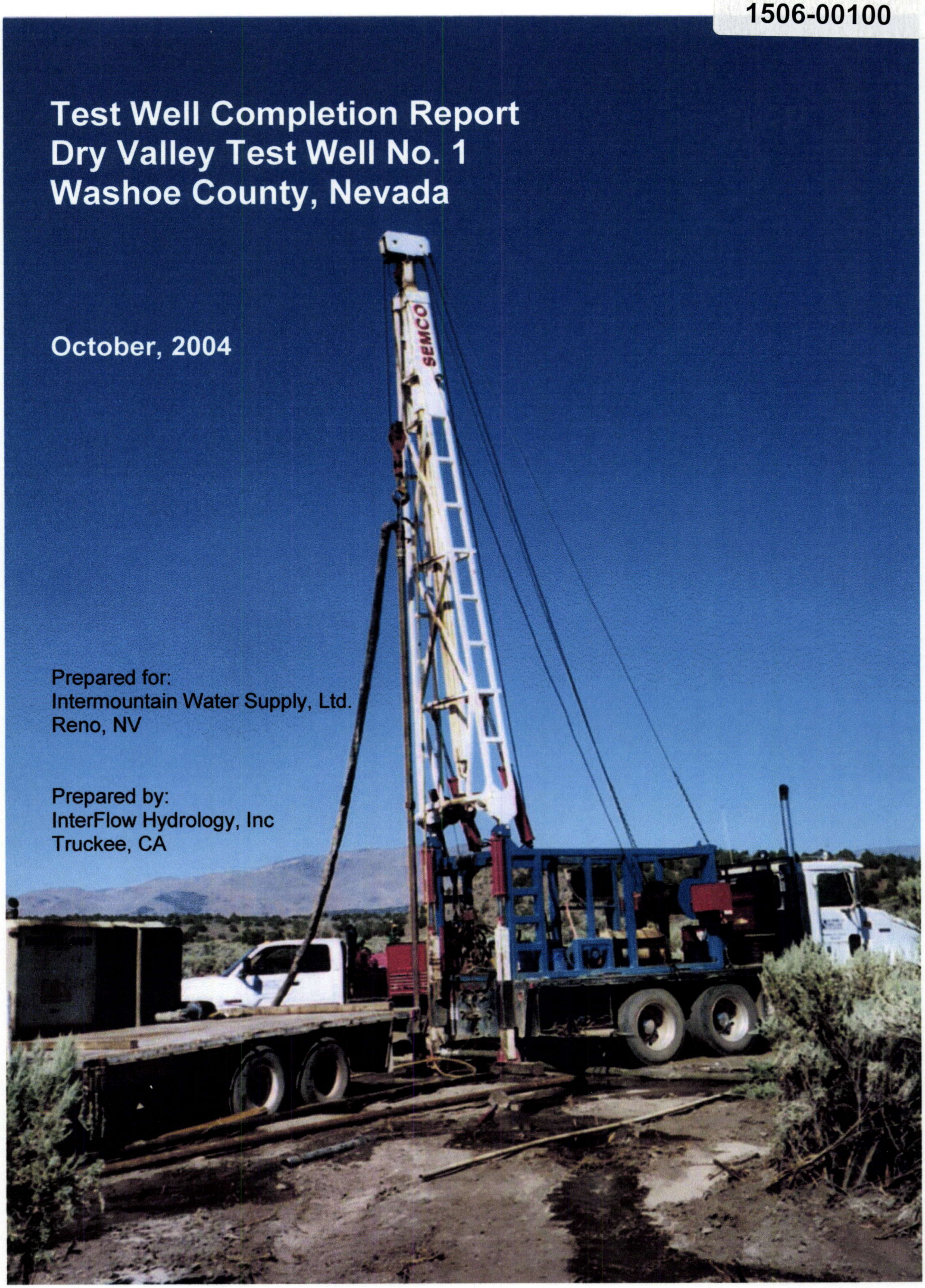
Test Well Completion Report
Dry Valley Test Well No. 1
Washoe County, Nevada

October, 2004

Prepared for:
Intermountain Water Supply, Ltd.
Reno, NV

Prepared by:
InterFlow Hydrology, Inc
Truckee, CA



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PROFESSIONAL ENGINEER-STATE OF NEVADA
DWIGHT L. SMITH
GEOLOGICAL
No. 11906

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Test Well Completion Report
Dry Valley Test Well No. 1
Washoe County, Nevada

Introduction

In the summer of 2004, Intermountain Water Supply, Ltd completed a 6-inch diameter test well in Dry Valley, Washoe County, Nevada (Figure 1). The well is located in the NW ¼ SE ¼ Section 10, T24N, R28E, MDM, near the point of diversion for water rights Permit No. 66400. The purpose of Dry Valley Test Well No. 1 (DV-TW-1) is to collect ground water quality and aquifer data. This report presents a summary of hydrogeologic data collected during drilling and aquifer testing.

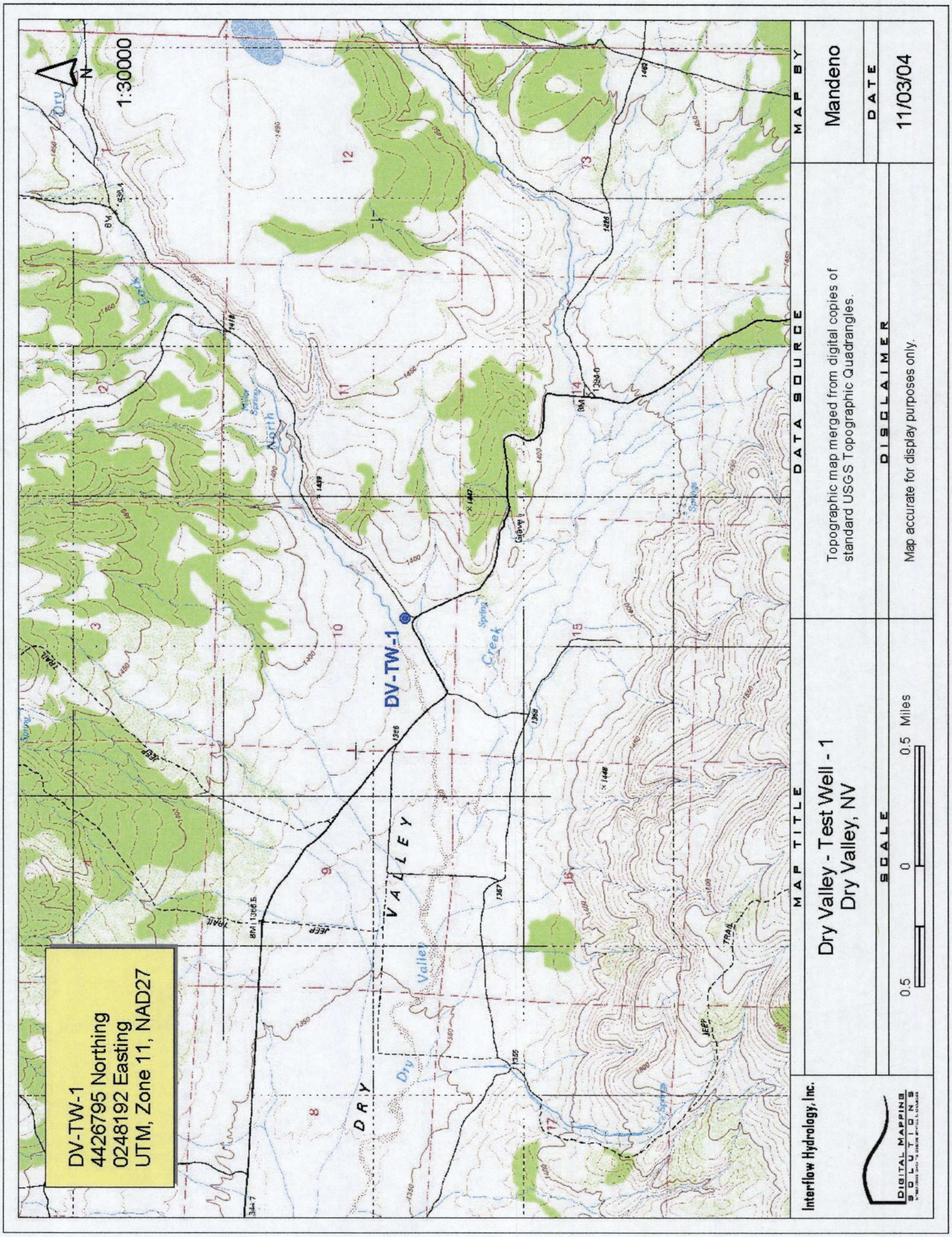
Summary

Well DV-TW-1 is constructed to 700 feet in depth and encountered two aquifer systems. The upper aquifer is unconfined and consists of interbedded gravel, sand and clay alluvium. Depth to ground water is only 5 feet below land surface and the aquifer extends to approximately 240 feet in depth. Near the base of this aquifer is a thin tuff (volcanic ash) unit at 224 feet in depth, marking the bottom of this aquifer as late Tertiary to early Quaternary (2 million years before present) basin-fill.

A deeper confined aquifer also exists from approximately 505 feet and to greater than 718 feet below land surface. This aquifer has a potentiometric head of 22 feet above land surface, resulting in approximately 35 gallons per minute (gpm) artesian flow from the well. The deep aquifer is in Tertiary basin-fill, with an apparent hydraulic conductivity lower than the upper aquifer. Separating the two aquifers is a sequence of basin-fill containing a greater amount of clay, and a thin interbedded basalt (volcanic flow) unit at 291 feet in depth.

Ground water chemistry at the test well is good, with all analyzed constituents meeting existing drinking water standards, including the forthcoming arsenic standard to be implemented in year 2006. Water produced from the test well is slightly geothermal, with temperatures measured between 75° and 85° F. The source of the geothermal water is the deep confined aquifer.

Two pumping tests were conducted at rates ranging from 100 to 305 gpm. The hydraulic efficiency of the 6-inch diameter test well is likely low (below 50%) due to construction materials and well diameter. A large-diameter (12 to 16-inch) higher-efficiency production well constructed at this location should be capable of producing at least 600 gpm. However, the calculated hydraulic conductivity of the test well is lower than expected for alluvium and poorly consolidated basin-fill, and water level recovery after the pumping tests was slow. It appears likely that a production well at this location will need to be operated with recovery (non-pumping) periods sufficient to sustain reasonable pumping water levels over the long-term.


DV-TW-1
4426795 Northing
0248192 Easting
UTM, Zone 11, NAD27
1:30000
N
DV-TW-1
DRY
VALLEY
Dry Valley
North Fork
Spring Creek
MAP TITLE
Dry Valley - Test Well - 1
Dry Valley, NV
DATA SOURCE
Topographic map merged from digital copies of standard USGS Topographic Quadrangles.
DISCLAIMER
Map accurate for display purposes only.
SCALE
0.5 0 0.5 Miles
MAP BY
Mandeno
DATE
11/03/04
Interflow Hydrology, Inc.
DIGITAL MAPPING SOLUTIONS

Drilling and Well Construction

Drilling was accomplished using direct-circulation mud-rotary drilling methods by Humboldt Drilling and Pump Company, Winnemucca, Nevada. Drilling commenced on May 21, 2004 and the well was completed approximately two weeks thereafter. A 6-inch diameter pilot borehole was initially drilled to 718 feet in depth, with the cuttings geologically logged and an electric log performed on the borehole. The pilot borehole was then reamed to a 12-inch diameter borehole to accommodate construction of a 6-inch diameter test well.

DV-TW-1 well construction is as follows:

Material	Depth Interval
Blank casing (6-5/8 inch O.D., 0.188 wall thickness)	Above land surface to 110 feet
Mill-slot perforated casing (3/16-inch quad-slotted)	110 to 240 feet
Blank casing	240 to 500 feet
Mill-slot perforated casing	500 to 700 feet
Blank casing with end cap	700 to 710 feet
Gravel pack (3/8-inch pea gravel)	100 to 720 feet
Cement Seal	Land surface to 100 feet

Problems (bridging) occurred during gravel pack installation, and the casing had to be removed by the driller and the 12-inch borehole re-drilled to remove gravel pack material and reset the casing. This has lead to some question as to potential borehole plugging (introduction of drilling mud into the borehole twice), which were later addressed by additional swabbing and air-lifting development.

