



210 Shafor Water Plant

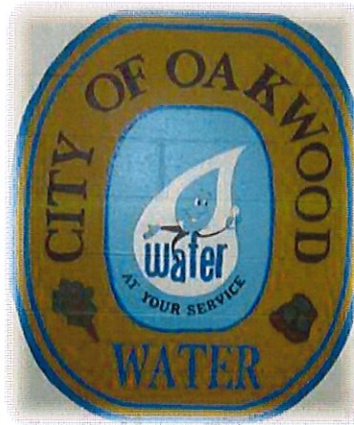


120 Springhouse Water Plant

2021

WATER PRODUCTION

ANNUAL REPORT



September 2022

Prepared by Scott Loper:

A handwritten signature in blue ink that reads "Scott Loper".

Water Plant Superintendent

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I. INTRODUCTION/BRIEF HISTORY

This report provides a summary of the operations of the city of Oakwood water system for the year 2021. It includes the following items:

- Water Pumpage Statistics
- Water Monitoring and Testing (OEPA Compliance)
- Water System Maintenance
- Budget Summary

Prior to 1954, the city of Oakwood purchased all of its water from outside sources, primarily the city of Dayton. At that time, the Ohio Department of Health regulated public water systems and the rules and regulations were fairly limited, thus the price of water was relatively low. In 1954 Oakwood drilled two wells at 120 Springhouse Road. This site became known as the “Springhouse Wellfield.” This was the beginning of Oakwood’s quest to become water independent.

From 1954 to 1965 Oakwood pumped water from these two wells. This proved so successful that three new wells (Wells #1, 2 & 3) were drilled at the Springhouse property to a greater depth so as to sustain heavier pumping. The original two wells were abandoned. Operating Wells #1, 2 & 3 increased water production and lowered Oakwood’s reliance on Dayton water. The water was chlorinated to ensure that it was free from bacteria.

In 1978 Oakwood developed a second well field at the south end of Firwood Drive off Irving Avenue in Dayton. It was referred to as the “Firwood Wellfield.” Between 1978 and 1988 three production wells (Wells #4, 5 & 6) were drilled at this location. The groundwater resources in this area proved to be abundant. In 1985 Oakwood purchased land on the north side of Irving Avenue to build a soccer field. In 1986 Well #7 was drilled adjacent to the soccer field. This site became known as the “Soccer Field Wellfield”.

Prior to using water from the Firwood Wellfield, the Ohio EPA required the City to construct an Iron and Manganese Removal Plant due to elevated levels of iron and manganese in Well #5. The plant was constructed in 1980 at the 210 Shafor Boulevard Service Yard. This plant also housed the chlorination system for Wells #4, 5, 6 & 7.

In 1987 Oakwood explored the possibility of softening the City water. In 1988 plans were completed for the water softening plant at 210 Shafor Boulevard. The plant was constructed in 1989. In 1991 plans were completed for the water softening plant at 120 Springhouse Road and the plant was built in 1992. Both water softening plants use the “Ion Exchange” softening process. This is the same process used in most private home water softening units. The softening system removes hardness, primarily calcium and magnesium. Periodically the softening units require backwashing and regenerating of the resin bed filters.

In 2004, Oakwood drilled Well #8 in the Firwood Wellfield and placed it into service. This well was needed to further enhance Oakwood’s water independence.

The reports and tables in Sections III & IV provide monthly and yearly totals of the city of Oakwood's 2021 water pumpage. They include monthly and yearly totals for all wells, the Shafor plant, Springhouse plant and water purchased from outside sources (i.e., city of Dayton and Montgomery County). In 2021, Oakwood was able to provide 99.75% of its own water for daily usage, even for fire responses.

II. WATER MONITORING AND TESTING (OEPA COMPLIANCE)

The following samples were collected at the entry points of the water system at the 120 Springhouse and the 210 Shafor Water Treatment Plants as required by the Ohio EPA:

- Nitrates, collected August 24, 2021
- Total Trihalomethanes (TTHM), collected August 24, 2021
- Total Haloacetic Acids (HAA5), collected September 16, 2021

Samples for Lead and Copper were collected from 20 Oakwood properties between June 20 and September 12, 2021.

