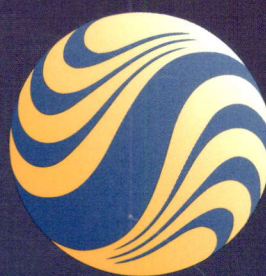


1506-00068

SUPPLEMENTAL INFORMATION
WATER WELL
FOR
MOUNT ROSE DEVELOPMENT COMPANY
WASHOE COUNTY, NEVADA



Stantec

**SUPPLEMENTAL INFORMATION
WATER WELL
FOR
MOUNT ROSE DEVELOPMENT COMPANY
WASHOE COUNTY, NEVADA**

DECEMBER 1999

PREPARED FOR:

**MOUNT ROSE DEVELOPMENT COMPANY
22222 MOUNT ROSE HIGHWAY
RENO, NEVADA 89511
(775) 849-0704**

PREPARED BY:

**STANTEC CONSULTING INC.
950 INDUSTRIAL WAY
SPARKS, NEVADA 89431
(775) 358-6931**

PROJECT No. 80200319

Stantec Consulting Inc.
950 Industrial Way
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Stantec

December 15, 1999
Project No. 80200319

Mr. Paul Senft
MT. ROSE DEVELOPMENT COMPANY
22222 Mt. Rose Highway
Reno, Nevada 89511

RE: WATER WELL

Dear Paul:

Contained in this report are data that supports the request for variance from the Washoe County District Health Department to use the new water well at Mount Rose Ski Area as a potable water source.

In October 1999, information was presented to the Sewage, Wastewater & Sanitation Board and Well Construction Hearing and Advisory Board. In this meeting, we discussed the proposed WCDHD variance conditions. Mt. Rose was in agreement with most conditions, with the exception of designating the system under the Surface Water Treatment Rule. Evidence existed to support no surface water influence; however, it was felt that additional testing could help support our position. In November 1999, a Microscopic Particulate Analysis (MPA) was conducted on water from the well. This EPA test method is specifically for assessment of whether waters are under the influence of surface water, and is the national standard for this type of determination. Results of the MPA test are excellent, with no detection of surface water indicators.

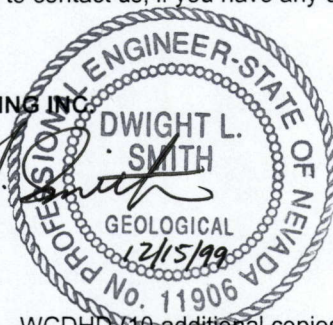
Based on the data assessed from this well, it is the professional opinion of Stantec Consulting that the water produced from the new well is not under the direct influence of surface waters. Supporting data is attached, along with general information regarding well construction.

Please do not hesitate to contact us, if you have any questions regarding our assessment of this well.

Sincerely,

STANTEC CONSULTING INC.

Dwight L. Smith
Dwight L. Smith, P.E.
Hydrogeologist



James G. Smith
James G. Smith, P.E.
Geotechnical Department Manager

cc: Fritz Steppat – WCDHD (10 additional copies for Board members)
Doug Coulter – WCDHD
Dan Dragan, W.C. – Dept. of Water Resources
Terri Svetich, W.C. – Dept. of Water Resources
John Enloe – EcoLogic
Catherine Clark, J.B.R. – Environmental Consultants

DLS:rw
Enclosures
p:\geotech\80200319\wpdocs\reports\November 1999 well info.doc

Buildings

Environment

Industrial

Management Systems

Transportation

Urban Land

Summary of Well Construction & Water Quality Mt. Rose Ski Area

Well Siting:

The well is located in the Galena Creek watershed due to water rights issues. The specific well location was selected in an effort to intersect a regional fracture zone that trends through the middle of a meadow, while minimizing impacts of new improvements for access.

Well Construction:

Well Driller: Nevada Drilling, Inc.

Depth: 505 feet

Diameter of Casing: 8-inches

Sanitary Seal: ground surface to 110 feet

Screened intervals: 165 to 225 feet, 265 to 485 feet

Static Water Level: 41.1 feet below top of casing

Pumping Test Rates: 150 to 750 gallons per minute

Geology Encountered:

Glacial moraine and alluvium 0 to 100 feet, decomposed granite 100 to 120 feet, hard competent granite 120 to 505 feet with a highly fractured zone at 170 to 230 feet and moderately fractured zones between 290 to 505 feet.

Planned Well Use:

Water Consumption: potable water supply to the lodge, potable water supply to potential future development at the ski area, snow making, and occasional irrigation of erosion control vegetation.

Planned Pumping Rate: 400 to 450 g.p.m.

Planned Pumping Frequency: potentially heavy in November-December depending on presence of natural snow, moderate through the rest of the winter, minor in the summer.

Planned Treatment: Chlorination and corrosion control with sodium hydroxide.

Water Rights: Permitted 100 acre-feet of quasi-municipal underground rights with the point of diversion at the new well.

Data that support the conclusion of no surface water influence to the well:

1. MPA test results: no detected surface water indicators, no Giardia, no Cryptosporidium.
2. Well Constructed to 505 feet in depth, with a sanitary seal to 110 feet, extending into top of granite bedrock. No direct route of connection to near-surface waters.
3. Depth of well screen: Placed at fracture zones, 165 to 225 feet and 265 to 485 feet in depth.
4. Static water level at 41.1 feet below top of casing, or approximately 35 deeper than surrounding ground surface. Hydraulic connection would result in static water level in the well nearly equal to surface water elevation.

5. Pumping test Data:

- a. Temperature remains stable during pumping tests, at approximately 40.5 degrees Fahrenheit.
- b. Recovery of static water level in well after a significant pumping interval is slow, which is common in confined bedrock aquifer systems.

6. General water chemistry: Slightly elevated radioactivity due to ground water interactions with granite bedrock. No Coliform bacteria.

More detailed information is presented in the accompanying Appendices.

Appendix A – MPA Testing Results, November 1999

Appendix B – Well Construction Report, including Drinking Water Standards Testing, January 1999

Appendix C – Well Siting Summary

Appendix D - Water Rights Permits

**Summary of Microscopic Particulate Analyses
Mt. Rose Ski Area Well
November, 1999**

On November 2, 1999, pumping commenced at approximately 400 gallons per minute (gpm). The static water level at the start of the test was 41.08 feet below top of casing. MPA filter sampling equipment was borrowed from Washoe County Division of Water Resources. Sampling protocol for the MPA are attached.

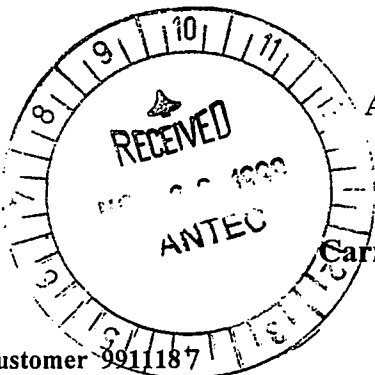
The well was pumped continuously for 3 days (approximately 72 hours). After approximately 50 hours of pumping, water circulation through the MPA filter system was started at a flow rate of 0.8 gpm while the well pumping continued at 400 gpm. After approximately 22 hours of filter flow, the test was completed and pumping stopped. The flow meter for the MPA filter ceased or froze early in the morning prior to completion of the test and up to that point recorded 636 gallons of flow. When the test was terminated at 9:25 AM the morning of November 5, 1999, the flow meter was not operating, yet discharge from the filter system was measured using a bucket and stopwatch at 0.67 gpm. Based on the measurements collected and duration of sampling (22.25 hours), the estimated total flow through the filter is 975 gallons.

The filter sample was shipped in a chilled cooler via next-day freight to CH Diagnostic & Consulting Service, Inc., located in Loveland, Colorado. The filter sample was tested for Giardia, Cryptosporidium, and Microscopic Particulate Analysis (EPA Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis – MPA). **No indicators of surface water influence were detected and the sample received the lowest possible risk ranking (a 0 score).**

The flow meter at the well head recorded a total discharge of 1,646,500 gallons during the 3-day test, and the average flow is calculated at 383 gpm. Water level drawdown at this pumping rate was 15.5 feet at the end of the 3-day test. Water level recovery was measured at 64 percent at 50 hours after the termination of pumping, confirming the need for recovery time allocation after long-term operation (see Stantec Consulting Well Completion Report dated January 6, 1999).

On a daily basis during the pumping and recovery period (November 2 through November 7, 1999), the creek adjacent to the meadow was monitored for turbidity, in accordance with the NDEP temporary well discharge permit granted for this testing. Discharged water was dispersed in the meadow through four lateral pipelines equipped with diffuser heads.

APPENDIX A



ANALYSIS FOR WATERBORNE PARTICULATES

COPY

CH Diagnostic & Consulting Service, Inc.

214 SE 19th Street, Loveland, CO 80537

Carrie M. Hancock, President

Telephone (970) 667-9789

Invoice 9951303

11/8/99

Customer 9911187
Mt. Rose Development Company
22222 Mt. Rose Hwy
Reno, NV 89511

Laboratory Information

UPS; 11/8/99; 840Hrs; Wound;
Excellent; Results submitted by:

Tricia Klumicki

WSID#

Sample Identification: Mt. Rose Well #1

Sample Information: Source: Drilled well, 505' deep and 15' from river/stream/lake, unchlorinated, 41°F, pH 7.8

Date/Start: 11/4/99; 1110 Hrs

Date/Stop: 11/5/99; 0925 Hrs

Sampler: Dwight Smith

Gallons: 975

Filter Color: Off white

Total Centrifugate: 0.01 mL/100 gals

RESULTS OF MICROSCOPIC PARTICULATE ANALYSIS:

Amorphous Debris: Clay, silt and inorganic precipitate, 1-100 µM diameter

Other Algae: ND

Diatoms: ND

Plant Debris: ND

Giardia: ND

Coccidia: ND

Rotifers: ND

Nematodes: ND

Pollen: ND

Ameba: ND

Ciliates: ND

Colorless Flagellates: ND

Crustaceans: ND

Insects/Larvae: ND

Other: ND

RESULTS of GIARDIA & CRYPTOSPORIDIUM ANALYSIS:

Loaded Pellet: <0.001 mL/100 L

Amount of Sample Assayed: 393.6 L

		Total IFA Count	Empty	Amorphous Structure	1 Internal Structure	≥ 2 Internal Structures	Internal Structure
Giardia	detected	0	0	0	0	0	
	#/ 100 L	<0.3	<0.3	<0.3	<0.3	<0.3	
Cryptosporidium	detected	0	0	0			0
	#/ 100 L	<0.3	<0.3	<0.3			<0.3

ND (None Detected)

Quality Control Batch #: 9945

This sample was analyzed for particulates following the Environmental Protection Agency Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA).

This sample was also analyzed for *Giardia* and *Cryptosporidium* by the method outlined in: ICR Laboratory Manual, 1996. USEPA, Washington, D.C., EPA/600/R-95/178. All limitations stated in the methods apply.

Comments: Score: 0-Low Risk per EPA Consensus Method referenced above.
Equivalent volume assayed for MPA: 21.7 L

From: E.P.A. Consensus Method for Determining Groundwaters
Under the Direct Influence of Surface Water Using Microscopic
Particulate Analysis (MPA)

TABLE 1. Numerical range of each primary bio-indicator
(particulate) counted per 100 gallons water.

Indicators of surface water ¹	EH ³	H	M	R	NS
Giardia ²	>30	16-30	6-15	1-5	<1
Coccidia ²	>30	16-30	6-15	1-5	<1
Diatoms ⁴	>150	41-149	11-40	1-10	<1
Other Algae ⁴	>300	96-299	21-95	1-20	<1
Insects/Larvae	>100	31-99	16-30	1-15	<1
Rotifers	>150	61-149	21-60	1-20	<1
Plant Debris ⁴	>200	71-200	26-70	1-25	<1

1. According to EPA "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources", March, 1991 ed.
2. If Giardia cysts or coccidia are found in any sample, irrespective of volume, score as above.
3. Key= EH -extremely heavy M -moderate NS -not significant
H -heavy R -rare
4. Chlorophyll containing

TABLE 2. Relative surface water risk factors associated with scoring of primary bio-indicators (particulate) present during MPA of subsurface water sources.

Indicators of surface water ¹	Relative Risk Factor ¹				
	EH ²	H	M	R	NS
Giardia	40	30	25	20	0
Coccidia	35	30	25	20	0
Diatoms	16	13	11	6	0
Other Algae	14	12	9	4	0
Insects/Larvae	9	7	5	3	0
Rotifers	4	3	2	1	0
Plant Debris	3	2	1	0	0

1. According to EPA "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources", March 1991 ed.
2. Refer to Table 1 for range of indicators counted per 100 gallons.

Key= EH -extremely heavy M -moderate NS -not significant
 H -heavy R -rare
3. Risk of surface water contamination:
 ≥20 - high risk
 10-19 - moderate risk
 ≤9 - low risk

Sampling Protocol for *Giardia*, *Cryptosporidium* and Microscopic Particulate Analysis

CH Diagnostic & Consulting Service, Inc.