Upon completion, the well had an artesian flow of approximately 35 gpm of mildly geothermal water (85°F). The well was capped and a pressure gage installed, which measured 9.1 psi (21 feet of head at the gage) in August 2004.

The driller's report for the test well is included in Appendix A.

Geologic Logging

Formation samples were collected at 10-foot depth intervals during pilot borehole drilling and logged by a hydrogeologist. Electric logging of the borehole was also conducted. Logs are included in Appendix A.

In summary, the geologic logging indicates two aquifers were encountered. An upper aquifer exists from near ground surface to approximately 240 feet in depth, and appears to be unconfined (perhaps semi-confined at depth). Static water level in the upper aquifer is approximately 5 feet below ground surface. Alluvium encountered is predominantly gravelly and clayey sand. Cleaner sands were logged from 0 to 35 feet, 65 to 85 feet, 150 to 170 feet, 195 to 224 feet, and 228 to 254 feet in depth. A thin tuff layer (volcanic ash) is present at approximately 224 feet in depth, which probably marks the late-Quaternary to early-Tertiary time-frame as interpreted from nearby geologic mapping and rock descriptions by Grose and others (2000) and Henry and others (2004). Electric logging suggests significant interbedded water-bearing strata throughout this upper aquifer (Appendix A).

A reddish-brown clay stratum is present from 261 to 291 feet in depth, and is underlain by a possible basalt layer (volcanic flow rock) from 291 to 300 feet in depth (could be a large boulder).

Lithology of Tertiary basin-fill between 300 to 505 feet is interbedded sands, gravels and clays, with significant clays at 335 to 361, 385 to 355, 425 to 455, and 495 to 505 feet in depth. Electric logging suggests this basin-fill is hydraulically tighter with minor water-bearing potential as compared to the overlying alluvium.

From 505 to 718 feet, significant sands were encountered, with interbedded clay strata at 540, 575, 600 to 610, 637 to 658, and 685 to 690 feet in depth. Dark brown clay at 637 to 658 feet in depth was unusually soft. These notably coarse-grained Tertiary basin-fill materials comprise a deeper confined aquifer. Geologic and electric logging suggests good water bearing properties in these deeper basin-fill deposits.

Water Chemistry Testing

General water chemistry was analyzed from two water samples collected from DV-TW-1. The first sample dated June 17, 2004 was collected at the end of initial well development by air-lifting methods. The second sample was collected on June 25, 2004 after approximately 23 hours of pumping at an average flow rate of 111 gpm.

All analyzed parameters meet current state and federal drinking water standards. The total dissolved solids content is excellent at 210 milligrams per liter (mg/L). Arsenic concentration is low at 0.005 mg/L, which meets the forthcoming year 2006 drinking water standard. Trace amounts of iron and manganese at 0.06 mg/L and 0.011 mg/L, respectively, are within drinking water standards.

Laboratory analytical reports are contained in Appendix B.

Aquifer Testing

Two aquifer tests were conducted on the test well. During both tests, water levels were recorded by both manual wire-line measurements and a water level transducer-recorder. Temperature data were also collected by the recorder which was installed in the well at a depth of approximately 200 feet. Miscellaneous conductivity measurements were taken during pumping with no noticeable changes observed. Water levels were monitored in a nearby stockwater pond built in the stream channel of the North Fork of Dry Valley Creek, with no changes observed during pumping.

The first test was commenced on June 24, 2004 at a pumping rate of approximately 300 gpm, and was reduced to a constant rate of approximately 100 gpm for the majority of the duration of the 24-hour test. Recovery water levels were measured following the pumping period (see Figure 2). This pumping test followed limited development of the test well via air-lifting. While produced water was noted to be clear during the end of air-lifting development, there was a concern that some aquifer plugging might have occurred during well construction, and a decision was made to more aggressively develop the well.

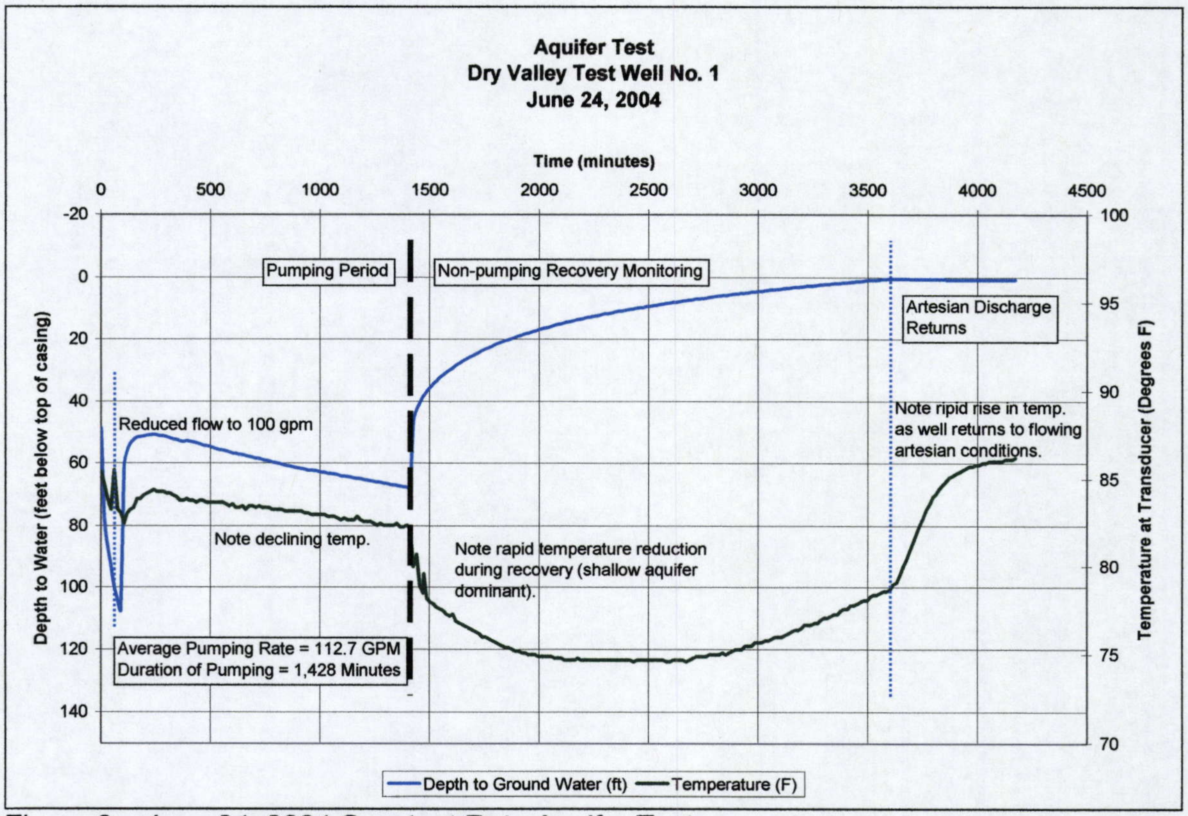


Figure 2 – June 24, 2004 Constant Rate Aquifer Test.

Following two days of additional swabbing and airlifting development, a step-drawdown test was conducted on August 16, 2004 for a pumping duration of 8.3 hours (see Figure 3). Pumping rates ranged from approximately 111 to 305 gpm (Figure 4), and some gains in production capacity were noted over the previous pumping test (approximately 30%). Recovery water levels were measured following the pumping period. An important observation is that the specific capacity of the test well (production per unit drawdown) increased with increasing flow rates (Figure 4). This is not normal, with an expected lowering of specific capacity with increasing flow rates, as a result of increased entrance velocity head losses (Driscoll, 1986). This tends to indicate that the test well is not completely developed, i.e., some formation damage (aquifer plugging) by drilling mud (bentonite) may be present.

Analyses of aquifer tests was performed using spreadsheet techniques published by Halford and Kuniansky (2002), and indicate an aquifer hydraulic conductivity of approximately 0.2 ft/day (ft/day = cubic feet per day per square foot of aquifer) (see Appendix C). This is a notably low hydraulic conductivity for sand dominated alluvium and basin-fill materials. Todd (1980) reports a representative range for fine to medium sand of approximately 8 to 40 ft/day, and Freeze and Cherry (1979) present a range for silty sands of approximately 0.1 to 100 ft/day.

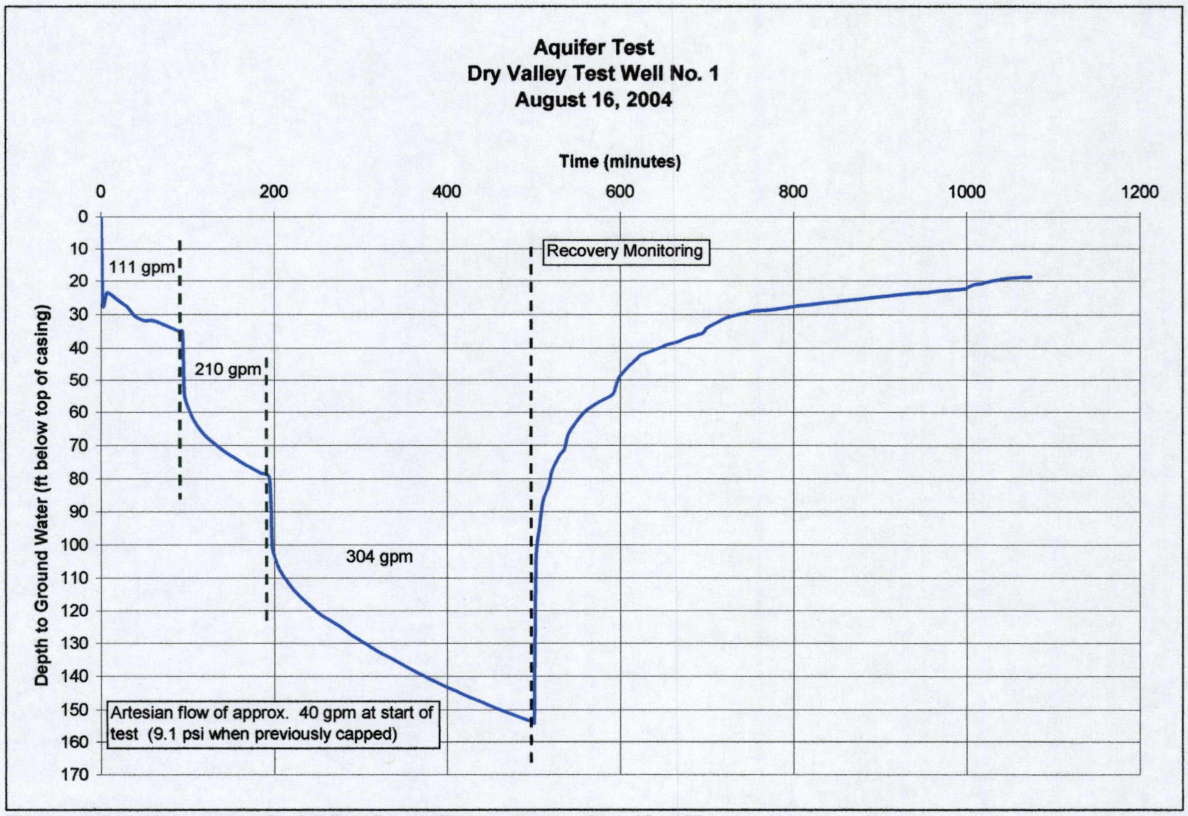


Figure 3 – August 16, 2004 Step Drawdown Aquifer Test.

