

MT. ROSE SERVICE COMPANY

PRELIMINARY WATER SYSTEM

MASTER PLAN AND REPORT

MARCH, 1980



PREPARED FOR

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28 VINE STREET

Subject: Mt. Rose Service Company - Preliminary Water System

Master Plan and Report

Gentlemen:

Enclosed are three copies of the referenced Master Plan and Report for your review and comments.

WATERESOURCE has compiled all of the data which has been gathered from private and government sources concerning the Mt. Rose Water System in the attached report. This information varies from well logs to water rights. In addition to the record information, well testing was undertaken to ascertain both quantity and quality. The report appendix contains all of the data gathered. With the data, a preliminary master plan was prepared to incorporate not only existing facilities and needs, but those facilities which may be required to serve the Galena Creek area in the foreseeable future.

The Master Plan, which was developed using zoning techniques along with the physical restraints of the area, indicates that ultimately the Mt. Rose Service Company will have to upgrade their facilities to meet the ultimate water demand obligation. This upgrading will take place in the form of increased well and booster pump capacity, as well as transmission and distribution improvements. The Master Plan should be used to guide future system improvements. Individual consideration should be given to each development which may necessitate alterations to the Master Plan.

In summary, the water system will require several improvements at this time to meet present commitments. The improvements include developing the existing well field and the facilities presently being constructed for the Galena Forest project.

WATERESOURCE has appreciated the opportunity to be of service to Intermountain Development Company and the Mt. Rose Service Company. We look forward to assisting both companies in the future with respect to water development in the area. If there are any questions or interpretation is necessary, please call.

Sincerely,

WATERESOURCE CONSULTING ENGINEERS, INC.

Kenneth R. Freeman, P.E.

· KRF/dmo

Enclosures

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SECTION 1 - INTRODUCTION

In December of 1979, WATERESOURCE entered into a contract with Intermountain Development Company, the purpose of which was to investigate the existing capabilities of the Mt. Rose Service Company to supply water to their service area. In conjunction with evaluation of existing facilities, WATERESOURCE contracted to develop a preliminary master plan of the service area including facility requirements for the ultimate needs of the service area.

Portions of this report will cover:

- 1. Permitted water rights.
- 2. Existing facilities.
- 3. Existing groundwater source capabilities.
- 4. Ultimate water demands.
- 5. Facilities--wells, pumps, tanks, and pressure reducing stations.

The basic intention of this report is to furnish a guide in planning the physical progression of installation of the water system facilities as they are required by development in the area. Because it is difficult to determine the direction and timing of development in various areas within the service area, a certain flexibility is required in designing the actual facilities at any given time. Therefore, this report should be used as a guide only and with individual consideration given to specific developments.

A byproduct of the report has been the development of a data base for the water service company. Prior to the report, information did not appear to be centralized for easy access.

SECTION 2 - PERMITTED WATER RIGHTS

Application for a certificated water right was initiated in 1978. The State Water Engineer approved the application of a permitted right and set the dates required to fulfill the requirements to obtain a certificated right. Portions of the application are contained in Appendix A denoting the requirements and dates various proofs are to be filed. In May 1979, application was made for an extension for proof of beneficial use. An extension was granted until May 30, 1980.

Applications No. 35147, 35148, 35149, 35150, 35151, and 35152 are interrelated in that maximum pumping rates were established combining all six applications.

Maximum diversion rate

- 5 cfs or 2,240 gpm

Maximum annual use rate

- 1,095.0 mg

Residence to be served by the six permits - 3,000 homes

The permits also state that application No. 30261 by Uplands Inc. (Appendix A) would be honored ahead of Mt. Rose for 109.5 mg annually at a 3 cfs or 1,344 gpm diversion rate. If Uplands could not show beneficial use within the time restraints specified, the balance would revert back to the Mt. Rose Service Company. Proof of beneficial use is due by Uplands on March 11, 1983. If Uplands can support their application, this will reduce the Mt. Rose water rights quantities and ultimately reduce the

numbers of residences contained in the original permit as noted below:

Maximum diversion rate

- 5 cfs or 2,240 gpm

Maximum annual use rate

- 985.5 mg

Residence to be served by the six permits - 2,700 homes

Contained in the section on <u>Water Demands</u> under <u>Master Plan Zoning</u>, the ultimate demand was estimated to be 986 mg annually. This would indicate that the existing permitted rights are sufficient, excluding the Upland's rights, to meet the demands of the service area as presently outlined on the Master Plan map.

SECTION 3 - EXISTING WATER SYSTEM FACILITIES

A. <u>Wells</u> - At present, there are six wells which are owned by Mt. Rose. The wells lie within the southeast quarter of Section 2, T17N, R19E. Figure 3.1 shows the relationship of the six wells to each other and to the surrounding neighborhood.

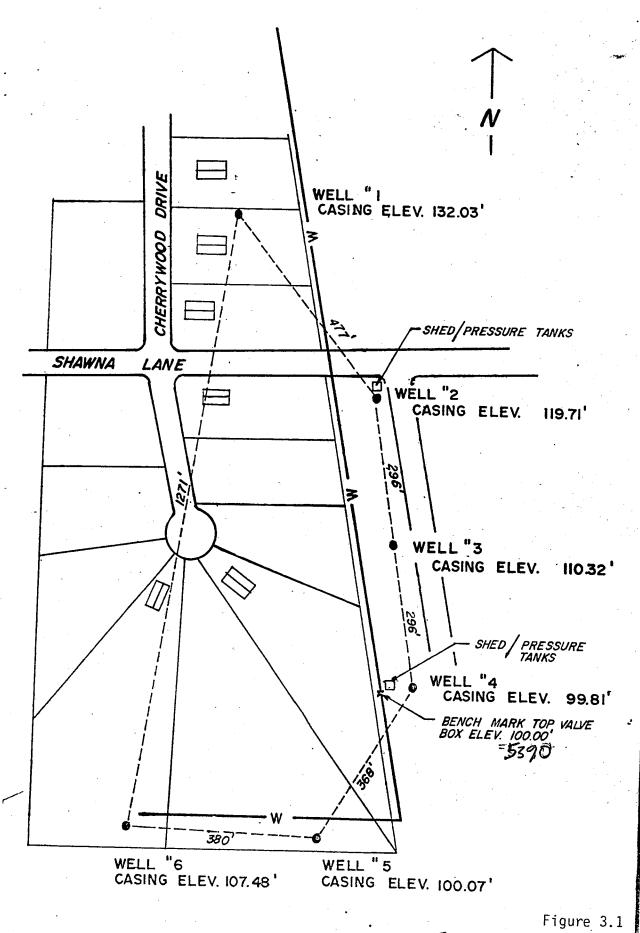
Wells No. 2 and No. 4 are the only wells being used at this time to supply water to the system. The other four wells are not connected to the system. We have included in Appendix B copies of the driller's logs for each well as filed with the Division of Water Resources. The logs show that the wells were drilled between 1974 and 1977.

The following is an itemized list of data taken from the driller's log, plus observations made during the testing of each well:

<u>Well No. 1</u>:

- A. Drilled June, 1976.
- B. Driller--Glenn Pump & Drilling Company
- C. Cable tool drilled to a depth of 200 feet (present sounded depth = 134 feet).
- D. Eight-inch casing.
- E. Perforations--100 to 200 feet.

The only variance from the log found during testing was that the perforation may exist above 100 feet.







Well No. 2:

- A. Drilled March, 1974.
- B. Driller--Glenn Pump & Drilling Company.
- C. Cable tool drilled to a depth of 175 feet (present sounded depth = 170 feet).
- D. Eight-inch casing.
- E. Perforations--146 to 175 feet.

Nothing was found during testing which varied from the driller's log.

Well No. 3:

- A. Drilled June, 1976.
- B. Driller--Glenn Pump & Drilling Company.
- C. Rotary drilled and gravel-packed to a depth of 175 feet (present sounded depth = 147 feet).
- D. Eight-inch casing.
- E. Perforations--100 to 175 feet.

There appears to be a casing size reduction at 87 feet, probably to 6-inch.

Well No. 4:

- A. Drilled May, 1977.
- B. Driller--Marcin Drilling Company.
- C. Cable tool drilled to a depth of 235 feet (present sounded depth = 182 feet).
- D. Eight-inch casing to 163 feet.
- E. Perforations--100 to 235 feet.

Except for the depth, no variations were noted during testing.

Well No. 5:

- A. Drilled May, 1977.
- B. Driller--Andrew J. Foster.
- C. Cable tool drilled to a depth of 140 feet (present sounded depth = 195 feet).
- D. Eight-inch casing.
- E. Perforations--100 to 140 feet.

Several things varied from the log during testing. Given that the test pump was set at 150 feet and by sounding the bottom of the well at 195 feet, it appears that the well was deepened after the original drilling. It was also found that a six-inch liner may begin at 110 feet. This could explain how the well was deepened.

Well No. 6:

- A. Drilled May, 1977.
- B. Driller--Marcin Drilling Company.
- C. Cable tool drilled to a depth of 161 feet (present sounded depth = 172 feet).
- D. Eight-inch casing.
- E. Perforations--100 to 161 feet.

When the well was sounded, the depth appeared to be 172 feet. This variance could have resulted during the original drilling operation.

The only variable to show up on the field inspection was the depth of the

individual wells. Except for Well No. 5, the other wells all appear to be more shallow than described in the logs. It is possible, with time, that the well may have filled in with sand and silt. Developing and cleaning the wells could restore depth; however, if the well is of cable tool construction, it will silt in again with time.

In addition to the above-recorded data and observed data, the tops of the casings were surveyed to relate each well by elevation differences:

	ELEVATION TOP CASING
Well No. 1	132.03 ft.
Well No. 2	119.71 ft.
Well No. 3	110.32 ft.
Well No. 4	99.81 ft.
Well No. 5	100.07 ft.
Well No. 6	107.49 ft.

Basis of elevation: valve box cover, northeast corner of building at Well No. 4--set at 100.00 feet.

B. <u>Well Pumping Equipment</u> - Four of the six wells are equipped with pumps. As stated before, only Well No. 2 and No. 4 are operable at this time.

Well No. 1:

- A. One HP single phase pump and motor.
- B. Service pole lying on ground.
- C. One and one-half inch discharge with well cap.
- D. No discharge capability.

Well No. 2:

- A. Seven and one-half HP single phase pump and motor. Gould UH66KT12 (100 gpm at 200 TDH).
- B. Service pole operable.
- C. One and one-half inch discharge, 8-inch pitless adaptor.
- D. Two 80-gallon pressure tanks inside building.
- E. Discharge directly to main.

Well No. 3:

- A. Seven and one-half HP single phase pump and motor. Gould UH66KT12 (100 gpm at 200 TDH).
- B. Service pole operable.
- C. Three-inch discharge.
- D. No discharge capability.

Well No. 4:

- A. Seven and one-half HP single phase pump and motor. Gould UH66KT12 (100 gpm at 200 TDH).
- B. Service pole operable.
- C. Three-inch discharge, 8-inch pitless adaptor.
- D. One thousand gallon pressure tank inside building.
- E. Filters between well and tank.
- F. Discharge into system.

Well No. 5:

- A. No pump present.
- B. Service pole operable, single phase.

Well No. 6:

- A. No pump present.
- B. Service pole operable, single phase.

The capacity of each well will be discussed in Section 5.

