Well #12 = WTN 83110

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REPORT ON

WELL DRILLING, CONSTRUCTION AND CAPACITY TESTING, PRODUCTION WELL #12 SILVER STAR MOUNTAIN RESORT VERNON, BRITISH COLUMBIA

Submitted to:

Big White Ski Resort
P.O. Box 2434, Station "R"
Kelowna, British Columbia
V1X 6A5

DISTRIBUTION:

2 Copies - Big White Ski Resort
1 Copies - Golder Associates Ltd.

December 5, 2003

012-4027 (5500)

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) is pleased to submit the following report presenting the results of the well drilling, construction and capacity testing of a water supply well (Well 12) at Silver Star Mountain Resort (Silver Star), located near Vernon, B.C. (Figure 1).

The purpose of this work was to install a new water supply well at Silver Star and to assess the long-term sustainable yield available from this well. The report includes details on the design, construction and capacity testing of the well, and water quality sampling. Recommendations are given for the depth of pump placement and long-term monitoring of the performance of the well.

It is intended that Well 12 will provide supply Silver Star in the order of 1.25 L/s (20 USgpm) to 1.6 L/s (25 USgpm). This additional water will supplement the current water being extracted from Wells 1 through 5 at the Resort.

As the well will be handed over to the Regional District of Central Okanagan, it is understood that a report is not required for the procurement of a Certificate of Public Convenience and Necessity (CPCN). The report will, however, be reviewed by the Groundwater Management Section of the BC Ministry of Water, Land and Air Protection (BCMWLAP).

Verbal authorization to proceed with the work was given by Mr. Maurice Valcourt of Big White Utlilities on August 16, 2002.

2.0 BACKGROUND

Silver Star Mountain Resort is located approximately 15 km northeast of Vernon. At present, there are eleven water wells known to exist at Silver Star Resort, all of which are completed within 200 m of the ground surface in water-bearing fractures (approximately 40 to 70 m depth) present in either shale or argillite (schist) rock. Wells 1 through 5 are located in the village area and are currently used to supply the demands of the village. The wells reportedly provide a combined yield between 60 gpm and 120 gpm. Well 6 provides water for the Paradise Restaurant, a day lodge on the north side of the resort. Wells 7 through 11 are located primarily north and east of the village area and are not currently utilized by the Resort.

Golder was retained by Big White in January 2002 to evaluate the potential for three of the unused wells to augment the current supply of potable water at Silver Star, summarized in the following reports:

- "*Well Capacity Testing, Silver Star Resort, Vernon, B.C.*", dated March 27, 2002 (Golder Project No. 022-4027)
- "*Addendum to Well Capacity Testing Report, Silver Star Resort, Vernon, B.C.*", dated May 3, 2002 (Golder Project No. 022-4027)
- "*Summary of Groundwater Development Initiatives Undertaken by Big White Utilities at Silver Star Ski Resort, Vernon, B.C.*", dated September 13, 2002 (Golder Project No. 022-4027 (5000)

Based on the results of the three well capacity tests in January and February 2002, Well 8, located at the based of Putnam Chair lift, was reported as capable of a long-term capacity of 11 US gpm; Well 7, located at the base of the Yellow Chair lift, capable of a long-term capacity of 2 US gpm; and, Well 10, located at the top of the Vance Chair lift, capable of a long-term capacity of 10 US gpm. Well capacity was estimated using the methodology outlined in the guidance document published by the BC Ministry of Water, Land and Air Protection (MWLAP) entitled "*Evaluating Long-Term Well Capacity for a Certificate of Public Convenience and Necessity*" (1999), including bedrock aquifers.

3.0 WELL CONSTRUCTION

3.1 Well Location

Based on interpretation of borehole logs and the Geological Survey of Canada Map for the area, the water supply wells at Silver Star are understood to exist in fractured rock zones within the two most upper rock types in the Shuswap Highlands. Borehole logs suggested that the width of fracture zones in the Pcs and Ms formations ranges between 5m and 15 m and the depth of fracturing is inconsistent. However, higher flow rates are reported in the borehole logs at the greater depths. The Pcs Formation outcrops immediately to the west of the Village and this area is considered an important recharge zone for the aquifer. Static water levels in the aquifer become more artesian to the east, which suggest that recharge occurs at higher elevations in the western portion of the aquifer.

Based on the available geological and topographic maps, Silver Star Mountain recreational land use boundaries and site access, a location approximately 1.1 km west of the main Village and 550 m south of Well 2 was chosen for construction of Well #12.

An access road was constructed by Silver Star Resort to allow the drilling rig and support equipment access to the proposed drilling location.

3.2 Drilling and Casing Advancement

The drilling rig and support equipment were mobilized to the site on September 8, 2002 and drilling commenced on Well #12 on September 9. The drilling method utilized for Well #12 by the drilling contractor, Dan Gare Drilling of Vernon, BC, was the "cased hole" method in overburden and the open hole method with a down-hole rock hammer in bedrock. A truck-mounted air rotary drilling rig with an on-board air compressor and pneumatic casing hammer were used to complete the well.

Drilling of the well was conducted between September 9 and September 16, 2002, with the well drilled to a total depth of 179.8 m. Golder was on site throughout most of the drilling process to collect and visually log drill cuttings and to verify material and labour used by the contractor. The subsurface conditions encountered during drilling included the following:

- Overburden consisting of brown silt and clay (Till) to 29 m depth;
- Bedrock composed of argillite (schist) from 29 m to 176.7 m depth, with water-bearing fractures/faults at 58m, 150 m and 166 m depth. Drilling progressed smoothly through this bedrock, which is interpreted as being the Pcs Formation identified in previous reports;
- Bedrock composed of granite from 176.7 to 179.8 m. The rate of drilling was much slower in this bedrock, which is interpreted as being the Pcb Formation identified in previous reports;

At depths where water-bearing fractures were encountered, the air compressor on the drilling rig was used to blow water from the borehole and the quantity removed was measured with a 20 l pail and stopwatch. The quantity of water was noted to increase from approximately 0.3 L/s (5 USgpm) at 58 m depth to approximately 3.8 L/s (60 USgpm) at 166 m depth.

