

**MINOR MODIFICATION TO PERMIT NO. CA10710001  
ISSUED TO LA PALOMA GENERATING COMPANY, LCC**

In accordance with 40 CFR §144.41, it is understood and agreed that this permit has been modified to establish an initial maximum allowable injection pressure (“MAIP”) as well as a maximum allowable injection rate (“MAIR”), based on results of a step-rate test conducted on October 31, 2008. In addition, several clarifications to existing permit terms are included, based on communications with La Paloma Generating Company, LLC (“LPGC”).

Portions of pages **8, 9, 10, 12, 13,** and **Appendices B and F** of the permit have been 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**):

*Page 8:*

**II.A.4.(b).(vii).**

- (vii) **Supplementary SRT may be authorized by EPA if well WD-3 injection pressure reaches approximately 770 psi measured at the wellhead, operational data indicate that injection pressure is within 80 percent of the calculated fracture pressure, or if operational data indicate that fracture pressure is realized prior to reaching 770 psi.**

*Page 9:*

**II.A.6.(b).**

- (b) Surface casing: ~~9-5/8 inch OD (36 lb J-55)~~ **9-7/8 inch OD (40.5 lb J-55)** from ground surface to approximately 500 feet bgs cemented to surface.

*Page 10:*

**II.A.7.(a)**

- (a) Tubing: ~~5-inch OD (18 lb L-80)~~ **5-1/2 inch OD (17 lb L-80)** from ground surface to approximately ~~4,228~~ **4,300** feet bgs; 4.25-inch OD x 3.000-inch ID x 20-ft L seal (assembly to 4,350 ft bgs).

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**II.A.7.(b)**

- (b) Well WD-3 Liner: ~~5-inch 18 lb~~ **5-1/2 inch 17 lb**, L-80 liner from 4,350-5,300 ft bgs contains a polish bore receptacle that accepts a seal section on the end of the tubing string equipped with a series of chevron seals rated to ~10,000 psi differential pressure; slotted 2-inch x 200M, ~~24~~ **48R**, 6-inch C from 4,400-5,300 ft bgs. ~~AR~~ Setting collar is 3 feet in length, ~~MSCP~~ Liner

hanger device is **approximately** 8 feet long, and polished bore receptacle extends 20 feet below that, resulting in a 31' long liner hanger (5-1/2-inch top liner hanger will extend from 4,350-4,381 feet bgs). See Appendix B, Figures 4-5 **7a, 7b, and 8.**

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**II.A.7.(c)**

- (c) **Well WD-3 Sand Control Liner:** 3-1/2 inch (2.99 inch ID), 17 lb. L-80 base pipe with 132 holes (3/8 inch diameter) per foot, 0.010-inch diameter slot, 316L stainless steel wire wrap (4.0 inch OD) from approximately 4,346-4,720 ft bgs. The liner hanger is approximately 4 feet long. The sand control liner contains the polish bore receptacle that accepts a seal section on the end of the tubing string equipped with a series of chevron seals rated to ~10,000 psi differential pressure. See Appendix B, Figure 7a.

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**II.A.7.(d)**

- (d) **Integrated Sand Control Liner:** 5-1/2 inch, 17 lb. L-80 base pipe with 146 holes (3/8 inch diameter) per foot, 0.010-inch diameter slot, 316L stainless steel wire wrap (6.050 inch OD) from 4,400-5,300 ft bgs. The liner hanger is approximately 4 feet long. The sand control liner contains the polish bore receptacle that accepts a seal section on the end of the tubing string equipped with a series of chevron seals rated to ~10,000 psi differential pressure. See Appendix B, Figure 7b.

*Page 16:*

**II.B.3.(a)**

- (a) **The initial wellhead injection operating pressure for well WD-3 will be 100 pounds per square inch (psi) or less. Injection pressures for the well will be evaluated at 100 psi increments to monitor reservoir pressure increases. The Permittee will provide immediate verbal notification and written notification within five (5) days to EPA when surface pressures reach successive 100 psi increments and an evaluation report will be submitted to EPA within thirty (30) days of reaching these increments. Each report will contain digital injection rate and wellhead injection pressure data collected by the installed monitoring devices (including date, time, injection pressure, and injection rate data) in accordance with Section D, paragraph 3(a) of this part. Permittee will not inject at pressures greater than 770 psi measured at the wellhead without written authorization by EPA in accordance with Section C, paragraph 3 of this part.**

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**II.B.3.(b).**

- (b) **In event that the Permittee conducts a subsequent Step-Rate Test according to Section A paragraph 4(b) of this part for well WD-3, EPA will provide the Permittee written notification of the modified maximum allowable injection pressure for well WD-3, along with a minor modification of the permit under 40 CFR §144.41(e). In no case shall pressure in the injection zone during injection initiate new fractures or propagate existing fractures in the injection zone or the confining zone. In no case shall injection pressure cause the movement of injection or formation fluids into or between underground sources of drinking water.**

**II.B.3.(c).**

- (c) **For proposed wells WD-1, WD-2, WD-4 and WD-5, Maximum allowable injection pressure measured at the wellhead shall be based on the Step-Rate Test conducted under Section A paragraph 4(b) of this part. EPA will provide the Permittee written notification of the maximum allowable injection pressure for each injection well constructed and operated under this permit, along with a minor modification of the permit under 40 CFR §144.41(e). In no case shall pressure in the injection zone during injection initiate new fractures or propagate existing fractures in the injection zone or the confining zone. In no case shall injection pressure cause the movement of injection or formation fluids into or between underground sources of drinking water.**

**II.B.4.(a)**

- (a) The injection rate shall not exceed the volume determined appropriate through the demonstrations conducted in this section and justified by measured friction factors. **The injection rate for well WD-3 shall not exceed 8 bbls/min. This volume limitation was determined to be appropriate through the demonstrations conducted in this section and justified by measured friction factors.** EPA will provide written notification of the maximum injection volume allowed under this permit prior to any injection activities, along with a minor modification of the permit under 40 CFR §144.41(e).

*Appendix B:*

Figure 7a. ~~Well construction schematic typical of proposed wells WD-1—WD-5.~~ **Well construction schematic typical of proposed well WD-3 with single wire wrap sand screen liner.**

**Figure 7b. Well construction schematic typical of proposed wells WD-1, WD-2, WD-4 and**

**WD-5 with integrated single wire wrap sand screen.**

*Appendix F:*

Figure 9a. Schematic of general plugging and abandonment plan for proposed wells WD-1, WD-2, WD-4 and WD-5.

**Figure 9b. Schematic of general plugging and abandonment plan for well WD-3.**

**Abandonment Procedure for Injection Well WD-3 with Sand Control Liner**

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All other permit conditions remain unchanged.

This minor modification is to become effective on May 11, 2009.

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Alexis Strauss, Director  
Water Division