C. <u>Piping Network</u> - The existing piping is made up of six-inch, eight-inch, and ten-inch asbestos cement pipe, Class 150. Appendix D contains a service map showing the existing system as of October, 1979. The system contains less than 6,000 lineal feet of pipe within the well field and beyond for disbribution. There are several services in use at this time along with several fire hydrants.

Pressure within the system is supplied by the well pumps through the pressure sustaining tanks.

SECTION 4 - FACILITIES UNDER CONSTRUCTION

- A. <u>Storage Tank</u> There is a 420,000 gallon tank at Galena Forest under construction. Tank data is as follows:
 - 1. Diameter--55 feet.
 - 2. Height--24 feet.
 - Overflow height--6,248 feet.
 - 4. Pad elevation--6,225 feet.

The tank was constructed to AWWA Standards for a welded steel tank.

- B. <u>Booster Pump Stations (Galena Creek Pump Station)</u> The high head pump station at the well field is as follows:
 - 1. Design--two pumps at 175 gpm at 700 feet TDH.
 - 2. Discharge elevation--approximately 5,400 feet.

The booster pump station is located next to Well No. 2. The suction side is connected to the existing ten-inch main now used in the service area. The discharge is to a new ten-inch main connecting the pump station to the tank located in Galena Forest Estates.

C. <u>Secondary Booster Pump Station (Galena Forest Pump Station)</u> - This station services a small area in Galena Forest Estates in the near vicinity of the tank.

- 1. Design two pumps at 53 gpm with 46 feet TDH.
- 2. Discharge elevation--6,227 feet.
- 3. Two pressure sustaining tanks--120 gallons capacity each.

This station receives its suction pressure from the storage tank located adjacent to the pump station.

- D. <u>Pressure Reducing Station</u> This station is located in Galena Forest Estates in the Douglas fir parklet. The purpose of the station is to reduce pressure from the ten-inch transmission main into an area to be served. This is required because the pressure in this area is greater than 100 psi inside the ten-inch main (see pressure zone 6,017-5,890 on the Preliminary Water System Master Plan map, Appendix F).
- E. <u>Ten-Inch Transmission Main</u> The above booster pump station and tank are connected by a ten-inch asbestos cement pipe. The pipe ranges in class from T-90 to T-40. The main is approximately 17,630 (3.3 miles) feet long with over 100 psi pressure over the lower 14,920 feet (2.8 miles). The pressure reaches static pressures of 360 psi and surge pressure in excess of 360 psi. Extreme care should be exercised when working in the vicinity of this main.

SECTION 5 - EXISTING WELL CAPACITIES

A. <u>General</u> - In determining the capacity of the well field and the individual wells, two evaluations need to be made. First, what is the capacity of the well as constructed and secondly, what is the capacity of the aquifer supplying the well?

The process of evaluation required pump test data. This was accomplished by testing each well by a stepping process in which increased pump rates are used for short durations (step test). We also tested Well No. 3 for a longer duration (24 hours) at a constant pumping rate of 250 gpm. In conjunction with the long duration test, we observed and recorded water level variation in Wells No. 4 and No. 5 to determine the effects of long-term pumping.

In general, the step test results were used to evaluate the capacity of the individual wells as constructed. The long duration test plus observation tests, were used to evaluate the aquifer (supply). The data taken from the step test and long duration test can be found in Appendix C.

B. <u>Well Capacity</u> - Individual well characteristics are itemized in Section 3 (A). With the test data and the well characteristics, the following evaluation was compiled:

Well No. 1 (0 gpm):

As shown in the step test data for Well No. 1 (Appendix C), we could not pump this well for more than four minutes at 35 gpm. Therefore, the well was eliminated for consideration as a production well. It could be used as a tomestic well if properly developed.

Well No. 2 (100 gpm - limited durations):

This well is presently connected to the Mt. Rose Water System.

Through the step test (figure 5.1), it is felt that the well,
as constructed, can reliably supply 100 gpm for limited durations.

Well No. 3 (350 gpm):

Well No. 3 is by far the best constructed well. It appears to have been a rotary drilled, gravel-packed well. This type of drilling allows gravel to be packed around the casing, with a resulting increase of water flow to the casing and ultimately to the pump. No. 3 could be considered a limited production well. Figure 5.2 shows the relative strength of the well.

Well No. 3 was not pumped at the capacity we have estimated, but from experience, we feel that it could supply 350 gpm.

Well No. 4 (75 gpm - limited duration):

This well is identical in nature to Well No. 2 except that its construction is slightly more constricting on the flow volume.

A comparison of Figure 5.1 and Figure 5.3 graphically shows the

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difference in each well's capacity. Well No. 4 is also connected to the existing water system.

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Well No. 5 (75 gpm - limited duration):

Well No. 5 is rated at 75 gpm. It appears to tap a different water source than Wells No. 3, No. 4, and No. 6. This difference is indicated by the difference in statis water elevations as contained in Appendix C. Figure 5.4 graphically shows the test data taken for Well No. 5.

Well No. 6 (100 gpm - limited duration):

Figure 5.5 and the test data show that the well was stressed at 140 gpm. However, we feel that it should hold 100 gpm on a limited time duration.

Summation of Evaluated Quantities:

Well No. 1 - 0 gpm

Well No. 2 - 100 gpm

Well No. 3 - 350 gpm

Well No. 4 - 75 tpm

Well No. 5 - 75 gpm

Well No. 6 - 100 gpm

TOTAL: 700 gpm

The 700 gpm figure represents what the wells are capable of, as constructed. We believe reconstruction or development could improve each well's capabilities.

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Figure 5.5

C. Aquifer Capabilities (Groundwater Supply) - It is difficult to evaluate the aquifer with the data developed from the pump testing. Because of the limitation resulting from the construction of the existing wells, limited data was developed from the test. We were unable to stress the aquifer through Well No. 3 with the limitation of pump size, i.e., the well could accept only a small pump capable of 275 gpm. A special pump could have been bought, however, cost considerations eliminated this possibility.

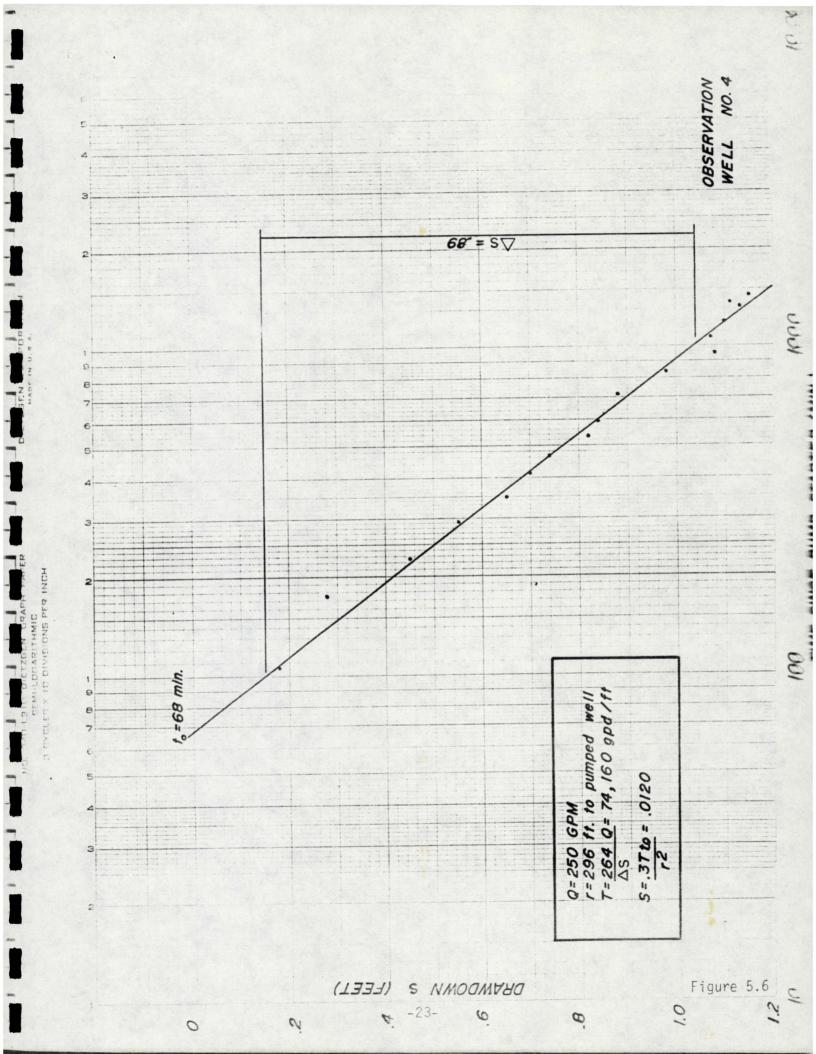
Although information from pumping Well No. 3 is insufficient to completely evaluate the aquifer, observation data taken concurrently on Well No. 4 is sufficient to preliminarily evaluate the aquifer from which water is being taken. Figure 5.6 represents a time vs. drawdown comparison. With this graph, two parameters of aquifer evaluation can be developed. They are:

Coefficient of Transmissibility (T) - of an aquifer is the rate at which water will flow through the aquifer and is measured in gallons per day per foot.

Coefficient of Storage (S) - of an aquifer is the volume of water released from storage, or taken into storage and is a dimensionless unit.

With these two parameters, we can make some predictions:

- 1. Specific capacity of the wells with different diameters.
- Drawdowns in the aquifers at various distances from a pumped well.
- 3. The drawdown in a well at any time after pumping commences.



The T and S developed from Figure 5.6, with back-up data in Appendix C, indicates there exists an aquifer with capabilities significantly greater than the capabilities of the well field (700 gpm) as constructed. Without the ability to stress the aquifer, the developed T and S should be considered preliminary until such time as the aquifer can be stressed, possibly through a new well properly sized and constructed and a much higher rate pump test conducted.

SECTION 6 - PROJECTED WATER DEMANDS

- A. <u>General</u> Two elements make up the total water demand for the service area. The first element is the density or population which could inhabit this area. Second, the water usage projected for the individual person and then extended to the total water usage for the population.
- B. <u>Estimated Customers</u> To estimate the potential number of customers, several elements control the density or population in the service area. These elements consist of zoning, terrain, and existing areas already served by alternate sources.
 - 1. Zoning There are two zoning plans presently covering the service area. Both zoning plans were developed by the Regional Planning Commission of Washoe County. The first plan is defined by maps for Land Use Districts 4, 8, and 12. Table 6.1 gives a breakdown by zoning definition from residential to commercial of the acreage in each section for the service area.

The second plan was adopted by Washoe County in 1978 and represents a master plan for the area and is defined as, "Galena Fan Planning Area." Table 6.2 gives a breakdown by zoning definition from residential, commercial, and conservation-recreational area and shows the acreage in each section for the service area.

TABLE 6.1

PRESENT ZONING - RPC (Acres)

SECTION	<u>A-1</u>	<u>A-2</u>	<u>A-4</u>	<u>C-1</u>	<u>C-2</u>	TOTAL
1	360		280			640
2	640		===			640
3	545	60		20	15	640
4	. 10		150	20	10	640
9	110		215	55	20	160
10	635		5		20	400
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35	210	270			~~~	320
36	250	70			*	480
		,,,				320
TOTALS:	3,890	790	810	75	35	5,600

NOTES:

- Zoning taken from Regional Planning Commission maps for Land Use Districts 4, 8 and 12.
- 2. Acreage estimated to nearest five acres.

