

NHPUC DOCKET DR 89-31
ROSEBROOK WATER COMPANY
RESPONSES TO STAFF DATA REQUESTS - SET NO. 1

14. How many customers is the system designed to serve; i.e., how many customers is the system capable of serving? How many customers has DES approved the system for? Are any DES approvals pending?

Response:

The Satter Companies engaged Provan and Lorber Engineers to evaluate the Rosebrook Water Company system in July 1988. Material relevant to this question is attached in support of this answer.

The system consists of a gravel packed well, a 600,000 gallon storage tank and distribution mains. The well has a capacity to service approximately 600 homes. The storage tank appears to have the domestic demand capacity to service 1,800 homes and the water mains are in various capacities, depending on location.

Regarding the DES approval, there is no specific approval required by the DES which defines the capacity of a water system of this type. Our capacity estimates cited above are from the engineer's report. There are no DES approvals pending at this time.

Responsible Witness: Richard Barber

WATER SUPPLY STUDY
BRETTON WOODS, NEW HAMPSHIRE
FOR
THE SATTIER COMPANIES OF NEW ENGLAND

JULY 1988

PROVAN & LORBER, INC.
CONSULTING ENGINEERS
P. O. BOX 389
CONTOOCCOOK, NH 03229
(603) 746-3220

P. O. BOX 167
LITTLETON, NH 03561
(603) 444-6301

Provan & Lorber, Inc.
Civil and Environmental Consulting Engineers

July 25, 1988

Mr. Richard Barber
Executive Vice President
Satter Companies of New England
Route 302
Bretton Woods, NH 03575

SUBJECT: WATER SUPPLY STUDY - BREITON WOODS, NEW HAMPSHIRE

Dear Mr. Barber:

PROVAN & LORBER, INC. has completed the review of the Bretton Woods water supply system for the Satter Companies of New England. The review was limited to a discussion of the system with operating personnel, a field investigation of the facilities and review of state records.

The report identifies improvements necessary to meet state requirements as well as projected demands. General cost estimates have been provided as well as a prioritization of improvements with emphasis on health related issues.

We are pleased to be of continued service to the Satter Companies of New England on this important project.

Very truly yours,
PROVAN & LORBER, INC.



Terry G. Lorber, P.E.
Executive Vice President

TGL:vp

WATER SUPPLY STUDY

Bretton Woods, New Hampshire

INTRODUCTION

The Satter Companies of New England have recently purchased the Bretton Woods Resort and associated utilities. **PROVAN & LORBER, INC.** has been retained to evaluate the water supply system serving the area for their proposed development program.

PROJECT SCOPE

The Scope of Services for the project include:

1. Provide a field reconnaissance of the existing water supply system.
2. Review the state records relative to water supply for Bretton Woods.
3. Prepare a brief report on the water supply for the proposed development and to meet State criteria.

INFORMATION SOURCES

1. Discussions were held with Mr. Herb Boynton, General Manager, Bretton Woods.
2. A field reconnaissance was made of the existing water utilities.
3. The state records were reviewed for the water supply information. Three (3) letters were found in the state files for the Bretton Woods Resort and are included in Appendix A, B & C.

EXISTING WATER SUPPLY SYSTEMS

The Bretton Woods Resort is presently served by the Rosebrook Water Company which maintains several water supply systems.

Historically, surface water has been obtained from Crawfords Purchase from two stream sources, Clinton Brook and the confluence of the Abenaki and Asquam brooks. The surface water is screened and chlorinated prior to gravity flow to three (3) wood staved storage tanks on Mt. Stickney near Route 302. The storage capacity is reportedly 150,000 gallons. A detailed description of the system is included in Appendix A. The surface source supplies water to the Mt. Washington Hotel and golf course. The surface sources are used only during the summer season.

Major water system improvements were completed in the early 1970's to include the installation of a gravel pack well (322 gpm), storage (650,000 gal) and distribution system. A more detailed description is included in Appendix B. The groundwater supply presently serves the ski area, recreation center, maintenance building, Forest cottages, Rosebrook town houses, Fabyan's, the service station, the welcome center, the stables, Mt. Washington Place, the administration building and the caretaker. Individual wells serve the Lodge and Silver Fox Motel.

WATER DEMANDS

Existing Water Demands

Water usage at the Bretton Woods Resort is monitored by individual water meters. A totalization of flows was not available. Also, total flow meters are inoperable. Therefore, the existing water usage was estimated as follows:

Table 1

Existing Water Supply Demands

	<u>Units</u>	<u>Flow</u>	=	<u>GPD</u>
Mt. Washington Hotel	250	x 200	=	50,000 (1) *
Bretton Arms	34	x 200	=	6,800
Admin Bldg/Welcome Center				
Service Station/Maintenance Bldg (2)	420	x 15	=	6,300
Mt. Washington Place	68	x 300	=	20,400
Ski Area	1800	x 10	=	18,000 (1)
Forest Cottages	54	x 300	=	16,200
Rosebrook Town Houses	28	x 300	=	8,400
Recreation Center	100	x 20	=	2,000
Restaurants (Fabyan's, Bretton Arms)	150	x 20	=	3,000
Misc. Single Family	20	x 300	=	<u>6,000</u>
Total Demand				137,100
Seasonal Usage				87,000 - 119,100 GPD

(1) Seasonal Usage

(2) Administrative support staff at various locations

* Now ~ 100K / Day due to Leaks / Refrigeration, etc.

The existing water usage is approximately 87,000 to 119,100 gpd excluding the golf course and seasonal usage of the Mt. Washington Hotel and ski area. Also the Lodge/Silver Fox are on individual wells.

Projected Water Demands

The Satter Companies of New England plan an aggressive development program for construction of 1500-1800 units. This coupled with year round usage of the Mt. Washington Hotel which can not continue on a surface water supply would require a water supply system capable of delivering 659,000 GPD estimated as follows.

Table 2

Protected Water Supply Demands

	<u>GPD</u>
New Development	
1800 units x 300 GPD =	540,000
Existing Development (1)	<u>137,100</u>
Total Demand	677,100

(1) Includes Mt. Washington Hotel and excludes the golf course (which can remain on the surface source) and the Lodge/Silver Fox hotel which are on wells. (See Table 1)

Analysis of Demands

The existing gravel pack well has sufficient yield (300 to 322 gpm) for the existing demands 119,100 gpd (83 gpm).

The projected demands 677,100 gpd (470 gpm) will require an additional well or wells to meet the State criteria of a source capacity of 2 times the average daily demand (940 gpm). A standby well is a requirement for water systems with 30 connections. Therefore, the well field capacity should be:

Existing well	300 gpm
New well(s)	<u>640 gpm</u>
Total	940 gpm

The decision on a third well will be based on more accurate projections of future water demands and actual water usage data.

The existing storage tank of 650,000 gal is sufficient for projected domestic demands. The fire demands requirements are beyond the scope of this project.

WATER QUALITY

Water quality problems have been periodically cited for the surface sources. Continued use of the surface source for human consumption is not recommended due to the anticipated excessive cost for complete treatment of the supply.

The water quality of the groundwater gravel pack well has historically experienced acceptable quality. Recent testing in November 1987 found excessive levels of lead and elevated concentrations of iron. Additional testing is warranted to identify if the lead occurrence is an anomaly or indeed a water quality problem possibly associated with the well construction. The iron level should also be monitored but at this point does not require treatment. Recent water quality results from the State are included in Appendix C with historic data in Appendix D.

