

The year 1971 saw the completion of the new Water Pollution Control Plant dedicated in October, and the Water Filtration Plant completed its second full year of service.

Operations at the Water Filtration Plant are going smoothly; plant personnel are turning out record amounts of high quality water. The total amount of water treated at the Water Filtration Plant during 1971 was 2.3 billion gallons. More water was filtered during July than any other month. The total for July was 363 million gallons with the peak day coming on July 19 with 15.3 million gallons. The total amount treated in 1971 represents a usage of 315 gallons per person per day, twice the national average of 150 gallons per person per day. The large amount of water used for irrigation purposes accounts for the difference.

The purification of water is a very costly process with a large percentage of the cost going for the purchase of chemicals, in 1971 the total cost of chemicals was \$27,359.

Ten percent of the water filtered in 1971 was used to backwash filters. Purified water must be used to wash away the mud that accumulates on top of the filters while they are in use. Before the wash water lagoons were constructed the water used to wash filters was wasted to the river. The lagoons which were put into service late in 1971 will prevent the loss of over 200 million gallons of water per year.

The Water Pollution Control Plant was put into service and records started in September. From September through December the plant processed 449 million gallons of wastewater. The new plant, located on the site of the old Westside plant, is receiving the total city flow of wastewater. The amount of dried sludge hauled from the new plant was 2,536 tons. The quality of the plant effluent has been excellent, exceeding the standards established by the State Board of Health. B.O.D. and suspended solids are reduced by 90% and the wastewater has attained a sufficient amount of oxygen before it is returned to the river. Chlorine is added to kill disease causing bacteria, thus producing an effluent that not only is clear and pleasant looking but safe as well.

Chemicals play an important part in the treatment of wastewater just as they do in the purification of water. September 1971 through December 1971, the total cost of chemicals spent for treatment of wastewater was \$6,179.

The operators at both the Water Filtration Plant and the Water Pollution Control Plant continued to better their knowledge and skills by studying and attending training schools. Four operators attended the Operators' Training School in Denver and at the end of the year all of the operators were certified; two operators hold the "A" certificate, the highest class certificate issued. The Water Filtration Plant continues to supply safe, high quality water to the citizens of Grand Junction and the Water Pollution Control Plant continues to help protect our environment.

UTILITY PLANTS ANNUAL REPORT - 1971

The year 1971 was an exciting one for the Utility Plants. The new Water Pollution Control Plant was completed and put into service, and the Water Filtration Plant completed its second full year of service. The Water Pollution Control Plant was dedicated in October and the operators spent the remainder of the year "shaking the bugs out" and becoming familiar with the new equipment and operating techniques. Operations at the Water Filtration Plant are going smoothly and the plant personnel are turning out record amounts of high quality water.

The total amount of water treated at the Water Filtration Plant during 1971 was 2.3 billion gallons. More water was filtered during July than any other month. The total for July was 363 million gallons with the peak day coming on July 19 with 15.3 million gallons. The average daily filtration for the month of July was 11.6 million gallons. The total amount treated in 1971 represents a usage of 315 gallons per person per day or twice the national average of 150 gallons per person per day. The large amount of water used for irrigation purposes accounts for the difference.

The purification of water is a very costly process with a large percentage of the cost going for the purchase of chemicals. The following table gives a breakdown of the amounts and costs of chemicals used at the filter plant in 1971.

	<u>Alum.</u>	<u>Lime</u>	<u>Soda Ash</u>	<u>Fluorine</u>	<u>Chlorine</u>	<u>Ammonia</u>	<u>Filter Aid</u>
Amount (lbs.)	359,807	7,700	118,400	30,200	22,040	5,852	1,085
Cost	\$16,473	\$246	\$3,235	\$3,129	\$1,483	\$936	\$1,857

TOTAL COST OF CHEMICALS - \$27,359

In March the use of lime for corrosion control was discontinued. Soda ash is now used because it is easier to handle and it goes into solution better.

Ten percent of the water filtered in 1971 was used to backwash filters. Purified water must be used to wash away the mud that accumulates on top of the filters while they are in use. Before the wash water lagoons were constructed the water used to wash filters was wasted to the river. The lagoons which were put into service late in 1971 will prevent the loss of over 200 million gallons of water per year.

