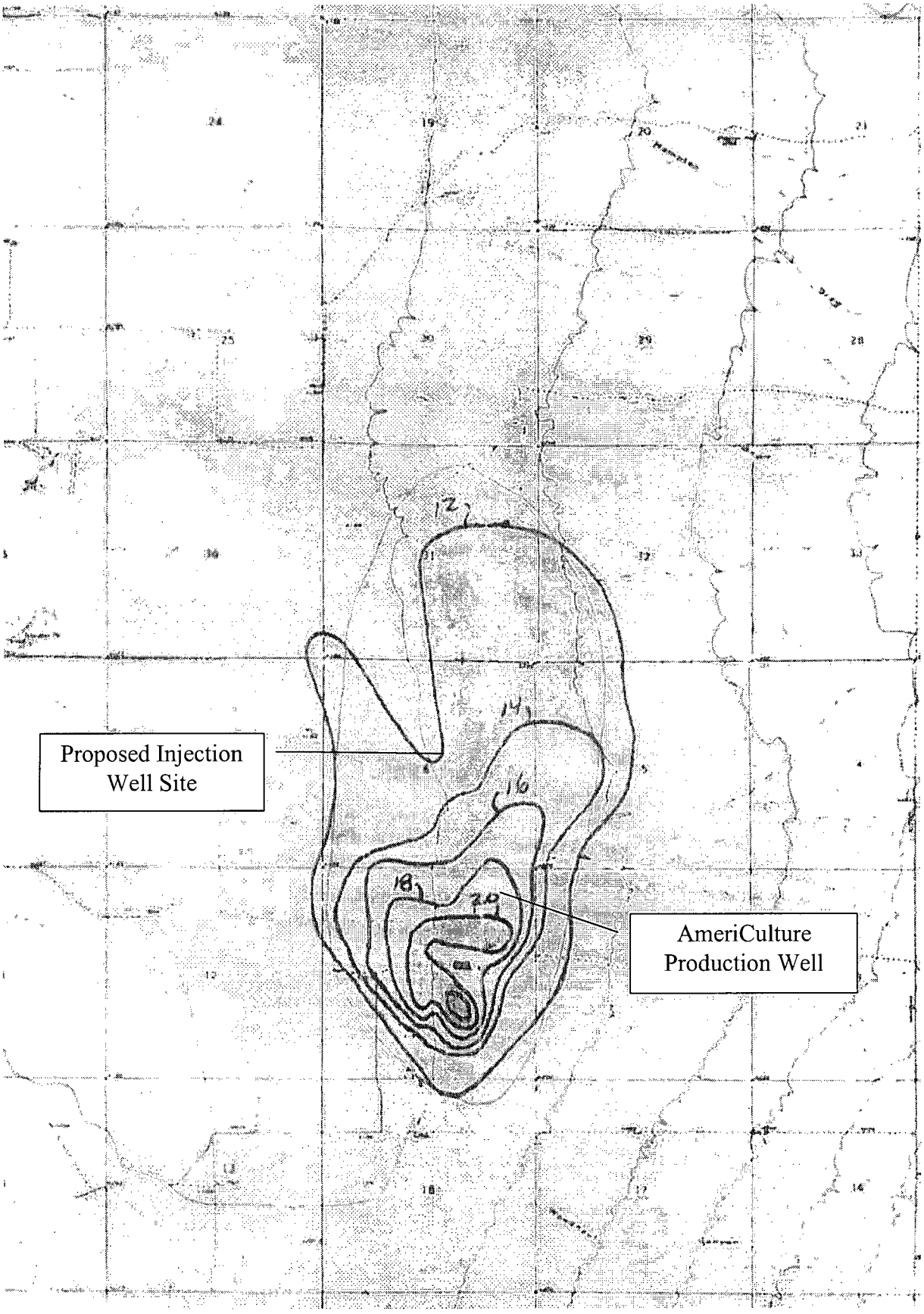


Figure 6. Regional ground temperature (°C) at 1 meter depth at the Lighting Dock Geothermal Anomaly.

