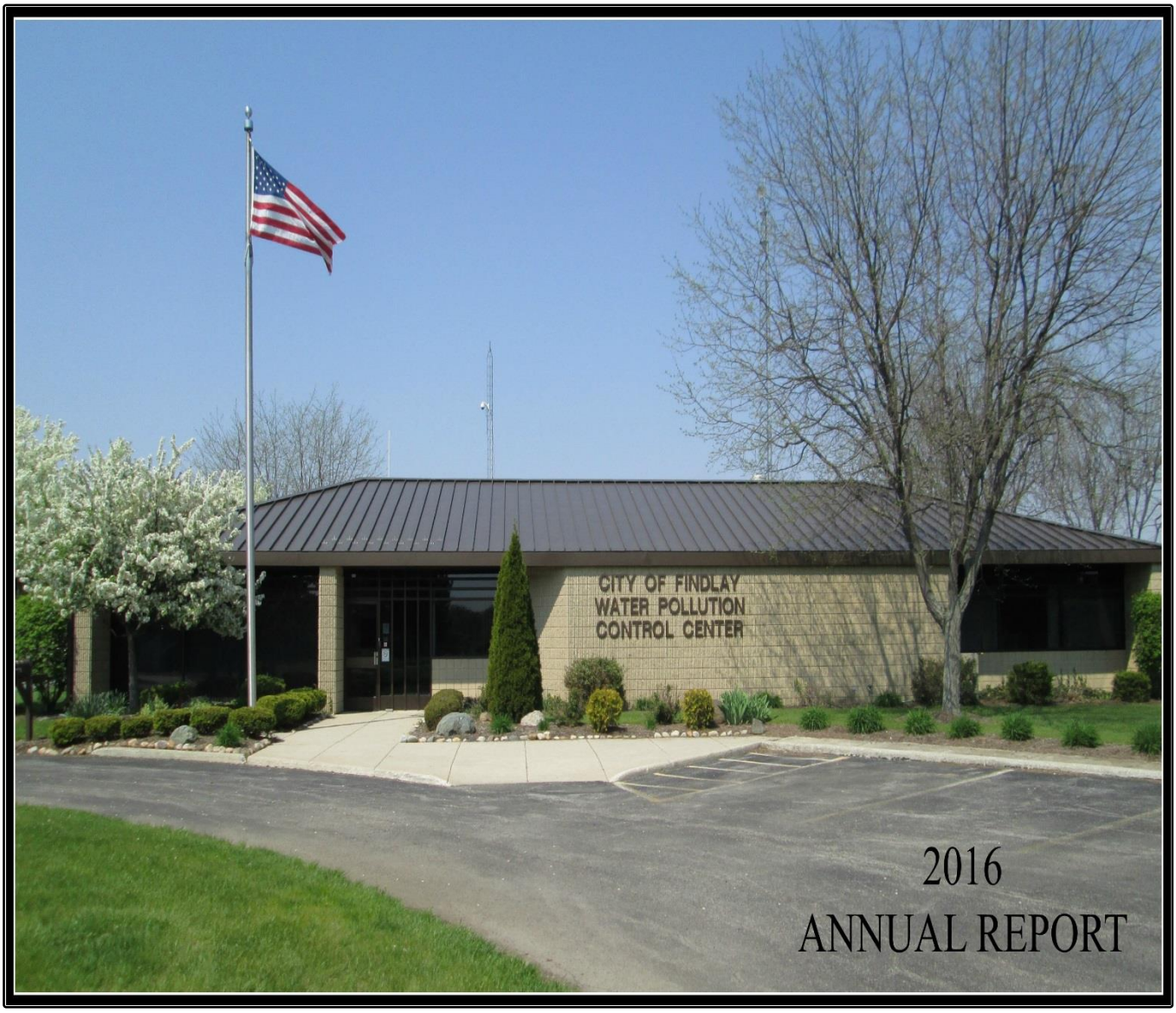
CITY OF FINDLAY

WATER POLLUTION

CONTROL CENTER



Introduction

The annual report of operations of the Water Pollution Control Center for the year ending December 31, 2016 is respectfully submitted herein. We wish to acknowledge the initiative and cooperation exhibited by those employees listed below in their outstanding operation and maintenance of the wastewater system throughout the year 2016.

The Water Pollution Control Center (WPCC) is comprised of three departments, Water Pollution Control, Sewer Maintenance, and Stormwater Maintenance. Each department operates under separate budgets and are all under the direction of Dave Beach, Superintendent of the Water Pollution Control Center (WPCC).