214 SE 19th St., Loveland, CO 80537, Carrie M. Hancock, President
970-667-9789; fax 970-667-9719; customerservice@chdiagnostic.com

This protocol satisfies sampling requirements for the following methods:

1. ICR protozoan method for detecting *Giardia* cysts and *Cryptosporidium* oocysts in water by a fluorescent antibody procedure- EPA ICR Microbial Laboratory Manual EPA/600/R-95/178
2. Microscopic Particulate Analysis (MPA) for Filtration Plant Optimization- EPA 910-R-96-001
3. Consensus Method for Determining Groundwaters Under the Direct Influence of Surface Water Using Microscopic Particulate Analysis (MPA)- EPA 910/9-92-029
4. Method 1623: *Cryptosporidium* and *Giardia* in Water by Filtration/TMS/FA- EPA 821-R-99-006

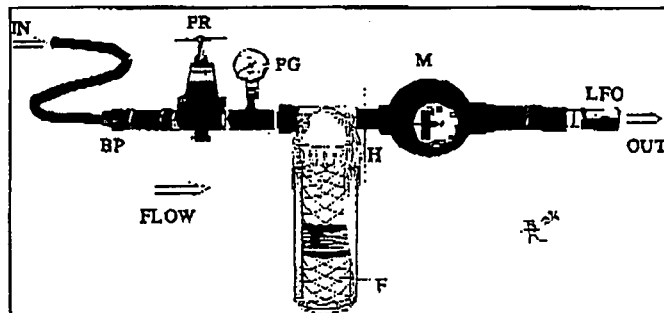
EQUIPMENT

1. Inlet hose (washing machine hose)
2. Backflow preventor (BP)
3. Pressure regulator (PR)
4. Pressure gauge (PG)
5. Filter housing (H) Fulflo LT10
For 1623: Substitute Gelman Envirochek™ Capsule, clear tubing (0.5 in I.D.), clamps, appropriate fittings.
6. 1 micron nominal porosity filter (F) Parker Hannifan M39R10A
For 1623: filter included in Gelman Envirochek™ Capsule
7. Meter (M)
8. Limiting flow orifice (LFO) 2L/min. (0.5 gal/min)

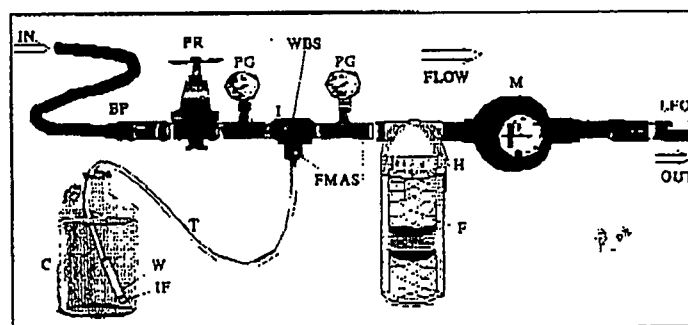
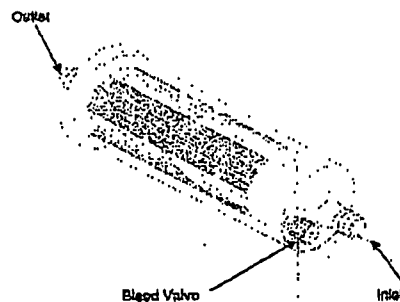
Additional Equipment for chlorinated samples:

9. Carboy (C) for sodium thiosulfate
10. Injector (I) with:
 - a. water bypass screw (WBS)
 - b. (Optional) fine metering adjustment (FMAS)
 - c. tubing (T)
 - d. injector filter (IF)
 - e. porcelain weight (W)
11. Second pressure gauge

Clean equipment, prior to use, by washing in hot water with detergent and bleach followed by hot water rinse and particle free water rinse, air dry and seal open ends of sampler for storage. Alternatively, borrow equipment from CH Diagnostic.



Gelman Envirochek™ Sampling Capsule



OTHER SUPPLIES

(1) Turbidimeter; (2) pH meter; (3) Thermometer; (4) Sanitary latex gloves; (5) Sample labels; (6) Heavy duty ziploc 2 gallon freezer bags; (7) Frozen "blue" ice packs and cooler for shipping; (8) For chlorinated water: sodium thiosulfate and reagent grade water (see page 4), sanitary 250 mL graduated cylinder; (9) For non-pressurized source: 2-4 Liter/minute gas or electric pump

SAMPLING LOCATIONS AND TIMING

Ground Water should be sampled as close to the source as possible to avoid inclusion of organisms growing in holding tanks, distribution pipes, or blended waters. Sampling taps and spring boxes should be cleaned and flushed prior to sampling. EPA Consensus Method recommends a minimum of two samples: one following a heavy rain event, snowmelt or irrigation season; and one in late summer or after an extended dry period. CH Diagnostic recommends 3 samples collected during periods when water quality data indicate greatest probability of surface water impact on ground water. These data include temperature, total dissolved solids, pH, conductivity, turbidity, dissolved oxygen, hardness, etc. that are monitored in the ground water and any adjacent surface water.

Raw Surface Water should be sampled prior to any chemical addition. It is preferable to collect the sample after any presedimentation basins or recycled water additions, but only if no chemicals were added prior to this point. Sampling after recycle input should be taken after adequate in-line mixing. The main objective of raw water collection is to get a representative sample of the organisms entering the treatment system.

Finished Surface Water should be sampled before chlorination. If this is not possible, sodium thiosulfate must be injected to neutralize the chlorine (see page 4). Collect samples prior to post-treatment storage.

Treatment Plant Evaluation: Raw water sampling should be initiated before finished water sampling. The amount of time between start of raw sampling and start of finished sampling should be equivalent to the detention time of the system. Finished water sampling should begin immediately after filters are put on line and encompass a full cycle run (or 24 hour period) including at least one backwash.

SAMPLING PROCEDURE

1. Source water measurements

- Run sample tap for 2-3 minutes to clear in-line debris and allow turbidity to become uniform. Measure and record turbidity, temperature and pH of sample source.

2. Flush equipment

- Assemble clean sampling apparatus as shown on page one; **however, do not install filter, limiting flow orifice, or Gelman Envirochek™ capsule yet.** Use the additional equipment if sampling chlorinated water.
- Ensure proper flow direction by checking arrows on meter and in/out indications on pressure regulator and filter housing.
- Flush sampling apparatus with 50 gallons (190 Liters, 6.7 ft³) of water being sampled. Allow water to flow through entire sampling apparatus (except for filter or capsule and limiting flow orifice).

3. Adjust pressure

- Attach the limiting flow orifice.
- Use pressure regulator to adjust water pressure to **10 psi** for unchlorinated samples and **25 psi** in the first gauge for samples requiring dechlorination.
- **If sampling a chlorinated source, follow injector adjustments on page 4.**

4. Install filter

- Using a filter wrench, open and drain filter housing.
- Put on new latex gloves. Open filter packaging and aseptically place filter into filter housing.
- Reassemble filter housing, ensuring o-ring seals properly.
- **For 1623:** Retain vinyl caps from capsule. Attach capsule with appropriate lengths of tubing. Orient the capsule with the large space at the inlet side of the unit. Secure with band clamps.

5. Begin Sampling

- Record date, time and initial meter reading. The one's unit on the meter is marked with an unchanging zero and is read from the rotating dial. The dial reads to tenths of gallons.
- Turn water on slowly with unit in upright position. Invert unit to expel all air from filter housing. When housing is full of water, return to upright position. **Increase water flow to no more than one gpm** and maintain this rate for entire sampling period (limiting flow orifice will prevent flow over 2L/min).

For 1623: Open purge valve of capsule by turning the plug about half a turn in the counter-clockwise direction and allow the incoming water to displace trapped air in capsule. When capsule is full of water, close the purge valve. **Increase water flow to no more than 2L/min.**

- If sampling a chlorinated source, follow the dechlorination step on page 4.**
- Monitor pressure gauge: 10 psi for unchlorinated samples and 25 psi (read from the first gauge) for samples requiring dechlorination.

6. Sample the following amounts

ICR- raw water:	26.4 gal (100 liters, 3.5 ft ³)
ICR- finish water:	264.2 gal (1000 liters, 35 ft ³)
MPA- raw surface water:	minimum- 26.4 gal (100 liters, 3.5 ft ³); optimum- 1440 gal (5450 liters, 192.5 ft ³) or 24 hrs if flow <1 gpm
MPA- finished surface water:	minimum- 264 gal (1000 liters, 35 ft ³); optimum- 1440 gal (5450 liters, 192.5 ft ³) or 24 hrs if flow <1 gpm
MPA- groundwater:	minimum- 500 gal (1900 liters, 66.8 ft ³); maximum- 1000 gal (3785 liters, 133.7 ft ³)
1623	EPA recommends: 10 L per capsule with 2 capsules collected the first time at each source and every 20 th sample thereafter. CH Diagnostic recommends: 20 L minimum and 4,000 L max.

If filter plugs before prescribed amount is attained, collection of less volume is permissible. If plugging is anticipated, sample may be collected at a reduced flow rate to encompass a longer sampling period. Make a note on analysis request form if filter plugged.

7. End sampling

- Shut off water. Record stop date and time, final meter reading, turbidity and total volume sampled.
 - Disconnect lower section of filter housing while maintaining housing in upright position.
 - With new latex gloves, aseptically remove filter from housing and place in plastic zip-loc bag.
 - Pour all of the remaining water from filter housing into the same bag. Seal bag.
 - Record sample name on bag with a permanent marker.**
 - Do not allow bag to touch any environmental surface before placing inside a second bag.
 - Sample may be refrigerated at 2-5°C for up to 15 hours before shipping. **DO NOT FREEZE**
- For 1623:** Remove inlet hose from the water source while holding capsule in an upright position. Seal the inlet with vinyl cap. Never pour any water out of the upper chamber. While continuing to hold capsule in an upright position, disconnect the outlet hose. Leave remaining water in the capsule. Seal the outlet with vinyl cap. Samples must be received at CH Diagnostic within 24 hours of sample collection.

8. Ship sample

WRAP SAMPLE IN SOME FORM OF INSULATION (e.g. bubble wrap) and place into insulated shipping container. Place blue ice cold packs around, but **NOT IN DIRECT CONTACT** with, filters (frozen filters may compromise test results). **DO NOT USE DRY ICE.** Avoid using wet ice whenever possible. Initial type of analysis to be performed on CH Diagnostic Analysis Request form. Place completed form in zip-loc bag and in box with filters. Ship by **priority over-night** courier to CH Diagnostic.

9. Clean up

Discard inlet hose. Clean equipment by washing in hot water with detergent and bleach followed by hot water rinse and particle-free water rinse, air dry, and seal open ends of sampler for storage. Alternatively, return equipment borrowed from CH Diagnostic at your earliest convenience. Equipment may be shipped separately from the sample by regular ground courier.

ADDITIONAL PROCEDURES FOR CHLORINATED WATER SAMPLES**2% Sodium Thiosulfate Solution (make prior to sampling):**

3.14 grams of sodium thiosulfate pentahydrate ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5\text{H}_2\text{O}$) per 100 mL reagent grade water makes a 2% solution. 10 mL of 2% sodium thio. solution is needed for each gallon of chlorinated water that is sampled. Plan sample volume to determine appropriate amount of sodium thiosulfate solution. For example:

A 264 gal (1000 L) sample, requires 94.2 grams sodium thio. dissolved in 3 L reagent grade water.

A 500 gal (1900 L) sample, requires 157 grams sodium thio. dissolved in 5 L reagent grade water.

A 1,000 gal (3785 L) sample, requires 314 grams sodium thio. dissolved in 10 L of reagent grade water.

A 1,440 gal (5450 L) sample, requires 455.3 grams sodium thio. dissolved in 14.5 L of reagent grade water.

Make 0.5 liter marks with permanent marker on carboy that will hold sodium thiosulfate solution.

Injector Adjustments (make while adjusting pressure in step 3, page 2):

Sample tap must supply water with at least 25 psi. If not, install 1-5 gal/min gas or electric pump after sample filter housing. Pump must be capable of producing at least 25 psi.

Adjust injector during 50 gallon flush period by placing injector tubing with injector filter and weight into 250 mL graduated cylinder filled with reagent grade water.

Use water bypass screw to adjust pressure on downstream pressure gauge to 16 psi, while upstream pressure is at least 25 psi.

Check for 10 mL/min injection rate. Coarse adjustments may be made with water bypass screw. If injector has fine metering adjustment screw, use it to fine tune injection rate.

If there is no suction visibly drawing down the water in the graduated cylinder, or if too much is flowing, make sure the first gauge has at least 25 psi and adjust the water bypass screw further to increase or decrease the pressure differential between the two gauges. Greater differential between the upstream and downstream gauges increases the flow rate; a smaller differential decreases the flow rate.

Dechlorination Step (performed during sampling in step 5, page 3):

Pour 100 mL sodium thio. solution into graduated cylinder.

Adjust injector screws as necessary to 10 mL/min (see injector adjustment section above).

Move injector tube to large carboy filled with sodium thio. Monitor level of sodium thiosulfate solution in the carboy which should go down approximately 0.5 L every 1.5 hrs.

