

**THE SHERWIN WILLIAMS COMPANY
STEAD, NEVADA
WELL NO. 2
CONSTRUCTION AND TESTING**

PROJECT NO. 97028.42

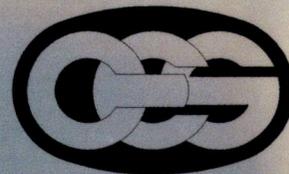
March 9, 1998

Prepared for:

**The Sherwin-Williams Company
101 Prospect Avenue
Cleveland, Ohio 44115-1075**

Prepared by:

**CONSULTING ENGINEERING SERVICES, INC.
1105 Terminal Way, Suite 304
Reno, Nevada 89502
Telephone: 702-786-5873
Fax: 702-786-6138**



PRINT OR TYPE ONLY
DO NOT WRITE ON BACK

WELL DRILLER'S REPORT

Please complete this form in its entirety in accordance with NRS 534.170 and NAC 534.340

Permit No. _____
Basin 92.B

NOTICE OF INTENT NO. 38404

1. OWNER Sherwin Williams
MAILING ADDRESS 101 Prospect Avenue N.W. Cleveland, OH 44115-1075

ADDRESS AT WELL LOCATION Intersection of Arkansas St. & Lemon Vly Dr. Reno, NV 89510

2. LOCATION NW 1/4 SW 1/4 Sec. 26 T 31N R 19 E Washoe County

PERMIT NO. 55940/6620 80-730-01
Issued by Water Resources Parcel No. Subdivision Name

3. WORK PERFORMED
 New Well Replace Recondition
 Deepen Abandon Other _____

4. PROPOSED USE
 Domestic Irrigation Test
 Municipal/Industrial Monitor Stock

5. WELL TYPE
 Cable Rotary RVC
 Air Other _____

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thick-ness
Clay		0	55	55
Clay w/fine sand		55	80	25
Clay		80	90	10
Sand & clay		90	120	30
Sand		120	135	15
Fine sand & clay		135	145	10
Course sand		145	192	47
Clay		192	194	2
Sand & clay		194	262	68
Clay		262	264	2
Sand		264	275	11
Gravel		275	287	12
Clay		287	295	8
Sand & gravel		295	310	15
Sand		310	410	100
Granite Bedrock		410	430	20

8. WELL CONSTRUCTION
 Depth Drilled 430 Feet Depth Cased 424 Feet

HOLE DIAMETER (BIT SIZE)

	From	To
<u>24</u> Inches	<u>0</u> Feet	<u>65</u> Feet
<u>19</u> Inches	<u>65</u> Feet	<u>430</u> Feet

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
<u>SEE</u>				

Perforations:
 Type perforation ATTACHED
 Size perforation _____

From _____ feet to _____ feet
 From _____ feet to _____ feet
 From _____ feet to _____ feet
 From _____ feet to _____ feet

Surface Seal: Yes No Seal Type:
 Depth of Seal 190 Neat Cement
 Placement Method: Pumped Cement Grout
 Poured Concrete Grout

Gravel Packed: Yes No
 From 190 feet to 430 feet

9. WATER LEVEL
 Static water level 47.5 feet below land surface
 Artesian flow _____ G.P.M. _____ P.S.I.
 Water temperature cool °F Quality good

10. DRILLER'S CERTIFICATION
 This well was drilled under my supervision and the report is true to the best of my knowledge.

Name Humboldt Drilling & Pump Co., Inc. Contractor
 Address 4675 W. Winnemucca Blvd Contractor
Winnemucca, NV 89445

Nevada contractor's license number issued by the State Contractor's Board 015234

Nevada driller's license number issued by the Division of Water Resources, the on-site driller 1713

Signed Jerry G. Tomp
 By driller performing actual drilling on-site or contractor.

Date 2-3-98

Date started 12/13/97, 19____
 Date completed 12/17/97, 19____

7. WELL TEST DATA

TEST METHOD:	Draw Down (Feet Below Static)	Time (Hours)
<input type="checkbox"/> Bailer <input checked="" type="checkbox"/> Pump <input type="checkbox"/> Air Lift G.P.M. _____	<u>160.85</u>	<u>24 hrs.</u>
<u>189</u>		

Casing Log	FT.:			Formation - Remarks 12-17-97
10 3/4" casing				3" Gravel Chut + 2 - 195'
Cement Grout Seal D-190'				
Screen	200	240		
Blank	240	260		
Screen	260	320		
Blank	320	340		
Screen	340	380		
Blank	380	400		
Screen	400	420		
Blank	420	425		
Welded Bull Nose on Bottom				Gravel Pack from 190 - 430

ORIGINAL
FILE WITH DIVISION OF
WATER RESOURCES.

NOTICE OF INTENT

No. 38404

DIVISION OF WATER RESOURCES:

11/17 1997

On or about 11/19 1997, I plan to commence drilling deepening recon-

ditioning plugging of a 5 1/4 inch well, for TEST purposes.

This well is is not a replacement well.

The work will be done for SHERWIN - WILLIAMS
(Name of client and address)

location of well is NW 1/4 SW 1/4 Sec. 26 T. 31 N31R 19 E

PARCEL NO. 80-73001 SUBDIVISION NAME

ADDRESS (at well location) INTERSECTION OF ARKANSAS ST. & LENON VLY.

PERMIT/WAIVER NO. 55940/6028 in WASHOE County.

Contractor's Lic. No. 015234 Driller's Lic. No. 1154T

Company Name and Address HUMBOLDT DRILLING & PUMP CO.
WINNEMUCCA, NV 89445 JIM STARS
Driller's Signature

Need log forms Need notice cards

(O)-5256 (Rev. 11-96)



BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO. 17 CARSON CITY, NEVADA

POSTAGE WILL BE PAID BY ADDRESSEE

ATTN: BRANCH MANAGER
DIVISION OF WATER RESOURCES
STATE OF NEVADA
123 W NYE LN STE 246
CARSON CITY NV 89706-9931

STATE ENGINEERS OFFICE
97 NOV 19 AM 10:24

RECEIVED

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



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SUMMARY AND CONCLUSIONS

1. The Sherwin Williams Company Well No. 2 (SW-2) was drilled in Lemmon Valley near Stead, Washoe County, Nevada. The well site is situated within property owned by the Washoe County Utility Services Division that houses Lemmon Valley Well No. 6. SW-2 replaces Well No. 6 which produces an unacceptably high concentration of sand in the discharge when pumped at a rate of greater than about 85 gallons per minute. Well No. 6 is equipped to pump 150 gallons per minute and the well has been equipped with a sand separator to minimize sand accumulations in the distribution system.
2. A test well for Well No. 2 was drilled by the dual-tube reverse rotary drilling method. The method allows formation water samples to be collected as the borehole is advanced, when desired, even in unconsolidated alluvial deposits. It also allows for collection of drill cuttings that are very representative of the formation material penetrated. The test well was terminated at a depth of 440 feet versus the target depth of 500 feet because granitic bedrock was encountered at a depth of 425.
3. SW-2 was constructed of 10¾-inch O.D. (outside diameter) steel well casing with a wall thickness of 0.250 inches and a total of 160 lineal feet of 10-inch pipe size Johnson-UOP continuous slot, shaped wire, wound well screen with an aperture width of 0.030 inch. The screen was placed opposite the most permeable water-bearing horizons penetrated by the well identified through the borehole geophysical logs and the lithologic log of the borehole. A cement seal was placed in the annulus from a depth of 190 feet to the land surface. The deep sanitary seal coupled with a large aggregate thickness of clay above 190 feet inhibits contamination originating at the land surface from impacting the water-bearing horizons exploited by the well.
4. Construction of the well was substantially completed December 23, 1997 with the conclusion of initial well development procedures. However, the well drilling and testing program for SW-2 was not entirely complete until February 5, 1998. Upon completion of well construction, the well was subjected to a series of well-performance and aquifer-stress tests. The initial step-drawdown test indicated that the well was afflicted with a large skin factor. The skin limited the yield of the well to approximately 150 gallons per minute. Additional development was initiated. Subsequent testing determined that the skin was eventually removed and that the well is highly efficient at pumping rates of up to 200 gpm.
5. The aquifer transmissivity was determined to be approximately 6,300 gallons per day per foot width of aquifer. The coefficient of storage was determined to be 0.0019, a value which suggests the aquifer is semi-confined. The average vertical hydraulic conductivity of the formation is approximately 1.5 gallons per day per square foot.
6. The sand content in the discharge from the well was measured with a Rossum[™] sand tester. Sand content five minutes after starting the pump at the beginning of the aquifer stress test was met the specified limit of five (5) parts per million (p.p.m.). The sand content after five minutes was 0 p.p.m. for all practical purposes.
7. A water sample was collected from the well discharge near the conclusion of the aquifer-stress pumping test. The sample was analyzed for general physical chemistry, trace metals, volatile organic

compounds (VOCs), regulated and unregulated synthetic organic compounds (SOCs), radionuclides, and asbestos. The chemical quality of the groundwater meets all applicable state and federal drinking water standards.

8. Well No. 2 was test pumped at rates of between 100 and 200 gpm. The well is rated to yield 180 gpm using specific criteria establish by the Washoe County Utility Services Division. For selecting a production pump, the design pumping level at 180 gpm is approximately 200 feet below the land surface.
9. Well No. 2 met the specifications for plumbness and alignment.

INTRODUCTION

The Sherwin-Williams Company Well No. 2 (SW-2) is located in Lemmon Valley north of Reno, Nevada (refer to Figure 1) near the community of Stead, Nevada. The well site is situated within the NW¼ SW¼ of Section 26, Township 21 North, Range 19 East, M.D.B.&M. (refer to Figure 2). The well site is within property owned by the Washoe County Utility Services Division.

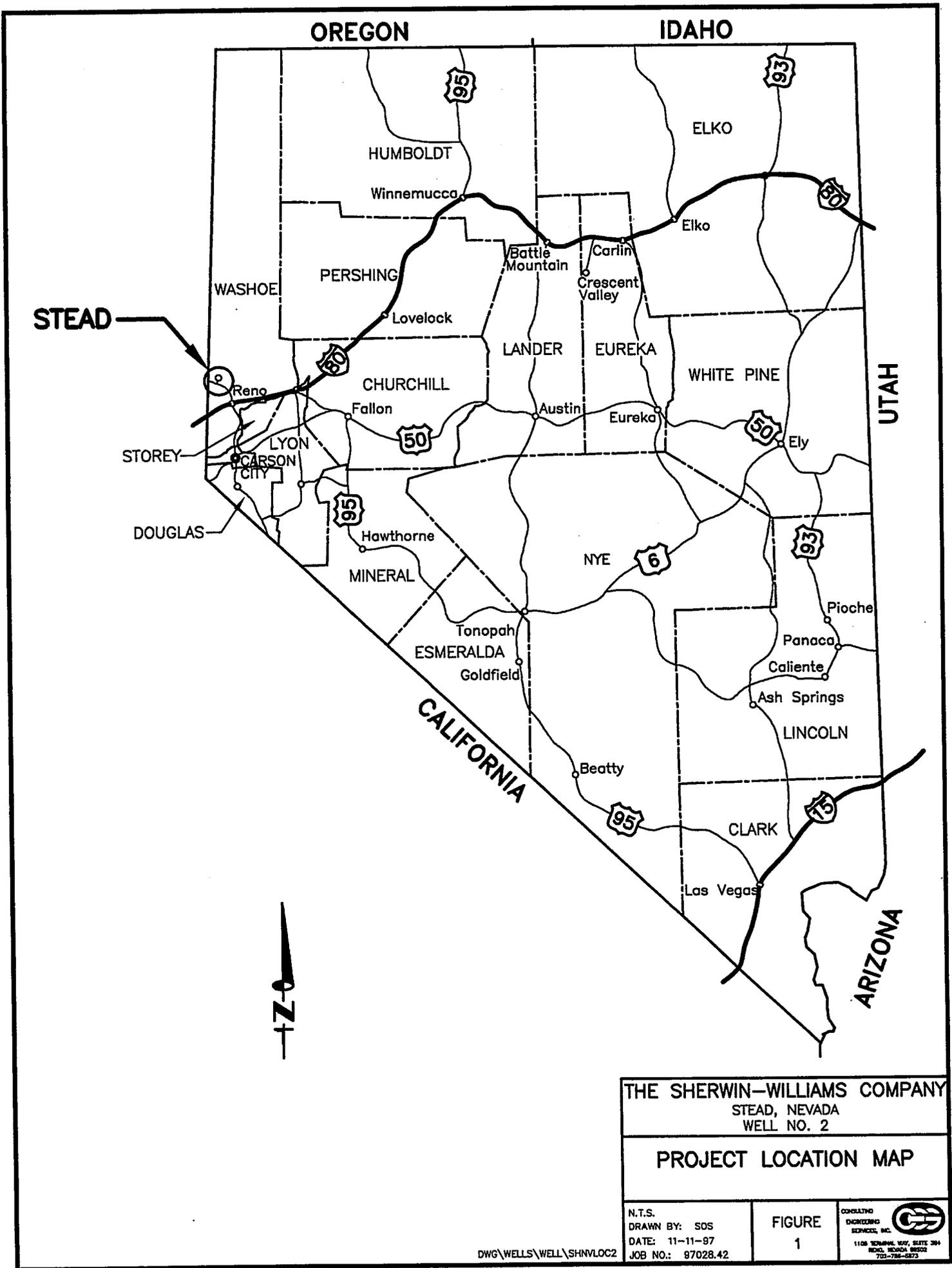
SW-2 was constructed for the Washoe County Utility Services Division (Utility Division) under a cooperative agreement between The Sherwin-Williams Company and Washoe County. Under the terms of the agreement, The Sherwin-Williams Company agreed to provide the County with a total of 700 gallons per minute from one, possibly two wells. These terms were partially met with the construction of Well No. 1 in October and November, 1997 which may be rated to yield 400 gallons per minute (refer to CES report detailing the construction and testing of SW-1). Well No. 2 was needed to provide the balance of 300 gpm. Because the well is located adjacent to a major thoroughfare and an area where residential wastes are disposed of through individual septic systems, the preliminary well design included a cement sanitary seal to a depth of at least 200 feet to reduce the potential for contamination originating at the land surface to degrade the chemical quality of groundwater derived from the well.

Well No. 2 replaces a well owned and operated as a quasi-municipal water supply source by the Utility Division that is referred to as Lemmon Valley Water Company Well No. 6 (see Figure 2). Well No. 6 was drilled and completed to a depth of 438 feet in 1970. Its casing was perforated with factory mill slots placed selectively between depths of 111 and 438 feet below the land surface. When Well 6 was acquired by the Utility Division, it was purported to yield approximately 200 gallons per minute. However, at 200 gpm, the well yielded excessive amounts of sand in the discharge and it was determined that the sand content could be reduced to acceptable levels by restricting the pumping rate to approximately 85 gallons per minute (Dan Dragan, personal communication). As a compromise, the Utility Division reduced the discharge from the well to approximately 150 gpm and equipped it with a sand separator to combat the sand problem.

The drilling and testing program for The Sherwin-Williams Company Well No. 2 includes the formal plugging and abandonment of Well No. 6. The extirpation of Well No. 6 and two other wells (the Peak Well and Turney Well) are documented in separate report.

Consulting Engineering Services, Inc. (CES) of Reno, Nevada was engaged by The Sherwin-Williams Company to provide consulting services relevant to the design, bidding, construction and testing of Well No. 1 and No. 2. CES worked closely with the Utility Division staff in all phases of the program from the design stage through completion of the well performance and aquifer stress tests. Utility Division staff participated in the collection of the aquifer stress test data and reviewed conclusions of this report.

Competitive bids for Well No. 2 were solicited for the construction and testing of the well from three qualified drilling firms at the same time as bids were solicited for Well No. 1. Humboldt Drilling and Pump Company of Winnemucca, Nevada was awarded the contract for the entire project. Work on the well commenced November 17, 1997 with the mobilization of equipment and was substantially complete by December 16th with the conclusion of the initial pumping tests. However, additional well development was prescribed as a consequence of the test results and the testing was not completed until February 1998. This report documents the well construction and testing, the chemical quality of the groundwater derived from the well, and provides information relevant to the selection of production pumping equipment.