All samples tested as required by the Ohio EPA and under the 2021 Ohio EPA Chemical Monitoring schedule were in compliance with the Safe Drinking Water Act. Table 1 on page 5 lists the results of the lead and copper sampling program. Table 2 on pages 6 – 7 compares Oakwood's water with EPA standards. All results are from the most recent samples taken. Some samples are only required to be taken every three years. The monthly routine sampling consists of the following tests:

- **10 bacteriological samples per month from Distribution System.**
- **2 sodium samples per month from Distribution System.**
- **1 sodium sample per month from each Plant.**
- **1 iron and manganese sample per week from each Plant.**
- **Hardness samples daily from each Plant and Distribution System.**
- **Free and total chlorine samples daily from each Plant as well as from the Distribution System.**
- **1 chloride and pH sample per month from each Plant (NPDES Stormwater Permit requirement).**
- **1 Total Dissolved Solids sample per month from each Plant (NPDES Stormwater Permit requirement).**

General test results are as follows:

- **All 120 bacteriological samples tested negative for coliform bacteria.**
- **Raw water sodium averaged 120 mg/L at 210 Shafor, up from 101 mg/L in 2020; and 161 mg/L at 120 Springhouse, up from 141 mg/L in 2020.**
- **System water sodium averaged 353 mg/L, up from 285 mg/L in 2020.**
- **Iron at both plant effluents averaged <0.1 mg/L.**
- **Manganese at both plant effluents averaged <0.01 mg/L.**
- **System water hardness at 210 Shafor averaged 176 mg/L (10.3 GPG).**
- **System water hardness at 120 Springhouse averaged 148 mg/L (8.7 GPG).**

**TABLE 1
OAKWOOD 2021 LEAD & COPPER TESTING RESULTS**

EPA Copper Action Level (ug/L)		1,350
	SAMPLE NUMBER	COPPER RESULTS (ug/L)
1	LC228	34.1
2	LC225	42.0
3	LC234	48.5
4	LC209	53.2
5	LC221	60.8
6	LC201	65.0
7	LC223	86.8
8	LC226	118
9	LC210	119
10	LC235	121
11	LC224	124
12	LC205	138
13	LC231	144
14	LC222	148
15	LC203	153
16	LC233	172
17	LC230	221
18	LC227	262
19	LC218	270
20	LC214	542

EPA Lead Action Level (ug/L)		15.5
	SAMPLE NUMBER	LEAD RESULTS (ug/L)
1	LC209	0
2	LC228	0
3	LC201	.54
4	LC225	.62
5	LC205	.67
6	LC226	.71
7	LC233	.84
8	LC224	.87
9	LC235	1.0
10	LC210	1.2
11	LC203	1.9
12	LC223	2.0
13	LC221	2.6
14	LC227	3.2
15	LC230	3.5
16	LC222	3.9
17	LC218	4.2
18	LC234	4.6
19	LC231	7.5
20	LC214	113

BDL: Below Detectible Limits

To be in compliance with the OEPA Lead & Copper Rule, sample results must be below the set action level for lead and copper, as listed in the table above, at the 90th percentile. Oakwood's 90th percentile is highlighted in light blue above.