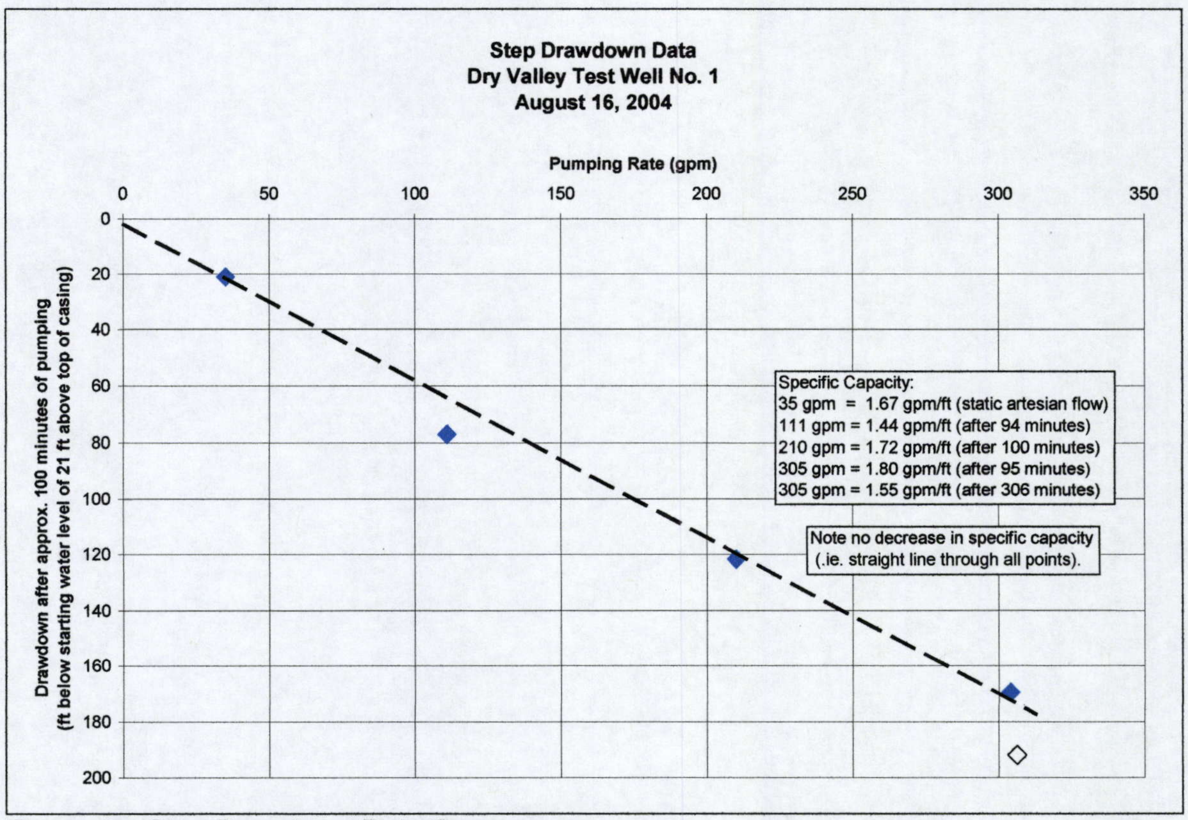


Figure 4 – Step Drawdown Data Summary.

Water temperature of artesian flow from DV-TW-1 is approximately 85°F. During pumping, the temperature of discharged water decreased. The trends in temperature changes during and after the pumping periods indicate that the deeper confined aquifer is the source of geothermal water and also the source of artesian flow produced from the well (Figure 2). The dominant aquifer contributing flow to the well during the aquifer tests appears to be the upper unconfined aquifer, also based on observations of temperature fluctuations and water-level recovery trends during and after pumping periods (Figure 2).

Recovery water-level monitoring following both aquifer tests suggests that the aquifer is slow to regain starting static water levels, although potential formation damage (drilling mud plugging problems) may be affecting the data. The observed time to return to starting static water level in the upper aquifer appears to the about 3 times the duration of pumping (Figure 5), and longer for the deeper confined aquifer. The duration of pumping tests were relatively short, and long-term monitoring of water levels will be necessary, should a production well be constructed at this location. The aquifer testing data suggest that production pumping at this location will need to be managed with recovery (non-pumping) periods in order to maintain long-term water levels at acceptable levels.

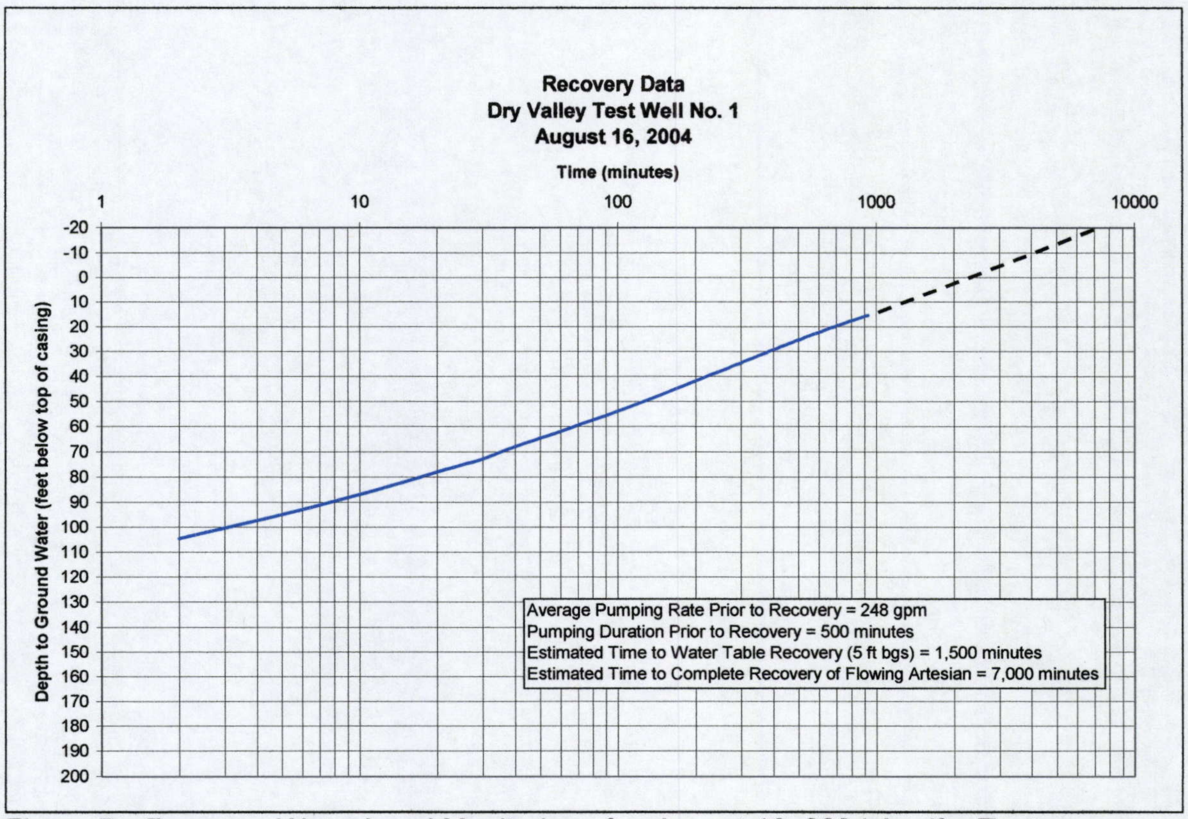


Figure 5 – Recovery Water Level Monitoring after August 16, 2004 Aquifer Test.

Well efficiency (a function of entrance velocity head losses in the well which create additional drawdown) is believed to be 50% or lower, based on the type of well construction materials (mill-slot perforated casing) and the relatively small diameter of the test well as compared to the pumped rates. A large-diameter production well constructed with continuous-slot well screen will likely yield at least 600 gpm. The duration of pumping at this type of rate would be dependent on monitoring and managing water-level drawdown in the well.

References

Driscoll, F. G., 1986, Groundwater and Wells, Published by Johnson Division, St. Paul, Minnesota.

Freeze, R. A, and Cherry, 1979, J. A., Groundwater, Published by Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Grose, T.L.T., Mergner, M., Moar, R.R., Saucedo, G.J., and Little, J.D., 2000, Geologic Map of the Chilcoot 15' Quadrangle, Lassen and Plumas Counties, California, California Department of Conservation, Division of Mines and Geology, DMG Open-File Report 2000-23, 1 Plate, 1:62,500 scale.

Halford, K. J., and Kuniansky, E. L., 2002, Documentation of Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data, US Geological Survey, Open-File Report 02-197.

Henry, C. D., Faulds, J. E., dePolo, C. M., and Davis, D. A., 2004, Geology of the Dogskin Mountain Quadrangle, Northern Walker Lane, Nevada (including Preliminary Geologic Map, 1:24,000 scale), Nevada Bureau of Mines and Geology, Open-File Report 03-16.

Todd, D. K., 1980, Groundwater Hydrology, Second Edition, Published by John Wiley & Sons, New York, New York.

Appendix A – Geologic and Electric Logs

DRY VALLEY TEST WELL NO. 1 (DV-TW-1)
Logged by: D. Smith
Drilling Commenced: May 21, 2004
Driller: Humboldt Drilling
Drilling Method: Mud Rotary (6-inch diameter borehole)

Depth (ft)	Time	Lithology	Description
0	5-21-04 12:00		0 – 35: Brown Cobby Slighty Silty SAND, angular to subrounded predominantly volcanic derived (basalt).
20			35 – 45: Brn. Gravelly CLAYEY SAND, w/est. 30% med. plastic clay.
40			45 – 55: Gravelly SAND, subangular to subrounded, minor clay stringers. 55 – 65: Gravelly CLAYEY SAND, 10-15% clay.
60			65 – 85: Brn. Gravelly Silty SAND.
80	13:15		85 – 90: Brown Gravelly Sandy CLAY. 90 – 101: Brn. Gravelly CLAYEY SAND, with est. 15% med. plastic clay (clay stringers).
100	13:35		101 – 104: Brown Gravelly Sandy CLAY. 104 – 120: Gravelly CLAYEY SAND, with est. 15% clay.
120	14:10		120 – 135: Reddish Brn. Gravelly Sandy CLAY. 135 – 150: Brn. Gravelly CLAYEY SAND, with est. 20% med. plastic clay.
140	14:30		150 – 170: Brn. Slightly Clayey GRAVELLY SAND, subangular to subrounded, gravel and coarse sand is predominantly basalt in med to fine grained lithic and quartz sand.
160	14:50		170 – 180: Brn. Gravelly CLAYEY SAND, with est. 20%.
180	15:05		180 – 195: Gravelly Sandy CLAY 195 – 224: Slightly Clayey GRAVELLY SAND, coarse grained, angular to subrounded sand particles, majority drk gray basalt, with yellow, white and pink feldspar, and clear quartz.
200			
220	15:55		224 – 228: Lt. Reddish Gray TUFF (chips, micaeous, glassey). 228 – 254: Gray Slightly Clayey GRAVELLY SAND, same as 195 to 224 ft.
240			254 – 257: Lt. Gray Sandy CLAY. 257 – 261: SAND, same as 228 – 254.

260	16:45		261 – 291: Reddish Brn. Sandy CLAY.
280			291 – 300: BASALT (cuttings are chips, hard – slow drilling).
300	5-22-04 9:45	....	300 – 315: Gravelly CLAYEY SAND with est. 15% gray clay.
320		....	315 – 335: Slightly Clayey Gravelly SAND, angular to subangular predominantly volcanic rock particles.
340	10:20		335 – 361: Sandy CLAY with est. 50% med. plastic clay.
360	10:30	....	361 – 385: Brn. SAND, fine to coarse grained angular to subrounded predominantly gray basalt particles with some feldspar and qtz.
380	10:50	....	385 – 405: Brn. CLAYEY GRAVELLY SAND w/est. 20% clay.
400	11:15	....	405 – 425: Brn. CLAYEY SAND with occasional boulders (410).
420	11:45		425 – 440: Sandy CLAY with est. 50% low-med plastic clay.
440	12:10	O O O O	440 – 450: Brn. Clayey GRAVEL with est. 25% med plastic clay, subrounded gravel to ½-inch plus, dk. Gray volcanic. 450 – 455: Sandy CLAY, 50% med plastic clay. 455 – 495: Gravelly SAND, fine grained sand with subrounded-subangular coarse sand and gravel to 3/8-inch, predominantly basalt, with feldspar and quartz in fine sand.
460		....	
480	12:45	....	495 – 505: Brown Sandy CLAY, with est. 60% low plastic clay.
500	13:00	....	505 – 515: Gray Silty SAND.
520		....	515 – 565: SAND, fine to coarse grained, moderately well sorted, large fraction subrounded, w/est. 50% volcanic rock fragments (mostly basalt), 25% quartz, and 25% feldspar.

