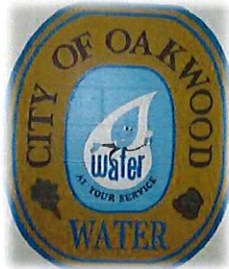


WATER PRODUCTION ANNUAL REPORT

2022



AUGUST 31

City of Oakwood

Prepared By:



Scott Loper, Water Plant Superintendent

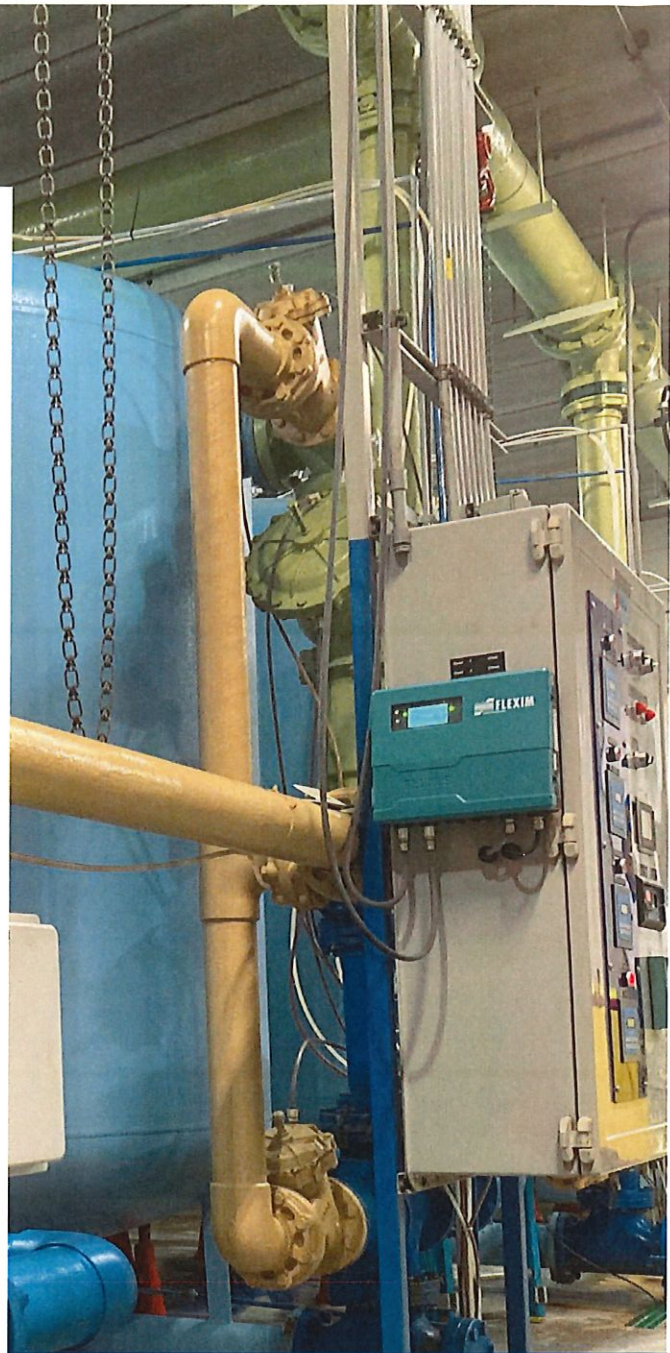


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I. INTRODUCTION/BRIEF HISTORY

This report provides a summary of the operations of the city of Oakwood water system for the year 2022. 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 2022 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 2022, Oakwood was able to provide 99.97% 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 25, 2022
- Total Trihalomethanes (TTHM), collected August 25, 2022
- Total Haloacetic Acids (HAA5), collected August 25, 2022

Samples for Lead and Copper were collected from 20 Oakwood properties between June 20 and September 12, 2022.