THE SHERWIN-WILLIAMS COMPANY
 STEAD, NEVADA
 WELL NO. 2

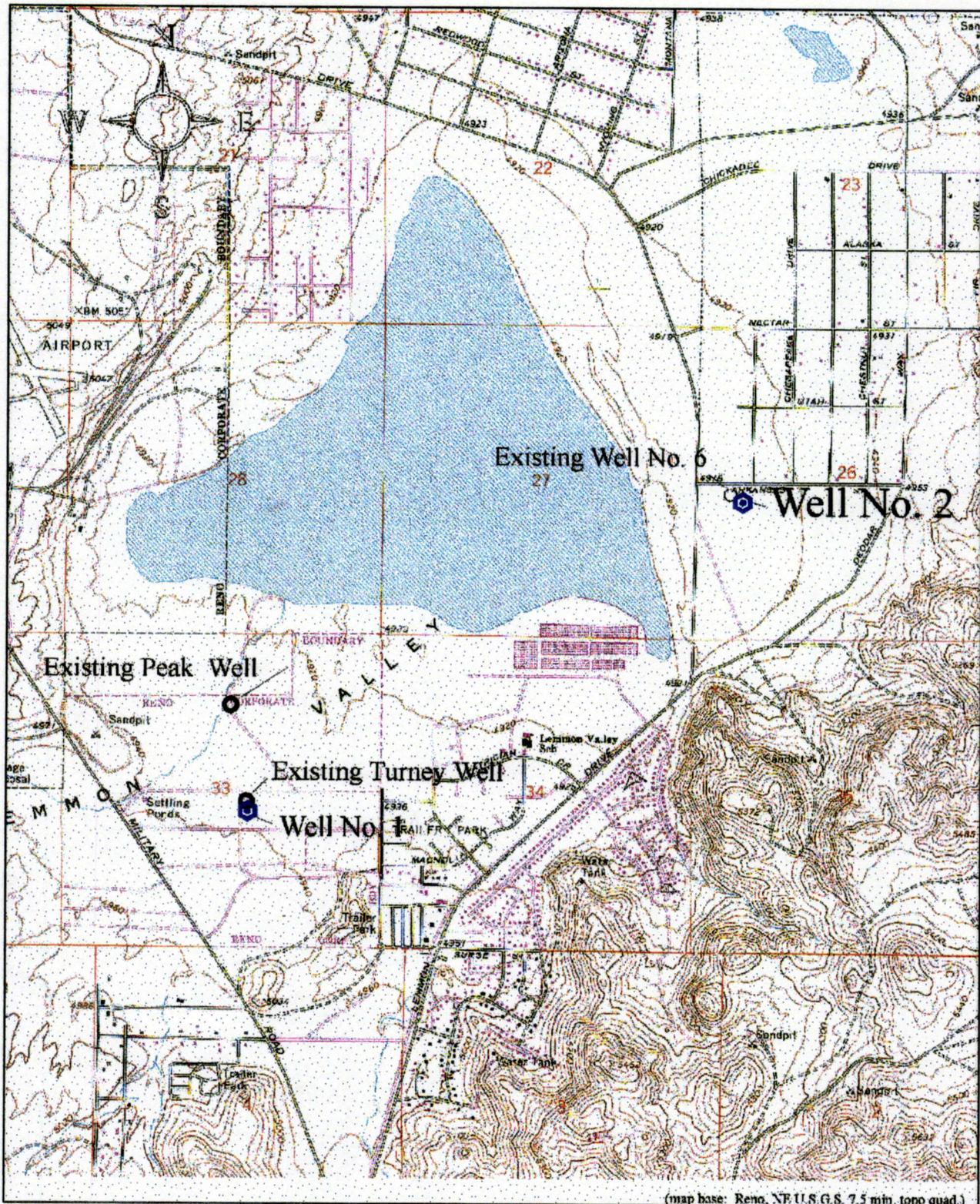
PROJECT LOCATION MAP

N.T.S.
 DRAWN BY: SOS
 DATE: 11-11-97
 JOB NO.: 97028.42

FIGURE
 1

CONSULTING
 ENGINEERING
 SERVICES, INC.
 1108 SHERMAN WAY, SUITE 204
 RENO, NEVADA 89502
 725-788-0873





THE SHERWIN-WILLIAMS COMPANY
 STEAD, NEVADA
 WELL NO. 2

SITE MAP

1" = 2500'
 DRAWN BY: SOS
 DATE: 11-11-97
 JOB NO.: 97028.42

FIGURE
 2



WELL CONSTRUCTION SUMMARY

Well SW-2 was drilled in two stages. The first stage entailed drilling a pilot hole to a depth of 440 feet by the dual-tube reverse-rotary method beginning November 17, 1997 and concluding November 23rd. The second stage entailed reaming the test well and constructing the production well. Upon completion of well construction, the well was subjected to a battery of well performance and aquifer stress tests. Initial testing was substantially complete by December 29th. However, additional well development and testing was recommended and the well testing program was not completed until January 24, 1998. A chronological summary of the well construction and testing program is presented below.

- 9/16/97 Notice to Proceed with the project was issued by The Sherwin-Williams Company.
- 11/07/87 Authorization to start drilling Well No. 2 was given to the contractor. The contractor installed and cemented 24-inch diameter surface conductor casing to a depth of 37 feet.
- 11/17/97 Drilling the 5¼-inch dia. pilot hole by the dual-tube reverse circulation method commenced.
- 11/23/97 Test hole drilling was completed and borehole geophysical logs were performed.
- 11/24-26/97 Data and information from the test well were examined. Final well design criteria were selected. Materials with which to construct the production well were ordered.
- 11/27-12/9/97 Materials were manufactured or acquired and mobilized to the site.
- 12/11-12/97 The borehole was reamed to a diameter of 24 inches and 20-inch diameter casing was installed to a depth of 67 feet to reduce fluid loss in fractured clay.
- 12/13-16/97 The pilot hole was reamed from a depth of 67 feet to the final design depth of 435 feet.
- 12/16-17/97 Well casing, screen, gravel filter pack and sanitary seal were installed.
- 12/18-20/97 Initial development of the well using the drill rig to surge and air-lift pump the well took place. The drill rig was demobilized from the site.
- 12/22/97 The test pump was mobilized to the site and installed in the well.
- 12/22-23/97 Development of the well by surging and pumping was accomplished. Development was concluded when the sand content met the specified level. The well was disinfected with chlorine upon conclusion of development.
- 12/29/97 The first step-drawdown test was performed.
- 1/5-8/98 Additional well development was accomplished.
- 1/9/98 The second step-drawdown test was performed.
- 1/13-15/98 Additional well development was accomplished.
- 1/16/98 The third step-drawdown test was performed.
- 1/19-21/98 Additional well development was accomplished.
- 1/22/98 The fourth and final step-drawdown test was performed.
- 1/23-24/98 The constant-discharge pumping test was performed.
- 1/25/98 Data loggers were removed from the well at the conclusion of the recovery period that followed the pumping test and the test pump was removed from the well.
- 2/5/98 The well was tested for plumbness and alignment.

The test well was drilled to a depth of 440 feet. Drilling was terminated prior to the target depth of 500 feet because the borehole encountered granitic bedrock at a depth of 428 feet. The data from the borehole (formation samples, borehole geophysical logs, and penetration rates) were examined to determine the depth of the production well, the depth of the annular seal, the screened intervals, screen aperture width, and filter pack size and gradation. An abbreviated description of the geologic materials penetrated by the well is provided below. A detailed geologic log of the borehole is provided in Appendix A.

Depth interval (ft.)	Description
0-120	Clay with fine sand interbeds. Clay: yellowish brown to dark yellowish brown, stiff, sandy. Sand: fine, mixed with silt.
120-425	Sand with occasional clay beds. Sand: predominantly fine to medium, occasionally coarse, sub-rounded, granitic.
425-440	Granitic bedrock. Weathered and fractured at the contact with the alluvium at 425, fresh at 435.

PRODUCTION WELL CONSTRUCTION

The preliminary design for SW-2 called for a 500-foot deep well constructed with 10-inch diameter casing and a total of 200 linear feet continuous slot, shaped wire wound well screen to be placed opposite the most permeable water-bearing horizons. As stated above, the subsurface conditions warranted a departure from the preliminary design. The well was ultimately completed to a depth of 424.5 feet and utilized a total of 160 linear feet of well screen. Details of the well construction are shown in Table 2 and illustrated in Figure 3.

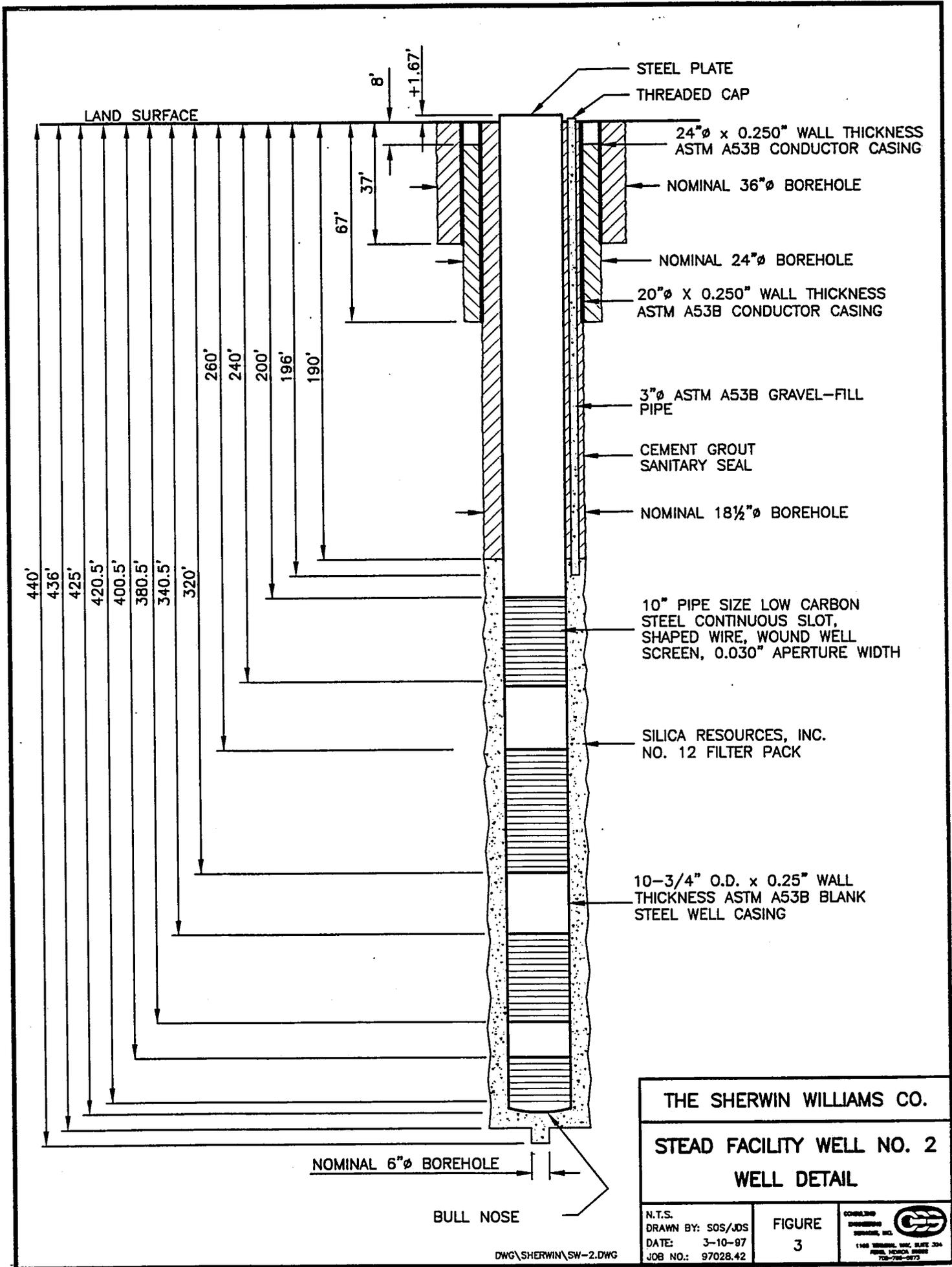
Casing Schedule	
Depth Interval (Feet)	Description
0 to 37	Blank 24-inch O.D. x 0.250-inch wall thickness ASTM A53B steel surface conductor casing. Conductor casing was placed by the contractor at his option to overcome a problem with stability of the borehole. The annular space outside of the casing was sealed with cement grout to the land surface.
0 to 67	Blank 20-inch O.D. x 0.250-inch wall thickness ASTM A53B steel intermediate conductor casing. Conductor casing was placed by the contractor at his option to overcome a problem with stability of the borehole. The annular space outside of the casing was sealed with cement grout to a depth of eight feet below the land surface.
+2.0 to 200	Blank 10¾-inch O.D. x 0.250-inch wall thickness ASTM A53B steel casing.
200 to 240	10-inch pipe size continuous slot, shaped wire wound Johnson-UOP well screen (0.030-inch aperture width).
240 to 260	Blank 10¾-inch O.D. x 0.250-inch wall thickness ASTM A53B steel casing.
260 to 320	10-inch pipe size continuous slot, shaped wire wound Johnson-UOP well screen (0.030-inch aperture width).
320 to 340	Blank 10¾-inch O.D. x 0.250-inch wall thickness ASTM A53B steel casing.
340.5 to 380.5	10-inch pipe size continuous slot, shaped wire wound Johnson-UOP well screen (0.030-inch aperture width).
380.5 to 400.5	Blank 10¾-inch O.D. x 0.250-inch wall thickness ASTM A53B steel casing.

400.5 to 420.5	10-inch pipe size continuous slot, shaped wire wound Johnson-UOP well screen (0.030-inch aperture width).
420.5 to 425	Blank 10¾-inch O.D. x 0.250-inch wall thickness ASTM A53B steel casing with a tapered "bull nose" bottom.
Other	
436 to 191	Gravel filter pack. 18 cubic yards of Silica Resources, Inc. Marysville, CA, "No. 12" Product. Installed via tremie pipe from the bottom of the well, raising the pipe in 30-ft increments.
196 to 2 ft above land surface	Gravel fill pipe. 3-inch diameter Schedule 40 threaded and coupled steel pipe.
191 to 190	Grout cutoff comprised of 10 sacks of coarse granular bentonite
190 to land surface	Cement grout. The annular space between the 26-inch diameter conductor casing and formation walls was sealed with cement grout. The annular space outside of the 20-inch diameter intermediate casing was sealed with cement grout from 67 feet to a depth of 8 feet. The annular space outside of the 10-inch casing was sealed from 190 feet to the land surface.
420 to 120	Centralizers. 5/16" x 2" x 1', (three round) on 100 foot intervals.

WELL DEVELOPMENT

Once the construction of the well was complete, development procedures were initiated. The purpose of well development is to remove residual drilling fluids from the well, restore formation damage which arises as a consequence of the drilling process, and to remove the finer-sized formation material from the near-vicinity of the well bore so as to increase the permeability of the aquifer near the well bore. Initial well development comprised alternately swabbing the entire screened interval of the well with a surge block and air-lift pumping using the drill-rig's auxiliary air compressor. Development started at the shallowest well screen and proceeded downward in 20-foot increments. The process was repeated over a period of three days until surging no longer dislodged fine-sized material. The water discharged from the well during initial development was routed through tanks to elutriate the discharge before it was spilled onto the land surface and routed away from the site.

Once initial development was completed, the submersible turbine test pump was installed in the well to a depth of 240 feet. The well was then surged with the test pump and pumped at progressively increasing rates of up to 350 gpm until the discharge was visibly clear. The sand content was monitored during developmental pumping to gage the status of the developmental process. Well development was judged to be complete once the sand content was less than 5 parts per million as measured with a Rossum™ sand tester. Initial well development using the test pump took approximately 1 day to complete.



THE SHERWIN WILLIAMS CO.		
STEAD FACILITY WELL NO. 2 WELL DETAIL		
N.T.S. DRAWN BY: SOS/JDS DATE: 3-10-97 JOB NO.: 97028.42	FIGURE 3	 CONSULTING ENGINEERS SERVICE, INC. 1168 WINDMILL BLVD, SUITE 204 FORT WORTH, TEXAS 76104 TEL: 788-0873

Initial step-drawdown pumping test results indicated that the well was afflicted with a large skin factor. The effect of the skin factor is to inhibit the influx of groundwater into the well so that it yields less water at a given drawdown. The medium sand-sized filter pack that was required to retain the fine-sand sized aquifer materials may have contributed to the ineffectiveness of the specified developmental techniques. Their ineffectiveness may have been exacerbated by the amount of screen installed in the well which resulted in very low entrance velocities. Additional development was prescribed to reduce the skin factor.

This work entailed installation of sodium acid pyrophosphate (SAPP), a dispersant commonly used to break down and remove drilling muds. The SAPP was mixed and installed in the well using a tremie pipe and the well was swabbed to ensure the chemicals were thoroughly mixed. Water was then poured down the well to displace the chemicals out through the filter pack where they could contact any residual wall cake left over from the drilling process. The well was then swabbed for two days using a cable-tool drill rig equipped with a "cracking block." The cracking block is a surge block that is equipped with a valve. The valve allows the cracking block to exert more force on the up stroke so that it pulls water into the well, drawing the broken-down drilling mud and formation fines through the filter pack. The well was then re-equipped with the test pump and surged until the discharge was sand-free. A step-drawdown test was performed to test the effectiveness of the treatment. The first chemical/physical treatment increased the performance of the well by approximately 20 per cent. The process was repeated twice more until little increase in performance was achieved. The step-drawdown test results are documented in the subsequent sections.

WELL TESTING SUMMARY

The submersible turbine test pump used to develop the well was also employed for testing purposes. The testing program entailed pumping the well at rates selected by the hydrogeologist for prescribed periods of time while measuring water levels in the well. Pumping rates were measured with a pipe weir and circular orifice. Water levels in the well before, during, and after the tests were measured with a pressure transducer and recorded by an In-Situ Hermit™ data logger. The test sequence included a series of step-drawdown tests and a 24-hour duration aquifer stress test followed by 45-hour period where the recovery of water levels were monitored. Well No. 6 served as an observation well during the aquifer stress test of SW-2.

Step-Drawdown Testing

A total of four step-drawdown pumping tests were performed. The first step-drawdown test was performed after initial well development was completed. The subsequent three tests were performed after each of the subsequent chemical treatments and development episodes. The data for all four tests are plotted in Figure 4 for comparison.

Test 1

The step-drawdown test of SW-2 entailed pumping the well for four "steps" of one hour each. Pertinent data for the test are summarized below and in Figure 4.