DRY VALLEY TEST WELL NO. 1 (DV-TW-1)
Logged by: D. Smith
Drilling Commenced: May 21, 2004
Driller: Humboldt Drilling
Drilling Method: Mud Rotary (6-inch diameter borehole)

540	13:45		540: Clay strata noted from E-log (est. less than 5-ft thick).
560			565 – 600: Gray Slightly Clayey Slightly Gravelly Silty SAND, subrounded to subangular, roughly even proportions of lithic (volcanic – basalt), feldspar, and quartz.
580	14:05		575: Clay strata noted from E-log (est. less than 5-ft thick).
600			600 – 610: Grayish Brn. Sandy CLAY. 610 – 637: Grayish Brn. CLAYEY SAND w/est. 35% med. plastic clay.
620			
640			637 – 658: Dark Brown Sandy CLAY, soft, low to med plastic, 70% fines.
660			658 – 685: Grayish Brn. Slightly Clayey Slightly Gravelly SAND, predominantly subangular and coarse grained basalt particles.
680	16:00		685 – 690: Gray Sandy CLAY w/est. 50% med. plastic clay.
700	16:20		690 – 702: Grayish Brn. Slightly Gravelly SAND, fine to coarse grained, mostly drk gray volcanic particles. 702 – 718: Sandy CLAY
720			

Notes:
1. Total Depth Drilled = 718 ft.
2. Electric Logging by Dewey Data on 5-23-04, including natural gamma, SP, Point Resistance, Lateral Log, 16-inch Resistivity, and 64-inch Resistivity.
3. 6-inch diameter well completed to 700 ft in reamed borehole (12-inch diameter).
4. First water encountered at 5 ft below ground surface.
5. Static water level in completed well = 9.1 psi (22 ft above land surface).
6. Artesian flow of approx. 40 gpm (temperature = 85°F).

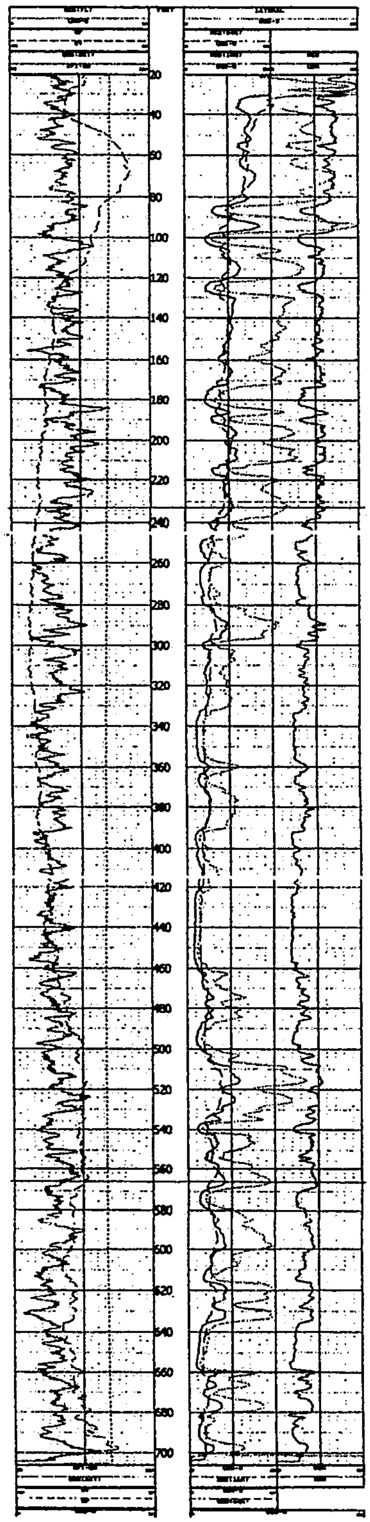
Dewey Data

I.M.W.S.-2004

COMPANY	: INTERMOUNTAIN WATER SUPPLY			OTHER SERVICES INVOICE 52304 400	
WELL	: I.M.W.S.-2004				
LOCATION/FIELD	: DOYLE				
COUNTY	: WASHOE				
STATE	: NV				
SECTION	: N/A	TOWNSHIP	N/A	RANGE	N/A
DATE	: 05/23/04	PERMANENT DATUM	: G.L.		
DEPTH DRILLER	: 700 FT			KB	: N/A
LOG BOTTOM	: 705.60	LOG MEASURED FROM	: G.L.	DF	: N/A
LOG TOP	: -2.10	DRL MEASURED FROM	: G.L.	GL	: N/A
CASING DIAMETER	: DOW	LOGGING UNIT	: 2		
CASING TYPE	:	FIELD OFFICE	: CENTRAL CAL		
CASING THICKNESS	:	RECORDED BY	: DSHANHOLTZE		
BIT SIZE	: 6	BOREHOLE FLUID	: N/A	FILE	ORIGINAL
MAGNETIC DECL.	: 0	RM	: 81	TYPE	6044A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 70		
NEUTRON MATRIX	: Dolomite	MATRIX DELTA T	: 64	THRESH:	5000

WATER QUALITY-
HUMBOLDT

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



CANARY - CLIENT'S COPY
PINK - WELL DRILLER'S COPY

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DIVISION OF WATER RESOURCES
WELL DRILLER'S REPORT

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

Log No. ______
Permit No. ______
Basin ______

NOTICE OF INTENT NO. 51958

1. OWNER Intermountain Water Supply
MAILING ADDRESS 11665 Anthem Drive
Spanish Springs, NV 89436

ADDRESS AT WELL LOCATION Dry Valley Road, Base of Fort Sage

2. LOCATION NW 1/4 SE 1/4 Sec. 10 T 24 N/S R 18 E Washoe County
PERMIT NO. 66400 (Issued by Water Resources) | Parcel No. | Subdivision Name

3. WORK PERFORMED
[X] New Well [ ] Replace [ ] Recondition
[ ] Deepen [ ] Abandon [ ] Other ______

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

5. WELL TYPE
[ ] Cable [X] Rotary [ ] RVC
[ ] Air [X] Other Mud

6. LITHOLOGIC LOG

Material	Water Strata	From	To	Thickness
Top Soil		0	3	3
Sand/gravel		3	12	9
Gravel/cobbles		12	20	8
Sand/gravel		20	25	5
Clay		25	26	1
Sand/gravel		26	38	12
Clay		38	39	1
Sand/gravel		39	58	19
Clay		58	59	1
Sand/some gravel		59	80	21
Cobbles		80	85	5
Sand/clay stringers		85	96	11
Cobbles		96	101	5
Gravelly clay		101	104	3
Sand/gravel		104	114	10
Clay		114	116	2
Gravel/cobbles/sand		116	138	22
Gravelly clay		138	176	38
Clay		176	178	2
Sandy clay		178	185	7
Cobbles		185	187	2
Sandy clay		187	194	7
Gravelly sand/clay lens		194	218	24
Clay		218	221	3
Sand/gravel		221	226	5
Pink andesite		226	228	2
Continued on next page				

Date started 5/21/04, 19__
Date completed 6/17/04, 19__

7. WELL TEST DATA

TEST METHOD: [ ] Bailer [X] Pump [ ] Air Lift

	G.P.M.	Draw Down (Feet Below Static)	Time (Hours)
P/L 67.6	100		24

8. WELL CONSTRUCTION

Depth Drilled 718 Feet Depth Cased 710 Feet

HOLE DIAMETER (BIT SIZE)

Inches	From (Feet)	To (Feet)
13	0	100
9 7/8	100	718

CASING SCHEDULE

Size O.D. (Inches)	Weight/Ft. (Pounds)	Wall Thickness (Inches)	From (Feet)	To (Feet)
6 5/8		.188	+2	110
6 5/8		.188	250	510
6 5/8		.188	700	710

Perforations:
Type perforation Quad Mill Slot
Size perforation .090
From 110 feet to 250 feet
From 510 feet to 700 feet
From ______ feet to ______ feet
From ______ feet to ______ feet
From ______ feet to ______ feet

Surface Seal: [X] Yes [ ] No
Depth of Seal 100
Placement Method: [X] Pumped [ ] Poured
Seal Type: [ ] Neat Cement [X] Cement Grout [ ] Concrete Grout

Gravel Packed: [X] Yes [ ] No
From 100 feet to 718 feet

9. WATER LEVEL

Static water level ______ feet below land surface
Artesian flow 35+ G.P.M. 9 P.S.I.
Water temperature 83 °F Quality Fair

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, Nevada 89445

Nevada contractor's license number issued by the State Contractor's Board 66797

Nevada driller's license number issued by the Division of Water Resources, the on-site driller 2235

Signed [signature] By driller performing actual drilling on-site or contractor

Date 08/09/04

WHITE - DIVISION OF WATER RESOURCES
CANARY - CLIENT'S COPY
PINK - WELL DRILLER'S COPY

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STATE OF NEVADA
DIVISION OF WATER RESOURCES
WELL DRILLER'S REPORT

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

OFFICE USE ONLY
Log No.
Permit No.
Basin

Page 2

NOTICE OF INTENT NO. 51989

1. OWNER Intermountain Water Supply
MAILING ADDRESS 11685 Anthem Drive Spanish Springs, NV 89436

ADDRESS AT WELL LOCATION Dry Valley Road, Base of Fort Sage

2. LOCATION NW 1/4 SE 1/4 Sec. 10 T 24 N/S R 18 E Washoe County
PERMIT NO. 66400
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	Thickness
Altered volcanics		228	254	26
Sand/clay (gray)		254	257	3
Altered volcanics		257	261	4
Sandy clay		261	277	16
Gravel		277	278	1
Gravelly clay		278	285	7
Cobbles		285	287	2
Gravelly clay		287	292	5
Fractured basalt		292	304	12
Clay		304	340	36
Sandy clay		340	357	17
Gravelly clay		357	397	40
Tan clay		397	406	9
Gravel		406	419	13
Clay		419	500	81
Gravel		500	503	3
Sandy clay		503	536	33
Sand		536	551	15
Coarse sand		551	637	86
Clay (sticky)		637	658	21
Sandy clay/sand		658	702	44
Sandy clay		702	718	16

Date started 5/21/1904 , 19
Date completed 6/17/1904 , 19

7. WELL TEST DATA

TEST METHOD: ☐ Bailer ☐ Pump ☐ Air Lift

G.P.M.	Draw Down (Feet Below Static)	Time (Hours)

8. WELL CONSTRUCTION

Depth Drilled Feet Depth Cased Feet

HOLE DIAMETER (BIT SIZE)

	From	To
Inches	Feet	Feet
Inches	Feet	Feet
Inches	Feet	Feet

CASING SCHEDULE

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

Perforations:
Type perforation
Size perforation
From feet to feet
From feet to feet
From feet to feet
From feet to feet
From feet to feet

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

Gravel Packed: ☐ Yes ☐ No
From feet to feet

9. WATER LEVEL

Static water level feet below land surface
Artesian flow G.P.M. P.S.I.
Water temperature °F Quality

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, Nevada 89445

Nevada contractor's license number issued by the State Contractor's Board 56797

Nevada driller's license number issued by the Division of Water Resources, the on-site driller 2235

Signed
By driller performing actual drilling on-site or contractor

Date 08/09/04

Appendix B – Water Chemistry Results

Sierra Environmental Monitoring, Inc.

