

CITY OF WOOSTER

WATER PRODUCTION DIVISION

ANNUAL REPORT
FOR YEAR 2005

Prepared by

Michael Hunter
Utilities Manager

&

Ken Kinney
Asst. Utilities Manager

2005 WATER TREATMENT PLANT ANNUAL REPORT

Our mission is defined as: A commitment to excellence in public service through the proper treatment, protection and preservation of water resources.

EXECUTIVE SUMMARY

The water plant continues to perform well and has proven that its efficient operation will serve the people of Wooster well into this new century.

The water plant produced a total of 1,290,275,000 gallons of potable water in 2005. This total signifies an increase of 23,275,000 gallons from 2004. This can be attributed to a decrease in rainfall this year. The average daily production was 3.54 million gallons with a peak of 5.39 million gallons on June 21st. The average per capita usage was 135.3 gallons per day based on the current population estimate of 26,166.

The chemical cost per million gallons of treated water in 2005 was \$179.94. The increase from the previous year (\$121.63) was due to increased cost of chemicals, and use of more Sodium Hypochlorite (chlorine) to oxidize the Ammonia in S-1 well water.

The perpetual support from Mayor Howey, City Council and city management has allowed us to cultivate a successful environment to be productive. Their continued assistance will allow us to enhance water quality and strive to protect our precious water resources.

TREATMENT SUMMARY

YEAR	TOTAL MILLION GALLONS RAW WATER	TOTAL MILLION GALLONS FINISHED WATER	AVERAGE CHEMICAL COST PER MILLION GALLONS	AVERAGE HARDNESS RAW WATER mg/L	AVERAGE HARDNESS FINISHED WATER mg/L
2000	1320	1305	\$78.61	334	102
2001	1431	1416	\$ 81.84	338	104
2002	1414	1400	\$ 86.17	352	107
2003	1391	1378	\$ 99.86	371	111
2004	1278	1267	\$121.10	389	117
2005	1303	1290	\$179.94	389	119

Finished water pumped to the city in 2005 increased by 23 million gallons from the previous year. An average of 3.57 million gallons per day of raw water from our well field was treated in 2005. The high duty pumps sent an average of 3.53 million gallons per day of finished water into the distribution system. The peak-pumping day occurred on June 21, when 5.39 million gallons of finished water was pumped into the city. The average per capita usage of water in 2005 was 143.6 gallons per day (based on population data of 26,166).

The chemical cost per million gallons of treated water in 2005 was \$179.94. The increase from the previous year (\$121.63) was due to increased chemical cost and the increased use of Sodium Hypochlorite to oxidize Ammonia in the raw water.

AVERAGE CHEMICAL COST PER MILLION GALLONS

YEAR	LIME	SODA ASH	CHLORINE	CO2
2000	\$49.00	\$10.05	\$10.07	\$9.49
2001	\$51.86	\$11.53	\$11.97	\$6.48
2002	\$53.71	\$13.02	\$12.56	\$6.88
2003	\$59.48	\$15.77	\$17.36	\$7.25
2004	\$72.31	\$17.95	\$21.46	\$9.91
2005	\$114.06	\$23.59	\$31.73	\$10.56

ANNUAL CHEMICAL USAGE (in pounds)

YEAR	LIME	SODA ASH	CHLORINE (in gallons)	CO2
2000	1,993,924	181,233	29,205	225,200
2001	2,249,309	220,283	33,893	168,711
2002	2,302,094	246,070	35,176	172,216
2003	2,250,126	340,446	41,893	178,309
2004	2,436,907	306,616	46,879	219,341
2005	2,607,260	320,853	52,155	210,899

Sludge, a byproduct of the lime, soda ash softening process, is pumped to the sludge mix tank at the water pollution control plant. There was 12.491 million gallons of lime and soda ash sludge processed in 2005.

The plant used 19,337,271 gallons (52,979 gallons per day average) of treated water to backwash the plant's four filters. The backwash water is recycled back to the beginning of the treatment process to conserve water.

The city well fields continue to provide sufficient water. The North field yearly average was 30.3 feet. Its lowest level was in October at 23.0 feet, and peaked at 39.7 feet in May. The S-1 Well in the South well field averaged 60.6 feet of water peaking at 73.1 feet in December and a low of 54.2 feet in July. The S-2 Well in the South well field averaged 46.1 feet for 2005, peaking at 59.4 feet in December with a low of 36.0 feet in

September. The North well field is capable of only maintaining a daily production of 1.8 million gallons per day. The S-1 well pumped 1.5 to 2.0 million gallons per day.

AVERAGE ANNUAL WATER WELL LEVEL (in feet)

WELLS	1998	1999	2000	2001	2002	2003	2004	2005
North well field	19.5	17.7	15.7	13.9	16.0	23.2	28.6	30.3
South well field S-1	46.7	60.0	58.0	55.6	57.5	54.4	64.5	60.4
South well field S-2	38.1	38.8	37.0	27.4	33.0	28.5	54.8	46.1

The OARDC reports, in 2005, 33.92 inches of precipitation in the Wooster area compared to 46.8 inches in 2004. The average rainfall is 38.9 inches for the Wooster community. For the year 2005 the area was 4.98 inches below the normal precipitation.