Non-pumping water level prior to start of test - 50.01 feet below the measuring point (M.P. = top of the stilling well, 2.7 feet above land surface).
 Testing started - 0800 hours 12/29/97
 Testing ended - 1200 hours 12/29/97

TABLE 3. WELL SW-2 STEP-DRAWDOWN TEST NO. 1 DATA SUMMARY				
Step	Duration t (minutes)	Pumping rate Q (gpm)	Drawdown s (feet)	Specific Capacity, C _s
I	60	100	85.76	1.17
II	60	126	111.20	1.13
III	60	152	137.40	1.11
IV	60	176	163.8	1.08

SHERWIN-WILLIAMS WELL SW-2
STEP-DRAWDOWN TEST DATA

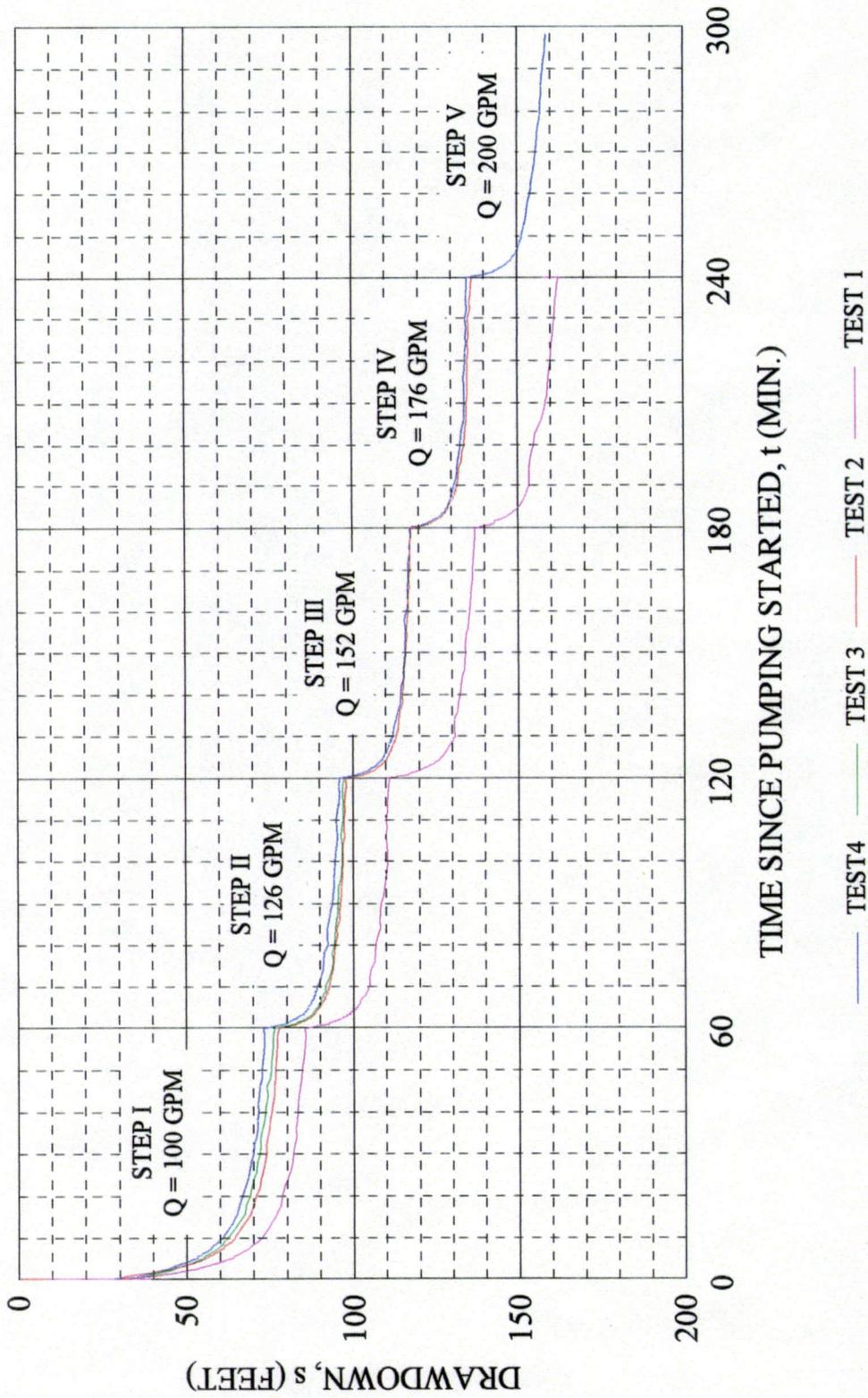


FIGURE 4. WELL NO. 2 STEP-DRAWDOWN TEST SUMMARY

Test 2

The step-drawdown test of SW-2 entailed pumping the well for four "steps" of one hour each. Pertinent data for the test are summarized below and in Figure 4.

Non-pumping water level prior to start of test - 50.4 feet below the measuring point (M.P. = top of the stilling well, 2.7 feet above land surface).

Testing started - 1050 hours 1/8/98

Testing ended - 1450 hours 1/8/98

Step	Duration t (minutes)	Pumping rate Q (gpm)	Drawdowns (feet)	Specific Capacity, C _s
I	60	100	77.30	1.29
II	60	126	97.64	1.29
III	60	152	117.41	1.29
IV	60	176	136.18	1.29

Test 3

The step-drawdown test of SW-2 entailed pumping the well for two "steps" of one hour each. The test was terminated after the second step when it became obvious that the second SAPP treatment had only a small effect on well performance. Pertinent data for the test are summarized below and in Figure 4.

Non-pumping water level prior to start of test - 50.30 feet below the measuring point (M.P. = top of the stilling well, 2.7 feet above land surface).

Testing started - 0800 hours 1/17/98

Testing ended - 1200 hours 1/17/98

Step	Duration t (minutes)	Pumping rate Q (gpm)	Drawdowns (feet)	Specific Capacity, C _s
I	60	100	75.35	1.33
II	60	126	96.78	1.30

Test 4

The step-drawdown test of SW-2 entailed pumping the well for five "steps" of one hour each. The fifth step was added to determine the maximum output of the well. Pertinent data for the test are summarized below and in Figure 4.

Non-pumping water level prior to start of test - 50.00 feet below the measuring point (M.P. = top of the stilling well, 2.4 feet above land surface).

Testing started - 0800 hours 10/31/97

Testing ended - 1300 hours 10/31/97

TABLE 6. WELL SW-2 STEP-DRAWDOWN TEST NO. 4 DATA SUMMARY

Step	Duration t (minutes)	Pumping rate Q (gpm)	Drawdown s (feet)	Specific Capacity, C _s
I	60	100	73.16	1.37
II	60	126	95.85	1.32
III	60	152	116.88	1.30
IV	60	176	134.93	1.30
V	60	200	158.31	1.26

Aquifer-Stress Test

The step-drawdown test was followed by a 24-hour duration aquifer stress test. The aquifer-stress test entailed controlled pumping of the well for 24 hours and monitoring the drawdown in the pumped well, SW-2, and the nearby observation well (Well No. 6). The observation well was located a distance of approximately 40 feet from SW-2. Upon completion of the pumping test, the water level in the well was monitored by the computerized data logger for a period of 45 hours. The test is summarized below.

Non-pumping water level in SW-2 prior to the start of the test - 49.95 feet below the measuring point (M.P. = 2.4 feet above the land surface).

Water-level in the Well No. 6 prior to the start of the test - 48.28 feet below the top of the stilling well

Testing commenced - 1030 hours 1/23/98.

Pumping rate - 189 gallons per minute.

Test ended - 1030 hours 1/24/98

Pumping water level at the conclusion of the test - 210.8 below M.P. (208.4 feet below land surface).

Drawdown in SW-2 at the conclusion of the test - 160.8 feet.

All of the drawdown and recovery data for the test are plotted in the appendix.

TESTING RESULTS

Step-drawdown Test Results

The step-drawdown test data were analyzed to evaluate the overall hydraulic efficiency of the well. The data were analyzed using the computer program WHIP (Well Hydraulics Interpretation Package: Hydro-Geo Chem, 1988). The observed and calculated drawdown for the well are shown in Figure 5. The calculated data assume no well losses or skin factor. The close comparison between observed and calculated drawdown for the late-time data indicate that the overall hydraulic efficiency of the well is very high. The analytical results also indicate that the skin factor was eliminated as a result of the three additional chemical treatments and well-development using the cable tool rig and cracking block.

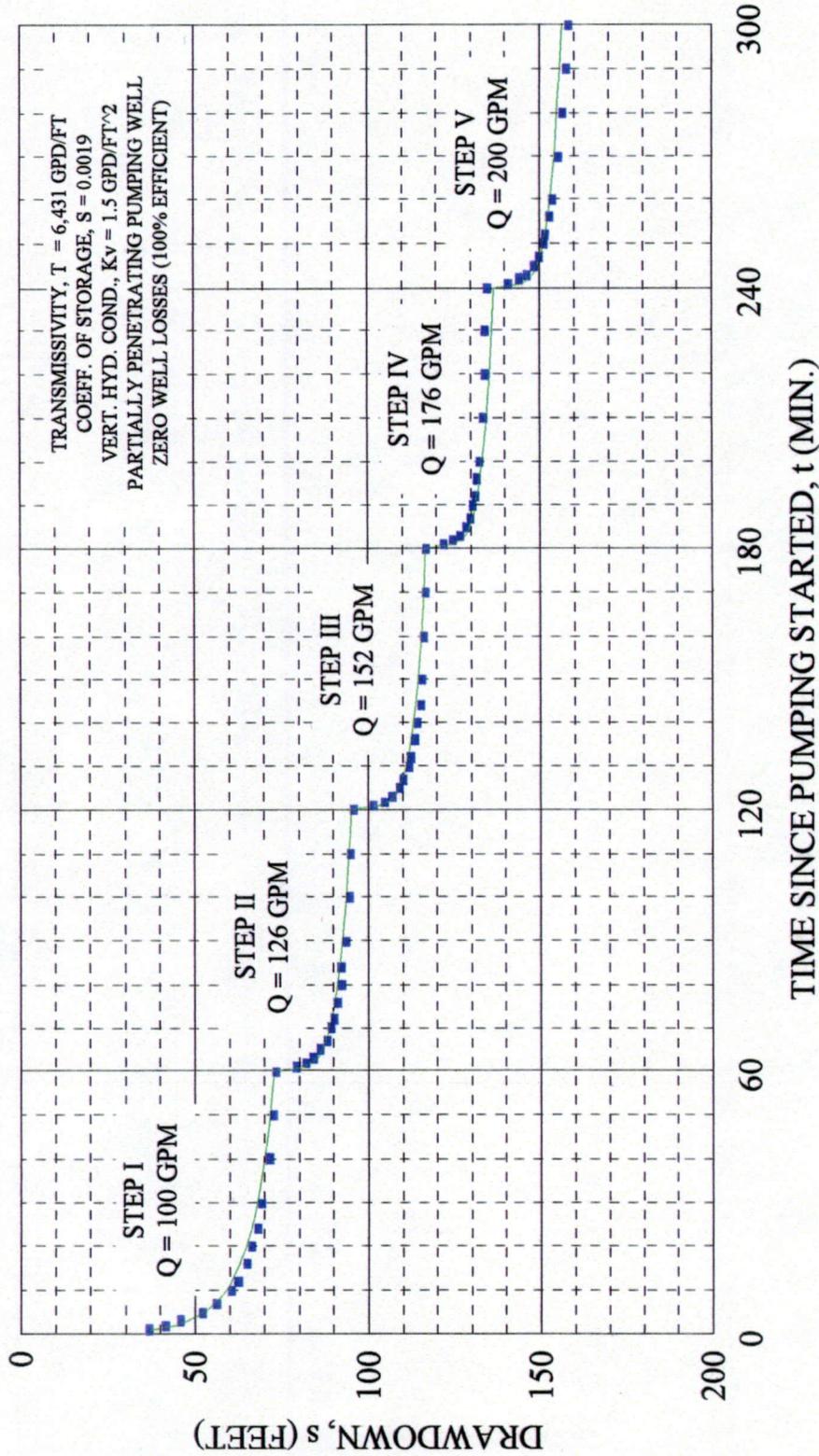
Aquifer-Stress Test Results

The primary purpose of an aquifer-stress test is to determine the hydraulic properties of the aquifer that control how a well will perform in the long-term. The aquifer-stress test data for both the pumped and observation wells were analyzed using the computer program WHIP. The aquifer properties were initially calculated from the observation well (Well No. 6) data. The transmissivity of the aquifer (the overall ability of the aquifer to transmit groundwater) was determined to be approximately 6,400 gallons per day per foot width of aquifer (gpd/ft) and the coefficient of storage for the aquifer was calculated to be 0.0019, a value representative of a sem-confined aquifer. This transmissivity value is comparable to values obtained by the Washoe County Utility Division through testing of Well No. 6 (Dan Dragan, personal communication). The value for storage coefficient is consistent with data obtained from the geologic and geophysical logs of the borehole, both of which showed intercalated sand, silt and clay beds. Once the overall aquifer properties were determined, the response of the pumped well, SW-2, to pumping was investigated. Early-time drawdown and recovery data for the pumped well show the influence of well bore storage and partial penetration of the aquifer by the pumped well. Once the late-time data for the pumped well were adjusted for partial penetration, a good correlation between the observed and calculated data was achieved. This analysis yielded an average vertical hydraulic conductivity for the aquifer of approximately 1.5 gpd/ft.

The results of the analysis of the drawdown data for the aquifer-stress test are depicted in Figure 6. The flattening of the drawdown curve for Well No. 6 near the end of the test suggests a recharge boundary affected the test results. This pseudo-recharge boundary is most likely an increase in aquifer transmissivity west of Lemmon Valley drive indicated by another County well in that general area. The late-time data for the pumped well shows the development of a seepage face once the pumping level was below the top of the well screen. The results of the analysis of the recovery data are shown in Figure 7 and 8. All three Figures (6, 7, & 8) compare the observed data with the simulated drawdown and recovery for the two wells.

SHERWIN-WILLIAMS WELL SW-2

STEP-DRAWDOWN TEST DATA



■ Observed drawdown — Calculated drawdown
 FIGURE 5. WELL NO. 2 STEP-DRAWDOWN TEST, OBSERVED & CALCULATED
 DRAWDOWN DATA

SHERWIN-WILLIAMS WELL SW-2 CONSTANT-DISCHARGE TEST DATA

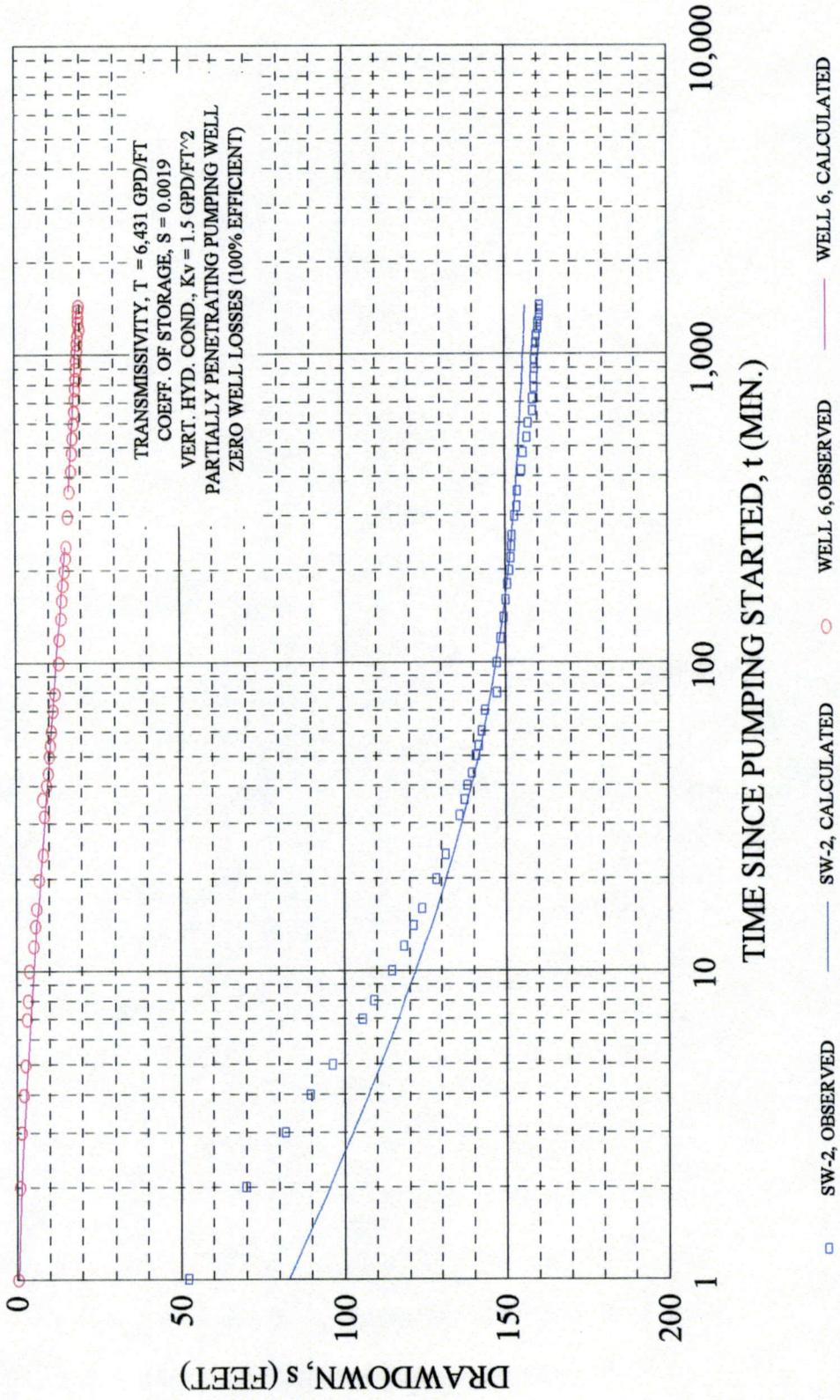
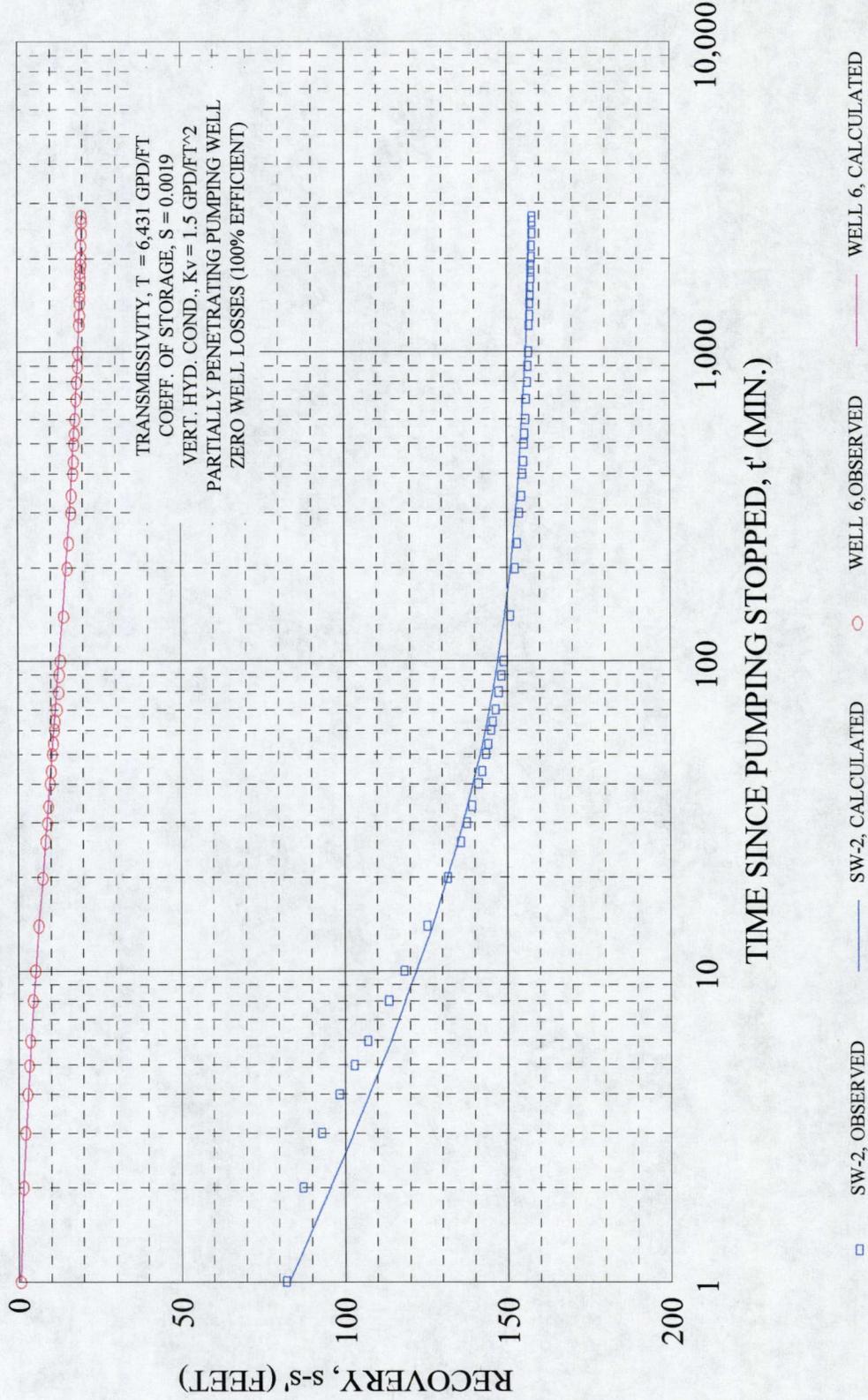