Laboratory Analysis Report
Report ID: 61646

Interflow Hydrology, Inc.
Attn: Dwight Smith
P.O. Box 1482
Truckee, CA 96160

Date: 7/9/2004
Client: ITF-112
Taken by: D. Smith
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S200406-2069	Dry Valley Test Well #1	6/25/2004	12:15 PM	6/28/2004

Parameter	Method	Result	Units Of Measure	MCL	Analyst	Date Analyzed
Alkalinity, Total	SM 2320 B	133	mg/L CaCO3		Kobza	7/4/2004
Alkalinity/Bicarbonate	SM 2320 B	122	mg/L CaCO3		Kobza	7/4/2004
Alkalinity/Carbonate	SM 2320 B	11	mg/L CaCO3		Kobza	7/4/2004
Alkalinity/Hydroxide	SM 2320 B	<2	mg/L CaCO3		Kobza	7/4/2004
Arsenic - ICP-MS	EPA 200.8	0.005	mg/L	0.01 mg/L	Li	7/7/2004
Barium - ICP-MS	EPA 200.8	0.003	mg/L	2.0 mg/L	Li	7/7/2004
Calcium - ICP-OES	EPA 200.7	3.3	mg/L		Layman	7/6/2004
Chloride - Ion Chromatography	EPA 300.0	8.8	mg/L	250 mg/L	Keller	7/1/2004
Color Apparent	EPA 110.2	<5	Color Units	15	Nava	6/30/2004
Copper - ICP-MS	EPA 200.8	<0.001	mg/L	1.0 mg/L	Li	7/7/2004
Fluoride - Ion Chromatography	EPA 300.0	0.27	mg/L	2.0/4.0 mg/L	Keller	7/1/2004
Iron - ICP-OES	EPA 200.7	0.06	mg/L	0.3 mg/L	Layman	7/6/2004
Lead - ICP-MS	EPA 200.8	<0.001	mg/L	0.015 mg/L	Li	7/7/2004
Magnesium - ICP-OES	EPA 200.7	<0.5	mg/L	125 mg/L	Layman	7/6/2004
Manganese - ICP-MS	EPA 200.8	0.011	mg/L	0.05 mg/L	Li	7/7/2004
MBAS Surfactants	SM 5540 C	<0.05	mg/L	0.5 mg/L	Kobza	6/29/2004
Nitrate-N - Ion Chromatography	EPA 300.0	<0.05	mg/L N	10 mg/L as N	Keller	7/1/2004
pH	SM 4500 H+B	8.54	pH Units	6.5 to 8.5	Kobza	7/4/2004
pH - Temperature	SM 4500 H+B	18.6	°C		Kobza	7/4/2004
Potassium - ICP-OES	EPA 200.7	0.6	mg/L		Layman	7/6/2004
Sodium - ICP-OES	EPA 200.7	67	mg/L		Layman	7/6/2004
Sulfate - Ion Chromatography	EPA 300.0	20	mg/L	500 mg/L	Keller	7/1/2004
Total Dissolved Solids	SM 2540 C	210	mg/L	500/1000 mg/L	Osterreicher	6/29/2004
Turbidity	SM 2130 B	0.5	NTU		Nava	6/30/2004
Zinc - ICP-MS	EPA 200.8	<0.01	mg/L	5 mg/L	Li	7/7/2004

SAMPLE WATER AS TESTED _X_ DID ____DID NOT MEET DRINKING WATER STANDARDS.

John Kobza, Ph.D.
Laboratory Director

1135 Financial Blvd.
Reno, NV 89502-2348
Phone (775) 857-2400
FAX (775) 857-2404
sem@sem-analytical.com

John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Analysis Report
Report ID: 61646

Sierra Environmental Monitoring, Inc.

Interflow Hydrology, Inc.
Attn: Dwight Smith
P.O. Box 1482
Truckee, CA 96160

Date: 7/9/2004
Client: ITF-112
Taken by: D. Smith
PO #:

Approved By: ______________________
Sierra Environmental Monitoring, Inc

Date: 7/9/2004

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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John C. Seher
Special Consultant
Quality Assurance Manager

Laboratory Analysis Report
Report ID: 61443

Sierra Environmental Monitoring, Inc.

Interflow Hydrology, Inc.
Attn: Dwight Smith
P.O. Box 1482
Truckee, CA 96160

Date: 6/28/2004
Client: ITF-112
Taken by: D. Smith
PO #:

Sample ID:	Customer Sample ID	Date Sampled	Time Sampled	Date Received
S200406-1482	Dry Valley Test Well #1	6/17/2004	9:40 AM	6/17/2004

Parameter	Method	Result	Units Of Measure	MCL	Analyst	Date Analyzed
Alkalinity, Total	SM 2320 B	132	mg/L CaCO3		Kobza	6/24/2004
Alkalinity/Bicarbonate	SM 2320 B	124	mg/L CaCO3		Kobza	6/24/2004
Alkalinity/Carbonate	SM 2320 B	8	mg/L CaCO3		Kobza	6/24/2004
Alkalinity/Hydroxide	SM 2320 B	<2	mg/L CaCO3		Kobza	6/24/2004
Arsenic - ICP-MS	EPA 200.8	0.005	mg/L	0.01 mg/L	Li	6/18/2004
Barium - ICP-MS	EPA 200.8	0.004	mg/L	2.0 mg/L	Li	6/18/2004
Calcium - ICP-OES	EPA 200.7	3.4	mg/L		Li	6/22/2004
Chloride - Ion Chromatography	EPA 300.0	10	mg/L	250 mg/L	Henderson	6/17/2004
Color Apparent	EPA 110.2	<5	Color Units	15	Kobza	6/19/2004
Copper - ICP-MS	EPA 200.8	0.002	mg/L	1.0 mg/L	Li	6/18/2004
Fluoride - Ion Chromatography	EPA 300.0	0.21	mg/L	2.0/4.0 mg/L	Henderson	6/17/2004
Iron - ICP-OES	EPA 200.7	0.1	mg/L	0.3 mg/L	Li	6/22/2004
Lead - ICP-MS	EPA 200.8	<0.001	mg/L	0.015 mg/L	Li	6/18/2004
Magnesium - ICP-OES	EPA 200.7	<0.5	mg/L	125 mg/L	Li	6/22/2004
Manganese - ICP-MS	EPA 200.8	0.011	mg/L	0.05 mg/L	Li	6/18/2004
MBAS Surfactants	SM 5540 C	<0.05	mg/L	0.5 mg/L	Kobza	6/18/2004
Nitrate-N - Ion Chromatography	EPA 300.0	0.14	mg/L N	10 mg/L as N	Henderson	6/17/2004
pH	SM 4500 H+B	8.43	pH Units	6.5 to 8.5	Kobza	6/24/2004
pH - Temperature	SM 4500 H+B	20.8	°C		Kobza	6/24/2004
Potassium - ICP-OES	EPA 200.7	0.8	mg/L		Li	6/22/2004
Sodium - ICP-OES	EPA 200.7	67	mg/L		Li	6/22/2004
Sulfate - Ion Chromatography	EPA 300.0	20	mg/L	500 mg/L	Henderson	6/17/2004
Total Dissolved Solids	SM 2540 C	240	mg/L	500/1000 mg/L	Osterreicher	6/21/2004
Turbidity	SM 2130 B	1.1	NTU		Kobza	6/19/2004
Zinc - ICP-MS	EPA 200.8	0.01	mg/L	5 mg/L	Li	6/18/2004

SAMPLE WATER AS TESTED _X_ DID ____DID NOT MEET DRINKING WATER STANDARDS.

John Kobza, Ph.D.
Laboratory Director

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John C. Seher
Special Consultant
Quality Assurance Manager

Sierra Environmental Monitoring, Inc.

Laboratory Analysis Report

Report ID: 61443

Interflow Hydrology, Inc.		**Date:**	6/28/2004
Attn: Dwight Smith		**Client:**	ITF-112
P.O. Box 1482		**Taken by:**	D. Smith
Truckee, CA 96160		**PO #:**	

Approved By: ______________________ **Date:** 6/28/2004

Sierra Environmental Monitoring, Inc

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John C. Seher
Special Consultant
Quality Assurance Manager

Appendix C – Aquifer Test Data

WELL ID: Dru Valley Test Well No. 1

Local ID: HML-Augmentation
Date: 6/24/2004
Time: 0:00

INPUT

Construction:	
Casing dia. (d_c)	8 Inch
Annulus dia. (d_w)	8 Inch
Screen Length (L)	340 Feet
Depths to:	
water level (DTW)	-21 Feet
Top of Aquifer	0 Feet
Base of Aquifer	700 Feet
Annular Fill:	
across screen --	Open Hole
above screen --	Cement
Aquifer Material --	Fine Sand
FLOW RATE	113 GPM

COMPUTED

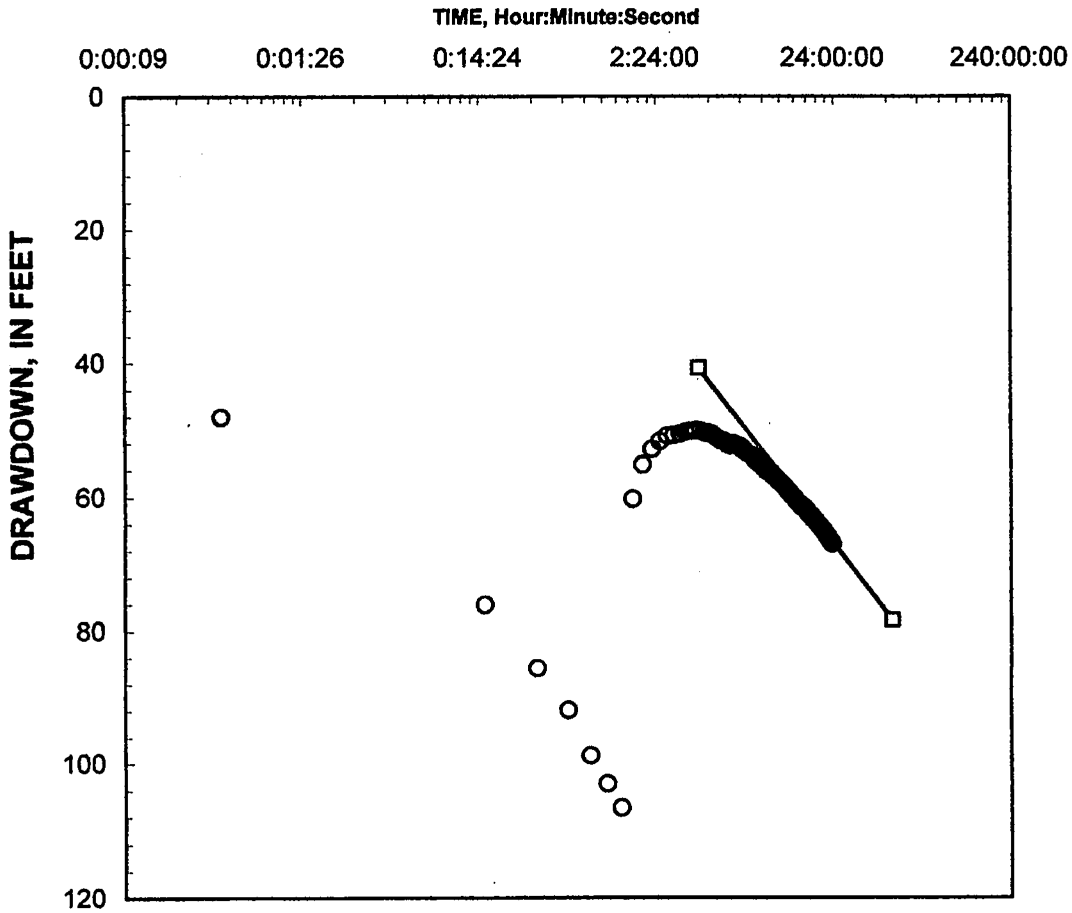
Aquifer thickness = 700 Feet

Slope = 34.49541 Feet/log10

Input is consistent.

K =	0.16 Feet/Day
T =	120 Feet²/Day

K= 0.16 is less than likely minimum of 3 for Fine Sand



REMARKS:

Cooper-Jacob analysis of single-well aquifer test

Analysis of 111 gpm data.