Drilling was terminated in the Pcb formation at 179.8 as the potential for intercepting additional water-bearing fractures is considered remote. Development to remove fine-grained sediment and rock fragments was completed by jetting and surging air into the borehole through the base of the drill stem, temporarily placed in the well for this purpose. The well was developed in this manner for 12 hours. Following well development, the static water level in the well was measured at approximately 8 m below the top of the surface casing. The well was disinfected by shock chlorination and completed with a cap and lock.

A copy of the original driller's report is included in Appendix I.

Inserted into the open borehole for prevention of rock fragments damaging pumping equipment is 112.5 mm nominal diameter PVC liner, slotted from approximately 120 m to the full depth of 179.8.

Final depth measurements in the well include the top of the major water-bearing fracture zone at 166 m and static water level at approximately 8 m. The available drawdown in the well, defined as the height of water column above the top of the major water-bearing fractures is approximately 158 m. For well yield calculations completed later in this report, we have used a conservative value of 150 m for available drawdown. A completion diagram for the well is shown in Figure 3.

4.0 WELL CAPACITY TESTING

To assess the potential well capacity, the characteristics of the aquifer and the potential for well interference, a series of pumping tests were completed on the newly constructed well. Moore Pumps of Vernon conducted the well capacity testing, which consisted of step-drawdown tests and a 72-hour constant rate pumping test. The pumping tests were conducted between September 23 and September 27, 2002.

Two nearby wells, including Well #2 (located approximately 550 m north of Well #12) and Well #5 (located approximately 400 m northeast of W #12) were selected for water level observations during the testing of Well #12. The two observation wells were shut down approximately 16 hours prior to commencing testing.

The pump used for testing Well #12 was placed at approximately 90 m depth. Discharged water during testing was directed away from the well via piping and flat lay hose onto the forest floor within a ravine located immediately south of the well head. The discharge was controlled using a gate valve located at the well head and the flow rate was measured using a 20 litre pail and a stopwatch.

Step-Drawdown Testing

Step-drawdown testing was conducted on September 23, 2002 at discharge rates of 0.39 L/s (6.25 USgpm), 0.76 L/s (13 USgpm), 1.33 L/s (21 USgpm) and 1.74 L/s (27.5 USgpm) for 30 minute intervals, or cumulatively for 120 minutes (2 hours). The testing was done to assess the specific capacity and efficiency of the well at various pumping rates and to determine the optimum pumping rate to be utilized during the constant rate test. Drawdown was not monitored in the observation wells during step-drawdown testing.

Measurements taken during the step-drawdown testing are presented in Appendix II. Plots of drawdown against time for each step and drawdown against discharge at the end of each 30 minute step are presented in Figure 4 and Figure 5 respectively. The plot indicates that the efficiency of the well decreases at higher pumping rates and that the safe transmitting capacity of the well screens had not been exceeded.

The optimum rate for the constant rate test was set at 1.7 L/s (27 USgpm).

Constant Rate Testing

The constant pumping test was conducted at a discharge rate varying between 1.4 L/s (22 USgpm) and 1.7 L/s (27 USgpm) between September 24 and September 27, 2002, for a total of 72 hours pumping. The pumping rate varied as a result of the capability of the installed test pump to deliver a constant discharge over the roughly 70 m of drawdown created during the testing. Drawdown was monitored in both the well being pumped (Well #12) and in two observation wells (Well #2 and Well #5). Water level measurements were taken at close time intervals during the first hour of testing and at greater time intervals towards the end of the testing period.

A total drawdown of 72.8 m was recorded in Well #12. Approximately 0.2 m of drawdown was observed in Well #5. The water level in Well #2 actually recovered during the entire period of testing on Well #12. The drawdown of roughly 73 m observed in Well 12 during the constant rate testing corresponds to approximately 49 percent of the calculated available drawdown for the well. There is indication of a recharge boundary being encountered after approximately 1700 minutes of pumping as the rate of decline in water level in the pumping well decreased.

Plots of drawdown in the pumping well and drawdown in the observation wells are presented in Figure 6 and Figure 7. Measurements taken during the constant rate test are included in Appendix II.

Well Recovery Monitoring

Following shut down of the pump at the end of the constant rate pumping test, the recovery of water levels was monitored in Well #12, Well #2 and Well #5. Water levels were initially measured at close time intervals, with the interval increased as the rate of recovery decreased with time. The recovery of Well #12 following testing is shown in

Figure 6. The water level at the end of the recovery monitoring period, 4800 minutes after pumping stopped, was 6.3 m, indicating the well had recovered 92 percent of the drawdown induced during the testing. The trend in water levels observed in Well #5 did not reverse (from drawdown to recovery) following shut down of the testing in Well #12, indicating that the changes observed in this well may not have been created by pumping in Well #12. Measurements taken during recovery monitoring are presented in Appendix II.

5.0 CHEMICAL AND BIOLOGICAL ANALYSES

Prior to the end of the constant rate pumping test on September 27, 2002, water samples were collected from the pumping discharge and immediately shipped to CANTEST laboratories in Burnaby, BC to be analyzed for potability. The analyses completed included an enhanced suite of chemical parameters for potability including, pH, metals, alkalinity and nutrients. Samples for total and fecal coliform bacteria testing were sent to Caro Labs in Kelowna, BC. The results of the water potability analysis are presented in Table 1 and a copy of the original laboratory certificates are presented in Appendix III.