WATER SYSTEM ASSESSMENT

Based on the projected water demands, review of state records, and field observation of the existing water utilities, the following improvements are warranted:

Source Evaluation

1. Continued use of the surface sources is not recommended for the Mt. Washington Hotel. The Hotel is to be placed on the groundwater supply after improvements in the Hotel refrigeration systems.
2. The surface sources can be utilized for the irrigation of the golf course.
3. The Lodge/Silver Fox motels to remain on individual well supplies.
4. Pump test existing gravel pack well to access yield.
5. Water quality testing to address the lead issue.
6. Gravel pack well system to be expanded. An additional well or wells are required for standby, as well as to meet projected demands.

System deficiencies

1. Stand by power at the existing well site.
2. Automatic control of well pumping and storage tank levels.

NHPUC DOCKET DR 89-031
ROSEBROOK WATER COMPANY, INC.
RESPONSES TO STAFF DATA REQUESTS - SET NO. 2

REQUEST #1: Provide the following from the Water Supply Study
Provan & Lorber.

1. Appendix A, B, C, and D.
2. A copy of the most recent water quality testing.

RESPONSE #1: 1. Appendix A, B, C, and D is attached.
2. To be provided.

Responsible Witness: Richard Barber

APPENDIX

A



file

ENGINEERING REPORT ON WATER SUPPLY
AND
DISTRIBUTION FACILITIES FOR THE
MOUNT WASHINGTON HOTEL
MOUNT WASHINGTON MANAGEMENT CO., INC.
BRETTON WOODS, NEW HAMPSHIRE

May 1981
Revised August 1981

EEl 1546-04-01

ROY F. WESTON, INC.
NORTHEAST REGIONAL OFFICE
2 Chenell Drive
Concord, New Hampshire 03301



environmental engineers, inc.
affiliate of the W&B Group

18 August 1981

Mount Washington Management Co., Inc.
Bretton Woods, New Hampshire 03575

Attention: Mr. John E. Sylvester, Jr.

Re: Engineering Report on Water
Supply for the Mount
Washington Hotel
WO 1546-04-01

Gentlemen:

Please except my apology for not attending to your letter of 4 June 1981 until now.

In correcting the draft report to reflect your comment, I offer the following as an explanation to the final report.

Section One, the report has been changed to reflect the posting of the Jefferson Brook Impoundment Area.

The discussion of a campfire near the Clinton Brook Impoundment is necessary because it was one of the State's major findings during their investigation. The report indicates that the campsite has been removed and access to the area has been blocked off. The use of Jefferson Brook as noted in the report is for emergencies and not a regular supply. However, any emergency water source must employ the same protective measures as a regular water supply so the addition of a valve in the transmission line add nothing to the system. Discontinuing the use of the brook would remove your emergency supply thereby, degrading the reliability of your supply.

Section Two, has been changed to reflect your comments.

Section Three, the rational behind using a vinyl liner was stated in the report but one comment should have been added. When the present supply is abandoned and the ski area system extended, then a pressure reducer could be installed in the transmission line (from the ski area) and the two wooded tanks used as additional

Mount Washington Management Co., Inc.
18 August 1981
Page 2


water storage. This would add toward fire protection and increase the reliability of the system.

A copy of the report has been forwarded to Mr. Harry Stewart of the New Hampshire Water Supply and Pollution Control Commission.

Again, I apologize for the delay in attending to this matter. If there are any questions on this report, please do not hesitate to contact me.

Sincerely yours,

ENVIRONMENTAL ENGINEERS, INC.


For Joseph S. Wasiuk, P.E.
Project Engineer

JSW/kj

Enclosure

SECTION ONE

EXISTING WATER SUPPLY AND DISTRIBUTION SYSTEM1.1 Sources

The Mount Washington Hotel complex draws its water from two surface supplies, located in the higher elevations of Crawford Purchase. The primary source is a reservoir on Clinton Brook. This impoundment was formed by the construction of a concrete dam, which is located about 750 feet downstream from the confluence of Abenaki and Asquam Brooks. The secondary source is Jefferson Brook. A small impoundment was formed in the brook by the construction of a stone dam lined with polyethylene to form an impervious barrier. A portion of this brook is then diverted through an old, six-inch pipe to the Clinton Brook impoundment. This source is used more as an emergency source than a regular supply.

The watershed for both of these sources is uninhabited with limited access. Limited activities taking place within the watershed include hunting, fishing, hiking, camping, snowmobiling and cross country skiing. The Clinton Brook impoundment area is posted with signs stating that it is a public water supply. The Jefferson Brook impoundment area was not posted at the time our inspection was conducted, but this situation has been rectified.

During the inspection of these impoundments, evidence of a camp fire was found on the shore of Clinton Brook impoundment. Since that discovery, the access road to the impoundment has been closed by means of a metal gate and other means of egress blocked off, and the debris from the campfire has been removed.

1.2 Distribution System

The present distribution system starts at the reservoir on Clinton Brook as a twelve inch main and extends to the present chlorination

facility. From that point to the storage tanks on Mt. Stickney, the line size is eight inches. (There is an eight inch spur that goes directly to the hotel. However, this line is gated closed.) The line that does supply the hotel with water is a twelve inch main, connecting the storage tanks with an eight inch main that loops around the hotel. There is an eight inch branch line off the back side of the loop that interconnects an elevated storage tank with the water system.

The majority of the distribution system is old - circa 1900 - but appears in good physical condition.

As previously stated, a six inch main connects Jefferson Brook impoundment area to Clinton Brook reservoir. The majority of this line is elevated above ground level through the use of metal stands. Some settlement has taken place and sizeable leaks are visible.

1.3 Storage Facilities

Two forms of storage exist within the Mount Washington Hotel water system. The first, supply storage, is the amount of water that exists above the intake pipe in the Clinton Brook reservoir. Because of the irregular shape of the reservoir, the exact quantity of water stored could not be accurately determined but was estimated at approximately 300,000 gallons. The second form, distribution storage, consists of three wood-stave tanks with a total storage capacity of 150,000 gallons. These tanks are located on the north side of Mt. Stickney and are set on timber platforms approximately five feet above the ground.

At present, only two of the tanks are in use, so usable storage capacity is 100,000 gallons. Because the tanks are filled with water only during the warmer months, the wood shrinks during the winter and the tanks consequently leak when filled. The tanks covers are also in need of repair to insure that they are watertight, with screening around the edge to keep birds and other wildlife out.

Additionally, there is a 100,000 gallon elevated tank located behind the hotel. This tank is for fire protection only, and is interconnected to the distribution system through a section of eight inch pipe with a gate valve and check valve. This tank remains filled at all times for fire protection purposes.

1.4 Treatment Facilities

Water from Clinton Brook reservoir flows to the distribution system by gravity. En route, it passes through a small building which houses the chlorination equipment. Inside the building is a small brick structure which contains the inlet pipe from the reservoir, the outlet pipe to the distribution system, a screen to filter out debris, and the chlorine injection nozzle.

Inasmuch as this is an antiquated water system, there is no means of measuring the flow of water passing through the structure, so the amount of chlorine added is set by an educated guess. Chlorination is accomplished through the use of gaseous chlorine and a rate controller. This controller is set to certain number of pounds of chlorine per day. If the chlorine residual at the hotel drops below 0.2 mg/l free chlorine, the dosage rate is increased to insure that a proper residual is present. Although this method is not sophisticated, it does work well since the flow rate is nearly constant. This constant flow rate is achieved by continually overflowing the distribution storage tanks.

