



# WorleyParsons

resources & energy

## Infrastructure and Environment

2330 East Bidwell, Suite 150  
Folsom, CA 95630, USA  
Telephone: +1 916 817 3920  
Facsimile: +1 916 983 1935  
www.worleyparsons.com

November 8, 2010

Proj. No.: 108010-00270  
File Loc.: Folsom

Adam Green  
Solar Reserve  
2425 Olympic Blvd., Suite 500 East  
Santa Monica, CA 90404

Dear Mr. Green:

## **RE: GROUNDWATER QUALITY MONITORING PLAN – SAGUACHE SOLAR ENERGY PROJECT**

### **Introduction**

Following the review of the Preliminary 1041 Permit Application for the Solar Reserve Saguache Solar Energy Project (herein referred to as the Site), Saguache County requested that a groundwater quality monitoring plan be prepared to address concerns related to hazardous materials use, storage and disposal at the Site.

In response to this request, WorleyParsons has prepared a groundwater quality monitoring plan. This plan is presented herein. The primary objectives of this plan are (1) to establish the baseline groundwater quality at the Site prior to construction and operation and (2) to conduct routine groundwater quality monitoring during construction and operation for comparison to the baseline groundwater quality. Routine groundwater quality monitoring during construction and operation will provide a mechanism to identify any potential impacts to groundwater as a result of the Site activities and to provide an early warning to help avoid, minimize, and mitigate significant impacts to groundwater quality.

### **Groundwater Quality Monitoring Program**

The groundwater quality monitoring program will consist of three phases:

- A one-time groundwater quality monitoring event conducted prior to construction and operation to establish a baseline. The results of the baseline monitoring event will serve as a basis for comparison during future sampling events and will be used to evaluate any impacts to groundwater quality during construction and operation;
- Semi-annual groundwater quality monitoring during construction and one event at the end of construction;
- Semi-annual groundwater quality monitoring for the first five years of operation. Following five years of project operations the frequency of the groundwater quality monitoring events will be reassessed.



## Monitoring Well Network

There are 111 registered wells within the property being optioned by the project. **Table 1** summarizes the well details. Existing wells located at or near the areas that will store hazardous materials or where hazardous materials may be released will be utilized for the groundwater quality monitoring plan; although, the condition of said wells are unknown and the installation of additional monitoring wells may be necessary. Prior to initiation of the baseline groundwater quality monitoring event, permission will be obtained from the well owners and the condition of the selected on-Site wells will be evaluated. Following the well reconnaissance the decision to install additional monitoring wells will be made. Written notice to the Saguache County will be submitted in the event an additional monitoring well or wells are necessary. All necessary permits will be obtained prior to well installation activities.

Hazardous materials will be temporarily stored at the Site during construction activities. These materials mainly include petroleum hydrocarbons including diesel fuel and gasoline. These hazardous liquids will be stored in a laydown area near the project entrance, which is located between the two power blocks on the west side of the property (**Figure 1**). The power blocks are the other areas where hazardous materials will be stored. Additionally, the evaporation ponds will be used for plant waste water disposal, and the elevated constituents within the sludge may be considered hazardous. There is a north and south power block and the evaporation pond for each power block are co-located in the center of the Site as shown by **Figure 1**. Based on the locations of the stored hazardous materials, the selected on-Site monitoring wells will include wells 72 or 73 located near the southern power block, wells 43, 47, 48, or 49 located near the evaporation ponds, wells 8, 9, 10, or 53 located near the northern power block, and wells 27 or 17 located near the entrance road (**Figure 1**). At least one well located near each power block, the evaporation ponds, and the entrance road/laydown area will be selected as monitoring points. All of these wells are completed in the Upper Aquifer, which is a shallow water table aquifer occurring between approximately 3 and 100 feet below ground surface (bgs). The wells are currently used for irrigation and most if not all likely have dedicated groundwater pumps.

## Analytical Suite

The groundwater samples collected from the wells near the power blocks will be analyzed for nitrate and nitrite as tracer chemicals to determine if the molten salt stored at this location has been released into the groundwater.