The Key Processes of Operations at the WPCC include:

- Provide Wastewater Treatment that Meets or Exceeds our National Pollutant Discharge Elimination System (NPDES) Permit
- Operation and Maintenance of Wastewater Collection System
- Operation and Maintenance of Sanitary & Storm Pumping Stations
- Condition and Dispose of Biosolids
- Ensure Reliable and Valid Analytical Lab Data
- Maintain Stormwater Collection System
- Meet Regulatory Reporting Requirements Set Forth in NPDES
- Floodwater Management

Water Pollution Control Employees:

- Raul Amesquita
- Joel Borer
- Seth Cole
- James Fox
- Dave Frantz
- Joshua Gearing
- Gary Hayden
- Matt Karl
- Jessica McGrain
- Amanda Mooney
- Tom Moses
- Werner Roesch
- Mark Stears
- Todd Ward
- Jason Wolfarth

Sewer Maintenance Employees:

- Joe Arras
- Bob Courtney
- Dan Gonzalez
- Terry Grohoske
- Dave Holman
- Chris Kolhoff
- Mark Routzon
- Michael Stillberger
- Isaac Theis
- Brent Vaughan

Stormwater Employees:

- Dana Cramer
- George Elston

The WPCC employs many staff members that are licensed with the State of Ohio in wastewater treatment and collection. To keep their licensure they must participate in continuing education and continually meet the standards set forth by the Ohio EPA.

The following employees are licensed by the Ohio Environmental Protection Agency:

Waste Water Operator Licenses:

Dave Beach	Class 4	Seth Cole	Class 3
Jason Wolfarth	Class 3	Werner Roesch	Class 2
David Frantz	Class 3	Joel Borer	Class 1
Mark Stears	Class 3	Josh Gearing	Class 1
Raul Amesquita	Class 3	Jessica McGrain	Class 1

Waste Water Collection Licenses:

Robert Courtney	Class 1	Mike Stillberger	Class 1
Chris Kolhoff	Class 1		

In the year 2016, the City of Findlay WPCC completed its eighty-third year of operation by treating 3.701 billion gallons of sewage, 511 million gallons less than 2015.The average daily total for sewage treated was 10.120 million gallons per day which was also down from 2015's daily average of 11.528 million gallons per day. Additional flow data can be found in the graphs included with this report.

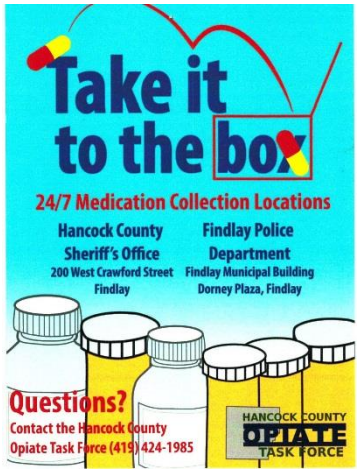
The WPCC has an approved Ohio Environmental Protection Agency Sludge Management Plan and continues to meet all state and federal regulatory requirements for disposal in a landfill. The wastewater biosolids (sludge) generated at the WPCC is conditioned on four belt filter presses located in the Solids Processing Building. 1,984.18 dry tons of biosolids were treated and disposed of at the Hancock County Landfill in 2016. This treatment resulted in an average of 12.32 dry tons per day of operation of the belt filter presses.

In an effort to preserve equipment and cut down on repairs, the City invested in a bar screen that went into operation on August 4, 2015 at the Water Pollution Control Center. In 2016, it removed 13,060 pounds or 36.38 pounds of debris per day from the raw wastewater entering the WPCC. The bar screen will allow for the continued removal of large objects such as rags, plastics, solids, and other debris from the waste stream preventing damage and clogging of downstream equipment, piping, and appurtenances. The WPCC previously used grinders to reduce debris to a passable size before entering the influent pump station but they were found to be inefficient at removing debris and in need of frequent mechanical repairs.

Plant maintenance made several improvements throughout 2016. They installed a dedicated effluent flow meter in the UV channel that was mandated by the Ohio EPA, a new control panel and pump were installed at County Road 220, and the obsolete #3 VFD was replaced at the influent pump station.