6.0 INTERPRETATION OF RESULTS

6.1 Well Yield

Well capacity was estimated using the methodology outlined in the guidance document published by the BC MWLAP entitled "*Evaluating Long-Term Well Capacity for a Certificate of Public Convenience and Necessity (CPCN)*" (1999). The recommended methodology for estimating the long-term well capacity for a fractured bedrock aquifer is to conduct a minimum 72-hour pumping test during low water level periods (late fall-winter for the interior of B.C.). MWLAP recommends that the following four criteria be considered when evaluating well capacity:

1. adequate pumping test procedures;
2. estimated drawdown in pumping well extended to a minimum of 100 day period;
3. total available drawdown in the pumping well; and,
4. other factors, such as well interference and water quality.

The well capacity (Q) for a specific well, using information from the well log and the pumping test, is calculated as follows:

Q = 0.7 (70% of the available drawdown) x 100 day specific capacity x available drawdown in the pumping well

The 100 day specific capacity is estimated by projecting the drawdown of the 72-hour pumping test to 100 days and the available drawdown is determined to be the height of water between the static water level and the dominant water-bearing set of fractures.

The 100 day projection period is utilized as it extends the pumping period from the mid-winter period (Dec/Jan) when the lowest static water levels typically exist to April/May when recharge typically occurs to an aquifer from spring snowmelt/runoff. This time period is intended to represent the period when the recharge to the aquifer is the lowest and hence worst case conditions.

The total available drawdown (the height of water above the major water bearing fractures) in the well based on the driller's log is 150 m. The drawdown extrapolated to 100 days based on the 72-hour test is estimated to range between 85 m and 130 m. The 100-day specific capacity of the well is calculated to range between 0.011 L/s/m and 0.016 L/s/m. Based on an available drawdown of 150 m for the well and this range of specific capacity, the yield for the well is in the range of 1.14 L/s (18 USgpm) to 1.74 L/s (27 USgpm). Assuming that the indicated recharge boundary is the outcropping of the Pcs Formation to the west of the well and that no negative boundary conditions are encountered during future pumping, a conservative capacity rating for the well is 1.51 L/s, or 24 USgpm. Pumping at this rate is expected to create a drawdown in the order of 93 m.

6.2 Assessment Of Well Interference

Two other water supply wells are located within approximately 500 m of Well #12, those being Well #2 and Well #5. Based on the observed drawdown during testing of Well #12, the maximum drawdown created in Well #5 was 0.2 m. Extension of the drawdown to 100 days indicates that approximately 0.6 m of drawdown is expected to occur in Well #5. The drawdown created by both wells pumping is expected to be in the range of 1.0 to 1.5 m, which is not significant compared to the available drawdown for each well. With mutual interference effects taken into account, it is expected that an additional 1.0 m to 1.5 m of drawdown will be generated in each of Well #5 and Well #12. This additional drawdown represents an additional 1 percent utilization of available drawdown in Well #12. No interference between Well #2 and Well #12 is indicated. Therefore, the total estimated drawdown in Well #12 for the rated yield of 1.51 L/s (24 USgpm) would be in the order of 95 m, or 63 percent of available drawdown in the well. This amount of drawdown does not exceed the 70 percent recommended in the CPCN guidelines.

6.3 Assessment of Water Quality

The laboratory analysis of the water sampled from Well #12 indicates that the water meets or exceeds all the Guidelines for Canadian Drinking Water Quality (GCDWQ).

7.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this investigation, the following conclusions can be made:

- The long-term sustainable well yield of Well #12 is 1.51 L/s (24 USgpm);

- The static water level in Well #12 is approximately 8 m below top of casing and the available drawdown in the well is approximately 150 m;

- At a discharge rate of 1.51 L/s (24 USgpm), the expected drawdown in the well is in the order of 93 m. Mutual well interference as a result of simultaneous operation of Well #5 is expected to create an additional drawdown of 1.0 to 1.5 m in Well #12. No interference between Well #2 and Well #12 is indicated;

- With a pump setting at 155 m depth, approximately 50 m of available drawdown exists in Well #12 as a contingency;

- The water quality in Well #12 presently meets or exceeds all Guidelines for Canadian Drinking Water Quality;

Based on the above conclusions, the following recommendations are made:

- The recommended depth for the placement of the pump intake in the well is 155 m, or roughly 10 m above the top of the dominant water-bearing fractures in the borehole.

- Regular monitoring of well performance and water quality should be conducted to provide for early identification of trends in declining specific capacity or water quality, if they occur. Early diagnosis of such problems will allow, amongst other things, for well rehabilitation efforts (if necessary) to be scheduled during low demand periods. Well rehabilitation, including mechanical and/or chemical rehabilitation should be completed every 5 to 10 years.

- Well Head and Aquifer protection strategies should be developed and implemented as the aquifer is relatively vulnerable to contamination from surface spills and septic effluent.

8.0 LIMITATIONS

This report was prepared for the exclusive use of Big White Ski Resort and their representatives. The calculation of long-term sustainable yield was made based on the condition of Well #12 at the time of the pumping tests. The drawdown measured in the well is a function of well construction, pumping rate, and well inefficiencies in addition to aquifer hydraulics. It is typical for wells to realize decreasing efficiency over time due to precipitation of dissolved chemicals or sedimentation in the well. Periodic maintenance of wells may alleviate these problems. Golder makes no prediction concerning the effect of decreasing well efficiency on well yields. Furthermore, the chemical analysis performed provides a snapshot of the existing water quality available from the aquifer at this location. Future water quality will vary as the aquifer is stressed and for a variety of other conditions. The investigation was performed according to current professional standards and practices in the field of physical hydrogeology. The assessment of groundwater conditions presented has been made using historical and technical data collected and information from sources noted in the report. If new information is discovered during future work, including excavations, borings or other studies, Golder should be requested to provide amendments as required.

Golder has relied in good faith on information provided by the drilling contractor, the pumping test contractor and other parties noted in this report. We accept no responsibility for any deficiency, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretations or fraudulent acts of others.