The groundwater samples collected from the well or wells located near the entrance/laydown area will be analyzed for total petroleum hydrocarbon carbon chain in accordance with United States Environmental Protection Agency (USEPA) method 8015 to determine if any releases of petroleum hydrocarbons occurred at this location. If petroleum hydrocarbons are detected then additional analyzes may be required including total petroleum hydrocarbons in the diesel range (TPHd), total petroleum hydrocarbons in the gasoline range (TPHg), and volatile organic compounds (VOCs).

The groundwater samples collected from the wells near the evaporation ponds will be analyzed for total dissolved solids (TDS), specific conductance, major cations, and major anions to assess if any of the fluids discharged to the ponds have been released into groundwater.



## Groundwater Sampling Methods

Prior to groundwater sample collection, the groundwater levels in each monitoring well will be measured using an electric water level meter in general accordance with ASTM's *Test Method for Determining Subsurface Liquid levels in a Borehole or Monitoring Well (Observation Well)* (ASTM, 1993a). The water levels will be used to monitoring the baseline groundwater elevations across the Site and changes in the groundwater elevations, if any, during construction and operation. In the event that water level measurements are not feasible in one or more of the selected wells due to dedicated pump equipment or other limitations, a near-by alternate well will be selected for water level measurement.

Groundwater samples will be collected in accordance with ATSM's *Guide for Sampling Groundwater Monitoring Wells* (ASTM, 1992). Groundwater samples will be collected using conventional purging and sampling methods. These methods require that groundwater samples are only collected after at least three well casing volumes have been purged, geochemical parameters such as pH, conductivity, temperature, turbidity have stabilized for three or more consecutive readings, and the water level in the well has recharged to at least 80 percent of the per-purge water level. If the well has a dedicated pump then this pump will be utilized. For wells without a dedicated pump, electric submersible pumps will be temporarily installed. All waste water generated during purging will be discharged to the land surface or to the plants water treatment facility under any necessary permit(s).

Immediately upon sample collection, groundwater samples will be place in laboratory supplied containers. These containers will be labeled with pertinent information including the well identification, time, date, preservative (if any), and analysis. The labeled containers will be placed in an ice chest and will be transported to a State Certified laboratory under chain of custody protocol. ATSM describes chain of custody protocol in the *Practice for Sampling Chain-of-Custody Procedures* (ASTM, 1993b).

Between wells, all non-dedicated sampling equipment will be decontaminated using a three stage wash to avoid cross-contamination. Duplicate groundwater samples will be collected during each sampling event. These samples will be submitted to the laboratory as blind samples with no indication of which primary sample was duplicated and will be used to assess the precision of the laboratory analyses. Additional internal laboratory quality control/quality assurance practices will also be conducted.

## Data Analysis and Reporting

A report documenting the baseline sample results will be prepared and submitted to Saguache County. Semi-annual reports will also be prepared and submitted to Saguache County following each sampling event. The reports will include the tabulated laboratory analytical data and a brief discussion of the how the results compare to the baseline data. In addition, water level data will be tabulated and a brief discussion of water level changes will be reported.



## Closing

If you have any questions regarding this Groundwater Quality Monitoring Plan please do not hesitate to contact the undersigned. A more detailed plan can be provided upon request.

Best Regards,

WORLEYPARSONS

Matthew J. Rhoades, CPG  
Supervising Hydrogeologist

## References

ASTM, 1992, Guide for Sampling Groundwater Monitoring Wells. ASTM D4448-85a.

ASTM, 1993a, Test Method for Determining Subsurface Liquid levels in a Borehole or Monitoring Well (Observation Well). ASTM D4750-87.

ASTM, 1993b, Practice for Sampling Chain-of-Custody Procedures. ASTM D4840-88.