**TABLE 2
OAKWOOD 2021 WATER TESTING RESULTS**

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
VOLATILE ORGANIC COMPOUNDS	ug/L	ug/L	ug/L	
Benzene	<0.5	<0.5	5.0	8/24/21
Carbon tetrachloride	<0.5	<0.5	5.0	8/24/21
1,1-Dichloroethane	<0.5	<0.5	7.0	8/24/21
1,2-Dichloroethane	<0.5	<0.5	5.0	8/24/21
cis-1,2-Dichloroethene	<0.5	<0.5	70.0	8/24/21
Dichloromethane	<0.5	<0.5	5.0	8/24/21
1,2-Dichloropropane	<0.5	<0.5	5.0	8/24/21
Ethylbenzene	<0.5	<0.5	700.0	8/24/21
Styrene	<0.5	<0.5	100.0	8/24/21
Toluene	<0.5	<0.5	1000.0	8/24/21
1,1,1-Trichloroethane	<0.5	<0.5	200.0	8/24/21
Tetrachloroethene	<0.5	<0.5	5.0	8/24/21
1,2,4-Trichlorobenzene	<0.5	<0.5	70.0	8/24/21
Trichloroethene	<0.5	<0.5	5.0	8/24/21
1,1,2-Trichloroethane	<0.5	<0.5	5.0	8/24/21
Vinyl chloride	<0.5	<0.5	2.0	8/24/21
Xylenes, Total	<0.5	<0.5	10000.0	8/24/21
Bromodichloromethane	<0.5	<0.5	TTHM*	8/24/21
Bromoform	<0.5	0.52	TTHM	8/24/21
Chloroform	<0.5	<0.5	TTHM	8/24/21
Dibromochloromethane	<0.5	0.79	TTHM	8/24/21
Bromobenzene	<0.5	<0.5	NR**	8/24/21
Bromochloromethane	<0.5	<0.5	NR	8/24/21
Bromomethane	<0.5	<0.5	NR	8/24/21
n-Butylbenzene	<0.5	<0.5	NR	8/24/21
sec-Butylbenzene	<0.5	<0.5	NR	8/24/21
tert-Butylbenzene	<0.5	<0.5	NR	8/24/21
Chlorobenzene	<0.5	<0.5	NR	8/24/21
Chloroethane	<0.5	<0.5	NR	8/24/21
Chloromethane	<0.5	<0.5	NR	8/24/21
2-Chlorotoluene	<0.5	<0.5	NR	8/24/21
4-Chlorotoluene	<0.5	<0.5	NR	8/24/21
Dibromomethane	<0.5	<0.5	NR	8/24/21
1,2-Dichlorobenzene	<0.5	<0.5	NR	8/24/21
1,3-Dichlorobenzene	<0.5	<0.5	NR	8/24/21
1,4-Dichlorobenzene	<0.5	<0.5	NR	8/24/21
Dichlorodifluoromethane	<0.5	<0.5	NR	8/24/21
1,1-Dichloroethene	<0.5	<0.5	NR	8/24/21
trans-1,2-Dichloroethene	<0.5	<0.5	NR	8/24/21
1,3-Dichloropropane	<0.5	<0.5	NR	8/24/21
2,2-Dichloropropane	<0.5	<0.5	NR	8/24/21
1,1-Dichloropropene	<0.5	<0.5	NR	8/24/21
1,3-Dichloropropene	<0.5	<0.5	NR	8/24/21
Hexachlorobutadiene	<0.5	<0.5	NR	8/24/21
Isopropylbenzene	<0.5	<0.5	NR	8/24/21
Naphthalene	<0.5	<0.5	NR	8/24/21

* TTHM: Trihalomethanes regulated separately as Disinfection Byproducts

** NR: Not Regulated

TABLE 2 (cont.)

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
SYNTHETIC ORGANIC CHEMICALS	ug/L	ug/L	ug/L	
Alachlor	<0.2	<0.2	2.0	6/2/20
Atrazine	<0.3	<0.3	3.0	6/2/2/20
Simazine	<0.35	<0.35	4.0	6/2/20

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
INORGANIC COMPOUNDS	ug/L	ug/L	ug/L	
Antimony, total	<4.0	<4.0	6.0	8/30/21
Barium, total	0.0793	0.0581	2.0	8/30/21
Beryllium, total	<1.0	<1.0	4.0	8/30/21
Cadmium, total	<1.0	0.780	5.0	8/30/21
Chromium, total	<10.0	<10.0	100.0	8/30/21
Cyanide, total	<5.0	<5.0	200.0	8/30/21
Fluoride, total	0.2	0.2	4.0	8/30/21
Mercury, total	<0.5	<0.5	2.0	8/30/21
Nickel, total	<20.0	<20.0		8/30/21
Selenium, total	<5.0	<5.0	50.0	8/30/21
Thallium, total	<1.5	<1.5	2.0	8/30/21

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Wonderly	Ridgeway		
TOTAL TRIHALOMETHANES	ug/L	ug/L	ug/L	
Chloroform	<1.00	.79		8/24/21
Bromoform	1.1	2.4		8/24/21
Bromodichloromethane	1.1	2.2		8/24/21
Dibromochloromethane	2.7	4.0		8/24/21
Total TTHM's	4.9	9.4	80.0	

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Wonderly	Ridgeway		
FIVE HALOACETIC ACIDS	ug/L	ug/L	ug/L	
Dibromoacetic Acid	1.043	2.881		9-16-21
Dichloroacetic Acid	<1.00	<1.00		9/16/21
Monobromoacetic Acid	<1.00	<1.00		9/16/21
Monochloroacetic Acid	<1.00	<1.00		9/16/21
Trichloroacetic Acid	1.056	2.94		9/16/21
Total HAA5's	2.099	5.821	60.00	

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
MISCELLANEOUS	mg/L	mg/L	mg/L	
Nitrate	1.0	1.5	10	8/24/21

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
RADIOLOGICAL	pci/L	pci/L	pci/L	
Alpha, total	<3	<3	15	6/5/18
Radium-228	<1.0	<1.0	5	6/5/18

In 2021, the Oakwood water plants reduced the hardness of the raw water by 59%. Through the ion exchange process, this 59% reduction in water hardness resulted in a 151% increase in sodium content. Both of these percentages are within normal operating ranges.

