DEPARTMENT OF THE ARMY
CAMP STANLEY STORAGE ACTIVITY, MCAAP
25800 RALPH FAIR ROAD, BOERNE, TX 78015-4800

August 16, 2007

U-104-07

Mr. David Laughlin
Texas Commission on Environmental Quality
Water Supply Division
P.O. Box 13087 (MC-153)
Austin, TX 78711-3087

Subject: Rehabilitation of Groundwater Supply Wells CS-9 and -10, Camp Stanley Storage Activity, Boerne, Texas, Public Water System, I.D. #0150117, TCEQ Plan Review Log Number: 200604-031

Dear Mr. Laughlin:

The Camp Stanley Storage Activity (CSSA), McAlester Army Ammunition Plant, US Army Field Support Command, Army Materiel Command, U.S. Army is submitting notification that the groundwater supply well rehabilitations (subject PWS and Review Team Log #) at CSSA Supply Wells CS-9 and CS-10 have been completed as of June 1, 2007.

The rehabilitation plans in CSSA's original Water System Plan (Plan) submittal (April 10, 2006) and a supplemental submittal (April 21, 2006) were conditionally approved by TCEQ April 13 and 27, 2006, respectively. Work tasks were completed as outlined in the Plan submittal, in accordance with AWWA standards, and met the TCEQ's 30 TAC Chapter §290 - Rules and Regulations for Public Water Systems (Rules). The well service contractor is a licensed water well driller and pump installer (License No. 2525). Table 1 shows a summary of the upgraded construction data (unchanged information such as maps and original driller's log not included). Original laboratory reports for water analyses are available for inspection in the CSSA files. Copies of the laboratory reports are included as part of this submittal.

Table 1. Rework Completion Data

Well	Steel Casing	Annular Cement	Borehole		Pumps	Formations
			Diameter	Depth		
CS-9	10in. diameter to 178 ft.	0-178 ft. *	14¾ in.	2-176 ft.	20 hp 90 gpm rated	Middle Trinity (no change)
			13¾ in.	176-485 ft.		
			12¼ in.	485-548 ft. (TD)		
CS-10	no change	no change	no change	580 ft. (TD)	20 hp 90 gpm rated	Middle Trinity (no change)

*Positive displacement exterior method.

Well CS-10 rehabilitation was accomplished as planned and with no difficulty. The old pump and column pipe were removed. A video inspection of the existing casing interior determined it to be sound. The existing 8-inch diameter steel casing extends to 392 feet below ground surface (bgs), whereas earlier records indicated casing to 390 feet. Below the casing the wellbore is open in the Lower Glen Rose, Bexar Shale, and Cow Creek members of the Middle Trinity Aquifer. During cleaning of the borehole approximately 30 feet of soft infilling was airlifted out. The finished total depth of the well is now 580 feet bgs. Some historical records indicate the original drilled depth of Well CS-10 was 590 feet and was first drilled in 1918. After airlifting was completed, a new 20 hp pump and column piping were installed at CS-10. The surface completion and related appurtenances were upgraded to meet current Rules and standards as per the Plan submittal. The well was chlorinated and left idle for 24 hours, then flushed and sampled. Bacteriological samples collected on 3 consecutive days showed "Not Present" results.

A modified pumping test was performed at Well CS-10 as per §290.41(c)(3)(G), *TCEQ Technical Guideline II, Hydrologic Testing*, and *TCEQ Staff Guidance: Pumping Test For Public Water Wells* on June 18, 2007. The well was idle for 2 days prior to the test. Graphical pumping test data is attached. The pumping rate was maintained at 110 gallons per minute (gpm) for 8 hours and 51 minutes. Total drawdown was 86.56 feet at the end of pumping. After pumping stopped, the non-pumping water level had recovered by 50% after 27 minutes, and 75% after 3 hours. CSSA operators generally rotate daily pumping among 3 base supply wells, and a well is normally pumping not more than 8 hours per day. The modified pumping test was performed several months after the upgrade was finished and after drought conditions had abated, as requested in the Plan submittal. Basic hydraulic properties have been determined through previous pumping tests and are available for viewing at *http://www.stanley.army.mil/Volume5/GW_pumping_tests/TOC.htm*.

At Well CS-9, 21 feet of old, deteriorated 8-inch diameter casing was removed and replaced with 180 feet (178 feet bgs and 2 feet above ground level) of new, 10-inch diameter steel casing. The annular space of the new casing was grouted in by positive displacement exterior method using a cement and 3-5% bentonite powder mix. After the new surface casing was installed, a section of old piping was encountered lodged near the bottom of the borehole. The top of the object was at a depth of 553 feet bgs. It was surmised that this debris originated from either old well casing, column pipe, and/or pump that broke and fell to the bottom of the well sometime in the past. Collection of one CS-9 water sample, after the downhole debris had been disturbed, showed a concentration of (5.9 mg/l) of mercury (Hg) above the drinking water MCL (2.0 mg/l). Based on this finding, it was determined that the debris was the source for the elevated concentrations above drinking water MCLs. No metals were found above MCLs in concurrent sampling of CS-10 water. Removal of the debris proved economically infeasible. The bottom of CS-9 was pressure grouted up to 548.8 feet with neat cement by tremie pipe and positive