APPENDIX B

Stantec Consulting Inc.
950 Industrial Way
Sparks NV 89431 USA
Tel: (775) 358-6931 Fax: (775) 358-6954
www.stantec.com



Stantec

**SUMMARY OF WELL CONSTRUCTION
MT. ROSE SKI AREA
WASHOE COUNTY, NEVADA**

JANUARY 1999

PREPARED FOR:

MT. ROSE DEVELOPMENT COMPANY

Buildings

Environment

Industrial

Management Systems

Transportation

Urban Land

Stantec Consulting Inc.
950 Industrial Way
Sparks NV 89431 USA
Tel: (775) 358-6931 Fax: (775) 358-6954
www.stantec.com



Stantec

January 6, 1999
Project No. 26100027

Paul Senft
MT. ROSE DEVELOPMENT COMPANY
22222 Mt. Rose Highway
Reno, Nevada 89511

RE: Water Well Construction and Testing

Dear Paul:

This report contains a summary of drilling, construction, pumping tests, and water quality testing for the new water well built at Mt. Rose Ski Area. In the appendices you will find the following information:

Appendix A - Geologic and electric logs
Appendix B - As-built drawing
Appendix C - Pumping test results (plots)
Appendix D - Water quality testing

It has been a pleasure working with you on this portion of the improvements at Mt. Rose Ski Area. Please do not hesitate to contact me, if you have any questions regarding equipping or operation of the well.

Sincerely,

STANTEC CONSULTING INC.

Dwight L. Smith, P.E.
Hydrogeologist

Buildings

Environment

Industrial

Management Systems

Transportation

Urban Land

DLS:rw

Enclosures

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**SUMMARY OF WELL CONSTRUCTION
MT. ROSE SKI AREA
WASHOE COUNTY, NEVADA**

Drilling and Well Construction

Drilling was commenced by Nevada Drilling, Incorporated in August, 1998 and well construction and pumping tests were completed by mid-October, 1998. Drilling encountered alluvium (gravel and sands with boulders and cobbles) down to a depth of approximately 120 feet. Granite bedrock was encountered below the alluvium. The granite bedrock was moderately to highly fractured for most the depth drilled (505 feet). The rock between 170 to 225 feet was particularly fractured, and the rock between 290 to 500 feet was also consistently fractured. A regional fracture system was apparently encountered, as hoped for during the selection of the well location.

The well is constructed of 8-inch diameter casing (inside diameter), and consists of continuous-slot wire-wrap screen (0.10 inch slot size) from 165 to 225 feet, and 265 to 485 feet. A sanitary seal of Type II cement grout seal was placed from approximately 110 feet to within 10 feet of ground surface. Bentonite hole plug was place in the upper 10 feet of annular space between the well casing and the bore hole.

Well Pumping Tests

The well was pumped at rates up to 750 gallons per minute (maximum capacity of the pump) and the well can efficiently produce up to 750 gallons per minute. Water levels recorded for various pumping rates are as follows:

Static Water Level	41.1 feet below top of casing
Pumping Water Level at 150 gpm	44.3 feet
Pumping Water Level at 300 gpm	47.2 feet
Pumping Water Level at 450 gpm	52.5 feet
Pumping Water Level at 600 gpm	58.7 feet
Pumping Water Level at 750 gpm	65.8 feet

A constant rate pumping test was conducted at 700 gpm. Water level recovery measurements which followed this pumping test indicate that well will need recovery time (non-pumping time) in order to avoid detrimental long-term drawdown. The static water level following the pumping test was approximately 10 feet lower than when the test was started. If pumping at a high rate were to be sustained for a long period time, without non-pumping (recovery) periods, the pumping water level would constantly decline as portions of the fracture system are depleted of water quicker than water flows into the fracture system. Large volumes of water can be withdrawn from the fracture system, as long as recovery time is allowed so that water can be replenished.

Numerous scenarios of pumping and recovery could be successfully implemented. The well could be pumped intensively in the early winter for snow making supply and then pumping reduced until after the spring time recharge occurs. For example, the well could be pumped at 600 gpm for 14 hours a day for 6 to 8 weeks, followed by minimal pumping for the remainder of the year. We can review the sustainability of what ever scenario you may desire.

Equipping the well with a pump system will be dependant on several factors, including the horse-power of the pump needed to generate the desired flow rate and lift. The 8-inch diameter casing will limit the size of submersible pump motor and diameter of the drop pipe which can be installed in the well. The desired flow rate and lift will need to be reviewed for compatibility with the

diameter of the well. After periods of sustained pumping for snow making, the pumping water level of the well will be lower until recharge time is allowed, which will also need to be considered when selecting the size of the pump and motor.

Water Quality Testing

Complete State of Nevada drinking water testing was performed on samples of water collected from the well during pumping tests. All results are good, and well within federal and state drinking water standards. Radioactivity testing (gross alpha) results were slightly elevated, therefore, additional testing for Radium-226 was conducted. Radium-226 results are within the allowable standards.

Corrosivity testing was also conducted, with results indicating that the water has a high corrosion potential. This not unusual for waters that are as low in dissolved solids as the ground water at Mt. Rose. Buffering can be accomplished to reduce the corrosion potential of piping and storage facilities.

The total dissolved solids concentration of the water is 52 parts per million and the pH is 7.8 (slightly above neutral). The water temperature recorded during pumping tests ranged from 40.3 to 40.8 degrees Fahrenheit.

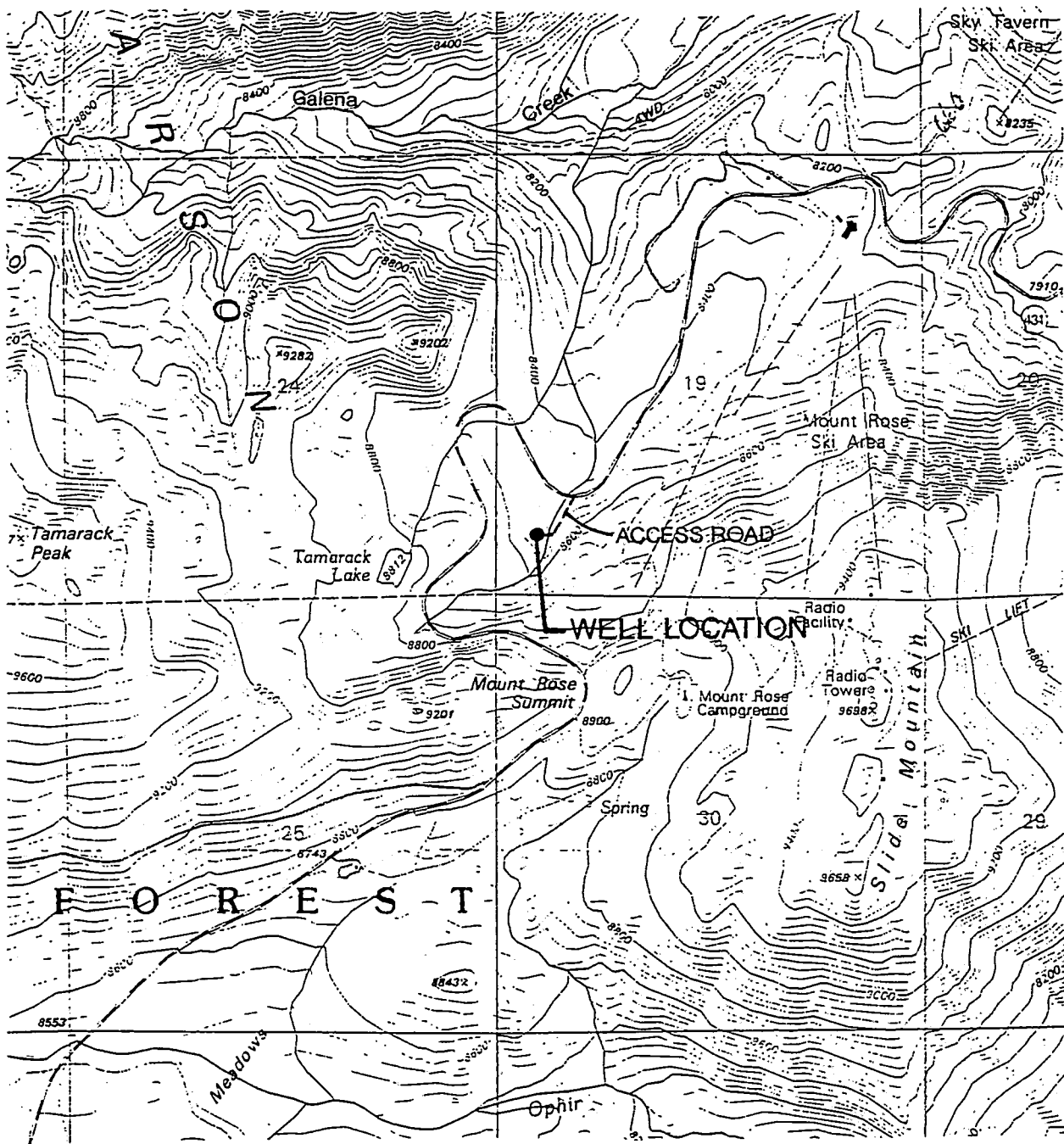
Recommended Long-term Monitoring

It is particularly important in fractured bedrock aquifer systems to monitor water levels both during pumping and non-pumping time periods. Fracture systems can become partially depleted by pumping, significantly reducing well yield. Because some water level depletion was detected during the pumping tests, monitoring of water levels and pumped quantities is strongly advised.

Record keeping of the pumped quantities of water is required by the State Engineer. Measurement of water levels in the well can be accomplished by installing a water level recording transducer when the pump is installed, or water levels can be physically measured with a sounding probe.



1" = 2000'



APPENDIX A

LOG OF BORING

LOG NO.: MT. ROSE GALENA WELL

GROUND ELEVATION.: _____
















LOGGED BY: D. Smith

GROUND WATER DEPTH: _____

DATE: 9-1-98

DATE MEASURED: _____

TYPE OF BORING: Mud Rotary

NOTES	Sample Number	Location	Moisture Percent	Number of Blows	Depth In Feet	Soil Class	Graphic Log	DESCRIPTION
								0-10: Brown <u>Decomposed Granite Sand</u> , coarse grained.
								10-30: Gray <u>Decomposed Granite Sand</u> , coarse grained.
					20			
								30-40: Gray <u>Decomposed Granite Sand</u> , coarse to very coarse grained with chips, cobbly.
					40			
								40-60: Gray, cobbly, gravelly, <u>Decomposed Granite</u> with sand, predominantly 1/4-inch to 1/2-inch granite chips.
					60			
								60-100: Gray <u>Decomposed Granite Sand</u> , coarse grained.
					80			
								
					100			
								100-120: Gray <u>Decomposed Granite</u> , very coarse sand sized particles and minus 3/8-inch chips.
					120			
								120-505: <u>Fractured Granite</u> , Highly Fractured: 170-230', Minor Fracturing: 230-290', Moderately Fractured: 290-505'
					140			

EXPLANATION

Number of Blows: Record number of blows for one foot penetration of sampler using 140 pound hammer falling 30 inches.

Description: Describe soil type by Unified Soil Classification System with emphasis on in-place or natural condition.

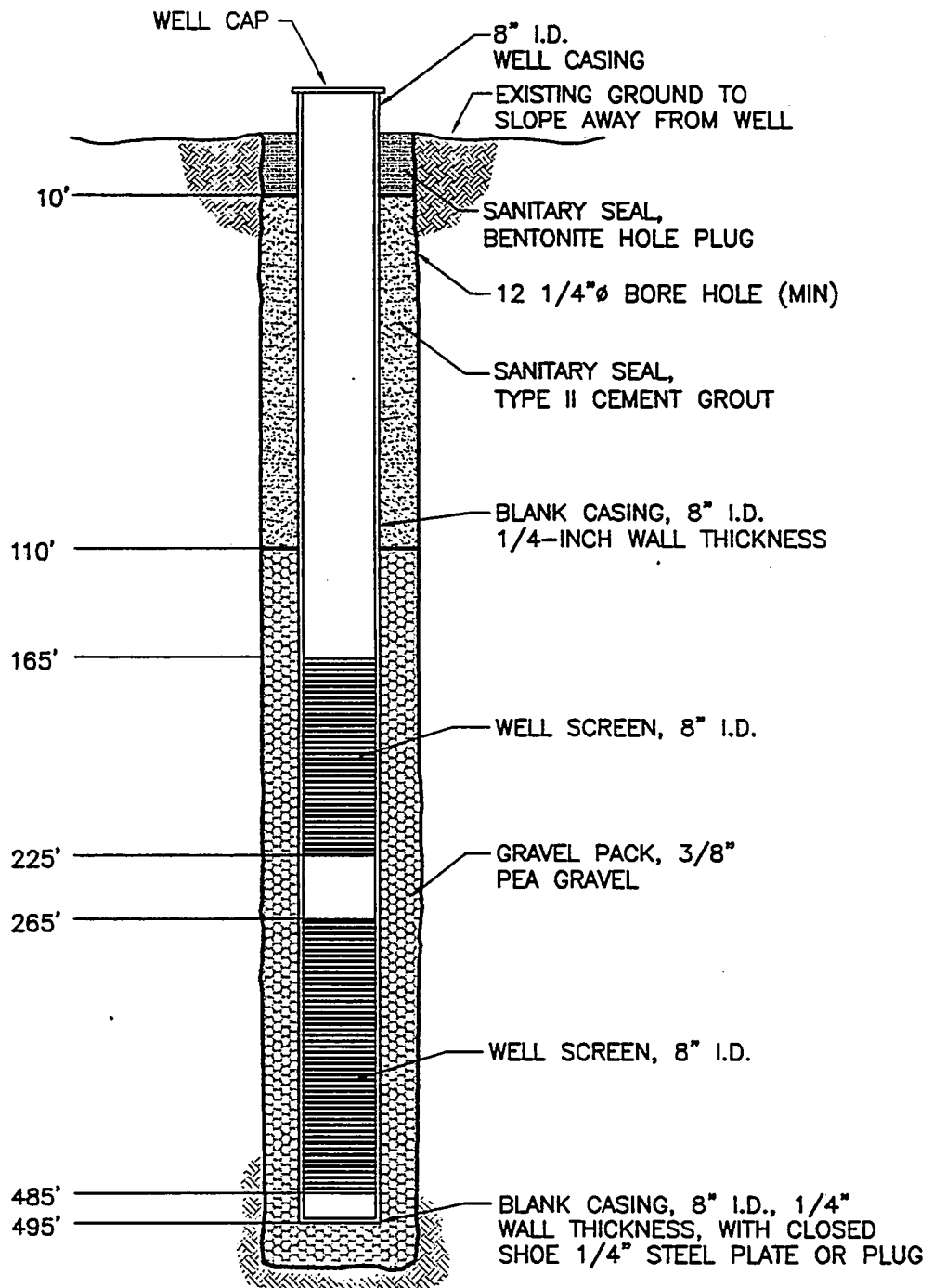
■ Splitspoon Sample Location 2-inch O.D., 1.5-inch I.D., 1.375-inch Shoe I.D.

