UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

May 21, 2013

Kevin Cunningham
Facility Manager
Northern California Power Agency
P.O. 1478
Lodi, CA 95241-1478

Re: Underground Injection Control Class I Nonhazardous Permit No. CA10910003
Minor Permit Modification No. 2
Lodi, CA

Dear Mr. Cunningham:

Enclosed is a Minor Modification (No. 2) to Permit No. CA10910003, issued to Northern California Power Agency (NCPA) for operation of its Class I-NH injection wells. This minor permit modification is issued in accordance with the UIC regulations at 40 CFR §144.41. The permit modification is effective immediately.

This minor modification addresses revised requirements regarding demonstration of financial responsibility, and includes updated schematics for injection wells STIG-1 and LEC-1. In addition, minor clarifications are incorporated as follows: Cement Evaluation Analysis, Tubing/Casing Annulus Requirements, report submittal procedures, and a few minor spelling and/or reference citations.

If you have any questions regarding the permit conditions, please contact Michele Dermer at (415) 972-3417, email: dermer.michele@epa.gov, or David Albright at (415) 972-3971, email: albright.david@epa.gov.

Sincerely,

John Kemmerer,
Acting Director, Water Division

Enclosure: Minor Modification

cc w/enc: Mike Woods, Californian Division of Oil, Gas and Geothermal Resources
Anne Olson, Central Valley Regional Water Quality Control Board
Joe Bittner, NCPA
Vinnie Venethongkham, NCPA

MINOR MODIFICATION NO. 2 TO PERMIT NO. CA10910003
ISSUED TO NORTHERN CALIFORNIA POWER AGENCY

In accordance with 40 CFR §144.41, it is understood and agreed that this permit is hereby modified to provide several clarifications, based on communications with Northern California Power Agency (NCPA).

Portions of pages 6, 13, 14, 17, 22, 24, and Appendix B of the permit are revised to incorporate the above changes and now read as follows (for clarity, changes are shown with removals struck out and with new additions **emboldened and underlined**):

Page 6

...

2. Testing during Drilling and Construction

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Before surface, intermediate, and long string casings are set, dual induction/spontaneous potential/gamma ray/caliper (DIL/SP/GR/CAL) logs will be run over the course of the entire open hole sequence after the well is drilled to each respective terminal depth. After each casing is set and cementing is completed, ~~a spherically focused~~ cement bond evaluation ~~log (CBL)~~ will be ~~run~~ **conducted** over the course of the entire cased hole sequence (See Section D.2(a)(iv) of this part). **This cement bond evaluation shall enable the analysis of bond between cement and casing as well as between cement and formation, and shall allow detection and assessment of any micro-annulus between the casing and cement as well as any cement channeling in the borehole annulus.**

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...

(ii) The Permittee will be required to submit a letter to EPA confirming that the "Hazardous Waste Determination" was carried out according to 40 CFR §262.11 within sixty (60) days of its having been completed.

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(iv) Cement Evaluation Analysis

After casing is installed, after conducting a cement squeeze job in an open hole, or after any well cement repair, for any well constructed under this permit, the Permittee shall submit cementing records and cement evaluation logs that demonstrate the isolation of the injection interval and other formations from underground sources of drinking water by means of cementing the surface casing and the long string casing well bore annuli to surface. ~~The a~~**A**nalysis shall include ~~a spherically focused~~ **cement evaluation**~~tool,~~ run after the long-string casing is set and cemented~~, which enables the evaluation of the bond between cement and casing as well as of the bond between cement and formation~~. **Acceptable cement evaluation must assess the following four objectives:**

1) **Bond between casing and cement;**
2) **Bond between cement and formation;**
3) **Detection and assessment of any micro-annulus (small gaps between casing and cement); and**
4) **Identification of any cement channeling in the borehole annulus.**

The Permittee may not commence or recommence injection until it has received written notice from EPA that such a demonstration is satisfactory.

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...