displacement, sealing the debris in cement and from contact with the remaining open portion of the CS-9 borehole. Neat cement was prepared according to AWWA definitions. Purge water containing metals above MCLs was contained, characterized, and discharged to the CSSA wastewater treatment plant in compliance with the CSSA TPDES permit. After cementing, Well CS-9 was again purged and sampled. Two subsequent raw water analyses (results attached) showed Pb and Hg detections far below MCLs and slightly above reporting limits (RL), the highest levels being 0.00304 and 0.00042 *mg/l*, respectively. Table 2 shows a summary of recent Well CS-9 metals analyses results. A laboratory report of contained Well CS-9 purge water is attached showing negative results for PCBs, SVOCs, and VOCs. A new 20 hp pump and piping were installed in Well CS-9 and the surface completion and related appurtenances were upgraded to current standards. The well was disinfected, purged, and bacteriological samples were collected on 3 consecutive days showing "Not Present" results.

A modified pumping test was performed at Well CS-9 in May 2007 and test data is graphically provided in the attachments. The well was idle for several days prior to the test. The well was pumped at a rate of 58 gpm for 24 hours. About 5 hours before the end of the test the water level recovered 3 feet over the course of an hour, before resuming a steady shallow decline. About the same time, storms developed in the region depositing 1.5 inches of rain within a very short time in some places. The power system in the CSSA area occasionally experiences fleeting power interruptions and surges during storms. The slight water level rise could be attributed to either small power fluctuations, or a recharge pulse resulting from sudden heavy area precipitation. The maximum drawdown of 72.08 feet was achieved after 19 hours and 5 minutes of pumping. The net drawdown after 24 hours was 70.11 feet. After pumping stopped, the well recovered by 50% within 19 minutes, 75% after 71 minutes, and 100% recovery was attained after 20 hours and 2 minutes of rest.

As per the TCEQ *Public Well Completion Data Checklist*, the following items relative to completed upgrade work at Wells CS-9 and CS-10 are submitted:

1. Copy of recorded deed and map - **on file at TCEQ**;
2. New construction data summary on upgraded Wells CS-9 and CS-10 (below);
3. USGS topographic map - **on file at TCEQ**;
4. Records of post-rework pumping tests (attached);
5. Bacteriological analyses reports (attached);
6. Chemical analyses reports - **on file at TCEQ**, selected pages of recent supplementary analyses reports attached (see narrative for explanation);

Table 2

CSSA Well CS-9 Selected Raw Water Sampling Analyses Summary
September 2005 - April 2007
(µg/ liter)

Parameter	MCL	09/08/05 Pre-rehab quarterly monitoring	Rehabilitation work	06/13/06 Routine Quarterly Sampling*	09/13/06 Routine Quarterly Sampling	09/28/06 TCEQ sampling (LCRA-ELS)	10/23/06 after 2.5 mins purge (120 gal)	10/23/06 after 60 mins purge (2,880 gal)	Cement grouted over debris, reinstalled new pump and pipe	04/06/07 Post-rehab Quality Sampling	04/18/07 Post-rehab Quality Verification
Aluminum	200[1]					35.50					
Antimony	6					ND					
Arsenic	10	0.42		1.10	0.36	ND	ND	0.49			
Barium	2000	39		34.0	36.0	32.10	41.0	38.00			
Beryllium	4					ND					
Cadmium	5	ND		0.07	0.11	ND	ND	0.05			
Calcium	n/a					86,900					
Chromium	100	2.6		8.80	ND	7.12	ND	ND			
Copper	1300[2]	12		28.0	7.90	5.86	21.0	ND			
Iron	300[1]					569					
Lead	**15**	1.1		**18.00**	**28.00**	**35.10**	9.10	**17.00**		1.83	3.04
Magnesium	n/a					26,700					
Manganese	50[1]					4.19					
Mercury	**2**	ND		**5.90**	0.36	0.38	0.23	0.51		0.42	0.188
Nickel	100	1.2		8.0	ND	4.01	ND	ND			
Selenium	50					ND					
Silver	100[1]					ND					
Sodium	250000[3]					9,130					
Thallium	2					0.41				ND	ND
Zinc	5000[1]	62		3,400	1,700	2,430	4,400	690		555	598

XX.00 = above MCL
1 = SMCL
2 = Action level
3 = guideline
blank = not analyzed

* Well removed from service upon receipt of results.

7. Final approval sampling - not immediately required, a substantial chemical history of the wells is already established and **on file at TCEQ**. Routine annual and triennial inspection and sampling by TCEQ continues;

8. Checklist acknowledgement (attached).

If you have any questions, if you require additional information, or if we can be of any other assistance, please contact Glaré Sanchez, Environmental Program Manager, at (210) 698-5208.