☒ Thin Wall Shelby Location 2.5-inch I.D.

MT. ROSE SKI AREA
MT. ROSE DEVELOPMENT COMPANY
Reno, Nevada

Sheet 1 of 4
Project No. 26100027
Plate

APPENDIX B



NTS



Stantech Consulting Inc.
 950 Industrial Way
 Sparks, Nevada 89431 USA
 Phone: (702) 358-0931

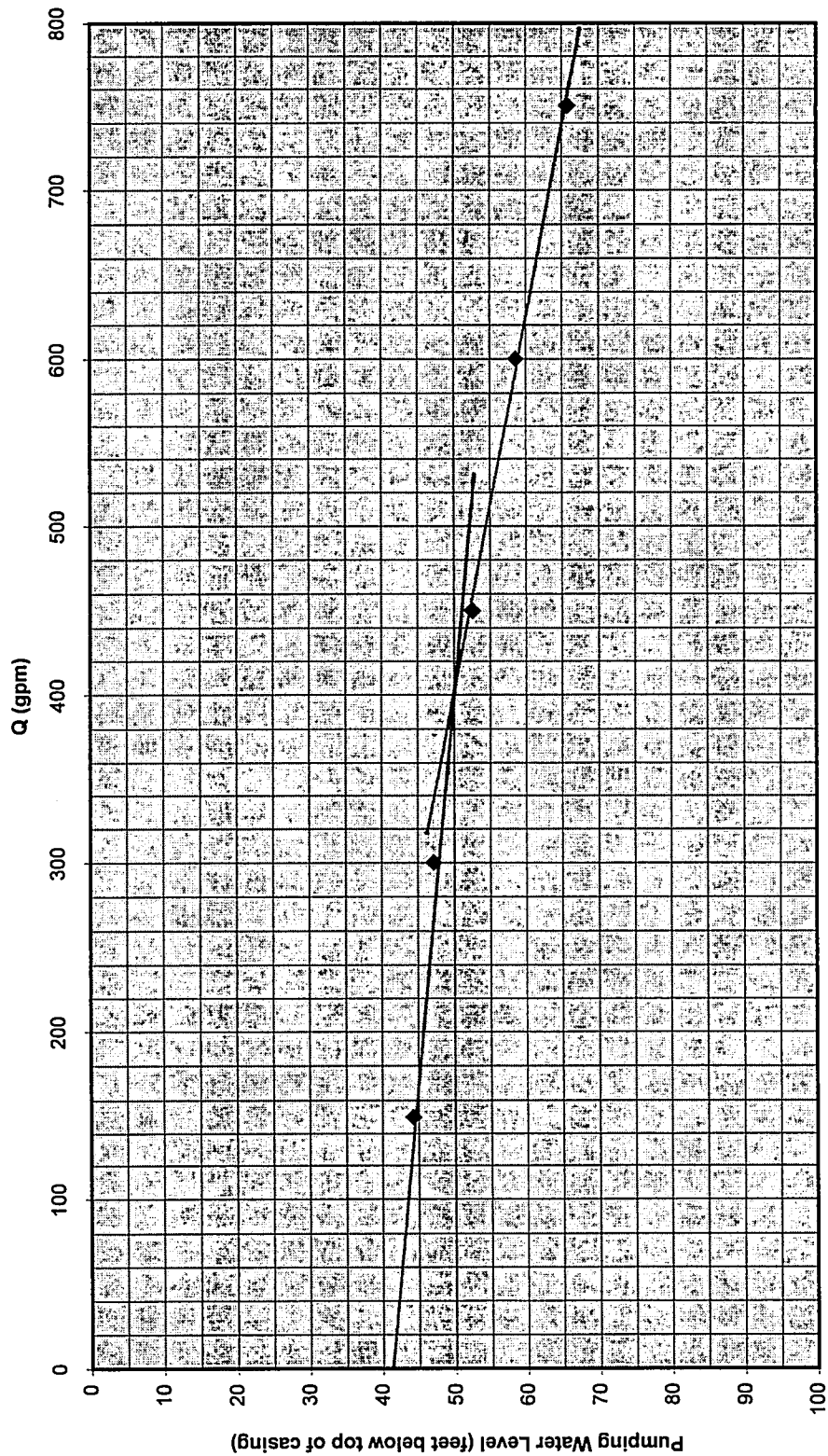
RENO

WELL ASBUILT SCHEMATIC
MT. ROSE DEVELOPMENT COMPANY
 MT. ROSE SKI AREA
 WASHOE COUNTY

NEVADA

PROJECT NO.
 26100027
 PLATE NO. 2

APPENDIX C



Stantec

**STEP-DRAWDOWN TEST RESULTS
MT. ROSE DEVELOPMENT COMPANY
PRODUCTION WELL**

PROJECT NO.: 26100027

PLATE 3

Bruce MacKay Pump & Well Service, Inc.

PUMPING TEST DATA

WELL _____
PUMPING/OBSERVATION WELL
PUMPING/RECOVERY DATA
PAGE 4 OF _____

TYPE OF PUMPING TEST Step

HOW Q MEASURED _____

M.P. for WL's _____ elev. _____

HOW WL's MEASURED _____

DEPTH of PUMP/AIRLINE _____ wrt _____

PUMPED WELL NO. _____

% SUBMERGENCE: Initial _____; pumping _____

RADIUS of PUMPED WELL _____

PUMP ON: date 10-15-98 time _____

DISTANCE from PUMPED WELL _____

PUMP OFF: date _____ time _____

TIME at t=0					WATER LEVEL DATA STATIC WATER LEVEL					WATER PRODUCT.		COMMENTS
CLOCK TIME	ELAPSED TIME min	hrs	min	hrs	READING	CONVERSIONS CORRECTIONS	WATER LEVEL	gals'	Psi	MGAL	FT ³	(NOTE ANY CHANGES IN OBSERVERS)
						<u>meter</u>						
700					ON	99273	41'10"	8	128	150		
710	10		10				43'8"	1.8		150		
715	15		5				43'10"	10.3	128	150		
720	20		5				43'9"		128	150		
730	30		10				43'8 1/2"		130	130		
745	45		15				43'9 1/2"		128	150		Adj Pres.
800	1:00		15	1 hr			44'					
815	1:15						44'		129			
830	1:30						44'1"		128	160		Adj Pres
845	1:45						44'3"	sand		160		
900	2:00			2 hr			44'3"	Total sand	112	300		Increase to 300
915	2:15						46'10"	2.2	112	300	240	
930	2:30						46'11"		114		245	
945	2:45						46'11"					
1000	3:00			3 hr		99647	47'0"	2.1				
1015	3:15						47'1"					
1030	3:30						47'2"					
1045	3:45						47'2"					
1100	4:00			4 hr			47'3"	2.3	96	450	400	Increase to 450
1115	4:15						51'2 1/2"	2.4				
1130	4:30						51'4 1/2"					
1145	4:45						51'6"					Adj. Pres.
1200	5:00			5 hr			51'8"	2.5				
1215	5:15						51'9"					
1230	5:30						51'10 1/2"					
1245	5:45						52'0"	2.5	96			Adj. Pres.
1300	6:00			6 hr			52'2 1/2"					
1315	6:15						52'4"					
1330	6:30						52'4 1/2"					
1345	6:45						52'6"					
1400	7:00			7 hr			52'7"	2.5	66	600	580	Increase to 600
1415	7:15						57'7 1/2"					Adj. Pres.
1430	7:30						57'11"					
1445	7:45											
1500	8:00			8 hr			58'2 1/2"					Adj. Pres.
1515	8:15											
1530	8:30						58'7"					
1545	8:45											
1600	9:00			9 hr			58'10 1/2"	2.6	33	750	740	Increase to 750

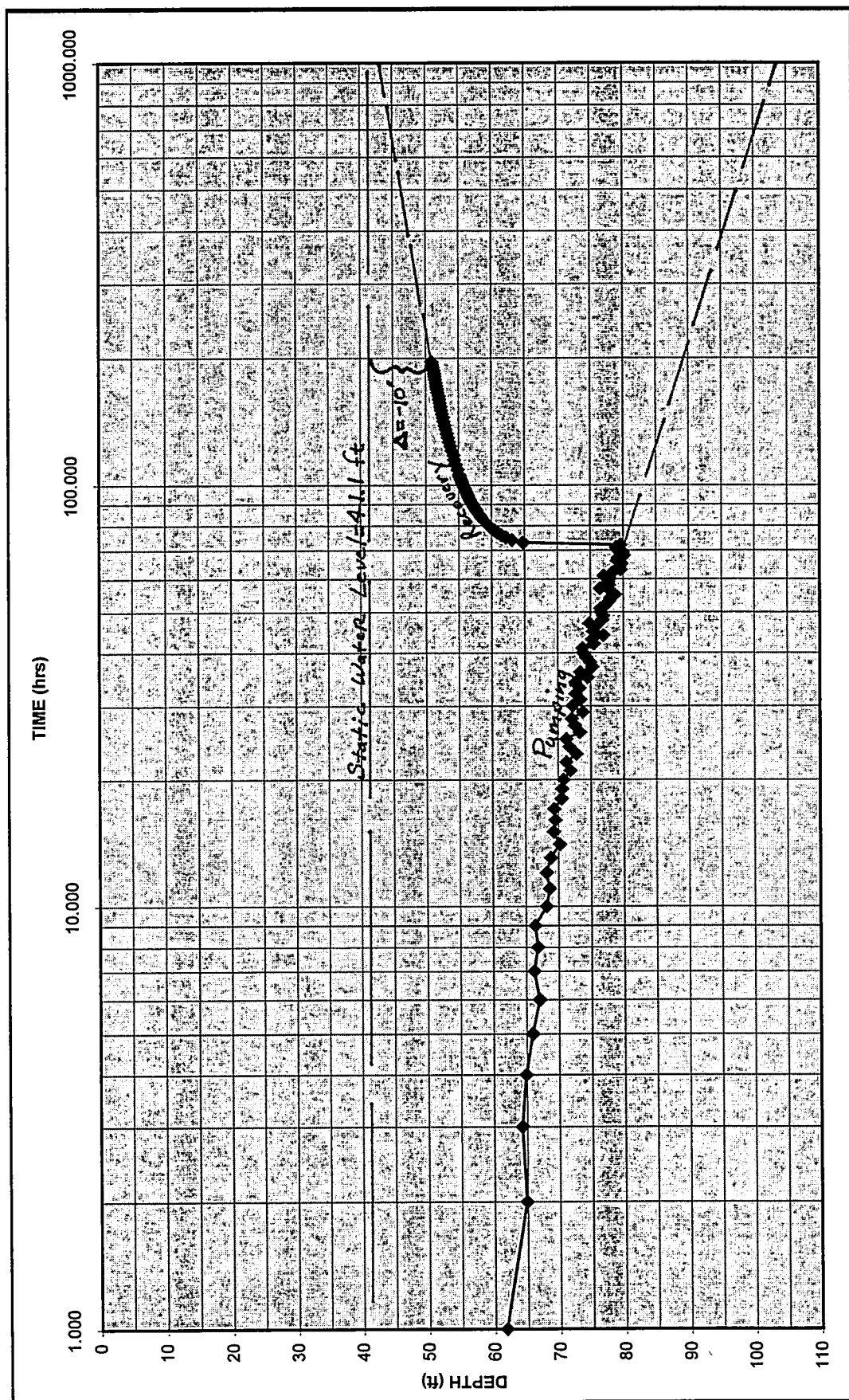
Bruce MacKay Pump & Well Service, Inc.

PUMPING TEST DATA

WELL _____
PUMPING/OBSERVATION WELL
PUMPING/RECOVERY DATA
PAGE _____ OF _____

TYPE of PUMPING TEST _____
HOW Q MEASURED _____ M.P. for WL's _____ elev. _____
HOW WL's MEASURED _____ DEPTH of PUMP/AIRLINE _____ wrt _____
PUMPED WELL NO. _____ % SUBMERGENCE: Initial _____; pumping _____
RADIUS of PUMPED WELL _____ PUMP ON: date _____ time _____
DISTANCE from PUMPED WELL _____ PUMP OFF: date _____ time _____

TIME					WATER LEVEL DATA					WATER PRODUCT.	COMMENTS
at 1:00					STATIC WATER LEVEL						
CLOCK TIME	ELAPSED TIME	ft	ft	ft/ft	READING	CONVERSIONS or CORRECTIONS	WATER LEVEL	S or S'		Q	(NOTE ANY CHANGES IN OBSERVERS)
1625	500						64' 2"				
1630	510										
1640	520										
1650	530										
1700	540										
1730	570										
1800	600										
1620	520						64' 2"				
1640	540						64' 7"				
1700	560						64' 11"				
1730	590						65' 4 1/2"				
1800	600						65' 9"				



Stantec

CONSTANT RATE PUMPING TEST @ 700 gpm
MT. ROSE DEVELOPMENT COMPANY
PRODUCTION WELL

PROJECT NO.: 26100027

PLATE 4

APPENDIX D

REVISED
Laboratory
Analysis Report



Sierra
Environmental
Monitoring, Inc.