The City of Findlay has continued work on the Long Term Control Plan for Combined Sewer Overflows. In November of 2013, the first draft of the Long Term Post Construction Compliance Monitoring Plan was submitted to the Ohio EPA for approval. It outlined the location of existing combined sewer outfalls (CSO's) in the system, identified the most active, set guidelines for inspection and sample collection, and developed forms to report the findings. In January of 2015, we received a letter of LTCP Post-Construction acceptance from the Ohio EPA. Flow meters were ordered in February and installation and training started in May. The wet weather in June and July made installation a struggle but the final flow meter was installed in August of 2015 and data is currently being collected and recorded from these CSO locations. The EPA requires that we monitor and report flow data from the five most active CSO's for a minimum of 24 months to adequately characterize any remaining volumes and occurrences for CSO's. The data collected from these flow meters will be integral in planning for the future.

The City of Findlay WPCC continues to partner with Marathon Petroleum Corporation on a ground-mounted 975.88 kilowatt (kW) solar energy facility composed of four sub array systems. The project was constructed as a research and development project to better understand the potential advantages and disadvantages of solar energy. The electrical power it generates is donated to the Water Pollution Control Center. Over 6,000 solar panels were used to complete the project including tracking and fixed solar panels from both SHARP and KYOCERA brands. The facility went on line on November 5, 2012 and in its four years of operation it has generated 3,444,268 kilowatt hours (kWh) of electrical power with an estimated retail value of $286,897. The solar panels generated 983,995 kWh this year, which is about 1/6th of the total kWh used by the plant in 2016.



The WPC once again partnered with the Hancock County Board of Alcohol, Drug Addiction, and Mental Health Services, The University of Findlay, the Findlay Police Department, and Rader Environment Services to hold semi-annual drive-up collections of prescription drugs. In addition to these events, there are also permanent collection boxes at the Hancock County Sheriff's Office and the City of Findlay Police Department, which were installed in 2011 to allow the citizens of Findlay and Hancock County an alternative to disposing of their unwanted prescription drugs by flushing them down their toilets. Officer Rhoads and Akers of the Findlay Police Department destroyed 625 pounds of medical collection drugs on March 3, 2016. In addition to prescription drugs, residents are also given the opportunity to dispose of mercury. In 2016, there were several opportunities for mercury disposal including; weekly collections at Litter Landing and two drive

up collections that yielded a total of 62 pounds of mercury. As part of the Mercury Preventative Maintenance Program (PMP), a billing insert was included with the November and December water/sewer bills that highlighted the different types of mercury, the hazards of each, and offered a list of common household items that contain mercury. We are pleased with the success of these efforts and will continue to promote proper disposal of these common contaminants.

The WPCC staff continues to conduct tours for school age children, citizen groups, and University of Findlay students who are interested in wastewater management. These tours provide a general overview of the treatment process and focus on pollution prevention as well as ways that we can keep our storm water system cleaner. In 2016, the University of Findlay Senior Forum toured the plant and listened to a brief presentation.

Laboratory testing, to assure compliance with the NPDES permit limits, is performed at the WPCC and several outside laboratories. Two full-time laboratory technicians are required to monitor the specified parameters. The WPCC is pleased to report that our laboratory, once again, received an acceptable rating on all parameters that were tested as part of the annual DMR-QA (Discharge Monitoring Report & Quality Assurance) study. This study involves purchasing samples with unknown values and running the tests through our lab. The results are then sent back to the company for evaluation and the evaluation is then forwarded to the USEPA.

There was only one violation of the WPCC NPDES permit during 2016. We exceeded the weekly concentration limit for E. Coli bacteria during the fourth week of August. This permit violation was caused by the failure of a circuit board located within the controls of the UV disinfection system. With the installation of a new circuit board, we experienced no further problems with the UV disinfection system.

The Water Pollution Control Center also has an approved Ohio Environmental Protection Agency Industrial Pretreatment Program to regulate the disposal of industrial wastewater into the sanitary wastewater collection system. The Water Pollution Control Center is the legal authority responsible for the management, testing, and record keeping of the program. Audits of the program and inspections are performed annually by the Northwest District Office of the Ohio EPA and tri-annually by the State Office of the Ohio EPA. Inspection reports from all EPA agencies have been above average and the City of Findlay is meeting all federal requirements at this time. The WPCC works closely with local industries in the pretreatment of their individual discharges and has developed an excellent cooperative spirit to ensure compliance with the pretreatment program. At present, all industrial dischargers are in compliance with current regulations and their continued cooperation is anticipated.