TABLE 6.2

MASTER PLAN ZONING - RPC (Acres)

SECTION	<u>A-1</u>	<u>A-2</u>	<u>A-7</u>	COMMERCIAL	ACTIVE RECREATION (A-R)	CONSERVATION (L-R)	TOTAL
1	35		600	85-86		5	640
. 2	515				5	120	640
3	500		· .	40		100	640
4					150	10	160
9	90			40	200	70	400
10	530	· ·	80			30	640
11	545		70	••	5	20	640
12	120		20		450	50	640
25		70				10	80
34	80	70		• • • • • • • • • • • • • • • • • • •	150	20 .	320
35	350	100				30	480
36		240			70	10	320
TOTALS:	2,765	480	770	80	1,030	475	5,600

Notes:

- Zoning taken from Regional Planning Commission maps for master plan of Galena fan planning area.
- 2. Acreage estimated to nearest five acres.

In this report, we will use a combination of both plans in conjunction with engineering judgement in projecting the potential number of customers for the Mt. Rose Service Company.

- 2. <u>Terrain</u> As shown on the master plan map, there are areas which, in our opinion, are not suitable for development because of vertical elevation changes or hazardous areas, i.e., stream channels or other natural conditions. We have removed these areas from our calculations of customer service densities. Most of these areas fall within the active-recreation zoning and, therefore, must be discounted.
- 3. Areas Already Served Because of the nature of water reliability in Nevada, in this report we have assumed that at total build out, those existing private sources of water will be transferred to the Mt. Rose Service Company.

This assumption thereby will result in calculating the maximum demand. Any private system continuing in use will relieve the demands placed upon the service area.

C. <u>Customer Water Usage</u> - There are two criteria which must be met. First, Washoe County Public Health Department requires that a water system be capable of delivering 1 gpm per customer during peak demands. This would translate to 1,440 gallons per day. The second criteria is that the State Water Engineer evaluates a water system on 1,000 gallons per day per customer.

Therefore, the system will be designed as follows:

Delivery to customers--1,440 gpd.

Delivery by ground water source--1,000 gpd.

The difference of 440 gpd during peak demands will be met by storage from tanks within the system.

D. Annual Water System Demand Calculations from Ground Water Source -

1. Assumptions:

- (a) Ten percent loss of area due to streets.
- (b) Areas taken from Table 6.1 and 6.2.

2. Present Zoning:

A-1 (1 acre) - $3,890 \times 0.9 = 3,501$ acres or customers

A-2
$$(2\frac{1}{2} \text{ acres}) - \frac{790 \times 0.9}{2.5} = 284 \text{ customers}$$

A-4 (5 acres) -
$$\frac{810 \times 0.9}{5}$$
 = 146 customers

C-1 - estimate 20 customers

C-2 - estimate 10 customers

Total Demand:

 $A-1 - 3,501 \times 1,000 \text{ gpd} = 3.50 \text{ mgd}$

 $A-2 - 284 \times 1,000 \text{ gpd} = 0.28 \text{ mgd}$

 $A-4 - 146 \times 1,000 \text{ gpd} = 0.15 \text{ mgd}$

 $C-1 - 20 \times 1,000 \text{ gpd} = 0.02 \text{ mgd}$

 $C-2 - 10 \times 1,000 \text{ gpd} = 0.01 \text{ mgd}$

3.96 mgd or 1,445 mg/year

Master Plan Zoning:

A-1 (1 acre) $-2,765 \times 0.9 = 2,489$ acres or customers

A-2 (2½ acres) -
$$\frac{480 \times 0.9}{2.5}$$
 = 173 customers

A-7 (40 acres) -
$$\frac{770 \times 0.9}{40}$$
 = 17 customers

Commercial - estimate 20 customers

Active Recreational (A-4) - negligible compared to Residential Conservation (L-R) - negligible compared to Residential

Total Demand

$$A-1$$
 - 2,489 x 1,000 gpd = 2.49 mgd

$$A-2$$
 - 173 x 1,000 gpd = 0.17 mgd

$$A-7$$
 - 17 x 1,000 gpd = 0.02 mgd

Commercial -
$$20 \times 1,000 \text{ gpd} = 0.02 \text{ mgd}$$

2.70 mgd or 986 mg /year

If we use the master plan figure of annual demand and compare it with the amount of water contained in the water rights permit for Mt. Rose Service Company of 985 to 1,095 mg/year, we can state the permitted rights and the source demand are compatible.

Galena Forest No. 1 - 420,000 gallons (existing)

Galena Forest No. 2 - 420,000 gallons (proposed)

Deer Forest - 420,000 gallons (proposed)

Well tank - 600,000 gallons (proposed)

SECTION 7 - MASTER PLAN

A. General

The Master Plan attempt to integrate the knowledge developed in Sections 2 through 6 and WATERESOURCE's experience. This integration includes the existing facilities, facilities under construction, ultimate water demands, and future facilities required to serve the ultimate demand.

The water system which was designed for Galena Forest Estates is the major factor involved in designing for the Master Plan. This water system extends from the well field to the tank site within Galena Forest. The location of the transmission main, as shown on the Master Plan map, Appendix F, traverses in a west to southwesterly direction through the service area. This main will be the major feed into the westerly portion of the service area. The east, north and south will require development of additional transmission capacity. The system will involve storage (tanks), pressure reducing stations, booster pump station, and additional well capacity.

B. Storage

In Section 6 (E)2, storage requirements were discussed to meet the peak day demand. The section indicated that in addition to the tank presently under construction, a minimum of three additional storage facilities would be required. One site exists next to the Galena Forest storage tank under

construction. A second and third site have been placed on the Master Plan as elevation requires. The sites are located in the:

NE4 of NE4, Section 10 - pad elevation 5,710 ft. NE4 of SW4, Section 1 - pad elevation 5,590 ft.

Both sites were picked considering elevation required, land availability, and location relative to demand. The locations can be changed, but the elevation must be maintained.

It could be anticipated that the Section 1 site would be served directly from the existing well field. The Section 10 site could be served via the 10-inch transmission main through a pressure reducing station or more efficiently from a new well field, location to be determined.

It is believed that development of storage facilities should adhere to the following pattern:

- 1. Section 1.
- 2. Section 10.
- 3. Second tank at Galena Forest.

The list results from a knowledge of the existing conditions and the developments in the planning stage at this time. Of course, development may take a completely different progression, which would necessitate a change.

C. Booster Pumps

With the development of the storage at Galena Forest and the accompanying booster pump station, major booster pump facilities will not be required in

the near future.

Booster pumps would be required to transport water to the Section 1 tank site, possibly to the Section 10 site. However, the location of the major booster pump facilities will depend on the location of the new well field.

The secondary or distribution pump stations are totally dependent on the progression of development. Their location would be dictated as development required.

D. Pressure Reducing Stations

These stations, as far as location, are similar to the secondary booster pump stations. They will be required to tap the high pressure 10-inch transmission line. The Master Plan shows the proposed station for Unit 2 of Galena Forest.

E. Wells

No attempt has been made to locate the new well field. However, a possibility is in the vicinity of Galena Creek through Sections 2, 10, and 11. See Section 5 on requirements.

F. Pressure Zones

Utilizing the knowledge of storage and source (well) location, WATERESOURCE has developed the pump zones for the Master Plan. These zones are an ideal condition and may require modification due to development requirements.

The zones are based on operating at a high pressure of 100 psi and low of

45 psi. This range of operating pressures, therefore, results in a zone with an elevation difference between high and low of 127 feet. The base or control which dictates the location of the zones is the storage facility being built in Galena Forest under the condition of a full tank.

Access to the zones is controlled by booster pumps (above tank) and pressure regulator (below the tank gravity zone). The pressure zones can change if a new well field is developed.

The Master Plan represents a compilation of known data. It should be used as a guide in developing the water system as required.

SECTION 8 - CONCLUSIONS

- Permitted water rights appear to be sufficient to meet the potential demands of the service area as presently defined.
- 2. Of the six wells, five were drilled by the cable tool method which is generally unacceptable for quasi-municipal use. The remaining well appears to have been drilled by rotary methods which should produce a production well, i.e., high volume. However, this well has a 6-inch liner which effectively mitigates the effects of the rotary drilling below what could be expected.
- 3. The wells are drilled into the same aquifer and, therefore, can be thought of as a single well system. It should be possible to drill a new well sufficient in capacity to eliminate all of the existing wells, with a resulting increase in efficiency.
- 4. The well field, as constructed, is capable of delivering 700 gpm which, with storage, should serve approximately 1,000 residences.
- 5. The existing pump capacity is capable of serving approximately 250 residences, i.e., the pumps in Wells No. 2 and No. 4. However, due to piping configuration of both discharges, the combined capability is less than 200 residences.

- 6. The capacity of Well No. 2 and No. 4 is INSUFFICIENT to meet the requirements of the Galena Creek pump station. It is possible that the pump could pump more water than delivered by the wells, thereby incurring damage.
- 7. Additional well capacity will be required as development takes place.
- 8. Wells No. 3, No. 5, and No. 6 could be developed on an interim basis if cost effective. A new well, properly constructed, may be more cost effective than utilizing the existing wells.
- 9. Water quality tests showed that the water is of high quality.

 Included in Appendix E are copies of the Nevada Division of

 Health lab tests for samples taken during the testing operation.

- 10. With the addition of the Galena Forest storage tank (420,000 gallons), storage capacity is sufficient to meet the present commitment to Galena Forest and the existing customers. Projects which are under way in Sections 3 and 11 may require additional storage when developed.
- 11. Additional storage tank sites will be required as development takes place. Ultimately, a total storage capacity of approximately 1.9 mg will be required in approximately four or more tanks.

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WATER RIGHTS PERMITS

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const	imptive use.	th comingling
	3000 sungle family dwelling units to be served	WILII COMINGALMS
	from other wells. Date of Incorporation is: J	June 27, 19//