FIGURE 6. WELL NO. 2 AQUIFER-STRESS TEST, OBSERVED & CALCULATED
DRAWDOWN DATA

SHERWIN-WILLIAMS WELL SW-2 CONSTANT-DISCHARGE TEST DATA



□ SW-2, OBSERVED — SW-2, CALCULATED ○ WELL 6, OBSERVED — WELL 6, CALCULATED
FIGURE 7. WELL NO. 2 AQUIFER-STRESS TEST, OBSERVED & CALCULATED RECOVERY DATA (I)

SHERWIN-WILLIAMS WELL SW-2
 CONSTANT-DISCHARGE TEST DATA

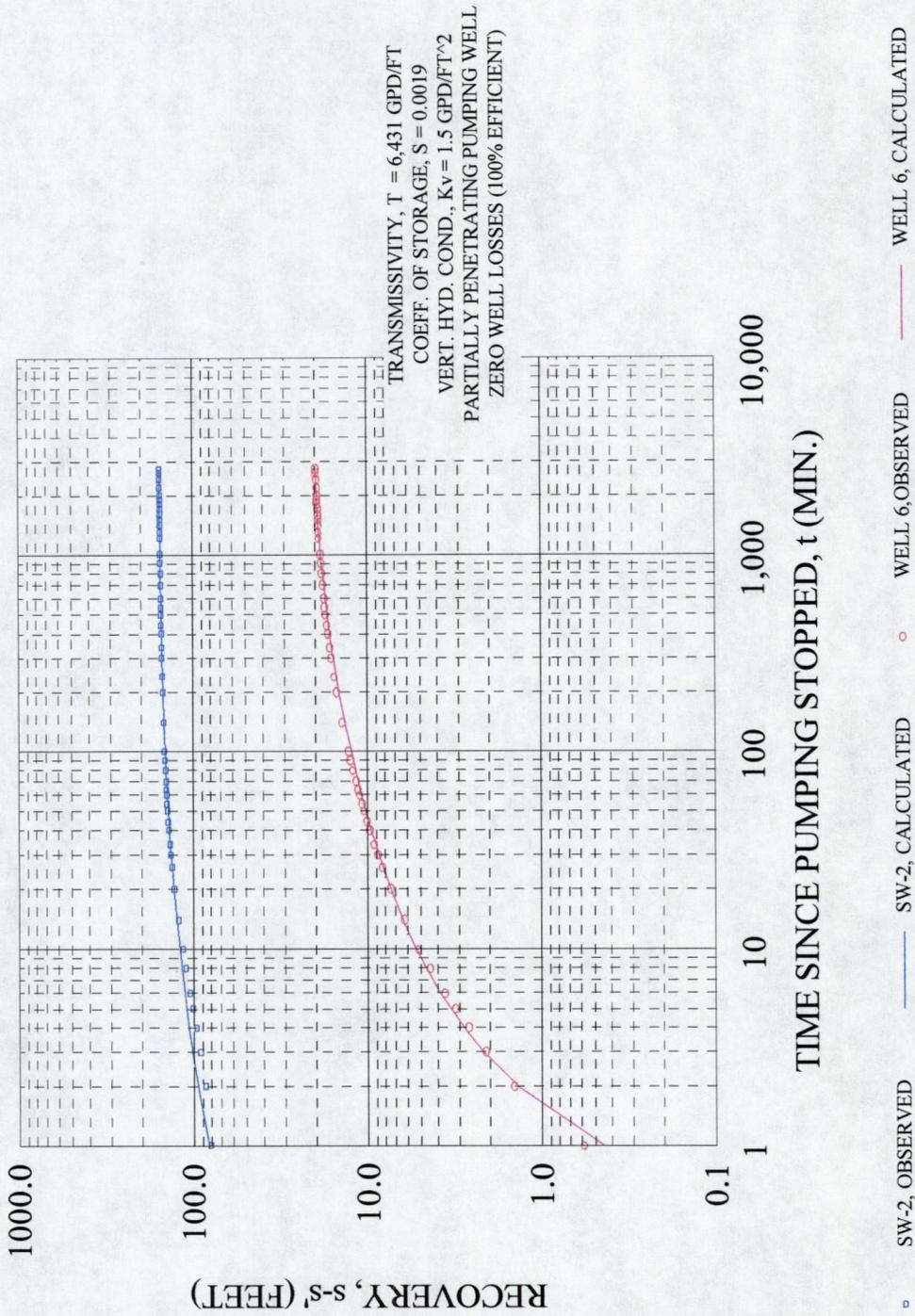


FIGURE 8. WELL NO. 2 AQUIFER-STRESS TEST, OBSERVED & CALCULATED RECOVERY DATA (II)

Sand Content

The specifications for Well SW-2 called for a maximum sand content in the discharge of five parts per million (5ppm) within five minutes after startup of the pump. The content of sand in the discharge was tested using a Rossum[™] sand tester. A number of informal sand tests were performed during development of the well to monitor the effectiveness of development. Once these tests indicated development was nearing completion, a formal sand test was performed. The second sand test was conducted at the start of the constant-discharge test. The results of the sand tests are shown in Figure 9. In summary, within five minutes of pump start up, the sand content was at or below the specified limit of 5 ppm. After the initial few minutes of the constant-discharge test, the sand content was 0 p.p.m. for all practical purposes.

Plumbness and Alignment

The well was tested for plumbness and alignment on February 5, 1998. The maximum permissible deviation down to the design pump setting depth of 250 feet is six inches per 100 feet. The well passed the plumbness and alignment test. The average deviation between land surface and a depth of 250 feet was 2.5 inches per 100 feet in the east-west direction. In the north-south direction, the deviation was less than one inch per 100 feet to a depth of 250 feet. The deviation plots are provided in the appendix.

SHERWIN-WILLIAMS WELL SW-2
SAND CONTENT

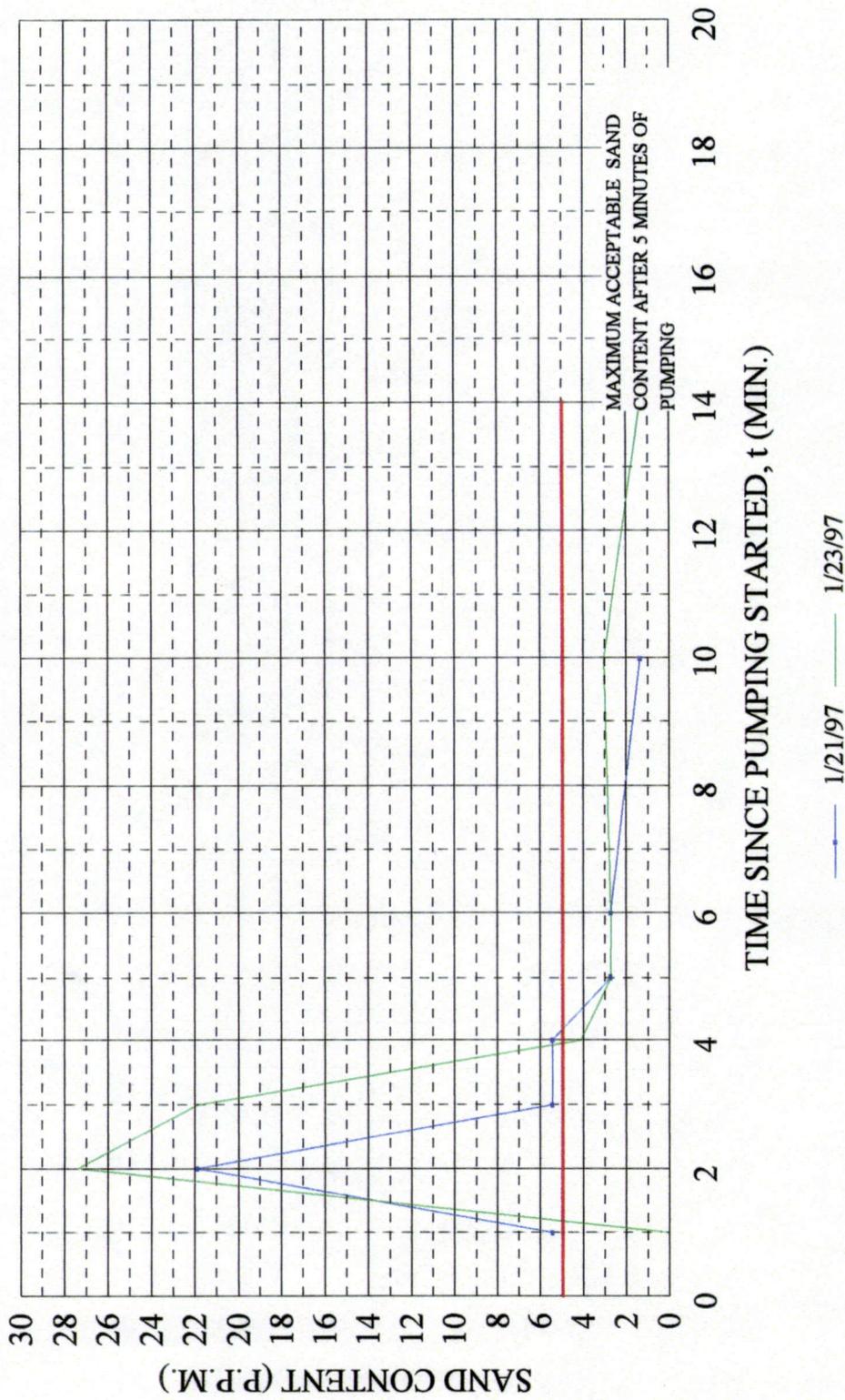


FIGURE 9. WELL NO. 2 SAND TEST DATA

CHEMICAL QUALITY OF GROUNDWATER FROM WELL NO. 2

A water sample was collected from the discharge of the well near the end of the constant-discharge pumping test. The sample was submitted to Sierra Environmental Monitoring, a State of Nevada certified laboratory, for chemical analysis. The results are tabulated below and the complete analytical report is provided in Appendix D.

TABLE 6. WATER CHEMISTRY DATA FOR SHERWIN-WILLIAMS WELL NO. 2, STEAD, NEVADA (all results in milligrams per liter unless otherwise noted)		
ANALYTE	RESULT	DRINKING WATER STANDARD
Sample date	1/24/98	
Sample time	09:30	
Temperature (°F)	57	
Electrical conductivity, field (µmho/cm)	306	
pH, lab (std. units)	7.63	6.5-8.5 ⁽³⁾
Total Dissolved Solids	212	500/1000 ⁽³⁾
Turbidity (NTU)	0.18	1.0 ⁽²⁾
Color (APU)	<5	15 ⁽³⁾
Odor (TON)	0	3.0
MBAS	<0.05	0.5 ⁽³⁾
Asbestos (fibers/liter > 10µm)	0	7
Major cations		
Calcium	22	
Magnesium	8.3	125/250 ⁽³⁾
Sodium	25	
Potassium	2.5	
Major anions		
Alkalinity (mg/l CaCO ₃)	110	
Sulfate	35	250/500 ⁽³⁾
Chloride	9.3	250/400
Nitrate (as N)	1.7	10 ⁽²⁾
Nitrite (as N)	<0.3	1
Cyanide (total)	<0.005	0.2
Fluoride	<0.1	2.0/4.0 ^(2,4)

Trace metals		
Antimony	<0.001	
Arsenic	0.004	0.05 ⁽²⁾
Barium	0.057	1.0 ⁽²⁾
Beryllium	<0.001	0.004
Cadmium	<0.001	0.01 ⁽²⁾
Chromium	<0.009	0.1 ⁽²⁾
Copper	<0.001	1.0 ⁽²⁾
Iron	<0.25	0.3/0.6 ⁽³⁾
Lead	<0.001	0.05 ⁽²⁾
Manganese	0.010	0.05/0.1 ⁽³⁾
Mercury	<0.0005	0.002 ⁽²⁾
Nickel	0.003	0.1
Selenium	0.002	0.01 ⁽²⁾
Silver	<0.001	.05 ⁽²⁾
Thallium	<0.001	0.002
Zinc	0.01	5.0 ⁽²⁾
Radionuclides		
Gross α (pCi/l)	2 \pm 2	15 ⁽²⁾
Gross β (pCi/l)	6 \pm 3	50 ⁽²⁾
Volatile Organic and Synthetic Organic Compounds		
U.S.E.P.A. Methods 504, 505, 507, 515.1, 524, 525, 531.1, 547, 548, & 549	Not Detected ⁽¹⁾	See Appendix D
Notes: 1. Refer to Appendix D for complete analytical results, detection limits, and maximum contaminant levels for VOCs & SOCs. 2. Primary Drinking Water Standard. 3. Secondary Drinking Water Standard (recommended/maximum concentration). 4. Temperature dependent.		

The groundwater derived from Well No. 2 meets current water quality standards.

YIELD RATING OF SHERWIN-WILLIAMS WELL NO. 2 AND PRODUCTION PUMP SELECTION CRITERIA

Yield Rating

The yield rating of Sherwin-Williams Well No. 2 is based on criteria that have been adopted by the Washoe County Utility Services Division. These include:

- ◆ The assumption that the well is pumped continuously for a 90-day period.
- ◆ The pumping level in the well is limited to the top of the well screen. In SW-2, the top of the screen is 200 feet below the land surface.

Under these criteria, the yield of the well is limited to 182 gallons per minute. This yield, combined with the yield for SW-1 (total of 582 gpm) is below the 700 gallons per minute combined yield required under the terms of the agreement between The Sherwin-Williams Company and Washoe County. However, the Utility Services Division concluded that The Sherwin-Williams Company fulfilled the terms of agreement and will not require a third well to be constructed (Dan Dragan, personal communication).

Considering the hydrogeologic conditions now known to exist at the site, the maximum long term yield of the well is 182 gallons per minute. Figure 10 shows the projected pumping level in SW-2 for a constant pumping rate of 182 gallons per minute. After 90 days of continuous pumping, the pumping level is calculated to be approximately 200 feet below the land surface which corresponds to the top of the well screen.

Production Pump Criteria

When practicable, a pump intake should be placed opposite blank well casing. This reduces the potential for very high velocities at the pump intake which might cause sand to be pulled into the well. Also, for submersible pumps, it ensures proper cooling by channeling water past the motor. For SW-2, the recommended pump setting is approximately 250 feet below the land surface. This places the pump intake within the blank casing that is located between depths of 240 and 260 feet below the surface.

In summary, the recommended design pump performance criteria are:

Discharge - 180 gpm.

Static water level - 48 feet below land surface.

Pumping level - 200 feet below land surface.

Pump intake setting - 250 feet below the land surface.