Sincerely,

Jason D. Shirley
Installation Manager

Attachments

cc: Ms. Glare Sanchez, CSSA Environmental Program Manager
Mr. Greg Lyssy, EPA Region 6
Mr. Sonny Rayos, TCEQ Central Office
Ms. Mary Knipfer, TCEQ Central Office
Ms. Abigail Power, TCEQ Region 13
Ms. Julie Burdey, Parsons
Ms. Kimberly Vaughn, Parsons

ATTACHMENTS

Checklist

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
WATER SUPPLY DIVISION, UTIL. CREATION & PLAN REV. TEAM MC-153
P.O. BOX 13087, AUSTIN, TEXAS 78711-3087

PUBLIC WATER SYSTEM ID No.: 0150117
TCEQ LOG NO: 200604-031
OWNER'S WELL ID NO. or Name Wells CS-9 and CS-10

PUBLIC WELL COMPLETION DATA CHECKLIST FOR INTERIM APPROVAL

Any well proposed as a source of water for a public water supply must have plans approved for construction by the TCEQ. Plans are reviewed for compliance with Rules and Regulations for Public Water Systems Title 30 TAC Chapter 290.38-290.49. After the well is drilled, the well completion data listed below must be submitted for TCEQ evaluation. Based on this submitted data, interim approval may be given for use of the well. Please include the TCEQ Log No. and owner's well name when submitting well completion information.

(Small print references in parentheses are to Rules and Regulations for Public Water Systems Title 30 TAC Chapter 290.38-290.49)

1. ☐ N/A Copies of ordinance or a recorded deed and map showing ownership and/or sanitary control easements as filed at the county courthouse (bearing the county clerk's stamp), covering all areas within 150 feet of the well owned by the system that will convey to others and neighboring tract not owned by the system(for a sample easement see 30 TAC 290.47(c), or contact the TCEQ Austin office or a Regional office. (Section 290.41(c)(1)(F) of the rules.)

2. ☑ Construction data on the completed well, including:
   - ☑ Casing size, bore hole diameter (at least 3-in wider than casing OD), total well depth, casing material (e.g. steel, PVC-SDR17), casing length, and cementing depth and method (one of the methods in AWWA Standard A-100-(latest rev'n), Appendix. C, *excluding* the dump bailer and tremie methods);
   - N/A Driller's geologic log of strata penetrated during drilling of the well;
   - N/A Copy of the official State of Texas Well Report filled out by the water well driller (some of the preceding data is included on the Water Well Report form. (Section 290.41(c)(3)(A),(B),(C) & (G) of the rules.)
   - ☑ Cementing certificate (Railroad Commission or company format). (Section 290.41(c)(3)(A))

3. N/A A U.S. Geological Survey 7.5-minute topographic quadrangle map (include quadrangle name and number), or a legible copy, with "cross-hairs" showing the location of the completed well. (Section 290.41(c)(3)(A) of the rules.) ACCURACY: All locations collected shall maintain a minimum level of accuracy of at least 25 meters (82 feet). TCEQ OPP 8.11.02)

4. ☑ Record of a 36 hour pump test on the well showing stable production at the well's rated capacity (Section 290.41(c)(3)(A) & (G) of the rules). Include the final well pump capacity in gpm and feet, t.d.h.

5. ☑ Three bacteriological analysis reports showing raw well water to be free of coliform bacterial contamination; reports must be for samples of raw (untreated) water from the disinfected well, collected on three successive days, and submitted to a laboratory certified by TCEQ. (Section 290.41(c)(3)(A) & (F) of the rules.)

6. ☑ Chemical analysis reports for well water samples showing the water to be of acceptable quality for at least, the most problematic contaminants listed below (Section 290.41(c)(3)(A) & (G) of the rules, and Section 290.104 and 290.105 of Drinking Water Standards). Reports from a private, non-certified laboratory may be accepted by TCEQ for interim use of the well. Maximum contaminant level (MCL) and secondary contaminant level (SCL) units are in mg/l (except arsenic).

MCL	PRIMARY	SCL	SECONDARY	SCL	SECONDARY	SCL	SECONDARY
10 (as N)	Nitrate	0.2	Aluminum	5.0	Zinc	300	Sulfate
1 (asN)	Nitrite	1.0	Copper	1,000	Total Dissolved Solids	300	Chloride
10 µg/l	Arsenic	0.3	Iron	2.0	Fluoride	≥7.0	pH
4.0	Fluoride	0.05	Manganese				

15	Gross alpha (pCi/liter)*
5	Radium-226/228 (pCi/liter)*
50	Beta particle (pCi/liter)*
30	Uranium (µg/liter)*

(WHERE: pCi/liter=pico curies per liter, µg/liter=micrograms per liter)

*Radionuclide water analyses required only in selected counties listed on the back of this checklist. For more guidance see "How to Conduct Radionuclide Testing for Well Completion Interim Approval" at:

http://www.tceq.state.tx.us/permitting/water_supply/pdw/chemicals/radionuclides/pdw_rad.html

7. ☑ By checking this box, submitter agrees to contact the Drinking Water Quality Team at 512/239-4691 within 120 days of receiving interim approval to schedule final approval sampling. These will be collected by TCEQ contractors, analyzed by a certified lab, and paid for by the Public Water Supply.

8. ☑ By checking this box, submitter acknowledges that Public Water Supply systems are subject to applicable Texas Administrative Code 30 Chapters 290, 291, 292 and 293. More information can be found at 512/239-4691, http://www.tceq.state.tx.us/nav/util_water/, and http://www.tnrcc.state.tx.us/oprd/rules/index.html .

N/A = Not Applicable; data already on file at TCEQ.

