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July 18, 2014

Mr. Aaron Yue
Project Manager, Geological Services Branch
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630

Subject: Response to Department of Toxic Substances Control's May 22, 2014 Letter "Request for Information Regarding Historic Pacific Gas and Electric Company Wells, Topock Compressor Station Site, Needles, California (EPA ID No. CAT080011729)"

Dear Mr. Yue:

The following information has been compiled in response to the Department of Toxic Substances Control (DTSC)'s request for information regarding historical wells at Topock Compressor Station (TCS) near Needles, California. DTSC questions are presented below in italics, followed by Pacific Gas and Electric Company (PG&E)'s response. The wells referenced in DTSC's letter and these responses are shown on Figures 1 through 9. Additional pertinent information on the various wells and references are provided at the end of this letter.

Question 1

***Well #1.** PG&E has recently submitted old site figures to DTSC during investigation of TCS Well #4 located in Bat Cave Wash and preparation of the RFI Volume 1 Addendum. The drawing, dated January 17, 1957 (portion of this drawing is attached - Drawing 58055), indicates that "Well #1 Elev. 535.9" was located by the Transwestern Meter area. Additionally, faint text occurring above the notes section of this drawing discusses Well #1 and appears to read, "Contours Change of Well #1 4/24/60". PG&E should, as accurately as possible, plot this well on a current site map and disclose the historic use of this well and its ultimate disposition.*

Response

Figures 1 (overview) and 2 show the approximate location of Well #1 relative to the current facilities at TCS. The information pertaining to the location of this well is limited to drawings 580855 (DTSC's letter refers to Drawing 58055--we believe this is a typo and should be 580855), R-2538, and 580808. Drawing 580808 shows a well in the same location, but the well is not numbered. The location of the well has been estimated as accurately as possible using the current Topock geographic information system (GIS) base map and georeferencing various historical drawings that have Well #1 shown with useful points of reference.

Well #1 was likely the first of several exploratory wells (Wells #1 through #5) drilled in 1950 prior to construction of the compressor station (see response to Question 4). Information on the ultimate disposition of Well #1 is not available.

Question 2

***Well No. 1 and Well No. 2:** This is in reference to the two original water supply wells for the station located by the AOC-14 Railroad Debris site and Interstate 40. These two wells have not been accurately located on past PG&E figures. Recently submitted figures dated from the 1950s (Drawings 482557 and 482629) appear*

to provide sufficient information for PG&E to accurately plot them on site maps. The drawings (including Drawing 58055) indicate that Well No. 1 was located in the footprint of the freeway, but Well No. 2 was located in the Railroad Debris area and outside of the freeway footprint. Detailed drilling log information for these wells is contained in the Alisto 1996 Current Conditions Report for Bat Cave Wash. The top of casing elevation for Well No. 2 was stated to be 552.76' and casing diameter was noted to be 10 ¾ inches. PG&E should, as accurately as possible, plot these wells on a current site map. It's assumed that Well No. 1 was situated under the current freeway and would be inaccessible to further assessment. In addition, PG&E should ascertain if Well No. 2 was appropriately decommissioned. If not, PG&E should propose methods to locate Well No. 2 (e.g., geophysical survey and/or pothole).

Response

Wells No. 1 and No. 2 are shown on Drawings 481911, 482557, and 482629. These two wells are not shown on Drawing 580855. These two wells are also referred to as PGE-01 and PGE-02, respectively. Figures 1 and 4 show the estimated locations of PGE-01 and PGE-02. The information used to locate these wells was taken from Drawing 481911 REV12. The drawing was georeferenced using the Topock GIS base map and several points of reference on the drawing and the top of casing elevation.

There is no specific information regarding the method of decommissioning of PGE-2. A 1964 work order (GM 159114) states it was necessary to abandon the two existing water wells to accommodate the state freeway (PG&E, 1964a).

PG&E proposes to conduct a geophysical survey in the suspected area of Well No. 02. The results of the geophysical survey will be discussed with DTSC to assess whether or not potholing is needed.