SECTION TWO

CURRENT OPERATIONAL PROCEDURES2.1 Operational Procedures

During last summer, an outbreak of salmonella occurred at the Mount Washington Hotel. A routine investigation of daily operational procedures of the hotel's water system was conducted by the New Hampshire Water Supply and Pollution Control Commission. The investigation pointed out certain deficiencies as noted in Appendix A. While the system was not maintained on a daily basis prior to the salmonella outbreak, it is now being maintained by including the following regime:

- Daily inspection of the reservoir and chlorination facilities,
- Daily testing for chlorine residuals.
- Inspection of the immediate watershed for the presence of hikers, campers, etc., and
- Monthly reports submitted to the appropriate state authorities.

In addition, an in-house cross-connection survey has been conducted to eliminate noted difficulties. These difficulties were not the result of current management inadequacies but rather were due to changing code requirements over the years, as well as personnel changes or oversights.

Since the original complaint, the management has made every effort to prevent possible recurrence by enforcing the steps outlined above and by training hotel personnel in proper techniques.

SECTION THREE

RECOMMENDATIONS AND CONCLUSIONS3.1 Recommendations

The following recommendations are in order:

1. That the distribution storage tanks currently being used be lined with a vinyl liner to
 - a. eliminate leakage
 - b. extend the life of the tanks
 - c. create a more sanitary storage situation
2. That the management continue a training program for appropriate personnel to insure proper operation of the water system, particularly with regard to the chlorination facility.
3. That consideration be given to future elimination of the existing fire protection storage tank. The tank could be eliminated by connecting the Mount Washington Hotel system with the Bretton Woods Ski Area system. This proposed connection would provide the Mount Washington Hotel with water from groundwater sources as well as provide greatly increased fire protection capabilities (from 100,000 gallons to 500,000 gallons). Such a connection would require installation of 3600 feet of transmission main. However, before such a project could be undertaken, the following improvements to the Bretton Woods system would have to be addressed:
 - a. Installation of telemetering equipment between the storage tank and pump.
 - b. Repair of the surge control valve in the pump house.
 - c. Installation of a flow meter in the pump house.
 - d. Repairs to the roof of the existing storage tank to eliminate surface water intrusion.

4. That appropriate hotel personnel be permanently detailed to make periodic inspections of both impoundment areas to insure compliance with regulations regarding camping and hiking near posted public water supplies.

3.2 Conclusions

Through the implementation of recommendations 1, 2, and 4, the existing water can adequately provide a safe water supply which will, in our judgement, meet the standards both the State and Federal Safe Drinking Water Act.

When it becomes financially feasible, the Mount Washington system and the Bretton Woods system should be connected, according to recommendation 3.

The management of the Mount Washington Hotel has been responsive to the mandate given by the state and very cooperative with the consulting engineer, and has made every effort to correct deficiencies in the system pending this report.

APPENDIX A

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

DATE July 29, 1980

FROM Stephen W. Leavenworth, P.E.
Chief,
Water Supply Division

AT (OFFICE) Water Supply and
Pollution Control
Commission

SUBJECT N.C.W.S., CARROLL; MOUNT WASHINGTON HOTEL.

TO Maynard H. Mires, M.D., M.P.H.
Director
Division of Public Health Services
Department of Health and Welfare

In response to a call from Bill Oakman, of your office of Consumer Protection, two of our sanitarians made a sanitary survey of the subject water system.

As you know, under the 1977 Safe Drinking Water Act, the Mt. Washington Hotel is classified as a Non-Community Public Water System. While the staff has completed the sanitary surveys of about half of these systems in the state, the subject system had not yet been surveyed. Thus, our records are incomplete and little information was available until now. A brief description of the system, as determined from the survey made by Richard Henderson and Peter Harrington on July 24 and 25 is attached.

Defects in the system are as follows:

1. There was evidence of hiking and camping activity in the vicinity of the impoundment reservoir. In addition, toilet paper and human waste was found deposited on the ground upstream of the reservoir and tributary to it.

2. Chlorination is very crude. The water flows through a concrete chamber, separated into two compartments by a screen. There is no protection of the treated water from surface infestation by insects, rodents, etc. There are no controls for the chlorination device other than a valve, which, when opened, permits gaseous chlorine to bubble up into the first chamber. There is no gage or scale to measure the flow and the operators did not have any means of testing for a residual, which is the only means of immediately determining effectiveness of treatment.

3. The treated water is stored in the two 50,000 gallon tanks which are in disrepair, must be patched and tarred yearly. The screen mesh around the top of the tanks has large holes in it, allowing entrance by flying animals. A bat was observed leaving the tank through one of the openings.

4. It was reported that the lower fire storage tank is, at times, filled by pumping from a nearby stream, without any treatment at all. Although the fire storage is supposed to come into use only if there is a fire, readings of different pressure gages at the time indicated that this occurs much more frequently, probably every day during peak domestic demand.

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

July 29, 1980

FROM Stephen W. Leavenworth, P.E. DATE
Chief, Water Supply and
Water Supply Division AT (OFFICE) Pollution Control
Commission

SUBJECT N.C.W.S., CARROLL; MOUNT WASHINGTON HOTEL. - PAGE 2

TO Maynard H. Mires, M.D., M.P.H.
Director
Division of Public Health Services
Department of Health and Welfare

5. Within the hotel plumbing, in the kitchen area, there were cross-connections where hoses from the potable supply were immersed in sinks filled with wastewater and in wash water pails used for cleaning floors. There is a tight connection between the dishwasher waste outlet and the sewer which, if the sewer becomes blocked or backs up, will allow the waste to back up into the dishwasher.

There are a number of problems with this water system, serious enough to require immediate attention. Some, such as cross-connections, can be corrected by local maintenance staff. Another, the filling of the fire storage tank with river water must cease immediately. If this causes problems in keeping the tank filled, an engineering study may help solve the problem. Treatment of the source appears to be inadequate, but may be improved upon this season. However, it is suggested that a new source be found which does not require treatment, such as a groundwater supply. Again, an engineering study is necessary. All of this must be accomplished before the next season.

Results of analyses made in sample collected by your personnel and ours are attached.

SWL/jt1

Attachment

MOUNT WASHINGTON HOTEL WATER SYSTEM
JULY 24, 1980

The hotel, one of the largest in New England, has about 300 rooms and serves a population of some 600 guests plus an additional unknown number of staff members. In addition to the domestic water use of the hotel, there is a large demand for the golf courses, two swimming pools, and fire protection.

The primary and intended source of water for the entire complex is an impoundment of Jefferson Brook, and two smaller brooks, about four miles easterly of the hotel complex. The impounded water is piped down into the valley in 8-inch main directly to two wooden storage tanks located westerly of the hotel on the mountainside west of the highway and railroad. A third tank at that location is in such disrepair as to be unusable. The tanks appear to be about 50,000 gallon capacity each. From these tanks the water flows down into the valley through a 12-inch watermain to an elevated storage tank with a reported capacity of 100,000 gallons near the hotel. From this line, water is piped to the hotel complex. Treatment consists of gas chlorination between the impoundment reservoir and the two large storage tanks.