III. WELL PUMPAGE REPORT AND CHARTS

The eight production wells produced 500,856,000 gallons of water in 2021, which is an average of 1,372,000 gallons per day. In 2020, the eight production wells produced 506,086,000 gallons of water. This represents a 1.03 % decrease in raw water produced in 2021. The 2021 maximum day well production was on August 28 at 2,350,000 gallons. It is common that our highest usage occurs during the summer months when many property owners irrigate their lawns. The 2021 minimum day well production was on November 26 at 837,000 gallons. The minimum day production normally occurs in the fall or winter.

Out of the 500,856,000 gallons pumped in 2021, 33,257,000 gallons were used to either backwash the iron and manganese filters or regenerate the softening units at 210 Shafor and 120 Springhouse. This represents 6.64% of the total water pumped for the year, a 1.06% decrease from 2020. The primary flow meters were replaced in 2020 and accurately report plant production.

Chart 1 below and Chart 2 on the next page show the 2021 water table draw down compared to 2018, 2019 and 2020.

CHART 1

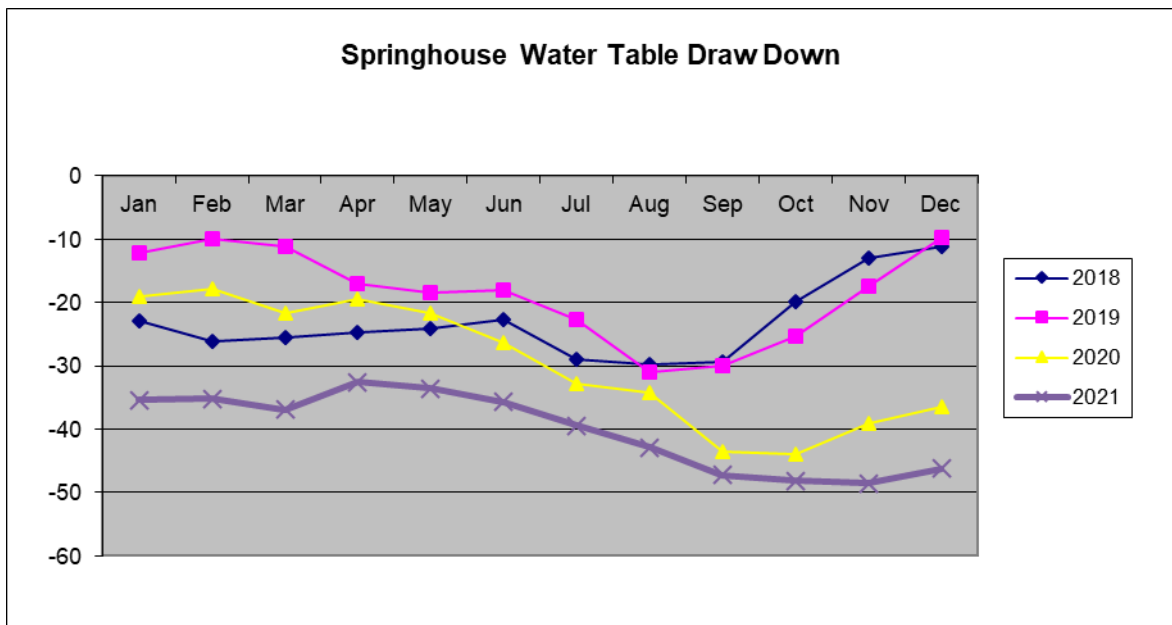
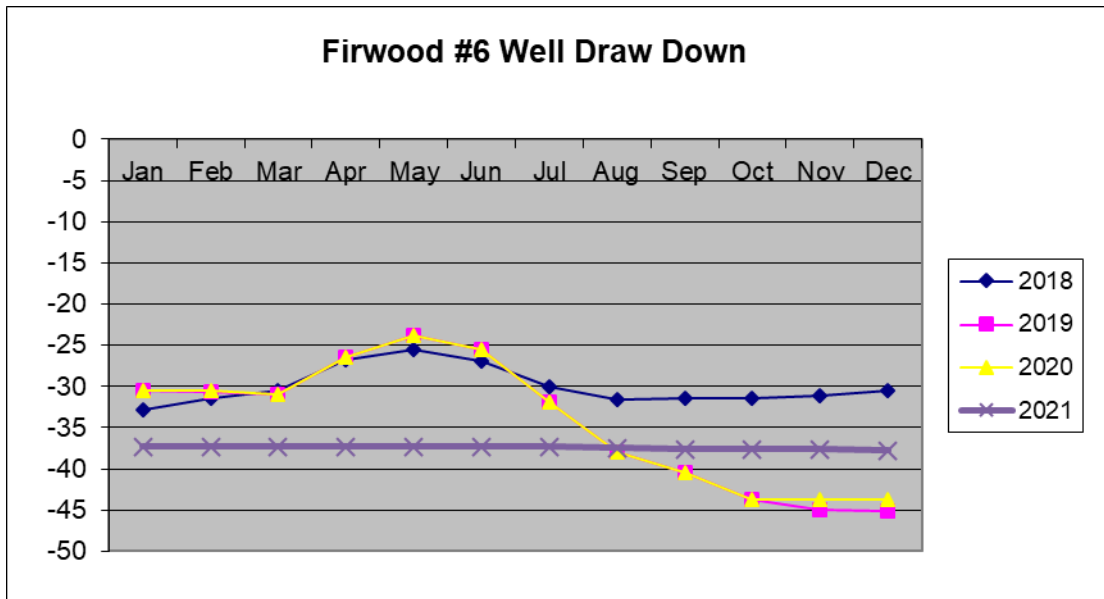