In looking ahead to next year, we continue to focus on meeting our key processes while working towards the 2017 objectives of:

- Continued compliance on the Combined Sewer Overflow Long Term Control Plan
- Continue the Ditch Maintenance Program
- Continue the Annual Sewer and Manhole Lining Program
- WPC/SM Cold Storage Building
- SCADA System Upgrade
- Brandman Area Sewer Division and CSO Removal
- Hardin Street Sewer Separation
- East Front Street CSO Removal
- Flap Gate Project

2016

ANNUAL SUMMARY OF OPERATIONS

MONTH	FLOW (MILLION GALLONS)		
	TOTAL	*AVG/DAY*	*PEAK*
JANUARY	344.430	11.111	23.620
FEBRUARY	332.634	11.470	26.782
MARCH	476.573	15.373	28.770
APRIL	451.267	15.042	33.484
MAY	386.234	12.459	33.170
JUNE	284.690	9.490	21.947
JULY	212.097	6.842	9.518
AUGUST	250.234	8.072	15.030
SEPTEMBER	243.250	8.108	15.144
OCTOBER	254.321	8.204	20.983
NOVEMBER	215.035	7.168	9.615
DECEMBER	251.047	8.098	11.182
2016 TOTAL	**3,701.812**		
2016 AVERAGE	**308.484**	**10.120**	**20.770**
2015 TOTAL	4,213.375		
2015 AVERAGE	351.115	11.528	24.907
2014 TOTAL	3,892.512		
2014 AVERAGE	324.376	10.706	21.272

2016

ANNUAL SUMMARY OF OPERATIONS

MONTH	SUSPENDED SOLIDS MG/L		5-DAY CBOD MG/L		AMMONIA MG/L	
	RAW	*FINAL*	*RAW*	*FINAL*	*RAW*	*FINAL*
JANUARY	122	2.76	91	1.43	11.9	0.000
FEBRUARY	153	3.05	107	1.90	13.1	0.009
MARCH	101	2.22	71	1.74	8.6	0.007
APRIL	101	3.86	72	1.95	9.3	0.004
MAY	121	3.41	85	2.86	10.7	0.055
JUNE	137	3.00	96	3.00	14.0	0.053
JULY	166	3.05	127	2.71	17.8	0.067
AUGUST	154	3.13	95	2.04	17.1	0.079
SEPTEMBER	148	3.41	118	1.86	17.2	0.040
OCTOBER	146	2.81	120	1.71	17.6	0.035
NOVEMBER	156	4.18	137	2.73	18.4	0.061
DECEMBER	152	2.05	129	2.14	19.0	0.056
NPDES LIMIT (SUMMER)	5/01-10/31	14	N/A	10	N/A	0.91
NPDES LIMIT (WINTER)	11/01-4/30	18	N/A	13	N/A	4.2
2016 AVERAGE	**138**	**3.08**	**104**	**2.17**	**14.6**	**0.039**
2015 AVERAGE	129	2.57	114	1.73	14.2	0.016
2014 AVERAGE	131	2.67	131	1.64	15	0.054

2016

ANNUAL SUMMARY OF OPERATIONS

MONTH	TOTAL PHOSPHORUS MG/L		COD MG/L	E. COLI #/100ML
	RAW	*FINAL*	*FINAL*	*FINAL*
JANUARY	2.9	0.55	10	
FEBRUARY	3.6	0.69	6	
MARCH	2.3	0.49	2	
APRIL	2.4	0.61	5	
MAY	2.8	0.64	17	9
JUNE	3.5	0.78	14	67
JULY	4.5	0.81	21	8
AUGUST	4.0	0.85	20	86
SEPTEMBER	4.0	0.84	10	24
OCTOBER	4.1	0.88	19	36
NOVEMBER	4.3	0.85	13	
DECEMBER	4.1	0.68	9	
NPDES LIMIT	***N/A***	***1***	***N/A***	***126/100ML***
2016 AVERAGE	3.54	0.72	12.17	38.33
2015 AVERAGE	3.24	0.68	14.42	69.67
2014 AVERAGE	3.26	0.74	11.67	30.67

2016

ANNUAL SUMMARY OF OPERATIONS

MONTH	DISSOLVED OXYGEN (PPM)		
	FINAL EFFLUENT	*BLANCHARD RIVER ABOVE*	*BLANCHARD RIVER BELOW*
JANUARY	8.9	13.4	12.6
FEBRUARY	9.2	11.9	12.1
MARCH	9.0	12.0	11.6
APRIL	8.7	11.5	11.5
MAY	8.2	9.2	9.2
JUNE	7.8	8.5	7.4
JULY	7.4	9.1	8.3
AUGUST	7.4	6.7	7.8
SEPTEMBER	7.5	6.0	5.9
OCTOBER	7.9	6.9	7.0
NOVEMBER	8.4	6.4	6.4
DECEMBER	9.1	11.2	10.0
NPDES PERMIT MINIMUM (SUMMER) 5/01-10/31	6.7		
NPDES PERMIT MINIMUM (WINTER) 11/01-4/30	5.3		
2016 AVERAGE	8.3	9.4	9.2
2015 AVERAGE	8.5	10.0	9.3
2014 AVERAGE	8.8	10.1	9.9