Any use which third parties make of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Golder Associates Ltd. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

9.0 CLOSURE

We trust this report provides you with the information you require at this time. Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Yours truly,

GOLDER ASSOCIATES LTD.

Remi J.P. Allard, M.Eng., P.Eng.
Senior Hydrogeologist

Reviewed by: Don Chorley, MSc., P.Geo.
Principle and Senior Hydrogeologist

RA/DC/mpg

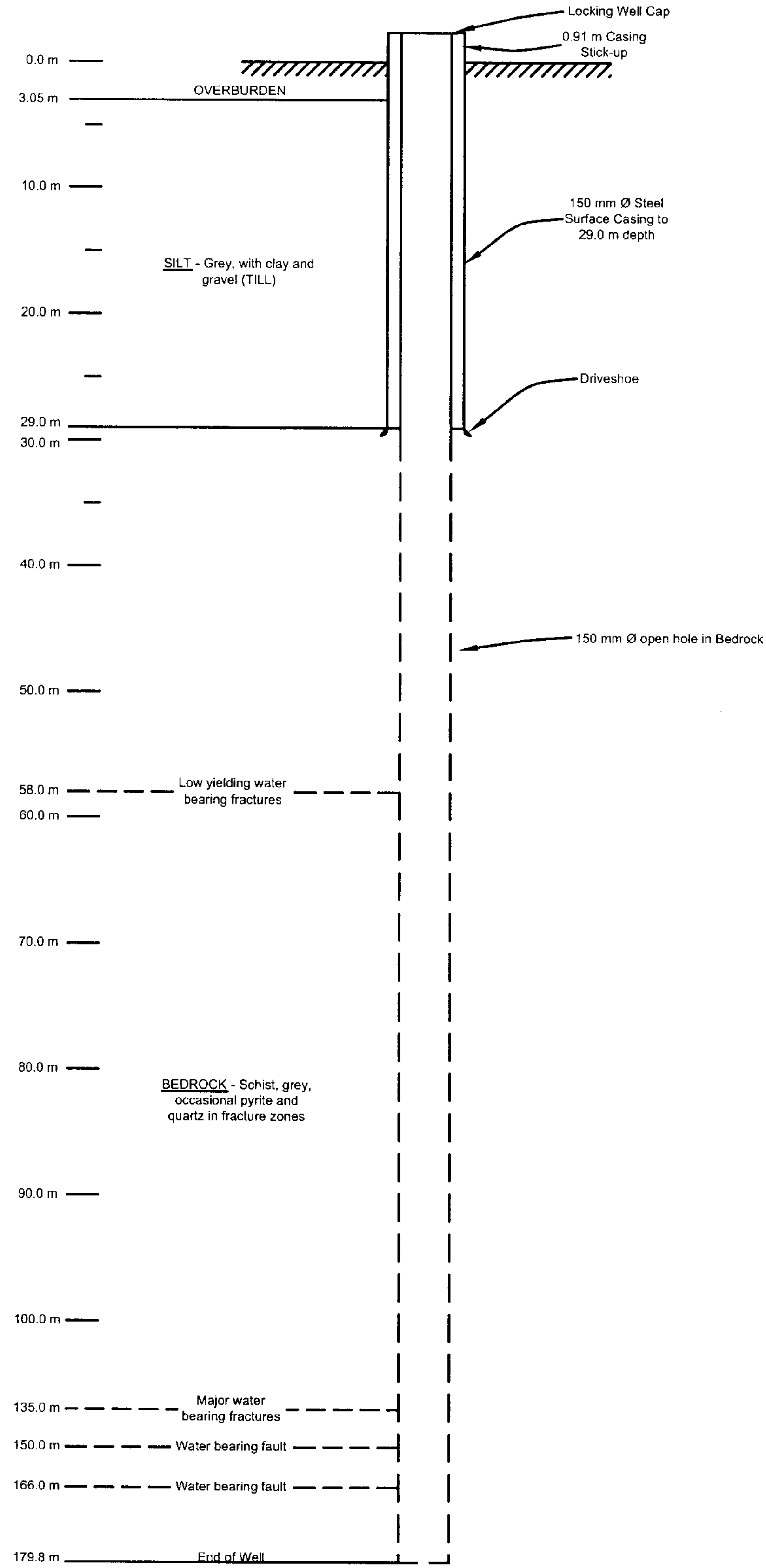
\\KEL_MAIN\DATA\ACTIVE\4000\022-4027 SILVER STAR (BIG WHITE) - WELLS & WATER RESERVOIR\TASK 5500\FINAL\SILVER STAR REP TO DEC 5.DOC