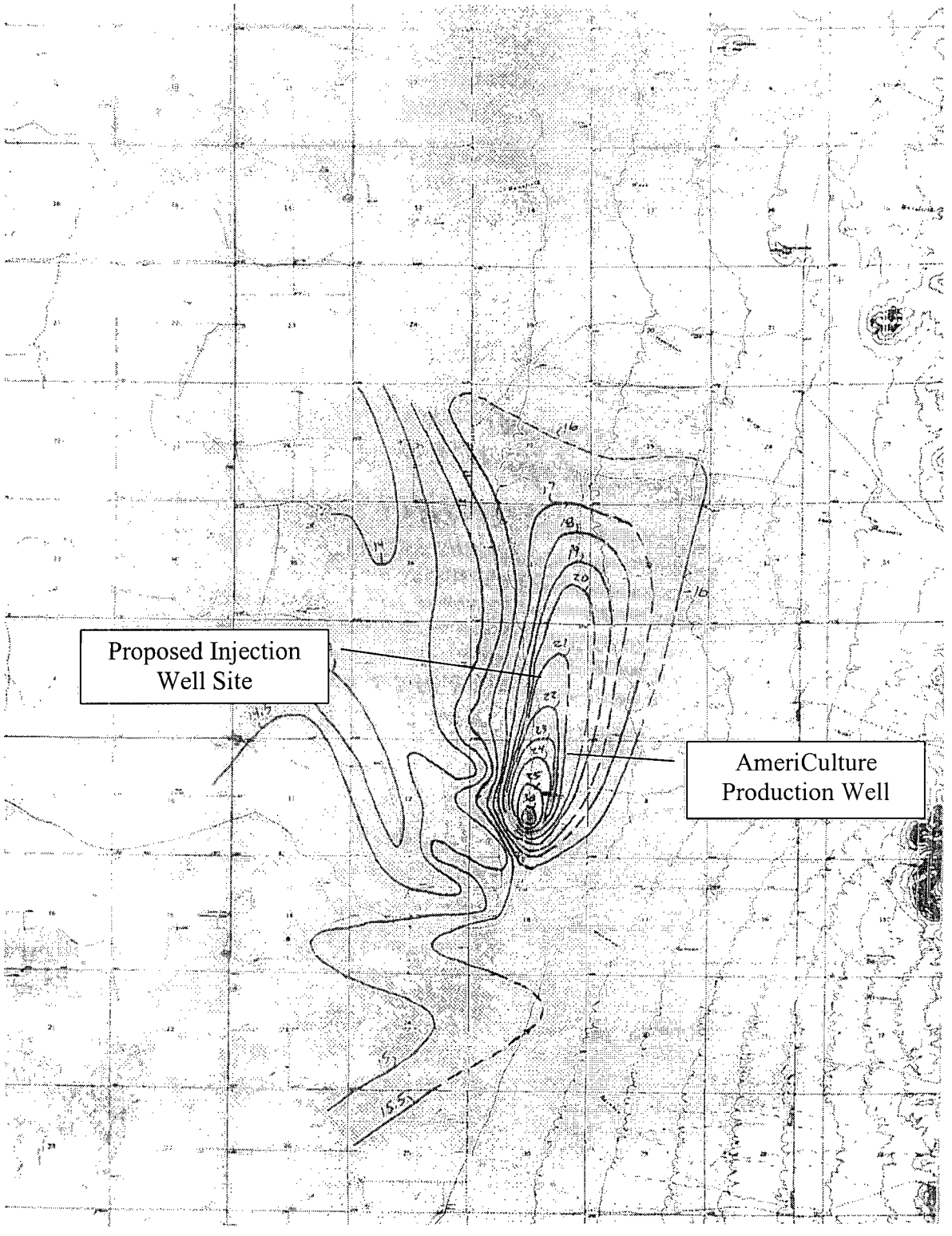


Figure 7. Regional ground temperature (°C) at 2 meter depth at the Lighting Dock Geothermal Anomaly.

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

June 12, 2002

TO: Distribution List

FROM: John H. Kersten
Acting Manager, Golden Field Office

SUBJECT: PRE-DECISIONAL DRAFT ENVIRONMENTAL ASSESSMENT
SMALL-SCALE GEOTHERMAL POWER PLANT AND DIRECT-USE GEOTHERMAL APPLICATION AT AMERICULTURE, INC., COTTON CITY, NM (DOE/EA 1396)

The subject pre-decisional draft environmental assessment (EA) is enclosed for your review. The Department of Energy, Golden Field Office has prepared this document in accordance with the National Environmental Policy Act (NEPA) and DOE's NEPA implementing regulations. DOE distributed a request for public and agency comments dated November 1, 2001, to approximately 25 federal, state, and local agencies, interested organizations, and individuals. DOE received two comments in response to this request. These comments have been incorporated into the draft EA.

Proposed Action

DOE's Proposed Action is to provide partial funding for two project components located within the Lightning Dock Known Geothermal Resource Area near Animas and Cotton City, NM, approximately 16 miles southwest of Lordsburg, NM. The Proposed Action would use an existing geothermal well (AmeriCulture State 1), which is currently used for heating AmeriCulture's fish hatchery operation. The first project component would involve the construction and operation of a small-scale (approximately one megawatt) geothermal power plant. The second project component would utilize either geothermal fluid directly from the existing well or geothermal fluid exhausted from the new power plant as the heating source for the hatchery. Spent fluid would be re-injected into the geothermal reservoir.

Request for Comments

Consistent with NEPA implementing guidelines, it is DOE's policy to integrate community and public concerns into its decision-making processes. Comments on this draft EA will be accepted for a period of 30 days. Please submit any comments by Friday, July 12, 2002, to:

Steve Blazek
NEPA Compliance Officer
DOE Golden Field Office
1617 Cole Boulevard
Golden, CO 80401-3393
(303) 275-4723 (303) 275- 4788 (fax) steve_blazek@nrel.gov

DOE will review and consider all comments prior to making any final decision. Thank you for your interest and participation in DOE's NEPA process.

Sincerely,

John H. Kersten
Acting Manager, Golden Field Office

Distribution:
Damon Seawright, AmeriCulture
Henry Mlcak, Exergy, Inc.
Mark Morolli, Exergy
Dale Burgett
Thomas W. McCants
Peter Maggiore, NMED
Micheal P. Jansky, EPA
Joseph Torrez, BLM
Rodger Anderson, NMOCD
Roy Johnson, NMOCD
Tim Gum, NMOCD
Mike Matush, NMSLO
Office of the State Engineer
Tommy Townsend, Phelps Dodge

ok

Form G-107
Adopted 10-1-74
Revised 10-1-78

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

GEOTHERMAL RESOURCES WELL HISTORY

Operator AmeriCulture, Inc. Address HC 65 Box 260C, Animas, NM 88020

Lease Name AmeriCulture, Inc. Well No.

Unit Letter B Sec. 7 Twp. 25S Rge 19W

Reservoir Lightning Dock County Hidalgo

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting, and initial production data and zone temperature. (Attach additional sheets if necessary.)

Date	
10/20/01 thru 10/23/01	Spudded well, using 20" bit. Drilled to 270' in alluvium; to 284 in Gila Conglomerate transitional unit; and to 292' in Gila Conglomerate using 20" bit using bentonite mud. Set 16" casing to 1 ft off bottom. Circulated cement (160? sacks) in annulus, and verified top of cement by circulation returns.
10/24/01 thru 10/30/01	Waited on cement set.
10/31/01 thru 11/13/01	Resumed drilling to 581' using 14-3/4" bit and air/foam as circulation fluid at 1,350 cfm and 350 psi. First major fracture confirmed by surface water returns at 293'. Very slow penetration rate to 370', moderate to 417', and fast to 581'. Major fractures at 370' and 393' with fault zone at 379' to 382'. Set 12-3/4" casing to 581'. Flow steady but not measured. Spot temperature measurements ranged from 195-210 F
11/14/01 thru 11/19/01	Cementing preparation and Halliburton mobilization
11/20/01	Casing spot cemented by Halliburton (30 sacks) approximately 100' between calculated depth of 481' and borehole TD of 581'.
11/21/01 thru 11/23/01	Waited on cement set.
11/24/01 thru 11/29/01	Drilling commenced on November 24, 2001 to 910' with bentonite mud and 11-7/8" bit through conglomerate/fill to 645', rhyolite to 860', and welded tuff to bottom. Lost circulation at 745' to 755', 785' to 805', and 830' to 860' requiring LCM. Borehole left full of heavy mud enriched with drispac to stabilize hole until drilling resumed in future, and to facilitate future logging efforts.

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position Vice President Date 2-05-02

ok

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

Form G-106
Adopted 10-1-74
Revised 10-1-78

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator AmeriCulture, Inc. Address HC 65 Box 260C, Animas, NM 88020

Lease Name AmeriCulture, Inc. Well No. A-601-EXPL

Unit Letter B Sec. 7 Twp. 25S Rge 19W

Reservoir Lightning Dock County Hidalgo

Commenced drilling October 20, 2001

Completed drilling November 29, 2001

Total depth 910' Plugged depth

Junk

Commenced producing (Date)

GEOLOGICAL MARKERS	DEPTH
Red Gila Conglomerate	284'
Grey Rhyolite	645'

Geologic age at total depth: unknown

Production Test Data

Date	Static test. Shut-in well head		Total Mass Flow Data					Separator Data			
	Temp. °F	Pres. Psig.	Lbs/Hr	Temp. °F	Pres. Psig.	Enthalpy	Orifice	Water cuft/Hr	Steam Lbs/Hr	Pres. Psig.	Temp. °F
11/13/01			500,000	205							

CASING RECORD (Present Hole)

Size of Hole	Size of Casing	Weight of Csg/ft.	Grade of Casing	New or Used	Seamless or Lapweld	Depth of Shoe	Top of Casing	Number of Sacks Cement	Top of Cement	Cement Top Determined By
20"	16"	82.8 lb.		new	lapweld	292'	1' AGL	160?	GL	Circulation
14-3/4"	12-3/4"	53.6 lb.		new	seamless	581'	1' AGL	30	481-581' spot	Volumetric est.