Date : 12/04/98
Client : ALP-855
Taken by: CLIENT
Report : 25958
PO# :

ALPHA ANALYTICAL
255 GLENDALE AVENUE, SUITE 21
SPARKS NV 89431

Page: 1

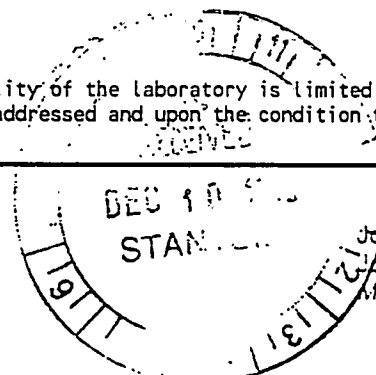
Sample	Collected Date Time	ALKALINITY MG/L CAC03	PH S.U.	COLOR APPARENT COLOR UNIT	TOTAL DISSOL. SOLIDS MG/L	NITRATE-N MG/L	NITRITE-N MG/L
SEA98102109-01-MT.ROSE/STANTEC	10/21/98 :	32B	7.81	<5	52	0.1N	<0.1N
Sample	Collected Date Time	NO3 + NO2 MG/L N	CALCIUM ICP MG/L	MAGNESIUM ICP MG/L	CHLORIDE MG/L	CYANIDE, TOTAL MG/L	FLUORIDE MG/L
SEA98102109-01-MT.ROSE/STANTEC	10/21/98 :	<0.2	6.3	1.8	5.6	<0.005	<0.1
Sample	Collected Date Time	SULFATE MG/L	MBAS SURFACTANTS MG/L	CORROSIVITY CAC03 SATUR. PHM-PHS	ODOR T.O.N.	TOTAL COLIFORM P/A COLILERT	E. COLI P/A COLILERT
SEA98102109-01-MT.ROSE/STANTEC	10/21/98 :	0.7	<0.05	-3.10	0	ABSENT	ABSENT
Sample	Collected Date Time	ANTIMONY ICP-MS MG/L	ARSENIC ICP-MS MG/L	BARIUM ICP-MS MG/L	BERYLLIUM ICP-MS MG/L	CADMIUM ICP-MS MG/L	CHROMIUM ICP-MS MG/L
SEA98102109-01-MT.ROSE/STANTEC	10/21/98 :	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.004
Sample	Collected Date Time	COPPER ICP-MS MG/L	IRON ICP-OES MG/L	MANGANESE ICP-MS MG/L	MERCURY AA COLD VAPOR MG/L	NICKEL ICP-MS MG/L	SELENIUM ICP-MS MG/L
SEA98102109-01-MT.ROSE/STANTEC	10/21/98 :	0.007	0.08	0.001	<0.0005	0.002	< 0.001
Sample	Collected Date Time	THALLIUM ICP-MS MG/L	ZINC ICP-MS MG/L				
SEA98102109-01-MT.ROSE/STANTEC	10/21/98 :	< 0.001	0.01				

Approved By:

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

William F. Pillsbury
President

1135 Financial Blvd.
Reno, NV 89502
Phone (702) 857-2400
FAX (702) 857-2404
sem@power.net



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



Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21
Sparks, Nevada 89421-5778
702 355-1044
FAX: 702 355-0406
1-800-283-1183

e-mail: alpha@powernet.net
<http://www.powernet.net/~alpha>

Las Vegas, Nevada
702 498-3312
FAX: 702 736-7520
Sacramento, California
916 366-9088
FAX: 916 366-9188

CASE NARRATIVE

November 13, 1998

One sample was received on 10/21/98 for the analyses of SOC and VOC compounds for source compliance monitoring in the state of Nevada. All sample containers were received in good condition.

Alpha Analytical ID	Client ID	Date	Time Collected
SEA98102109-01	Mt. Rose/Stantech	10/21/98	

METHOD 504.1:

Your sample was spiked as the batch Laboratory Fortified Matrix. All QA/QC criteria were met with no abnormalities.

METHOD 505:

All QA/QC criteria were met with no abnormalities.

METHOD 515.1

All QA/QC criteria were met with no abnormalities.

METHOD 525.2

All QA/QC criteria were met with no abnormalities.

METHOD 531.1:

All QA/QC criteria were met with no abnormalities.

METHOD 547:

All QA/QC criteria were met with no abnormalities.

METHOD 548.1

All QA/QC criteria were met with no abnormalities.

METHOD 549.1

All QA/QC criteria were met with no abnormalities.

Walter J. Hinchman
Quality Assurance Officer

11/17/98

Date



Alpha Analytical, Inc.

255 Glendale Avenue, Suite 21
Sparks, Nevada 89431-5778
(702) 355-1044
FAX: (702) 355-0406
1-800-283-1183

e-mail: alpha@power.net
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Las Vegas, Nevada
(702) 496-0821
FAX: (702) 736-7525
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

ANALYTICAL REPORT

Client: Stantech

950 Industrial St.
Sparks, NV 89431

Attn: Dwight Smith

Client Sample ID: Mt. Rose/StanTech

Lab Sample ID: 98102109-01A

Date Sampled: 10/21/1998

Date Received: 10/21/1998

Matrix: Drinking Water

PWS/DWR#:

National Primary Drinking Water Phase II and Phase V - Regulated and Unregulated Synthetic Organic Compounds (SOCs)

Analyte	Result	R.L.	Units	Date Analyzed
E504.1 EDB AND DBCP				
1,2-Dibromo-3-chloropropane	ND	0.02	µg/L	10/29/1998
1,2-Dibromoethane	ND	0.01	µg/L	10/29/1998

E505 ORGANOHALIDE PESTICIDES AND PCBS				
Hexachlorocyclopentadiene	ND	0.1	µg/L	10/21/1998
Hexachlorobenzene	ND	0.1	µg/L	10/21/1998
gamma-BHC	ND	0.02	µg/L	10/21/1998
Alachlor	ND	0.2	µg/L	10/21/1998
Heptachlor	ND	0.04	µg/L	10/21/1998
Aldrin	ND	0.2	µg/L	10/21/1998
Heptachlor epoxide	ND	0.02	µg/L	10/21/1998
Dieldrin	ND	0.2	µg/L	10/21/1998
Endrin	ND	0.01	µg/L	10/21/1998
Methoxychlor	ND	0.1	µg/L	10/21/1998
Chlordane	ND	0.2	µg/L	10/21/1998
Toxaphene	ND	1.0	µg/L	10/21/1998
Aroclor 1016	ND	0.08	µg/L	10/21/1998
Aroclor 1221	ND	20	µg/L	10/21/1998
Aroclor 1232	ND	0.5	µg/L	10/21/1998
Aroclor 1242	ND	0.3	µg/L	10/21/1998
Aroclor 1248	ND	0.1	µg/L	10/21/1998
Aroclor 1254	ND	0.1	µg/L	10/21/1998
Aroclor 1260	ND	0.2	µg/L	10/21/1998

E515.1 CHLORINATED ACID HERBICIDES				
Dalapon	ND	1.0	µg/L	11/2/1998
Dicamba	ND	0.5	µg/L	11/2/1998
2,4-D	ND	0.1	µg/L	11/2/1998
PCP	ND	0.04	µg/L	11/2/1998
2,4,5-TP	ND	0.2	µg/L	11/2/1998
Dinoseb	ND	0.2	µg/L	11/2/1998
Picloram	ND	0.1	µg/L	11/2/1998

ND = Not Detected

Analyte	Result	R.L.	Units	Date Analyzed
E525.2 SVOCs BY GCMS				
Alachlor	ND	0.2	µg/L	11/3/1998
Atrazine	ND	0.1	µg/L	11/3/1998
Benzo(a)pyrene	ND	0.02	µg/L	11/3/1998
bis(2-Ethylhexyl)phthalate	ND	0.6	µg/L	11/3/1998
bis(2-Ethylhexyl)adipate	ND	0.6	µg/L	11/3/1998
Barachlor	ND	1.0	µg/L	11/3/1998
Metolachlor	ND	1.0	µg/L	11/3/1998
Metribuzin	ND	1.0	µg/L	11/3/1998
Proachlor	ND	1.0	µg/L	11/3/1998
Simazine	ND	0.07	µg/L	11/3/1998

E531.1 CARBAMATES				
Aldicarb	ND	0.5	µg/L	10/24/1998
Aldicarb sulfoxide	ND	0.5	µg/L	10/24/1998
Aldicarb sulfone	ND	0.8	µg/L	10/24/1998
Carbaryl	ND	1.0	µg/L	10/24/1998
Carbofuran	ND	0.9	µg/L	10/24/1998
3-Hydroxycarbofuran	ND	1.0	µg/L	10/24/1998
Methomyl	ND	1.0	µg/L	10/24/1998
Oxamyl	ND	2.0	µg/L	10/24/1998

E547 GLYPHOSATE				
Glyphosate	ND	6.0	µg/L	10/31/1998

E548.1 ENDOTHALL				
Endothall	ND	9.0	µg/L	10/26/1998

E549.1 DIQUAT/PARAQUAT				
Diquat	ND	0.4	µg/L	11/2/1998

Approved By:

Walter Hinchman
Walter Hinchman
Quality Assurance Officer

Date:

11/17/98



Alpha Analytical, Inc.

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http: www.power.net ~alpha

ANALYTICAL REPORT

Las Vegas, Nevada
(702) 498-0911
FAX: (702) 786-7521
Sacramento, California
(916) 366-9089
FAX: (916) 366-9138

Stantech
950 Industrial St.
Sparks, NV 89431

Job#: _____
Phone: (702) 358-6931
Attn: Dwight Smith

Alpha Analytical Number: 98102109-01A
Client I.D. Number: Mt. Rose/Stantech

Sampled: 10/21/1998
Analyzed: 10/23/1998
Received: 10/21/1998

SDWA Volatiles (plus Lists 1 & 3 Unregulated) EPA 524.2

Compound	Concentration µg/L	Reporting Limit	Compound	Concentration µg/L	Reporting Limit
1 Benzene	ND	0.500 µg/L	38 2,2-Dichloropropane	ND	0.500 µg/L
2 Vinyl chloride	ND	0.500 µg/L	39 1,1,1,2-Tetrachloroethane	ND	0.500 µg/L
3 Carbon tetrachloride	ND	0.500 µg/L	40 1,1,2,2-Tetrachloroethane	ND	0.500 µg/L
4 1,2-Dichloroethane	ND	0.500 µg/L	41 1,2,3-Trichloropropane	ND	0.500 µg/L
5 Trichloroethene	ND	0.500 µg/L	42 Bromochloromethane	ND	0.500 µg/L
6 1,3-Dichlorobenzene	ND	0.500 µg/L	43 n-Butylbenzene	ND	0.500 µg/L
7 1,1-Dichloroethene	ND	0.500 µg/L	44 Dichlorodifluoromethane	ND	0.500 µg/L
8 1,1,1-Trichloroethane	ND	0.500 µg/L	45 Trichlorofluoromethane	ND	0.500 µg/L
9 cis-1,2-Dichloroethene	ND	0.500 µg/L	46 Hexachlorobutadiene	ND	0.500 µg/L
10 1,2-Dichloropropane	ND	0.500 µg/L	47 Isopropylbenzene	ND	0.500 µg/L
11 Ethylbenzene	ND	0.500 µg/L	48 4-Isopropyltoluene	ND	0.500 µg/L
12 Chlorobenzene	ND	0.500 µg/L	49 Naphthalene	ND	0.500 µg/L
13 1,4-Dichlorobenzene	ND	0.500 µg/L	50 n-Propylbenzene	ND	0.500 µg/L
14 Styrene	ND	0.500 µg/L	51 sec-Butylbenzene	ND	0.500 µg/L
15 Tetrachloroethene	ND	0.500 µg/L	52 tert-Butylbenzene	ND	0.500 µg/L
16 Toluene	ND	0.500 µg/L	53 1,2,3-Trichlorobenzene	ND	0.500 µg/L
17 trans-1,2-Dichloroethene	ND	0.500 µg/L	54 1,2,4-Trimethylbenzene	ND	0.500 µg/L
18 Xylenes, total	ND	0.500 µg/L	55 1,3,5-Trimethylbenzene	ND	0.500 µg/L
19 Dichloromethane	ND	0.500 µg/L			
20 1,1,2-Trichloroethane	ND	0.500 µg/L			
21 1,2,4-Trichlorobenzene	ND	0.500 µg/L			
22 Bromobenzene	ND	0.500 µg/L			
23 Bromodichloromethane	ND	0.500 µg/L			
24 Bromoform	ND	0.500 µg/L			
25 Bromomethane	ND	0.500 µg/L			
26 Dibromochloromethane	ND	0.500 µg/L			
27 Chloroethane	ND	0.500 µg/L			
28 Chloroform	ND	0.500 µg/L			
29 Chloromethane	ND	0.500 µg/L			
30 2-Chlorotoluene	ND	0.500 µg/L			
31 4-Chlorotoluene	ND	0.500 µg/L			
32 Dibromomethane	ND	0.500 µg/L			
33 1,2-Dichlorobenzene	ND	0.500 µg/L			
34 1,1-Dichloroethane	ND	0.500 µg/L			
35 1,1-Dichloropropene	ND	0.500 µg/L			
36 1,3-Dichloropropane	ND	0.500 µg/L			
37 trans-1,3-Dichloropropene	ND	0.500 µg/L			