Water Quality Analyses

DHL Analytical

Date: *02-Nov-06*

CLIENT:	CSSA Environmental Group	**Client Sample ID:**	CS-9 Purge Water
Project:	CS-9 Purge/CSSA	**Lab ID:**	0610205-01
Project No:	CSSA	**Collection Date:**	10/25/2006 2:30:00 PM
Lab Order:	0610205	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
608 PESTICIDE/PCB BY GC		**E608**					Analyst: **DO**
Aroclor 1016	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Aroclor 1221	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Aroclor 1232	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Aroclor 1242	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Aroclor 1248	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Aroclor 1254	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Aroclor 1260	ND	0.100	0.250		µg/L	1	10/31/2006 11:41:49 PM
Surr: Decachlorobiphenyl	110	0	40-130		%REC	1	10/31/2006 11:41:49 PM
Surr: Tetrachloro-m-xylene	56.9	0	40-130		%REC	1	10/31/2006 11:41:49 PM
TOTAL METALS: ICP-MS		**E200.8**					Analyst: **JWC**
Aluminum	89.0	10.0	30.0		µg/L	1	10/30/2006 8:00:00 PM
Antimony	ND	0.800	2.50		µg/L	1	10/30/2006 8:00:00 PM
Arsenic	ND	2.00	6.00		µg/L	1	10/30/2006 8:00:00 PM
Barium	42.3	3.00	10.0		µg/L	1	10/30/2006 8:00:00 PM
Beryllium	ND	0.300	0.800		µg/L	1	10/30/2006 8:00:00 PM
Cadmium	0.309	0.300	1.00	J	µg/L	1	10/30/2006 8:00:00 PM
Chromium	ND	2.00	6.00		µg/L	1	10/30/2006 8:00:00 PM
Copper	ND	2.00	10.0		µg/L	1	10/30/2006 8:00:00 PM
Lead	6.25	0.300	1.00		µg/L	1	10/30/2006 8:00:00 PM
Nickel	ND	3.00	10.0		µg/L	1	10/31/2006 10:05:00 AM
Selenium	2.13	2.00	6.00	J	µg/L	1	10/30/2006 8:00:00 PM
Silver	ND	1.00	2.00		µg/L	1	10/30/2006 8:00:00 PM
Thallium	3.59	0.500	1.50		µg/L	1	10/30/2006 8:00:00 PM
Zinc	928	2.00	5.00		µg/L	1	10/30/2006 8:00:00 PM
AQUEOUS MERCURY, TOTAL		**E245.1**					Analyst: **KC**
Mercury	0.175	0.0800	0.200	J	µg/L	1	10/30/2006 2:28:00 PM
625 SEMIVOLATILE WATER		**E625**					Analyst: **DO**
Benzidine	ND	5.00	50.0		µg/L	1	10/27/2006 9:56:00 PM
Benzo[a]anthracene	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
Benzo[a]pyrene	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
Chrysene	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
2,4-Dimethylphenol	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
2-Methylphenol	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
4,6-Dinitro-2-methylphenol	ND	2.00	50.0		µg/L	1	10/27/2006 9:56:00 PM
4-Chloro-3-methylphenol	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
4-Methylphenol	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
1,4-Dichlorobenzene	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM
Hexachlorobenzene	ND	2.00	10.0		µg/L	1	10/27/2006 9:56:00 PM

Qualifiers	B	Analyte detected in the associated Method Blank	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	N	Parameter not NELAC certified	ND	Not Detected at the Method Detection Limit
	RL	Reporting Limit	S	Spike Recovery outside control limits

DHL Analytical **Date:** *11-Apr-07*

CLIENT:	Parsons, Inc.	**Client Sample ID:**	CS-9
)ject:	CSSA	**Lab ID:**	0704056-02
Project No:	745251.04000	**Collection Date:**	04/06/07 10:02 AM
Lab Order:	0704056	**Matrix:**	AQUEOUS

Analyses	Result	SQL	RL	Qual	Units	DF	Date Analyzed
TOTAL MERCURY: AQUEOUS		**SW7470A**					Analyst: **KDT**
Mercury	0.000420	0.0000800	0.000200		mg/L	1	04/10/07 02:31 PM
TRACE METALS: ICP-MS - WATER		**SW6020**					Analyst: **JWC**
Lead	0.00183	0.000300	0.00100		mg/L	1	04/10/07 05:49 PM
Thallium	ND	0.000500	0.00150		mg/L	1	04/10/07 05:49 PM
Zinc	0.555	0.00200	0.00500		mg/L	1	04/10/07 05:49 PM

Qualifiers:

ND - Not Detected at the SQL
J - Analyte detected between SQL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SQL - Sample Quantitation Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical

Date: *20-Apr-07*

CLIENT:	Parsons, Inc.	**Client Sample ID:**	CS-9
Project:	CSSA	**Lab ID:**	0704156-01
Project No:	743322.10	**Alternate ID:**	CS-9_041807_N1540
Lab Order:	0704156	**Collection Date:**	04/18/07 03:40 PM
		Matrix:	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
TOTAL METALS: ICP-MS		**E200.8**					Analyst: **JWC**
Lead	0.00304	0.000300	0.00100		mg/L	1	04/19/07 05:53 PM
Thallium	ND	0.000500	0.00150		mg/L	1	04/19/07 05:53 PM
Zinc	0.598	0.00200	0.00500		mg/L	1	04/19/07 05:53 PM
AQUEOUS MERCURY, TOTAL		**E245.1**					Analyst: **KDT**
Mercury	0.000188	0.0000800	0.000200	J	mg/L	1	04/19/07 01:01 PM

Qualifiers:

B	Analyte detected in the associated Method Blank	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
N	Parameter not NELAC certified	ND	Not Detected at the Method Detection Limit
RL	Reporting Limit	S	Spike Recovery outside control limits

Bacteriology Reports

SAN ANTONIO
TESTING LABORATORY, INC.