PERFORATED CASING

(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

Was analysis of effluent made? No Electrical log depths: N/A Temperature log depths: 0-910'

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position Vice President Date 2-05-02

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

Form G-105
Adopted 10-1-74
Revised 10-1-78

GEOTHERMAL RESOURCES WELL LOG

Operator AmeriCulture, Inc.
Address HC 65 Box 260C, Animas, NM 88020
Reservoir Lightning Dock
Lease Name AmeriCulture, Inc. Well No. A-601-EXPL Unit Letter B
Location: 825 feet from the east line and
319 feet from the north line Section 7
Township 25S Range 19W County Hidalgo

FORMATIONS PENETRATED BY WELL

DEPTH TO Top of Formation	DEPTH TO Bottom of Formation	Thickness	Drilled or Cored	Recovery	DESCRIPTION
0'	270'	270'	Drilled	cuttings	Tert.-Quat. Alluvium
270'	284'	14'	Drilled	cuttings	Tert. Gila Conglomerate transitional unit
284'	645'	361'	Drilled	cuttings	Tert. Gila Conglomerate. Very slow penetration rate to 370', moderate to 417', and fast to 581'. Numerous lost circulation zones
645'	860'	215'	Drilled	cuttings	Rhyolite; fast penetraton compared to conglomerate'; numerous lost circulation zones
860'	910'	50'	Drilled	cuttings	Welded tuff

Attach Additional Sheets if Necessary

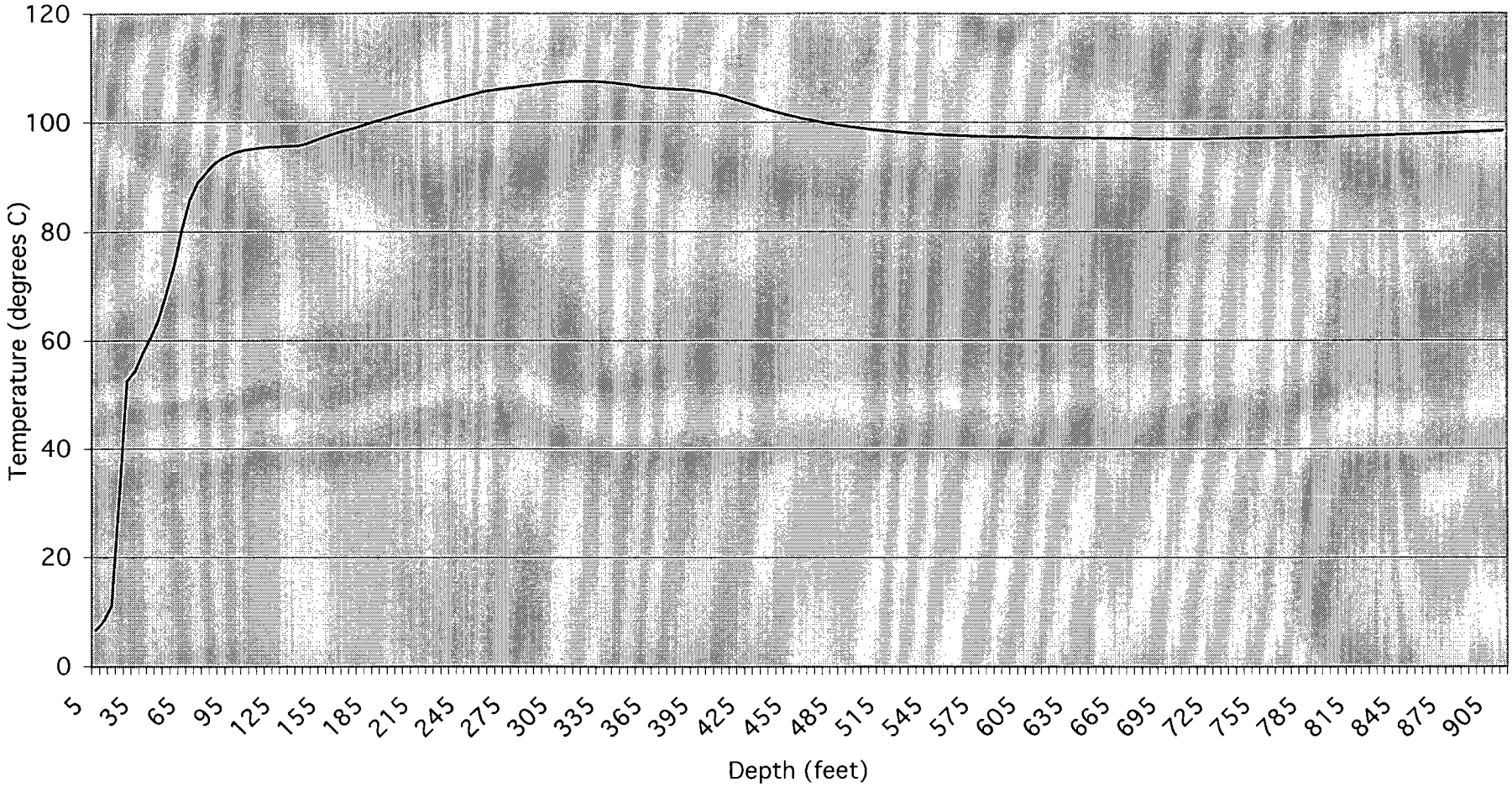
This form must be accompanied by copies of electric logs, directional surveys, physical or chemical logs, water analyses, tests, and temperature surveys (See Rule 205).