CHART 2



The aquifer water levels in the wells have not been heavily stressed for many years due to relatively mild summers with plenty of rain. During the summer and fall of 2020 we experienced a mild drought for several months resulting in the drop in the water table at the end of 2020, most pronounced at Springhouse. We did not have any issues in 2021. We did monthly drawdowns at each well and noticed no significant changes.

Table 3 on the next page shows a comparison of total well production in gallons per well per month for 2020 and 2021.

IV. TOTAL PUMPAGE TO SYSTEM REPORT AND CHARTS

The City was able to produce water to meet 99.75% of the total demand of 439,658,000 gallons (1,205,000 avg/day). The maximum day system usage was on August 28th at 2,350,000 gallons and the minimum day system usage was on November 26th at 837,000 gallons. No fire events (i.e., extra demand) occurred in 2021 that required city of Dayton or Montgomery County water. During the month of September, we did purchase 1,119,000 gallons due to a power failure at Well #6 and a pump issue at Well #7.



TABLE 3

CITY OF OAKWOOD WATER DEPARTMENT
MONTHLY WELL PUMPAGE RECORD

YEAR: 2021
MONTH: December

MONTH	WELL #1		WELL #2		WELL #3		WELL #4		WELL #5		WELL #6		WELL #7		WELL #8		MONTHLY TOTAL		ANNUAL TOTAL	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
JANUARY	19.130	19.768	0.000	0.000	0.050	0.000	4.255	0.000	0.000	0.000	0.000	15.513	0.000	2.833	11.716	0.389	35.151	38.503	35.151	38.503
FEBRUARY	17.182	19.538	0.019	0.005	0.705	0.002	5.622	0.086	0.205	0.005	0.000	14.015	0.561	3.317	10.175	0.882	34.469	37.850	69.620	76.353
MARCH	21.663	21.402	0.002	0.000	0.718	0.000	4.418	3.650	0.671	0.000	0.000	12.316	0.000	4.224	10.897	1.241	38.369	42.833	107.989	119.186
APRIL	17.242	17.363	0.000	0.000	0.000	0.000	10.438	12.144	1.218	0.000	0.132	0.132	0.000	6.037	6.129	2.457	38.619	38.133	146.608	157.319
MAY	22.419	21.684	0.001	0.000	0.005	0.000	7.676	8.133	10.609	1.004	2.309	1.478	0.000	6.296	0.008	5.865	43.027	44.460	189.635	201.779
JUNE	23.610	21.573	0.035	0.000	0.100	0.186	10.180	2.101	4.316	3.975	9.245	5.522	2.858	6.070	0.000	7.541	50.344	46.968	239.979	248.747
JULY	23.326	24.592	1.573	0.001	2.550	0.170	0.000	0.000	4.482	4.524	13.668	5.339	6.241	6.304	5.167	7.492	57.007	48.422	296.986	297.169
AUGUST	22.439	24.528	1.538	0.652	3.040	0.773	0.005	0.005	4.646	5.653	8.003	10.046	6.305	6.207	5.147	5.244	51.123	53.108	348.109	350.277
SEPTEMBER	22.307	23.429	0.889	3.250	6.187	0.244	0.000	0.699	5.439	1.745	9.902	9.951	6.171	2.527	0.000	2.347	50.895	44.192	399.004	394.469