**WorleyParsons**

resources & energy

## Tables

ENVIRONMENTAL

**Table 1**  
**Well Inventory**  
**Saguache Solar Energy Project**

Well ID	Alternate Well ID	Well Owner	Township, Range, and Section	UTM_x	UTM_y	Well Permit No.	Well Permit Status	Well Use	Aquifer	Well Installation Date	Date Well Abandoned	Ground Surface Elevation (feet amsl)	Well Depth (feet bgs)	Screened Interval (feet bgs)	Pump Rate (gpm)	Static Water Level (feet bgs)
<b>Township 41 North Range 9 East Section 3</b>																
<b>q160 q40</b>																
1		C&W RANCHES	41 N 9 E 3 NE	414668.40	4187635.50	19782.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
2		SKYVIEW COOLING COMP	41 N 9 E 3 NE	414665.70	4187640.50	21256.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	3
3		SKYVIEW COOLING COMP	41 N 9 E 3 NW	413869.60	4187644.70	21255.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	3
4	21255-F	C&W RANCHES	41 N 9 E 3 NW	413868.10	4187638.50	19781.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
5		SKYVIEW COOLING COMP	41 N 9 E 3 SE	414657.90	4186817.50	19780.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
6		SKYVIEW COOLING COMP	41 N 9 E 3 SE NE	414659.80	4187018.50	49700.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	4/28/1998		7,700	115	35 - 115	1,000	14
7		SKYVIEW COOLING COMP	41 N 9 E 3 SW NE	413864.30	4186816.50	20165.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		900	
8		SKYVIEW COOLING COMP	41 N 9 E 3 SW SW	413660.50	4186618.00	13017.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				113		2,000	4
9		SKYVIEW COOLING COMP	41 N 9 E 3 SW SW	413660.50	4186618.00	13016.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,800	4
10		INNESS MARK R	41 N 9 E 3 SW SW	413520.70	4186474.70	208062.00	Well Constructed	DOMESTIC/STOCK	UNCONFINED SAN LUIS VALLEY	9/10/1999		7,700	98	68 - 98	15	6
<b>Township 41 North Range 9 East Section 4</b>																
11		MCENTYRE FRANK	41 N 9 E 4	412659.90	4187238.50	202.00	Well Constructed		ALL UNNAMED AQUIFERS				130			
12		ENTIRE FRANK	41 N 9 E 4	412659.90	4187238.50	18.00	Well Constructed		ALL UNNAMED AQUIFERS				100			
13		SAM INVESTMENTS INC	41 N 9 E 4 NE	413065.00	4187651.50	20973.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		900	3
14		HUNT C. TRUST ESTATE	41 N 9 E 4 NE SW	412861.10	4187441.70	5447.00	Permit Expired	IRRIGATION	ALL UNNAMED AQUIFERS							
15		SAM INVESTMENTS INC	41 N 9 E 4 NW	412256.20	4187660.70	20972.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		900	3
16		HUNT C. TRUST ESTATE	41 N 9 E 4 NW SW	412054.60	4187450.00	5448.00	Permit Expired	IRRIGATION	ALL UNNAMED AQUIFERS							
17		SAM INVESTMENTS INC	41 N 9 E 4 SE	413059.60	4186819.00	20971.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	4
18		SAM INVESTMENTS INC	41 N 9 E 4 SW	412252.10	4186825.00	20970.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	4
19		SAM INVESTMENTS INC	41 N 9 E 4 SW SW	411867.60	4186445.20	11337.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				125		2,000	6
20		SAM INVESTMENTS INC	41 N 9 E 4 SW SW	411868.20	4186742.50	11336.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				98		1,800	6
21		SAM INVESTMENTS INC	41 N 9 E 4 SW SW	412050.30	4186629.20	7555.00	Well Constructed	STOCK	ALL UNNAMED AQUIFERS				500			
<b>Township 41 North Range 9 East Section 7</b>																
22	WELL #16A	MYERS ERNEST M & VIRGINIA K	41 N 9 E 7 SE	409809.6	4185250.7	23242	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
23		HUNT CAROLINE TRST ESTATE	41 N 9 E 7 SE	409816.4	4185249.2	21813	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
24	WELL #107	MYERS ERNEST M & VIRGINIA K	41 N 9 E 7 SE SW	409432.7	4184913.7	6033	Well Constructed	STOCK	ALL UNNAMED AQUIFERS				500		50	
25	WELL #16	MYERS ERNEST M & VIRGINIA K	41 N 9 E 7 SE SW	409457.9	4184868.2	11302	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				90		1,850	
26	#1A	WEDEL WAYNE L & JUDITH S	41 N 9 E 7 SW	409035.3	4185261	20868	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	5/10/1976			100	30 - 100	900	5