SHERWIN-WILLIAMS WELL SW-2
PROJECTED PERFORMANCE AT 182 GPM

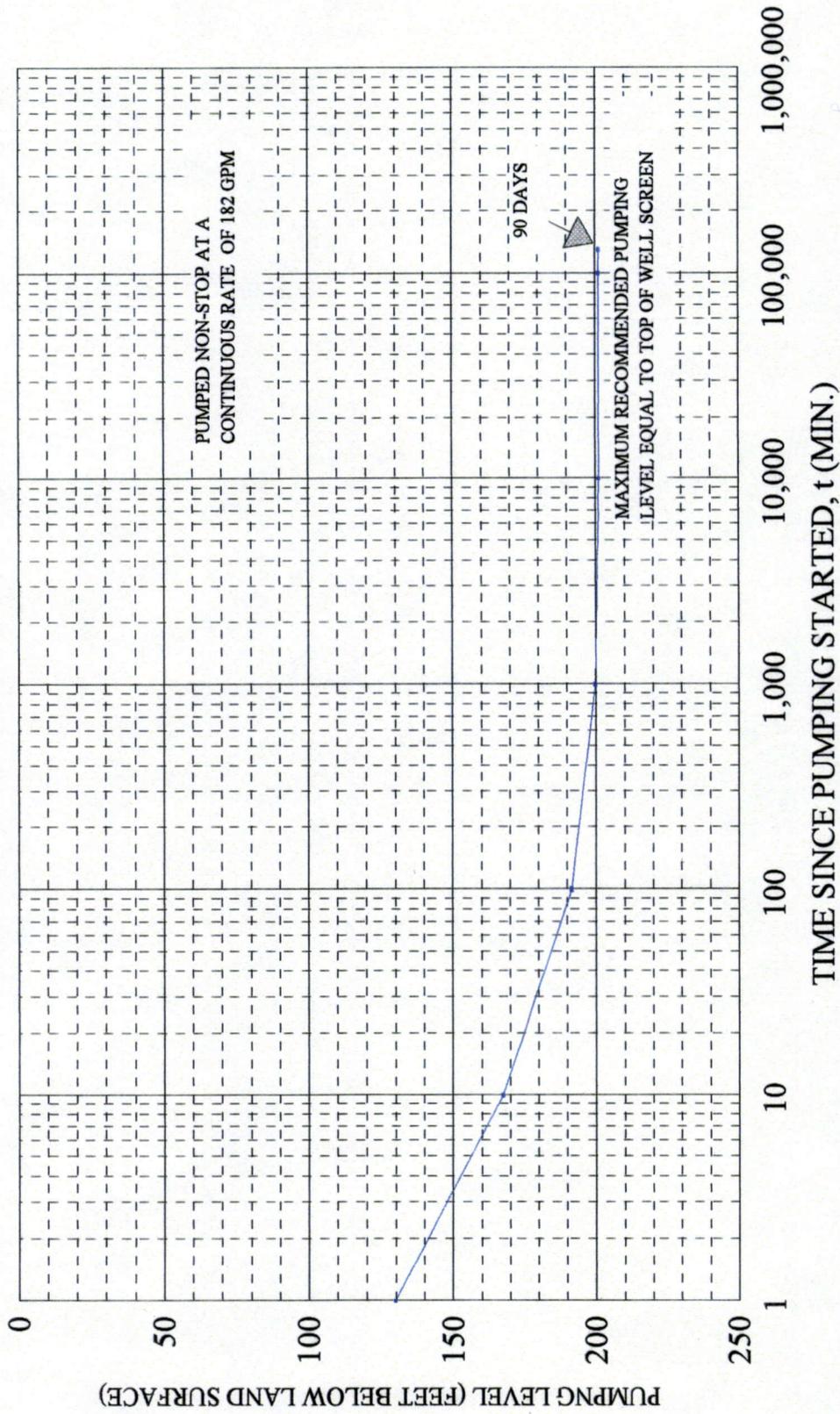


FIGURE 10. PREDICTED PUMPING LEVEL AT 180 GPM

SOURCES OF INFORMATION

CES, Inc., December, 1997. Construction and Testing of The Sherwin-Williams Company Stead, Nevada Well No. 1: consulting report prepared by Consulting Engineering Services, Inc. for The Sherwin-Williams Company.

Dragan, Dan, personal communications

Hydro-Geo Chem, 1988. Computer Program WHIP (Well Hydraulics Interpretation Package).

APPENDIX A. BOREHOLE LOG AND ALIGNMENT DATA

LOG OF BOREHO

BOREHOLE Sherwin Williams #2

PAGE 1 OF 6

LOC. OR COORDS. <u>NW 1/4 SW 1/4</u> <u>Sec 26 T21N R19E</u>	DRILLER <u>Humboldt</u> <u>Jim Stoss</u>	START	FINISH
GROUND ELEV. <u>4920 ft ±</u>	RIG <u>T-100</u>	DATE <u>11/19/97</u>	DATE <u>11/23/97</u>
TOTAL DEPTH <u>440'</u>	BIT(S) <u>5 1/4" Tricone</u>	TIME <u>7:50</u>	TIME <u>12:15</u>
BOREHOLE DIAM. <u>5 1/4"</u>	FLUID <u>Water/Air - Dual Tube</u> <u>Reverse</u>	GEOPHYS. LOG <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
		HOW LEFT <u>See Field</u> <u>Notebook</u>	

LOCATION Washoe Co - Lemmon Valley
LOGGED BY Ken Johnson

PROJECT Sherwin Williams #2

DEPTH	PEN. RATE	CIRC.		AIR LIFT Q (GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS
		RET.	LOSS				
5							0-40' Drilled previously w/ auger drill + 24" conductor casing set to 30'.
10							
15							
20							
25							
30							Bottom of conductor casing
35							Bottom of 6" casing (added 8-10' later)
40	15:30				clay + sand		First Sample 40-45' 10YR 4/3 clay w/ fine sand + silt (20%) up to 40% fine sand + silt
45'					clay		
50							10YR 3/4 massive clay
55							5Y 4/3 clay w/ ~10% fine sand
60	15:42 15:45				clay + sand		
65					clay		
70					clay + sand		10YR 3/4 clay w/ fine to med subang sand - 30%
75	15:56 7:3'			out of water			10YR 5/5 clay w/ 10% fine sand

16:20 Back on Bottom

LOG OF BOREHOLE

BOREHOLE Sherwin Williams #2

PAGE 2 OF 6

LOC. OR COORDS. <u>NW 1/4 SW 1/4</u> <u>Sec 26, T21N, R19E</u> GROUND ELEV. <u>4920 ft ±</u> TOTAL DEPTH <u>440'</u> BOREHOLE DIAM. <u>5 1/4"</u>	DRILLER <u>Humboldt</u> RIG <u>T-100</u> BIT(S) <u>5 1/4" Trilone mill tooth</u> FLUID <u>water/air - Dual Tube Reverse</u>	START <u>11/19/97</u> FINISH <u>11/23/97</u> DATE <u>7:50</u> TIME <u>12:15</u> GEOPHYS. LOG <u>YES</u> NO HOW LEFT <u>See field notebook</u>
---	--	--

LOCATION Washoe Co. - Lemmon Valley
 LOGGED BY _____
 PROJECT Sherwin Williams #2

DEPTH	PEN. RATE	CIRC.		AIR LIFT Q (GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS
		RET.	LOSS				
End 11/19 @ 80	16:25 8:40				Sand w/ clay		Fine to med grain sub-ang sand (DE source?) = 20-30% clay
85					clay		10YR 4/4 clay w/ Tr fine sand
90							10YR 3/4 clay w/ 5-10% fine to med sand
95					sand		med grain sub med sand - qtz feld tr Fe-mys w/ 20% clay
100	8:54 9:02				sand + clay		SAA w/ 50% clay
105	9:14				clay + minor sand		10YR 5/3 clay w/ 10% fine sand
110							10YR 4/3 clay = 10% fine to med sand
115							
120	9:17 9:23				Sand		Fine Sand - sub ang 10% Fe-mys - granitic source?
125							Fine to med sand
130							inc in fines-
135							v fine + tr clay
140	9:33 11:22						Fine sand
End 11/20 Partial 145	11:55						inc in coarse sand - 20%
150							

LOG OF BOREHOLE

BOREHOLE Sherwin Williams #2

PAGE 3 OF 6

LOC. OR COORDS. <u>NW 1/4 SW 1/4</u> <u>SEC 26 T21N R19E</u>	DRILLER <u>Humboldt</u>	START	FINISH
GROUND ELEV. <u>4920 ft ±</u>		DATE <u>11/19/97</u>	DATE <u>11/23/97</u>
TOTAL DEPTH <u>440'</u>	RIG <u>T-100</u>	TIME <u>7:50</u>	TIME <u>12:15</u>
BOREHOLE DIAM. <u>5 1/4"</u>	BIT(S) <u>5 1/4" Tricone - mill tooth</u>	GEOPHYS. LOG <u>X</u> YES <u>NO</u>	
	FLUID <u>water/air - Dual Tube Reverse</u>	HOW LEFT <u>See Field Notebook</u>	

LOCATION Washoe Co - Lemmon Valley
 LOGGED BY _____

PROJECT Sherwin Williams #2

DEPTH	PEN. RATE	CIRC.		AIR LIFT Q (GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS
		RET.	LOSS				
155					Sand		Fine, med + coarse sand - 20% coarse
160	1207 1219						SAA 5% coarse Dom fine sand
165							Inc in coarse ~ 5-10%
170							
175							
180	1239 1255						
185							
190					Clay		192 clay seam ~ 2' thick
195					Sand		Rtn to fine to med sand = coarse 10-15%
200	1319 1334						
205							
210							
215	10:37						Plugged @ 213 11/21
220	10:51 10:58						SAA
225							

LOG OF BOREHOLE

BOREHOLE Sherwin Williams #2

PAGE 4 OF 6

LOC. OR COORDS. <u>NW 1/4 SW 1/4</u> <u>Sec 26 T21N R19E</u> GROUND ELEV. <u>4920 FT ±</u> TOTAL DEPTH <u>440'</u> BOREHOLE DIAM. <u>5 1/4"</u>	DRILLER <u>Humboldt</u> RIG <u>T-100</u> BIT(S) <u>5 1/4" Tricone Mill Tooth</u> FLUID <u>Water/Air Dual Tube Reverse</u>	START <u>11/19/97</u> FINISH <u>11/23/97</u> DATE <u>7:50</u> TIME <u>12:15</u> GEOPHYS. LOG <u>X</u> YES <u>NO</u> HOW LEFT <u>See Field Notebook</u>
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LOCATION Washoe Co - Lemmon Valley
 LOGGED BY _____

PROJECT Sherwin Williams #2

DEPTH	PEN. RATE	CIRC.		AIR LIFT Q(GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS
		RET.	LOSS				
230					Sand		Fine to med sand - don fine gr
235	11:14						Fine to med gr sand
240	11:23 11:30						
245							
250	11:38						
255							
260	11:50 11:56				clay sand		262 clay seam
265							
270							
275						BA	Tr gravel
280	12:26 12:35						
285						BA	Tr gravel
290							287 clay seam Very slow drilling
295	14:02						clay
300	14:33						Fine to med gr sand - may be up hole con form - Very slow drilling suspect clay - may be setting washed away

14:40

LOG OF BOREHOLE

BOREHOLE Sherwin Williams #2

PAGE 6 OF 6

LOC. OR COORDS. <u>NW 1/4 SW 1/4</u> <u>Sec 26 T21N R19E</u> GROUND ELEV. <u>4920ft±</u> TOTAL DEPTH <u>440'</u> BOREHOLE DIAM. <u>5 1/4"</u>	DRILLER <u>Humboldt</u> RIG <u>T-100</u> BIT(S) <u>5 1/4" Tricone Mill Tooth</u> FLUID <u>water/air - Dual Tube</u> <u>Reverse</u>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"><u>START</u></td> <td style="text-align: center;"><u>FINISH</u></td> </tr> <tr> <td>DATE <u>11/19/97</u></td> <td>DATE <u>11/23/97</u></td> </tr> <tr> <td>TIME <u>7:50</u></td> <td>TIME <u>12:15</u></td> </tr> <tr> <td colspan="2">GEOPHYS. LOG <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO</td> </tr> <tr> <td colspan="2">HOW LEFT <u>See Field</u></td> </tr> <tr> <td colspan="2"><u>Note book</u></td> </tr> </table>	<u>START</u>	<u>FINISH</u>	DATE <u>11/19/97</u>	DATE <u>11/23/97</u>	TIME <u>7:50</u>	TIME <u>12:15</u>	GEOPHYS. LOG <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		HOW LEFT <u>See Field</u>		<u>Note book</u>	
<u>START</u>	<u>FINISH</u>													
DATE <u>11/19/97</u>	DATE <u>11/23/97</u>													
TIME <u>7:50</u>	TIME <u>12:15</u>													
GEOPHYS. LOG <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO														
HOW LEFT <u>See Field</u>														
<u>Note book</u>														

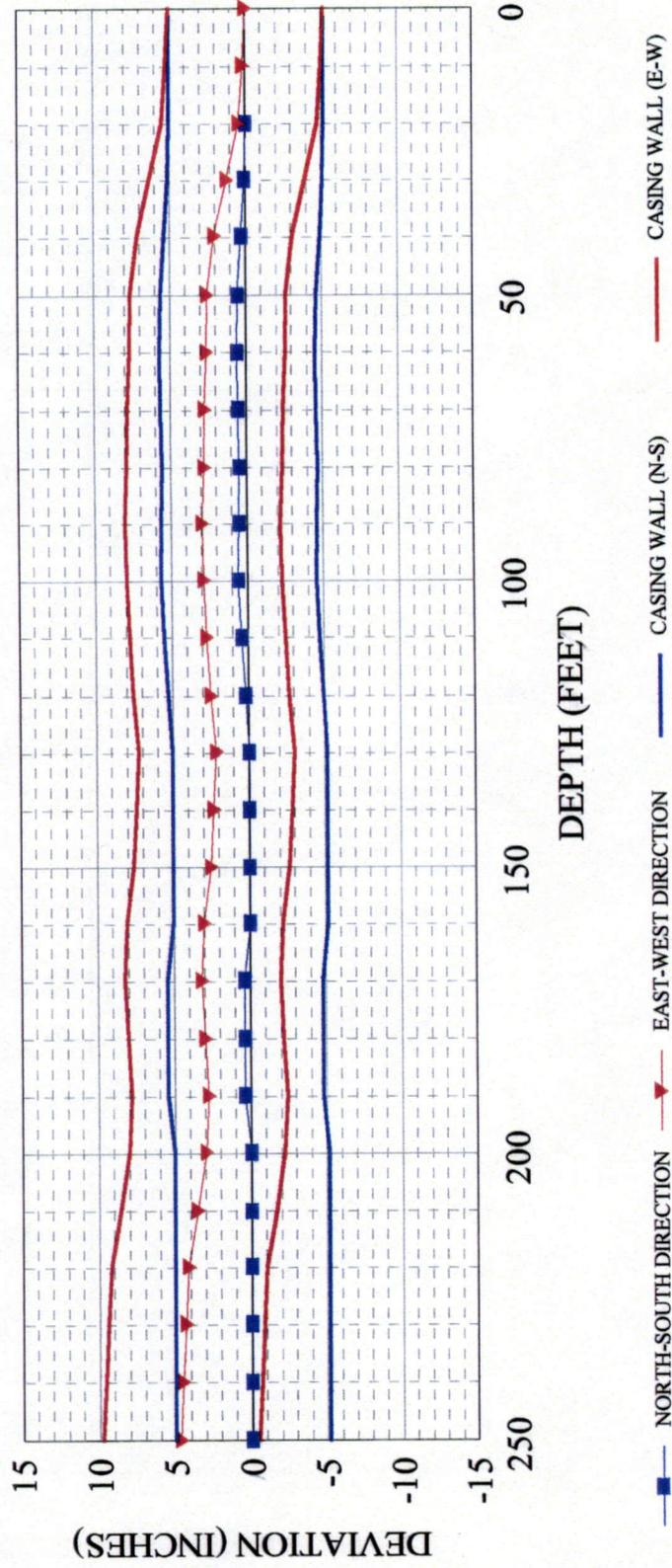
LOCATION Washoe County - Lemmon Valley
LOGGED BY

PROJECT Sherwin Williams #2

DEPTH	PEN. RATE	CIRC.		AIR LIFT Q(GPM)	MATERIAL	SYM-BOL	DESCRIPTION AND COMMENTS
		RET.	LOSS				
400	16:47 10:28					[Symbol: dots]	NO Samples 380-400 End of 11/22 (380') Fine to med sand w 3% of coarse sand
405						[Symbol: dots]	Down med sand
410						[Symbol: dots]	TR Gravel
415						[Symbol: dots]	TR gravel
420	11:02 11:11					[Symbol: dots]	Appearance of granite frags - may be OG or subcrop
425						[Symbol: dots]	w 50% granitic frags - probably weathered bedrock sand coming from up hole
430	11:30					[Symbol: dots]	
435	11:41 11:48					[Symbol: dots]	shale shaker down, fixed @ 11:44
440	12:15 TD					[Symbol: dots]	Down granitic frags - sand probably from up hole

SHERWIN-WILLIAMS WELL 2

PLUMBNESS & ALIGNMENT



APPENDIX B. BOREHOLE GEOPHYSICAL LOG

APPENDIX C. PUMPING TEST FIELD DATA SHEETS

76 6012

SEAR'S DRILLING CO., INC.
PHILIP & ESSER CO. DRILLING

SW-1 Step Tests: 12/29/97 + 1/8/98

12/29/97
+ 1/8/98

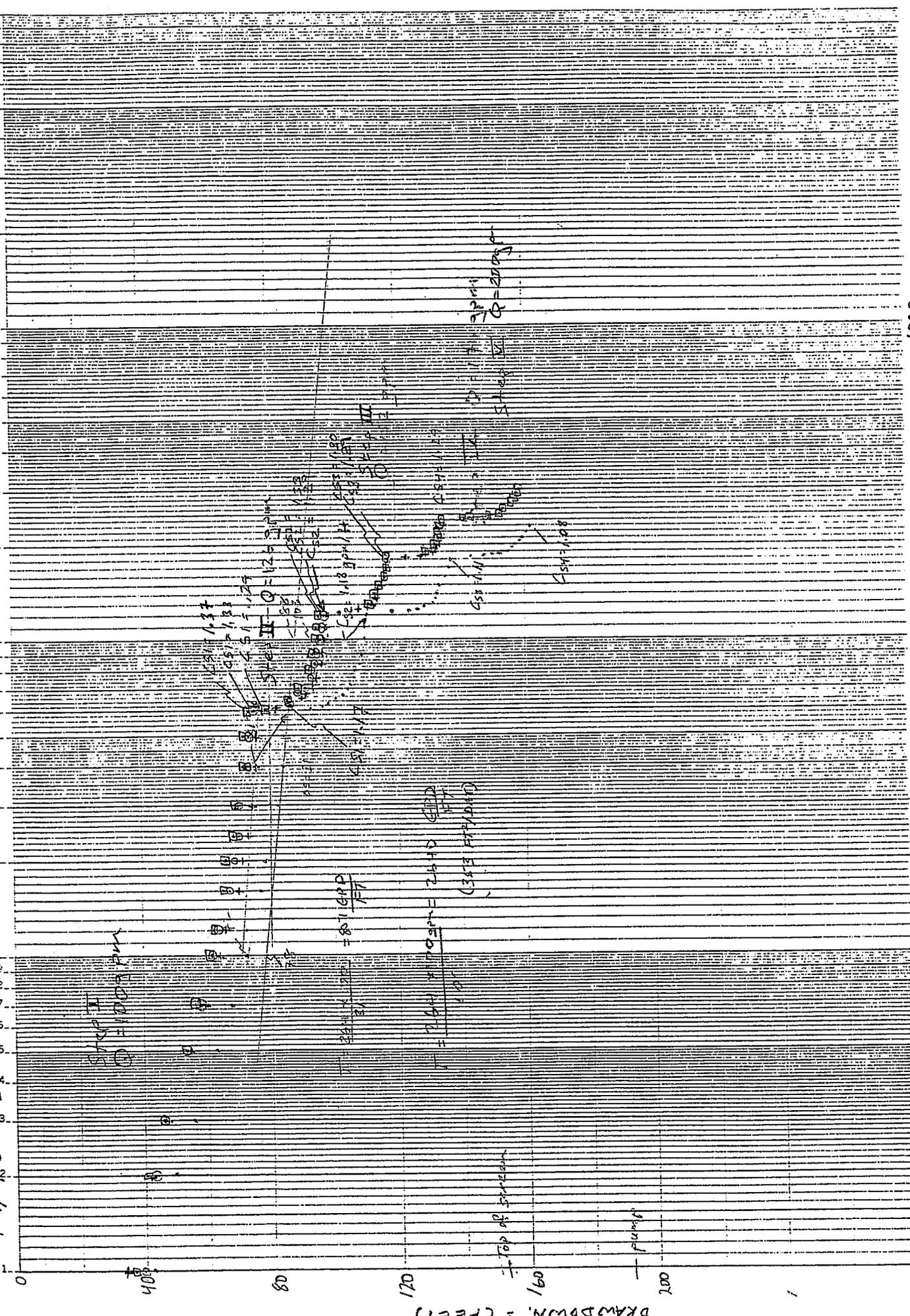
STEP I
Q = 1000 gpm

STEP II
Q = 1250 gpm

Q = 871 GRP

Q = 2600 x 1000 = 2440 (3573 FPP/DAY)