OCTOBER	22.687	24.258	0.091	0.034	1.808	0.000	0.000	1.782	0.000	0.110	12.754	7.407	1.556	4.360	0.000	0.459	38.896	38.410	437.900	432.879
NOVEMBER	18.012	23.507	0.000	0.000	0.000	0.000	0.000	0.130	0.000	0.000	4.979	9.331	0.959	0.000	8.908	0.074	32.858	33.042	470.758	465.921
DECEMBER	18.651	19.425	0.000	0.051	0.000	0.311	0.000	1.177	0.000	0.000	14.387	1.421	1.361	0.000	0.929	12.550	35.328	34.935	506.086	500.856
ANNUAL	248.668	261.067	4.148	3.993	15.163	1.686	42.594	29.907	31.586	17.016	78.839	92.471	26.012	48.175	59.076	46.541	506.086	500.856	506.086	500.856
TOTALS	49.14%	52.12%	0.82%	0.80%	3.00%	0.34%	8.42%	5.97%	6.24%	3.40%	15.58%	18.46%	5.14%	9.62%	11.67%	9.29%	100.00%	100.00%	100.00%	100.00%
AVG. DAY (2020 YTD):	1.387 M.G.D.		267.979 MGD		2021 Springhouse wells		266.746 MGD		53.26%		234.110 MGD		46.74%							
AVG. DAY (2021 YTD):	1.372 M.G.D.		238.107 MGD		2021 Firwood wells		234.110 MGD		47.05%		234.110 MGD		46.74%							

Table 4 below shows a comparison of the water resources needed to meet the City's demands in 2020 and 2021.

**TABLE 4
WATER RESOURCE RECORD**

Location	2020 Gallons	2020%	2021 Gallons	2021%
Oakwood WTPs	456,549,000	99.71%	439,658,000	99.75%
Dayton/Shroyer	1,345,000	0.29%	1,119,000	0.25%
Dayton/Springhouse	0	0%	0	0%
County/Fairmont	0	0%	0	0%
TOTALS:	457,894,000	100%	440,777,000	100%

There was a decrease in demand of 17,117,000 gallons of water in 2021 compared to 2020 (3.74%). Table 5 on the next page shows the comparison in total gallons pumped to the system per month for 2020 and 2021.

V. MAINTENANCE

The following is a summary of the larger maintenance projects that took place in 2020.

- January: Contractor (AOP) repaired valves on softening units at 120 Springhouse WTP
- May: Replaced high service pump #1 at 120 Springhouse WTP
- June: Replaced high service pump #2 at 120 Springhouse WTP
Multiple control issues at 120 Springhouse WTP repaired by Delta Controls
- July: Replaced brine pump at 210 Shafor WTP
- August: Repaired controls for high service pumps 120 Springhouse WTP
- September: Installed well #6 motor starter at 210 Shafor WTP
Replace pump and motor well # 7 for 210 Shafor WTP
Replace fuses and wire for pump and motor starter well # 7 for 210 Shafor WTP
Replaced #4 pump for 210 Shafor WTP
Repair motor starter well # 6 for 210 Shafor WTP
- November: Replaced #8 pump for 210 Shafor WTP

All preventive maintenance was performed on schedule and all day-to-day repairs were performed as needed. All parts inventories are up-to-date in case of emergencies.