Reduced Data

Entry	Time, Date Hr:Min:Sec	Water Level Feet
1	1/0/00 0:00:00	0.70
2	1/0/00 0:00:30	48.70
3	1/0/00 0:15:30	76.80
4	1/0/00 0:30:30	86.30
5	1/0/00 0:45:30	92.60
6	1/0/00 1:00:30	99.50
7	1/0/00 1:15:30	103.70
8	1/0/00 1:30:30	107.30
9	1/0/00 1:45:30	61.00
10	1/0/00 2:00:30	55.90
11	1/0/00 2:15:30	53.60
12	1/0/00 2:30:30	52.40
13	1/0/00 2:45:30	51.60
14	1/0/00 3:00:30	51.50
15	1/0/00 3:15:30	51.30
16	1/0/00 3:30:30	51.00
17	1/0/00 3:45:30	50.90
18	1/0/00 4:00:30	50.80
19	1/0/00 4:15:30	50.90
20	1/0/00 4:30:30	51.20
21	1/0/00 4:45:30	51.20
22	1/0/00 5:00:30	51.50
23	1/0/00 5:15:30	51.90
24	1/0/00 5:30:30	52.30
25	1/0/00 5:45:30	52.40
26	1/0/00 6:00:30	52.80
27	1/0/00 6:15:30	53.10
28	1/0/00 6:30:30	52.80
29	1/0/00 6:45:30	53.00
30	1/0/00 7:00:30	53.20
31	1/0/00 7:15:30	53.50
32	1/0/00 7:30:30	53.80
33	1/0/00 7:45:30	54.20
34	1/0/00 8:00:30	54.40
35	1/0/00 8:15:30	54.60
36	1/0/00 8:30:30	55.00
37	1/0/00 8:45:30	55.40
38	1/0/00 9:00:30	55.70
39	1/0/00 9:15:30	55.80
40	1/0/00 9:30:30	56.10
41	1/0/00 9:45:30	56.40
42	1/0/00 10:00:30	56.80
43	1/0/00 10:15:30	56.90
44	1/0/00 10:30:30	57.20
45	1/0/00 10:45:30	57.30
46	1/0/00 11:00:30	57.60
47	1/0/00 11:15:30	57.90
48	1/0/00 11:30:30	58.10
49	1/0/00 11:45:30	58.40
50	1/0/00 12:00:30	58.50
51	1/0/00 12:15:30	58.80
52	1/0/00 12:30:30	59.10
53	1/0/00 12:45:30	59.30
54	1/0/00 13:00:30	59.60
55	1/0/00 13:15:30	59.80
56	1/0/00 13:30:30	60.00
57	1/0/00 13:45:30	60.30
58	1/0/00 14:00:30	60.60
59	1/0/00 14:15:30	60.80
60	1/0/00 14:30:30	61.00
61	1/0/00 14:45:30	61.30
62	1/0/00 15:00:30	61.50
63	1/0/00 15:15:30	61.70
64	1/0/00 15:30:30	61.90
65	1/0/00 15:45:30	62.20
66	1/0/00 16:00:30	62.20
67	1/0/00 16:15:30	62.30
68	1/0/00 16:30:30	62.50
69	1/0/00 16:45:30	62.80
70	1/0/00 17:00:30	62.90
71	1/0/00 17:15:30	63.20
72	1/0/00 17:30:30	63.30
73	1/0/00 17:45:30	63.40
74	1/0/00 18:00:30	63.60
75	1/0/00 18:15:30	64.00
76	1/0/00 18:30:30	64.10
77	1/0/00 18:45:30	64.20
78	1/0/00 19:00:30	64.40
79	1/0/00 19:15:30	64.70
80	1/0/00 19:30:30	64.80
81	1/0/00 19:45:30	64.90
82	1/0/00 20:00:30	65.20
83	1/0/00 20:15:30	65.30
84	1/0/00 20:30:30	65.50
85	1/0/00 20:45:30	65.70
86	1/0/00 21:00:30	65.90
87	1/0/00 21:15:30	66.00
88	1/0/00 21:30:30	66.30
89	1/0/00 21:45:30	66.40
90	1/0/00 22:00:30	66.70
91	1/0/00 22:15:30	66.80
92	1/0/00 22:30:30	67.00
93	1/0/00 22:45:30	67.20
94	1/0/00 23:00:30	67.40
95	1/0/00 23:15:30	67.50

WELL ID: Dry Valley Test Well No. 1 - Recovery

Local ID: Intermountain TW-1
Date: 8/16/2004
Time: 15:40

INPUT

Construction:	
Casing dia. (d_c)	6 Inch
Annulus dia. (d_w)	12 Inch
Screen Length (L)	340 Feet
Depths to:	
water level (DTW)	-21 Feet
Top of Aquifer	0 Feet
Base of Aquifer	720 Feet
Annular Fill:	
across screen -- Open Hole	
above screen -- Cement	
Aquifer Material -- Fine Sand	
FLOW RATE	248 GPM

COMPUTED

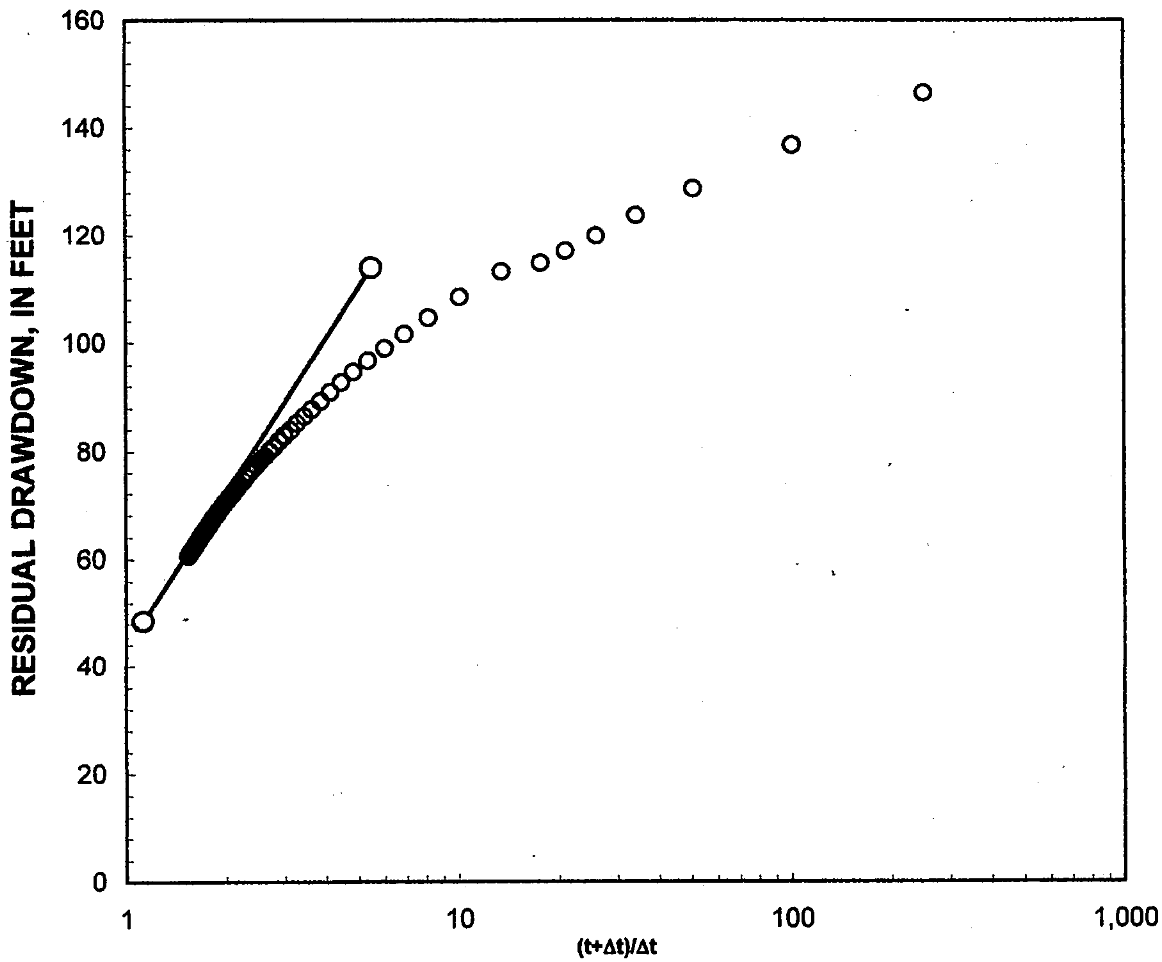
Aquifer thickness = 720 Feet

Slope = 95.05814 Feet/log10

Input is consistent.

K =	0.13 Feet/Day
T =	92 Feet²/Day

K= 0.13 is less than likely minimum of 3 for Fine Sand



REMARKS: Cooper-Jacob recovery analysis of single-well aquifer test

Recovery water level data for June test.

Reduced Data

Entry	Time, Date Hr:Min:Sec	Water Level Feet
1	1/0/00 15:40:00	-21.00
2	1/1/00 0:00:00	175.02
3	1/1/00 0:02:00	125.50
4	1/1/00 0:05:00	115.79
5	1/1/00 0:10:00	107.76
6	1/1/00 0:15:00	102.76
7	1/1/00 0:20:00	98.88
8	1/1/00 0:25:00	96.00
9	1/1/00 0:30:00	93.71
10	1/1/00 0:40:00	92.10
11	1/1/00 0:55:00	87.40
12	1/1/00 1:10:00	83.60
13	1/1/00 1:25:00	80.60
14	1/1/00 1:40:00	78.00
15	1/1/00 1:55:00	75.70
16	1/1/00 2:10:00	73.60
17	1/1/00 2:25:00	71.70
18	1/1/00 2:40:00	69.90
19	1/1/00 2:55:00	68.30
20	1/1/00 3:10:00	66.80
21	1/1/00 3:25:00	65.50
22	1/1/00 3:40:00	64.20
23	1/1/00 3:55:00	63.00
24	1/1/00 4:10:00	62.00
25	1/1/00 4:25:00	61.00
26	1/1/00 4:40:00	59.90
27	1/1/00 4:55:00	59.10
28	1/1/00 5:10:00	58.10
29	1/1/00 5:25:00	57.30
30	1/1/00 5:40:00	56.50
31	1/1/00 5:55:00	55.70
32	1/1/00 6:10:00	55.00
33	1/1/00 6:25:00	54.20
34	1/1/00 6:40:00	53.50
35	1/1/00 6:55:00	52.90
36	1/1/00 7:10:00	52.20
37	1/1/00 7:25:00	51.70
38	1/1/00 7:40:00	51.00
39	1/1/00 7:55:00	50.50
40	1/1/00 8:10:00	49.90
41	1/1/00 8:25:00	49.50
42	1/1/00 8:40:00	49.00
43	1/1/00 8:55:00	48.40
44	1/1/00 9:10:00	48.00
45	1/1/00 9:25:00	47.50
46	1/1/00 9:40:00	47.10
47	1/1/00 9:55:00	46.70
48	1/1/00 10:10:00	46.30
49	1/1/00 10:25:00	45.80
50	1/1/00 10:40:00	45.40

Entry	Time, Date Hr:Min:Sec	Water Level Feet
51	1/1/00 10:55:00	45.00
52	1/1/00 11:10:00	44.60
53	1/1/00 11:25:00	44.40
54	1/1/00 11:40:00	43.90
55	1/1/00 11:55:00	43.70
56	1/1/00 12:10:00	43.30
57	1/1/00 12:25:00	43.00
58	1/1/00 12:40:00	42.70
59	1/1/00 12:55:00	42.30
60	1/1/00 13:10:00	42.00
61	1/1/00 13:25:00	41.80
62	1/1/00 13:40:00	41.50
63	1/1/00 13:55:00	41.20
64	1/1/00 14:10:00	40.90
65	1/1/00 14:25:00	40.70
66	1/1/00 14:40:00	40.40
67	1/1/00 14:55:00	40.10
68	1/1/00 15:10:00	39.90
69	1/1/00 15:25:00	39.70

WELL ID: Dry Valley Test Well No. 1

Local ID: Intermountain TW-1
Date: 8/16/2004
Time: 13:00

INPUT

Construction:	
Casing dia. (d_c)	6 Inch
Annulus dia. (d_w)	12 Inch
Screen Length (L)	340 Feet
Depths to:	
water level (DTW)	-21 Feet
Top of Aquifer	0 Feet
Base of Aquifer	720 Feet
Annular Fill:	
across screen -- Open Hole	
above screen -- Cement	
Aquifer Material -- Fine Sand	
FLOW RATE	304 GPM