2016

SOLIDS PROCESSING

ANNUAL REPORT

MONTH	OPERATING HOURS				TOTAL OPERATING
	1	2	3	4	HOURS
JANUARY	157.25		156.00	142.00	455.25
FEBRUARY	175.50		165.50	156.00	497.00
MARCH		153.25	143.75	133.25	430.25
APRIL		134.75	128.50	120.00	383.25
MAY		138.00	123.75	124.75	386.50
JUNE		160.75	153.25	145.25	459.25
JULY	79.25	33.00	107.25	101.00	320.50
AUGUST	119.00		113.50	107.00	339.50
SEPTEMBER	111.25		91.00	98.75	301.00
OCTOBER	112.25		106.75	100.00	319.00
NOVEMBER	118.00		111.25	106.25	335.50
DECEMBER	162.00		142.75	149.50	454.25
TOTAL	1,034.50	619.75	1,543.25	1,483.75	4,681.25
AVERAGE	129.31	123.95	128.60	123.65	390.10

2016

SOLIDS PROCESSING

ANNUAL REPORT

MONTH	AVERAGE COST $/TON	POLYMER COST TOTAL,$	POLYMER USAGE GALLONS	AVERAGE SOLIDS CAPTURE,%
JANUARY	17.68	3,000.78	330.12	0.96
FEBRUARY	17.81	3,636.36	400.04	0.97
MARCH	18.79	3,580.91	393.94	0.95
APRIL	18.27	2,928.35	322.15	0.96
MAY	16.99	2,441.30	268.57	0.92
JUNE	15.86	3,209.50	353.08	0.96
JULY	15.41	1,917.27	210.92	0.96
AUGUST	15.45	2,204.32	242.50	0.96
SEPTEMBER	15.50	2,123.78	233.64	0.93
OCTOBER	17.14	2,344.95	257.97	0.96
NOVEMBER	13.84	2,206.87	242.78	0.97
DECEMBER	9.07	1,973.00	268.07	0.94
TOTAL		31,567.39	3,523.78	
AVERAGE	15.98			0.95

Polymer cost/gal *$9.09*

2016

SOLIDS PROCESSING ANNUAL REPORT

MONTH	TOTAL SLUDGE DEWATER & SUPNT. GALLONS	DEWATERED SLUDGE GALLONS	SUPERNANT GALLONS	DEWATERED SLUDGE DRY TONS	AVG. SOLIDS FEED %	AVG. SOLIDS CAKE %
JANUARY	6,308,992	3,879,438	2,429,554	176.30	1.08	15.96
FEBRUARY	8,247,563	5,643,704	2,603,859	202.11	0.92	15.32
MARCH	7,890,496	5,415,084	2,475,412	187.98	0.93	15.50
APRIL	6,543,110	4,347,856	2,195,254	162.91	1.03	15.70
MAY	6,383,846	4,079,617	2,304,229	146.36	0.97	16.20
JUNE	8,196,140	5,895,509	2,300,631	203.12	0.93	16.20
JULY	6,189,568	4,092,239	2,097,329	129.35	0.88	16.30
AUGUST	6,239,823	4,156,923	2,082,900	143.03	0.94	15.80
SEPTEMBER	5,641,143	3,597,013	2,044,130	133.00	0.98	14.90
OCTOBER	6,479,213	4,231,752	2,247,461	136.94	0.93	14.80
NOVEMBER	7,036,036	4,417,241	2,618,795	155.25	1.08	14.50
DECEMBER	8,844,149	6,000,988	2,843,161	207.83	0.96	13.80
TOTAL	84,000,079	55,757,364	28,242,715	1,984.18		
AVERAGE	7,000,007	4,646,447	2,353,560	165.35	0.97	15.42

2015-2016
COMPARISON OF OPERATIONS

REMOVAL OF SUSPENDED SOLIDS	
2015 *RAW TO FINAL*	*2016* *RAW TO FINAL*
98.00%	97.74%

REMOVAL OF 5-DAY C.B.O.D.	
(Carbonaceous Biochemical Oxygen Demand)	
2015 *RAW TO FINAL*	*2016* *RAW TO FINAL*
98.40%	97.86%