All samples tested as required by the Ohio EPA and under the 2022 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 100 mg/L at 210 Shafor, down from 120 mg/L in 2021; and 153 mg/L at 120 Springhouse, down from 161 mg/L in 2021.**
- **System water sodium averaged 338 mg/L, down from 353 mg/L in 2021.**
- **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 174 mg/L (10.2 GPG).**
- **System water hardness at 120 Springhouse averaged 160 mg/L (9.4 GPG).**

**TABLE 1
OAKWOOD 2022 LEAD & COPPER TESTING RESULTS**

EPA Copper Action Level (ug/L)		1,350
	SAMPLE NUMBER	COPPER RESULTS (MG/L)
1	LC225	48
2	LC223	57
3	LC201	58
4	LC224	60
5	LC221	68
6	LC234	78
7	LC232	100
8	LC209	110
9	LC226	110
10	LC210	120
11	LC222	120
12	LC228	130
13	LC230	138
14	LC203	140
15	LC231	154
16	LC233	160
17	LC227	210
18	LC213	220
19	LC218	230
20	LC205	270

EPA Lead Action Level (ug/L)		15.5
	SAMPLE NUMBER	LEAD RESULTS (ug/L)
1	LC201	ND
2	LC203	ND
3	LC205	ND
4	LC209	ND
5	LC210	ND
6	LC218	ND
7	LC221	ND
8	LC222	ND
9	LC223	ND
10	LC224	ND
11	LC225	ND
12	LC226	ND
13	LC227	ND
14	LC228	ND
15	LC231	ND
16	LC232	ND
17	LC233	ND
18	LC234	ND
19	LC213	5.3
20	LC230	7.4

ND: Not-Detected

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 2022 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*	8/24/22
Bromoform	<0.5	0.52	TTHM	8/24/22
Chloroform	<0.5	<0.5	TTHM	8/24/22
Dibromochloromethane	<0.5	0.79	TTHM	8/24/22
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	6/2/20
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	1.5		8/25/22
Bromoform	1.0	4.8		8/25/22
Bromodichloromethane	1.1	4.7		8/25/22
Dibromochloromethane	1.8	7.9		8/25/22
Total TTHM's	4.4	19.0	80.0	

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Wonderly	Ridgeway		
FIVE HALOACETIC ACIDS	ug/L	ug/L	ug/L	
Dibromoacetic Acid	ND	2.6		9/25/22
Dichloroacetic Acid	<1.00	<1.00		9/25/22
Monobromoacetic Acid	<1.00	<1.00		9/25/22
Monochloroacetic Acid	<1.00	<1.00		9/25/22
Trichloroacetic Acid	ND	ND		9/25/22
Total HAA5's	ND	2.6	60.00	

CONTAMINANT	OAKWOOD'S WATER		OEPA MCL	DATE COLLECTED
	Shafor	Springhouse		
MISCELLANEOUS	mg/L	mg/L	mg/L	
Nitrate	1.3	1.1	10	8/25/22

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 2022, the Oakwood water plants reduced the hardness of the raw water by 58%. Through the ion exchange process, this 58% reduction in water hardness resulted in a 167% increase in sodium content. Both of these percentages are within normal operating ranges.

III. WELL PUMPAGE REPORT AND CHARTS

The eight production wells produced 444,636,000 gallons of water in 2022, which is an average of 1,218,000 gallons per day. In 2021, the eight production wells produced 500,856,000 gallons of water. This represents a 11.22 % decrease in raw water produced in 2022. The 2022 maximum day well production was on June 26 at 1,767,000 gallons. It is common that our highest usage occurs during the summer months when many property owners irrigate their lawns. The 2022 minimum day well production was on November 8 at 597,000 gallons. The minimum day production normally occurs in the fall or winter.

Out of the 444,636,000 gallons pumped in 2022, 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 7.48% of the total water pumped for the year, a 0.84% increase from 2021. 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 2022 water table draw down compared to 2019, 2020 and 2021.