Question 3

Topock Well No. 1: *According to the 2007 RFI/RI Volume 1 Report, Topock Well No. 1 supplied the PG&E Topock Compressor Station with water from approximately 1960 until 1980 after Wells No. 1 and No. 2 were taken offline. DTSC recently searched for Topock Well No. 1 based on USGS maps and aerial photographs and found a roughly six to eight inch diameter iron pipe with a 90 degree elbow rising from the ground (see Figure 1 attached). PG&E should confirm if this is indeed a well and if it is Topock-1. If it is a well, PG&E should also determine if the well can yield reliable water level or chemical data in support of the groundwater remedy.*

Response

PG&E contacted the property owner to obtain permission to visit the location of the pipe identified by DTSC. A site visit was conducted on June 3, 2014. The property owner, Victor Hewlett, was present for the site visit.

The property owner indicated that the old well was capped and had been covered with dirt (Hewlett, 2014). He identified an area approximately 10 to 15 feet across as the likely location of the well, which was approximately 50 feet away from the feature noted in DTSC's May 22, 2014 letter. Therefore, the pipe and elbow noted by DTSC is not the well, rather, they are likely part of an irrigation or water line. The bolted fitting is a coupling of some type, and the black mass appears to be burned plastic pipe. According to Mr. Hewlett, a water tank and piping were also formerly located in the vicinity of Topock 1; however, they burned down some years ago.

This area appears to be located on fill, surrounded by marsh, and is consistent with the location shown on the United States Geological Survey topographic map. The approximate location of Topock-1 is shown on Figure 8.

No boring log has been found for Topock-1. There is written information indicating that the well consists of a casing set within an old, brick-lined dug well or cistern filled with volcanic cinders or volcanic ash, soil, and

gravel. The dug well is reported as being either 24 or 30 feet wide, and the casing is reported to be either 14 inches or 16 inches in diameter and 50 feet deep (PG&E, undated(a), 1975).

The Southwest Gas Corp. response to the 1974 Arizona Water Commission Questionnaire for Topock-1 indicates that the well is 33 feet, 8 inches deep and that the casing diameter is 12.5 inches. The same questionnaire indicates that, as of 1974, the well was used for emergencies only (Southwest Gas Corporation [SGC], 1974a).

As noted by the property owner, the Topock-1 well was capped and buried; therefore, it cannot be sampled. Topock-1 was never owned or operated by PG&E. The water supply wells located in Arizona were and are currently owned and operated by others.

Question 4

Finally, DTSC has concerns with the numbering system used to identify historic wells, specifically the PGE-X series. The numbering of PGE-6 through 9 is consistent and well documented. PG&E-1 through 4, however, have been briefly mentioned in the past with limited information. Based on the numbering scheme, it would be logical to assume that a PGE-05 well should also exist. However, PGE-05 has not been mentioned in documents to date. PG&E should review all historical data and comment on the PGE-X numbering system including listing the identity of wells PGE-01 through PGE-09.

Response

Information gathered during the r historical file review was reviewed for information pertaining to water supply wells. A chronology and summary of early exploratory and water supply well installation has been developed and is listed below, along with the various naming conventions used over the years.

Table 1 provides a cross reference for various well names and numbering conventions; Table 2 summarizes information for each of the wells; and Table 3 provides water quality analytical data for various exploratory and water supply wells (through 1979). Well locations are provided on Figure 1; individual well locations are shown on Figures 2 through 9.

It appears that the "PGE-X" well-naming system was implemented sometime between 1987 and 1996. The 1987 RCRA facility assessment report (A.T. Kearney, 1987) did not use the PGE-X naming convention when referring to Solid Waste Management Unit (SWMU) 2/Unit 4.2 (PGE-08). The first report where wells were referred to as "PGE-X" appears to be the 1996 Current Conditions Report (Alisto, 1996). This report identified wells PGE-01, PGE-02, PGE-06, PGE-07, and PGE-08.

The following summary and chronology on various historical well and water supply wells has been developed:

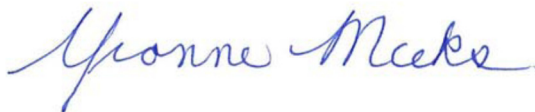
- **1951:** Five exploratory wells (Wells No. 1 through No. 5) were drilled prior to station construction.