<b>Township 41 North Range 9 East Section 8</b>																
27	WELL #15A	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 NE	411440.70	4186028.00	25696.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				118		1,100	14
28		COOK T	41 N 9 E 8 NE NE	411641.80	4186229.00	24304.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY	9/6/1979			100	30 - 100	600	5
29		SAM INVESTMENTS INC	41 N 9 E 8 NE NE	411786.10	4186365.20	62789.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS						50	
30	WELL #108	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 NE NW	411234.30	4186233.20	536.00	Well Constructed	DOMESTIC	ALL UNNAMED AQUIFERS				462		40	
31	WELL #15	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 NE SW	411027.10	4185662.50	2853.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				122	20 - 122	2,000	5
32	WELL #5	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 NW SW	410243.80	4185666.70	8936.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	8/2/1972			97	17 - 97	2,000	6
33	WELL #5A	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 NW SW	410616.90	4186037.70	22883.00	Well Abandoned	IRRIGATION	ALL UNNAMED AQUIFERS		3/27/2009		100		1,000	3
34	5-A	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 NW SW	410610.90	4186044.00	22883.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	5/15/2008			100	40 - 100	900	20
35		SAM INVESTMENTS INC	41 N 9 E 8 SE	411431.60	4185240.00	23562.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
36		SAM INVESTMENTS INC	41 N 9 E 8 SE SW	411030.90	4184857.70	15066.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				120		1,500	3
37	WELL #4	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 SW SW	410220.90	4184919.20	7720.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				135	12 - 130	2,000	70
38	WELL #4A	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 SW SW	410614.30	4185243.70	22882.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	3
39	WELL #110	MYERS ERNEST M & VIRGINIA K	41 N 9 E 8 SW SW	410211.00	4184879.70	6032.00	Well Constructed	STOCK	ALL UNNAMED AQUIFERS				500		50	
<b>Township 41 North Range 9 East Section 9</b>																
40		MCENTYRE FRANK	41 N 9 E 9	412641.50	4185622.00	205.00	Well Constructed		ALL UNNAMED AQUIFERS				130			
41		MCENTYRE FRANK	41 N 9 E 9	412641.50	4185622.00	204.00	Well Constructed		ALL UNNAMED AQUIFERS				127			
42		ENTIRE FRANK	41 N 9 E 9	412641.50	4185622.00	17.00	Well Constructed		ALL UNNAMED AQUIFERS				107			
43		SAM INVESTMENT INC	41 N 9 E 9 NE	413050.40	4186014.20	19778.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
44		SAM INVESTMENTS INC	41 N 9 E 9 NW	412245.40	4186020.20	20164.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
45		SAM INVESTMENTS INC	41 N 9 E 9 NW SW	412041.80	4185827.70	11716.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				107		1,600	7
46		SAM INVESTMENTS INC	41 N 9 E 9 SE	413037.50	4185226.60	19779.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
47		SAM INVESTMENTS INC	41 N 9 E 9 SW	412236.30	4185234.20	20166.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
48		SAM INVESTMENTS INC	41 N 9 E 9 SW SW	412032.10	4185032.60	11718.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				130		2,000	5
49		SAM INVESTMENTS INC	41 N 9 E 9 SW SW	412032.10	4185032.60	11717.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				127		2,000	5
<b>Township 41 North Range 9 East Section 10</b>																
50		C & W RANCHES	41 N 9 E 10 NE	414648.60	4186012.70	19784.00	Well Abandoned	IRRIGATION	ALL UNNAMED AQUIFERS		3/7/1996		100		1,000	
51		SKYVIEW COOLING COMP	41 N 9 E 10 NE	413855.10	4186011.70	19784.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	3/12/1996			130	40 - 130	1,000	8
52		SSS FARMS	41 N 9 E 10 NE	414652.50	4186020.20	27508.00	Permit Issued; Completion Status Unknown	MONITORING WELL	ALL UNNAMED AQUIFERS							