Camp Stanley Storage Activity

25800 Ralph Fair Rd.
Boerne, TX 78015-4800
ATTN: Eric Tennyson

Date/Time Received: 5/23/2007 3:44 PM
Date Reported: 5/25/2007

Project Name: Camp Stanley
Project No.: 745 006 04

Additional Info:

Report No.: 0705-210

REPORT OF MICROBIOLOGICAL ANALYSIS

Sample ID #: 1 CS-9(1) **Sampling Method:** Grab
Sample Type: Drinking Water **Date/Time Collected:** 5/23/2007 3:00 P

Parameter	Results	Units	Analysis Method	Start Date/Time	Read Date/Time	Analyst
Total Coliform	Not Found	F/NF	SM9223	5/23/2007 / 4:01 PM	5/24/2007 / 4:05 PM	ID
E Coli	Not Found	F/NF	SM9223	5/23/2007 / 4:01 PM	5/24/2007 / 4:05 PM	ID

SAN ANTONIO
TESTING LABORATORY, INC.

Camp Stanley Storage Activity

25800 Ralph Fair Rd.
Boerne, TX 78015-4800
ATTN: Eric Tennyson

Date/Time Received: 5/25/2007 3:42 PM
Date Reported: 5/30/2007

Project Name: Camp Stanley
Project No.: 745006.04

Additional Info:

Report No.: 0705-248

REPORT OF MICROBIOLOGICAL ANALYSIS

Sample ID #: 1 CS-9(3)
Sampling Method: Grab
Sample Type: Liquid
Date/Time Collected: 5/25/2007 3:00 P

Parameter	Results	Units	Analysis Method	Start Date/Time	Read Date/Time	Analyst
Total Coliform	Not Found	F/NF	SM9223	5/25/2007 / 4:05 PM	5/26/2007 / 4:09 PM	ID
E Coli	Not Found	F/NF	SM9223	5/25/2007 / 4:05 PM	5/26/2007 / 4:09 PM	ID

SAN ANTONIO
TESTING LABORATORY, INC.

1

Camp Stanley Storage Activity

25800 Ralph Fair Rd.
Boerne, TX 78015
ATTN: Env. Office

Date/Time Received: 6/26/2006 9:01 AM
Date Reported: 6/27/2006

Project Name: State
Project No.: 0150117

Additional Info:

Report No.: 0606-187

REPORT OF MICROBIOLOGICAL ANALYSIS

Sample ID #: 1 CSSA Well CS -10
Sample Type: Drinking Water
Date/Time Collected: 6/25/2006 3:00 P

Parameter	Results	Units	Analysis Method	Start Date/Time	Read Date/Time	Analyst
Total Coliform	Not Found	F/NF	SM9223	6/26/2006 / 2:15 PM	6/27/2006 / 2:30 PM	SA
E Coli	Not Found	F/NF	SM9223	6/26/2006 / 2:15 PM	6/27/2006 / 2:30 PM	SA

SAN ANTONIO TESTING LABORATORY, INC.

3

Camp Stanley Storage Activity

25800 Ralph Fair Rd.
Boerne, TX 78015
ATTN: Env. Office

Date/Time Received: 6/27/2006 4:15 PM

Date Reported: 6/29/2006

Project Name: State
Project No.: 0150117

Additional Info:

Report No.: 0606-208

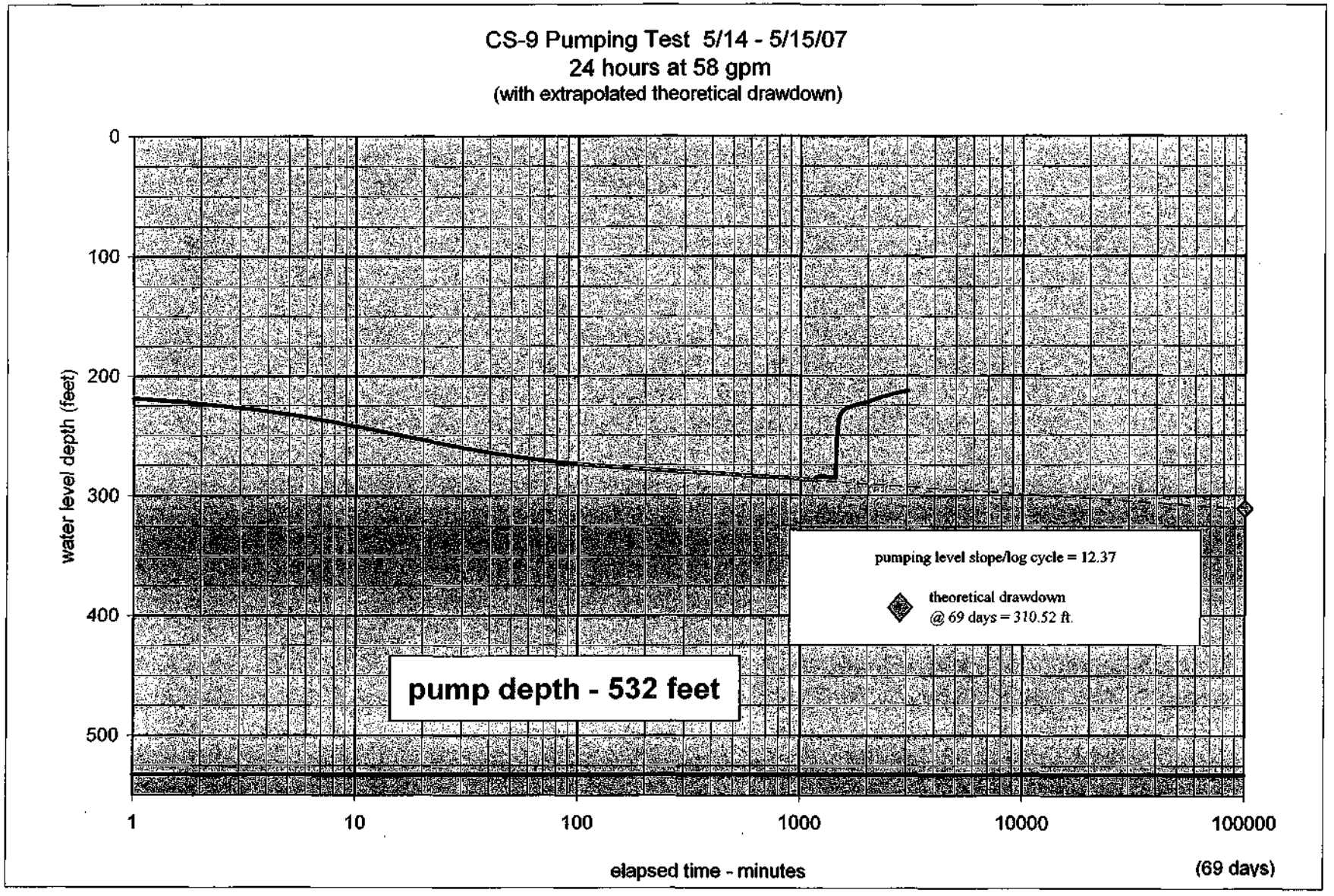
REPORT OF MICROBIOLOGICAL ANALYSIS

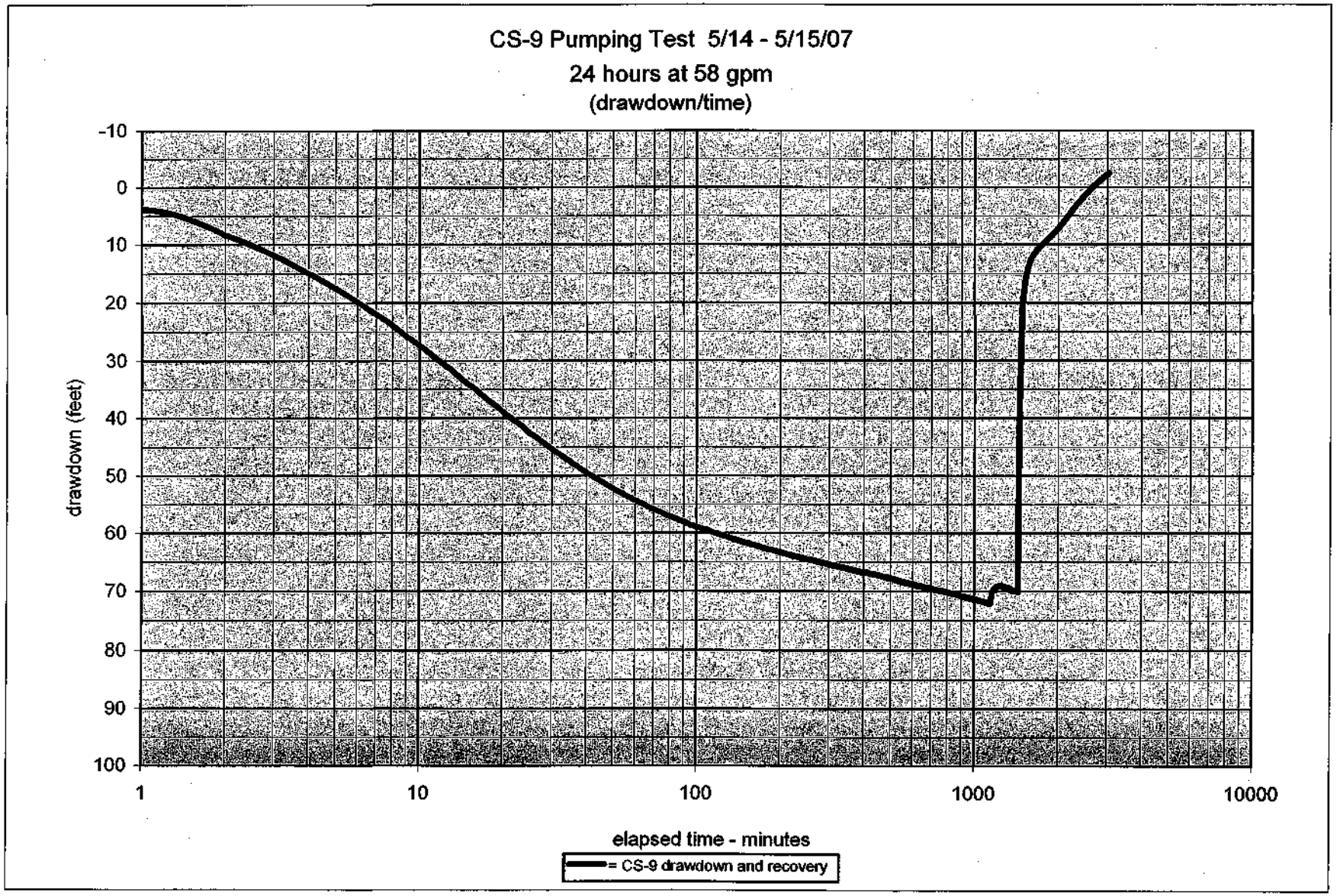
Sample ID #: 1 Well CS-10 (3 of 3)
Sample Type: Drinking Water