MOUNT WASHINGTON HOTEL

07/29/80

<u>Date</u>	<u>Lab. #</u>	<u>Location</u>	<u>Taken By</u>	<u>Results</u>
7-14	14169	?	Dave Drumm	OGG <1
	14179	?	Mt. Washington Hotel Supt.	TNTC <1
7-20	14792	Ice Machine (Accounting)	B. Oakman	1
	14793	Ice Machine (Stickney)	"	2
	14794	Ice Machine (accounting) (deep)	"	<1
	14795	Ice Machine (ballroom)	"	<1
	14796	Water supply kitchen	"	25
	14797	Water supply kitchen	"	TNTC 31
7-22	15148	Exact Location ?	Consumer Protection	TNTC 11
	15149	Mt. Washington Hotel		OCG 50 (resample)
7-24	15295	Kitchen sink	Harrington/ Henderson	<1
	15296	Plumbing shaft	"	150
	15297	South central kitchen sink	"	242
	15298	Reservoir (dam intake)	"	>200 410 est
7-25	15489	Bretton Woods Mtr. Inn	"	<1
	15490	Ski Lodge	"	<1
	15487	Rose Brook Ski Area	"	<1
	15488	Plumbing Room - Hotel	"	1
7-28		Stream #1	Harrington	
		Stream #2	"	
		Stream #3	"	
		Stream #4	"	
		Stream #5	"	
		Stream #6	"	
		Stream #7	"	
		Fire Water Tank - Hotel	"	

APPENDIX

B

The State of New Hampshire



COMMISSIONERS
 JOHN F. BRIDGES, Chairman
 CHARLES E. BARRY
 JOHN C. COLLINS, P.E.
 DELBERT F. DOWNING
 RUSSELL DUMAIS
 HERBERT A. FINCHER
 RICHARD M. FLYNN
 WILBUR F. LaPAGE
 JAMES J. PAGE
 WAYNE L. PATENAUDE
 DAVID G. SCOTT
 WILLIAM T. WALLACE, M.D., M.P.H.

Water Supply and Pollution Control Commission

Hazen Drive - P.O. Box 95

Concord, N.H. 03301
 June 5, 1985

STAFF

WILLIAM A. HEALY, P.E.
 Executive Director

DANIEL COLLINS, P.E.
 Deputy Executive Director
 Chief Engineer

10 Files
 Rosebrook ✓
 Mt. Washington Hotel

Rosebrook Water Company
 Bretton Woods, N.H. 03575

Subject: C.W.S./N.C.W.S., ROSEBROOK/MOUNT WASHINGTON HOTEL, BRETTON WOODS

Dear Sirs:

On September 25, 1984, this writer visited the Mount Washington Hotel in Bretton Woods to perform an in-depth sanitary survey. The purpose of a sanitary survey is to evaluate the capabilities of a water system's source, treatment, distribution and management to continually produce safe drinking water. We wish to thank those involved including Herb Boynton and Jes Sylvester for their cooperation in performing this survey. It is our intention through this letter to provide a critique of the water system while providing positive criticism.

We must require that, after reviewing this letter, you notify this office in writing, indicating those steps you have taken or propose to take to address these deficiencies. A timetable for completion of these steps should also be included. Many of the deficiencies were discussed with you at the time of the survey and it was indicated that they would be addressed over the winter when major overall improvements to the Hotel were to be undertaken. However, it now the case that the major overhaul has not been undertaken for various reasons. That is why we would like a more formal indication of the new schedule.

I. SYSTEM BACKGROUND

A summary of the water system components for the Mount Washington Hotel and the Rosebrook Water systems is included in the appendix to this letter. Please review this summary for any possible errors.

II. SYSTEM DEFICIENCIES

A. SURFACE WATER SOURCE

The most significant and pressing deficiency in these water systems is the continued use of the surface water source to serve the

(continued)

-2-

June 5, 1985

Subject: C.W.S./N.C.W.S., ROSEBROOK/MOUNT WASHINGTON HOTEL, BRETTON WOODS

Hotel Complex. It is the intention of the present owners to completely upgrade the water system at the Hotel Complex and to connect to the Rosebrook Water System. This will result in the abandonment of the surface water source. Presently, daily chlorine residuals are taken from the plumbing shop which is at the farthest point in the water system. I was informed by Mr. Boynton, by phone on June 4, 1985, that a residual is maintained at between 0.3 and 0.4 ppm of chlorine. I was also informed that a new gas chlorinator has been installed at the surface water impoundment and that the storage tanks have been cleaned and scoured and the system flushed this past spring.

It is now estimated that work will be begun to connect to the Rosebrook system sometime this Fall. In the meantime we must require that the following steps be taken or continue to be taken:

1. Daily chlorine residuals must be taken and recorded on the appropriate forms provided by this Division (several copies are enclosed). A copy of the monthly chlorine residual report shall be forwarded to this office for review at the end of each month.

2. Monthly Bacteriological samples will be required from the Mount Washington Hotel and Rosebrook Water Systems. These bottles will be forwarded to you from this office. Please be advised that these samples must be returned to our laboratory within 48 hours of collecting the sample or they will not be testable.

The surface water system must ultimately be abandoned. We strongly suggest that this be completed as soon as possible. This will eliminate the inherent public health dangers associated with using an inadequately treated surface water supply as well as the dangers to your personnel in using gas chlorination without all the appropriate safeguards.

B. HOTEL COMPLEX PLUMBING SYSTEM

A major concern of this office also pertains to any actual or potential cross connections which may exist in the Hotel's plumbing system between the potable water supply and some other unapproved water or substance. A careful review of the plumbing system should be made and corrective actions taken to bring this system into compliance with State requirements pertaining to cross connections as defined in the Safe Drinking Water Act, RSA 148-B, Rule Ws 314, Cross Connections and the BOCA Plumbing Code. As it is the intention of the present owners to upgrade this plumbing system, it is an ideal opportunity to address this important public health concern by performing a cross connection survey. Please be advised that this Division has requested as early as August 15, 1980 that a cross connection survey be conducted.

C. ABANDONMENT OF THE SURFACE WATER SOURCE

Once the connection to the Rosebrook System has been completed the surface water source should be completely physically separated

June 5, 1985

Subject: C.W.S./N.C.W.S., ROSEBROOK/MOUNT WASHINGTON HOTEL, BRETTON WOODS .

from the public drinking water system. If this source is intended to be used for any other purpose such as fire protection or lawn irrigation, then it must still be a physically separated from the public drinking water system.

D. ROSEBROOK - GRAVEL PACKED WELL

The vent tube on the gravel pack well should be covered with a fine mesh screen and looped downward with at least 18" of clearance above the floor. This will keep water from the cooling bearings, dust, insects and animals from entering into your source through the well casing.

E. ALTERNATE SOURCES

It was indicated during the survey that several other sources exist at the Hotel Complex and that some may be considered for future use as a backup or to serve separate facilities. These include: a gravel packed well (?) near the 18th Fairway (South) which is estimated to produce 200 gpm and which may be desired for use as a backup during emergencies; an artesian well north of the #1 green which used to serve the old touring center and which may someday be used to serve a 19th Hole Pub and Snack Bar; and a group of 16 to 18 wells near the 'Wheel House' and which have not been used for 40 years.

Please be advised that none of these sources can be introduced into any public water system without prior approval from this office. This will entail a formal request in writing with plans showing the well locations and protective radii, along with field inspections and safe drinking water quality analyses. If you do not intend to use these sources, then they should be properly abandoned to prevent contamination of the aquifers from which they draw (information enclosed).

Our records indicate that a second gravel pack well was developed by R.E. Chapman & Company at the time that the currently used GPW was developed. This well would be located just north of the Lake Carolina Area and was rated at 250 gpm. As I do not have a plan showing either the 18th Fairway well or the Lake Carolina area, I am not able to determine if the two are the same. Please advise our office concerning this matter.