**TABLE 5
CITY OF OAKWOOD WATER DEPARTMENT
MONTHLY PUMPAGE TO SYSTEM RECORD**

YEAR: 2021
MONTH: December

MONTH	SPRINGHOUSE		FIRWOOD		DAYTON/SHROYER		FAIRMONT		DAYTON/SPRING.		MONTHLY TOTAL		ANNUAL TOTAL	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
JANUARY	18.277	18.065	14.942	15.749	0.000	0.000	0.000	0.000	0.000	0.000	33.219	33.814	33.219	33.814
FEBRUARY	16.427	17.732	15.507	15.407	0.085	0.000	0.000	0.000	0.000	0.000	32.019	33.139	65.238	66.953
MARCH	20.375	19.635	14.992	17.941	0.000	0.000	0.000	0.000	0.000	0.000	35.367	37.576	100.605	104.529
APRIL	15.958	15.707	17.848	17.127	0.000	0.000	0.000	0.000	0.000	0.000	33.806	32.834	134.411	137.363
MAY	20.797	19.634	16.893	19.110	0.000	0.000	0.000	0.000	0.000	0.000	37.690	38.744	172.101	176.107
JUNE	21.999	19.683	21.507	21.363	0.000	0.000	0.000	0.000	0.000	0.000	43.506	41.046	215.607	217.153
JULY	25.918	22.448	25.436	20.301	0.000	0.000	0.000	0.000	0.000	0.000	51.354	42.749	266.961	259.902
AUGUST	25.476	23.567	20.844	23.509	0.816	0.000	0.000	0.000	0.000	0.000	47.136	47.076	314.097	306.978
SEPTEMBER	27.977	24.537	18.928	14.786	0.444	1.119	0.000	0.000	0.000	0.000	47.349	40.442	361.446	347.420
OCTOBER	23.147	21.959	12.205	12.297	0.000	0.000	0.000	0.000	0.000	0.000	35.352	34.256	396.798	381.676
NOVEMBER	16.795	20.953	12.876	8.033	0.000	0.000	0.000	0.000	0.000	0.000	29.671	28.986	426.469	410.662
DECEMBER	17.433	17.301	13.992	12.814	0.000	0.000	0.000	0.000	0.000	0.000	31.425	30.115	457.894	440.777
ANNUAL	250.579	241.221	205.970	198.437	1.345	1.119	0.000	0.000	0.000	0.000	457.894	440.777	457.894	440.777
TOTALS	54.72%	54.73%	44.98%	45.02%	0.29%	0.25%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%		

2020 Summary	
	M.G.
Oakwood:	456.549 99.71%
Dayton:	1.345 0.29%
County:	0.000 0.00%
TOTAL:	457.894 100%

2021 Summary	
	M.G.
Oakwood:	439.658 99.75%
Dayton:	1.119 0.25%
County:	0.000 0.00%
TOTAL:	440.777 100%

2020 Avg. per day 1.255 MGD

2021 Avg. per day: 1.208 MGD

VI. BUDGET/FINANCES

The 2021 budget allocation for Oakwood Water Production was \$632,933.28. In 2021, the Oakwood Water Production Unit spent \$660,129.35 toward the production of the City's water. This computes to an average cost of \$1,318.00 per million gallons pumped from the city's eight wells in 2021, up from \$1,233.24 per million gallons in 2020. The cost per million gallons will fluctuate up or down depending on the total water demand and maintenance costs for the year. 2021 had an average water demand lower than 2020 but had a warmer and drier end to the summer. We continually strive to bring down the cost of water by optimizing our treatment process.

The water production unit budget consists of five main categories: personnel, utilities, chemicals, maintenance and miscellaneous. The following charts show what percentage of the budget goes to each of these categories and shows a comparison from the year before.