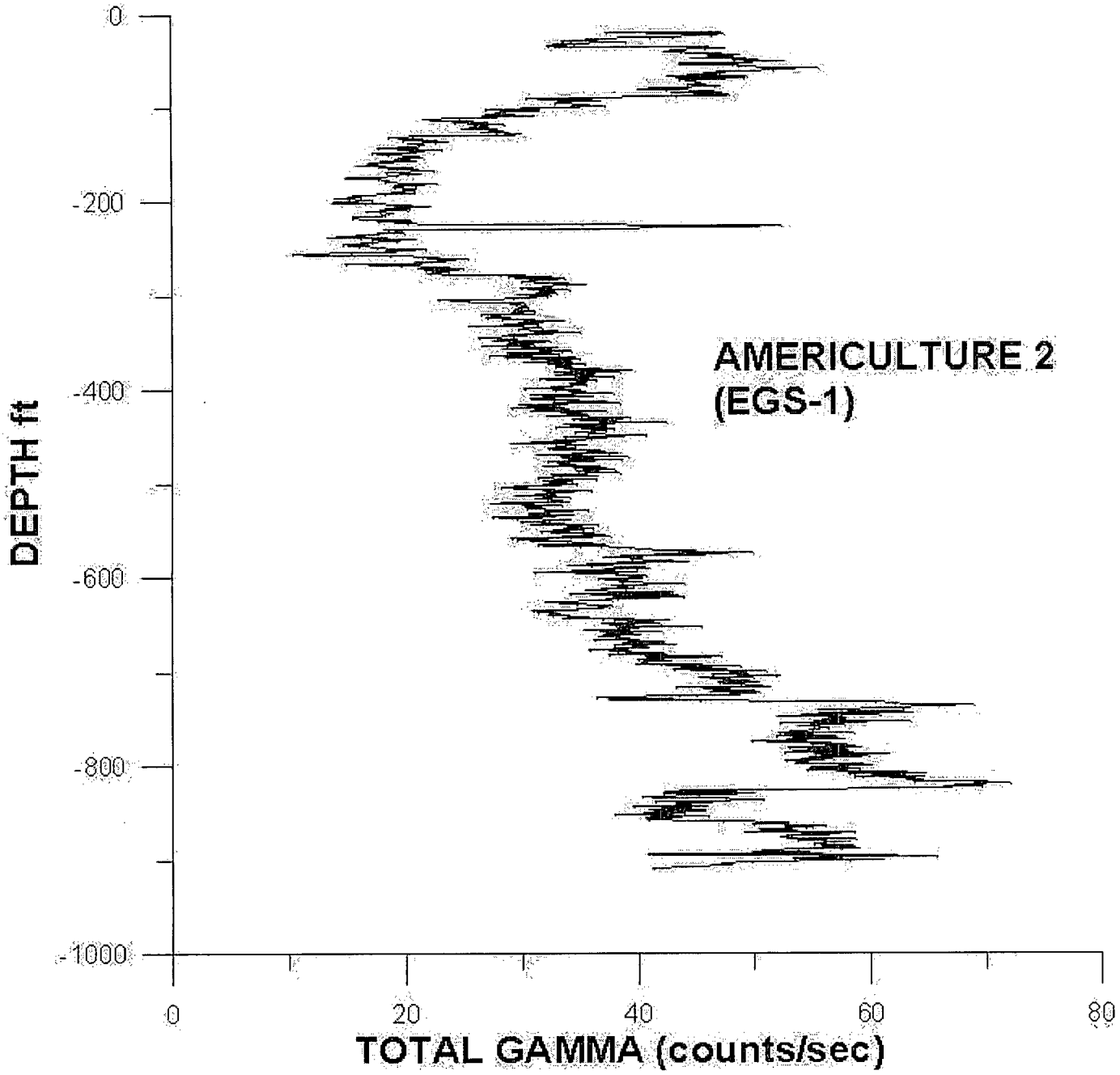
CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position Vice President Date February 5, 2002

Temperature Log for AmeriCulture A-601-EXPL




0
-200
-400
-600
-800
-1000
DEPTH ft
AMERICULTURE 2
(EGS-1)
0
20
40
60
80
TOTAL GAMMA (counts/sec)

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

Form C-104
Adopted 10-1-74
Revised 10-1-78

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES

OWNER OR OPERATOR
Name AmeriCulture, Inc.
Address HC 65 Box 260C, Animas, NM 88020

TYPE OF WELL
Geothermal Producer [ ] Low-Temperature Thermal [X] Injection/Disposal [ ]

REASON FOR FILING
New Well [X] Recompletion [ ]
Change in Ownership [ ] Designation of Purchaser [ ]
Other (Please Explain) [ ]

10

DESCRIPTION OF WELL
Lease Name AmeriCulture, Inc. Well No. A-601-EXPL Name of Reservoir Lightning Dock
Kind of Lease (Fee, Fed. or State) State Lease Number GTR-304-1

LOCATION
Unit Letter B ; 825 feet from the east line and
319 feet from the north line of
Section 7 Township 25S Range 19W
County Hidalgo

TYPE OF PRODUCT
Dry Steam Steam and Water Low Temp. Thermal Water X

DESIGNATION OF PURCHASER OF PRODUCT
Name of Purchaser
Address of Purchaser
Product Will Be Used For

CERTIFICATE OF COMPLIANCE
I hereby certify that all rules and regulations concerning geothermal resources wells in the State of New Mexico, as promulgated by the Oil Conservation Division of New Mexico, have been complied with, with respect to the subject well, and that the information given above is true and complete to the best of my knowledge and belief.

Signed [signature] Position Vice President Date 2/05/02

Approved [signature] Position DISTRICT SUPERVISOR Date 3/22/02

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P O BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1-74
Revised 10-1-78

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Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State [X] Fee [ ]

5.a State Lease No.: GTR-304-1

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit —" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer [ ] Temp. Observation [ ] Low-Temp Thermal [X] Injection/Disposal [ ]

7. Unit Agreement Name:

2. Name of Operator: AmeriCulture, Inc.

8. Farm or Lease Name: AmeriCulture

3. Address of Operator: HC 65 Box 260C, Animas, NM 88020

9. Well No.: ~~A-601~~ 304-EXPL

4. Location of Well: Unit Letter B, 319 Feet From The north Line and 825 Feet From The east Line, Section 7 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Lightning Dock

15. Elevation (Show whether DF, RT, GR, etc.): 4265' RT

12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK [ ]	PLUG AND ABANDON [ ]	REMEDIAL WORK [ ]	ALTERING CASING
TEMPORARILY ABANDON [ ]		COMMENCE DRILLING OPNS. [X]	PLUG & ABANDONMENT
PULL OR ALTER CASING [ ]	CHANGE PLANS [ ]	CASING TEST AND CEMENT JOB [X]	
OTHER [ ]		OTHER	

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting any proposed work) SEE RULE 203.

Well spudded on October 20, 2001. Drilled to 270' in alluvium; to 284 in Gila Conglomerate transitional unit; and to 292' in Gila Conglomerate using 20" bit using bentonite mud. Set 16" casing to 1 ft off bottom. Circulated cement in annulus, and verified top of cement by circulation returns. Resumed drilling on October 31, 2001 to 581' using 14-3/4" bit and air/foam as circulation fluid. First major fracture confirmed by surface water returns at 293'. Very slow penetration rate to 370', moderate to 417', and fast to 581'. Major fractures at 370' and 393' with fault zone at 379' to 382'. Set 12-3/4" casing to 581'. On November 20, 2001 casing spot cemented approximately 100' by Halliburton to isolate shallow reservoir. Drilling commenced on November 24, 2001 to 910' with bentonite mud and 11-7/8" bit through conglomerate/fill to 645', rhyolite to 860', and welded tuff to bottom. Lost circulation at 745' to 755', 785' to 805', and 830' to 860' requiring LCM. Borehole left full of 50 viscosity mud enriched with drispac to preserve formation and stabilize hole for future entrance, and to facilitate future logging efforts.