	1p/ga bl/bc Applicant 18/78 by Mt.Rose Prop.Own.Assoc.,Inc.	***********
rro. 5/	18/78 by Mt.Rose Prop.Own.Assoc., Inc. 78 by Robert & Barbara Kutnocky s/ Lee Hale, Pres	5
5/22/	185 Casazza S	treet, P.O. Box 2
		0,50.
•	APPROVAL OF STATE ENGINEER	and instead on the
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13.	Estimated time required to construct works completed	
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	Remarks: For use other than irrigation or stock watering, state number and type of	•
	consumptive use.	
i	3000 single family dwelling units to be serve	d with comingling
•	from other wells. Date of Incorporation is:	June 27, 1977.
Pro 5,	npared lp/ga bl/bc Applicant	es. Street, P.O. Box 29
	APPROVAL OF STATE ENGINEER	
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to e	The place of use under this permit is limited to that the agreement dated June 18, 1978 filed under 35147. The duty of water under Permits 35147 through 35152 is limited gallons. The final allocation of water under Application from the annual duty under Permits 35147 through 35152 but 109.5 million gallons annually. Tamount of water to be changed shall be limited to the amount which can be applianced. 5.0 ————————————————————————————————	O30. The State retains at any and all times. area described in total combined annual to 1095.0 million 30261 shall be deducted shall not exceed ied to beneficial use, and not ot to exceed September 5, 1978
to e	The place of use under this permit is limited to that the agreement dated June 18, 1978 filed under 35147. The duty of water under Permits 35147 through 35152 is limited gallons. The final allocation of water under Application from the annual duty under Permits 35147 through 35152 but 109.5 million gallons annually. Tamount of water to be changed shall be limited to the amount which can be applicated. 5.0	O30. The State retains at any and all times. area described in total combined annual to 1095.0 million 30261 shall be deducted shall not exceed ied to beneficial use, and not ot to exceed September 5, 1978 October 5, 1978
Act Pro	The place of use under this permit is limited to that the agreement dated June 18, 1978 filed under 35147. The duty of water under Permits 35147 through 35152 is limited gallons. The final allocation of water under Application from the annual duty under Permits 35147 through 35152 but 109.5 million gallons annually. Tamount of water to be changed shall be limited to the amount which can be applicated. 5.0	O30. The State retains at any and all times. area described in total combined annual to 1095.0 million 30261 shall be deducted shall not exceed September 5, 1978 October 5, 1978 September 5, 1978
Act Pro Wo	The place of use under this permit is limited to that the agreement dated June 18, 1978 filled under 35147. The duty of water under Permits 35147 through 35152 is limited gallons. The final allocation of water under Application from the annual duty under Permits 35147 through 35152 but 109.5 million gallons annually. amount of water to be changed shall be limited to the amount which can be appliated. 5.0	O30. The State retains at any and all times. area described in total combined annual to 1095.0 million 30261 shall be deducted shall not exceed ied to beneficial use, and not ot to exceed September 5, 1978 October 5, 1978 October 5, 1978
Act Pro Wo. Pro	The place of use under this permit is limited to that the agreement dated June 18, 1978 filed under 35147. The duty of water under Permits 35147 through 35152 is limited gallons. The final allocation of water under Application from the annual duty under Permits 35147 through 35152 but 109.5 million gallons annually. amount of water to be changed shall be limited to the amount which can be appliated. 5.0	O30. The State retains at any and all times. area described in total combined annual to 1095.0 million 30261 shall be deducted shall not exceed seed to beneficial use, and not ot to exceed September 5, 1978 October 5, 1978 September 5, 1978 April 30, 1979
Act Pro Pro App	The place of use under this permit is limited to that the agreement dated June 18, 1978 filled under 35147. The duty of water under Permits 35147 through 35152 is limited gallons. The final allocation of water under Application from the annual duty under Permits 35147 through 35152 but 109.5 million gallons annually. amount of water to be changed shall be limited to the amount which can be appliated. 5.0	O30. The State retains at any and all times. area described in total combined annual to 1095.0 million 30261 shall be deducted shall not exceed ied to beneficial use, and not ot to exceed September 5, 1978 October 5, 1978 September 5, 1978 April 30, 1979 May 30, 1979

12.	Estimated cost of works \$200,000.00 total	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
13.	Estimated time required to construct works completed	
14.	Estimated time required to complete the application of water to beneficial use	10 years
15.	Remarks: For use other than irrigation or stock watering, state number and type	of units to be served or annual
]	consumptive use.	
	3000 single family dwelling units to be serv	ved with comingling
•	from other wells. Date of Incorporation is	June 27, 1977.
Pro	pared lp/ga bl/bc Applicant 5/18/78 by Mt.Rose Prop.Own.Assoc.,Inc. 22/78 by Robert & Barbara Kutnocky s/ Lee Hale, I	Pres.
	185 Casazza	Street, P.O. Box 292 la 89504
	APPROVAL OF STATE ENGINEER	
	This is to certify that I have examined the foregoing application, and do hereby	grant the same, subject to the
	This permit to change the place of use of the waters source as heretofore granted under Permit 28426 is issued and conditions imposed in said Permit 28426 and with the other rights on the source will be affected by the change well shall be equipped with a 2-inch opening and a totalizinstalled and maintained in the discharge pipeline near than accurate measurements must be kept of water placed to totalizing meter must be installed before any use of the other than the proof of completion of work is filed. If the well is be installed and maintained to prevent waste. This source area designated by the State Engineer pursuant to NRS 534, the right to regulate the use of the water herein granted. The place of use under this permit is limited to that agreement dated June 18, 1978 filed under 35147. The total of water under Permits 35147 through 35152 is limited to 1 The final allocation of water under Application 30261 shall annual duty under Permits 35147 through 35152 but shall no gallons annually.	subject to the terms understanding that no proposed herein. The zing meter must be ne point of diversion beneficial use. The vater begins or before a flowing, a valve must is located within an 1030. The State retains at any and all times. It area described in the all combined annual duty 1095.0 million gallons. It be deducted from the ot exceed 109.5 million
	mount of water to be changed shall be limited to the amount which can be app	
to exc	cobic feet per second.	•
	1095.0 million gallons annually.	
Actual	construction work shall begin on or before.	September 5, 1978
P.roof	of commencement of work shall be filed before	October 5, 1978
Work	must be prosecuted with reasonable diligence and be completed on or before	September 5, 1978
Proof	of completion of work shall be filed before.	October 5, 1978
Applic	ation of water to beneficial use shall be made on or before	April 30, 1979
	of the application of water to beneficial use shall be filed on or before.	
Map i	a support of proof of beneficial use shall be filed on or before.	

IN TESTIMONY WHEREOF, I ROLAND D. WESTERGARD
State Engineer of Nevada, have hereunto set my hand and the seal of

Completion of work filed____

Pro- " of beneficial use filed

il ,	•
12. Estimated cost of works \$200,000,00 t	-1.1
13. Estimated time required to construct works	SEAL
14. Estimated time required to	pleted
14. Estimated time required to complete the application of water to be	neficial use 10 yrs.
than irrigation or stock watering, state nu	mber and type of units to be served as
3.000 single family dwellings will from other sources Data of	he
from other sources Date of	ve_served_along_with_comingling
from other sources. Date of incorp	oration is: June 27, 1977
***************************************	PP 5 2 4 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
mpared lp/ga bl/bc Applicant 5/18/78 by Mt.Rose Prop.Own.Assoc,Inc.	
: 5/22/78 by Robert & Barbara Kutnocky s/ Lee	777
185	Casazza Ctrack
	Casazza Street, P.O. Box 292 O, Nevada 89504
OF STATE	FNGINEED
This is to certify that I have examined the foregoing application, an following limitations and conditions:	id do hereby grane st
following limitations and conditions:	as as hereby grant the same, subject to the
Inis permit to a	hà
source as heretofore granted under Permit 28427 and conditions imposed in said Permit 28427 and well shall be equipped and	is issued subject
other rights on the source will be affected by the installed and maintains.	with the understand
well shall be equipped with a 2-inch opening and in the discharge pipelin	ie change proposed by
installed and maintained in a 2-inch opening and	a totalizing motor. The
installed and maintained in the discharge pipelin and accurate measurements must be kept of water p	e near the point of 1.
and accurate measurements must be kept of water p totalizing meter must be installed before any use	laced to beneficial
totalizing meter must be installed before any use the proof of completion of work is filed. If the	of the water begins on her
the proof of completion of work is filed. If the area designated by the State of the provent waste. The	e well is flowing, a value much
be installed and maintained to prevent waste. The area designated by the State Engineer pursuant to the right to regulate the use of the water herein	is source is located within an
the right to regulate the use of the water to	NRS 534.030. The State retains
the right to regulate the use of the water herein agreement dated June 18, 1978 filed under 35147.	granted at any and all times
agreement dated June 18, 1978 filed under 351/7	to that area described in the
agreement dated June 18, 1978 filed under 35147. The final allocation of water under Application 30 annual duty under Permits 35147 through 35152 is limited annual duty under Permits 35147.	The total combined annual dury
annual durantian of water under Application 20	ted to 1095.0 million gallons.
The final allocation of water under Application 30 gallons annually.	261 shall be deducted from the
	not exceed 109.5 million
The amount of water to be changed shall be limited to all	
to exceed 5.0 cubic feet per second	an oe applied to beneficial use, and not
1095.0 million gallons annually.	, but not to exceed
Actual construction work shall begin on or before.	September 5, 1978
ricol of commencement of work shall be filed before	October 5 1070
Work must be prosecuted with reasonable diligence and be completed on or t	Sentenham - Sentenham -
Proof of completion of work shall be filed before.	
Application of water to beneficial use shall be made on or before.	
Proof of the application of process as a second of the application of	April 30, 1979
Proof of the application of water to beneficial use shall be filed on or before	May 30, 1979
Map in support of proof of beneficial use shall be filed on or before.	May 30, 1979
74L Of the 14 miles	

Commencement of work filed_ Completion of work filed.

May 30, 1979

__ IN TESTIMONY WHEREOF, 1___ ROLAND D. EFETTROADS

Estimated cost of works \$200,000.00 total	
Estimated cost of works	, , , , , , , , , , , , , , , , , , ,
Estimated time required to construct works. 10 Estimated time required to complete the application of water to beneficial use	years
Estimated time required to complete the application of water to beneficiate and type of unit	s to be served or annual
Remarks: For use other than irrigation or stock watering, state number and type of unit	
3,000 single family dwellings will be served al	ong with comingling
g,000 single family dwords from other sources. Date of incorporation is:	June 27, 1977
from other sources. Date of Incorporation	
•	
mpared lp/ga bl/bc Applicant Applicant Processing Proce	
mpared 19/8a 10.5/18/78 by Mt.Rose Prop.Own., Assoc., Inc. 10.5/18/78 by Mt.Rose Prop.Own., Assoc., Inc. 185 Casazza State	reet, P.O. Box 292
APPROVAL OF STATE ENGINEER	
This is to certify that I have examined the foregoing application, and do hereby gran	nt the same, subject to the
This is to certify that I have llowing limitations and conditions: This permit to change the place of use of the waters of the permit to change the place of use of the waters of the permit 28429 is issued supported under Permit 28429 is issued supported upder Permit 28429 is issued supported to the permit 28429 is is issued as a permit 28429 is is is is is is in the permit 28429 is is is is is is in the permit 28429 is is is is is in the permit 28429 is is is is is in the permit 28429 is is is is in the permit 28429 is is is is in the permit 28429 is is is in the permit 28429 is is is in the permit 28429 is is in the permit 28429 i	
and conditions imposed in said Permit 28429 and with the under a conditions imposed in said Permit 28429 and with the under the other rights on the source will be affected by the change provided the shall be equipped with a 2-inch opening and a totalizing well shall be equipped with a 2-inch opening and a totalizing well and maintained in the discharge pipeline near the and accurate measurements must be kept of water placed to be and accurate measurements must be kept of water placed to be totalizing meter must be installed before any use of the water herein granted area designated and maintained to prevent waste. This source area designated by the State Engineer pursuant to NRS 534.0 area designated by the State Engineer pursuant to NRS 534.0 area designated by the state Engineer pursuant to that The place of use under this permit is limited to that agreement dated June 18, 1978 filed under 35147. The total of water under Permits 35147 through 35152 is limited to 10 annual duty under Permits 35147 through 35152 but shall not gallons annually.	coposed herein. The mag meter must be point of diversion eneficial use. The ter begins or before flowing, a valve must is located within an 30. The State retains t any and all times. area described in the combined annual duty 195.0 million gallons. I be deducted from the exceed 109.5 million ied to beneficial use, and not
The amount of water to be changed shall be miles to exceed	
1095.0 million gallons annually.	September 5, 1978
Actual construction work shall begin on or before	October 5, 1978
Proof of commencement of work shall be filed before	2bar 5 1978
Work must be prosecuted with reasonable diligence and be completed on or before	October 5, 1978
Proof of completion of work shall be filed before	April 30, 1979
Application of water to beneficial use shall be made on or before.	May 30, 1979
Proof of the application of water to beneficial use shall be filed on or before	May 30, 1979
Map in support of proof of beneficial use shall be filed on or before IN TESTIMONY WHEREOF, I RI	DLAND D. WESTERGARD
Commencement of work filed State Engineer of Nevada, have he	