ND = Not Detected

Phase I Regulated Compounds (1-8); Phase II Regulated Compounds (9-18); Phase V Regulated Compounds (19-21); List 1 Unregulated Compounds (22-41); List 3 Unregulated Compounds (42-55); and, Additionally requested Compounds (56+)

Approved By: _____

Walter Hinchman
Walter Hinchman
Quality Assurance Officer

Date: _____

11/17/98

Billing Information:
 Name StanTech Consulting, Inc.
 Address 952 Industrial Way
 City, State, Zip Sparks, NV 89431-0042
 Phone Number (702) 358-6131 Fax (702) 358-6132



Alpha Analytical, Inc.
255 Glendale Avenue, Suite 21
Sparks, Nevada 89431
Phone (702) 355-1044
Fax (702) 355-0406

Client Name		Address		City, State, Zip		P.O. #		Job #		DWR #		Fax #	
Date Sampled		Time Sampled		Malix* See Key Below		Office Use Only		Sampled by		Report Attention		Sample Description	
Total and type of containers ** See below		Total and type of containers ** See below		Total and type of containers ** See below		Total and type of containers ** See below		Total and type of containers ** See below		Total and type of containers ** See below		Total and type of containers ** See below	
10/2/92	10/2/92	AG	AG	SEN98102109-01	MT Rose, Stantech	Dwight Smith	2L	X	525	575	575	549	547
							2L						
							2-1/2L						
							1-1/2L						
							2V						
							2V						
							2V						
							2V						
							2V						
							1V						
9/23/92	9/23/92	AG	AG	DIB	Trip Blank								

SPECIAL INSTRUCTIONS:

Signature	Print Name	Company	Date	Time
Relinquished by <i>[Signature]</i>	<i>Jeff Harkelman</i>	<i>StarTech Consulting</i>	<i>10-21-98</i>	<i>14:45</i>
Received by <i>[Signature]</i>	<i>H. Eskew</i>	<i>Alpha</i>	<i>10/21/98</i>	<i>2:15pm</i>
Relinquished by				
Received by				
Relinquished by				
Received by				

Hazardous samples will be returned to client or disposed of at client expense.

NOTE: Samples are

44-38861-1A - VM

$$f_{\text{eff}}(t) = 1(t)$$

11

VVoan 3-Soil.jar : O Oibo

Summary

Abstract

Table 1



BARRINGER LABORATORIES, INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

6-Nov-98

ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

Attn:
Project:

Received: 23-Oct-98 10:25
PO #: SEA98102109

Job: 983820E

Status: Final

ANALYTICAL REPORT PACKAGE

CASE NARRATIVE.....i
ANALYTICAL RESULTS.....R-1
QUALITY CONTROL REPORT.....Q-1



BARRINGER LABORATORIES, INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

6-Nov-98

ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

Page: i

Attn:
Project:

Received: 23-Oct-98 10:25
PO #: SEA98102109

Job: 983820E

Status: Final

CASE NARRATIVE

A total of 1 Water sample was received on 23-Oct-98. As stated in the chain of custody, the sample was run for the following analyses: Gross Alpha and Gross Beta. A table, to cross reference your sample ID to ours, is attached. Our procedures are summarized on the Quality Control Data Sheet.

Quality control standards for organic and inorganic analyses followed the appropriate SW-846 or EPA methodology. Quality control standards for radiochemistry followed our standard operating procedures or contractual requirements.

Signed: *[Signature]* 11/9/98
.....
Radiochemistry
Manager

Signed: *[Signature]*
.....
Project Review 11/9/98



ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

6-Nov-98
Page: ii

Attn:
Project:

Received: 23-Oct-98 10:25
PO #: SEA98102109

Job: 983820E

Status: Final

Lab-ID	Matrix	Client Sample ID	Sampled
983820-1	Water	SEA98102109-01A	21-Oct-98



BARRINGER LABORATORIES, INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

6-Nov-98

Page: R-1

Job: 983820E

Status: Final

ALPHA ANALYTICAL, INC.

Analyte: Gross Alpha
Fraction: Total
Method: 900.0
Units: pCi/l

Project:
Date Analyzed: 10/30-11/06
LLD: 3

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2 σ	LLD
983820-1	21-Oct-98	Water	SEA98102109-01A	10 \pm 2	3

Analyte: Gross Beta
Fraction: Total
Method: 900.0
Units: pCi/l

Project:
Date Analyzed: 10/30-11/06
LLD: 4

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2 σ	LLD
983820-1	21-Oct-98	Water	SEA98102109-01A	4.2 \pm 2.4	4

ALPHA ANALYTICAL, INC.

QUALITY CONTROL REPORT

Sample Id	Gross Alpha		Gross Beta	
	Total		Total	
	pCi/l	+ 2 σ	pCi/l	+ 2 σ
Duplicate	333	± 206	215	± 123
Duplicate	141	± 198	216	± 122
RER	0.47		0.01	
Std (found value)	93	± 4	86	± 2
Std (true value)	103		88	
Std % rec.	91		97	
Blank	1.2	± 0.7	0.9	± 0.5
Spike % rec.	115		103	



BARRINGER LABORATORIES, INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

6-Nov-98
Page: Q-2

Attn:
Project:

Received: 23-Oct-98 10:25
PO #: SEA98102109

Job: 983820E

Status: Final

Abbreviations:

Units:

pCi/l

: picoCuries per liter



ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

6-Nov-98
Page: Q-3

Attn:
Project:

Received: 23-Oct-98 10:25
PO #: SEA98102109

Job: 983820E

Status: Final

QUALITY CONTROL DATA SHEET

Received by: kz

Via: UPS

Sample Container Type: 1L gls
Additional Lab Preparation: None

Parameter	Method	Preservative	Init	Analysis Dates
Gross Alpha	900.0	HNO3	CWP	10/30-11/06
Gross Beta	900.0	HNO3	CWP	10/30-11/06

Barringer Laboratories, Inc. will return or dispose of your samples 30 days from the date your final report is mailed, unless otherwise specified by contract. Barringer Laboratories, Inc. reserves the right to return samples prior to the 30 days if radioactive levels exceed our license.



14-Dec-98

ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

Attn:
Project:

Received: 1-Dec-98 09:50
PO #: SEA98102109

Job: 984125E

Status: Final

ANALYTICAL REPORT PACKAGE

CASE NARRATIVE.....i
ANALYTICAL RESULTS.....R-1
QUALITY CONTROL REPORT.....Q-1

ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

14-Dec-98
Page: i

Attn:
Project:

Received: 1-Dec-98 09:50
PO #: SEA98102109

Job: 984125E


Status: Final

CASE NARRATIVE

A total of 1 Water sample was received on 1-Dec-98. As stated in the chain of custody, the sample was run for the following analysis: Ra-226. A table, to cross reference your sample ID to ours, is attached. Our procedures are summarized on the Quality Control Data Sheet.

Quality control standards for organic and inorganic analyses followed the appropriate SW-846 or EPA methodology. Quality control standards for radiochemistry followed our standard operating procedures or contractual requirements.

Signed:


.....12/14/98
Radiochemistry
Manager

Signed:


.....
Project Review 12/14/98



BARRINGER LABORATORIES, INC.

15000 W. 6TH AVE., SUITE 300 GOLDEN, CO 80401 (303) 277-1687 FAX (303) 277-1689

ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

14-Dec-98
Page: ii

Attn:
Project:

Received: 1-Dec-98 09:50
PO #: SEA98102109

Job: 984125E

Status: Final

Lab-ID	Matrix	Client Sample ID	Sampled
984125-1	Water	SEA98102109-01A	21-Oct-98

ALPHA ANALYTICAL, INC.

Analyte: Ra-226
Fraction: Total
Method: SM-705
Units: pCi/l

Project:
Date Analyzed: 12/10-12/11
LLD: 0.5

Lab Id	Date Sampled	Matrix	Sample Id	Concentration+ 2 σ	LLD
984125-1	21-Oct-98	Water	SEA98102109-01A	0.07 \pm 0.3	0.5

ALPHA ANALYTICAL, INC.

QUALITY CONTROL REPORT

	Ra-226	
	Total	
<u>Sample Id</u>	<u>pCi/l</u>	<u>+ 2σ</u>
Duplicate	118	± 5.58
Duplicate	90.3	± 4.70
RER	0.84	
Std (found value)	98.1	± 6.20
Std (true value)	99.0	
Std % rec.	99	
Blank	0	± 0.2
Spike % rec.	112	



ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

14-Dec-98
Page: Q-2

Attn:
Project:

Received: 1-Dec-98 09:50
PO #: SEA98102109

Job: 984125E

Status: Final

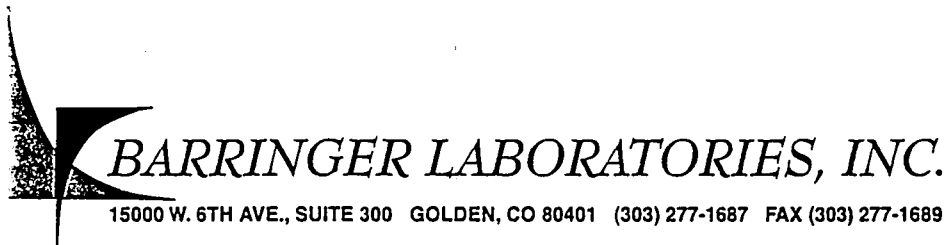
Abbreviations:

Parameters:

Ra-226 : Radium-226

Units:

pCi/l : picoCuries per liter



ALPHA ANALYTICAL, INC.
255 Glendale Ave., Ste. 21
Sparks, NV 89431

14-Dec-98
Page: Q-3

Attn:
Project:

Received: 1-Dec-98 09:50
PO #: SEA98102109

Job: 984125E

Status: Final

QUALITY CONTROL DATA SHEET

Received by: mp

Via: Reelog

Sample Container Type: 500ml pl
Additional Lab Preparation: None

Parameter	Method	Preservative	Init	Analysis Dates
Ra-226	SM-705	HNO3	AML	12/10-12/11

Barringer Laboratories, Inc. will return or dispose of your samples 30 days from the date your final report is mailed, unless otherwise specified by contract. Barringer Laboratories, Inc. reserves the right to return samples prior to the 30 days if radioactive levels exceed our license.

APPENDIX C

Stantec Consulting Inc.
950 Industrial Way
Sparks NV 89431 USA
Tel: (775) 358-6931 Fax: (775) 358-6954
www.stantec.com



Stantec

July 21, 1999
Project No. 80200027

Ms. Nancy Kang
US ARMY CORPS OF ENGINEERS
300 Booth Street, Room 2103
Reno, Nevada 89509

RE: MT. ROSE SKI AREA WELL

Dear Ms. Kang:

In follow-up to our telephone conversation on July 20 1999, this letter is related to well location selection at Mt. Rose Ski Area. This information is provided on behalf of our client, Mt. Rose Development Company, owner and operator of the ski area.

Well Siting Information

This particular well site was selected based on several political issues and hydrogeologic factors, as outlined below.

Most water produced from this well will be used for snowmaking. Potable water for the main lodge is currently provided from developed springs located about ½-mile up-gradient of the main lodge. Several years ago, Mt. Rose Development Company purchased additional ground water rights for snowmaking and other possible development. Snow making activities could consume up to 100 acre-feet per year, under Mt. Rose's existing water rights. A relatively high yield well is necessary to meet snowmaking water demands, which requires a large volume of water in a short period of time. Hydrogeologic evaluations were performed by Stantec Consulting in 1993 and 1996, to locate potential areas for a production capacity well. Based on these analyses, a well location was selected near the existing developed springs that Mt. Rose uses for municipal water supply (up-slope of the main lodge). Well construction specifications were prepared by Stantec Consulting in March 1997.

However, applications to transfer water rights to the selected well location were protested by the Mt. Rose Bowl Property Owner's Water Company and others. In "arbitration" meetings with the protesting parties, Mt. Rose agreed not to drill a new well within the Browns Creek watershed (origin of the water rights was in the Galena Creek watershed). However, a well location in the Galena Creek watershed was acceptable to the protesting parties. This agreement left only the southwestern corner of Mt. Rose's property to develop a well, which would cost Mt. Rose considerably more to construct a well and operate the system (pipeline, power extension, larger pump, etc than a well located in the Browns Creek watershed as originally planned). A new water right transfer application was filed with the State Engineer's office for the location where the

Buildings

Environment

Industrial

Management Systems

Transportation

Urban Land

Ms. Nancy Kang
US ARMY CORPS OF ENGINEERS
July 21, 1999
Page 2

existing well was drilled. Water rights permits were subsequently granted. Well specifications prepared for the first location were modified in July 1998 for the new location.