6. Tubing/Casing Annulus Requirements

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b. A minimum pressure of one hundred (100) psi at shut-in conditions shall be maintained on the tubing/casing annulus. ~~Within~~ **During** the first ~~quarter~~**year** of **normal** injection operations, the Permittee shall **monitor and** determine the **cyclic** range of fluctuation of injection ~~operations~~ pressures ~~to determine the cyclic range of annular pressure~~ for the well ~~during periods of normal operation~~. This normal pressure range shall **then** be **identified and** submitted with the ~~first~~ **next** quarterly report ~~after injection commences~~. Any annular pressure **measured**

outside of the**is established** normal pressure range shall be considered a **potential** loss of mechanical integrity and shall be reported per paragraph 2.c of this section **and Part III.E.10. Event details, including associated injection pressures and temperatures, shall be submitted to EPA for review and consultation as to whether a loss of mechanical integrity occurred.**

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A printed copy along with an electronic copy of m~~M~~onitoring results and all other reports required by this permit shall be submitted to the following address:

U.S. Environmental Protection Agency, Region IX
Water Division
Ground Water Office (Mail Code WTR-9)
75 Hawthorne St.
San Francisco, CA 94105-3901

Electronic c~~C~~opies of all reports shall also be provided to the following:

California Division of Oil, Gas, and Geothermal Resources
District 6 Office
Attn: District Engineer
801 K Street, MS 20-22
Sacramento, CA 95814-3530

California Regional Water Quality Control Board
District 5 Office
Attn: ~~Permit Section~~**Waste Discharge to Land Program**
11020 Sun Center Drive, Suite 200
Rancho Cordova, CA 95670

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G. FINANCIAL RESPONSIBILITY

1. Demonstration of Financial Responsibility

The Permittee is required to demonstrate and maintain financial responsibility and resources sufficient to close, plug, and abandon the underground injection operation as provided in the Plugging and Abandonment Plans and consistent with 40 CFR §144 Subpart ~~D~~**F**, which the Director has chosen to apply.

(a) The Permittee shall maintain a bond rating **covering liabilities associated with the wells** within the four highest categories of Standard and Poor's (AAA, AA, A, or BBB), Moody's (Aaa, Aa, A, or Baa) or Fitch (AAA, AA, A, or BBB). If the ~~most recent~~bond rating**s** do~~es~~ not fall within the four highest categories, the**n** the Permitee shall post a financial instrument such as a surety bond with a standby trust agreement or arrange other financial assurance for each well constructed **and covered by the insufficiently rated bonds** in the amount of $314,400 per well, to guarantee closure.

(b) The financial responsibility mechanism and amount shall be reviewed and updated periodically, upon request of EPA. The permittee may be required to change to an alternate method of demonstrating financial responsibility. Any such change must be approved in writing by EPA prior to the change.

(c) The Permitee must provide proof to EPA of its bond rating or renewal every year by January 28. **Such proof shall be demonstrated by a letter from the chief financial officer providing sufficient basis and description for the current bond rating.**

~~1~~2. Insolvency of Financial Institution

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~~2~~3. Insolvency of Owner or Operator

...

APPENDIX B – Well Schematics

Figure 2A. ~~As-built construction specifications for well STIG-1 (from Appendix 10 of the Permit Application).~~ **STIG-1 Wellbore Completion Diagram, updated May 7, 2013**

Figure 2B. LEC-1 Wellbore Completion Diagram, October 8, 2010

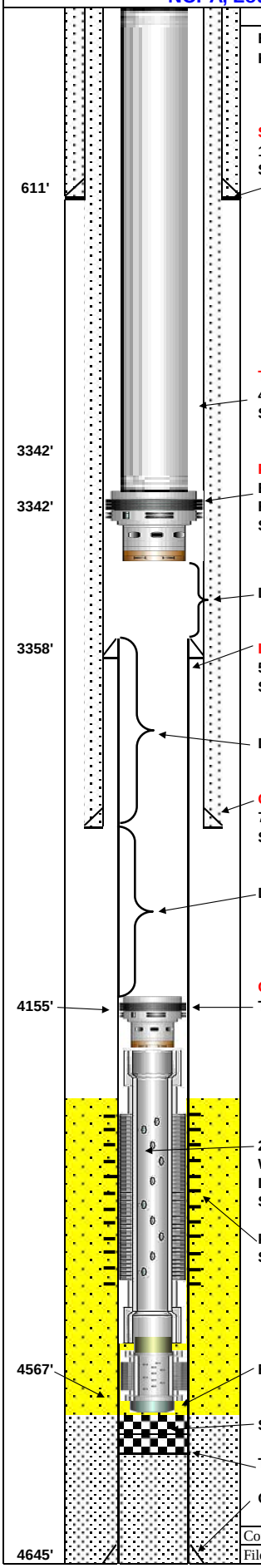
All other permit conditions remain unchanged.