		·
12.	Estimated cost of works \$200,000,00	total
13.	Estimated time required to construct works completed	
14.	Estimated time required to complete the application of water to beneficial	use 10 yrs
15.	Remarks: For use other than irrigation or stock watering, state number a	nd type of units to be served or annual
	consumptive use.	
	3.000 single family dwellings will be	served along with cominglin
	from other sources. Date of incorporation	
	•••••	
Com	pared lp/ga bl/bc Applicant Applicant	
C 3rc	0.5/18//8 by Mt.Rose Prop.Own.Assoc.,Inc.	
o: 5/	/22/78 by Robert & Barbara By s/ Lee Ha	ale, Pres. Asazza Street, P.O. Box 292
	165 Ca	Asazza Street, P.O. Box 292
		Nevada 89504
	This is to certify that I have examined the foregoing application, and do	hereby grant the same, subject to the
follo	wing limitations and conditions:	
	This permit to change the place of use of the	vaters of an underground
	source as heretofore granted under Permit 28430 is	issued subject to the terms
	and conditions imposed in said Permit 28430 and with	the understanding that mo
	other rights on the source will be affected by the	hange proposed herein. The
	well shall be equipped with a 2-inch opening and a t	otalizing meter must be
	installed and maintained in the discharge pipeline r	ear the point of diversion
	and accurate measurements must be kept of water place	ed 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 w	vell 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 NR	S 534.030. The State retains
	the right to regulate the use of the water herein gr	anted at any and all times.
	The place of use under this permit is limited to	o that area described in the
	agreement dated June 18, 1978 filed under 35147. The	e total combined annual duty
	of water under Permits 35147 through 35152 is limite. The final allocation of water under Application 3036	d to 1095.0 million gallons.
	The final allocation of water under Application 3026 annual duty under Permits 35147 through 35152 but sh	I Shall be deducted from the
	gallons annually.	all not exceed 109.5 million
The a	amount of water to be changed shall be limited to the amount which car	he applied to beneficial use and mat
	cubic feet per second:	
	1095.0 million gallons annually.	
A	•	
	d construction work shall begin on or before	•
Proof	of commencement of work shall be filed before	October 5, 1978
Work	must be prosecuted with reasonable diligence and be completed on or be	fore September 5, 1978
Proof	of completion of work shall be filed before	October 5, 1978
Applic	cation of water to beneficial use shall be made on or before.	April 30, 1979
Proof	of the application of water to beneficial use shall be filed on or before	May 30, 1979
Map i	n support of proof of beneficial use shall be filed on or before.	May 30, 1979
Commo	encement of work filed IN TESTIMONY WHEREOF, I_	ROLAND D. WESTERGARD
Comple	ction of work filed State Engineer of Nevada, h.	ave bereimto set my hand and the scal of
	of beneficial use filed my office, this 5th	day of JULY
7.1.	to see a suite of	

Certificate No.

APPENDIX B

DRILLERS LOGS

well #2

STATE OF NEVADA

WELL DRILLERS REPORT Please complete this form in its entirety

DIVISION OF WATER RESOURCES

OFFICE USE ONLY
Log No. 15663
Permit No. 2 242 5

Lor No	15663
Permit No	28425

1. OWNER.	Lee Hole			************		ADDRESS If S North Sierre
	NE 45	E 4	Sec. 2	тт.	12	N/8 R / 9 E WAShre County
3. New Wel Deepen	TYPE OF WO	Reconditio	• 0		omestic	PROPOSED USE Irrigation Test Cable Rotary
6.	LITHOL	OGIC LO	G			8. WELL CONSTRUCTION
	faterial	Water Strata	From	То	Thick-	Diameter hole
Top Soil Clay a Bear	durs		4	19	15	Casing record Weight per foot
Clay & Bu SAnd			23	89	12 24	inches feet feet
Clay & Crave SANCE Clay & Brack Crave / & Brack	Je,s	-	151	149	22	inches feet feet feet feet feet feet feet fe
	to Vurs					Surface seal: Yes No Type Characteristic Type
						Perforatione
		1:				Type perforation 7 150 150 150 150 150 150 150 150 150 150
					,	From feet to feet
						From feet to feet From feet to feet
	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			From feet to feet
						9. WATER LEVEL Static water level
						Flow. G.P.M. Water temperature. F. Quality Flor C.
Date started	Jugae 2 June	. 15		, 1	24	10. DRILLERS CERTIFICATION This well was drilled under my supervision and the report is true to the best of my knowledge.
7.	WELL T	est data				Name Clond from & Cilling
Pump RPM 345C	G.P.M.	Draw Dow	70 A	fter Hours	Pump	Name Cling from & O. Iling Address P.D. Port 99, Stran Dont, Alev.
						Nevada contractor's license number 11139
						Nevada driller's license number 658
G.P.M		R TEST	fa	بر <u>.</u>	bours	Signed & M. Sterens
G.P.MG.P.M		raw down.			bours	Date June 28, 1976

DIVISION OF WATER RESOURCES

MELL	. #.2	,

OFFICI	USF	ONLY

	OFFR	C1 C21	Uitis
	Log No	150	0
-	Permit No		

1. OWNER 7.	Re of feel	legens.	1	Please cor	pplete this	ERS REPORT form in its entirety ADDRESS 22	Permit No. Basin Trucker Man
2. LOCATION PERMIT NO			Sec21	T	12		Jachel Cours
3. New Well Deepen	-	RK Recondition Other	· D	Do	omestic [unicipal [PROPOSED USE Irrigation Tes Industrial Sto	
6.	LITHOL	OGIC LO	G	- 1			CONSTRUCTION
Mate	erial	Water Strata	From	То	Thick- ness	Diameter hole	inches Total depth 175 feet
Clay of Ban Sandagan	Volenz	yie.	0 15 2.3	19	3 14 43	Diameterinches	From To feet feet
Centra wa	atticone	1/0	66	51	15	inches inches	feetfeet
Lica 1/20 Clar 1/20 Haciltons 40	eclétics.	442	9E 135 146-	135	45	Surface seal: Yes No Depth of seal	Type (£73
Joney Beach	de la	(3:3	172	175	3	Gravel packed: Yes N Gravel packed from Perforations:	feet tofeet
						From	feet to feet feet to feet feet to feet feet to feet
						9. Static water level	TER LEVEL Feet below land surface
Date started	1.16 minste	//			9/2/	10. DRILLERS	F. Quality CERTIFICATION by supervision and the report is true to
7.	WELL TE	ST DATA				Name 2 1 1/21 / 14	mit Unly
Pump RPM	G.P.M. / [- J	Draw Dow		fier Hours I	,mub	Address A. B. J. G	9, Steen lead 1/2
						Nevada contractor's license m	
5.P.M.	D	R TEST			11	Nevada driller's license number	Heren.
G.P.M		raw down			.hours	Date 117- uct	21,1974

Draw down feet hours

DIVISION OF WATER RESOURCES

OFFICE USE ONLY
LOG NO 15662
Permit No. 28926
Davin

well you. 3

WELL DRILLERS REPORT

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•	'n	- }
l	~	7
١,	٠.	/

			s form in its entrety	• ,,
1. OWNER Lee HA	<u></u>		ADDRESS 155 N. Sierca	
			Reac, Nesoda	
- 1004 TON N/6 1/5/	1/4 Sec. 6	7 7	NBR19 E WASher C	·
PERMIT NO			170	Journa
3. TYPE_OF WO	ORK	4.	PROPOSED USE 5. TYPE WELL	L
New Well	Recondition	Domestic		ary 😉
Deepen 🗆	Other	Municipal	Industrial Stock Other	
6. LITHOL	OGIC LOG		8. WELL CONSTRUCTION	
Material	. Water From	To Thick-	Diameter holeinches Total depth/2.5	fee:
Tel Seil	0	1515	Weight per foot	
Clay Sec. Iders	5,	21 16	Diameter From To	
Sind & Gravel	Ves 21	24 5	85/y inches 0 feet 175	fœti
Sonkicley W/Br-ldis	26	23 42	inches feet	
Sand	yos 73	8/8	inches feet	
Sondy Clay of Gray el styrs	101	153 22	inchesfeet	
+ S. no. Il Berlevers	1/55 165		/c3inchesfeet	
SAND Clay + Budders	102		Surface seal: Yes No D Type Chronet	iœi
Court & Balders	165 144	175 31	Depth of seal 65 fut	
			Gravel packed: Yes D No D	100:
			Gravel packed from 125 feet to 45	fect
			Perforations:	
			Type perforation — Acc Language Size perforation / X 3 3	
	1		Size perforation /3 1 2 1 From /2 2 feet to /CC	
	 		From feet to	
			From feet to	
			From feet to	
			From feet to	fee:
		 		
			9. WATER LEVEL	
			Static water levelFeet below land surface	
	 		FlowG.P.M.	
	1		Water temperature * F. Quality	
		0/	10. DRILLERS CERTIFICATION	
Date started June 7			This well was drilled under my supervision and the report is tr	ue to
Date completed.	ź		the best of my knowledge.	
. WELL T	EST DATA		Name Clean Rump & Dilling Address P. P. Bex 99, Stepmbent, Ille	•
Pump RPM G.P.M.	Draw Down	After Hours Pump	0000001	
3450 100	32	8	Address P. A. 13ex 99, Stephbent Mr.	`
			Nevada contractor's license number 11139	
		<u> </u>		
			Nevada driller's license number. 4258	
BAILE	ER TEST		Signed m Henry	
	trwob ward			
	Draw downf		Date June 28, 1976	
G.P.M I	Oraw downf	eethours	Programme and the second secon	

DIVISION OF WATER RESOURCES

Please complete this form in its entirety



OFFICE USE ONLY Permit No. 28427

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WELL DRILLERS REPORT

1. OWNER	Mr. Hale		-			DDRESS Callahan Rd
r.						
2. LOCATION PERMIT NO	0¢ 4 \$	<i>E</i> ¼ S	c. <i>3</i> .	.,Т	17 N	N/SR 19 E Washoe C
3.	TYPE OF WO	ORK		4.		PROPOSED USE 5. TYPE WE
New Well Deepen		Recondition Other		1 .	mestic 🔲	- 1
6.	LITHOL	.ogic loc	}			8. WELL CONSTRUCTION
Ma	terial	Water Strata	From	То	Thick-	Diameter hole 8 inches Total depth 235 Casing record
Boulder	• 5	3.14.6	1 1	15	15	Weight per foot
I.st_wat			15	20	5	Diameter From To
Roulder			20	35_	15	8 inches 16et 168
	- 2d wate	Υ	35	40	5_	6inches168feet235
clay			40	75	35	inches feet
clay -			75_	110	35	inches feet
3d_wats			110	120	10	inches feet
rock			120	180	60	inches feet
	- water b	rg	_180_		20	Surface seal: Yes K No Type Cement
clay	rock	_	200	215	15	Depth of seal
gravel	_ water t	org	215	225	10	Gravel packed: Yes No No
-rock-			225	235	10_	Gravel packed fromfeet to
	* .	_	- i			
·						Perforations:
					 	Type perforation factory
				· ·		Size perforation.
			!	<u> </u>		From 60 ft feet to 8 inch
		_¦ i			 	From74 ft 5 in the 10 6 in ch
					<u> </u>	Fromfeet to
*						From feet to feet to
						9. WATER LEVEL
	3 - 3 - 3 3		+ 60	CP	W	Static water level Flow G.P.M. G.P.M.
Bailer C	ould only	_teet_/	4 L _ DU .	 	-	Water temperature F. Quality
Date started	45-25-77			•	19	10. DRILLERS CERTIFICATION This well was drilled under my supervision and the report is to
Date completed						the best of my knowledge.
7.	WELL 7	rest data				Name MARCIN DRILLING CO
	G.P.M.	Draw Dos	vn I A	fter Hours	Pump	
Pump RPM	G.F.M.	1				Address 4340 Hwy 50 E
			<u> </u>			Nevada contractor's license number 360
						Nevada driller's license number 7980
		<u> </u>				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
•		ER TEST			<u> </u>	Signed
G.P.M		Draw down				Date
G.P.M		Draw down				Date
G.P.M		Draw down	fc	ci	tiours	ľ