CHART 1

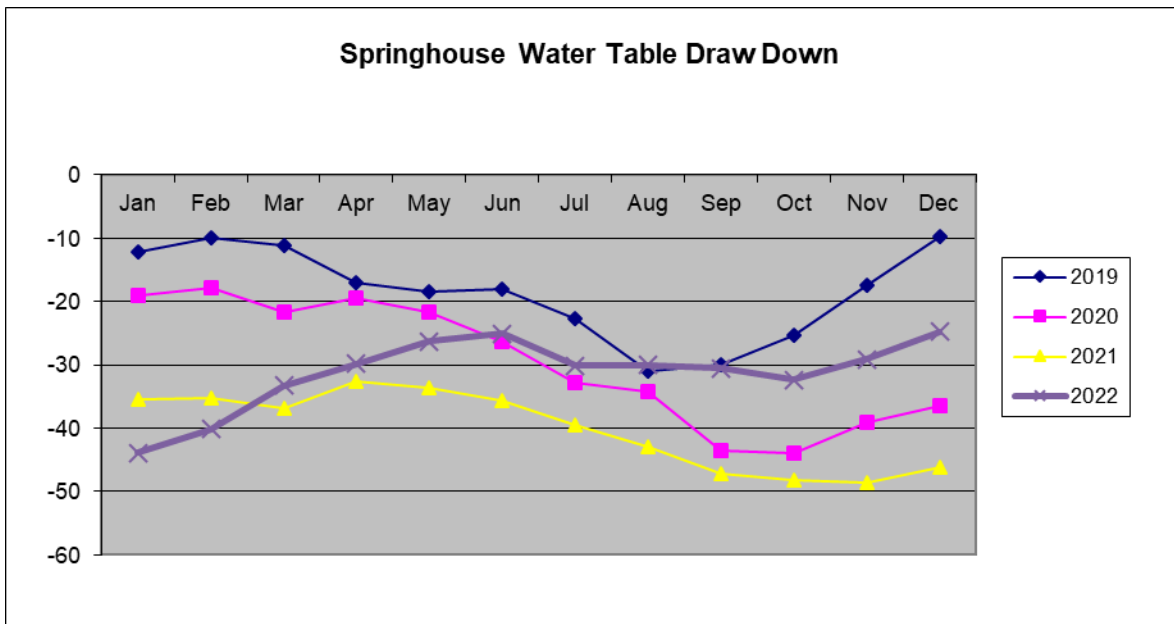
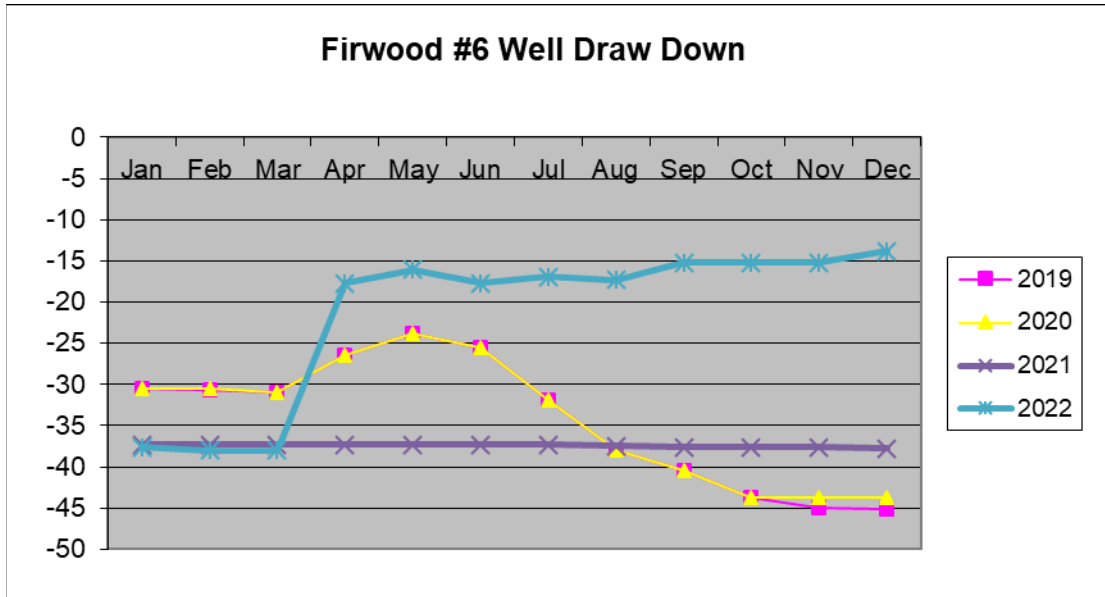


CHART 2



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 2022. We measured 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 2021 and 2022.

IV. TOTAL PUMPAGE TO SYSTEM REPORT AND CHARTS

The City was able to produce water to meet 99.97% of the total demand of 394,326,000 gallons (1,080,000 avg/day). The maximum day system usage was on June 30 at 1,999,000 gallons and the minimum day system usage was on November 8 at 597,000 gallons. No fire events (i.e., extra demand) occurred in 2022 that required city of Dayton or Montgomery County water. During the month of September, we did purchase 134,000 gallons due to a power failure at Well #6.