WOOSTER (OARDC) ANNUAL PRECIPITATION

YEAR	TOTAL ANNUAL PRECIPITATION	CHANGE FROM NORMAL PRECIPITATION
1997	27.2	-30%
1998	32.9	-15%
1999	27.9	-28%
2000	32.9	-15%
2001	29.1	-25%
2002	35.5	-09%
2003	43.2	+11%
2004	46.8	+20%
2005	33.97	-13%

Treatment Summary

Production of a safe and satisfactory drinking water throughout 2005 was indicated by negative E-Coli bacteria results in samples of finished water collected from representative points of the distribution system. 383 routine bacteria samples were taken. Another responsibility of our division is checking for bacteria in new lines installed within the city, before they are put into use. 114 special samples were collected and analyzed to ensure all the new and repaired lines were safe for our consumers. The plant also performed bacteria tests on 370 outside samples.

The North Buckeye Street booster station pumped a total of 425,609,800 gallons in 2005 (*1,172,479,000 gallons daily average*). The water from the North Buckeye station is pumped mainly to the Winter and Highland storage tank service area. The Long Road booster station pumped a total of 86,707,100 gallons (*238,862 gallons daily average*). The Long Road station serves the Industrial Park tank storage area. The Madison booster station, which delivers water to the ATI tank storage, transported a total of 42,018,900 gallons in 2005 (*115,755 per day average*). The Mechanicsburg Road booster station pumped a total of 174,268,000 gallons (*480,077 gallons daily*). The Mechanicsburg Road booster station supplies water to the Milltown tank for the area north of Oldman Road to Smithville Western, east to Melrose and Huffman Rd.

In July 1983, VOC contamination was found in the S-1 well. S-1 well was not used for consumption until November 1998, when it was operated to test the new water plant. The S-1 well was recently approved for limited use (2 days per month) when operated with the plant water stripping towers. The S-1 well is currently used for consumption on a daily basis with flow rates ranging from 1.2 to 2.0 million gallons a day.

The clean up process of the contamination plume has been in operation for 20 years operating No. 1 Interceptor well and tower since 1985. Residuals of VOC'S detected in the #1 interceptor well are Cis 1,2-Dichloroethene at 57.0 ug/l and Vinly Chloride at 4.6 ug/l . A total of 170,212,000 million gallons were pumped through the #1 stripper tower and released into Little Apple Creek Stream.

The #2, #3, & #4 interceptor wells have been in use for 15 years. The residuals of VOC'S detected were Trichloroethene at 52.0 ug/l and Cis 1,2-Dichloroethene at 8.0 ug/l All effluent water from the stripping tower was reduced to less than 0.5 ug/L of VOCs. A total of 98,107,000 million gallons was pumped through the #2 stripper tower in 2005 and released into Little Apple Creek Stream.

The #5 interceptor well, located next to S-1 well was shut down after recommendation from the Engineering firm of Malcolm Pirnie and agreeable by the OEPA. The S-1 well is now used as a production well and Interceptor well by collecting voc's moving south and to the west of its location. Residuals of VOC'S in S-1 well detected before stripping are Cis 1,2-Dichloroethene at 4.2 ug/l and Vinly Chloride at 2.3 ug/l. All effluent water was reduced to less than 0.5 ug/l, which is the lowest detection level of the lab.

2005 Highlights

- ❖ Mick Stebelton attended Advanced Waste Water Classes.
- ❖ Ken Kinney attended OTCO Water Workshop in Columbus.
- ❖ March 31 & April 13, Glenn Bower & Rod Musser attended water classes at Stark State College in Canton.
- ❖ April 21 helped with N E & NW AWWA Expo at the Wayne County Fair Grounds.
- ❖ On April 6 employees certified in Basic First Aid by Wayne County Red Cross.
- ❖ On May 19 six employees attended NEAWWA meeting at Cleveland Crown Water plant.
- ❖ June 3 Liquid Engineering inspected and cleaned inside bowl of Winter Elevated Tank.
- ❖ In July employees washed the exterior of the two 750,000 gallon Clearwells and the 1 million gallon Long road tank.
- ❖ July all plant employees certified for chemical
- ❖ On July 21 Ken Kinney, Don Macko and Rod Musser attended NEAWWA meeting at Atwood Lake Lodge.
- ❖ August, Seasonal employees finished flushing over 1300 fire hydrants.
- ❖ On August 5 a lightning storm damaged the 2300 volt transformer at Buckeye Pump Station. Temporary repairs made on August 6. Complete repairs made on October 13.
- ❖ August, seasonal employees finished painting all High Service pumps.
- ❖ September 1, Jeff Long and Bob King attended Canton Water Workshop.
- ❖ September, employees finished painting all Stripping pumps and pipes.
- ❖ September 19-22 Michael Hunter, Ken Kinney and Don Macko attended the AWWA State Convention in Columbus.
- ❖ RVI power washed IP elevated water tank.

- ❖ On October 6 Ken Kinney attended NEAWWA meeting at Akron Water Plant.
- ❖ October 28 –November 2 Bob King and Mick Stebelton participated on the Wooster Waste Water team at the National Convention in Washington D.C.
- ❖ November 15, Mick Stebelton attended water class at Stark State College.
- ❖ November 17, Ken Kinney attended AWWA Workshop in Columbus.
- ❖ In December cleaned No. 1 & 2 clarifiers completely, Co2 basins and sludge pits.
- ❖ In December cleaned Wash Recovery basin.
- ❖ RVI cleaned and replaced #1 & #2 Stripping Tower media 6 times in 2005.

**2005 WATER TREATMENT PLANT ANNUAL REPORT
EMPLOYEE ROSTER**

MANAGEMENT:

Utilities Manager
Asst. Utility Manager

Michael Hunter
Ken Kinney

LABORATORY TECHNICIAN:

Michael Shultz

PLANT MECHANIC:

Robert Lance

OPERATORS:

Glenn Bower
Jeffrey Long
Michael Stebelton
James Phillips
Robert King
Rod Musser