F. DISTRIBUTION MAP

According to our records, no map has been submitted showing the as-built water distribution system at Rosebrook. If a plan presently exists showing the water and sewer lines as they were constructed, please submit a copy to this office for our records. If a plan is not now available then one should be prepared. This plan will certainly become useful to those who manage the water system,

June 5, 1985

Subject: C.W.S./N.C.W.S., ROSEBROOK/MOUNT WASHINGTON HOTEL, BRETTON WOODS

especially during emergencies. We must require that a copy of this plan be submitted to our office before or concurrent with requests for approval of future expansions.

G. SYSTEM RELIABILITY & MAINTENANCE

Most of the maintenance of these public water supply systems is performed by your own personnel. Please be advised that this work should be performed in accordance with the American Water Works Association (AWWA) standards, i.e. installing water mains, disinfecting water mains, etc.

It is recommended that distribution gate valves be exercised biannually to ensure they are in working order and to counteract mineral build-up and subsequent jamming of the valve.

If your system is equipped with blow-offs, we recommend that the water lines be flushed once per year to clean out any debris which may be collecting in the piping. This is especially true of the surface water system.

We urge you to keep an inventory of spare parts for those components of your water system that are not readily available on a quick notice. Examples of such include: gate valves, repair clamps, tapping saddles, and a stock of each diameter pipe used in your water system.

H. MANAGEMENT - CERTIFIED OPERATOR

Since June of 1980, the State has required a certified operator at each community type public water system. This is to try and ensure that someone affiliated with the public water system is cognizant of accepted water works practices and State requirements. According to our records, a certified operator is not affiliated with your system. We must require that someone affiliated with the Rosebrook Water System submit an application and schedule to take the certification examination before January 1, 1986. The schedule for examinations and an application are enclosed. Further information pertaining to the examination can be obtained by contacting Thomas Andrews of this office.

I. MANAGEMENT - CORRESPONDENCE FILE

We suggest that you establish a permanent file for water supply matters. This should include specifications on your pumps, gravel pack well construction, as well as past correspondences from this office and your system engineering consultants. I have enclosed a list of some of the most recent correspondences that are in our file.

-5-

June 5, 1985

Subject: C.W.S./N.C.W.S., ROSEBROOK/MOUNT WASHINGTON HOTEL, BRETTON WOODS

Some of the deficiencies indicated above are less pressing than others. However, all are important to the proper and effective operation of public water systems. We are agreeable and would recommend that some of these be performed in conjunction with other system work as it develops. This letter will hopefully act to clarify those situations which deserve or require your attention and will hopefully act as a "laundry list" that will be referred to as work develops. The adoption of this approach will allow careful planning of the work and its accomplishments at a minimum cost.

The ownership and operation of a public water supply system involves many significant responsibilities. It is our main concern to represent and protect the public health. It is also our intention to work with you in solving any water related problems that you may have. Please feel free to contact us in Concord at 271-3544 at any time if you feel we can be of service to you.

Yours truly



William K. O'Neil
Sanitarian II
Water Supply Division

WKON/bon
Enclosures

7703X

APPENDIX

Subject: C.W.S./N.C.W.S., ROSEBROOK/MOUNT WASHINGTON HOTEL, BRETTON WOODS

SYSTEM BACKGROUND

The Rosebrook Water System presently consists of 28 townhouses, 27 duplexes which are divided into 2 cottage units each, the Bretton Woods Ski Area Base Lodge and Maintenance Building which serves up to an estimated 1600 to 1700 people per day during the ski season and Fabians Restaurant. Under the present ownership, the estimated maximum expansion potential for this system is up to 750 to 800 units. This water system is serviced by 322 gpm gravel pack well that was constructed in 1972. There is also a 650,000 gallon (90' ID) gravity feed storage tank at an elevation of 2000 M.S.L. The most recent expansion proposal for this system was made in July of 1984, and concerned the Remick Lane Subdivision. This expansion was approved July 23, 1984, by Mr. Harry Stewart, P.E., of this office.

The Mt. Washington Hotel is a 300 room facility which serves a population of some 600 guests plus additional number of staff members. The water system serving this Hotel complex (including a golf course, fountains, two swimming pools, lawn sprinklers, Restaurant, kitchen, employees quarters and maintenance shops) is presently served by a surface water source originating at Clinton Brook near the confluence of Abenaki and Asquam Brooks. This surface water undergoes only simple chlorination before its introduction into the public drinking water system. The chlorination system consists of a gas chlorinator that is set at a fixed rate and is not flow proportional because a master water meter is not provided.

The water is stored in two wood-stave tanks with a usable capacity of 100,000 gallons. A third 100,000 steel storage tank is located behind the hotel and is intended for fire protection.

7703X

72
2
72

APPENDIX

C

- JOUSE BRIDGES, Chairman
- MICHAEL G. LITTLE, Vice Chairman
- JOHN E. BARTLETT
- KENNETH M. THOMAS
- JAMES F. HAYDEN
- GEORGE E. HURT
- WILBUR LANGE
- DONALD A. NORMANDEAU, DEPT.
- WAYNE L. DAVENPORT
- JAMES VARIOUSIS
- WILLIAM F. WALLACE, M.D., M.P.H.



ALDEN H. HOWARD
COMMISSIONER

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER SUPPLY & POLLUTION CONTROL DIVISION

6 Hazen Drive, P.O. Box 95, Concord, NH 03301
603-271-3504

SELL A. NYLANDER, P.E.
CHIEF ENGINEER

June 6, 1988

Rosebrook Water System
c/o Frank Idleman
Mtn. Washington Mgmt. Corp.
Route 302
Bretton Woods, New Hampshire 03575

Subject: (CWS 0382010) CARROLL; ROSEBROOK WATER SYSTEM - SANITARY SURVEY

Dear Mr. Idleman:

On November 19, 1987, I visited the subject public water system to perform an in-depth sanitary survey. The purpose of a sanitary survey is to evaluate the capabilities of the water system's source, treatment, distribution and management to continually produce safe drinking water. I wish to thank you for your cooperation in performing this survey.

SYSTEM DESCRIPTION

The Rosebrook water system obtains its water from a single gravel packed well equipped with a submersible well pump. The well is 43' deep and has a yield of 322 gpm. Water flows from the well to a 650,000 gallon atmospheric storage tank and then by gravity flow to the distribution system. There is no treatment, and water is provided to the distribution system.

EPA IDENTIFICATION NUMBERS FOR SYSTEM AND SOURCES

All NH public water systems, as well as each source, are identified by a 7-digit EPA ID # (also appearing on the State Water Lab results/reports) and should be used when corresponding to our office. Those assigned to your system appear below (including latitude and longitude locations):

NAME OF SYSTEM
(Water Supply Sources)

ROSEBROOK
GPW - near brook

EPA # LATITUDE/LONGITUDE

0382010 441545-712744
0382011

Accompanying this letter is a copy of the 'Sanitary Survey Checklist' for your water system. Through the checklist and this letter, it is our intention to point out the system deficiencies while providing positive criticism. The positive aspects of your system are also indicated on this checklist.

4697j

- 2 -

06-06-88

Frank Idleman
Mtn. Washington Mgmt. Corp.
Route 302, Bretton Woods, NH 03575

Re: (CWS 0382010) CARROLL; ROSEBROOK - SANITARY SURVEY

This office realizes that portions of this development are still under construction and that some deficiencies listed will be corrected as part of your normal construction schedule. However, we have included them to remind you that they must be addressed by the time the water system's construction is complete.