Available information on these wells includes:

- Handwritten boring logs for Well Nos. 2, 3, and 5 dated between March and April, 1950 (PG&E, 1950a-c).
- A typed summary of water quality data from Well Nos. 3, 4, and 5 dated April, 1950 (PG&E, 1950d); the logs and water quality data are of poor quality (partially illegible).
- Reference to an exploratory drilling program included in the summary of plant construction (GM 113758 [PG&E, 1951a]).
- Well No. 4 was recently found in Bat Cave Wash and is now referred to as TCS Well No. 4

- **1951:** Wells No. 1 and No. 2, also known as PGE-1 and PGE-2, were drilled as the first compressor station water supply wells (PG&E, 1951a-c).
- **1961:** Due to the poor water quality (high total dissolved solids in wells PGE-1 and PGE-2), these wells were put on standby status. PG&E contracted with Southwest Gas Company to use an existing Atchison Topeka, and Santa Fe Railway (ATSF) Well (Topock-1), also known as Santa Fe Well No. 1, on the Arizona side of the Colorado River. Installation date for Topock-1 is not known (PG&E undated(a), 1975). The approximate location of Topock-1 is shown on Figure 8.
- **1964:** PGE-1 and PGE-2 were abandoned due to freeway construction (PG&E, 1964a-b). Well Nos. 6 and 7, also known as PGE-6 and PGE-7, were installed as replacement wells and put on standby (Peake, 1964; PG&E, 1964c,-d).
- **1966:** Topock-2, also known as Santa Fe Well No. 2, was added as a supplemental water supply (existing well, installed by others in 1958 or 1959) (ATSF, 1966; SGC, 1974b). The approximate location of Topock-2 is shown on Figure 9.
- **1969:** PGE-8 was installed as an injection well. PGE-8 was known as Unit 4.2 and SWMU 2 and is described in detail in the Final RFI/RI Volume 1 (CH2M HILL, 2007). The location of PGE-8 is shown on Figure 6.
- **1974:** Topock-3 (Santa Fe Well No. 3) was installed in May 1974. Because Topock-1 and Topock-2 had poor water quality, PG&E requested Southwest Gas Corporation to install Topock-3 (Drilling and Pump, Inc., 1974a-b; PG&E, 1974b); Topock-1 was put on standby for emergency supply only (SGC, 1974a; PG&E, 1984).
- **1980:** Topock-2A was installed and Topock-2 was abandoned (PG&E, 1980a-c, 1984).
- **1997:** PGE-9N and PGE-9S were installed near the Arch Bridge by PG&E as replacement water supply wells (PG&E, undated(b), PG&E, 1998). These wells have high total dissolved solids and were never used for water supply. The locations of PGE-9N and PGE-9S are shown on Figure 7.

Sincerely,



Yvonne Meeks
Topock Project Manager

References

Documents

- Alisto Engineering Group (Alisto). 1996. *Current Conditions Report Bat Cave Wash Project, Pacific Gas and Electric Company, Topock Compressor Station, 15 Miles Southeast of Needles, California*. June 25.
- A.T. Kearney. 1987. *RCRA Facility Assessment, Pacific Gas and Electric Company, Topock Compressor Station, Needles, California*. August.

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- CH2M HILL. 2007. *Final RCRA Facility Investigation/Remedial Investigation Report - PG&E Topock Compressor, Station, Needles, California. Volume 1 – Site Background and History*. September.
- _____. 2011. *Draft Well Inventory Data Package to Support Discussion of Future Well Decommissioning Activities*. September.
- Drilling and Pump, Inc. 1974a. Letter to Southwest Gas Corporation. "Well #3 at Topack [sic], Ariz." Drilling Log. June 5.
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- _____. 1957b. Silica Content, Santa Fe Well #1 and Colorado River Water, Topack [sic] Comp Station. January 17.
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- _____. 1961b. Industrial Water Analysis, New Well, Topock Compression Station. Sample Received October 31, 1961. November 1.
- _____. 1961b. Industrial Water Analysis, Topock Compression Station 10/30/61. Sample Received November 1, 1961. November 1.
- _____. 1964. Domestic Water Analysis, Sample from New Topock Well, June 64 [Hand-marked Well #6]. June 24.
- _____. 1968a. Domestic Water Analysis Results, Arizona Well #1. January 15.
- _____. 1968b. Domestic Water Analysis Results, Arizona Well #2. January 15.
- Pacific Gas and Electric Company (PG&E). 1950a. *May Drilling Log for Well #2*. Drilled between March 13, 1950 and— (poor legibility). March 20.
- _____. 1950b. *Drilling Log for Well #3*. Month unknown; log not dated. Drilled between March 19 and March 30, 1950; (poor legibility).
- _____. 1950c. *May Drilling log for Well #5*. Drilled between April 29 and May 13, 1950; (poor legibility).
- _____. 1950d. Memo from W.N. Lindblad (PG&E) to J. Love/PG&E. "Chemical Analysis of Well Waters near Site of Topock Compressor Station." June 22.
- _____. 1951. *GM 113758: Construction of Topock Compressor Station*. Part II, pp. 132-136. Date Unknown.
- _____. 1960. *GM 149072: Install 3160' of 6" Pipe to Supply Water for use at Topock Station*. August 15.