Assumed Storage = 0.001 d'less

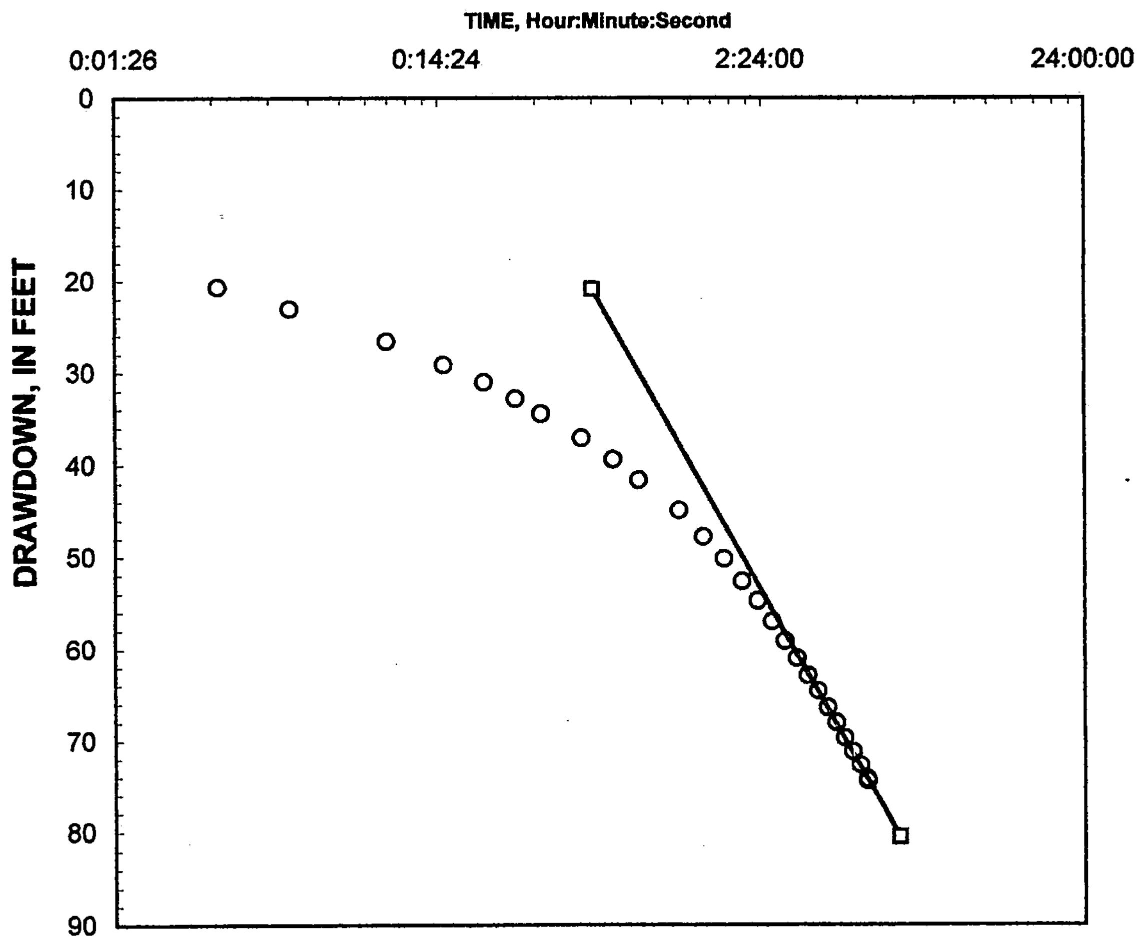
COMPUTED

Aquifer thickness = 720 Feet

Slope = 62.90084 Feet/log10

Input is consistent.

K = 0.24 Feet/Day
T = 170 Feet²/Day



REMARKS: Cooper-Jacob analysis of single-well aquifer test

Third step of second aquifer test. Depths to ground water reported below starting artesian head of 22 feet above land surface (9.1 psi).

Reduced Data

Entry	Time, Date Hr:Min:Sec	Water Level Feet
1	1/0/00 0:00:00	100.60
2	1/0/00 0:03:00	121.20
3	1/0/00 0:05:00	123.62
4	1/0/00 0:10:00	127.18
5	1/0/00 0:15:00	129.70
6	1/0/00 0:20:00	131.60
7	1/0/00 0:25:00	133.41
8	1/0/00 0:30:00	135.04
9	1/0/00 0:40:00	137.65
10	1/0/00 0:50:00	139.98
11	1/0/00 1:00:00	142.22
12	1/0/00 1:20:00	145.50
13	1/0/00 1:35:00	148.40
14	1/0/00 1:50:00	150.80
15	1/0/00 2:05:00	153.30
16	1/0/00 2:20:00	155.40
17	1/0/00 2:35:00	157.60
18	1/0/00 2:50:00	159.70
19	1/0/00 3:05:00	161.60
20	1/0/00 3:20:00	163.50
21	1/0/00 3:35:00	165.20
22	1/0/00 3:50:00	167.00
23	1/0/00 4:05:00	168.60
24	1/0/00 4:20:00	170.30
25	1/0/00 4:35:00	171.80
26	1/0/00 4:50:00	173.30
27	1/0/00 5:05:00	174.80

WELL ID: Dry Valley Test Well No. 1 - Recovery

Local ID: Intermountain TW-1
Date: 8/16/2004
Time: 15:40

INPUT

Construction:	
Casing dia. (d_c)	6 Inch
Annulus dia. (d_w)	12 Inch
Screen Length (L)	340 Feet
Depths to:	
water level (DTW)	-21 Feet
Top of Aquifer	0 Feet
Base of Aquifer	700 Feet
Annular Fill:	
across screen --	Open Hole
above screen --	Cement
Aquifer Material --	Fine Sand
FLOW RATE	248 GPM

COMPUTED

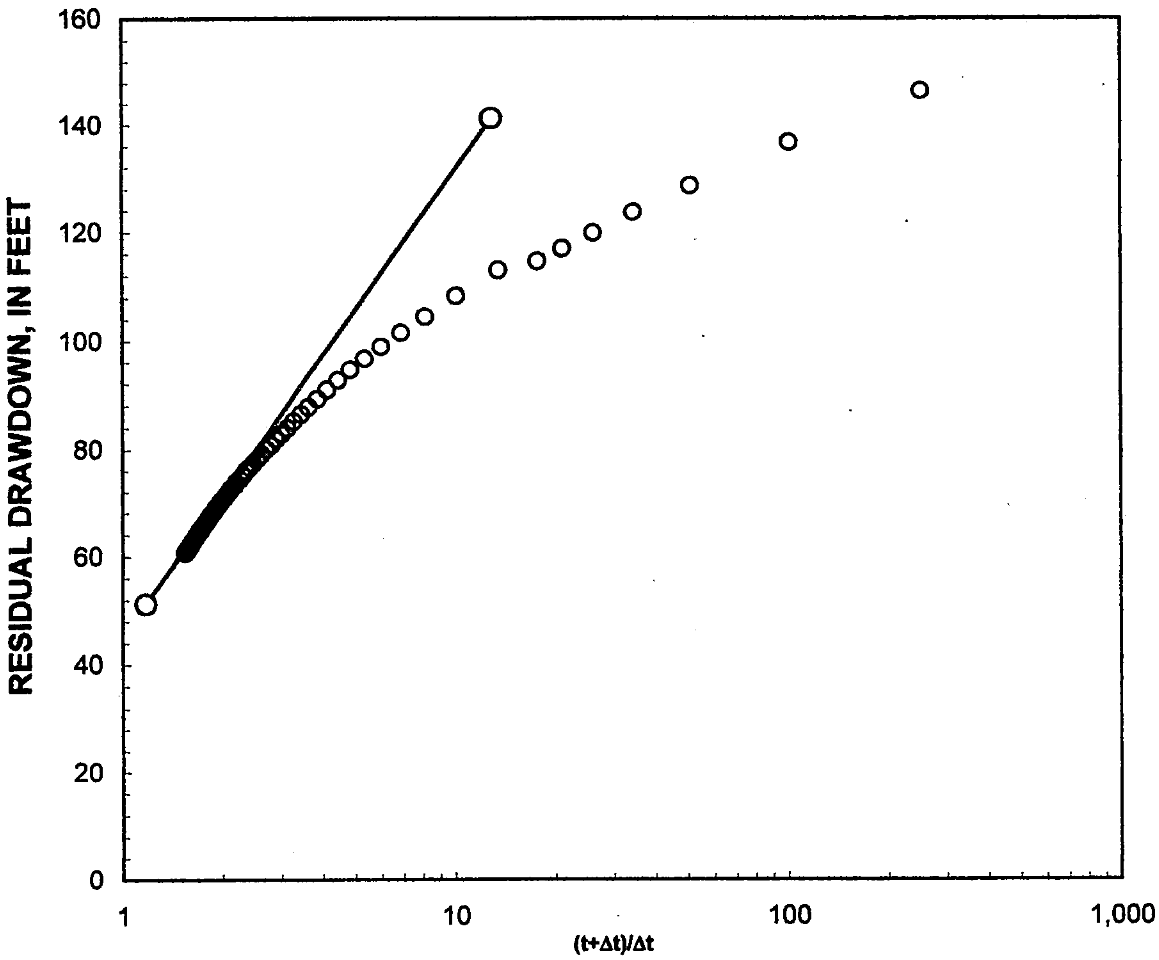
Aquifer thickness = 700 Feet

Slope = 86.37236 Feet/log10

Input is consistent.

K = 0.14 Feet/Day
T = 100 Feet²/Day

K= 0.14 is less than likely minimum of 3 for Fine Sand



REMARKS: Cooper-Jacob recovery analysis of single-well aquifer test

Recovery water level data from August test.

Reduced Data

Entry	Time, Date Hr:Min:Sec	Water Level Feet
1	1/0/00 15:40:00	-21.00
2	1/1/00 0:00:00	175.02
3	1/1/00 0:02:00	125.50
4	1/1/00 0:05:00	115.79
5	1/1/00 0:10:00	107.76
6	1/1/00 0:15:00	102.76
7	1/1/00 0:20:00	98.88
8	1/1/00 0:25:00	96.00
9	1/1/00 0:30:00	93.71
10	1/1/00 0:40:00	92.10
11	1/1/00 0:55:00	87.40
12	1/1/00 1:10:00	83.60
13	1/1/00 1:25:00	80.60
14	1/1/00 1:40:00	78.00
15	1/1/00 1:55:00	75.70
16	1/1/00 2:10:00	73.60
17	1/1/00 2:25:00	71.70
18	1/1/00 2:40:00	69.90
19	1/1/00 2:55:00	68.30
20	1/1/00 3:10:00	66.80
21	1/1/00 3:25:00	65.50
22	1/1/00 3:40:00	64.20
23	1/1/00 3:55:00	63.00
24	1/1/00 4:10:00	62.00
25	1/1/00 4:25:00	61.00
26	1/1/00 4:40:00	59.90
27	1/1/00 4:55:00	59.10
28	1/1/00 5:10:00	58.10
29	1/1/00 5:25:00	57.30
30	1/1/00 5:40:00	56.50
31	1/1/00 5:55:00	55.70
32	1/1/00 6:10:00	55.00
33	1/1/00 6:25:00	54.20
34	1/1/00 6:40:00	53.50
35	1/1/00 6:55:00	52.90
36	1/1/00 7:10:00	52.20
37	1/1/00 7:25:00	51.70
38	1/1/00 7:40:00	51.00
39	1/1/00 7:55:00	50.50
40	1/1/00 8:10:00	49.90
41	1/1/00 8:25:00	49.50
42	1/1/00 8:40:00	49.00
43	1/1/00 8:55:00	48.40
44	1/1/00 9:10:00	48.00
45	1/1/00 9:25:00	47.50
46	1/1/00 9:40:00	47.10
47	1/1/00 9:55:00	46.70
48	1/1/00 10:10:00	46.30
49	1/1/00 10:25:00	45.80
50	1/1/00 10:40:00	45.40
51	1/1/00 10:55:00	45.00
52	1/1/00 11:10:00	44.60
53	1/1/00 11:25:00	44.40
54	1/1/00 11:40:00	43.90
55	1/1/00 11:55:00	43.70
56	1/1/00 12:10:00	43.30
57	1/1/00 12:25:00	43.00
58	1/1/00 12:40:00	42.70
59	1/1/00 12:55:00	42.30
60	1/1/00 13:10:00	42.00
61	1/1/00 13:25:00	41.80
62	1/1/00 13:40:00	41.50
63	1/1/00 13:55:00	41.20
64	1/1/00 14:10:00	40.90
65	1/1/00 14:25:00	40.70
66	1/1/00 14:40:00	40.40
67	1/1/00 14:55:00	40.10
68	1/1/00 15:10:00	39.90
69	1/1/00 15:25:00	39.70