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

SIGNED [signature] TITLE Vice President DATE February 5, 2002

APPROVED BY [signature] TITLE DISTRICT SUPERVISOR DATE 5/22/02

3-15-02

Dear Roy,

Thanks for your time a few weeks ago. Jim is working on the location plat with well construction for all the regional wells. Hope all is well ~~with~~ with you.

Damon S.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL

SA

SUN

GEO

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Land Office		

Do Not Use This Form for Proposals to Drill or to Deepen or For Permit – " (Form C-101) for Such Proposals.)

1. Type of well: Geothermal Producer ☐ Temp
Low-Temp Thermal ☒ Inject

2. Name of Operator: **AmeriCulture, Inc.**

3. Address of Operator: **HC 65 Box 260C Ani**

4. Location of Well
Unit Letter **B, 319** Feet From

The **East** Line, Section **7** To

15. Elevatio

16. Check Appropriate Box

NOTICE OF INTENTION TO:

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

OTHER

Form C-103
Adopted 10-
Revised 10-

Lease
Fee

Name

me
ire

-601-EXPL
-A-S-2 304

r Wildcat
ock

CASING
ANDONME

17. Describe Proposed or completed Operations *(Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting a proposed work)* SEE RULE 203.

304

Drilling on well ~~A-601-EXPL~~ (to be renumbered A-45-A-S-2) was terminated November 29, 2001 at a total depth of 910' and left full of a 50 viscosity mud enriched with drispac to stabilize the hole for future drilling and facilitate future logging efforts. AmeriCulture may or may not choose not to resume drilling. In either case AmeriCulture desires to pump geothermal fluids from said geothermal well for its operational requirements. Any disposal of spent geothermal fluids will be done according to the terms specified in our recently renewed discharge permit from New Mexico ENMRD or future terms approved of by ENMRD, and as allowed under the pertinent stipulations placed upon AmeriCulture by the New Mexico Office of the State Engineer regarding the quantity, place, and purpose of use of water rights of AmeriCulture. Although some surface discharge is possible, as outlined under our current discharge permit, AmeriCulture intends to use reinjection, whenever practicable, in deference to geothermal resource conservation. AmeriCulture is applying to the New Mexico Office of the State Engineer to permit well A-601-EXPL (to be renamed A-45-A-S-2) as a supplemental well. Such designation would serve to include said well to the group of fresh and geothermal wells from which AmeriCulture is permitted to produce annually water up to its current water rights holdings (1,567.8 acre feet). Approval of this sundry notice will evidence, to the State Engineer, that the OCD approves of directly producing geothermal fluids from well A-601-EXPL according to the terms stated herein.

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

SIGNED _____ TITLE Vice-President DATE March 15, 200

APPROVED BY _____ TITLE DISTRICT SUPERVISOR DATE 5/22/02

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

Form G-103
Adopted 10-1
Revised 10-1

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Operator		
Land Office		

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease: State [X] Fee [ ]

5.a State Lease No.: GTR-304-1

Do Not Use This Form for Proposals to Drill or to Deepen or Plug Back to a Different Reservoir. Use "Application For Permit –" (Form G-101) for Such Proposals.)

1. Type of well: Geothermal Producer [ ] Temp. Observation [ ] Low-Temp Thermal [X] Injection/Disposal [ ]

7. Unit Agreement Name:

2. Name of Operator: AmeriCulture, Inc.

8. Farm or Lease Name: AmeriCulture

3. Address of Operator: HC 65 Box 260C Animas, NM 88020

9. Well No.: ~~A-601-EXPL~~ renumbered ~~A-45-A-S-2~~ 304

4. Location of Well: Unit Letter B, 319 Feet From The North Line and 825 Feet From The East Line, Section 7 Township 25S Range 19W NMPM.

10. Field and Pool, or Wildcat: Lightning Dock

15. Elevation (Show whether DF, RT, GR, etc.): 4256' RT

12. County: Hidalgo

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
PERFORM REMEDIAL WORK	[ ]	PLUG AND ABANDON	[ ]	REMEDIAL WORK	[ ]	ALTERING CASING	
TEMPORARILY ABANDON	[ ]			COMMENCE DRILLING OPNS.	[ ]	PLUG & ABANDONME	
PULL OR ALTER CASING	[ ]	CHANGE PLANS	[X]	CASING TEST AND CEMENT JOB	[ ]		
OTHER	[ ]			OTHER			

17. Describe Proposed or completed Operations (Clearly state all pertinent details, and give pertinenet dates, including estimated date of starting a proposed work) SEE RULE 203.

304

Drilling on well ~~A-601-EXPL~~ (to be renumbered A-45-A-S-2) was terminated November 29, 2001 at a total depth of 910' and left full of a 50 viscosity mud enriched with drispac to stabilize the hole for future drilling and facilitate future logging efforts. AmeriCulture may or may not choose not to resume drilling. In either case AmeriCulture desires to pump geothermal fluids from said geothermal well for its operational requirements. Any disposal of spent geothermal fluids will be done according to the terms specified in our recently renewed discharge permit from New Mexico ENMRD or future terms approved of by ENMRD, and as allowed under the pertinent stipulations placed upon AmeriCulture by the New Mexico Office of the State Engineer regarding the quantity, place, and purpose of use of water rights of AmeriCulture. Although some surface discharge is possible, as outlined under our current discharge permit, AmeriCulture intends to use reinjection, whenever practicable, in deference to geothermal resource conservation. AmeriCulture is applying to the New Mexico Office of the State Engineer to permit well A-601-EXPL (to be renamed A-45-A-S-2) as a supplemental well. Such designation would serve to include said well to the group of fresh and geothermal wells from which AmeriCulture is permitted to produce annually water up to its current water rights holdings (1,567.8 acre feet). Approval of this sundry notice will evidence, to the State Engineer, that the OCD approves of directly producing geothermal fluids from well A-601-EXPL according to the terms stated herein.

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

SIGNED _____ TITLE Vice-President DATE March 15, 200

APPROVED BY _____ TITLE DISTRICT SUPERVISOR DATE 5/22/02

Well File

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

September 22, 2001

Mr. Gary Seawright
AmeriCulture, Inc.
190 Central Park Square
Los Alamos, NM 87544

Re: $3,000 Single Well Geothermal Cash Bond
AmeriCulture, Inc., Principal
Los Alamos National Bank, Depository – Acct No. 0075777230
319' FNL and 825' FEL of Section 7,
Township 25 South, Range 19 West,
Hidalgo County, New Mexico
Bond No. OCD-704

Dear Mr. Seawright:

The New Mexico Oil Conservation Division hereby approves the above-captioned Single-Well Geothermal cash bond.