- _____. 1964a. *GM 159114: Replace Water Well System – Freeway Crossing – Topock*. March 24.
- _____. 1964b. Memo from H.P. Prudhomme/PGE to K.B. Anderson/PGE. Replacement of Water Wells, Topock Compressor Station. May 11.
- _____. 1964c. Memo from H.P. Prudhomme/PGE to K.B. Anderson/PGE. Completion of Water Well at Topock Compressor Station. June 23.
- _____. 1964d. Letter from H.M. Gustafson/PGE to P.W. Quinn, Jr./Division of Highways, District VIII. "Topock Compressor Station, VIII-SBd-12576, GM 159114, Parcel No. 12048-G,H [610/028.411 (CH)]." August 3.
- _____. 1975. Letter from H.P. Prudhomme/PGE to E.A. Lundberg/United States Bureau of Reclamation. "Letter in Response to BOR letter dated 5/27/1975, reference LC-440 560." June 11.
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- _____. 1980b. *Work Order 40679: Repair #2 Water Well (Estimate H-4233; 9-19-80)*. Authorized 10-6-80.
- _____. 1980c. *Work Order 40919: Develop Replacement Water Well (Estimate N-4241; 11-10-80)*. Authorized 11-13-80.
- _____. 1984. *Topock Compressor Station Water System*. April. Note: date based on footer RDD 4/84; document has no other date.
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- _____. 1998. *Technical Status Update #2 – Topock Industrial Water Supply Well Project*. March 16.
- _____. Undated(a). *Santa Fe Well at Topock*. Likely late 1950s or 1960 based on detail regarding proposed pipeline and pump assembly.
- _____. Undated(b) [top of memo has handwritten date of February 6 – 10, 1997]. Memo entitled: *Draft Design Criteria and Specification Summary, Topock Industrial Water Supply Well Installation Project*, Pacific Gas and Electric Company, Topock Compressor Station, Needles California.
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- Paul R. Peaker Water Well Repairing and Drilling (Peaker). 1964. *Pacific Gas and Electric Co., Bo 488, Barstow, California, 14", 180', at Topock Compressor Station*. June 17.
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Drawings

481911. *Property Map, Topock Compressor Station*. February 16, 1951. Revision 12.

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482557. *Topography, Topock Compressor Site*. May 25, 1971. Revision 1.

482629. *Sewers, Domestic, Utility & Fire, Water System, Topock Compressor Station*. June, 14, 1966.
Revision 1.

580808. *Contour Map of Topock Compressor Station*. March 1950.

580866: *Plot Plan of PG&E Co Topock Compressor Station and Vicinity*. No date specified

R-2538. *Topock-Milipitas Gas Line, Topography at Topock Compressor Station*. April, 24, 1950.