REMOVAL OF AMMONIA	
2015 *RAW TO FINAL*	*2016* *RAW TO FINAL*
99.92%	99.91%

REMOVAL OF TOTAL PHOSPHORUS	
2015 *RAW TO FINAL*	*2016* *RAW TO FINAL*
79.12%	79.31%

COST OF OPERATION		
	2015	***2016***
PAYROLL & BENEFITS	$1,131,417	$1,137,006
UTILITIES (electric, water & sewage)	$507,756	$562,779
CHEMICALS	$56,613	$56,974
EQUIPMENT MAINTENANCE	$65,804	$74,242
MISCELLANEOUS	$215,027	$186,078
CAPITAL EQUIPMENT	$75,585	$323,137
OPERATING COST TRANSFER	$615,977	$639,063
TOTAL	**$2,668,180**	**$2,979,278**
COST PER MILLION GALLONS	$633	$805

Weather Data

On September 19, 1934 the Sewage Treatment Works became a National Weather Service station for the City of Findlay and that tradition continues today at the Water Pollution Control Center. Weather records are on file dating back to 1894 for temperature, precipitation amounts, wind direction, and sky conditions. River levels are also monitored and supplied to the news media when they pose a threat to the community.

The average temperature for the year 2016 was 53.3°F which was 2.9°F above the historical average of 50.4°F. The lowest temperature of the year was 1°F which was recorded on January 18th, February 14th, and December 19th. Temperatures never fell below zero and no record lows were set or tied during the year. The highest temperature of the year was recorded on seven separate occasions when the mercury reached 92°F; June 11th, July 12th, July 13th, August 3rd, August 5th, August 11th, and September 7th . There were six (6) record highs set or tied throughout the year. The year 2016 recorded a total of twenty (20) days at or above 90°F but failed to reach 100°F even once. The historical record low temperature of minus 21° was recorded on January 13, 1912 and February 20, 1929. The highest temperature on record was 109° recorded on July 24, 1934.

New Record High Temperatures:

- ***February 3rd 57° Old Record 55° (1927)***
- ***February 20th 68° Old Record 67° (1930)***
- ***February 28th 65° Old Record 64° (1895)***
- ***December 26th 64° Old Record 56° (1940***)

Tied Record High Temperatures:

- ***March 9th 67° (2000***)
- ***November 18th 63° (1896)***

Total precipitation for 2016 was 32.09 inches, which was 3.96 inches below the one hundred and twenty-two year average of 36.02 inches. September had the greatest amount of monthly precipitation at 4.29 inches and November had the least at 1.06 inches. No rainfall records were tied or broken in 2016. September 10th recorded the largest single day rainfall at 1.64 inches and was one of the six days of the year in which we received more than one inch of rain. The Blanchard River did not exceeded flood stage in 2016 and the highest river elevation of the year was 7.65ft on February 25th. The WPCC recorded 181 days with precipitation, which accounts for 50% of the days in 2016. Out of those 181 days, 128 days or 71% had measurable amounts of precipitation of more than 0.01".

The year 2016 recorded a total annual snowfall of 12.6 inches, which is 14.10 inches below the one hundred and twenty-two year average of 26.7 inches. The seasonal snowfall for the winter of 2015-2016 totaled 6.7 inches which is the 4th lowest seasonal total on record. There were no snowfall records set in 2016 and the month of December was the snowiest month with 5.9 inches recorded.

2015-2016
TEMPERATURE AND PRECIPITATION DATA

MONTH	*AVERAGE TEMPERATURE* *(DEGREES)*				*PRECIPITATION* *(INCHES)*			
	2015		***2016***		***RAINFALL***		***ANNUAL SNOWFALL***	
	MAX	***MIN***	***MAX***	***MIN***	***2015***	***2016***	***2015***	***2016***
JANUARY	29.4	14.2	35.1	19.3	2.28	1.34	14	1.6
FEBRUARY	23.7	6.4	40.8	24.3	1.22	2.21	13.4	2.2
MARCH	43.3	25.4	54	36.5	1.98	3.82	4.1	2.1
APRIL	61.3	39.8	59.1	37.3	3.51	3.69	T	0.8
MAY	76.1	54.3	70.7	50.2	4.34	2.79		
JUNE	77.6	61.2	81.9	61.1	7.87	3.54		
JULY	80.6	62.3	85	66.2	7.22	1.46		
AUGUST	80.8	61.2	85.5	66.9	3.02	3.88		
SEPTEMBER	79.4	58.3	79.3	59.2	1.64	4.29		
OCTOBER	64.8	45	67.6	48	1.74	2.48		
NOVEMBER	55.9	37	56	35.9	1.49	1.06	T	T
DECEMBER	49.7	34.8	34.7	23	3.25	1.53	T	5.9
TOTAL					**39.56**	**32.09**	**31.5**	**12.6**
AVERAGE	**60.2**	**41.7**	**62.5**	**44.0**				
YEARLY AVERAGE	**50.9**		**53.2**					
HISTORICAL AVERAGE	50.4				36.02		26.7	