DIVISION OF WATER RESOURCES

. •	OFFICE USE	ONLY
Log No.		9
Permit 1	107042	9
Pacin		<u> </u>

9	WELL DRILL	ERS REPORT	Basin
e e e e e e e e e e e e e e e e e e e	Please complete this	form in its entirety	, 6,00
1. OWNER the tale		ADDRESS 1037	rent sure sur
Jot 45 Jack		Silver #	
2. LOCATION NE 14 SE 14 S	ec 2 T 1 7		
PERMIT NO		J	
3. TYPE OF WORK	4.	PROPOSED USE	5. TYPE WEITH
New Well	Domestic Municipal	☐ Irrigation ☐ Tes ☑ Industrial ☐ Sto	
6. LITHOLOGIC LOG			CONSTRUCTION
Material Water Strata	From To Thickness	Diameter hole	inches Total depth 140
Trem buton to 16	Feet grant	41	Thickness 5/14
and Amel Exte	West The 20	Diameter	From To
The state of the s	7 45 /20	- II	feet fir
don't account Back	5 turned		feet fix
End Alung 100 To 14	10 800	- 1	feet
quel Jane		7	feet ffx
		Surface seal: Yes No	Type Carried
			<u></u>
		Gravel packed: Yes 1	√o []
		Gravel packed from	feet to
		Perforations:	
		Type perforation	etas
a de la Maria de La Carta de L		Size perforation3/	4
		From O Backer	
			feet to 140 Blank 4
			feet to
	3	From	•
		-	
	-	- 11	TER LEVEL
	· · · · · · · · · · · · · · · · · · ·		Feet below land surface
	· · · · · · · · · · · · · · · · · · ·	Water temperature	F. Quality STOT
			<u> </u>
11.12	1927	ii ' •	S CERTIFICATION
		This well was drilled under no the best of my knowledge.	ny supervision and the report is truze
Date completed 2. 2224	197	=	
7. WELL TEST DATA		Name [121 drine	Instar
Pump RPM G.P.M. Draw Dow	n i After Hours Pump	- N	Into Te Drus
		- Nevada contractor's license n	umber / 6 / 6 / 6 / 7
	!	Nevada driller's license numb	Ser. 5-76
BAILER TEST		\$i	
G.P.M. CO Draw down	20 feet / hours		Tests -, 1977
	feethours	Date 124 33	
G.P.M. Draw down.	nours		•



DIVISION OF WATER RESOURCES

	OFFICE USE ONLY
Log No	1.7114
Permit N	17114
Racin	

WELL DRILLERS REPORT

1. OWNER Mr. Hale	•		***	ADDRESS Callahan Rd Well # 2
				N/SR/9 E Washoe Com
PERMIT NO				
3. TYPE OF New Well X	WORK Recondition Other		4. Domestic Municipal	
Deepen 🗆	Other		Municipal	LL Moustial D. Stock D. Other D.
6. LIT	HOLOGIC LO	G		8. WELL CONSTRUCTION
Material	Water Strata	From	To Thick-	Diameter hole 8 inches Total depth 161
Boulders - clay		11 :	25 25	Casing record. Weight per foot. Thickness • 188
lst water	•		30 5	- 11
gravel - sand -	- water		55 25	Diameter From To 161 f
clay - sand			05 50 135 3 0	
rock			150 15	inches feet feet f
sand - water			161 11	inches feet f
gravel				inches feet f
				Surface seal: Yes X No Type
, <u> </u>		 		Deput of acationing
				Gravel packed: Yes No
				Gravel packed from feet to
				Perforations:
and the second				Type perforationtonch
				Size perforation
				From 100 feet to 161
				From feet to
Test bail 60 G.H	P. M.			From feet to feet to
				From feet to
				9. WATER LEVEL
· · · · · · · · · · · · · · · · · · ·				Static water level
		i 		FlowG.P.M
		<u> </u>		Water temperature° F. Quality
5 1 60		<u> </u>		10. DRILLERS CERTIFICATION
Date started 5-4-77			, 19	This well was drilled under my supervision and the report is true
Date completed 5-13-77			19	the best of my knowledge.
7. WEL	L TEST DAT	A .		Name MARCIN DRILLING CO
Pump RPM G.P.M.	Draw Do	en After	Hours Pump	Address 4340 Hwy 50 E
				╣
	!	!		Nevada contractor's license number 3.50 Nevada driller's license number 7988
D	AILER TEST			Signed Curry Hurcu
G.P.M		feet	hours	Signed VIVI
G.P.M		feet	hours	Date 5-13-77
G.P.M			hours	

$\underline{\underline{A}} \ \underline{\underline{P}} \ \underline{\underline{P}} \ \underline{\underline{E}} \ \underline{\underline{N}} \ \underline{\underline{D}} \ \underline{\underline{I}} \ \underline{\underline{X}} \qquad \underline{\underline{C}}$

PUMP TEST DATA

																	1	v			PAGE
STEP	TEST		;		-	•															
	C.1	Well	No.	1		•	•				. A .			,		•		•	•		C-1
	C.2	Well	No.	2	•	•	•						. •					•	•		C-2
	C.3	Well	No.	3		•	•		•		•	•	•	•	•,			•			C-5
	C.4	Well	No.	4	• •	•	•			•		•			•					•	C-8
	C.5	Well	No.	5		•		•					•	•	•	•					C-11
• •	C.6	Well	No.	6		•		•	•	•	• •	•	•		•	•		•	•	•	C-15
24-H	OUR TE	ST					1								ar		1 AAT A				
	C.7				•	•	•	•		•					•			•		•	C-18
	C.8	Well	No.	4-(Obs	erv	ati	on	•		• •	•			•	• •			• .		C-22
	C.9	Well	No.	5-(Obs	erv	ati	on					•				•		•		C-24



Page 1 of 1

WELL PUMPING TEST DATA FORM

Date	January	25,	1980		

Location <u>Mt. Rose Service Company, Ga</u> Well Description <u>Well No. 1</u>	lena Creel	Area, Washo	e County
Static Water Surface 31.9 feet			
Pump Setting 130 feet Orifice Size 3 inch		·	
Data Collected By Ken Freeman			

Test Conditions clear, sunny, around 50, next to house, discharge to street drain system

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:25	0 min			31.9			start pump 100 gpm
9:25.5	0.5			77.4	45.5		
9:26	1			87.3	55.4	An and a second	
9:26.5	1.5	lost suction					pump off
			4				
11:30	0			31.1			start pump 35 gpm/stop
11:31	1			54.3	23.2		watch &bucket
11:32	2			75.5	44.4		
11:33	3			86.4	55.3		
11:34	4	lost suction	·		<u>.</u>		pump off
							·
1	,						



WELL PUMPING TEST DATA FORM

Date	January	26,	1980		

Page 1 of 3

Well Description We	11 No. 2			
· · · · · · · · · · · · · · · · · · ·			 	
Static Water Surface	24.8 feet /	,		
Pump Setting	130 feet			 •
Orifice Size	3 inch		*	

Test Conditions Partly cloudy/ windy, around 45°, discharge to street drain system

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:10	0 min			24.8		,	start pump 100 gpm
9:11	1			30.8	6.0		dirty water
9:12	2			31.5	6.7	į.	
9:13	3			31.8	7.0		
9:14	4			32.1	7.3		3
9:15	5			32.3	7,5		
9:17	7			32.6	7.8		
9:19	9		-	32.8	8.0		
9:21	11			33.0	8.2		
9:23	13			33.2	8.4	•	
9:25	15			33.4	8.6	·	
9:30	. 20		8	33.5	8.7		
9:40	30			34.0	9.2		

LOCATION Mt. Rose Service Company
Well No. 2

PAGE 2 OF 3

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:55	45	,		34.5	9.7		
10:10	60			34.9	10.1		clean water
10:25	75			35.2	10.4		
10:40	90			35.4	10.6		
10:55	105			35.6	10.8		,
11:10	120			35.7	10.9		change flow to 150 gpm
11:11	121			40.7	15.9		
11:12	122			41.8	17.0		water cloudy
11:13	123			42.1	17.3		
11:14	124			42.4	17.6		
11:15	125			42.6	17.8		
11:20	130		· ·	43.8	19.0	-	
11:30	140			44.7	19.9		
11:40	150			44.8	20.0		
11:55	165			45.6	20.8		
12:10	180			46.0	21.2		
12:25	195			46.3	21.5		
12:40	210			46.5	21.7		
12:55	225			46.8	22.0		

LOCATION Mt. Rose Service Company Well No. 2 PAGE ___

0F

Tim	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
1:10	240			47.0	22.2		change flow
1:11	241						to 200 gpm
1:12	242		*	47.5	22.7		
1:13	243			49.4	24.6		
1:14	244			51.8	27.0		
1:15	245			52.7	27.0		
1:20	250			54.1	29.3		
1:25	255		4	53.8			
1:30	260			53.9	29.0		
1:40	270			53.9	29.1		
1:55	285				29.1		
2:10	300			52.9	28.1		
2:25	315				28.6		
2:40	330				28.2		
2:55	345				28.0		3:00 water
3:10	360				27.8	1 v v v v	sample
				52.4	27.6		oump off
NOTE:	READINGS VARY	BECAUSE OF LOCA	TION OF	PERFORATI	ION.		