**TABLE 3
CITY OF OAKWOOD WATER DEPARTMENT
MONTHLY WELL PUMPAGE RECORD**

YEAR: 2022
MONTH: December

MONTH	WELL #1		WELL #2		WELL #3		WELL #4		WELL #5		WELL #6		WELL #7		WELL #8		MONTHLY TOTAL		ANNUAL TOTAL	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
JANUARY	19.768	21.350	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.407	15.513	1.315	2.833	2.604	0.389	12.053	38.503	38.729	38.503	38.729
FEBRUARY	19.538	17.340	0.005	0.000	0.002	0.000	0.086	11.013	0.005	5.546	14.015	0.162	3.317	0.064	0.882	0.000	37.850	34.125	76.353	72.854
MARCH	21.402	17.129	0.000	0.000	0.000	0.000	3.650	12.395	0.000	5.607	12.316	0.000	4.224	0.211	1.241	0.000	42.833	35.342	119.186	108.196
APRIL	17.363	17.957	0.000	0.000	0.000	0.000	12.144	11.604	0.000	4.532	0.132	2.899	6.037	0.057	2.457	0.000	38.133	37.049	157.319	145.245
MAY	21.684	17.933	0.000	0.000	0.000	0.000	8.133	12.999	1.004	4.232	1.478	3.259	6.296	0.118	5.865	0.000	44.460	38.541	201.779	183.786
JUNE	21.573	17.883	0.000	0.530	0.186	0.016	2.101	15.590	3.975	0.778	5.522	5.212	6.070	3.058	7.541	2.414	46.968	45.481	248.747	229.267
JULY	24.592	20.952	0.001	0.134	0.170	0.132	0.000	15.215	4.524	0.008	5.339	1.458	6.304	4.034	7.492	0.842	48.422	42.775	297.169	272.042
AUGUST	24.528	21.511	0.652	0.190	0.773	0.000	0.005	16.360	5.653	0.005	10.046	1.762	6.207	4.197	5.244	0.736	53.108	44.761	350.277	316.803
SEPTEMBER	23.429	20.034	3.250	0.133	0.244	0.167	0.699	4.795	1.745	0.000	9.951	6.932	2.527	4.585	2.347	0.997	44.192	37.643	394.469	354.446
OCTOBER	24.258	20.477	0.034	0.380	0.000	0.029	1.782	1.685	0.110	0.000	7.407	9.458	4.360	2.763	0.459	1.002	38.410	35.794	432.879	390.240
NOVEMBER	23.507	13.524	0.000	0.005	0.000	0.000	0.130	7.003	0.000	2.218	9.331	3.975	0.000	0.073	0.074	0.053	33.042	26.851	465.921	417.091
DECEMBER	19.425	13.761	0.051	0.000	0.311	0.000	1.177	9.748	0.000	4.036	1.421	0.000	0.000	0.000	12.550	0.000	34.935	27.545	500.856	444.636
ANNUAL	261.067	219.851	3.993	1.372	1.686	0.344	29.907	118.407	17.016	28.369	92.471	36.432	48.175	21.764	46.541	18.097	500.856	444.636	500.856	444.636
TOTALS	52.12%	49.45%	0.80%	0.31%	0.34%	0.08%	5.97%	26.63%	3.40%	6.38%	18.46%	8.19%	9.62%	4.89%	9.29%	4.07%	100.00%	100.00%	100.00%	100.00%

AVG. DAY (2021 YTD): _____ 1.372 M.G.D. 2021 Springhouse wells 266.746 MGD 53.26% 2022 Springhouse wells 221.567 MGD 49.83%
 AVG. DAY (2022 YTD): _____ 1.218 M.G.D. Firwood wells 234.110 MGD 46.74% Firwood wells 223.069 MGD 50.17%

Table 4 below shows a comparison of the water resources needed to meet the City’s demands in 2021 and 2022.

**TABLE 4
WATER RESOURCE RECORD**

Location	2021 Gallons	2021%	2022 Gallons	2022%
Oakwood WTPs	439,658,000	99.75%	394,192,000	99.97%
Dayton/Shroyer	1,119,000	0.25%	134,000	0.03%
Dayton/Springhouse	0	0%	0	0%
County/Fairmont	0	0%	0	0%
TOTALS:	440,777,000	100%	394,326,000	100%

There was a decrease in demand of 46,451,000 gallons of water in 2022 compared to 2021 (10.5%). Table 5 on the next page shows the comparison in total gallons pumped to the system per month for 2021 and 2022.