DEFICIENCIES

The remaining portion of this letter will address the specific deficiencies as indicated on the checklist. We've broken these down into 'Significant' and 'Other' deficiencies. We must require that you give immediate attention to the significant deficiencies. To ensure this, we require you to notify this office in writing within 45 days, of the steps you've taken or propose to take to alleviate these deficiencies. A timetable for completion must be included.

Be advised that, under RSA 148-B:6 (Approval of Construction or Alteration), no new construction, addition or alteration involving the source, treatment, distribution or storage of water in any public water system can begin without approval by WSEB of the Water Supply & Pollution Control Division (WSPCD).

SIGNIFICANT DEFICIENCIES AND REQUIRED ACTION

Excessive Lead Results

Sample results for lead, taken November 19, 1987, were found to be in excess of the SDWA standards. The MCL allowed by the State for lead is 0.025 mg/l. Water analyses show that the well has a lead level of 0.066 mg/l. This will should be resampled for lead as soon as possible to confirm the presence of lead. Please be advised that you will be receiving a series of sample bottles from the WSEB for lead sampling. These samples should be returned to the DES Water Laboratory or a laboratory certified by the DES laboratory. A copy of the sample results should be forwarded to the WSEB. Please be advised that treatment for lead may be required.

Atmospheric Storage Tank Cover

On the date of this survey, the cover for the atmospheric storage tank appeared to have structural deterioration. The masonry was cracked and there was loose and flaking pieces in several areas of the cover. In several places, footing on top of the cover appeared insecure and dangerous.

Due to the present condition of the subject cover, the WSEB is requiring that a structural engineer be retained to make an appraisal of the structural integrity of the cover and make written recommendations thereof. A copy of this report is to be forwarded to this office upon completion.

4697j

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06-06-88

Frank Idleman
Mtn. Washington Mgmt. Corp.
Route 302, Bretton Woods, NH 03575

Re: (CWS 0382010) CARROLL; ROSEBROOK - SANITARY SURVEY

Expansion

No further expansion of the subject public water system will be permitted until the expansion meets State "Design Standards for Small Public Water Systems". Before any expansion is allowed, the following technical conditions must be met.

1. An accurate distribution map of existing and proposed sections of the system must be submitted as described in "Small Public Water Systems" design standards (see enclosure).
2. Please be aware that no future expansion will be allowed until an accurate estimate of safe well yield, as described in the State "Design Criteria" is made for each source.

Maintenance

Distribution systems are normally flushed once a year through the blow-offs. In some water systems, the flushing must be done more often to keep mineral sediment in the piping under control. The frequency of flushing should be such that it prevents legitimate consumer complaints. Each gate valve on the water system should be turned annually to counteract mineral buildup and the subsequent jamming of the valve.

Spare Parts

We urge you to keep an inventory of spare parts of each diameter pipe you have in your water system. Although of some initial cost, such an inventory is quite appropriate when viewed against the cost of emergency labor and equipment when left standing idle, waiting for such a part to be picked up at a distant supplier. We would suggest gate valves, repair clamps, tapping saddles, and stock lengths of pipes be stocked for each diameter pipe in your water system. Remember that PVC piping loses some strength when directly exposed to the ultraviolet ray of the sun.

Informational Material Enclosed:

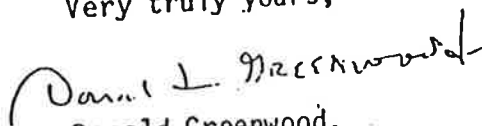
"As Built" Distribution Plan
Emergency Listing
Emergency Plan
Management Policies
Management Records and Files
Reproducible Map and Tie Location

Frank Idleman
Mtn. Washington Mgmt. Corp.
Route 302, Bretton Woods, NH 03575

Re: (CWS 0332010) CARROLL; ROSEBROOK - SANITARY SURVEY

The ownership and operation of a public water supply system involves many significant responsibilities, many which can also involve financial liabilities. It is our main concern to represent and protect the public health. It is also our intention to work with you in solving any water-related problems that you may have. Please feel free to contact us in Concord at 271-3139 any time you feel we can be of service to you.

Very truly yours,



Donald Greenwood,
Environmentalist
Water Supply Engineering Bureau

DG/jt1

Encls.

STEM'S
 me: Franklin Water System
 Address: Washington Mgt. Corp.
RT 302 Brother Woods, NH
 Zip Code: _____ Phone: _____

OWNER'S
 Name: M.T. Washington Mgt. Corp.
 Address: RT 302
Brother Woods, NH
 Zip Code: _____ Phone: _____

LOC. REP'S
 Name: Frank Illiano
 Address: M.T. Washington Mgt. Corp.
RT 302 Brother Woods, NH
 Zip Code: _____ Phone: 278-5501

GENERAL CHARACTERISTICS
 Check all that apply)

a Residential development
 b Recreational/Residential
 c Mobile Home Park
 d Institution
 e Hotel/Motel/Lodge
 f Restaurant

g Business or Industry
 h Non-resident school
 i Youth Rec. Camp
 j Campground
 k OTHER: _____
 l Seasonal _____

POPULATION

	Present	Potential
Permanent (people)		
Seasonal (people)	<u>2,200</u>	<u>summary</u>
Transient (people)		
Service connections	<u>168</u>	<u>connections</u>
Estimated or actual consumption per day (specify which)		_____ gpd

SOURCE DATA:

SOURCE I.D. Also, note all other Aux. or Abandoned.	EST. YIELD (gpm)	TYPE OF WELL	DEPTH OF CASING (feet)	DATE DEVELOPED	TREATMENT	WELL HAZARDS		WELL PUMP	
						description	distance from well	(gpm)	@ TDH
<u>Stand. drilled well</u>	<u>322</u>	<u>GRW</u>	<u>34-3"</u>	<u>1972</u>	<u>NONE</u>	<u>NONE</u>			

STORAGE: ATMOSPHERIC			BOOSTER PUMP			PRESSURE			Highest Elev. above Pump Sta
LOCATION	CONSTR.	CAPACITY (gallons)	BRAND	MODEL	CAPACITY (gpm) @TDH	LOCATION	CONSTR.	CAPACITY (gallons)	
<u>1 mi NW</u>	<u>concrete</u>	<u>650,000</u>	<u>B.F.</u>		<u>13</u>	<u>NA</u>			

Name of Pump Repair Company: _____

I. SOURCE: SANITARY CONSTRUCTION & QUANTITY

- | Y | N | N/A | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 1. Keep the top of the well protected so as to keep foreign matter and surface water out? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | a) Is there a sanitary seal on the well and is it properly installed? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | b) Is the well in a pit below ground level? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | c) Is this pit equipped with a gravity drain? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | d) Does the casing extend at least ten inches above the floor or ground? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | e) Is well vent screened and looped downward with at least 18" clearance above floor? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | f) Are the electrical wires into the well properly conducted? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 2. Is the casing length known, does it extend at least 10 feet into bedrock? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 3. Is the well site properly drained and/or protected from flooding? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | a) Is there a protective apron around the well casing made of concrete or clay and properly sloped? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Is there a minimum 200' protective well radius exclusive of hazards and permanent buildings; is all owned/or any easement? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 5. Is there a 48-hour pump test record for each source? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 6. Are there manufacturers' specifications for each pump available? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 7. Is the pump properly sized? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 8. Is there a low water cut-off device to prevent pump failure? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 9. Is the source(s) adequate in quantity? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10. Are there duplicate wells? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 11. Any separate sampling taps persource? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 12. A master water meter for each source? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 13. If standby or auxiliary power is available, is it properly maintained? |