Q = 2000 gpm



1000

100

10

TIME SINCE PUMPING STARTED, t (MINUTES)

AQUIFER TEST DATA

Owner The Sherman Williams Co Address _____ County _____ State _____

Date 12/25/97 Company performing test Humboldt Drilling & CES Measured by PCR

Well No. SW-2 Distance from pumping well 0 Type of test Step Test No. 1

Measuring equipment Hermit 1000C w/ 100 PSI TXR & Di.Pice

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date <u>12/25/97</u>	Time <u>0920</u> (t.)	Static water level <u>50.01</u>	How Q measured <u>3 x 6" orifice</u>				Duration <u>12/24</u>				
Pump off: Date _____	Time _____ (t.)	Measuring point <u>Top of Still Well</u>	Depth of pump/air line <u>21'</u>					Previous pumping? Yes <u>X</u> No _____			
Duration of aquifer test: _____		Elevation of measuring point <u>65.42.7'</u>									
Pumping _____	Recovery _____										

Date	Clock time	Time since pump started/stopped		Water level measurement	Correction or Conversion	Water level	Water level change s or s'	h inches	GPM Rate	Σ Q Meter	Pat's cell phone # 761-3307
		t	r								
12/25/97	0920	0		50.01			0		0	3.450100	9 1/4" = 100 gpm
	0921	1		91.74			41.71	9 1/4	100		Meter reads 200 gpm. No good!
	0922	2		99.36			49.35	9 1/4	100		Discharge was slightly discolored
	0923	3		105.65			55.64	9 1/4	100		No measurable sand
	0925	5		113.21			63.20	9 1/4	100		
	0927	7		117.69			67.68	9 1/4	100		Clear discharge
	0930	10		122.51			72.50				
	0932	12		122.74			72.73				
	0936	16		127.46			77.45	9 1/4	100		
	0940	20		128.78			78.77	9 1/4	100		
	0944	24		130.50			80.49	9 3/8	101		
	0950	30		132.23			82.21	9 1/4	100		
	1000	40		133.57			83.56	9 1/4	100		
	1010	50		134.86			84.85	9 1/4	100		C _s = 100 gpm / 85.76' = 1.17 gpm/ft
	1020	60		135.77			85.76	9 1/4	100		Total sand now in 110 min
	1021	61	1	142.91			92.90	14 1/2	126		End Stage I / Start Stage II
	1022	62	2	146.74			96.73	14 1/2	126		14 1/2" = 126
	1023	63	3	148.37			98.36	14 1/2	126		
	1025	65	5	151.28			101.27	14 1/2	126		
	1027	67	7	152.91			102.90	14 1/2	126		
	1030	70	10	155.22			105.25				
	1032	72	12	155.48			105.47				
	1036	76	16	156.83			106.82				
	1040	80	20	157.52			107.56	14 1/2	126		
	1044	84	24	158.14			108.13	14 1/2	126		
	1050	90	30	159.44			109.48	14 1/2	126		
	1100	100	40	160.65			110.64	14 1/2	126		
	1110	110	50	160.62			110.61	14 1/2	126		
	1120	120	60	161.21			111.20	14 1/2	126		C _s = 126 gpm / 111.20' = 1.13 gpm/ft

AQUIFER TEST DATA

Owner The Sherman-Williams Co. Address _____ County _____ State _____
 Date 12/29/77 Company performing test Humboldt Drilling & CES Measured by DCR
 Well No. SW-2 Distance from pumping well — Type of test Step Test No. 1
 Measuring equipment Hermit 1000 & w/ 100 Psi TDX

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data	
Pump on: Date <u>11/29/77</u> Time <u>0920</u> (t.)		Pump off: Date _____ Time _____ (r.)		Static water level <u>50.01'</u>		Measuring point <u>Top of old well</u>		How Q measured <u>3" x 6" orifice</u>				
Duration of aquifer test: Pumping _____ Recovery _____				Elevation of measuring point <u>63 + 2.7'</u>		Depth of pump/str line <u>246'</u>			Previous pumping? Yes _____ No _____			
						Duration _____ End _____						

Date	Clock time	Time since pump started t	Time since pump stopped r	t/r	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	h inches	Q gpm	Discharge measurement	Rate	
	1121	121			167.89			117.88	21	152			21" = 152 gpm
	1122	122			171.90			121.89	21	152			
	1123	123			174.72			124.71	21	152			
	1125	125			177.25			127.24	21	152			
	1127	127			178.83			128.82					
	1130	130			180.90			130.89					
	1132	132			184.84			131.83	21	152			
	1136	136			182.53			132.52	21	152			
	1140	140			183.28			133.27	21	152			
	1144	144			184.06			134.05	21	152			
	1150	150			184.57			134.56	21	152			
	1200	160			185.94			135.93	21	152			
	1210	170			186.76			136.75	21	152			
	1220	180			187.41			137.40	21	152			C ₂ = 1.11 End Step III / Start Step IV 27 1/2" = 176 gpm
	1221	181			192.94			142.97	27 1/2	176			
	1222	182			196.50			146.49	27 1/2	176			
	1223	183			198.51			148.51	27 1/2	176			
	1225	185			201.06			151.05	27 1/2	176			
	1227	187			202.40			152.39	27 1/2	176			
	1230	190			203.87			153.86					
	1232	192			204.41			154.40					
	1236	196			205.31			155.30	27 1/2	176			
	1240	200			207.32			157.32	27 1/2	176			
	1244	204			208.54			158.54	27 1/2	176			
	1250	210			209.43			159.42	27 1/2	176			
	1300	220			210.83			160.82	27 1/2	176			
	1210	230			211.89			161.88	27 1/2	176			
	1320	240			213.18			163.18	27 1/2	176			End Step IV C ₂₄ = 176 gpm / 163.18' = 1.08

AQUIFER TEST DATA

Owner The Sherman Williams Co Address _____ County _____ State _____

Date 1/19/78 Company performing test Humboldt Drilling & CAS Measured by D. B. ...

Well No. SW-2 Distance from pumping well _____ Type of test Step Test No. 3

Measuring equipment Humint 1000 G W/ 100 PSI TDX & 3" x 6" orifice

Time Data				Water Level Data				Discharge Data		Comments on factors affecting test data
Pump on: Date <u>1/19/78</u>	Time <u>0800</u> (L)			Static water level <u>50.30'</u>				How Q measured <u>5" x 6" orifice</u>		
Pump off: Date <u>1/19/78</u>	Time <u>1000</u> (L)			Measuring point <u>Top of Still Well</u>				Depth of pump/air line _____		
Duration of aquifer test: Pumping <u>2 hrs</u>	Recovery _____			Elevation of measuring point <u>LS + 2.2'</u>				Previous pumping? Yes _____ No _____		
								Duration _____	End <u>1/16/78</u>	

Date	Clock time	Time since pump started		Water level measurement	Correction or Conversion	Water level	Water level change s or s'	h (inches) Discharge measurement	Q (gpm) Rate	
		t	T							
1/19	0800	0		50.30			0	0		9 1/4" = 100 gpm
	0801	1		59.24			38.96	9 1/4	100	30 sec to achieve 100 c/sec
	0802	2		93.63			43.23	"	"	trace of fine sand
	0803	3		98.27			47.73	"	"	0.02 ml
	0805	5		104.72			54.42	"	"	0.05±
	0805	7		108.17			57.87	"	"	0.05±
	0810	10		112.05			61.75	"	"	
	0812	12		113.81			63.51	"	"	
	0816	16		117.29			66.99	"	"	
	0820	20		118.76			68.46	"	"	0.08±
	0824	24		120.05			69.75	"	"	
	0830	30		121.67			71.37	"	"	0.09±
	0840	40		123.34			73.04	"	"	
	0850	50		125.31			75.01	"	"	0.09±
	0900	60		125.65			75.35	"	"	14 1/2" = 126 CS1 = 1.33
	0901	61	1	131.73			81.43	14 1/2	126	
	0902	62	2	134.93			84.63	"	"	
	0903	63	3	137.09			86.79	"	"	
	0905	65	5	139.25			88.95	"	"	
	0907	67	7	140.13			89.73	"	"	
	0910	70	10	141.17			90.77	"	"	
	0912	72	12	142.64			92.34	"	"	
	0916	76	16	143.80			93.50	"	"	
	0920	80	20	144.27			93.97	"	"	
	0924	84	24	144.58			94.28	"	"	
	0930	90	30	146.27			94.97	"	"	
	0940	100	40	146.74			96.44	"	"	
	0950	110	50	147.06			96.76	"	"	
	1000	110	60	147.18			96.78	"	"	NO A 1054 and CS2 = 1.30 END TEST

AQUIFER TEST DATA

Owner The Sherman-Williams Co Address _____ County _____ State _____
 Date 1/22/97 Company performing test Humboldt Drilling Measured by D. R. [unclear]
 Well No. SW-2 Distance from pumping well _____ Type of test Step Test No. 4
 Measuring equipment Hermit 1000 L @ 100 psi TDX & 3x6" orifice

Time Data				Water Level Data				Discharge Data			Comments on factors affecting test data
Pump on: Date	<u>1/22/97</u>	Time	<u>0805 (L)</u>	Static water level	<u>50.00'</u>			How Q measured	<u>orifice</u>		
Pump off: Date	_____	Time	_____ (L)	Measuring point	<u>Top Still Well</u>			Depth of pump/air line	<u>240'</u>		
Duration of aquifer test:	_____	Recovery	_____	Elevation of measuring point	<u>LS + 2.4'</u>			Previous pumping? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Duration	<u>End 1/21/98</u>	

Date	Clock time	Time since pump started		11'	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	h inches	Q gpm	Rate	
		t	r									
1/22	0805	0			50.00			0	0			
	0806	1			86.69			36.69	9 1/4	100		35 sec to set @ ~0.01 ml sand
	0807	2			91.39			41.39	"	100		
	0808	3			95.90			45.90	"	100		sand ~ 0.01 +
	0810	5			102.29			52.29	"	"		0.14
	0812	7			106.27			56.27	"	"		water turned muddy from CI added yesterday
	0815	10			110.53			60.53	9 3/4	103		clear discharge
	0817	12			112.29			62.29	9 1/4	100		
	0821	16			115.01			65.01	9 1/2	100		
	0825	20			116.39			66.39	9 1/4	100		
	0827	24			118.18			68.18	"	"		
	0835	30			119.20			69.20	"	"		Sand = 0.50 ml
	0845	40			121.41			71.41	"	"		Sand = 0.34 ml
	0855	50			122.47			72.47	"	"		Sand ~ 0.31 ml
	0905	0	00		123.16			73.16	"	"		Sand ~ 0.31 ml CSI = 1.37
	0906	1	01		129.15			79.15	14 1/2	126		2" = 152 g sky became really overcast
	0907	2	02		131.93			81.93	"	"		
	0908	3	03		133.94			83.94	"	"		
	0910	5	05		136.01			86.01	"	"		
	0912	7	07		138.01			88.01	"	"		
	0915	10	10		139.36			89.36	"	"		
	0917	12	12		140.18			90.18	"	"		
	0921	16	16		141.01			91.01	"	"		
	0925	20	20		142.24			92.24	"	"		
	0929	24	24		142.15			92.15	"	"		
	0935	30	30		143.62			93.62	14 3/8	127		Sand = 0.31 ml
	0945	40	40		144.63			94.63	14 3/8	127		
	0955	50	50		144.88			94.88	14 3/8	127		
	1005	60	60		145.85			95.85	14 3/8	127		CS2 = 1.32

AQUIFER TEST DATA

Owner The Sherwin-Williams Co Address _____ County _____ State _____
 Date 1/22/98 Company performing test Humboldt Drilling & CES Measured by D. Bucaria
 Well No. SW-2 Distance from pumping well _____ Type of test Step Test No. 4
 Measuring equipment Hermit 1000 C w/ 100 psi TDX & 3" x 6" orifice

Time Data				Water Level Data				Discharge Data		Comments on factors affecting test data
Pump on: Date	<u>1/22/98</u>	Time	<u>0805</u> (t.)	Static water level	<u>50.0'</u>			How Q measured	<u>orifice</u>	
Pump off: Date		Time	(t')	Measuring point	<u>top of still well</u>			Depth of pump/airline	<u>240</u>	
Duration of aquifer test:				Elevation of measuring point	<u>6.5 + 2.4'</u>			Previous pumping? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Duration <u> </u> End <u>1/21</u>	
Pumping		Recovery								

Date	Clock time	Time since pump started		Water level measurement	Correction or Conversion	Water level	Water level change		Discharge measurement	Rate	
		t	t'				s	s or s'			
1/22	1006	1	121	151.55			101.55	21"	152		
	1007	2	122	154.34			104.84	"	"		
	1008	3	123	156.71			106.91	"	"		
	1010	5	125	159.14			109.14	"	"		
	1012	7	127	160.14			110.14	"	"		
	1015	10	130	161.76			111.76	"	"	SSK = 0.31, No Δ	
	1017	12	132	162.30			112.30	"	"		
	1021	15	136	163.49			113.49	"	"		
	1025	20	140	164.18			114.18	"	"		
	1029	24	144	165.29			115.28	"	"		
	1035	30	150	165.65			115.65	"	"	SPPLC informed me they will replace pump motor for comparison I suggested they call back.	
	1040	35	160	166.16			116.16	"	"		
	1055	50	170	166.63			116.63	"	"		
	1105	60	180	166.88			116.88	2 7/2	176	SSS = 1.30. Sand 0.31. No change	
	1106	1	181	171.98			121.98	"	"		
	1107	2	182	174.71			124.71	"	"		
	1109	3	183	176.69			126.69	"	"		
	1110	5	185	178.57			128.57	"	"		
	1112	7	187	179.69			129.69	"	"	No Δ in sand	
	1115	10	190	180.54			130.54	"	"	Dump sand tester & restart.	
	1117	12	192	181.42			131.42	"	"		
	1121	16	196	181.79			131.79	"	"		
	1125	20	200	182.64			132.64	"	"		
	1129	24	204	183.20			133.20	"	"		
	1135	30	210	183.64			133.64	"	"		
	1145	40	220	184.11			134.11	"	"		
	1156	50	230	184.14			134.14	"	"		
	1205	60	240	184.93			134.93			SS4 = 1.30	
	1206	1	241	189.98			140.98	36	200	Trace of Sand (260.00ml) in the test 50 min + 20	

AQUIFER TEST DATA

Owner The Sherwin-Williams Co Address _____ County _____ State _____
 Date 1/22/98 Company performing test Humboldt Drilling & CES Measured by D. Bergman
 Well No. SW-2 Distance from pumping well _____ Type of test Step Test No. 4