Constant Rate Pumping Test
Silver Star Well #12

Real Time	Time since pump started, t (minutes)	Time since pump stopped, t' (minutes)	Well # 12					
			t/t'	Water level measurment (btoc) (m)	Drawdown (m)	Residual Drawdown (s')	Calculated recovery (m)	Pumping Rate (USgpm)
September 24, 2002, 8:00:00 AM	0	--	--	9.50	--		--	
	10		--	27.32	17.82	--	--	27
	60	--	--	37.6	28.10	--	--	"
	90	--	--	40.64	31.14	--	--	26
	180	--	--	45	35.50	--	--	"
	240	--	--	51.42	41.92	--	--	5
	300	--	--	54.34	44.84	--	--	"
	330	--	--	55.62	46.12		--	"
	480	--		60.53	51.03	--	--	24
	560	--	--	63.16	53.66	--	--	"
	600	--	--	64.07	54.57	--	--	"
	1080	--	--	71.72	62.22	--	--	23
	1200	--	--	73.67	64.17	--	--	"
	1320	--	--	75.35	65.85	--	--	"
	1440			76.57	67.07	--	--	
	1560	--	--	77.34	67.84			"
	1680	--	--	77.78	68.28	--		22
	2040	--	--	79.32	69.82	--	--	"
	2100	--	--	79.72	70.22	--	--	"
	2160	--	--	79.98	70.48	--	--	"
	2220			80.29	70.79	--	--	22
	2520		--	80.5	71.00	--	--	"
	2640	--	--	80.8	71.30	--	--	"
	2760	--	--	80.98	71.48			"
	2880	--	--	80.99	71.49	--	--	"
	3000	--	--	80.99	71.49	--	--	"
	3120	--	--	81.12	71.62	--	--	"
	3240	--	--	81.3	71.80		--	22
	3360	--	--	81.3	71.80	--	--	"
	3480	--	--	81.32	71.82	--	--	"
	3600	--	--	81.49	71.99	--	--	"
	3720	--	--	81.63	72.13	--	--	22
	3840	--	--	81.73	72.23	--	--	"
	3960	--	--	81.94	72.44	--	--	"
	4080	--	--	82.06	72.56	--	--	"
	4200	--	--	82.19	72.69	--	--	"
	4320	--	--	82.33	72.83	--	--	22
September 26, 2002, 9:35:00 AM	4415	--	--	82.40	72.90	--	--	"
Recovery Data								
September 26, 2002, 9:35:00 AM	4415	0	--	82.40		0.00	0	Pump Off
	4415.5	0.5	8831	80.01		2.39	2.39	
	4417.2	1.7	2548	74.00		8.40	6.01	
	4419.5	2.3	1950	73.00		9.40	1.00	
	4422.4	2.9	1534	72.00		10.40	1.00	
	4426.1	3.7	1186	71.00		11.40	1.00	
	4430.5	4.3	1022	70.50		11.90	0.50	
	4435.5	5.0	887	70.00		12.40	0.50	
	4442.2	6.8	655	69.50		12.90	0.50	
	4450.2	8.0	556	69.21		13.19	0.29	
	4459.2	9.8	455	68.96		13.44	0.26	
	4469.2	10.0	447	68.67		13.74	0.29	
	4480.2	11.0	407	68.43		13.98	0.24	
	4492.2	12.0	374	68.16		14.24	0.27	
	4505.2	13.0	347	67.89		14.51	0.27	
	4519.2	14.0	323	67.64		14.77	0.25	
	4534.2	15.0	302	67.38		15.02	0.26	
	4551.2	17.0	268	66.93		15.48	0.45	
	4570.2	19.0	241	66.50		15.90	0.42	
	4591.2	21.0	219	66.09		16.31	0.41	
	4614.2	23.0	201	65.69		16.72	0.41	
	4639.2	25.0	186	65.23		17.17	0.45	
	4669.2	30.0	156	64.36		18.04	0.87	
	4704.2	35.0	134	63.59		18.81	0.77	
	4741.6	37.4	127	63.23		19.17	0.36	
	9551.6	4810.0	2	15.77		66.63	47.46	