This minor modification is effective on

May 21, 2013

John Kemmerer, Acting Director
Water Division

NCPA, Lodi STIG-1 Injection Well



EQUIPMENT DESCRIPTION

Elevation 8.51'
KB 15'

SURFACE PIPE
10 3/4" 40.5# K-55 ST&C
Set @ 611'

TUBING
4 1/2", 10.5#, J-55, 77 Jts
Set at 3342'

PACKER
Baker Model AL-2, Large Bore Lok-Set
Retrievable Packer
Set at 3342'

Distance Between Packer and Liner = 16'

LINER
5", 15#, K-55 ST&C
Set at 3358' - 4645'

Distance Between Liner and Casing = 302'

CASING
7", 20#, K-55 ST&C
Set at 3660'

Distance Between Casing and GPA = 495'

GRAVEL PACK
Top of Gravel Pack Packer = 4155'

2 3/8" x 2 15/16" OD
Wire Wrapped Screen Liner Gravel Packed
Inside 5" Liner
Set at 4155' - 4567'

Perforations (120° phasing) 4234' - 4573'
See Detail

Bottom of Screen Assembly - 4567'

Sand Fill

Top of Float Collar = 4599'

Original Total Depth (Casing Shoe)- 4645'

Completed: **June 6, 1993** Workovers: . Printed on
File:

Northern California Power Agency
STIG-1 WELL COMPLETION DIAGRAM

	ACTUAL	PROPOSED
FIELD LEASE		
WELL #		
RKB TO WL		
RKB TO ML	WATER DEPTH	
ANNULAR FLUID		

DIRECTIONAL DATA

MAX ANGLE	Vert.	THRU ZONE
KOP		HOLE TYPE

SURFACE EQUIPMENT

TREE	
SWAB CAP SIZE & THRD	
TOP TREE FLANGE	
TUBING SPOOL FLANGE	

TUBING DETAIL

	1st or LS	
SIZE	4 1/2"	
WEIGHT	10.5#	
GRADE	J-55	
DEPTH	3342'	
THREAD		
NEW/USED		
MIN. I.D.'s		

PRODUCTION ASSEMBLY DETAIL

DEPTH Feet	LGTH Feet	O. D. Inches	I. D. Inches	DESCRIPTION
0	3342	4.5	4.052	Tubing String
3342	3358	7.0	6.456	Casing
3358	4645	5.0	4.41	Liner

PERFORATIONS

4 Jet Shots/ft. 0.31" holes				
4234	4239	5		
4244	4254	10		
4267	4288	21		
4296	4306	10		
4312	4326	14		
4331	4379	48		
4390	4411	21		
4432	4507	75		
4528	4538	10		
4565	4573	8		
Total Net Perfs		**222**		

GRAVEL PACK ASSEMBLY

DEPTH Feet	LGTH Feet	O. D. Inches	I. D. Inches	
4156	**4567**	**2.938**	**2.375**	Gravel pack screen liner

CASING DETAIL

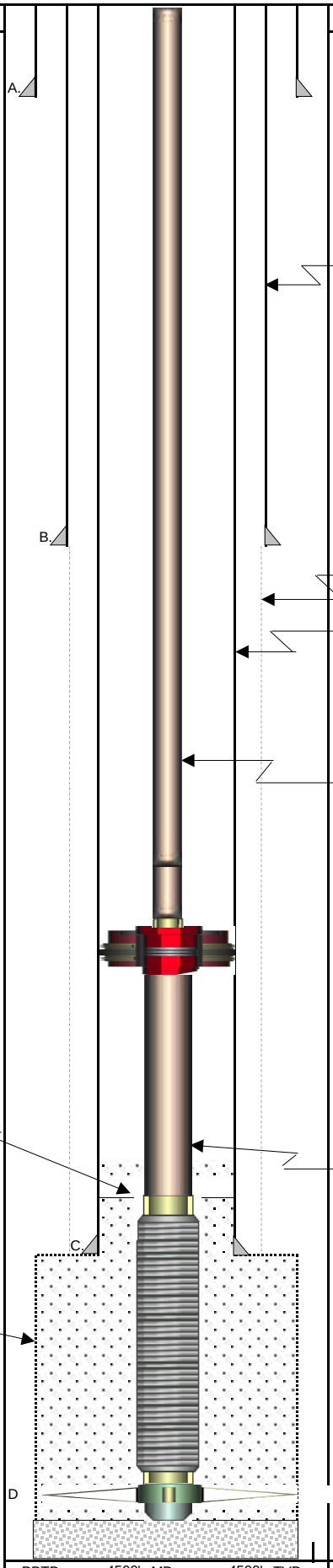
TYPE	SIZE	WGHT	GRADE	THRD	DEPTH
Surface	10 3/4"	40.5#	K-55	ST&C	611'
Casing	7"	20#	K-55	ST&C	3660'
Liner	5"	15#	K-55	ST&C	3358' - 4645'