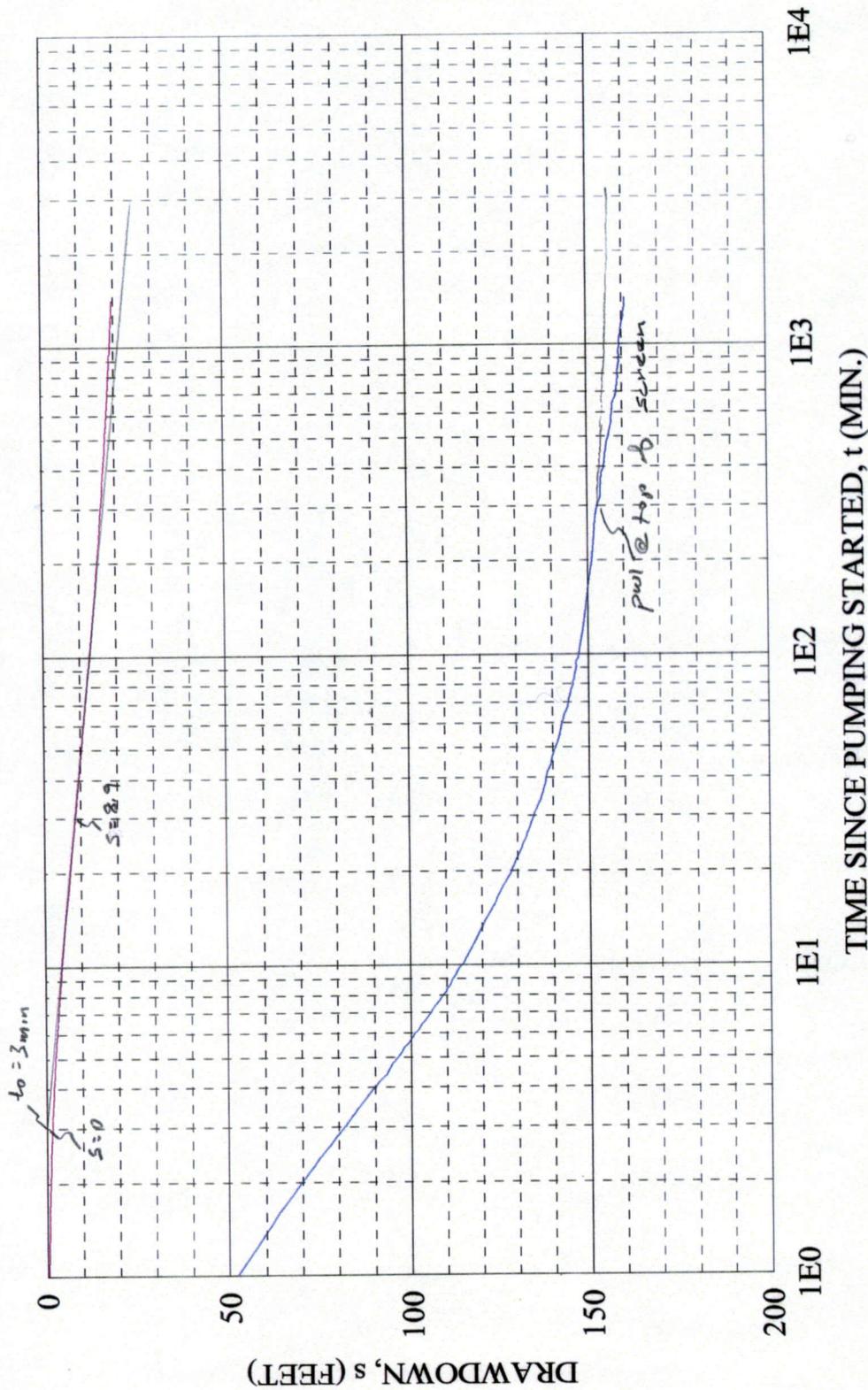
Measuring equipment Hermit 1000C w/ 100 psi TDR & 3" x 6" orifice

Time Data	Water Level Data	Discharge Data	Comments on factors affecting test data
Pump on: Date <u>1/22/98</u> Time <u>0805</u> (L) Pump off: Date _____ Time _____ (L) Duration of aquifer test: _____ Pumping _____ Recovery _____	Static water level <u>50.00'</u> Measuring point <u>Top of still well</u> Elevation of measuring point <u>65.24'</u>	How Q measured <u>orifice</u> Depth of pump/ <u>orifice</u> <u>240'</u> Previous pumping? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Duration _____ End <u>1/21/98</u>	

Date	Clock time	Time since pump started		Time since pump stopped	Water level measurement	Correction or Conversion	Water level	Water level change s or s'	h inches	Q gpm	Discharge measurement	Rate	
		t	r										
1/22	1207	2	242		194.05			144.05	36	200			
	1208	3	243		196.37			146.37	"	"			
	1210	5	245		198.47			148.47	"	"			
	1212	7	247		199.97			149.97	"	"			
	1215	10	250		201.35			151.35	"	"			No D in sand
	1217	12	252		201.73			151.73	"	"			
	1221	16	256		202.92			152.92	"	"			
	1225	20	260		203.83			153.83	"	"			
	1227	24	264		204.42			154.42	"	"			
	1235	30	270		205.39			155.39	"	"			
	1245	40	280		206.65			156.65	"	"			
	1255	50	290		207.62			157.62	"	"			
	1305	60	300		208.31			158.31	"	"			Still only a trace of sand C25' & 1.25

SHERWIN-WILLIAMS WELL SW-2

CONSTANT-DISCHARGE TEST DATA

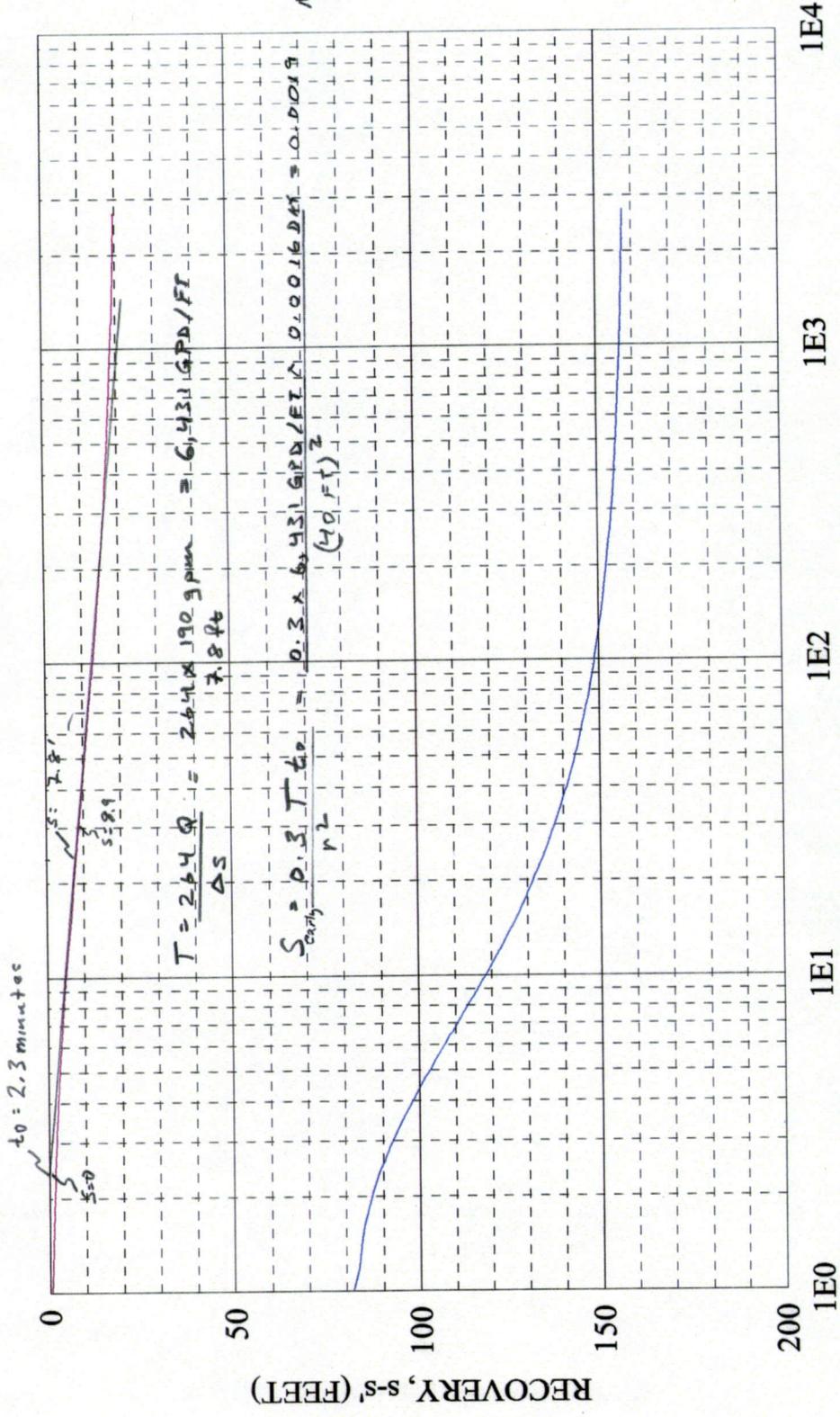


— PUMPED WELL, SW-2

— OBSERVATION WELL, LEMMON VALLEY 6

SHERWIN-WILLIAMS WELL SW-2

CONSTANT-DISCHARGE TEST DATA



Note: Site visit
6/20/1994
10% Sealy

TIME SINCE PUMPING STOPPED, t' (MIN.)

— PUMPED WELL, SW-2 — OBSERVATION WELL, LEMMON VALLEY 6

APPENDIX D. LABORATORY REPORT

Laboratory
Analysis Report



RECEIVED
FEB 11 1998
CES, INC.

Sierra
Environmental
Monitoring, Inc.

CONSULTING ENGINEERING SERV.
DALE BUGENIG
1105 TERMINAL WAY, SUITE 304
RENO NV 89502

Date : 2/10/98
Client : CES-010
Taken by: CLIENT-D. BUGENIG
Report : 22410
PO# :

Page: 1

Sample	Collected Date	Collected Time	ALKALINITY MG/L CAC03	PH S.U.	TURBIDITY NTU	COLOR APPARENT COLOR UNIT	TOTAL DISSOL. SOLIDS MG/L	NITRATE-N MG/L
SW-2	1/24/98	9:30	110B	7.63	0.18	<5	212	1.7N
Sample	Collected Date	Collected Time	NITRITE-N MG/L	CALCIUM ICP MG/L	MAGNESIUM ICP MG/L	POTASSIUM ICP MG/L	SODIUM ICP MG/L	CHLORIDE MG/L
SW-2	1/24/98	9:30	<0.3N	22	8.3	2.5	25	9.3
Sample	Collected Date	Collected Time	CYANIDE, TOTAL MG/L	FLUORIDE MG/L	SULFATE MG/L	MBAS SURFACTANTS MG/L	ODOR T.O.N.	ANTIMONY ICP-MS MG/L
SW-2	1/24/98	9:30	<0.005	<0.1	35	<0.05	0	< 0.001
Sample	Collected Date	Collected Time	ARSENIC ICP-MS MG/L	BARIUM ICP-MS MG/L	BERYLLIUM ICP-MS MG/L	CADMIUM ICP-MS MG/L	CHROMIUM ICP-MS MG/L	SILVER, ICP-MS MG/L
SW-2	1/24/98	9:30	0.004	0.057	< 0.001	< 0.001	0.009	< 0.001
Sample	Collected Date	Collected Time	COPPER ICP-MS MG/L	IRON ICP-OES MG/L	LEAD ICP-MS MG/L	MANGANESE ICP-MS MG/L	MERCURY AA COLD VAPOR MG/L	NICKEL ICP-MS MG/L
SW-2	1/24/98	9:30	< 0.001	0.25	< 0.001	0.010	<0.0005	0.003
Sample	Collected Date	Collected Time	SELENIUM ICP-MS MG/L	THALLIUM ICP-MS MG/L	ORGANICS ANAL TO FOLLOW	RADIOLOGICAL TO FOLLOW	ZINC ICP-MS MG/L	
SW-2	1/24/98	9:30	0.002	< 0.001	YES	YES	< 0.01	

Approved By:

This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

William F. Pillsbury
President

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Reno, NV 89502
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FAX (702) 857-2404
sem@powernet.net

John Kobza, Ph.D.
John C. Seher
Managers

Laboratory
Analysis Report



Sierra
Environmental
Monitoring, Inc.

CONSULTING ENGINEERING SERV.
DALE BUGENIG
1105 TERMINAL WAY, SUITE 304
RENO NV 89502

Date : 2/18/98
Client : CES-010
Taken by: CLIENT-D. BUGENIG
Report : 22411
PO# :

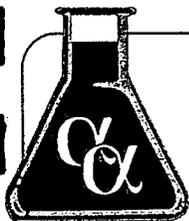
Sample	Collected		RADIOLOGICAL ANALYSIS	ASBESTOS %	ORGANICS ANALYSIS UG/L			
	Date	Time						
SW-2	1/24/98	9:30	SEE REPORT	SEE REPORT	SEE REPORT			

Approved By: _____
This report is applicable only to the sample received by the laboratory. The liability of the laboratory is limited to the amount paid for this report. This report is for the exclusive use of the client to whom it is addressed and upon the condition that the client assumes all liability for the further distribution of the report or its contents.

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FAX: (702) 736-7523
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

ANALYTICAL REPORT

Sierra Environmental Monitoring
1135 Financial Blvd.
Reno, NV 89502
Attn: John Seher

Client ID: (9801-1012) SW-2
Lab ID: SEM98012611-01
Sampled: 01/24/98
Received: 01/26/98

National Primary Drinking Water Phase II and Phase V Regulated and Unregulated Synthetic Organic Compounds (SOC's)

EPA Method	Contaminant	Concen ug/L	Det Limit	EPA Method	Contaminant	Concen ug/L	Det Limit
Analyzed: 02/05/98				Analyzed: 02/04/98			
504.1	1. 1,2-Dibromo-3-Chloropropane (DBCP)	ND	0.02	525.2	1. Atrazine	ND	0.10
504.1	2. 1,2-Dibromoethane(EDB)	ND	0.01	525.2	2. Benzo(a)pyrene	ND	0.02
Analyzed: 01/29/98				525.2	3. Bis(2-ethylhexyl) Phthalate	ND	0.60
505	1. Alachlor	ND	0.20	525.2	4. Bis(2-ethylhexyl) Adipate	ND	0.60
505	2. Aldrin	ND	0.20	525.2	5. Butachlor	ND	1.00
505	3. Chlordane (Technical)	ND	0.20	525.2	6. Metolachlor	ND	1.00
505	4. Dieldrin	ND	0.20	525.2	7. Metribuzin	ND	1.00
505	5. Endrin	ND	0.01	525.2	8. Propachlor	ND	1.00
505	6. Heptachlor	ND	0.04	525.2	9. Simazine	ND	0.07
505	7. Heptachlor Epoxide	ND	0.02	Analyzed: 01/29/98			
505	8. Hexachlorobenzene	ND	0.10	531.1	1. Aldicarb	ND	0.50
505	9. Hexachlorocyclopentadiene	ND	0.10	531.1	2. Aldicarb Sulfoxide	ND	0.50
505	10. Lindane	ND	0.02	531.1	3. Aldicarb Sulfone	ND	0.80
505	11. Methoxychlor	ND	0.10	531.1	4. Carbaryl	ND	1.00
505	12. Aroclor-1016 (Screen)	ND	0.08	531.1	5. Carbofuran	ND	0.90
505	13. Aroclor-1221 (Screen)	ND	20.0	531.1	6. 3-Hydroxycarbofuran	ND	1.00
505	14. Aroclor-1232 (Screen)	ND	0.50	531.1	7. Methomyl	ND	1.00
505	15. Aroclor-1242 (Screen)	ND	0.30	531.1	8. Oxamyl	ND	2.00
505	16. Aroclor-1248 (Screen)	ND	0.10	Analyzed: 02/06/98			
505	17. Aroclor-1254 (Screen)	ND	0.10	547	1. Glyphosate	ND	6.00
505	18. Aroclor-1260 (Screen)	ND	0.20	Analyzed: 01/28/98			
505	19. Toxaphene	ND	1.00	548.1	1. Endothall	ND	9.00
Analyzed: 02/10/98				Analyzed: 02/03/98			
515	1. Dalapon	ND	1.00	549.1	1. Diquat	ND	0.40
515	2. Dicamba	ND	0.50				
515	3. Dinoseb	ND	0.20				
515	4. 2,4-D	ND	0.10				
515	5. Picloram	ND	0.10				
515	6. Pentachlorophenol	ND	0.04				
515	7. 2,4,5-TP (Silvex)	ND	0.20				

ND - Not Detected

Approved By: Roger Scholl
Roger L. Scholl, Ph.D.
Laboratory Director

Date: 2/17/98



Alpha Analytical, Inc.

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Sparks, Nevada 89431
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1-800-283-1183

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(702) 498-3312
FAX: (702) 736-7523
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

ANALYTICAL REPORT

Sierra Environmental Monitoring, Inc.
1135 Financial Boulevard
Reno NV 89502

Job#: 2928
Phone: 857-2400
Attn: John C. Seher

Client ID: (9801-1012) SW-2
Lab ID: SEM98012611-01

Sampled: 01/24/98
Received: 01/26/98

Analyzed: 02/05/98

SDWA VOLATILES PLUS LISTS 1 AND 3 UNREGULATED COMPOUNDS EPA 524.2

Compound	Concentration ug/L	RL ug/L	Compound	Concentration ug/L	RL ug/L
1 Benzene	ND	0.50	28 Chloroform	4.07	0.50
2 Vinyl Chloride	ND	0.50	29 Chloromethane	ND	0.50
3 Carbon tetrachloride	ND	0.50	30 o-Chlorotoluene	ND	0.50
4 1,2-Dichloroethane	ND	0.50	31 p-Chlorotoluene	ND	0.50
5 Trichloroethylene	ND	0.50	32 Dibromomethane	ND	0.50
6 p-Dichlorobenzene	ND	0.50	33 m-Dichlorobenzene	ND	0.50
7 1,1-Dichloroethylene	ND	0.50	34 1,1-Dichloroethane	ND	0.50
8 1,1,1-Trichloroethane	ND	0.50	35 1,1-Dichloropropene	ND	0.50
10 Regulated Volatile Organic Compounds (VOC's) (Phase II)			36 1,3-Dichloropropane	ND	0.50
9 Cis-1,2-Dichloroethylene	ND	0.50	37 e,z-1,3-Dichloropropene	ND	0.50
10 1,2-Dichloropropane	ND	0.50	38 2,2-Dichloropropane	ND	0.50
11 Ethylbenzene	ND	0.50	39 1,1,1,2-Tetrachloroethane	ND	0.50
12 Monochlorobenzene	ND	0.50	40 1,1,2,2-Tetrachloroethane	ND	0.50
13 o-Dichlorobenzene	ND	0.50	41 1,2,3-Trichloropropane	ND	0.50
14 Styrene	ND	0.50	List 3- Monitoring Required at State Discretion		
15 Tetrachloroethylene	ND	0.50	42 Bromochloromethane	ND	0.50
16 Toluene	ND	0.50	43 n-Butylbenzene	ND	0.50
17 Trans-1,2-Dichloroethylene	ND	0.50	44 Dichlorodifluoromethane	ND	0.50
18 Xylenes (total)	ND	0.50	45 Fluorotrichloromethane	ND	0.50
3 Regulated Volatile Organic Compounds (VOC's) (Phase V)			46 Hexachlorobutadiene	ND	0.50
19 Dichloromethane	ND	0.50	47 Isopropylbenzene	ND	0.50
20 1,1,2-Trichloroethane	ND	0.50	48 p-Isopropyltoluene	ND	0.50
21 1,2,4-Trichlorobenzene	ND	0.50	49 Naphthalene	ND	0.50
List 1 - Unregulated Compounds - All Systems			50 n-Propylbenzene	ND	0.50
22 Bromobenzene	ND	0.50	51 sec-Butylbenzene	ND	0.50
23 Bromodichloromethane	ND	0.50	52 tert-Butylbenzene	ND	0.50
24 Bromoform	ND	0.50	53 1,2,3-Trichlorobenzene	ND	0.50
25 Bromomethane	ND	0.50	54 1,2,4-Trimethylbenzene	ND	0.50
26 Chlorodibromomethane	ND	0.50	55 1,3,5-Trimethylbenzene	ND	0.50
27 Chloroethane	ND	0.50	ND-Not Detected RL-Reporting Limit		

Approved by:

Roger Scholl
Roger L. Scholl, Ph.D.
Laboratory Director

Date:

2/13/98



2033 Heritage Park Drive
 Oklahoma City, OK 73120
 Ph. (405) 755-7272
 Fax (405) 755-2058

**Transmission Electron Microscopy
 Asbestos Analysis Report
 Drinking Water Sample**

QuanTEM Sample ID: 9801W350003-1
 Client Sample ID: (9801-1012) SW-2
 Sample Location: n/a
 Date/Time Prepared: January 29, 1998 21:00
 Prepared By: Tony Lehrling
 Analyzed By: Phillip Dang
 Methodology: EPA 600/4-84-043 (EPA 100.2)

Client: Sierra Environmental Monitoring, Inc.
 Account Number: W350
 Sample Aliquot (mL): 100
 Filter Type: 0.22µm 47mm MCE (1385mm²)
 Filter Area Analyzed (mm²): 0.0708
 Instrument: JEOL 100C / 10KX Magnification
 Grid Archival: 2800 A1 A2 A3

Analysis Summary

Structure	Chrysotile ≥10µ		Amphibole ≥10µ	
	Confirmed	Ambiguous	Confirmed	Ambiguous
Free Fibers	0	0	0	0
Fiber Bundles	0	0	0	0

Analysis Results

	Structures Counted
Total Confirmed Chrysotile	None Detected*
Total Confirmed Amphibole	None Detected*
Analytical Sensitivity	0.196 MFL
Total Concentration Asbestos Fibers ≥10 µm	Less than 0.2 MFL*

Comment:

* Numerous chrysotile structures <10 µm were observed in this sample.