**Table 1**  
Well Inventory  
Saguache Solar Energy Project

Well ID	Alternate Well ID	Well Owner	Township, Range, and Section	UTM_x	UTM_y	Well Permit No.	Well Permit Status	Well Use	Aquifer	Well Installation Date	Date Well Abandoned	Ground Surface Elevation (feet amsl)	Well Depth (feet bgs)	Screened Interval (feet bgs)	Pump Rate (gpm)	Static Water Level (feet bgs)
53		SKYVIEW COOLING COMP	41 N 9 E 10 NW	413855.10	4186011.70	19786.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	
54		PICKARD JACK	41 N 9 E 10 NW SW	413649.60	4185817.20	15798.00	Permit Expired	IRRIGATION	ALL UNNAMED AQUIFERS							
55		MOUNTAIN COAST ENTERPRISE	41 N 9 E 10 SE	414641.10	4185229.90	30438.00	Permit Issued; Completion Status Unknown	MONITORING WELL	ALL UNNAMED AQUIFERS							
56	#4	MOUNTAIN COAST ENTERPRISES LLC	41 N 9 E 10 SE	414638.00	4185236.90	19783.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	4/10/1997			133	29 - 129		
57		MOUNTAIN COAST ENTERPRISES LLC	41 N 9 E 10 SE	414638.00	4185236.90	19783.00	Well Abandoned	IRRIGATION	UNCONFINED SAN LUIS VALLEY	11/5/1975	3/2/1996		100	30 - 100	1,000	3
58		MOUNTAIN COAST ENTERPRISES LLC	41 N 9 E 10 SW	413842.10	4185227.40	19785.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	11/3/1976			100	30 - 100	1,000	3
<b>Township 41 North Range 9 East Section 15</b>																
59		C & W RANCHES	41 N 9 E 15 NW	413830.6	4184422.9	21257	Well Abandoned	IRRIGATION	ALL UNNAMED AQUIFERS		4/1/1996		100		1,000	3
60		WIJAYA COLORADO LLC	41 N 9 E 15 NW	413830.6	4184422.9	21257	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	3/2/1996			130	40 - 130	1,000	9
61		SSS FARMS	41 N 9 E 15 NW	413828.6	4184420.6	27507	Permit Issued; Completion Status Unknown	MONITORING WELL	ALL UNNAMED AQUIFERS							
62		C&W RANCHES	41 N 9 E 15 NW	413828.6	4184420.6	19787	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
63		PICKARD JACK	41 N 9 E 15 NW NW	413630.9	4184620.4	15799	Permit Expired	IRRIGATION	ALL UNNAMED AQUIFERS							
<b>Township 41 North Range 9 East Section 16</b>																
64		WIJAYA COLORADO LLC	41 N 9 E 16 NE	413026.00	4184421.90	21260.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	10/23/1976			100	30 - 100	1,000	3
65		C&W RANCHES	41 N 9 E 16 NE	413026.70	4184420.10	19790.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
66		C&W RANCHES	41 N 9 E 16 NW	412224.10	4184428.40	19789.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
67		WIJAYA COLORADO LLC	41 N 9 E 16 NW	412225.30	4184429.60	21259.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	10/20/1976			100	30 - 100	1,000	3
68		WIJAYA COLORADO LLC	41 N 9 E 16 SW	412212.50	4183618.40	21258.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	10/18/1976			100	30 - 100	1,000	3
69		C&W RANCHES	41 N 9 E 16 SW	412212.00	4183620.40	19788.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
<b>Township 41 North Range 9 East Section 17</b>																
70	#12	SKYVIEW COOLING COMPANY	41 N 9 E 17 NE	411420.60	4184435.40	25697.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	5/1/1982			110	30 - 100	1,000	5
71		HALL RISING	41 N 9 E 17 NE NE	411737.10	4184790.40	77339.00	Permit Expired	HOUSEHOLD USE ONLY	ALL UNNAMED AQUIFERS							
72	#12	SKYVIEW COOLING COMPANY	41 N 9 E 17 NE SW	411025.80	4184088.40	2597.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	6/8/1960			120	20 - 120	2,000	6
73	H9C2	SKYVIEW COOLING COMPANY	41 N 9 E 17 NE SW	411018.50	4184091.60	6034.00	Well Constructed	STOCK	ALL UNNAMED AQUIFERS	6/17/1960			500		50	
74	#3	SKYVIEW COOLING COMPANY	41 N 9 E 17 NW SW	410219.10	4184074.20	7719.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	9/18/1957			132	12 - 132	2,045	70
75	#3A	SKYVIEW COOLING COMPANY	41 N 9 E 17 NW SW	410614.60	4184439.00	22881.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	6/1/1978			110	30 - 110	1,000	21
76	#14	SKYVIEW COOLING COMPANY	41 N 9 E 17 SE	411407.90	4183626.10	25698.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	12/6/1980			118	38 - 118	1,100	12
77	#14	SKYVIEW COOLING COMPANY	41 N 9 E 17 SE SW	411029.20	4183264.90	2854.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	3/18/1961			127	20 - 127	2,000	5
78	H11C2	SKYVIEW COOLING COMPANY	41 N 9 E 17 SE SW	411021.80	4183291.60	7552.00	Well Constructed	STOCK	ALL UNNAMED AQUIFERS	11/0/1961			500			