Step-Drawdown Testing
Silver Star Well #12

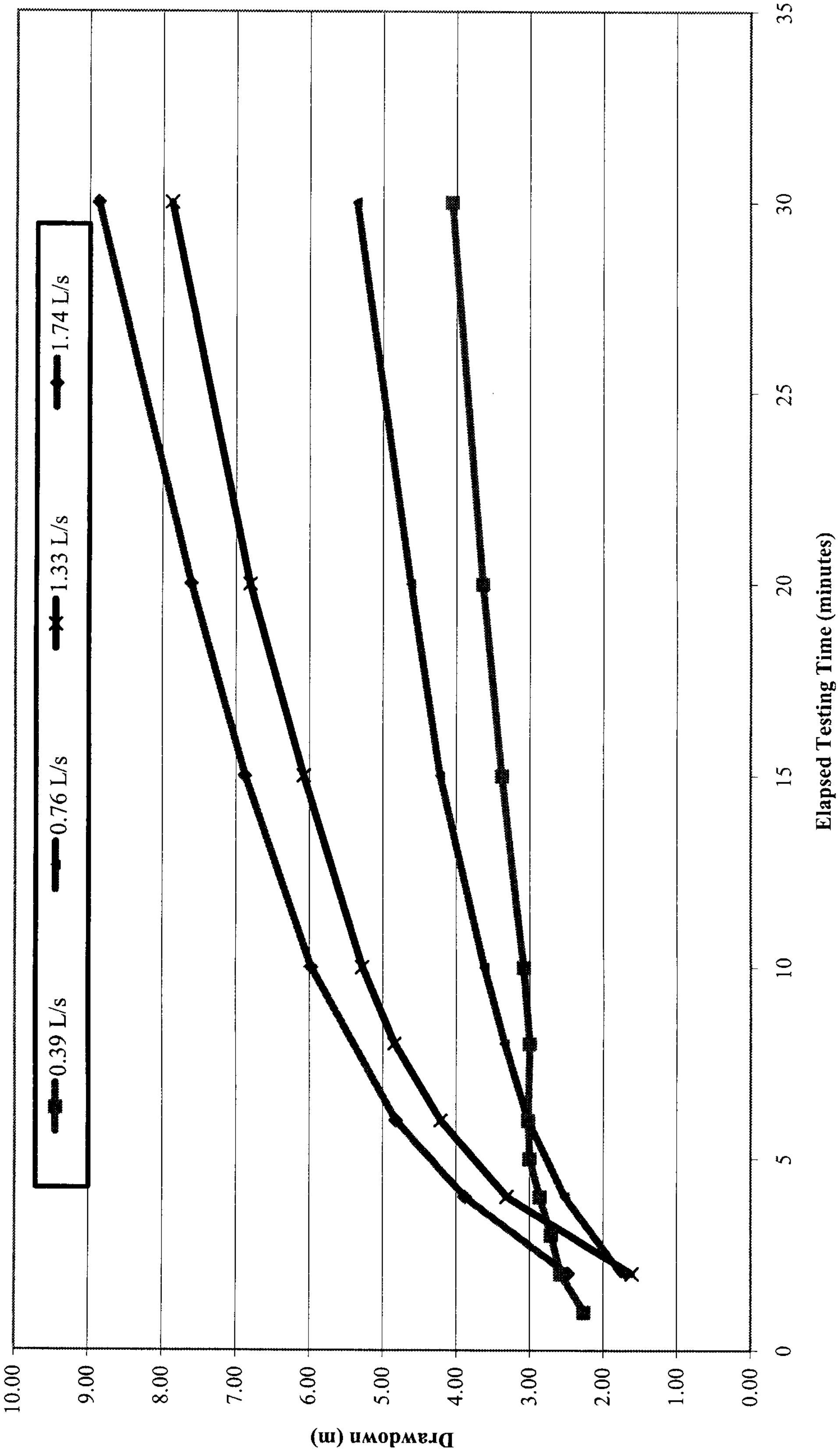
Real Time	Time since pump started, t (minutes)	Well #12				
		Water level measurment (btoc) (m)	Water level measurment (bgs) (m)	Water level change, s (m)	Drawdown (m)	Pumping Rate (USgpm)
5/23/02 1:10 PM	0	8.32	8.06	–	–	
	1	10.58	10.32	2.26	2.26	"
	2	10.90	10.64	0.32	2.58	"
	3	11.03	10.77	0.13	2.71	"
	4	11.18	10.92	0.15	2.86	"
	5	11.32	11.06	0.14	3.00	"
	6	11.34	11.08	0.02	3.02	"
	8	11.32	11.06	-0.02	3.00	"
	10	11.40	11.14	0.08	3.08	"
	15	11.70	11.44	0.30	3.38	"
	20	11.96	11.70	0.26	3.64	"
	30	12.38	12.12	0.42	4.06	"
	2	14.13	13.87	1.75	5.81	"
	4	14.90	14.64	0.77	6.58	"
	6	15.40	15.14	0.50	7.08	"
	8	15.72	15.46	0.32	7.40	"
	10	16.00	15.74	0.28	7.68	"
	15	16.60	16.34	0.60	8.28	"
	20	17.00	16.74	0.40	8.68	"
	30	17.74	17.48	0.74	9.42	"
	2	19.35	19.09	1.61	11.03	"
	4	21.05	20.79	1.70	12.73	"
	6	21.95	21.69	0.90	13.63	"
	8	22.58	22.32	0.63	14.26	"