Prepared By:	TW Cook	Date	December 15, 2004
Updated By:	JW Fairchild	Date	May 7, 2013

COMMENTS: (1) Depths are based on HLS open hole logs dated 5/2/93 and 5/7/93.
(2) All details from the June 6, 1993 casing diagram attached to permit CA1091003 were incorporated in this updated version.

LEC No. 1

COMMENTS



EQUIPMENT DESCRIPTION

20" Casing @ 40'

13-3/8#, 54.5#, J-55 ST&C

13-3/8" Casing @ 629'

12-1/4" Hole

8-5/8, 32#, J-55 LT&C

1. Tubing, 5-1/2", 17#, 22Cr140, Vam Ace
   Tensile Strenth=695,000#
   Burst=13540 psig.
   Collapse=8170 psig.

3. Baker SC-1 Packer
   Top @ 4135'
4. Upper Extension
5. Sliding Sleeve
6. Seal Bore
7. Lower Extension
8. Blank 5-1/2", 17#, 22Cr140, Vam Ace

8-5/8" Casing @ 4,225'

9. 5-1/2" premium wire wrap screen (6" OD)
   316L SS welded to 5-1/2", 22CR 140
10. O-ring seal sub
11. Circ Shoe & Centralizer
12. Total depth at 4500'.

PBTD:	4500'	MD	4500'	TVD
TD:	4500'	MD	4500'	TVD

Completed:
File:

NCPA

WELL COMPLETION DIAGRAM
ACTUAL

FIELD	NA	
WELL #	LEC No. 1	
Ground MSL +/-	6'	
KB	18'	
LOCATION	Sec. 24, T 3N, R 5E, MDB&M	

DIRECTIONAL DATA

MAX ANGLE	0	THRU ZONE	0
KOP	0	HOLE TYPE	Straight
BH Location	Vertical		

SURFACE EQUIPMENT

TREE	6" 3M
SWAB CAP SIZE & THRD	8rd EUE lift thread
TOP TREE FLANGE	6" 3M
TUBING SPOOL FLANGE	11" 3M

TUBING DETAIL

	1st or LS	SS or Btm of Taper
SIZE	5-1/2"	
WEIGHT	17#	
GRADE	22CR140	
DEPTH	4130'	
THREAD	Vam Ace	
NEW/USED	Used	
COATING	None	
SCSSV	None	
Min. I.D.	4.767"	

	O. D. (in.)	I. D. (in.)	LENGTH (ft)	DESCRIPTION
1.	5-1/2"	4.892	4130'	5-1/2", 17#, N-80, FJ
2.				
3.	7"	5"	5'	Baker SC-1 Packer
4.	5.5"	4.892	6'	Upper Extension
5.	5.81"	4.892	2'	Baker Model S Sliding Sleeve
6.	5.56"	4.892	1'	Baker Seal Bore
7.	5.56"	4.892'	21'	Lower Extension
8.	5.5"	4.892	40'	Blank 5-1/2", 17#, 22CR140
9.	6"	4.892	290'	Blank 5-1/2", 17#, 22CR140
10.	5.5"	1.813"	2.71	O-ring seal sub
11.	5.5"	N/A	1.80	shoe
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
23.				

CASING DETAIL

#	SIZE	WGHT	GRADE	THRD	DEPTH
A	20"	53#	NA		0' - 40'
B	13-3/8"	54.5	J-55	LT&C	0' - 600'
C	8-5/8"	24#	K55	LT&C	0' - 4,225'
D	5-1/2"	17#	22Cr140	FJ	4204'-4500'
E					
F					
G					
H					
I					
J					
K					
L					
M					
N					

Prepared By:	Saeed Irani	Date	October 8, 2010
Updated By:		Date	
		Printed on	