79	#13A	SKYVIEW COOLING COMPANY	41 N 9 E 17 SW	410617.80	4183632.10	25694.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	5/10/1982			110	30 - 110	1,000	5
80	#13	SKYVIEW COOLING COMPANY	41 N 9 E 17 SW SW	410226.80	4183242.40	7795.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	11/23/1957			135	15 - 135	1,800	3
<b>Township 41 North Range 9 East Section 18</b>																
81		SAM INVESTMENTS INC	41 N 9 E 18 NE	409809.80	4184446.20	21026.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	4
82		SAM INVESTMENTS INC.	41 N 9 E 18 NE NW	409525.20	4184767.00	257031.00	Well Constructed	DOMESTIC/STOCK	CONFINED SAN LUIS VALLEY				2,000		15	
83		BISHOP GEORGE F	41 N 9 E 18 NE SW	409615.00	4184246.20	18759.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
84		SAM INVESTMENTS INC	41 N 9 E 18 NE SW	409429.00	4184061.00	10416.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				110		2,400	3
85		SAM INVESTMENTS INC	41 N 9 E 18 NW	409023.20	4184456.50	21025.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	4
86		BISHOP GEORGE	41 N 9 E 18 NW NW	408822.40	4184659.50	27774.00	Well Constructed	DOMESTIC	ALL UNNAMED AQUIFERS				72		15	9
87		S A M INVESTMENTS	41 N 9 E 18 NW NW	408670.50	4184726.20	27774.00	Well Constructed	DOMESTIC/STOCK	ALL UNNAMED AQUIFERS	4/15/1999		7,700	100	80 - 100	15	15
88		BISHOP GEORGE F	41 N 9 E 18 NW SW	408817.50	4184254.70	18760.00	Permit Expired	IRRIGATION	UNCONFINED SAN LUIS VALLEY							
89		SAM INVESTMENTS INC	41 N 9 E 18 NW SW	408627.50	4184071.50	10415.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				113		2,400	3
90		SAM INVESTMENTS INC	41 N 9 E 18 SE	409813.10	4183638.00	21024.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	4
91		SAM INVESTMENTS INC	41 N 9 E 18 SE SW	409612.70	4183439.20	13181.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				119		2,000	3
92		SAM INVESTMENTS INC	41 N 9 E 18 SW	409011.50	4183643.50	20974.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,000	4
93		SAM INVESTMENTS INC	41 N 9 E 18 SW SE	409396.30	4183251.00	10623.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				90	30 - 90	1,800	42
94		SAM INVESTMENTS INC	41 N 9 E 18 SW SW	408621.00	4183260.70	6492.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				82	15 - 82	1,750	22
95		SAM INVESTMENTS INC	41 N 9 E 18 SW SW	408807.70	4183445.50	13164.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				123		2,000	3
<b>Township 41 North Range 9 East Section 20</b>																
96	#11A	SKYVIEW COOLING COMPANY	41 N 9 E 20 NE	411394.20	4182821.60	25695.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	1/30/1981			120	36 - 120	1,100	8
97	H14C2	SKYVIEW COOLING COMPANY	41 N 9 E 20 NE NW	410991.70	4182223.40	7554.00	Well Constructed	STOCK	ALL UNNAMED AQUIFERS	12/16/1960			500			
98	H13C2	SKYVIEW COOLING COMPANY	41 N 9 E 20 NE SW	411002.80	4182549.40	7553.00	Well Constructed	STOCK	ALL UNNAMED AQUIFERS	12/23/1960			500			
99	#11	SKYVIEW COOLING COMPANY	41 N 9 E 20 NE SW	411008.00	4182474.90	8937.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	6/30/1958			133	12 - 133	1,900	3
100	#10A	SKYVIEW COOLING COMPANY	41 N 9 E 20 NW	410608.00	4182827.60	25692.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	12/4/1980			110	39 - 110	1,100	15
101	#10	SKYVIEW COOLING COMPANY	41 N 9 E 20 NW SW	410215.00	4182491.40	8935.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	6/25/1958			136	12 - 136	2,100	80
102		SKYVIEW COOLING CORP	41 N 9 E 20 SE	411379.60	4182019.60	25693.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		1,100	17
103		ELLITHORPE ERIC L & V W	41 N 9 E 20 SE SE	411632.80	4181864.40	205893.00	Well Constructed	STOCK	CONFINED SAN LUIS VALLEY	12/31/1920			400		30	
104	#17	SKYVIEW COOLING COMPANY	41 N 9 E 20 SE SW	410986.10	4181729.10	8933.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	9/26/1958			104	-- - 104	1,800	4
105	#8	SKYVIEW COOLING COMPANY	41 N 9 E 20 SW SW	410182.50	4181709.90	8934.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS	9/15/1958			112	12 - 112	2,000	3
106	#8A	SKYVIEW COOLING COMPANY	41 N 9 E 20 SW SW	410585.00	4182018.90	22884.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	6/5/1978			110	30 - 110	1,000	3
107		SKYVIEW COOLING COMPANY	41 N 9 E 20 SW SW	410182.50	4181709.90	47224.00	Well Constructed	COMMERCIAL/IRRIGATION	UNCONFINED SAN LUIS VALLEY						15	
<b>Township 41 North Range 9 East Section 22</b>																