CHART 3

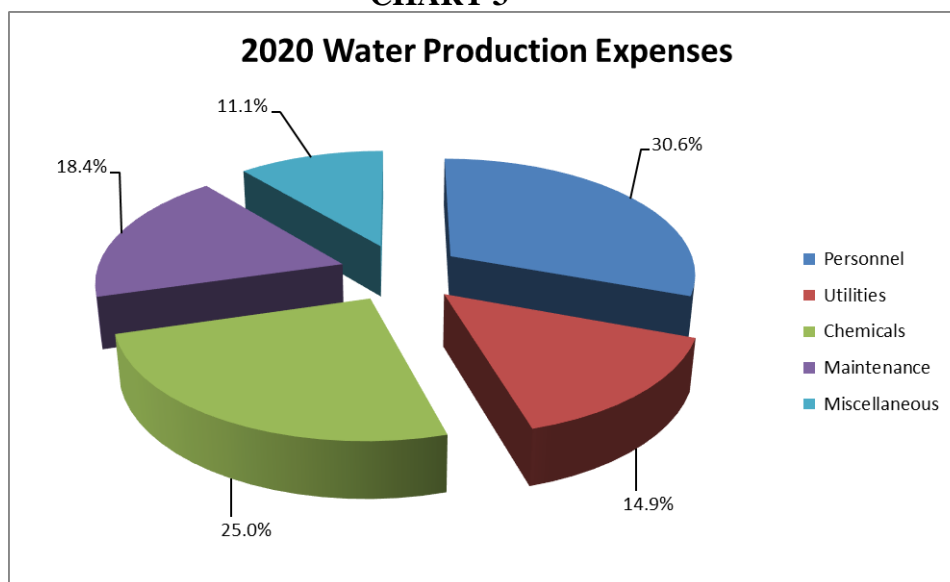
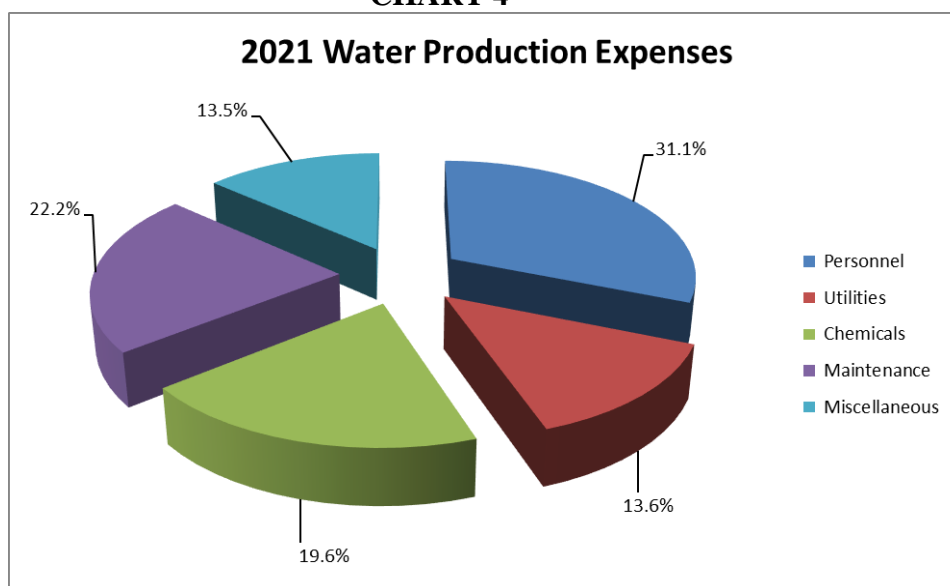


CHART 4



Personnel costs were \$205,318.12 for the year representing a 7.5% increase from 2020. Utility costs were \$89,771.13 which includes electric and natural gas representing a 3.4% decrease from 2020. Chemical costs were \$128,971.13 representing a 17.3% decrease over 2020. 1,102 tons of salt compared to 1,187 tons in 2020 and 3,907 gallons of sodium hypochlorite compared to 3,870 gallons in 2020 were used to treat the water.

Maintenance costs were \$146,787.96 representing a 27.6% increase compared to 2020.

VII. CONCLUSION

In reviewing our water system, 2021 was another successful year. All monthly and annual reports to the Ohio EPA and Ohio Department of Natural Resources were submitted on time. All lab testing was completed as required. We met or exceeded all Ohio and Federal EPA requirements and regulations. Our OEPA NPDES Surveys were conducted in February 2019 and no violations were found. The next survey will be conducted in 2024. We had a sanitary survey in 2021 for the treatment plants and distribution system and no violations were found. The next sanitary survey will be in 2024.

We continually look at ways to optimize our treatment process in order to maintain high water quality at the lowest cost. Some recent accomplishments include replacing faulty micro-switches, rebuilding process valves, adjusting treatment sequences, and more closely monitoring regeneration cycles on the softeners. We replaced the system controls at 210 Shafor and 120 Springhouse which allows us to better monitor and adjust the treatment process. In 2017 we continued to improve our water treatment plants by replacing the original softening media in the four filters at 210 Shafor Boulevard. All process valves on these four units were completely rebuilt to assure accurate operation. In November 2019 we replaced the original softening media in the three filters at 120 Springhouse Road. All process valves on these three units were completely rebuilt in 2020 and 2021.

In looking forward, we will continue to seek ways to operate the water plants in the most efficient manner producing the highest quality water possible.