The operators at both the Water Filtration Plant and the Water Pollution Control Plant continued to better their knowledge and skills by studying and attending training schools. Four operators attended the Operators' Training School in Denver and at the end of the year all of the operators were certified. Two operators hold the "A" certificate which is the highest class certificate issued.

The Water Pollution Control Plant was put into service and records started in September. From September through December the plant processed 449 million gallons of wastewater. The new plant, located on the site of the old Westside plant, is receiving the total city flow which was previously divided between the Westside and Southside plants. The old Southside plant was taken out of service.

Chemicals play an important part in the treatment of wastewater just as they do in the purification of water. The following table gives a list of chemicals used at the new plant from September through December.

C
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	<u>Lime</u>	<u>Ferric Chloride</u>	<u>Polymer</u>	<u>Chlorine</u>
Amount (lbs.)	71,200	9,722	3,037	20,230
Cost	\$1,403	\$1,908	\$1,525	\$1,343
TOTAL COST OF CHEMICALS - \$6,179 (for 4 months)				

C
O
P
Y

All of the chemicals except chlorine are used in the sludge drying process. In this process the solids which are removed from the wastewater are vacuum dried before being hauled to the sanitary land-fill. The amount of dried sludge hauled from the new plant was 2,536 tons.

Both of the utility plants operate within the standards set up by the Colorado State Health Department. The Water Filtration Plant continues to supply safe, high quality water to the citizens of Grand Junction and the Water Pollution Control plant continues to help protect our environment.

Respectfully submitted,

JAMES E. PATTERSON, JR.
UTILITY PLANTS SUPERINTENDENT

1970 was another year of major construction for the Utilities Department in Grand Junction. The enlargement of the Water Pollution Control Plant was started in December of 1969 and continued throughout 1970. As of December 31, 1970, the plant was about 80% completed with expected completion set for the middle of April. The total construction cost of this project will be approximately \$1,450,000.

In conjunction with the Water Pollution Control Plant enlargement a new trunk sewer was constructed between the South Side Sewage Plant and the West Side Sewage Plant. With the completion of the enlargement, the South Side Plant will be phased out of service.

The South Side Interceptor Sewer, which varies in size from a 24" pipe in the Eastern portion to 48" at the new Enlargement site to the West. The sewer construction was done in two sections by different contractors for a cost of approximately \$295,000.

Also during 1970 the Orchard Mesa Interceptor Sewer was completed, enabling the City to bring domestic sewage from the Orchard Mesa Area. Because of elevation problems, an underground pump station was constructed in the Duck Pond next to Highway 50. The sewage is then pumped up the 5th St. hill and then flows across the Colorado River into the existing sewer system. The cost of this system was approximately \$59,000.

Again our Utilities Systems Crews were kept busy repairing water mains that broke for one reason or another. During 1970 there were 198 water breaks that needed to be repaired which is an 18% reduction from 1969. The two worse breaks occurred during the last couple of months, one at 15th and Orchard and one just East of the baseball field in Lincoln Park.

The Systems Crews also installed approximately 200 feet of

sanitary sewers to the City's collection system. Thirty seven hundred (3,700) feet of sanitary sewers were also added under separate contracts which makes a total of thirty-nine hundred (3,900) feet of new sewers.

There were several small extensions of water main during the year that added up to forty-eight hundred (4,800) feet. All of these water line extensions were installed by the Systems Crews.

The Systems Crews also installed 59 new water taps and 36 new sewer taps to our systems during the past year. The addition of these new customers to the City's water and sewer systems brings the number of utilities service bills to 7,137.

The new Water Filtration Plant, that went into service during July of 1969, treated 2,307,750,000 gallons of water during 1970. This means that each man, woman, and child was responsible for using 114,273 gallons of water during the year. Another way to look at the amount of water used is that each person was responsible for using 313 gallons of water each day. Of course, a lot of this water was used for irrigating our yards and the parks to keep them beautiful during the summer.

The month of July will go down into our record books as being the month that we treated the most water up until the present time. During this month 357,000,000 gallons of water was treated, with 13,500,000 gallon being treated on our highest day.

The operations of the new Filter Plant did an excellent job treating the water, especially since the treatment procedures differ from the old plant. The quality of water arriving at the homes of everyone in Grand Junction is of the highest purity.