**Table 1**  
**Well Inventory**  
**Saguache Solar Energy Project**

Well ID	Alternate Well ID	Well Owner	Township, Range, and Section	UTM_x	UTM_y	Well Permit No.	Well Permit Status	Well Use	Aquifer	Well Installation Date	Date Well Abandoned	Ground Surface Elevation (feet amsl)	Well Depth (feet bgs)	Screened Interval (feet bgs)	Pump Rate (gpm)	Static Water Level (feet bgs)
108		TRIPLE L YOUTH RANCH	41 N 9 E 22 SE	414628.80	4181996.90	25280.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				100		900	5
109		KUNTZ JACK & JANET	41 N 9 E 22 SE SW	414627.40	4181813.90	35499.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	11/7/1989			90	30 - 90	450	8
110		KUNTZ JACK & JANET	41 N 9 E 22 SW	413810.50	4181994.90	25281.00	Well Constructed	IRRIGATION	UNCONFINED SAN LUIS VALLEY	3/17/1982			92		916	12
111		KUNTZ JACK & JANET	41 N 9 E 22 SW SW	413604.70	4181793.60	13941.00	Well Constructed	IRRIGATION	ALL UNNAMED AQUIFERS				102		1,950	4

Notes:  
 1. Yellow highlight indicates wells closest to the power blocks.