Sincerely,

David K. Brooks

DAVID K. BROOKS
Assistant General Counsel

DKB/dp

cc: Oil Conservation Division – Santa Fe

Los Alamos National Bank
1200 Trinity Drive
Los Alamos, NM 87544

548.2631
Fax #

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div
2040 Pacheco St.
Santa Fe, NM 87505

Form G-101
Adopted 10-1-74
Revised 10-1-78

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APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE [X] FEE [ ]

5.a State Lease No.: GTR-304-1

1a. Type of Work: Drill [X] Deepen [ ] Plug Back [ ]

7. Unit Agreement Name:

b. Type of Well: Geothermal Producer [ ] Temp Observation [ ] Low-Temp Thermal [X] Injection/Disposal [ ]

8. Farm or Lease Name: AmeriCulture

2. Name of Operator: AmeriCulture, Inc.

9. Well No.:

3. Address of Operator: HC 65 Box 260C, Animas, NM 88020

10. Field and Pool, or Wildcat: Lightning Dock

4. Location of Well: UNIT LETTER B LOCATED 319 FEET FROM THE north LINE AND 825 FEET FROM THE east LINE OF SEC. 7 TWP. 25S RGE. 19W NMPM

12. County: Hidalgo

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
1,500	Horquilla Formation?	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4265' RT	Int. Single well	Jim McBee	8 Octobert 2001

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
20"	16"	83	278+/-	328	Circ.
15"	12-3/4"	54	600+/-	30 (spot cement)	
12"	Open hole		1500+/-		

Drill a 20-inch hole (using drilling mud) to rhyolite at 278+/- ft. Case with 16-in casing; cement the annulus to the surface. Drill ahead in the rhyolite at a 15-in hole size using air. After passing out of the rhyolite at about 375 feet and into the underlying sediments (mainly limestone and shale), drill ahead to 600 feet, still using air as the circulating fluid. Run a 600-ft string of 12-3/4-in, 54 lb/ft. Spot cement the bottom 80 ft of the 12-3/4-in casing. Change back to drilling mud as the circulating fluid; drill out the cement inside the casing and pressure-test the cement job and conduct a cement bond log. Drill a 12-in hole to 1500+/- ft, obtaining 3 or 4 spot cores (30-ft long, NX size). Circulate out the drilling mud and replace with water. Clean out borehole with air. Run temperature and geophysical logs.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

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

Signed: [signature] Title: Vice President Date: September 20, 2001

(This space for State Use)

APPROVED BY: [signature] TITLE: DISTRICT SUPERVISOR DATE: 9/24/2001

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

Form G-102
Adopted 10-1-74
Revised 10-1-78

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
AmeriCulture, Inc.	GTR-304-1	

Unit Letter	Section	Township	Range	County
B	7	25S	19W	Hidalgo

Actual Footage Location of Well:
825 feet from the east line and 319 feet from the north line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4265' RT	Horquilla Formation ?	Lightning Dock	10 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

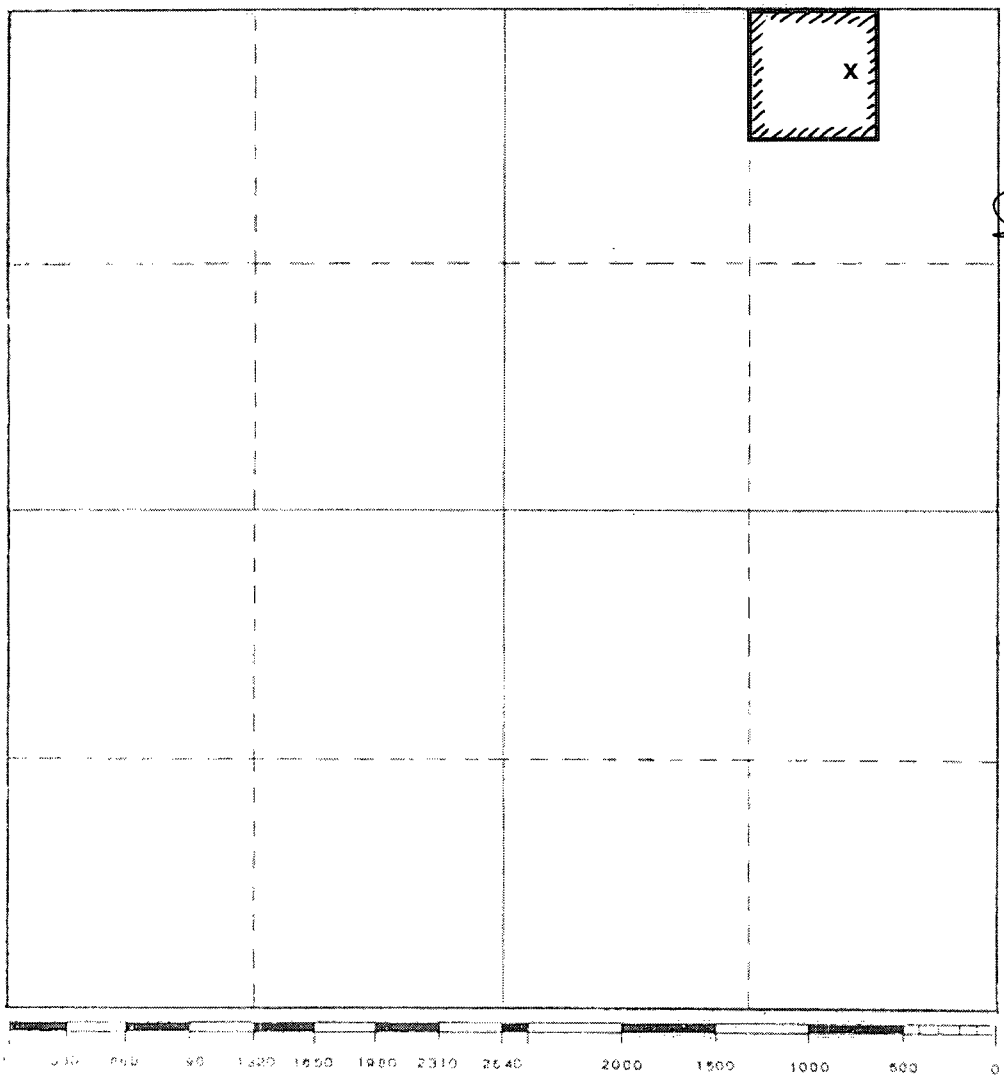
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownersip is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

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

Name: Damon E. Seawright

Position: Vice-President

Company: AmeriCulture, Inc.