II. SOURCE: QUALITY

- | Y | N | N/A | |
|--------------------------|-------------------------------------|--------------------------|---|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 22. Is the source(s) adequate in quality? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 23. Does the water quality meet all primary standards? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 24. Does the water quality meet all secondary standards? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 25. Does the water appear to require corrosion treatment? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 26. Does the system have a good bacterial record (including timely submittal of bacterial samples) over the past 2 years? |

III. CHEMICAL TREATMENT

- | Y | N | N/A | |
|--------------------------|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 45. Are the chemicals properly labeled and safeguarded? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 46. Is the chemical storage adequate? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 47. Are chemical feeders & pumps in operation, good condition & being properly maintained? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 48. Are the chemical injection points properly located to prevent backflow of concentrated chemicals by backsiphonage? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 49. Are the instrumentation and controls adequate for the process being utilized and in proper working order? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 50. Are adequate records being maintained (amount of water treated, amount of chemical usage)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 51. Is the treatment monitorable (sampling taps)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 52. Are any on-site test kits to gauge treatment available? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 53. Is the treatment correct for the size of operation and type of problem? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 54. Are adequate safety devices available and precaution observed? |

IV. PUMP HOUSE and STORAGE

- | Y | N | N/A | |
|-------------------------------------|-------------------------------------|--------------------------|---|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 60. Is the pump house equipped with a gravity floor drain? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 61. Is the electrical wiring neat and safe? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 62. Are there any hazardous chemicals stored in the pump house? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 63. Is there adequate room to service equipment? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 64. Is the pump house structurally sound, vandal proof, clean and tidy? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 65. Are there workable lights and a heater present? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 66. Is there proper ventilation of pump house to prevent excess moisture buildup? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 67. Are storage tanks located above groundwater level? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 68. Are the storage tanks protected against flooding? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 69. Does surface run-off and underground drainage drain away from the storage structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 70. Do the tanks appear to be structurally sound? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 71. Are the outsides of the tanks highly corroded? |

(continued on reverse side)

72. Are there clean sight tubes on the tanks? Y N X/Y

73. Are the overflow lines, air vents, drainage lines or clean out pipes covered or looped downward, screened and a minimum of three diameters above the ground or floor drain? Y N X/Y

74. Are there on-line duplicate booster pumps? Y N X/Y

75. Are the booster pumps properly sized for peak hourly flow demands? Y N X/Y

76. Are the pumps elevated off the floor by at least ten inches? Y N X/Y

77. Is there a working pressure gauge on the pressure tank? Y N X/Y

78. Does the minimum pressure setting allow for a minimum of 20 psi at the highest service elevation? Y N X/Y

79. Is the air compressor for the pressure storage tank in good working shape? Y N X/Y

80. Is there an alarm to note pump failure or low water level in storage tank? Y N X/Y

81. Is there adequate pressure storage level in storage tank? Y N X/Y

82. Is there adequate atmospheric storage? Y N X/Y

DISTRIBUTION SYSTEM

90. Is there an accurate distribution plan available? Y N X/Y

91. Is the distribution system looped? Y N X/Y

92. Are all services metered? Y N X/Y

93. Are there adequate flows and pressures at all times of the year in the distribution system? Y N X/Y

94. Are there adequate on-line gate valves properly located? Y N X/Y

95. Is there a maintenance program involving periodic gate valve exercising and flushing of mains through blow-offs? Y N X/Y

VI. MANAGEMENT and EMERGENCY RESPONSE

105. Are personnel adequately trained and/or certified? Y N X/Y

106. Are there sufficient personnel? Y N X/Y

107. Is there an on-site manager? Y N X/Y

108. Are sufficient operation and maintenance records being kept? Y N X/Y

109. Is there a permanent file with the operator of water system that includes past correspondences from the Division (including water quality results)? Y N X/Y

110. Are supplies and maintenance parts inventories adequate? Y N X/Y

111. Does a service contract exist with any repair and/or maintenance company? Y N X/Y

112. Is an emergency plan available and workable? Y N X/Y

113. Is there an emergency telephone list readily available with appropriate contacts included? Y N X/Y

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Water Supply Report

Reporting and Billing Address

ROSEBROOK WATER SYSTEM
CRAIG DOWNING
MT. WASHINGTON MANAGEMENT CORP.
ROUTE 302
BRETTON WOODS, NH 03575

Sample Location

EPA Number: 382011 GRAVEL NEAR BROOK
Owners Name: ROSE BROOK WATER SYSTEM
System Name: ROSEBROOK WATER SYSTEM
City or Town: CARROLL

Additional Information

Sample No.: 89637
Person Sampling: DON GREENWOOD
Date sampled: 11-19-87, 13:30
Date Received: 11-20-87, 09:21
Date Completed: 01-05-88
Person Receiving: BOB
Raw/Treated/Unk.: RAW

Comments:

Langlier Index, Ph = 6.28 = -3.7874

Test Name	Result		Standards	
	(see units)		Recommended	Allowable
Screen Alpha	pCi/L	< 1.0000		
Uranium	pCi/L	deleted		
Radium 226	pCi/L	deleted		
Radon gas	pCi/L	2200.0000		
Beryllium	mg/L	< .0300		
Coliform, Tot.	cts/100mL	0	< 1	< 1
Non-Coliform	cts/100mL	0	< 100	< 200
Aluminum	mg/L	< .0500		
Arsenic	mg/L	< .0050	< 0.05	< 0.05
Barium	mg/L	< .5000		< 1.0
Cadmium	mg/L	< .0030		< 0.01
Chromium	mg/L	< .0300		< 0.05
Copper	mg/L	< .1000	< 1.0	

Iron	mg/L	.6000	< 0.30	
Lead	mg/L	.0660	< 0.025	< 0.05
Mercury	mg/L	< .0010		< .002
Nickel	mg/L	.0600		< 0.01
Selenium	mg/L	< .0050		< 0.05
Silver	mg/L	< .0300		
Sodium	mg/L	4.0000	< 20	
Thallium	mg/L	< .1000		
Zinc	mg/L	.0300	< 5.0	
Alkalinity (CaCO3)	mg/L	11.3000		
Chloride	mg/L	3.0000	< 100	< 250
Fluoride	mg/L	.2200	1.00 - 2.00	4.0
Total Hardness (CaCO3)	mg/L	14.4000	< 100	
pH	Units	6.2800	6 to 8	5
Specific Conductance	uMHOs	54.1000		
Sulfate	mg/L	4.1600	< 250	
Manganese	mg/L	.0300	0.05	
Methane, dichloro-	ug/k	not detected		
Methane, dichlorobromo-	ug/k	not detected		
Methane, tribromo-	ug/k	not detected		
Methane, trichloro-	ug/k	not detected		
Methane, tetrachloro-	ug/k	not detected		
Methane, chlorodibromo-	ug/k	not detected		
Ethane, chloro-	ug/k	not detected		
Ethane, 1,1 dichloro	ug/k	not detected		
Ethane, 1,2 dichloro	ug/k	not detected		
Ethane, 1,1,1 trichloro	ug/k	not detected		
Ethane, 1,1,2 trichloro	ug/k	not detected		
Tetrachloroethane	ug/k	not detected		
Ethylene, 1,1 dichloro	ug/k	not detected		
Ethylene, trichloro	ug/k	not detected		
Ethylene, tetrachloro	ug/k	not detected		
Propane, 1,2 dichloro	ug/k	not detected		
1,3 dichloropropane	ug/k	not detected		
Benzene	ug/k	not detected		
Benzene, chloro	ug/k	not detected		
Benzenes, dichloro	ug/k	not detected		
Benzene, ethyl	ug/k	not detected		
Toluene	ug/k	not detected		
Xylene meta isomer	ug/k	not detected		
Ethylene, chloro	ug/k	not detected		
Methane, trichlorofluoro	ug/k	not detected		
Styrene	ug/k	not detected		
Methyl t-butyl ether	ug/k	not detected		
Antimony	mg/L	< .0100		
Molybdenum	mg/L	< .0100		
Vanadium	mg/L	< .0100		
Calcium Hardness	mg/L	9.9900		
Acetone	ug/k	not detected		
Tetrahydrofuran	ug/k	not detected		
Diethyl ether	ug/k	not detected		
Methyl ethyl ketone	ug/k	not detected		
Methyl isobutyl ketone	ug/k	not detected		
Propene 1,3 dimethyl t	ug/k	not detected		
Xylenes (ortho & para)	ug/k	not detected		
Trichlorotrifluoroeth.	ug/k	not detected		
1,2Dichloroethylene c+t	ug/k	not detected		
Cyclohexane	ug/k	not detected		
ChlorofluoroMethane	ug/k	not detected		