2016 Annual Report
Sewer Maintenance Department

The Sewer Maintenance department maintains a sanitary sewer system that reaches far outside the City of Findlay corporation limits. The sanitary sewer system has over 16,999 customers and is estimated to consist of over two hundred and ninety-five (295) miles of sewers and several thousand manholes. They also maintain 15.1 miles of sanitary force mains from various pump stations located both within the City of Findlay corporation limits and in the outlying area. Located on these force mains are 35 air relief valves that require weekly maintenance and replacement as needed to ensure efficient pumping and proper flows from the lift stations to the plant.

A total of seventy-two (72) reports of sewer problems were investigated in the year 2016. Only seven percent (7%) of the reports were due to a problem within the City's sewer system while the remaining ninety-three percent (93%) were determined to be in the homeowner's sewer. Thirteen percent (13%) of the 72 calls were received during nonscheduled work hours and required employees to be called in to work.

As part of a preventive maintenance program, all City sanitary sewers are cleaned every eight (8) years and those areas that historically have sewer problems are monitored and cleaned more often. In 2016, a total of 42 miles of sanitary sewer were cleaned by a high-pressure water sewer cleaner and vacuum truck called the sanitary vactor. This cleaning removed 533 cubic feet of debris from the City's sanitary system. The sanitary and storm vactors are often used to help other City departments with cleaning projects. The Water Treatment Plant, Water Pollution Control facility and even the City swimming pool have all utilized the vactor for the cleaning of tanks, basins, wet wells, or drains. In 2016, the vactor crews also assisted the Water Distribution department with hydro-excavation of fourty-five (45) services as they checked for lead service lines within the system.

Vactor

Additional preventative efforts included the application of grease treatment to 5,425 feet of sanitary sewer to decrease grease build up and treatment of 1,455 feet of sanitary sewer by private contractor to decrease the effect of tree root intrusion on the sewers. The root treatment process involves the spraying of foam on the roots within the sewer system which kills the roots without harming the tree. This helps to reduce sewer blockages within the lines and cuts down on the frequency that cleaning is required. A rat control maintenance program is also in place for the City sewers.

Throughout the year, four (4) sanitary sewer pipes and three (3) storm sewer pipes were repaired which had either collapsed or were damaged. Three (3) new catch basins were installed on the storm sewer at E. Edgar Avenue to help with localized storm water problems. The Sewer Maintenance Department also repaired manholes, constructed new manholes, adjusted castings to grade, and conducted dye tests.

The Sewer Maintenance Department, along with the Water Distribution Department, is required to locate and mark sewers and related structures as part of the Ohio Utilities Protection Service. During 2016, there was thirteen thousand nine hundred and eighty-eight (13,988) requests for sewer locates. This is almost double the previous high in 2005, of seven thousand eight hundred and thirty nine (7,839).

As required by OSHA and the City of Findlay's confined space entry policy, all confined space entries must be documented. During 2016, only three (3) entries were required by maintenance personnel to the sewer system. The Sewer Maintenance Department uses an enclosed trailer to allow the confined space equipment to be readily available at the job site. This reduces entry time and provides a safer entry procedure with all equipment close at hand.

As part of the 2016 Capital Improvement Plan, the Sewer Maintenance department was able to replace an outdated 1976 GMC television truck with a 2016 Ford Camera Truck. The new truck features a pipe ranger transporter which is a heavier unit that allows for better maneuverability when solids are on the bottom of the pipe. The pipe ranger camera allows for inspection of up to 48" pipe, has an inclinometer that measures pipe grade, and an offers electric camera lift to avoid the lens going under water. The system also has a lateral launcher transporter, which is a separate camera that allows for inspection of the main line and up to 150 feet in the lateral lines. Both units have a much better picture quality than the previous cameras. All images are sent to the dual monitors in the control room where the operator can view both the mainline and lateral inspections at the same time. The updated software has the adaptability to write, print reports, and view maps.