Date: September 20, 2001

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

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div
2040 Pacheco St.
Santa Fe, NM 87505

Form G-101
Adopted 10-1-74
Revised 10-1-78

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Operator		
Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK--GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE [X] FEE [ ]

5.a State Lease No.: GTR-304-1

1a. Type of Work: Drill [X] Deepen [ ] Plug Back [ ]

7. Unit Agreement Name:

b. Type of Well: Geothermal Producer [ ] Temp Observation [ ]
Low-Temp Thermal [X] Injection/Disposal [ ]

8. Farm or Lease Name: AmeriCulture

2. Name of Operator: AmeriCulture, Inc.

9. Well No.:

3. Address of Operator: HC 65 Box 260C, Animas, NM 88020

10. Field and Pool, or Wildcat: Lightning Dock

4. Location of Well: UNIT LETTER ~~B~~ A LOCATED 319 FEET FROM THE north LINE
AND 825 FEET FROM THE east LINE OF SEC. 7 TWP. 25S RGE. 19W NMPM

12. County: Hidalgo

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
1,500	Horquilla Formation?	Rotary

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4265' RT	Int. Single well	Jim McBee	8 Octobert 2001

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
20"	16"	83	278+/-	328	Circ.
15"	12-3/4"	54	600+/-	30 (spot cement)	
12"	Open hole		1500+/-		

Drill a 20-inch hole (using drilling mud) to rhyolite at 278+/- ft. Case with 16-in casing; cement the annulus to the surface. Drill ahead in the rhyolite at a 15-in hole size using air. After passing out of the rhyolite at about 375 feet and into the underlying sediments (mainly limestone and shale), drill ahead to 600 feet, still using air as the circulating fluid. Run a 600-ft string of 12-3/4-in, 54 lb/ft. Spot cement the bottom 80 ft of the 12-3/4-in casing. Change back to drilling mud as the circulating fluid; drill out the cement inside the casing and pressure-test the cement job and conduct a cement bond log. Drill a 12-in hole to 1500+/- ft, obtaining 3 or 4 spot cores (30-ft long, NX size). Circulate out the drilling mud and replace with water. Clean out borehole with air. Run temperature and geophysical logs.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

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

Signed _____ Title Vice President Date September 20, 2001

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

Form G-102
Adopted 10-1-74
Revised 10-1-78

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
AmeriCulture, Inc.	GTR-304-1	

Unit Letter	Section	Township	Range	County
B	7	25S	19W	Hidalgo

Actual Footage Location of Well:
825 feet from the east line and 319 feet from the north line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4265' RT	Horquilla Formation ?	Lightning Dock	10 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

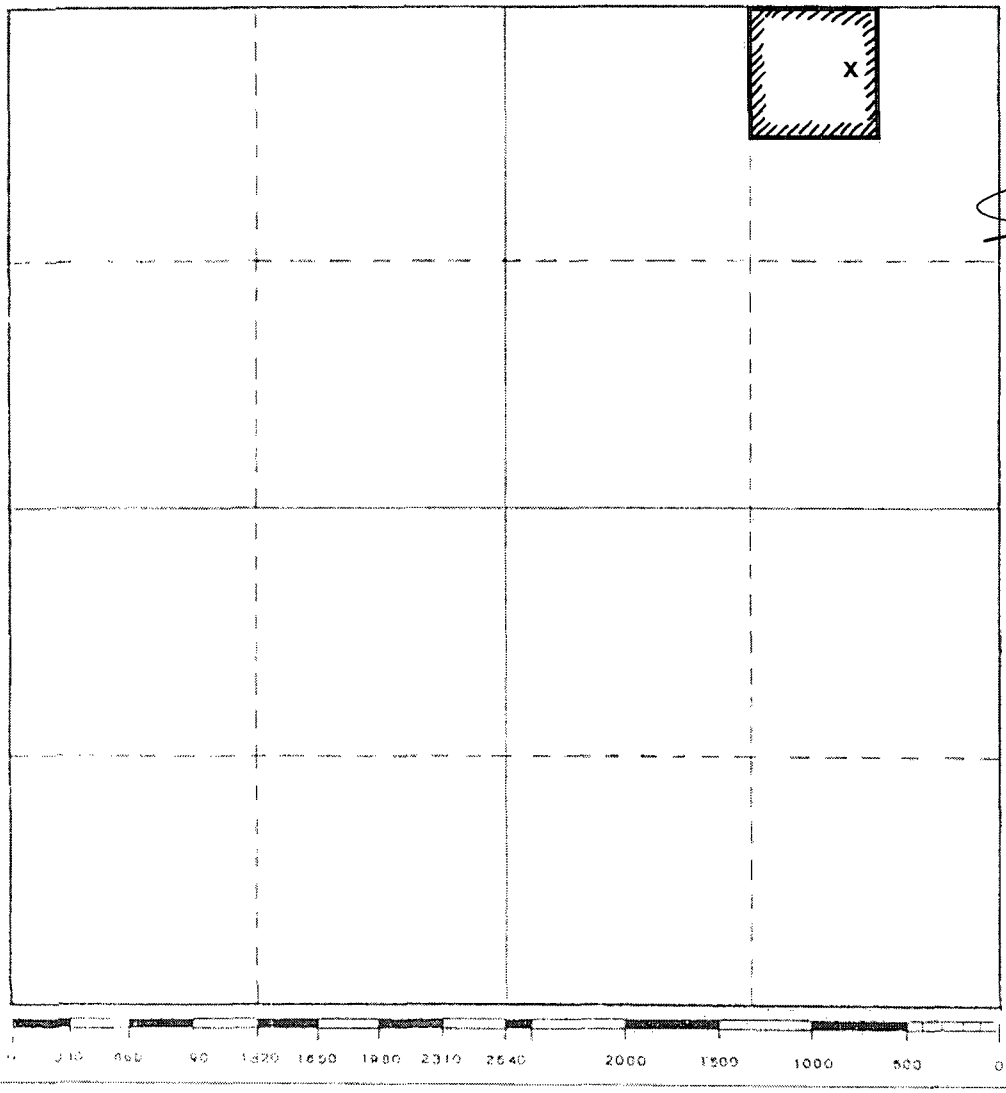
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownersip is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

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

Name: Damon E. Seawright

Position: Vice-President

Company: AmeriCulture, Inc.