WELL PUMPING TEST DATA FORM

Date	January	29,	1980	

Page 1 of 3

Location Mt. Rose Se	rvice	Company,	Galena	Creek	Area,	Washoe	County
Well Description Wel	l No.	3				"	
Static Water Surface	16.8	feet			·		· · · ·
Pump Setting	130 f	eet			··		· ·
Orifice Size	3 inc	h					•

Data Collected By Ken Freeman

Test Conditions cold. broken clouds, below 30, discharge to street drain system

Γime .	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:40	0 min			16.8			start pump 100 gpm
9:41	1			17.8	1.0	•	e de la companya de l
9:42				17.9	1.1	•	
9:43	3			18.0	1.2		
9:44	4	-	•	18.0	1.2		
9:45	5			18.0	1.2		
9:46	6		•	17.9	1.1		
9:50	10			17.9	1.1		
9:55	15		·	18.0	1.2		
10:00	20			18.1	1.3	•	
10:15	35		·	18.0	1.2		
10:30	- 50			17.9	1.1 ·		
0:40	60			18.0	1.2		change flow to 175 gpm

LOCATION	Mt. Rose Service	Company	* *.	
	Well No. 3			

PAGE 2 OF 3

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t '	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
10:41	61			20.2	3.4		
10:42	62			20.3	3.5		
10:43	63			20.3	3.5	•	
10:44	64			20.2	3.4	. 1	
10:45	65			20.4	3.6		
10:46	66		· · · · · ·	20.5	3.7	•	
10:48	68			20.5	3.7		
10:50	70			20.5	3.7		
10:55	75			20.6	3.8		12.05
11:00	80			20.5	3.7		11:05 - water sample
11:15	95			20.6	3.8		
1:30	110			20.7	3.9		Clare Clare
11:40	120			20.7	3.9		change flow to 250 gpm
11:41	121			23.8	7.0		
11:42	122			23.9	7.1		
11:43	123			23.9	7.1	•	
11:44	124			23.9	7.1		
11:45	125	-		24.1	7.3		
11:46	126			24.1	7.3		

LOCATION	Mt. Rose	Service	Company	
	Well No.	3		

PAGE __3 OF __3

·							
	Time Since Pumping Started	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
Time	t		1/1	Durrace			
11:48	128			24.1	7.3		****
11:50	130		- N	22.7	5.9		pitot tube 26"-215 gpm
11:52	132			22.2	5.4	•	23" - 201 gpm
11:54	134			22.1.	5.3	**	23"
11:56	136			21.9	5.1		22.5"
11:58	138		ì.	21.8	5.0		22" - 197 gpm
12:00	140			21.8	5.0	*	22"
12:05	145			21.7	4.9		
12:10	150			21.8	5.0	7.	22"
12:20	160			21.6	4.8		21" - 192 gpm
12:30	170			23.2	6.4		28" - 222 gpm
12:40	180			22.1	5.3		23"
NOTE:	The variati	ons in flow res	lted fr	om variat	ons of t	ne generator	output.
							,
£				·		•	
E CONTRACTOR OF THE CONTRACTOR							



WELL PUMPING TEST DATA FORM

Date	January	24	.1980
Date	vanuary	64.	- 1 20U

Page 1 of 3

Location	Mt.	Rose	Serv	ice	Company,	Galena	Creek	Area,	Washoe	County
Well Des	crip	tion	Well	No.	. 4					
		-	-							 · .

Static Water Surface 8.1 feet
Pump Setting 130 feet
Orifice Size 3 inch

Data Collected By Martin Smith

Test Conditions clear, sunny, around 50°, open area, overland discharge

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
10:10	0			8.1			start pump 100 gpm
10:11	1			28.0	19.9		
10:12	2			28.4	20.3	\$ 1.00	and the second second
10:13	3			30.9	22.8		e San
10:14	4			32.0	23.9		
10:15	5		·	32.5	24.4		
10:18	8			34.5	26.4		
10:21	11			35.8	27.7		
10:24	14			36.7	28.6		
10:27	17			37.4	29.3		
10:30	20			38.2	30.1		
10:35	25			39.8	31.7		
10:40	30		,	40.8	32.7		

LOCATION	Mt. Rose	Service	Company	-	
•••	Well No.	4			
		· · · · · · · · · · · · · · · · · · ·			

PAGE ___ 2 OF __3

·						·	<u> </u>
Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
10:50	40			42.1	34.0		
11:00	50			43.2	35.1		
11:10	60			44.4	36.3	•	
11:25	75			45.6	37.5		
11:40	90			46.5	38.4		
11:55	105			48.0	39.9	*	
12:10				49.1	41.0		change flow to 150 gpm
12:11	121			58.0	49.9		
12:12	122			60.2	52.1		
12:13	123		,	62.2	54.1		dirty water
12:14	124			62.9	54.8		
12:15	125			63.4	55.3		
12:20	130			65.3	57.2		
12:25	135			66.5	58.4	•	
12:40	150	, , , , , , , , , , , , , , , , , , ,		68.9	60.8		
12:55				70.8	62.7		
1:10	180			72.0	63.9		
1:25	195		:	73.0	64.9	·	
1:40	210			74.2	66,1		

LOCATION Mt. Rose Service Company

Well No. 4

PAGE _3 OF _3

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
1:55	225		-	75.3	67.2		2:05 - water sample
2:10	240			76.1	68.0		change flow to 200 gpm
2:11	241			85.2	77.1		
2:12	242			86.7	78.6		dirty water
2:13	243			87.8	79.7		
2:14	244			88.4	80.3		
2:15	245			88.9	80.8		
2:20	250			90.4	82.3		,
2:25	255			91.4	83.3		
2:40	270			93.9	85.8		
2:55	285			95.8	87.7		11
3:10	300			96.8	88.7		
3:25	315			97.6	89.5		
3:40	330			98.4	90.3	1	
3:55	345			99.0/	90.9		
4:00	350			99.3	91.2		pump off
				-			
					·		



WELL PUMPING TEST DATA FORM

Date	January	22,	1980	
				 _

Page 1 of 4

Location Mt. Ros	e Ser	vice	Co	mpany,	Galena	Creek	Area,	Washoe	County
Well Description	We11	No.	5						
Static Water Surf	ace	Nori	ma 1	42.2			·		
Pump Setting Orifice Size		155 2.5			, 3 inch				-
	.·				0 111011				

Data Collected By Ken Freeman

Test Conditions clear, sunny, around 45°, open area, overland discharge

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
8:32	O min.			42.2			start pump 80 gpm
8:34	5 2.5			51.4	9.2		googless for the second se
8:35	5 3.5		•	52.5	10.3		
8:36	5 4.5			53.0	10.8		
8:37	.5 5.5			52.5	10.3		
8:39	7			52.9	10.7		
8:40	8	,		53.3	11.1		
8:41	9			53.2	11.0		
8:42	10			53.8	11.6		•
8:44	12			53.7	11.5		
8:46	14			54.2	12.0		
8:50	18			54.9	12.7		
8:55	23			55.2	13.0		

LOCATION	Mt.	Rose	Service	Company

Well No. 5

PAGE 2 OF 4

1			<u> </u>	•			
Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:00	28			55.2	13.0		
9:15	43			56.0	13.8		9:20 #6 14.9
9:29	57			56.7	14.5		,
9:30	58			-			change flow to 150 gpm
9:31	59			62.6	20.4		
9:32	60			63.5	21.3		•
9:33				64.1	21.9		
9:34				65.1	22.9		•
9:35	63			65.1	22.9	•	
9:36	64		.	65.8	23.6		
9:38	66			66.0	23.8		
9:40	68			66.5	24.3		
9:45	73			67.7	25.5		
9:50	78		Ŧ	68.1	25.9		9:55 #4 7.5
10:0	0 88			69.0	26.8		10:05 #6 14.8
10:15	103	sounder stuck	-no rea	ding		•	
10:30	118	pump offdrav	vdown un	nown	·	,	pump off
		start new tes					
12:15	223			43.6			start pump 150 gpm

LOCATION	Mt. Rose Serv	vice Company	.	*
	Well No. 5			
j.				,

PAGE __3 OF __4

	Time Since		*	T		,	
Time	Pumping Started	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	
				Dullace		3	Remarks
12:15	5 223.5			54.4	10.8		,
12:16	224			56.4	12.8		
12:17	225			58.0	14.4		
12:18	226			59.9	16.3		
12:20	228	•		61.5	17.9		
12:22	230			62.8	19.2		•
12:24	232			63.6	20.0		
12:26	234			64.3	20.7		
12:30	238			65.3	21.7	48	
12:35	243			65.1	21.5		
12:40	248		*	67.1	23.5		
12:50	258			68.3	24.7		
12:59	267			68.6	25.0		
1:00	268						change flow to 200 gpm
1:05	273			76.7	33.1		
1:07	275			78.2	34.6		
1:10	278			78.5	34.9		
1:15	283			79.2	35.6		
1:20	288			79.3	35.7		

COTTON	M÷	Daca	Service	Company
الكالا المنسوس	MIT	ROSE	SELVICE	Company

Well No. 5

PAGE 4 OF

							
Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
1:30	298			80.0	36.4		1:35 water sample
1:45	313			81.2	37.6	4	
2:00	328		2.	83.2	39.6		2:08 #4 7.7
2:15	343			84.0	40.4		**************************************
2:30	358			84.5	40.9		
2:45	373			84.7	41.1		
3:00	388		,	84.7	41.1		pump off
	THE FOLLOWING	ARE SOME RECOV	ERY REA	INGS:	STREAM		
3:02				63.3	19.7		
3:04				59.6	16.0		
3:06				57.4	13.8		
3:10	,			55.0	11.4		
3:25				51.0	7.4		
3:40				47.8	4.2		
					-		
					 		
				1			



WELL PUMPING TEST DATA FORM

Date	Janua	ary	23,	1980	 	
Page		3	• •		File 7838	

Location Mt. Rose Service Company, Galena Creek Area, Washoe County Well Description Well No. 6 14.8 feet normal Static Water Surface 155 feet Pump Setting _ 3 inch Orifice Size

Data Collected By Ken Freeman

Test Conditions clear sunny day, around 45, open area, overland discharge

	Time Since Pumping Started	Time Since Pump Stopped	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks start pump
ime	t			19.0 ft.			140 GPM
.45	O min.			38.0	19.0		
:45.5					22.4		ge into a second
3:46	1		-	41.4	25.1		
8:47	2		-	44.1	30.9		
8:48	3			49.9			
8:49	4			51.1	32.1		
8:50	5			52.6	33.6		
				53.8	34.8	3	correct flow
8:51				55.2	36.	2	to 150 gpm
8:5	2 7			59.7	40.	7 .	
8:5	3 8		_		42.	.0	
8:5	54 9			61.0		.9	
8:	56 11		_	62.9		.2	
1-	58 13			64.2	43		

LOCATION	. M4 D	000 0-				.*
LOCATION		026 261	<u>cvice Co</u>	mpany	 	
	<u>Well</u>	<u>No.</u> 6			_	

PAGE 2 OF 3

-				*			
Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:00	15			66.0	47.0		
9:05	20	. · ·		69.0	50.0		
9:10	25		3	70.0	51.0		
9:20	35			71.5	52.5		
9:30	45			72.8	53.8		9:34 #5 42.7 9:37 #4 8.7
9:45	60			74.3	55.3		9:50 - water sample
10:00	75			75.9	56.9		
10:15	90			77.3	58.3	· ·	
10:30	105			78.7	59.7		
10:44	119			79.5	60.5		
10:45	120						flow change to 200 gpm
10:46	121		,*	88.5	69.5		
10:47	122		-	90.0	71.0		
10:48	123			91.6	72.6		
10:49	124			92.6	73.6		
10:50	125			93.1	74.1		
10:51	126			94.1	75.1		
10:52	127			95.0	76.0		
10:53	128			95.5	76.5		

Well No. 6

PAGE <u>3</u> OF <u>3</u>

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
10:54	129			95.8	76.8		
10:56	131			96.2	77.2		
10:58	133			96.2	77.2		
11:00	135			97.5	78.5		
11:05	140			98.3	79.3	, ,	· · · · · · · · · · · · · · · · · · ·
11:10	145			98.6	79.6		
11:20	155			99.3	80.3	egya a sever gay sake	
11:30	165			99.9	80.9	e e e e e e e e e e e e e e e e e e e	11:34 #5 42.43 11:37 #4 12.6
11:45	180			100.7	81.7		
12:00	195			101.3	82.3		
12:15	210			101.7	82.7		
12:30	225			101.9	82.9		
12:45	240			102.3	83.3		pump off
					,		
			1				