WELL ID: Dry Valley Test Well No. 1 - Step Drawdow

INPUT

Construction:		
Casing dia. (d_c)	6	Inch
Annulus dia. (d_w)	12	Inch
Screen Length (L)	340	Feet
Depths to:		
water level (DTW)	-21	Feet
Top of Aquifer	0	Feet
Base of Aquifer	720	Feet
Annular Fill:		
across screen -- Gravel		
above screen -- Cement		
Aquifer Material -- Fine Sand		
ASSUMED S =	0.0004	d'less

Local ID: Dry Valley Test Well No. 1
Date: 8/16/2004
Time: 1:00

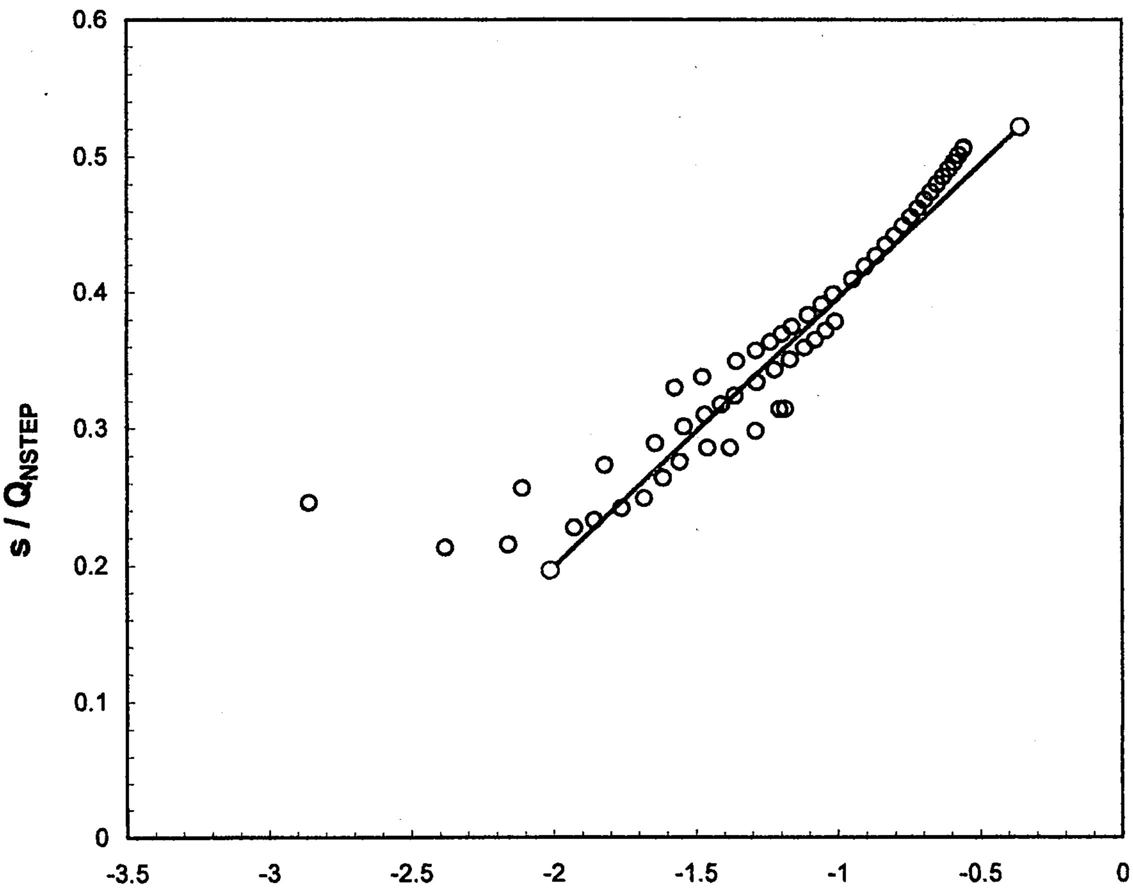
COMPUTED

Aquifer thickness = 700 Feet

Input is consistent.

K =	0.2	Feet/Day
T =	200	Feet2/Day
S =	0.0004	d'less
$K_{annular}$ =	3	Feet/Day
Skin =	-0.6	d'less

K= 0.2 is less than likelv minimum of 3 for Fine Sand

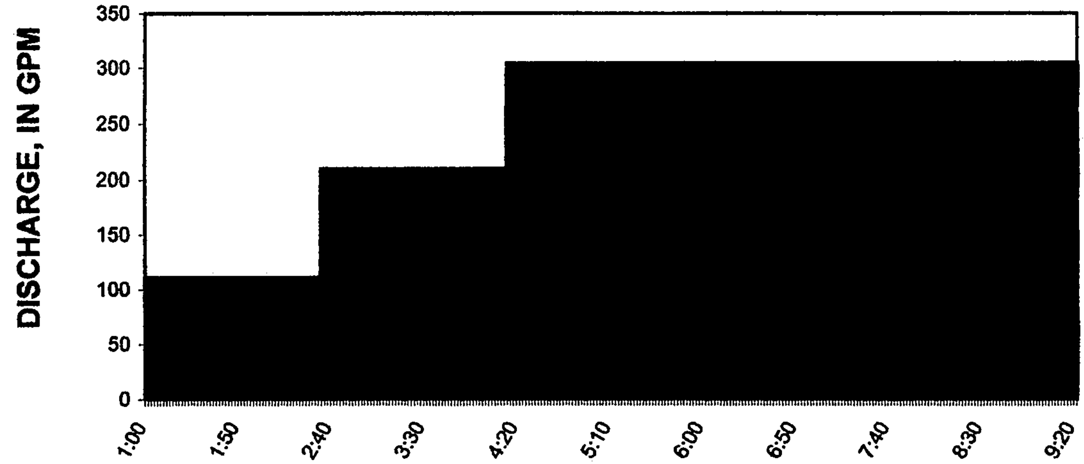


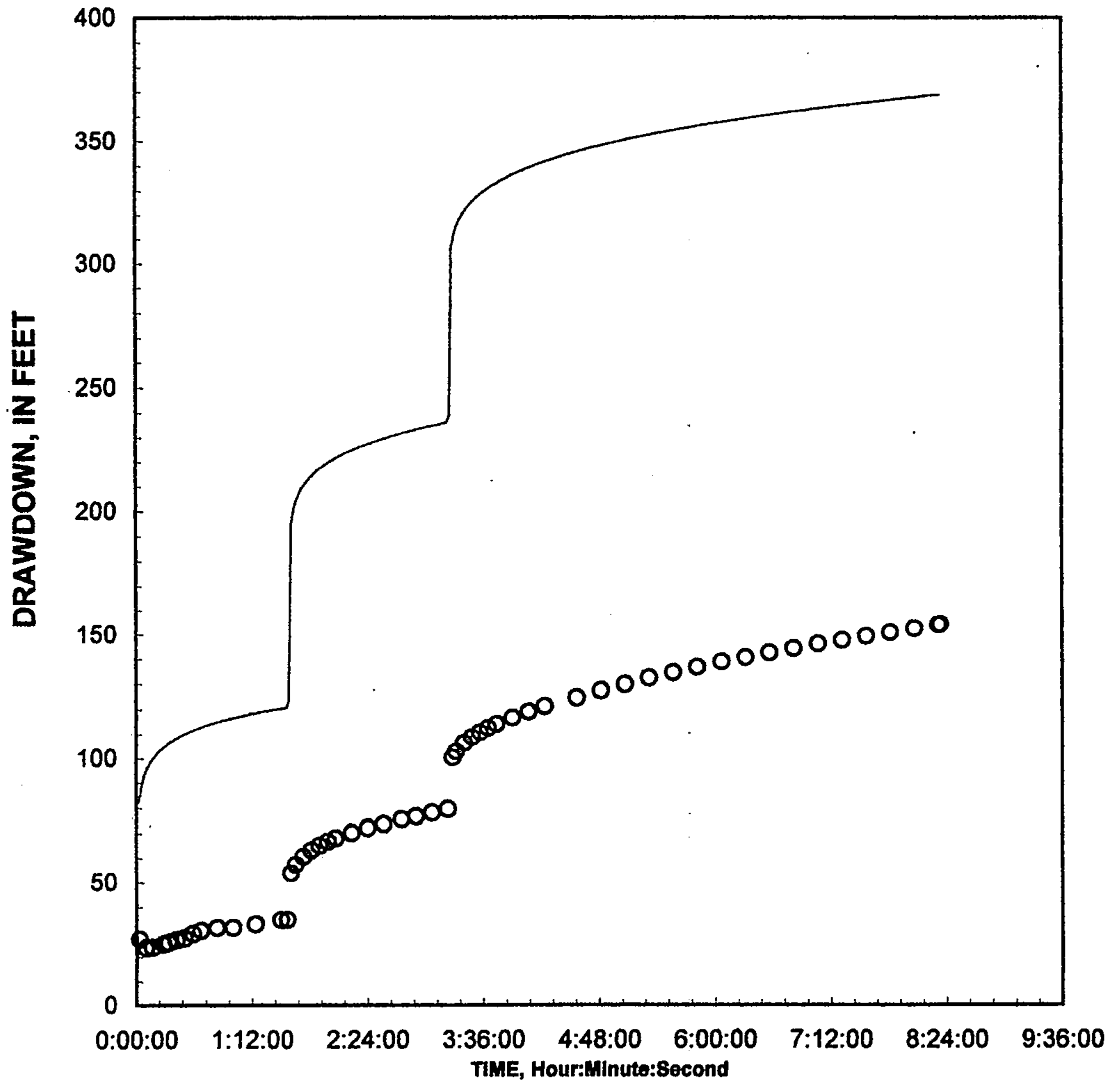
$$\sum_{I=1}^{NSTEP} \frac{Log(\Delta t_I)\Delta Q_I}{Q_{NSTEP}}$$

REMARKS: Step-drawdown analysis of single-well aquifer test

KANNULAR is estimated by fitting simulated drawdowns to measured drawdowns in a secondary plot. A reasonable storage value must be assigned by the user because storage and KANNULAR cannot be estimated independently. The estimate of T is not affected by changes in estimates of storage and KANNULAR.

ʋn Test WELL ID: Dry Valley Test Well No. 1 - Step Drawdown





Test

Reduced Data

Entry	Time, Hr:Min:Sec	Water Level Feet	Entry	Time, Hr:Min:Sec	Water Level Feet
1	1:00:00	21.00	51	8:19:00	168.60
2	1:02:00	48.30	52	8:34:00	170.30
3	1:06:00	44.65	53	8:49:00	171.80
4	1:10:00	44.88	54	9:04:00	173.30
5	1:17:00	46.26	55	9:19:00	174.80
6	1:20:00	46.85	56	9:20:00	175.02
7	1:25:00	47.82			
8	1:30:00	48.64			
9	1:35:00	50.28			
10	1:40:00	51.60			
11	1:50:00	52.74			
12	2:00:00	52.74			
13	2:14:00	54.09			
14	2:30:00	55.86			
15	2:34:00	55.90			
16	2:36:00	74.83			
17	2:39:00	78.35			
18	2:44:00	81.69			
19	2:49:00	84.25			
20	2:54:00	86.10			
21	2:59:00	87.67			
22	3:04:00	88.95			
23	3:14:00	91.07			
24	3:24:00	93.03			
25	3:34:00	94.65			
26	3:45:00	96.48			
27	3:54:00	97.73			
28	4:04:00	99.18			
29	4:14:00	100.60			
30	4:17:00	121.20			
31	4:19:00	123.62			
32	4:24:00	127.18			
33	4:29:00	129.70			
34	4:34:00	131.60			
35	4:39:00	133.41			
36	4:44:00	135.04			
37	4:54:00	137.65			
38	5:04:00	139.98			
39	5:14:00	142.22			
40	5:34:00	145.50			
41	5:49:00	148.40			
42	6:04:00	150.80			
43	6:19:00	153.30			
44	6:34:00	155.40			
45	6:49:00	157.60			
46	7:04:00	159.70			
47	7:19:00	161.60			
48	7:34:00	163.50			
49	7:49:00	165.20			
50	8:04:00	167.00			