**Table 2**  
**Groundwater Quality in the Upper Aquifer**

Analyte	Well ID	W-36	W-43
	Sample Collection Date	10/11/2010	10/11/2010
	Aquifer	Upper	Upper
	Location	North Power Block	South Power Block
<b>Metals</b>			
Antimony	mg/L	<0.0004	<0.0005
Arsenic	mg/L	<b>0.0026</b>	<b>0.0021</b>
Barium	mg/L	<b>0.083</b>	<b>0.083</b>
Beryllium	mg/L	<0.002	<0.002
Cadmium	mg/L	<0.0001	<0.0001
Calcium	mg/L	<b>80.1</b>	<b>114</b>
Chromium	mg/L	<0.01	<0.01
Cobalt	mg/L	<0.01	<0.01
Copper	mg/L	<0.01	<0.01
Iron	mg/L	<0.02	<0.02
Lead	mg/L	<0.0001	<b>0.0003</b>
Magnesium	mg/L	<b>12</b>	<b>18.1</b>
Manganese	mg/L	<0.005	<0.005
Mercury	mg/L	<0.0002	<0.0002
Molybdenum	mg/L	<0.01	<0.01
Nickel	mg/L	<0.01	<0.01
Potassium	mg/L	<b>8</b>	<b>9.7</b>
Selenium	mg/L	<b>0.0004</b>	<b>0.0017</b>
Silica (dissolved)	mg/L	<b>39.1</b>	<b>41.7</b>
Silica (total)	mg/L	<b>28.1</b>	<b>30.5</b>
Silver	mg/L	<0.01	<0.01
Sodium	mg/L	<b>24.7</b>	<b>30.8</b>
Thallium	mg/L	<0.0001	<0.0001
Zinc	mg/L	<0.001	<0.001
<b>Other</b>			
Alkalinity (total)	mg/L	<b>170</b>	<b>226</b>
Alkalinity, Bicarbonate(As CaCO <sub>3</sub> )	mg/L	<b>165</b>	<b>224</b>
Alkalinity, Carbonate (As CaCO <sub>3</sub> )	mg/L	<b>5</b>	<2
Alkalinity, Hydroxide (As CaCO <sub>3</sub> )	mg/L	<2	<2
Chloride	mg/L	<b>8.6</b>	<b>33.1</b>
Fluoride	mg/L	<0.1	<0.1
Nitrate (NO <sub>3</sub> ) - N	mg/L	<b>9.2</b>	<b>7.66</b>
Nitrite (NO <sub>2</sub> ) - N	mg/L	<0.01	<0.01
pH, at 22 °C	pH Units	<b>8.3</b>	<b>8.3</b>
Phosphorus (total)	mg/L	<b>0.12</b>	<b>0.05</b>
Phosphate (ortho)	mg/L	<b>0.24</b>	<b>0.18</b>
Specific Conductance (at 25°C)	umhos/cm	<b>616</b>	<b>828</b>
Sulfate as SO <sub>4</sub>	mg/L	<b>84.8</b>	<b>116</b>
Sulfide as S	mg/L	<0.02	<0.02
Total Hardness (calc as CaCO <sub>3</sub> )	mg/L	<b>250</b>	<b>359</b>
Total Dissolved Solids	mg/L	<b>410/402</b> <sup>4</sup>	<b>530/532</b> <sup>4</sup>

Notes:

1. ND = not detected above the laboratory reporting limit
2. <0.1 = not detected above the noted laboratory reporting limit
3. umhos/cm = micro ohms per centimeter
4. Total dissolved solids = measured/calculated
5. mg/L = milligrams per liter
6. °C = celsius
7. - - = not analyzed
8. **Bold** = concentration detected above the laboratory reporting limit.





## Figures

FINAL