In May of 1970 the new laboratory facilities at the filter

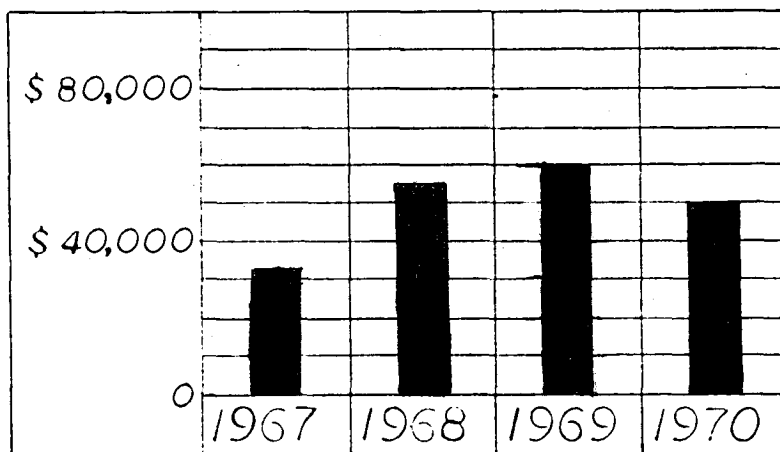
plant were put to good use. A full time technician was hired and a complete testing program was initiated. The technician will conduct tests to assure that our water will meet or exceed any necessary standards. Along with his responsibility to the Filter Plant, he will conduct the necessary test to assure the proper operation of our Water Pollution Control Plant.

The Sanitation Department was also kept very busy during the past year. The volume of trash hauled increased to such an extent that it became necessary to change our method of operation. Instead of each individual packer driving to the land-fill when it was full, a shuttle driver would provide an empty packer to the crew and drive the full packer to the land-fill. It was also necessary to add one new packer and one man to our crews to handle the increased trash load.

The sewage will enter the control building at the lower center and be pumped into pre-aeration building the next building to the left. From there it will pass into the two primary clarifiers, the two round tanks on either side of the pre-aeration building. The next stop is the first stage trickling filters, the next two round tanks, and then to the intermediate clarifier, the round tank at the extreme upper right. The sewage is then pumped again from the small building between the two clarifiers at the upper right to the second stage trickling filter, the large round tank at the upper left and from there to the final clarifier, the center tank in the top row. Chlorine is then added in the contact basin, the round tank in the left center. The sludge is taken from the clarifiers to either the sludge dewatering building, to the lower left, for processing or to the sludge holding building, the building with two round tanks attached at the right center, for storage.

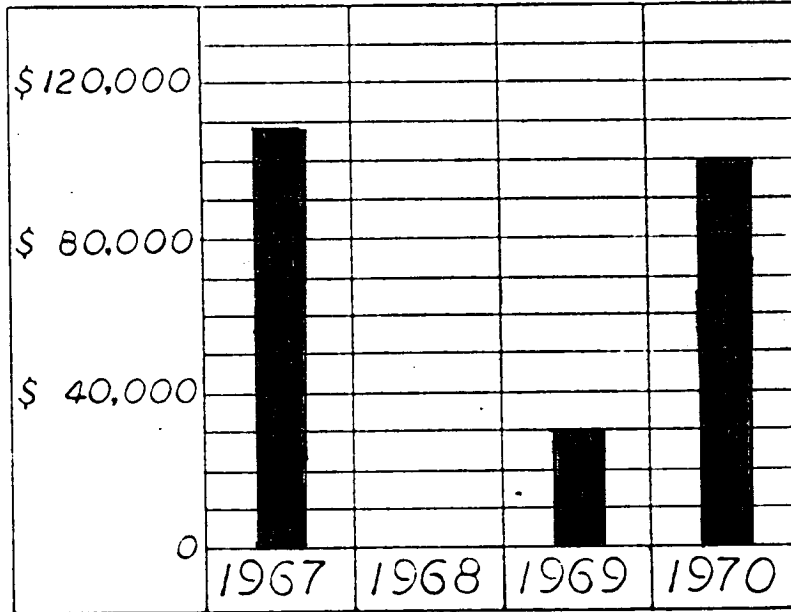
WATER DISTRIBUTION IMPROVEMENTS

(Not Including Mortar Lining of Indian Wash and Patterson Road Arterial Lines)