	10	23.02	22.76	0.44	14.70	"
	15	23.82	23.56	0.80	15.50	"
	20	24.55	24.29	0.73	16.23	"
	30	25.62	25.36	1.07	17.30	"
	2	28.10	27.84	2.48	19.78	"
	4	29.50	29.24	1.40	21.18	"
	6	30.44	30.18	0.94	22.12	"
	10	31.60	31.34	1.10	23.28	"
	15	32.50	32.24	0.90	24.18	"
	20	33.23	32.97	0.73	24.91	"
	30	34.50	34.24	1.27	26.18	"



Golder Associates Kelowna, British Columbia	SCALE AS SHOWN	TITLE
	DATE 12/05/03	**PRODUCTION WELL #12** **WELL COMPLETION DIAGRAM**
	DESIGN RA	
	CADD SN	
FILE No. Figure 03.dwg	CHECK	
PROJECT No. 022-4027-5500 REV. 0	REVIEW	SILVER STAR RESORT — FIGURE 3

Drawing: N:\Active\4000\022-4027 Silver Star (Big White) - Wells & Water Reservoir\task 5500\Figures\Figure 03.dwg Plotted: Dec 05, 2003 - 12:09pm By: snichol

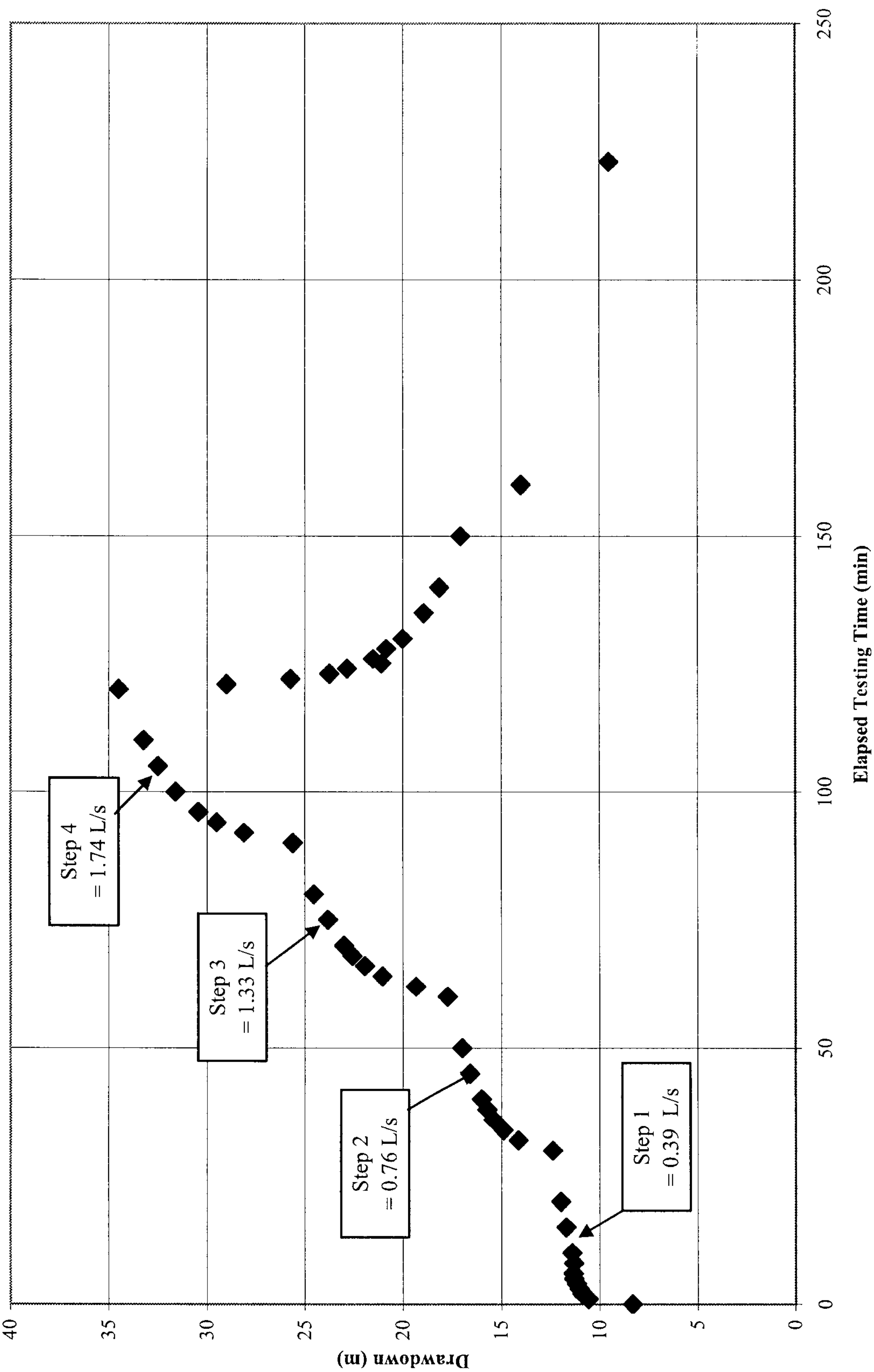
Drawing: N:\Active\4000\022-4027 Silver Star (Big White) - Wells & Water Reservoir\task 5500\Figures\Figure 04 - 07.dwg Plotted: Dec 05, 2003 - 12:04pm By: snichol