APPENDIX

D



(The 21st of new stamping)
Water Supply and Pollution Control Commission
SAFE DRINKING WATER ACT ANALYSIS

PRIMARY STANDARDS *

System Name: Section Woods Ski Area System's Location: Cazeele
 Description: (SW)
 Sample: (SW) Source I.D. #: _____

Laboratory			
I.D. Number	43505		
Date Sample Taken	2/11/82		
By Whom	T. Cox		
Date Sample Received	2/12/82		
By Whom	TC		
Results Reviewed By	MAR 02 1982 GJW		
PRIMARY STANDARDS & MCL	XXXXXXXXXXXX	XXXXXXXXXXXX	XXXXXXXXXXXX
Arsenic, As (0.05)	< 0.005		
Barium Ba (1.0)	< 0.5		
Cadmium, Cd (0.010)	< 0.005		
Chromium, Cr (0.05)	< 0.03		
Lead, Pb (0.05)	< 0.010		
Mercury, Hg (0.002)	< 0.001		
Nitrate, N ** (10.0)	0.40		
Selenium, Se (0.01)	0.005		
Silver, Ag (0.05)	< 0.03		
Fluoride, F (2.4)	0.19		
Endrin (0.0002)			
Lindane (0.004)			
Methoxychlor (0.1)			
Toxaphene (0.005)			
2, 4-D (0.1)			
2,4,5-TP Silvex (0.01)			
Trihalomethane (0.10)			
Alpha Scan	Rad. #	1 2 3 4	1 2 3 4
Gross Alpha (15pCi/l)			
Radium 226	Combined 5 pCi/l		
Radium 228			
Uranium ***			

All results in mg/l unless otherwise noted.
 The symbol < indicates that the actual concentration is less than value given.
 * See other side for Turbidity and Microbiological
 ** Measured Nitrate includes Nitrite
 *** Not directly a Primary Standard
 () circled numbers indicate which composites were received

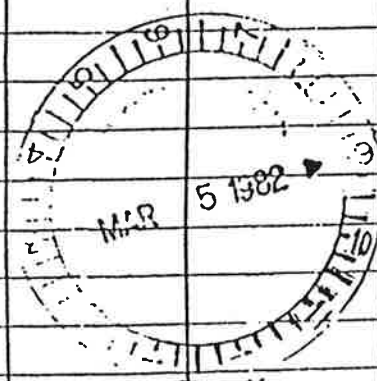


Water Supply and Pollution Control Commission
SAFE DRINKING WATER ACT ANALYSIS

SECONDARY STANDARDS*

Name: Bretton v. d. Ski Line System's Location: Carroll
 Station: (GW) Source I.D. #: _____
 Sample: (SW)

Laboratory				
Sample Number	13585			
Date Sample Taken	2/4/82			
From Whom	T. G. Lewis			
Date Sample Received	2/12/82			
By Whom	T. G.			
Tests Reviewed By				
SECONDARY STANDARDS & MCL XXX				
Chloride, Cl (250)	< 10			
Fluoride (15 apparent units)				
Copper, Cu (1.0)	< 0.1			
Chlorinating Agents, MBAS (0.5)				
Hydrogen Sulfide (0.05)				
Iron, Fe (0.30)	< 0.1			
Manganese, Mn (0.05)	< 0.01			
Ammonia Nitrogen (3 T.O.N.)				
Sulfate, SO ₄ (250)				
Cadmium, Zn (5)				
Fluoride, F (2.4)	0.19			
Nitrate ** N (10.0)	0.40			
Sodium, Na. (20-250)	5			
Microbiological T. Col./100ml	< 1 A			
Turbidity N.T.U.				
Corrosive Index				
Aggressive Langelier				
pH Units (6.5 - 8.5)	6.9			
Total Hardness as CaCO ₃	24			
Total Alkalinity as CaCO ₃	20			
Temperature C°				
TDS (To. Dis. Solids) (500)				
Calcium Hardness as CaCO ₃				



All results in mg/l unless otherwise noted.
 The symbol < indicates that the actual concentration is less than the value given.
 * EPA Secondary Standards

Corrosive characteristics	Langelier Index	Aggressive Index
Highly aggressive	< -2.0	< 10.0
Moderately aggressive	-2.0 to < 0.0	10.0 to < 12.0
Nonaggressive	> 0.0	> 12.0



SAFE DRINKING WATER ACT - NON-COMMUNITY SYSTEM RECORD

State of New Hampshire
 WATER SUPPLY AND POLLUTION CONTROL COMMISSION
 P.O. Box 95 - 105 Loudon Road
 Concord, New Hampshire 03301

DW 19-131
 Exhibit 22

NAME OF WATER SYSTEM ORGANIZATION/BUSINESS Bretton Woods Ski Area
 ADDRESS C/o Mountain Management Co. (Concord, N.H. 03575)
 BUSINESS AGENT/OWNER Mrs. Robert Schreier?
 BILLING ADDRESS Same

TOWN IN WHICH LOCATED Carroll
 TELEPHONE 778 5000 I.D. # C-352010
 TELEPHONE _____
 TOWN _____

SAMPLING FREQUENCY (DATE AND INITIAL) Feb 20, 1979, Quarterly

SANITARY SURVEY PERFORMED BY: ATS DATE: 5/2

DESCRIPTION OF SOURCE (circle) Dug well - Drilled well - Well point - Infiltration well - Surface Water (chlorinated-yes-no)

LABORATORY ANALYSES - PARAMETERS MEASURED

Sampled Source (if more than one) and Sampling Location	Total Coliforms/100ml K=less than 1; TNTC=too numerous to count, resample; OCG=obscuring confluent growth, resample	NO ₂ & NO ₃ as N mg/l	Cl mg/l	F mg/l	pH	Hardness mg/l	Fe mg/l	Mn mg/l	OPTIONAL PARAMETERS		Evaluation and Notes	Lab Number
									Cu mg/l	Pb mg/l		
49 mens Room	<1	0.41	<10	0.16	7.2	36	0.1	<0.01			MAR 05 1979 RW	88452
1/80 Plumbing Room Sink												
1/80 Surface Water - Mt. Wash Hotel	<1											15485
1/80 Faucet Skidodge												
1/80 Well Rose Brook	<1											15457
1/80 40' Drilled well	A	20.27	<10					0.01			FEB 17 1984 CIV	# 7274