V. MAINTENANCE

The following is a summary of the larger maintenance projects that took place in 2021.

January	Data issues Well #6 - repaired by Delta Controls
February	Timer issues Well #6 - repaired by Delta Controls. Replace coax cable Well #7 - repaired by Delta Controls Main power line replaced Well #6 - repaired by Studebaker Replace chlorine pump 210 Shafor - repaired by city crew
March	Replace control valve 120 Springhouse - repaired by AOP Replace chlorine pump at 210 Shafor Electrical issues Well #6 - repaired by Studebaker
April	Replaced motor starter and brine pump at 120 Springhouse
May	Replaced overhead door 120 Springhouse Replaced chlorine line 210 Shafor – repaired by city crew SCADA issues/loss of signal at water tower Power supply issues - repaired by Delta Controls
June	N/A
July	Replaced chlorine pump at 210 Shafor
August	N/A
September	Pump failure 120 Springhouse - blown fuses repaired by Delta Controls Fault Well #7 software issues - repaired by Delta Controls Replaced timer Well #1 120 Springhouse - repaired by Delta Controls Replaced overloads Well #1, 2 and 3 120 Springhouse - repaired by Delta Controls
October	Clean salt bin #1 at 210 Shafor - repaired city crew Changed backflow at 210 Shafor and 120 Springhouse
November	N/A
December	UPS failure at 120 Springhouse - repaired by Delta Controls Repaired KMNO4 line at 210 Shafor - repaired by city crew

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: 2022
MONTH: December

MONTH	SPRINGHOUSE		FIRWOOD		DAYTON/SHROYER		FAIRMONT		DAYTON/SPRING.		MONTHLY TOTAL		ANNUAL TOTAL	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
JANUARY	18.065	18.590	15.749	14.672	0.000	0.000	0.000	0.000	0.000	0.000	33.814	33.262	33.814	33.262
FEBRUARY	17.732	15.051	15.407	14.534	0.000	0.000	0.000	0.000	0.000	0.000	33.139	29.585	66.953	62.847
MARCH	19.635	14.534	17.941	15.714	0.000	0.000	0.000	0.000	0.000	0.000	37.576	30.248	104.529	93.095
APRIL	15.707	15.114	17.127	16.552	0.000	0.000	0.000	0.000	0.000	0.000	32.834	31.666	137.363	124.761
MAY	19.634	15.462	19.110	18.174	0.000	0.000	0.000	0.000	0.000	0.000	38.744	33.636	176.107	158.397
JUNE	19.683	16.964	21.363	23.535	0.000	0.134	0.000	0.000	0.000	0.000	41.046	40.633	217.153	199.030
JULY	22.448	20.078	20.301	18.766	0.000	0.000	0.000	0.000	0.000	0.000	42.749	38.844	259.902	237.874
AUGUST	23.567	20.560	23.509	19.849	0.000	0.000	0.000	0.000	0.000	0.000	47.076	40.409	306.978	278.283
SEPTEMBER	24.537	19.457	14.786	14.858	1.119	0.000	0.000	0.000	0.000	0.000	40.442	34.315	347.420	312.598
OCTOBER	21.959	19.945	12.297	12.619	0.000	0.000	0.000	0.000	0.000	0.000	34.256	32.564	381.676	345.162
NOVEMBER	20.953	12.900	8.033	11.350	0.000	0.000	0.000	0.000	0.000	0.000	28.986	24.250	410.662	369.412
DECEMBER	17.301	13.139	12.814	11.775	0.000	0.000	0.000	0.000	0.000	0.000	30.115	24.914	440.777	394.326
ANNUAL	241.221	201.794	198.437	192.398	1.119	0.134	0.000	0.000	0.000	0.000	440.777	394.326	440.777	394.326
TOTALS	54.73%	51.17%	45.02%	48.79%	0.25%	0.03%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%	100.00%	100.00%

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

2021 Avg. per day 1.208 MGD

2022 Summary	
	M.G.
Oakwood:	394.192
Dayton:	0.134
County:	0.000
TOTAL:	394.326
	100%

2022 Avg. per day: 1.080 MGD

VI. BUDGET/FINANCES

The 2022 budget allocation for Oakwood Water Production was \$657,731.89. In 2022, the Oakwood Water Production Unit spent \$602,417.39 toward the production of the City's water. This computes to an average cost of \$1,354.86 per million gallons pumped from the city's eight wells in 2022, up from \$1,318.00 per million gallons in 2021. The cost per million gallons will fluctuate up or down depending on the total water demand and maintenance costs for the year. 2022 had an average water demand lower than 2021 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