Development of high production wells in granite bedrock is very difficult. Fracture systems must be encountered which are extensive enough to store and hydraulically transmit water. The specific location of the well was selected based on interpretation of subsurface geology (Stantec 1993 and 1996 evaluations), which has generally been proven by well construction at this location. A lineament feature extends through the area of the well in a northeast to southwest alignment. A lineament is created by regional faulting, fracturing, jointing, or changes in rock consistency. Stantec Consulting interpreted a faulted, fractured or weak rock zone just beyond the toe of a steep bedrock slope in the southwest corner of Mt. Rose's property, where a large meadow and numerous springs exist. A well site was selected at approximately 100 feet beyond the toe of the slope, planning to encounter the fractured bedrock below 100 feet (45-degree projection of bedrock beneath the meadow). The top of granite bedrock was encountered at approximately 120 feet in depth, and highly fractured granite bedrock was encountered as hoped for, between 170 to 505 feet in depth.

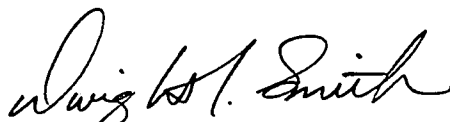
An eight-inch diameter well was constructed with screen placed between 165 to 485 feet in depth. The upper unconsolidated materials and decomposed granites were sealed off with Type II cement grout to a depth of 110 feet. The well construction effort was successful, producing a high capacity well which yields good quality ground water. The well was pump tested at flow rates up to 750 gallons per minute.

In our upcoming meeting with Mt. Rose, we can discuss the hydrogeology, well siting and well construction in greater detail.

We appreciate your assistance and guidance in appropriately addressing wetlands issues at the site. Please contact us if you have questions or need additional information.

Sincerely,

STANTEC CONSULTING INC.


Dwight L. Smith, P.E.
Hydrogeologist


James G. Smith, P.E.
Senior Associate
Geotechnical Manager

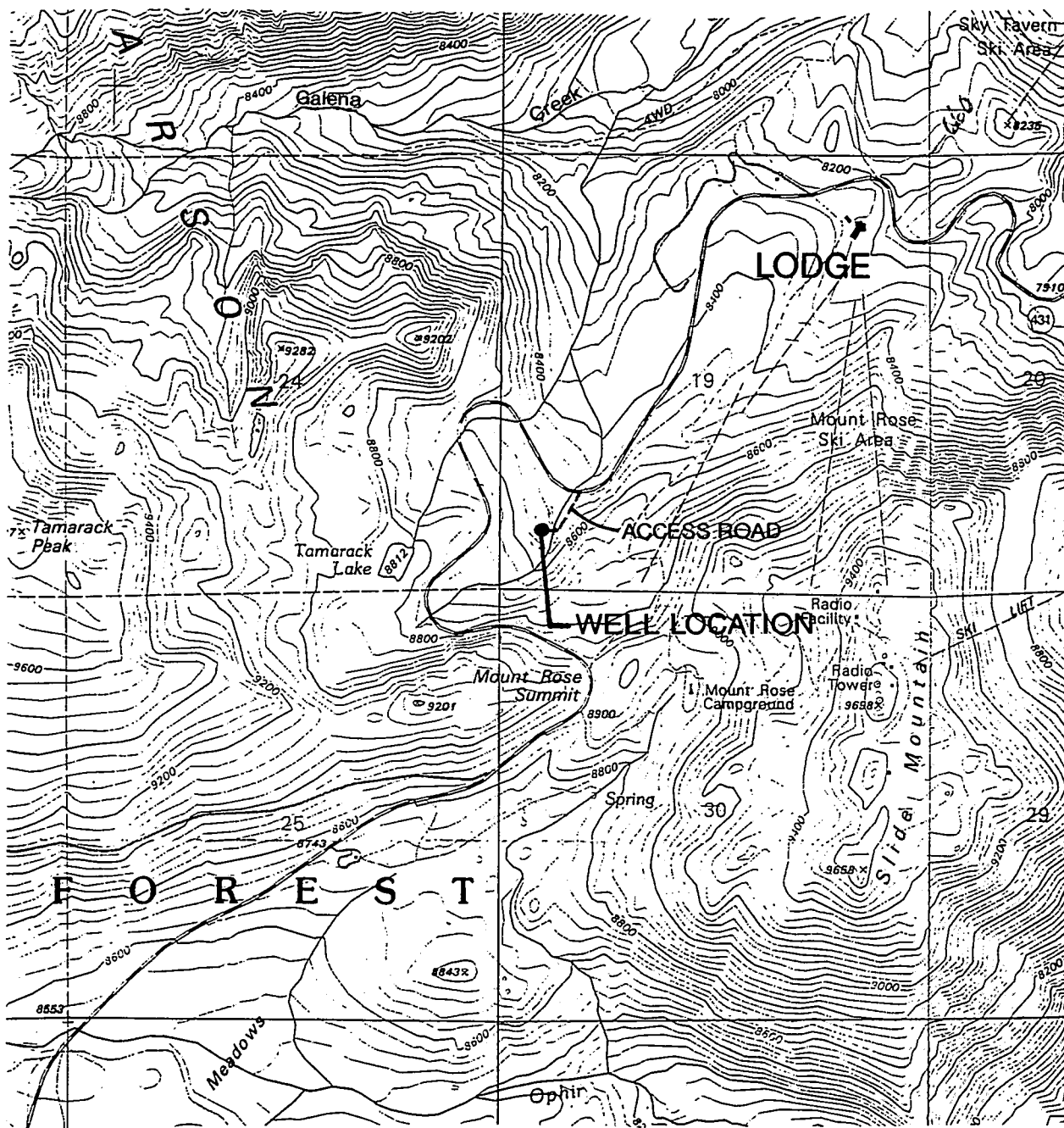
Stantec

cc: Paul Senft, Mt. Rose Development Company

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1" = 2000'



Stantech Consulting Inc.
950 Industrial Way
Sparks, Nevada 89431 USA
Phone: (702) 358-6931

RENO

LOCATION MAP
MT. ROSE DEVELOPMENT COMPANY
WELL CONSTRUCTION, MT. ROSE SKI AREA
WASHOE COUNTY

NEVADA

PROJECT NO.
26100027
PLATE NO. 1



APPENDIX D

BOB MILLER
Governor

STATE OF NEVADA

PETER G. MORROS
Director

R. MICHAEL TURNIPSEED, P.E.
State Engineer



DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES

123 W. Nye Lane, Suite 246

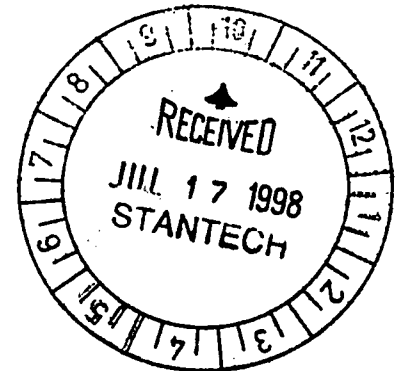
Carson City, Nevada 89706-0818

(702) 687-4380 • Fax (702) 687-6972

63695-63698
W-502

July 15, 1998

Dwight L. Smith
Stantech Consulting Inc.
950 Industrial Way
Sparks, NV 89431



Dear Mr. Smith:

Under the provisions of NRS 534.050(2)(a), authorization is hereby granted this date to drill one (1) exploration water well in Washoe County, Nevada. Local No. 088 N17 E19 19 cc

The intent to drill card and log, when filed, shall bear Waiver No. W-502, name, and license number of the driller performing the work. The starting and completion date of the exploratory well will not exceed ninety (90) days from the date of this waiver. Information concerning water quantity must be collected within sixty (60) days of the completion of the well. Should applications 63695-63698 be denied, the well must be plugged according to NAC 534.420 by a Nevada licensed well driller. The exploratory well can be test pumped for a maximum of seventy-two (72) hours. This authorization expires November 1, 1998.

A copy of the waiver must be in the possession of the well driller at the drill site.

The granting of this waiver does not grant or infer any rights of appropriation of public waters and shall not be deemed to result in the development of any equity.

The proposed test holes shall be drilled one at a time. If drilling is temporarily suspended on a test hole, with the intent to possibly return to develop it into a well at a latter time, the hole shall be filled with drilling mud of sufficient weight and viscosity to prevent wall collapse. If a temporarily suspended test hole is not developed into a water well it shall be immediately plugged according to NAC 534.420 before the drilling equipment is released.

A

63695-63598
W-502

Upon the determination that an exploratory well will be used for production, the well must be properly valved and shut in. The well cannot be used prior to permitting of applications 63695-63598 by the Division of Water Resources. If the applications to appropriate are cancelled, withdrawn, or denied, the well must be plugged in accordance with NAC 534.420 and the authorization granted under this waiver is simultaneously rescinded.

It is expressly understood that this waiver does not relieve the operator of the permitting requirements of other state, federal or local agencies.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Tim Wilson".

Tim Wilson
Hydraulic Engineer II

TW/jjs

**APPLICATION FOR PERMISSION TO CHANGE POINT OF
DIVERSION, MANNER OF USE AND PLACE OF USE OF THE
PUBLIC WATERS OF THE STATE OF NEVADA
HERETOFORE APPROPRIATED**

Date of filing in State Engineer's Office DEC 30 1997

Returned to applicant for correction _____

Corrected application filed _____

Map filed DEC 30 1997

The applicant Mt. Rose Development Company hereby make application for permission to change the Point of Diversion and Place of Use of water heretofore appropriated under a portion of Permit 47127

1. The source of water is Underground Well
2. The amount of water to be changed 0.0438 cfs, or 31.669 AF, annually
3. The water to be used for Quasi-Municipal
4. The water heretofore permitted for Quasi-Municipal
5. The water is to be diverted at the following point SW1/4 SW1/4 Section 19, T17N, R19E, MDM, or at a point from which the South 1/4 corner of said Section 19 bears, S 73°09'07"E., a distance of 2227 feet
6. The existing permitted point of diversion is located within SE1/4 NW1/4 Section 19, T17N, R19E, MDM, or at a point from which the Southwest corner of said Section 19 bears, S 31° 30' W a distance of 3,525 feet
7. Proposed place of use NE1/4, N1/2 SE1/4, NE1/4 SW1/4, Section 19, T17N, R19E, MDM
8. Existing place of use Sections 13, 14, 23, 24, 25 and 26, T17N, R18E, MDM and Sections 7, 8, 17, 18, 19, 20, N1/2 Section 29 and N1/2 Section 30, T17N, R19E, MDM
9. Use will be from January 1 to December 31 of each year.
10. Use was permitted from January 1 to December 31 of each year.
11. Description of proposed works Water well, distribution lines, above-ground storage tank and possible storage pond.
12. Estimated cost of works \$500,000.00
13. Estimated time required to construct works Two Years
14. Estimated time required to complete the application of water to beneficial use Ten Years
15. Remarks: This water will be used for snow making, ski lodge and planned condominiums.

By s/Richard W. Arden Agent
950 Industrial Way
Sparks, Nevada 89431

Compared gkl/cms dl/cms

Protested _____

APPROVAL OF STATE ENGINEER

This is to certify that I have examined the foregoing application, and do hereby grant the same, subject to the following limitations and conditions:

This permit to change the point of diversion and place of use of a portion of the waters of an underground source as heretofore granted under Permit 47127 is issued subject to the terms and conditions imposed in said Permit 47127 and with the understanding that no other rights on the source will be affected by the change proposed herein. The well shall be equipped with a 2-inch opening and a totalizing meter must be installed and maintained in the discharge pipeline near the point of diversion and accurate measurements must be kept of water placed to beneficial use. The totalizing meter must be installed before any use of the water begins or before the proof of completion of work is filed. If the well is flowing, a valve must be installed and maintained to prevent waste. This source is located within an area designated by the State Engineer pursuant to NRS 534.030. The State retains the right to regulate the use of the water herein granted at any and all times.

This permit does not extend the permittee the right of ingress and egress on public, private or corporate lands.

The well must be sealed with cement grout, concrete grout or neat cement from ground level to 100 feet.

The issuance of this permit does not waive the requirements that the permit holder obtain other permits from State, Federal and local agencies.

The total combined duty of water under Permits 63695, 63696, 63697 and 63698 shall not exceed 100.0 acre-feet annually.

Monthly records shall be kept of the amount of water pumped from this well and the records submitted to the State Engineer on a quarterly basis within 15 days after the end of each calendar quarter.

The amount of water to be appropriated shall be limited to the amount which can be applied to beneficial use, and not to exceed 0.0438 cubic feet per second, but not to exceed 31.669 acre-feet annually.