UBLETESOUTE consulting engineers

WELL PUMPING TEST DATA FORM

Date	March	7, 1980	

Page 1 of 4

Well Description	Well No. 3								
Static Water Surface	normal 14.8	feet							
Pump Setting	130 feet						•	* *	
Orifice Size	3 inch								
Data Collected By Ma	rtin Smith								
Test Conditions clou	dy day, aroun	d 40', (dischar	ge to	street	drai	n system		

•							
Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:15 A	M O min.		- -	14.71			start pump 275 gpm
9:15.	0.5		• • •	22.54	7.83	•	and the second s
9:16.	1.5			23.26	8.55		
9:17	2			23.57	8.86		
9:17.				23.79	9.08		
9:18	3			23.75	9.04		
9:19.	5 4.5			23.82	9.11		
9:20	5			23.97	9.26		
9:22	7			23.68	8.97		*
9:24	9			23.75	9.04		41" 269 gpm
9:26	11		·	23.69	8.98		
9:30	15			23.76	9.05		
9:35	20			23.65	8.94		39" 265 gpm

Well No. 3

PAGE 2 OF

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:40	25			23.64	8.93		
9:50	- 			23.58	8.87		38" 260 gpm
10:00	0 45			23.55	8.84		
10:15	60			23.58	8.87		
10:30	75			23.59	8.88		36.5"
11:00			· · · · · · · · · · · · · · · · · · ·	23.54	8.83		36"
11:30	135			23.54	8.83		35.5"
Noon	. 165		. :	23.54	8.83		35.5"
1:00	225			23.53	8.82		35.25"
2:00	285			23.52	8.81		35"
3:00	345			23.52	8.81		34.5"
4:00	405		•	23.50	8.80		34.25"
5:00	465			23.49	8.78		34"
6:00	525			23.50	8.79		34" 246 gpm
7:00	585			23.55	8.84		
8:00	645			23.50	8.79		
9:00	705			23.50	8.79		
11:00	825			23.51	8.80		
1:00	945			23.51	3.80		

Well No. 3

PAGE 3 OF 4

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
3:00	1,065			23.57	8.86		
5:00	1,185			23.52	8.81		
7:00	1,305			23.56	8.85		
8:00	1,365			23.59	8.88		33" 242 gpm
9:00	1,425			23.61	8.90		33.75"
9:15	1,440			23.65	8.94		pump off
		RECOVER	DA	ГА			.
9:15.	5	0.5		16.37		1.66	
9:16		1.0		15.52		0.81	
9:16.	5	1.5		15.33		0.62	
9:17		2.0		15.34		0.63	
9:17.	5	2.5		15.41		0.70	
9:18		3.0		15.38		0.67	
9:19		4.0		15.17		0.46	
9:20		5.0		15.31		0.60	
9:22		7.0		15.17		. 0.46	
9:24		9.0		15.14.		0.43	
9:26		11.0	:	15.24		0.53	
9:28		13.0		15.34		0.63	

LOCATION Mt. Rose Service	Company		·	
Well No. 3		 		
A Committee of the Comm	*.			
PAGE 4 OF 4				

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
9:30		15		15.17		0.46	
9:40		25		15.17		0.46	
9:45		30		15.09		0.38	
9:50		35		15.07		0.36	
9:55		40	•	15.04		0.33)
10:00		45	•	15.07		0.36	
10:10		55		15.14	3 • • • • • • • • • • • • • • • • • •	0.43	ا مر
10:20	e e e e e e e e e e e e e e e e e e e	~ ~65	ar in ea	15.13	u, ve	0.42	
10:30		75		15 . 06	**	0.35	
10:45		90		15.13	A 2	0.42	
11:00		105	•	15.06		0.35	
11:15		120		14.99		0.28	
11:30		135		15.07		0.36	
11:45		150		15.11		0.40	
12:00		165		15.08	•	0.37	end test
	g garage de la companya de la compan						



LL	PUMPING	TES	37
ATA	FORM		

Date	March 7,	1980		

Page 1 of 2

cation MT. Rose S	ervice Company	vation	JI CCK 7 C		, , , ,	
tic Water Surface					1	•
ata Collected By	Martin Smith			· · · · · · · · · · · · · · · · · · ·		

Ime	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
3:20 A	4 0 min.			5.44			
:45	. 30			5.44	0	1	(Sagar
.02	107	Standard Mark		5.62	0.18		
12:10	PM 175			5.72	0.28		* 1
1:02	227			5.89	0.45		
07	292			5.99	0.55		
<u>0</u> 2	347			6.09	0.65		
4:07	412			6:14	0.70		
02	467	<u>.</u>		6.18	0.74	1	
3: 06	531		·	6.26	0.8	2	·
<u>7</u> :05	590			6.28	0.8	4	
:08	713			6.32	0.8	8	
1:03	828			6.42	0.9	8	

Well No. 4 Observation

PAGE 2 OF 2

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
1:08	953			6.52	1.08		
3:03	1,068			6.51	1.07		
5:08	1,193			6.54	1.10	, , , ,	
7:03	1,308			6.57	1.13		
8:04	1,369			6.55	1.11		
9:02	1,427	·		6.59	1.15		
*						and the second	
		RECOVEI	ΥT	ST.		Same and the second of the second	A Section May 1988
9:34		19	*	6.60		1.16	
10:02		47		6.50		1.06	
10:36		81		6.47		1.03	*
11:02	2	107		6.42		0.98	
11:3	7	142		6.35		0.91	
11:5		159		6.32		0.88	-
* .							



WELL PUMPING TEST DATA FORM

Date	3/7/80		

Page 1 of 2

Location Mt. Rose Service Company, Gal Well Description Well No. 5 observati	lena Creek Area, Washoe County
Static Water Surface Pump Setting Orifice Size	
Data Collected By Martin Smith	

Test Conditions cloudy day, around 40°, open area, overland discharge

	Time Since					uischarge	
Time	Pumping Started	Time Since Pump Stopped t'	t/t'	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
8:20	AM		4	40,36			
9:43	; 28			40.36	0		
11:0	110			40.32			
12:02	PM 167			40.35			
1:06	231			40.33		•	
2:03	288			40.34			ř.
3:06	351			40.33			
4:04	409			40.35			
5:06	471		v	40.34	5		
6:03	528			40.32	EFFICT		
7:07	582			40.31	<u> </u>		
9:05	700	<		40.28	•.		
11:07	822			40.29			

LOCATION Mt Rose Service	Company			
Well No. 5 obse		· · · · · · · · · · · · · · · · · · ·		
			· ·	•
DACE 2 OF 2				

Time	Time Since Pumping Started t	Time Since Pump Stopped t'	t/t '	Water Surface	Draw- down S	Residual Drawdown S'	Remarks
1:04	939			40.28			
3:06	1,061			40.25	<u> </u>		
5:05	1,180			40.23	u U		
7:05	1,300	•		40.25	L. L.		
8:02	1,357			40.22	0		
9:03	1,418			40.22	Z		
		RECOVER	Y TE	S T			
9:31		16	,	40.22			
10:0	5	50		40.21		⊢ ½ ∪	
10:34		79		40.21		u u	
11:0		111	**	40.21		ш	
11:3		139		40.19		0 Z	
11:5		155		40.18			
					# 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
-							

<u>APPENDIX</u> <u>E</u>

WATER QUALITY TESTS

IN	TRIP)	LICA	TL)
PL	ease	PRI	ND.

BUREAU OF LABORATORIES AND RESEARCH NEVADA DIVISION OF HEALTH

-52404

ceport to: WATE	RESOURCE	****************	WATE	R SOURCE:	<u> </u>	ator Compan	
Address CONSUL City 28 Vine Street	TING ENGINEERS * Reno, Nevada 89503 State	***************************************	Casing o	SprCold	C+31	Depth	····
PLEASE CHECK BOX Constituent P.P.M.	YSIS F	OR PARTIAL ANA LE CONSTITUENT	LYSIS DESIRED	FOR CONS	TITLENES NO	No E	
124 Tuest	Chloride P.P.M.	Constitue	nt P.P.M.	Constituent	P.P.M.	Constituent	TOW
iness 46	Nitrate 2.0	Manganese	0.00				
nesium 1.2	Alkalinity 62 Bicarbonate 76	Color (20,	- ; RI	CEIVED	FEB 13 19	
. m 8	Carbonate ()	Turbidity	7.32	1		LB 13 19	80
	Fluoride 0.15	12 A					
	Amenic 9.001			10			

	TRIPLICATE	
PI.	ease print)	

BUREAU OF LABORATORIES AND RESEARCH

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7	٠,		т	

vater chemistry: VELL WATER: Pump sho bate sampled 1/29/30 bwnerMt. Rose Water	Date submitte	1660 N Reno, l ar water before samj		County Township: Range Area!	77W 19E	Section * Z	
report to: WATE Name	▼ Keno, Nevado 89	C E S Solute FOR PARTIAL A CIRCLE CONSTITUTE	Well Hot Casing di Now in to	SOURCE: Spring Cold iameter FOR CONSTI	in dep	Depth	Ft. Pt.
Constituent P.P.M.	Constituent P.J.		tituent P.P.M.	Constituent	P.P.M.	Constituent	W P.F3
s. 113	Chloride	Iron		× ×			ب يا وقود د
iness 51		0.9 Manganese	0.00				
Sium 12	Alkalinity	,	ŋ	REC	IVED FE	B 1 3 1980	*
nesium 5	Bicarbonate &	Turbidity	Q.5				
lum 8	Carbonate	C p.H.	7.		:		
asslum · · · · 3	Fluoride	0.13					
ate 2	Arsenic	0.000					
kemarks	lity meets the S	tate of	- The state of the	7-170	- 1		

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BUREAU OF LABORATORIES AND RESEARCH NEVADA DIVISION OF HEALTH

1660 N. Virginia Street 52407

ATER CHEMISTRY:	Victoria de la companya della companya de la companya de la companya della compan	Reno, Nevada 89503		<u> Masiloe</u>	*******************	
/ELL WATER: Pump st ate sampled 1/22/50 wner. Mt. Rose Wa	Date submitted 1344	before sampling.	Range Area'ii	_Bosa Wat	Section 7	
Address 28 Vine	ERESOURC TING ENGINEERS, IN Street Reno, Nevada 89503	Well Hot Casing d	SOURCE: Sprii Cold. iameter.	ngin d	Surface Depth	F:
ROUTINE DOMESTIC ANA PLEASE CHECK BOX Constituent P.P.M.	O.O.O.E. K CIRCLE	R PARTIAL ANALYSIS CONSTITUENT DESIRED	FOR CONS	TITUENTS NOT	LISTED BELOW PI	
Constitution 2 is all.	Constituent P.P.M.	Constituent P.P.M.	Constituent	P.P.M.	Constituent	P.P.
s. 144		Iron 1 1.		* * * * *.		Aliani .
iness E.S.	Nitrate 1 3	Manganese (15)				•
	Alkalinity 30	Color 7	RECEI	VED FEE	1 3 1980	
nesium 7	Bicarbonate 0.2	Turbidity 5. 15.				
luum 7	Carbonate ()	р.н. 7,60				
sstum 4	Pluoride 0.12					
_ate2	Arsenic (), 6/37				the St	ite of
CINST KS.			Cher	nical quality	Water Stand	