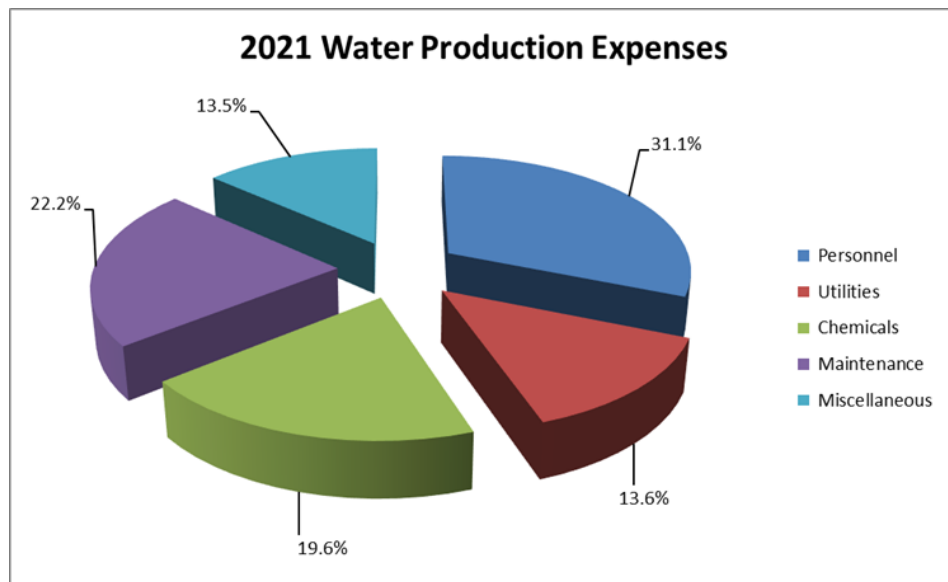
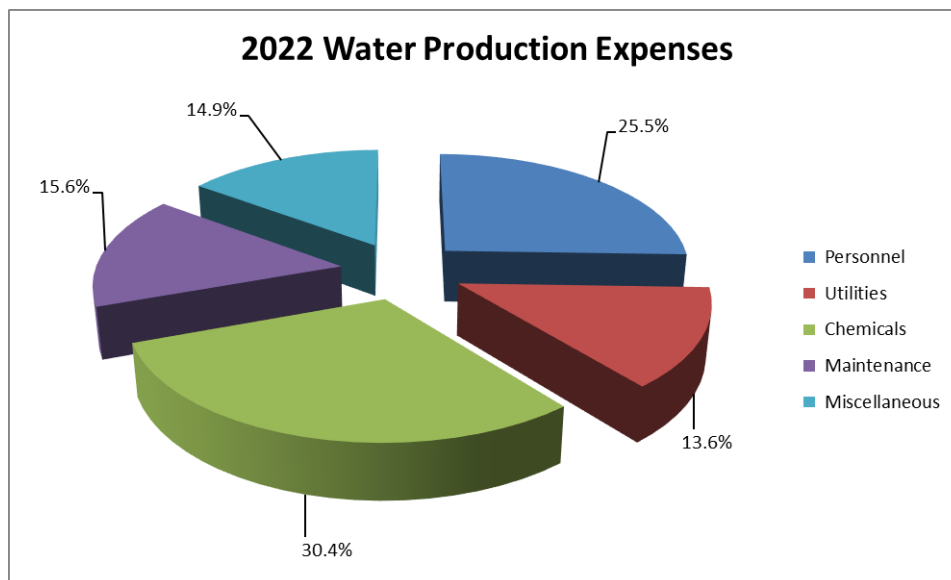


CHART 4



Personnel costs were \$153,768.46 for the year representing a 25.1% decrease from 2021. Utility costs were \$82,183.09 which includes electric and natural gas representing an 8.5% decrease from 2021. Chemical costs were \$183,236.14 representing a 42% increase over 2021. A total of 931.59 tons of salt compared to 1,102 tons in 2021 and 3,135 gallons of sodium hypochlorite compared to 3,907 gallons in 2021 were used to treat the water.

Maintenance costs were \$93,628.33 representing a 36.2% decrease compared to 2021.

VII. CONCLUSION

In reviewing our water system, 2022 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.