Work must be prosecuted with reasonable diligence and be completed on or before:

January 4, 2000

Proof of completion of work shall be filed before:

February 4, 2000

Application of water to beneficial use shall be filed on or before:

January 4, 2001

Proof of the application of water to beneficial use shall be filed on or before:

February 4, 2001

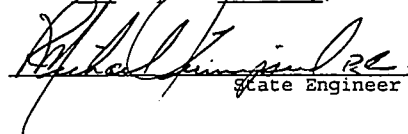
Map in support of proof of beneficial use shall be filed on or before:

N/A

IN TESTIMONY WHEREOF, I, R. MICHAEL TURNIPSEED, P.E.,

State Engineer of Nevada, have hereunto set
my hand and the seal of my office,

this 4th day of January, A.D. 1999


State Engineer

Completion of work filed _____

Proof of beneficial use filed _____

Cultural map filed _____

Certificate No. _____ Issued _____

NO. 63696

**APPLICATION FOR PERMISSION TO CHANGE POINT OF
DIVERSION, MANNER OF USE AND PLACE OF USE OF THE
PUBLIC WATERS OF THE STATE OF NEVADA
HERETOFORE APPROPRIATED**

Date of filing in State Engineer's Office DEC 30 1997
Returned to applicant for correction _____
Corrected application filed _____
Map filed DEC 30 1997 under 63695

The applicant Mt. Rose Development Company hereby make application for permission to change the Point of Diversion and Place of Use of water heretofore appropriated under a portion of Permit 47128

1. The source of water is Underground Well
2. The amount of water to be changed 0.0438 cfs or 31.669 AF, annually
3. The water to be used for Quasi-Municipal
4. The water heretofore permitted for Quasi-Municipal
5. The water is to be diverted at the following point SW1/4 SW1/4 Section 19, T17N, R19E, MDM, or at a point from which the South 1/4 corner of said Section 19 bears, S 73°09'07"E., a distance of 2227 feet
6. The existing permitted point of diversion is located within NW1/4 SW1/4 Section 19, T17N, R19E, MDM, or at a point from which the Southwest corner of said Section 19 bears, S 20° 30' W a distance of 2,475 feet
7. Proposed place of use NE1/4, N1/2 SE1/4, NE1/4 SW1/4, Section 19, T17N, R19E, MDM
8. Existing place of use Sections 13, 14, 23, 24, 25 and 26, T17N, R18E, MDM and Sections 7, 8, 17, 18, 19, 20, N1/2 Section 29 and N1/2 Section 30, T17N, R19E, MDM
9. Use will be from January 1 to December 31 of each year.
10. Use was permitted from January 1 to December 31 of each year.
11. Description of proposed works Water well, distribution lines, above-ground storage tank and possible storage pond.
12. Estimated cost of works \$500,000.00
13. Estimated time required to construct works Two Years
14. Estimated time required to complete the application of water to beneficial use Ten Years
15. Remarks: This water will be used for snow making, ski lodge and planned condominiums.

By s/Richard W. Arden Agent
950 Industrial Way
Sparks, Nevada 89431

Compared gkl/cms dl/cms

Protested _____

APPROVAL OF STATE ENGINEER

This is to certify that I have examined the foregoing application, and do hereby grant the same, subject to the following limitations and conditions:

This permit to change the point of diversion and place of use of a portion of the waters of an underground source as heretofore granted under Permit 47128 is issued subject to the terms and conditions imposed in said Permit 47128 and with the understanding that no other rights on the source will be affected by the change proposed herein. The well shall be equipped with a 2-inch opening and a totalizing meter must be installed and maintained in the discharge pipeline near the point of diversion and accurate measurements must be kept of water placed to beneficial use. The totalizing meter must be installed before any use of the water begins or before the proof of completion of work is filed. If the well is flowing, a valve must be installed and maintained to prevent waste. This source is located within an area designated by the State Engineer pursuant to NRS 534.030. The State retains the right to regulate the use of the water herein granted at any and all times.

This permit does not extend the permittee the right of ingress and egress on public, private or corporate lands.

The issuance of this permit does not waive the requirements that the permit holder obtain other permits from State, Federal and local agencies.

The well must be sealed with cement grout, concrete grout or neat cement from ground level to 100 feet.

The total combined duty of water under Permits 63695, 63696, 63697 and 63698 shall not exceed 100.0 acre-feet annually.

Monthly records shall be kept of the amount of water pumped from this well and the records submitted to the State Engineer on a quarterly basis within 15 days after the end of each calendar quarter.

The amount of water to be appropriated shall be limited to the amount which can be applied to beneficial use, and not to exceed 0.0438 cubic feet per second, but not to exceed 31.669 acre-feet annually.

Work must be prosecuted with reasonable diligence and be completed on or before:

January 4, 2000

Proof of completion of work shall be filed before:

February 4, 2000

Application of water to beneficial use shall be filed on or before:

January 4, 2001

Proof of the application of water to beneficial use shall be filed on or before:

February 4, 2001

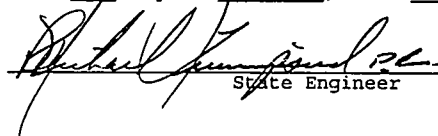
Map in support of proof of beneficial use shall be filed on or before:

N/A

IN TESTIMONY WHEREOF, I, R. MICHAEL TURNIPSEED, P.E.,

State Engineer of Nevada, have hereunto set
my hand and the seal of my office,

this 4th day of January, A.D. 1999


State Engineer

Completion of work filed _____

Proof of beneficial use filed _____

Cultural map filed _____

Certificate No. _____ Issued _____

NO. 63697

**APPLICATION FOR PERMISSION TO CHANGE POINT OF
DIVERSION, MANNER OF USE AND PLACE OF USE OF THE
PUBLIC WATERS OF THE STATE OF NEVADA
HERETOFORE APPROPRIATED**

Date of filing in State Engineer's Office DEC 30 1997

Returned to applicant for correction _____

Corrected application filed _____

Map filed DEC 30 1997 under 63695

The applicant Mt. Rose Development Company hereby make application for permission to change the Point of Diversion and Place of Use of water heretofore appropriated under a portion of Permit 47129

1. The source of water is Underground Well
2. The amount of water to be changed 0.0438 cfs or 31.669 AF, annually
3. The water to be used for Quasi-Municipal
4. The water heretofore permitted for Quasi-Municipal
5. The water is to be diverted at the following point SW1/4 SW1/4 Section 19, T17N, R19E, MDM, or at a point from which the South 1/4 corner of said Section 19 bears, S 73°09'07"E a distance of 2227 feet
6. The existing permitted point of diversion is located within SW1/4 SW1/4 Section 18, T17N, R19E, MDM, or at a point from which the Southwest corner of Section 19, T17N, R19E, MDM bears S 03° 45' W a distance of 5,715 feet
7. Proposed place of use NE1/4, N1/2 SE1/4, NE1/4 SW1/4, Section 19, T17N, R19E, MDM
8. Existing place of use Sections 13, 14, 23, 24, 25 and 26, T17N, R18E, MDM and Sections 7, 8, 17, 18, 19, 20, N1/2 Section 29 and N1/2 Section 30, T17N, R19E, MDM
9. Use will be from January 1 to December 31 of each year.
10. Use was permitted from January 1 to December 31 of each year.
11. Description of proposed works Water well, distribution lines, above-ground storage tank and possible storage pond.
12. Estimated cost of works \$500,000.00
13. Estimated time required to construct works Two Years
14. Estimated time required to complete the application of water to beneficial use Ten Years
15. Remarks: This water will be used for snow making, ski lodge and planned condominiums.

By s/Richard W. Arden Agent
950 Industrial Way
Sparks, Nevada 89431

Compared gkl/cms dl/cms

Protested _____

APPROVAL OF STATE ENGINEER

This is to certify that I have examined the foregoing application, and do hereby grant the same, subject to the following limitations and conditions:

This permit to change the point of diversion and place of use of a portion of the waters of an underground source as heretofore granted under Permit 47129 is issued subject to the terms and conditions imposed in said Permit 47129 and with the understanding that no other rights on the source will be affected by the change proposed herein. The well shall be equipped with a 2-inch opening and a totalizing meter must be installed and maintained in the discharge pipeline near the point of diversion and accurate measurements must be kept of water placed to beneficial use. The totalizing meter must be installed before any use of the water begins or before the proof of completion of work is filed. If the well is flowing, a valve must be installed and maintained to prevent waste. This source is located within an area designated by the State Engineer pursuant to NRS 534.030. The State retains the right to regulate the use of the water herein granted at any and all times.

This permit does not extend the permittee the right of ingress and egress on public, private or corporate lands.

The issuance of this permit does not waive the requirements that the permit holder obtain other permits from State, Federal and local agencies.

The well must be sealed with cement grout, concrete grout or neat cement from ground level to 100 feet.

The total combined duty of water under Permits 63695, 63696, 63697 and 63698 shall not exceed 100.0 acre-feet annually.

Monthly records shall be kept of the amount of water pumped from this well and the records submitted to the State Engineer on a quarterly basis within 15 days after the end of each calendar quarter.

The amount of water to be appropriated shall be limited to the amount which can be applied to beneficial use, and not to exceed 0.0438 cubic feet per second, but not to exceed 31.669 acre-feet annually.

Work must be prosecuted with reasonable diligence and be completed on or before:

January 4, 2000

Proof of completion of work shall be filed before:

February 4, 2000

Application of water to beneficial use shall be filed on or before:

January 4, 2001

Proof of the application of water to beneficial use shall be filed on or before:

February 4, 2001

Map in support of proof of beneficial use shall be filed on or before:

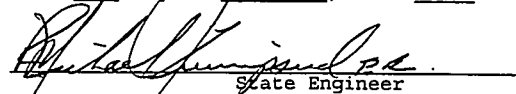
N/A

IN TESTIMONY WHEREOF, I, R. MICHAEL TURNIPSEED, P.E.,

State Engineer of Nevada, have hereunto set

my hand and the seal of my office,

this 4th day of January, A.D. 1999


State Engineer

Completion of work filed _____

Proof of beneficial use filed _____

Cultural map filed _____

Certificate No. _____ Issued _____

**APPLICATION FOR PERMISSION TO CHANGE POINT OF
DIVERSION, MANNER OF USE AND PLACE OF USE OF THE
PUBLIC WATERS OF THE STATE OF NEVADA
HERETOFORE APPROPRIATED**

Date of filing in State Engineer's Office DEC 30 1997

Returned to applicant for correction _____

Corrected application filed _____

Map filed DEC 30 1997 under 63695

The applicant Mt. Rose Development Company hereby make application for permission to change the Point of Diversion and Place of Use of water heretofore appropriated under a portion of Permit 47130

1. The source of water is Underground Well
2. The amount of water to be changed 0.01 cfs or 4.99 AF, annually
3. The water to be used for Quasi-Municipal
4. The water heretofore permitted for Quasi-Municipal
5. The water is to be diverted at the following point SW1/4 SW1/4 Section 19, T17N, R19E, MDM, or at a point from which the South 1/4 corner of said Section 19 bears, S 73°09'07"E a distance of 2227 feet
6. The existing permitted point of diversion is located within NE1/4 SW1/4 Section 18, T17N, R19E, MDM, or at a point from which the Southwest corner of Section 19, T17N, R19E, MDM bears, S 18° 15' W a distance of 7750 feet
7. Proposed place of use NE1/4, N1/2 SE1/4, NE1/4 SW1/4, Section 19, T17N, R19E, MDM
8. Existing place of use Sections 13, 14, 23, 24, 25 and 26, T17N, R18E, MDM and Sections 7, 8, 17, 18, 19, 20, N1/2 Section 29 and N1/2 Section 30, T17N, R19E, MDM
9. Use will be from January 1 to December 31 of each year.
10. Use was permitted from January 1 to December 31 of each year.
11. Description of proposed works Water well, distribution lines, above-ground storage tank and possible storage pond.
12. Estimated cost of works \$500,000.00
13. Estimated time required to construct works Two Years
14. Estimated time required to complete the application of water to beneficial use Ten Years
15. Remarks: This water will be used for snow making, ski lodge and planned condominiums.

By s/Richard W. Arden Agent
950 Industrial Way
Sparks, Nevada 89431

Compared gkl/cms dl/cms

Protested _____

APPROVAL OF STATE ENGINEER

This is to certify that I have examined the foregoing application, and do hereby grant the same, subject to the following limitations and conditions:

This permit to change the point of diversion and place of use of a portion of the waters of an underground source as heretofore granted under Permit 47130 is issued subject to the terms and conditions imposed in said Permit 47130 and with the understanding that no other rights on the source will be affected by the change proposed herein. The well shall be equipped with a 2-inch opening and a totalizing meter must be installed and maintained in the discharge pipeline near the point of diversion and accurate measurements must be kept of water placed to beneficial use. The totalizing meter must be installed before any use of the water begins or before the proof of completion of work is filed. If the well is flowing, a valve must be installed and maintained to prevent waste. This source is located within an area designated by the State Engineer pursuant to NRS 534.030. The State retains the right to regulate the use of the water herein granted at any and all times.

This permit does not extend the permittee the right of ingress and egress on public, private or corporate lands.

The issuance of this permit does not waive the requirements that the permit holder obtain other permits from State, Federal and local agencies.

The well must be sealed with cement grout, concrete grout or neat cement from ground level to 100 feet.

The total combined duty of water under Permits 63695, 63696, 63697 and 63698 shall not exceed 100.0 acre-feet annually.

Monthly records shall be kept of the amount of water pumped from this well and the records submitted to the State Engineer on a quarterly basis within 15 days after the end of each calendar quarter.

The amount of water to be appropriated shall be limited to the amount which can be applied to beneficial use, and not to exceed 0.01 cubic feet per second, but not to exceed 4.99 acre-feet annually.

Work must be prosecuted with reasonable diligence and be completed on or before:

January 4, 2000

Proof of completion of work shall be filed before:

February 4, 2000

Application of water to beneficial use shall be filed on or before:

January 4, 2001

Proof of the application of water to beneficial use shall be filed on or before:

February 4, 2001

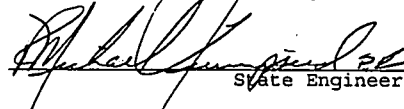
Map in support of proof of beneficial use shall be filed on or before:

N/A

IN TESTIMONY WHEREOF, I, R. MICHAEL TURNIPSEED, P.E.,

State Engineer of Nevada, have hereunto set my hand and the seal of my office,

this 4th day of January, A.D. 1999


State Engineer

Completion of work filed _____

Proof of beneficial use filed _____

Cultural map filed _____

Certificate No. _____ Issued _____