Tables

TABLE 1

Historical and Current Well Naming Conventions*PG&E Topock Compressor Station, Needles, California*

Well Name Used in RFI/RI	Other Commonly Used Well Names	Comments
PGE-01	PGE-1, Well No. 1, PGE Well 1	
PGE-02	PGE-2, Well No. 2, PGE Well 2	
PGE-06	PGE-6, Well #6	
PGE-07 (now PGE-07BR)	PGE-7, Well #7	
PGE-08	PGE-8, Disposal well, SWMU-2	
PGE-09N	None	
PGE-09S	None	
Topock-1	New Santa Fe Well, Santa Fe #1, Topock AZ Well No. 1, Well I	Reference documents use the terms "New Well" and "New Santa Fe Well" for both Topock-1 and Topock-2; the actual well referenced can be determined based on the date of the document.
Topock-2	Santa Fe #2, Topock AZ Well No. 2, Well II	
Topock-2	Topock-2A	This is the replacement well installed adjacent to Topock-2 in 1980.
Topock-3	Santa Fe #3, Well III	
#1	Well #1	Exploratory Well
#2	Well #2	Exploratory Well
#3	Well #3	Exploratory Well
TCS-#4	Well #4 Old well in Bat Cave Wash	Exploratory Well, possibly used for disposal in the 1960s
#5	Well #5	Exploratory Well

TABLE 2

Summary of Available Information for Water Supply and Operational Wells for Topock Compressor Station*PG&E Topock Compressor Station, Needles, California*

Well No. / Name ^a	Description	Casing Depth	Casing Diameter	Perforated Interval	Pumping Rate (gallons per minute)	Current Status
PGE-01	Original TCS water supply well, drilled June-July 1951	177 feet	14 inches	78 feet of perforated casing	>400 gpm at time of installation; data also available for April 29, 1964 (328 gpm) and May 7, 1964 (310 to 320 gpm)	Abandoned/Closed
PGE-02	Original TCS water supply well; drilled July-September 1951	148 feet	14 inches	54 feet of perforated casing	330 gpm at time of installation; data also available for April 29, 1964 (240 gpm) and May 7, 1964 (240 to 245 gpm)	Abandoned/Closed
#1 (circa 1950)						Unknown
#2 (1950 Well)	March 1950	Top of well elevation = 493.26 feet; bottom of boring at 393 feet				Unknown
#3 (1950 Well)	Installed March 1950	Top of well at el. 475 feet; bottom of boring at el. 290 feet				Unknown
#4 (TCS Well #4) (1950 Well)						Recently located in Bat Cave Wash
#5 (1950 Well)	Installed May 1950	Total depth 194 feet; elevation on log from collar of well; top of well at 553.7 feet	12 inches for 84 feet	Water encountered at 462.7 feet		Unknown
PGE-6	Water supply well installed June 1964	180 feet; 19 feet of 20-inch conductor casing on top	14 inches	110 feet to 180 feet	425 gpm	Decommissioned (CH2M HILL, 2011)
PGE-7	Water supply well installed October 1964	180 feet			330 gpm	Reconstructed as PGE-07BR
PGE-8 (SWMU 2)	Disposal Well	Total depth 554 feet; cased to 405 feet	6 inches	405 feet to 554 feet	26 gpm (estimated sustained yield)	Included in RCRA Investigation Program
PGE-9N	Proposed replacement well for existing well on Arizona side Installed March – April 1997	95 feet		70 feet	55 gpm (following modifications)	Not used for water supply; monitored occasionally

TABLE 2

Summary of Available Information for Water Supply and Operational Wells for Topock Compressor Station*PG&E Topock Compressor Station, Needles, California*

Well No. / Name^a	Description	Casing Depth	Casing Diameter	Perforated Interval	Pumping Rate (gallons per minute)	Current Status
PGE-9S	Proposed replacement well for existing well on Arizona side; installed March through April 1997	100 feet	12 inches	70 feet	150 gpm (following modifications)	Not used for water supply; monitored occasionally
Topock-1	Casing set in dug well, unknown installation date; pipeline to PG&E installed December 1960 through January 1961 (PG&E, 1960)	33 feet, 8 inches (SGC, 1974a); 50 feet (PG&E, undated(b), 1975)	12.5 inches (SGC, 1974a); 14 inches (PG&E, undated); 16 inches (PG&E 1975)		160 gpm (SGC, 1974a)	Capped (Hewlitt, pers. comm. 2014)
Topock-2	Water supply well, installed January 1959; Installed by Waughtel on or about 1958; installed 1958 (SGC, 1974b)	150 feet	8 inches	50 feet of "gravel perforations"	Standing water level = 6 feet; drawdown = 11 feet at 210 gpm	Abandoned
Topock-2A	Water supply well installed 1980	140 feet	12 inches	100 feet to 140 feet	Estimated 200 gpm with current pump	Active
Topock-3	Water supply well installed 5-17-1974 (SGC, 1974c)	250 feet; later partially filled with concrete in an effort to reduce total dissolved solids; currently 130 feet	12 inches	85 feet to 130 feet; formerly 150 feet to 190 feet and 210 feet to 250 feet	Estimated 200 gpm with current pump	Active; lower 120 feet of well filled with concrete