- 1967 - 14" water line on North Avenue from 11th Street to 15th Street was replaced.
- 1968 - Replaced 6" line from 9th Street to 12th Street on Gunnison.
Constructed 14" line from First Street and Orchard Avenue to First and Patterson to First and 7th Street.
Constructed 10" Line from 28 Road to 28 1/2 Road on Orchard Avenue.
- 1969 - Constructed
 - 12" line on Third Street from Gunnison to North Avenue.
 - 8" line on 15th Street from Wellington to Hermosa to 13th.
 - 6" line on 15th Street from Hermosa to Bonito to 12th Street.
 - 4" line on Mesa from 15th to 14th to Texas.
 - 6" line on Gunnison - 28 Road to 27th Street across Indian Wash.
 - 6" line on Belford - 28 Road to 26th Street across Indian Wash.
 - 6" line on Elm Avenue - 28 Road to 27th Street across Indian Wash.
 - 6" line on Texas Avenue - 28 Road to 27th Street across Indian Wash.
 - 6" line on 28 1/4 Road - Orchard Avenue south across Indian Wash.
 - 6" line on Bookcliff - from 12th to 13th .
 - 6" line on 28 Road from Orchard to Bookcliff.
 - 6" line on Bookcliff from 28 Road to 26th Street.
 - 6" line on Ouray - 20th Street west for 1/2 block.
- 1970 - Extension and replacements as per 1970 budget.

SANITARY SEWER DISTRICTS
and
SANITARY SEWER TRUNK LINE EXTENSIONS



- 1967 - North 12th Street District SS 22-67
Fairmount Heights District SS 23-67
- 1968 - None
- 1969 - Mel Rose Estates Subdivision SS 24-69
Olympic Acres SS 25-69
24th and Orchard)
9th and Noland) SS 26-69
Lilac Park Trunk Line
- 1970 - Estimated
Orchard Mesa
East Grand Avenue
El Corona Sub
El Poso
Horizon Drive Extension

FUTURE

1. Computer use for main replacement, and sewer blockages.
2. One full-time laboratory tech for water and sewer plant.
3. Training program for water plant and sewer plant operators.
4. Establish preventative maintenance program with water and sewer plants.
5. 1970, begin remote meter register and reading program to tape eventually, \$175,000.00.
6. Expanded meter repair to continue, possible one additional man in 1971.
7. Water main replacement program expanded to eliminate many of our water main breaks. \$30,000.00 to \$70,000.00 per year.
8. Improved raw water volume - Clifton to change method of taking their water, 1970.
9. Valve and piping modifications at Purdy Mesa Reservoir, including intake structure change, ability to take Juniata water direct to microstrainer and ability to take Kannah Creek water direct to microstrainer. \$5,000.00, 1970.
10. Improve Kannah Creek inlet works, dam, valves, screen, etc., \$15,000.00, 1970.
11. Improvements to Boland Reservoir. \$30,000.00, 1970.
12. Any necessary work to improve other reservoirs.
13. Orchard Mesa Interceptor Sewer \$51,228.00, 1970.
14. South Side Interceptor Sewer \$251,444.00, 1970.
15. Water Pollution Control Plant Enlargement, \$1,198,000.00, 1970-71.
16. Sewer lateral expansion per Dave.
17. Change Sanitation collection to a shuttle system.

1967, 1968, 1969

1. Improvements to water distribution system per Dave.
2. Improvements to sewer system per Dave.
3. Landfill operation changed to B.L.M. land near Whitewater 1968.
4. Garage for tractors at Landfill, 1968.
5. New tractor and scrapper at Landfill, 1969.
6. Administrative change - Utility Director, 1969.
7. Chlorination at sewer plant \$22,040.00.
8. 24" Water feeder main from new treatment plant to town 1968
\$165,430.74.
9. 2 4 M.G. covered water storage tanks 1968, \$279,000.00.
10. Relining Indian Wash 1968, Purdy Mesa flowline and Patterson Rd.
Line 1969, \$382,020.75.
11. Construction of new water filtration plant 1968 & 1969, \$1,065,000.00
12. One additional water plant operator to operate 24 hours per day.
13. Sewer cleaning program with new rodding machine.
14. Improved maintainance program on water meters.