Date: September 20, 2001

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

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div
2040 Pacheco St.
Santa Fe, NM 87505

Form G-101
Adopted 10-1-74
Revised 10-1-78

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U.S.G.S.		
Operator		
Land Office		

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK---GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease: STATE ☒ FEE ☐

5.a State Lease No.: GTR-304-1

1a. Type of Work: Drill ☒ Deepen ☐ Plug Back ☐

b. Type of Well: Geothermal Producer ☐ Low-Temp Thermal ☒ Temp Observation ☐ Injection/Disposal ☐

7. Unit Agreement Name:

8. Farm or Lease Name:

2. Name of Operator: AMERICULTURE, INC. GARY L. SEAWRIGHT, PRESIDENT

9. Well No.: SEA-1

3. Address of Operator: 536 PALE PLACE, LOS ALAMOS, NM 87544

10. Field and Pool, or Wildcat: LIGHTNING DOCK

4. Location of Well: UNIT LETTER A LOCATED 990 FEET FROM THE EAST LINE AND 630 FEET FROM THE NORTH LINE OF SEC. 7 TWP. 25 S RGE. 19 W NMPM

12. County: HIDALGO

19. Proposed Depth	19A. Formation	20. Rotary or C.T.
490'	VALLEY FILL	ROTARY

21. Elevations (Show whether DF, RT, etc.)	21A. Kind & Status Plug. Bond	21B. Drilling Contractor	22. Approx. Date Work will start
4250' MSL		ELBROCK WATER SYSTEMS	MAY 1, 1996

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP
12 3/4	10 3/4	32.75	100	150	CIRC

HOLE WILL BE DRILLED IN VALLEY FILL UNTIL RHYOLITE ROCK IS ENCOUNTERED. DEPTH AT THAT POINT COULD BE 100 FEET; IF SO, WELL WILL BE CASED 10 FEET INTO RHYOLITE, AND THEN COMPLETED AS OPEN HOLE TO TD. DEPTH TO RHYOLITE COULD BE 300'±.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. Give blowout preventer program, if any.

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

Signed Gary L. Seawright Title PRESIDENT Date 22 APRIL 1996

(This space for State Use)

APPROVED BY Roy E. Johnson TITLE DISTRICT SUPERVISOR DATE May 29, 1996

CONDITIONS OF APPROVAL, IF ANY:

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Oil Conservation Div.
2040 Pacheco St.
Santa Fe, NM 87505

Form G-102
Adopted 10-1-74
Revised 10-1-78

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.
AMERICULTURE, INC.	STATE LEASE GTR-304-1	SOA-1

Unit Letter	Section	Township	Range	County
A	7	25S	19W	HIDALGO

Actual Footage Location of Well:
990 feet from the EAST line and 630 feet from the NORTH line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
4250	ANIMAS VALLEY FILL	LIGHTNING DOCK	10 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

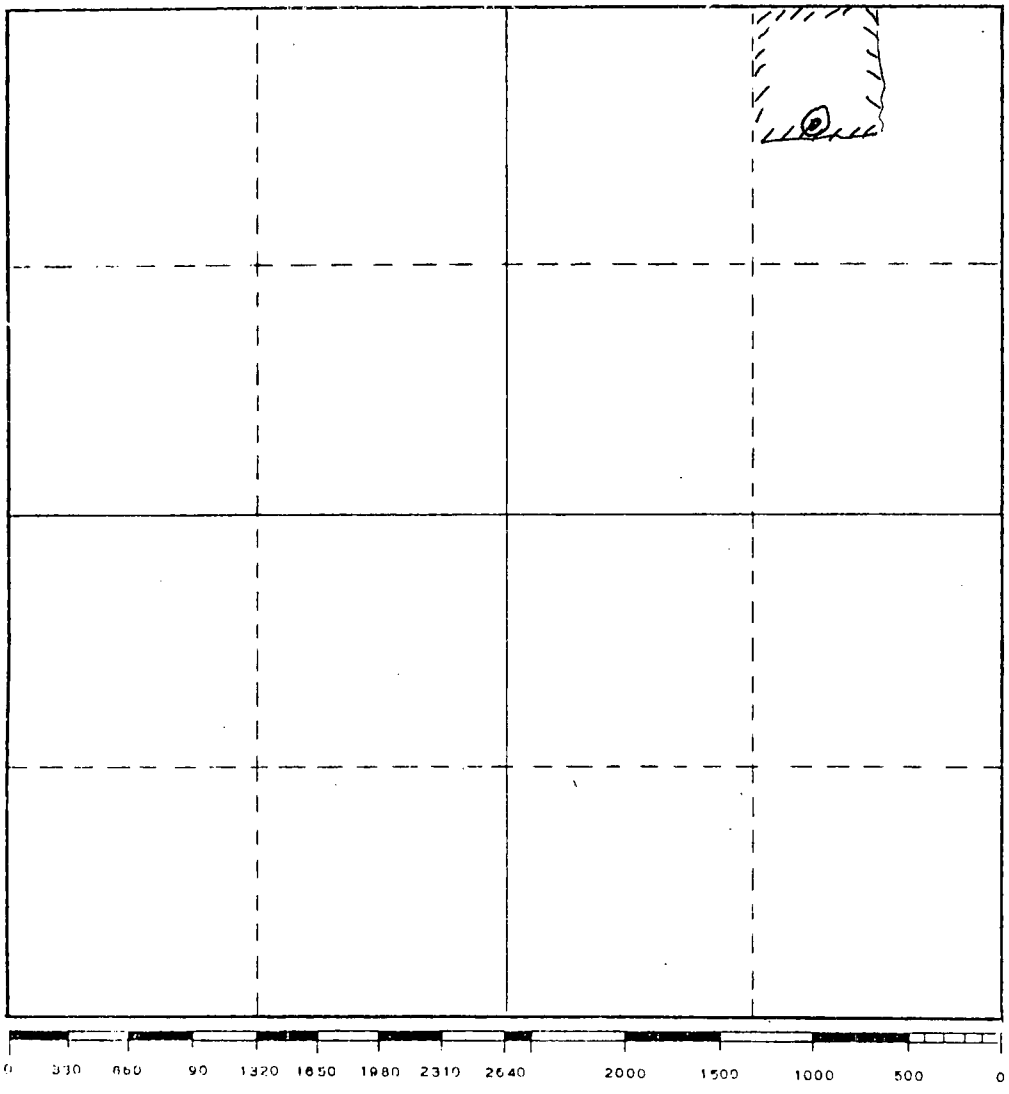
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownersip is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling, etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Division.



CERTIFICATION

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

Name: GARY L. SEAWRIGHT

Position: PRESIDENT

Company: AMERICULTURE INC

Date: 22 APRIL 1996

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

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

May 29, 1996

AmeriCulture, Inc.
536 Paul Place
Los Alamos, NM 87544

Attention: Gary Seawright

Re: $2,000 Geothermal Cash Bond
AmeriCulture, Inc., Operator
Los Alamos National Bank, Depository
630' FNL and 990' FEL of Sec. 7,
T-25-S, R-19-W, Hidalgo County
Bond No. OCD-576

Dear Mr. Seawright:

The Oil Conservation Division hereby approves the above-referenced geothermal bond effective this date.

Sincerely,

WILLIAM J. LEMAY,
Director

dr/

cc: Oil Conservation Division
Roy Johnson - Santa Fe