Figures



Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

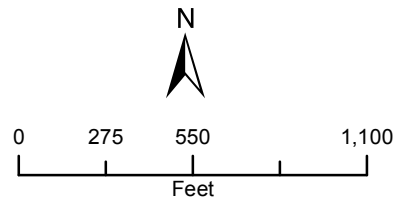


Figure 1
Water Supply and Historical Well Locations

Response to DTSC's May 22, 2014
 Request for Information Regarding
 Historical Pacific Gas & Electric Company (PG&E) Wells
 PG&E Topock Compressor Station
 Needles, California



Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

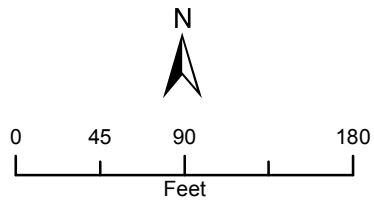


Figure 2
Water Supply and Historical Well Locations

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Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

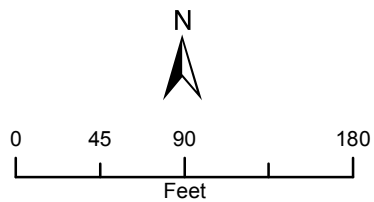


Figure 3
Water Supply and Historical Well Locations

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Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

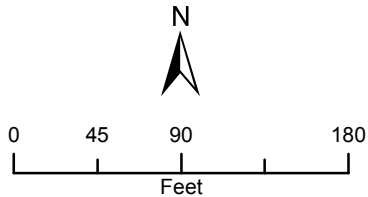


Figure 4
Water Supply and Historical Well Locations

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Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

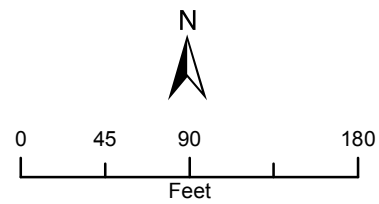


Figure 5
Water Supply and Historical Well Locations

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 Needles, California



Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

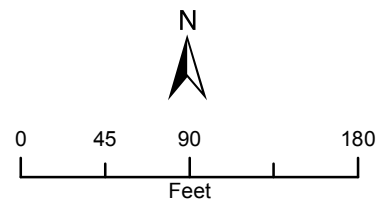


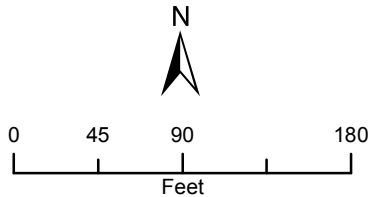
Figure 6
Water Supply and Historical Well Locations

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PG&E Topock Compressor Station
Needles, California



Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated



**Figure 7
Water Supply and Historical Well Locations**

Response to DTSC's May 22, 2014
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PG&E Topock Compressor Station
Needles, California



Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

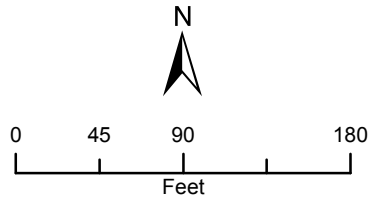


Figure 8
Water Supply and Historical Well Locations

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 Historical Pacific Gas & Electric Company (PG&E) Wells
 PG&E Topock Compressor Station
 Needles, California



Legend

- Well Location with Known Coordinates
- ▲ Well Location - Estimated

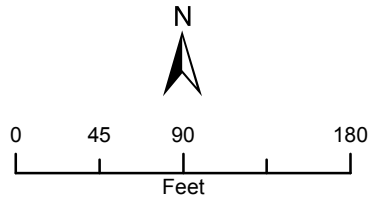


Figure 9
Water Supply and Historical Well Locations

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