Golder Associates
Kelowna, British Columbia

SCALE	AS SHOWN	TITLE	
DATE	12/05/03	**STEP DRAWDOWN TESTING OF WELL #12**	
DESIGN			
CADD	SN		
FILE No. Figure 04 - 07.dwg	CHECK		
PROJECT No. 022-4027-5500 REV. 0	REVIEW RA	SILVER STAR RESORT	FIGURE 4

Drawing: N:\Active\4000\022-4027 Silver Star (Big White) - Wells & Water Reservoir\task 5500\Figures\Figure 04 - 07.dwg Plotted: Dec 05, 2003 - 12:05pm By: snichol



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FILE No.	Figure 04 - 07.dwg	SCALE	AS SHOWN
PROJECT No.	022-4027-5500	DATE	12/05/03
REV.	0	DESIGN	
		CADD	SN
		CHECK	
		REVIEW	RA

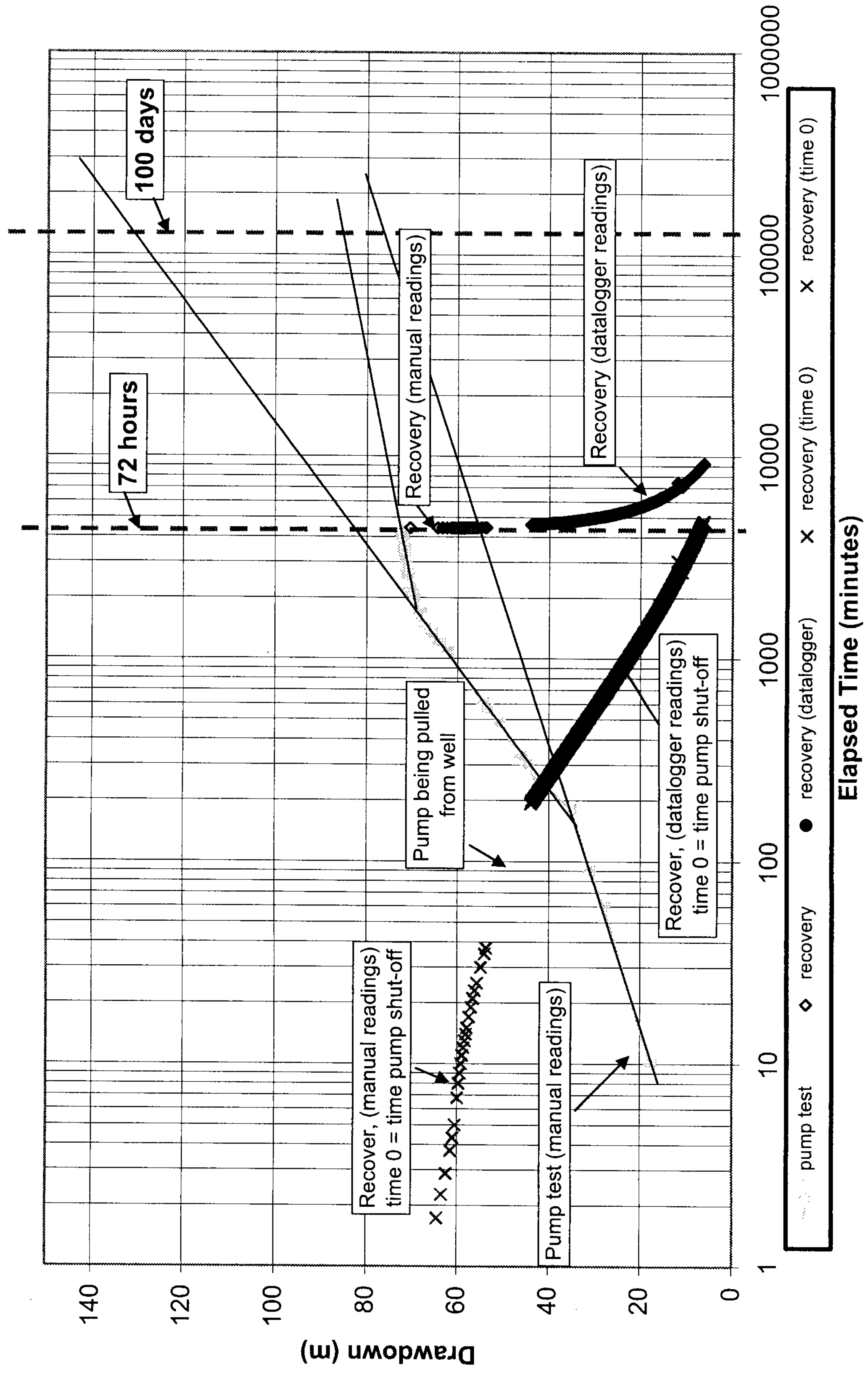
TITLE

STEP DRAWDOWN TESTING WELL #12

SILVER STAR RESORT

FIGURE 5

Drawing: N:\Active\4000\022-4027 Silver Star (Big White) - Wells & Water Reservoir\task 5500\Figures\Figure 04 - 07.dwg Plotted: Dec 05, 2003 - 12:05pm By: snichol



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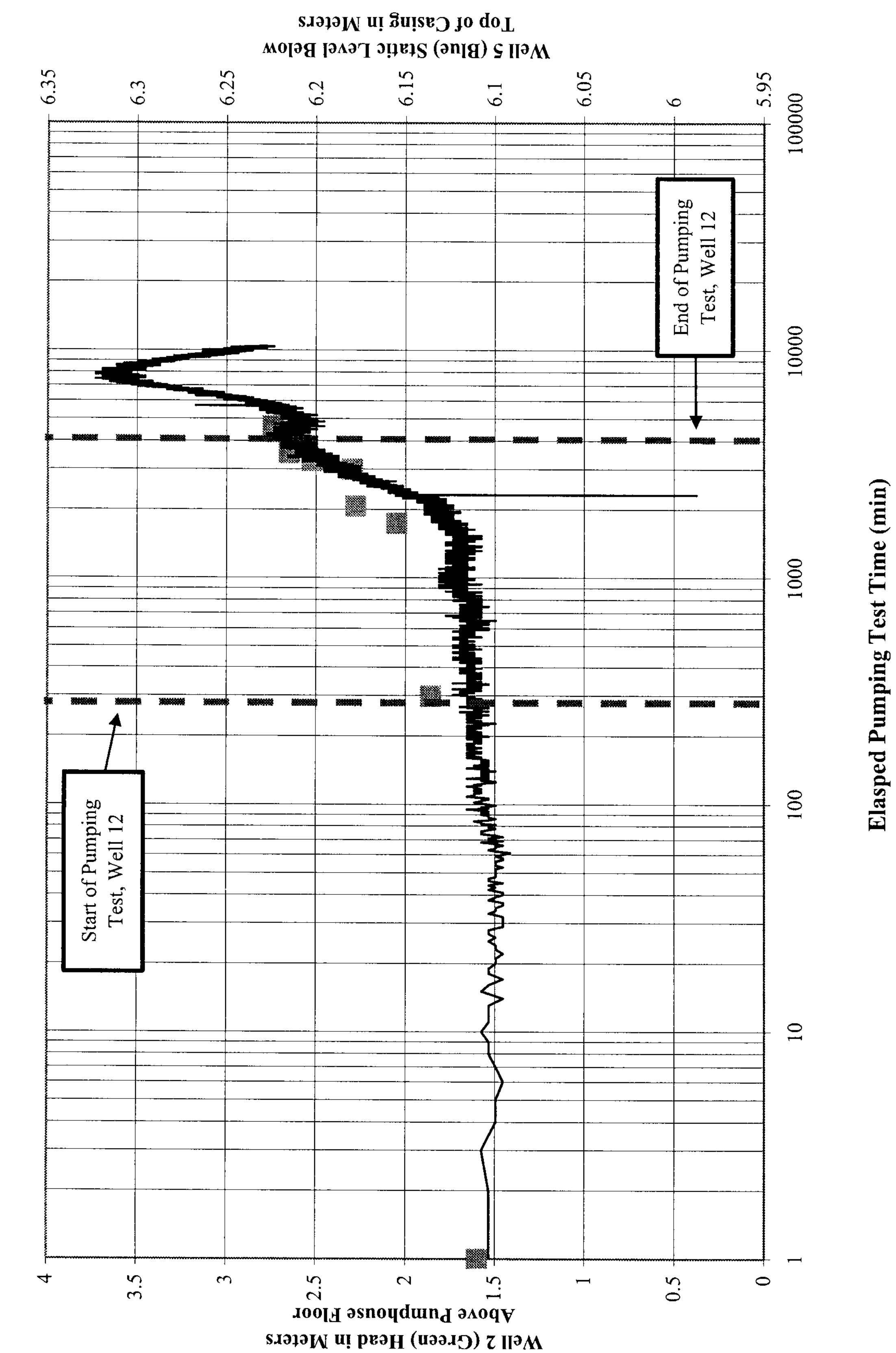
SCALE	AS SHOWN	TITLE	
DATE	12/05/03		
DESIGN			
CADD	SN		
FILE No. Figure 04 – 07.dwg	CHECK		
PROJECT No. 022–4027–5500 REV. 0	REVIEW	RA	

CONSTANT RATE TEST WELL #12

SILVER STAR RESORT

FIGURE 6



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SCALE	AS SHOWN	TITLE	RESPONSE OF OBSERVATION WELLS DURING PUMPING OF WELL #12
DATE	12/05/03		
DESIGN			
CADD	SN		
FILE No. Figure 04 – 07.dwg	CHECK		
PROJECT No. 022–4027–5500 REV. 0	REVIEW	RA	SILVER STAR RESORT — FIGURE 7