 (Reviewed and Approved)

February 1, 1998

 (Date)



Accu-Labs[®] Research, Inc.

4663 Table Mountain Drive Golden, Colorado 80403-1650
(303) 277-9514 FAX (303) 277-9512

Date: 02/09/98
Page 1 - A

CASE NARRATIVE

Ms Robin Procter
Sierra Environmental Monitoring Inc
1135 Financial Blvd
Reno, NV 89502

Lab Job Number: 020621 SIE002
Date Samples Received: 01/27/98
Customer PO Number: 2923

The following samples were received at the laboratory:

98-A1573

Drinking Water

The samples were received within EPA recommended holding times and in good condition. The radioactivity screen was performed at sample login, if required, and all results were within acceptable limits. If required, a pH screen confirmed that all samples were preserved to acceptable pH levels. Samples were analyzed within holding times as prescribed by the analytical method. Exceptions to these statements, additional information and any analytical anomalies are noted below.

The temperature of the samples upon arrival was 16 degrees C.

Sections A, B and C of this report contain a total of 3 pages.

Trudy L. Scott
Laboratory Manager

Date: 02/09/98
Page 1 - B

Accu-Labs® Research, Inc.

REPORT OF ANALYSIS

Ms Robin Procter
Sierra Environmental Monitoring Inc
1135 Financial Blvd
Reno, NV 89502

Lab Job Number: 020621 SIE002
Date Samples Received: 01/27/98
Customer PO Number: 2923

ALR Designation:	98-A1573
Client Designation:	[9801-1012]
Sample Location:	SW-2
Location II:	
Date/Time Collected	01/24/98 9:30

Radiochemistry (results in pCi/L unless noted):

Gross Alpha, total	2 +/- 2
Gross Beta, total	6 +/- 3

NOTES:

Gross Alpha results are based on an Am-241 absorption curve.

Gross Beta results are based on a Cs-137 absorption curve.

Variability of the radioactive disintegration process (counting error) at the 95% confidence level is 1.96 sigma and the level of significance may exceed that of the reported analytical result.

Scheduled sample disposal/return date: March 11, 1998.

Trudy L. Scott

Trudy L. Scott
Laboratory Manager

QA/QC Report for ALR Job Number 020621

PARAMETER	DETECTION LIMIT	DATE OF ANALYSIS	TIME OF ANALYSIS	ANALYST	METHOD
Lab Sample Number: 98-A1573					
Client Sample ID: [9801-1012]					
Gross Alpha, total	2 pCi/L	2/ 2/98	12:00	JM	References 1, 2, 3, 4, 6, 7, 8
Gross Beta, total	3 pCi/L	2/ 2/98	12:00	JM	References 1, 2, 3, 4, 6, 7, 8

The reference summary for the Radiochemistry Methods is attached.

Approved by : [Signature] Date : 2/9/98

**RADIOCHEMISTRY DEPARTMENT
METHOD REFERENCES UTILIZED BY ACCU-LABS RESEARCH, INC.**

1. U.S. Environmental Protection Agency, 1979, "Radiochemical Analytical Procedures for Analysis of Environmental Samples", Report No. EMSL-LV-0539-1, Las Vegas, NV.
2. American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1989, "Standard Methods for the Examination of Water and Wastewater", 17th ed., Washington, D.C., Am. Public Health Association.
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4. U.S. Environmental Protection Agency, Eastern Environmental Radiation Facility, "Radiochemistry Procedures Manual", EPA 520/5-84-006, Aug. 1984.
5. Misaqi, Fazlilleh L., "Monitoring Radon-222 Content of Mine Waters Informational Report 1026", U.S. Department of Interior, Mining Enforcement and Safety Administration, Denver, Colorado, 1975.
6. "Radioassay Procedures for Environmental Samples", 1967, USDHEW, Sec. 7.2.3.
7. "Handbook of Analytical Procedures", USAEC, Grand Junction Lab, 1970, p. 196.
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21. Cleveland, J.M., "The Chemistry of Plutonium", Americium Nuclear Society, 1979, p. 142-158.
22. US EPA, Office of Research & Development, Environmental Monitoring Systems Laboratory - Las Vegas, Las Vegas, NV 89193-3478.
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25. "1994 Annual Book of ASTM Standards, Vol. 11.01 and Vol. 11.02 Water", ASTM, Philadelphia, PA 19103-1187.

METHOD REFERENCES
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26. "Health and Environmental Chemistry: Analytical Techniques, Data Management, and Quality Assurance", LA-10300-M, Vols. I, II, III, IV Manual, Margaret A. Gautier, ed., Los Alamos National Laboratory, Los Alamos, NM 87545.
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29. "Procedures for radiochemical Analysis of Nuclear Reactor Aqueous Solutions", PB-222 154, May 1973, H.L. Krieger and S. Gold, National Environmental Research Center, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH 45268.
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GEO-HYDRO-DATA

INCORPORATED

GROUNDWATER LOG

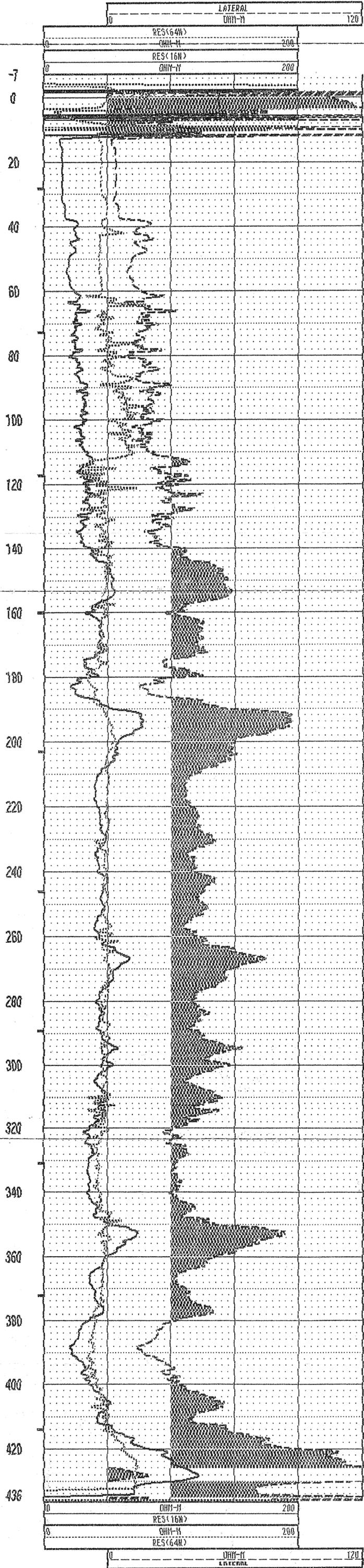
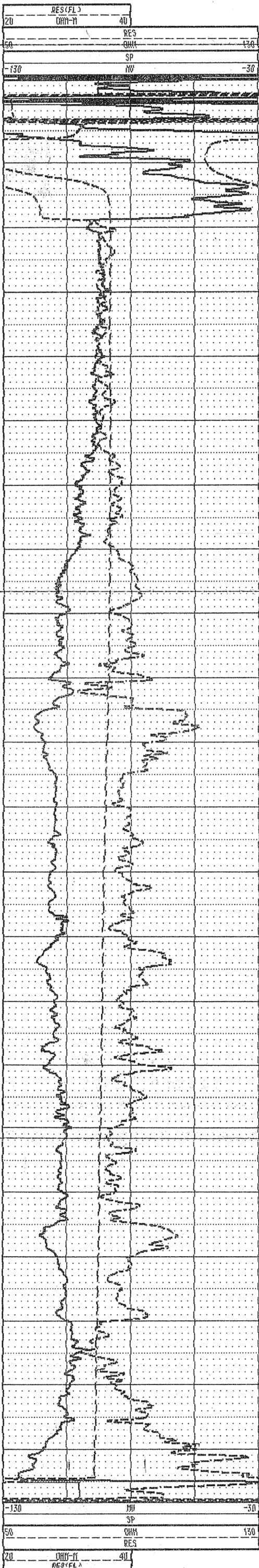
COMPANY	: SHERWIN WILLIAMS		OTHER SERVICES: INVOICE 10480 500-D
WELL	: TEST HOLE NO.2		
LOCATION/FIELD	: LEMON VALLEY		
COUNTY	: WASHOE		
STATE	: NV.		
SECTION	: N/A	TOWNSHIP	: N/A
		RANGE	: N/A

DATE	: 11/23/97	PERMANENT DATUM	: G.L.	ELEVATIONS	
DEPTH DRILLER	: 420 FEET	ELEV. PERM. DATUM	: N/A	KB	: N/A
LOG BOTTOM	: 436.40	LOG MEASURED FROM	: G.L.	DF	: N/A
LOG TOP	: -6.80	DRL MEASURED FROM	: G.L.	GL	: N/A

CASING DRILLER	: -	LOGGING UNIT	: 10
CASING TYPE	: -	FIELD OFFICE	: CLEMENTS, CA.
CASING THICKNESS	: -	RECORDED BY	: D. SHANNOLTZR

BIT SIZE	: 6	BOREHOLE FLUID	: CLAY/GEL	FILE	: ORIGINAL
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9041A
MATRIX DENSITY	: -	RM TEMPERATURE	: -	LOG	: 0
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: 1.13
NEUTRON MATRIX	: N/A	FLUID DELTA T	: -	THRESH	: 4000
REMARKS	:				
DRILL-HUMBOLDT	:				
CES-CONS.	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



GEO-HYDRO-DATA

INCORPORATED

CALIPER-GAMMA LOG

COMPANY : SHERWIN WILLIAMS
 WELL : TEST HOLE NO.2
 LOCATION/FIELD : LEMON VALLEY
 COUNTY : PASADENA
 STATE : NV.
 SECTION : N/A

OTHER SERVICES:
 INVOICE
 18488
 588-D

TOWNSHIP : N/A

RANGE : N/A

DATE : 11/23/97
 DEPTH DRILLER : 428 FEET
 LOG BOTTOM : 442.88
 LOG TOP : -6.88

PERMANENT DATUM : G.L.
 ELEV. PERM. DATUM: N/A
 LOG MEASURED FROM: G.L.
 DRI MEASURED FROM: G.L.

ELEVATIONS
 RB : N/A
 DF : N/A
 CL : N/A

CASING DRILLER : -
 CASING TYPE : -
 CASING THICKNESS: -

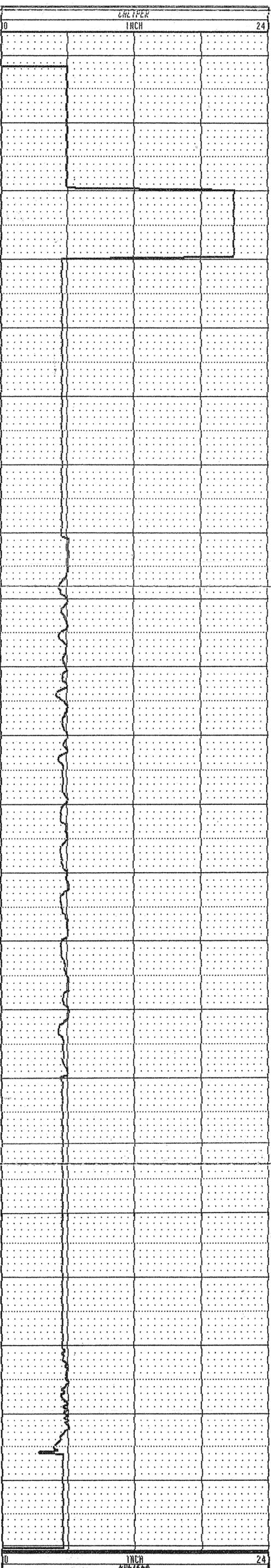
LOGGING UNIT : 10
 FIELD OFFICE : CLEMENTS, CA.
 RECORDED BY : D. SHANOLTZER

BIT SIZE : 6
 MAGNETIC DECL. : -
 MATRIX DENSITY : -
 FLUID DENSITY : -
 NEUTRON MATRIX : N/A
 REMARKS :
 DRILL-HUMBOLDT
 CES-CONS.

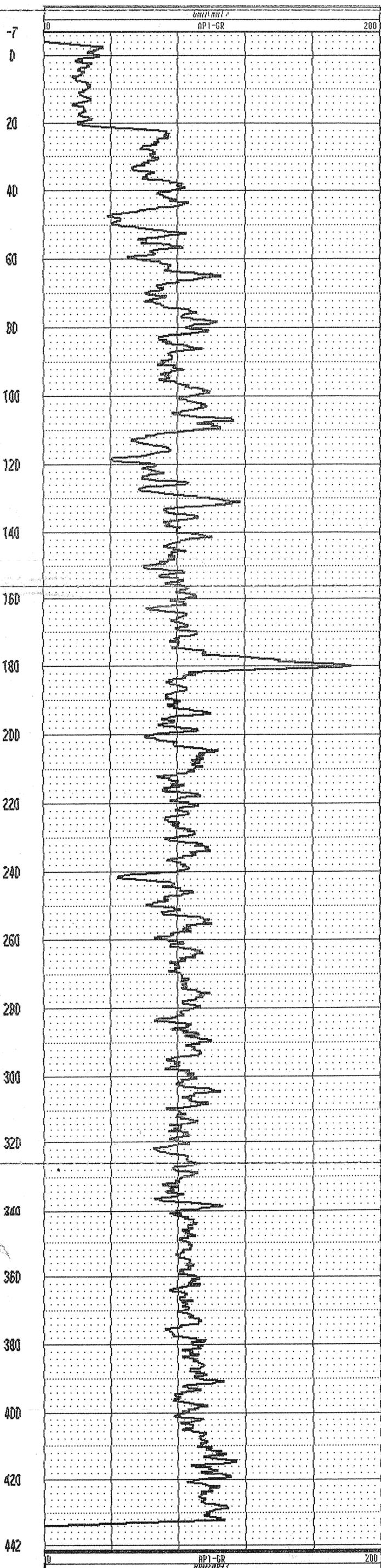
BOREHOLE FLUID : CLAY/GEL
 RM : -
 RA TEMPERATURE : -
 MATRIX DELTA T : -
 FLUID DELTA T : -

FILE : PROCESSED
 TYPE : 9841A
 LOG : 2
 PLOT : GMS 37
 TUBESH: 4888

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6 12 18



GEO-HYDRO-DATA

INCORPORATED

TEMPERATURE LOG

COMPANY : SHERWIN WILLIAMS		OTHER SERVICES: INVOICE 10480 500-D
WELL : TEST HOLE NO. 2		
LOCATION/FIELD : LEMON VALLEY		
COUNTY : WASHOE		
STATE : NV.		
SECTION : N/A	TOWNSHIP : N/A	RANGE : N/A
DATE : 11/23/97	PERMANENT DATUM : G.L.	ELEVATIONS
DEPTH DRILLER : 420 FEET	ELEV. PERM. DATUM: N/A	KB : N/A
LOG BOTTOM : 441.80	LOG MEASURED FROM: G.L.	DF : N/A
LOG TOP : -6.80	DRL MEASURED FROM: G.L.	GL : N/A
CASING DRILLER : -	LOGGING UNIT : 10	
CASING TYPE : -	FIELD OFFICE : CLEMENTS, CA.	
CASING THICKNESS: -	RECORDED BY : D. SHANHOLTZ	
BIT SIZE : 6	BOREHOLE FLUID : CLAY/GEL	FILE : PROCESSED
MAGNETIC DECL. : -	RM : -	TYPE : 9041A
MATRIX DENSITY : -	RM TEMPERATURE : -	LOG : 2
FLUID DENSITY : -	MATRIX DELTA T : -	PLOT : 1 64
NEUTRON MATRIX : N/A	FLUID DELTA T : -	THRESH: 4000
REMARKS :		
DRILL-HUMBOLDT		
CES-CONS.		

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