Date/Time Collected: 6/27/2006 3:15 P

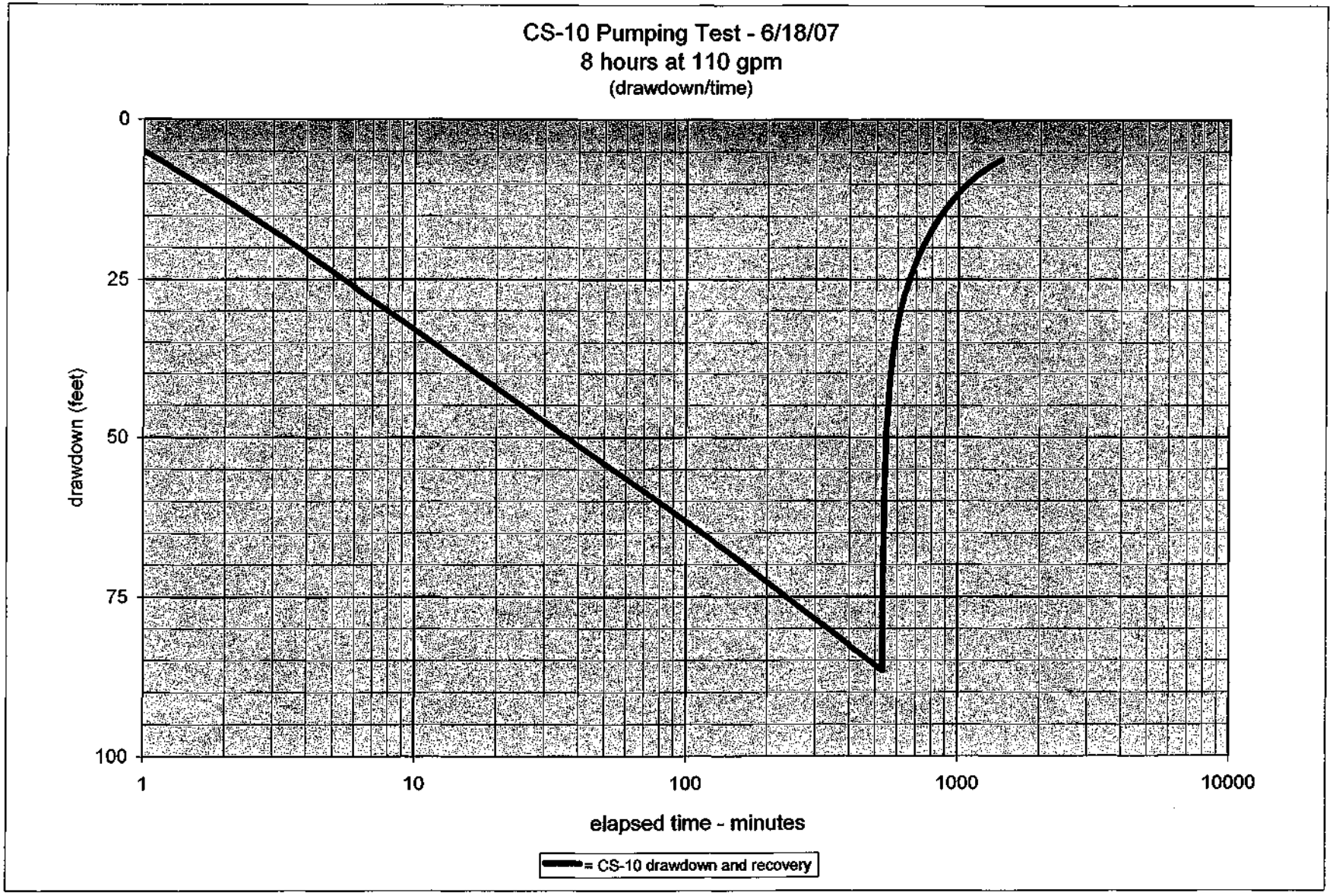
Parameter	Results	Units	Analysis Method	Start Date/Time	Read Date/Time	Analyst
Total Coliform	Not Found	F/NF	SM9223	6/27/2006 / 4:30 PM	6/28/2006 / 4:35 PM	ID
E Coli	Not Found	F/NF	SM9223	6/27/2006 / 4:30 PM	6/28/2006 / 4:35 PM	ID

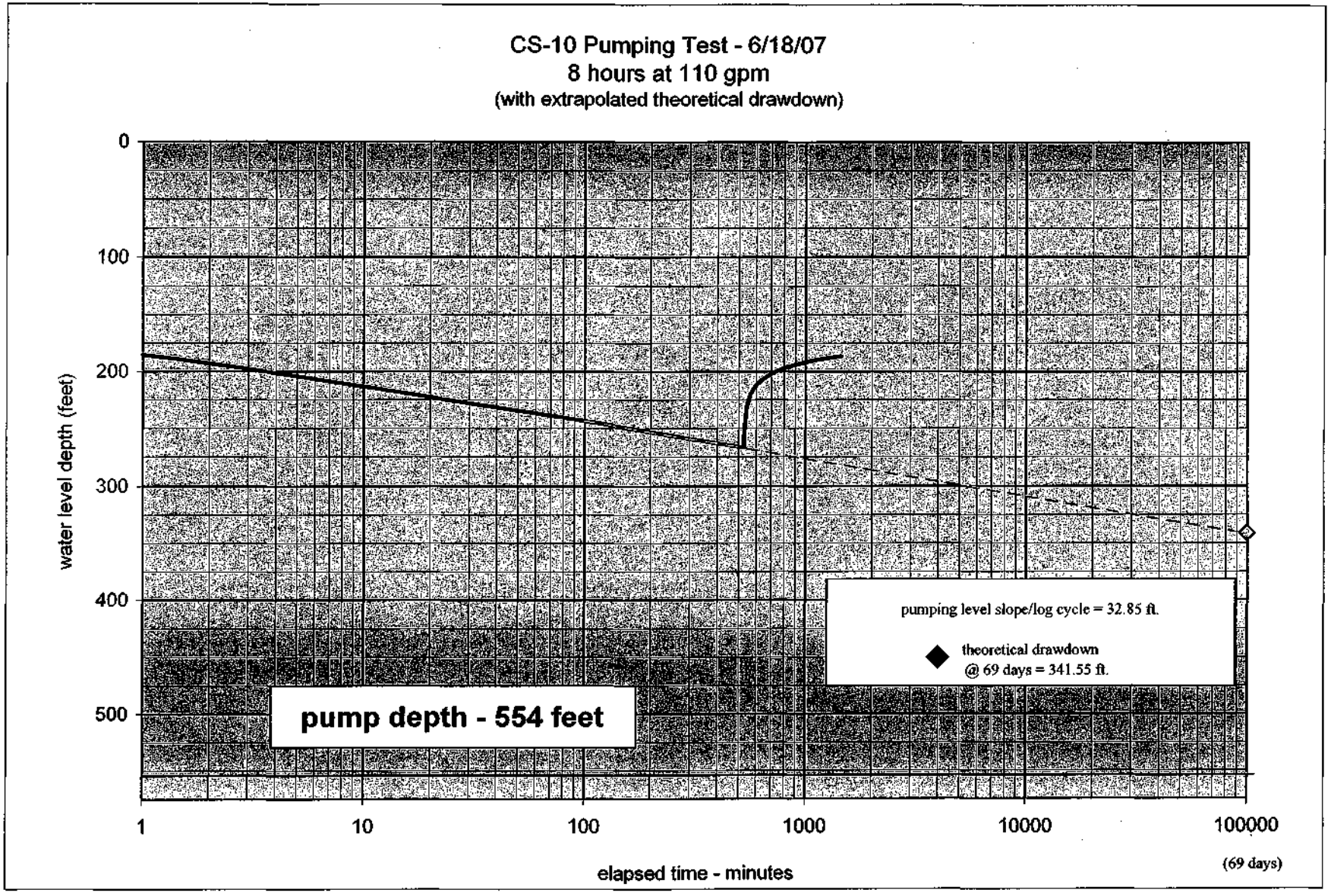
CS-9 Pumping Test Graphs


CS-9 Pumping Test 5/14 - 5/15/07
24 hours at 58 gpm
(with extrapolated theoretical drawdown)
water level depth (feet)
0
100
200
300
400
500
1
10
100
1000
10000
100000
elapsed time - minutes
(69 days)
pumping level slope/log cycle = 12.37
theoretical drawdown
@ 69 days = 310.52 ft.
pump depth - 532 feet


CS-9 Pumping Test 5/14 - 5/15/07
24 hours at 58 gpm
(drawdown/time)
drawdown (feet)
-10
0
10
20
30
40
50
60
70
80
90
100
1
10
100
1000
10000
elapsed time - minutes
= CS-9 drawdown and recovery

CS-10 Pumping Test Graphs


CS-10 Pumping Test - 6/18/07
8 hours at 110 gpm
(drawdown/time)
0
25
50
75
100
drawdown (feet)
1
10
100
1000
10000
elapsed time - minutes
= CS-10 drawdown and recovery


CS-10 Pumping Test - 6/18/07
8 hours at 110 gpm
(with extrapolated theoretical drawdown)
water level depth (feet)
0
100
200
300
400
500
pump depth - 554 feet
pumping level slope/log cycle = 32.85 ft.
theoretical drawdown
@ 69 days = 341.55 ft.
1
10
100
1000
10000
100000
(69 days)
elapsed time - minutes