The new truck went into service in August and has been a great addition to the department. In 2016, 41,154 feet of sewer were televised and assigned a rating based on their condition.

The televising program has allowed us to determine the sewers most in need of attention as we plan our sewer lining project. Sewer lining literally creates a "pipe" within the existing pipe and it restores the structural integrity of the original sewer line without digging it up. It is a cost effective alternative to sewer replacement that prevents root intrusion, stops infiltration and leaks into the sewer, increases flow rates, and is corrosion resistant to the hydrogen sulfide gas which is created within the sewer system. There were 10,382 feet of sewers lined in 2016 and it is expected that the program will continue in 2017.

2016 Sewer Lining

Pipe Size	Location	To	From	Length (LF)
8-inch	Church Hill Dr.	Western	Lilac	410.00
10-inch	Church Hill Dr.	Western	Lilac	1,017.00
10-inch	Cotttonwood St.	Ferndale	North Dead End	396.00
10-inch	Delmonte	MH North of Ferndale	End of Ferndale	410.00
10-inch	E/W Easement Edith/Melrose	East of Broad	2nd MH East Of Broad	790.00
10-inch	E/W Easement South of Edith	Delmonte	Cottonwood	700.00
12-inch	Edinborough Dr.	Beecher	Greenacre	1,805.00
10-inch	Ferndale Ave	Delmonte	Cottonwood	510.00
10-inch	Greenacre Dr.	Hillcrest	W. Bigelow	977.00
10-inch	Greendale	BMH on Greendale	40' South on Bristol	40.00
10-inch	Hollybrook Dr.	Edinborough Dr	Sheffield	892.00
10-inch	N/S Easement Bank/ Blanchard	Sixth St	South Dead End	2,018.00
15-inch	Northtowne Dr.	South Villa	W. Melrose	417.00
Total				10,382.00

Before Lining

After Lining

In 2016, construction of a cold storage building got underway for the Sewer Maintenance department. This departmental project was funded through the capital improvement plan and will provide much needed storage space for equipment that was formerly stored outdoors. Much of the labor on this project has been performed by WPCC employees.

Many other projects funded through the Capital Improvement plan and managed through the Engineering department were also completed throughout the year.

2016 Sewer Projects

Description	Project	Type
10-inch N12	G & H St. Sewer Sep.	Storm Sewer
12-inch N12	G & H St. Sewer Sep.	Storm Sewer
15-inch N12	G & H St. Sewer Sep.	Storm Sewer
18-inch N12	G & H St. Sewer Sep.	Storm Sewer
24-inch N12	G & H St. Sewer Sep.	Storm Sewer
Manhole	G & H St. Sewer Sep.	Storm Structure
Catch Basin	G & H St. Sewer Sep.	Storm Structure
15-inch PVC	Santee & Ely Replacement	Sanitary Sewer
8-inch N12	Fostoria Ave Phase II	Storm Sewer
10-inch N12	Fostoria Ave Phase II	Storm Sewer
12-inch N12	Fostoria Ave Phase II	Storm Sewer
15-inch N12	Fostoria Ave Phase II	Storm Sewer
18-inch N12	Fostoria Ave Phase II	Storm Sewer
24-inch N12	Fostoria Ave Phase II	Storm Sewer
30-inch N12	Fostoria Ave Phase II	Storm Sewer
Manhole	Fostoria Ave Phase II	Storm Structure
Catch Basin	Fostoria Ave Phase II	Storm Structure

The Sewer Maintenance and the Water Pollution Control Departments play an integral role in keeping the residents of Findlay safe when the Blanchard River nears and exceeds flood stage. They worked tirelessly along with the authorities to barricade and close flooded streets as well as responding to an increased number of sewer concerns during flood events.

Installation of flap gates on all Combined Sewer Overflows has also continued to prevent surcharging of the sewer system during flood conditions. Additional flap gates are installed on storm sewers to help minimize street flooding during high water levels of the Blanchard River and its tributaries.

During 2016, approximately thirty-seven percent (37%) of the Sewer Maintenance Unit man-hours were spent maintaining sanitary sewers, thirty-nine percent (39%) on storm collection system and the remaining twenty-four percent (24%) on building and equipment maintenance, vacation, sick leave, confined space entry training and equipment use and various other safety training.

2016

SEWER MAINTENACE

ANNUAL REPORT OF OPERATIONS

MONTH	CLEANING									CATCH BASINS		CONFINED SPACE ENTRIES	MANHOLES ADJUSTED #	SEWER CALLS #	TELEVISED	
	BUCKET		VACTOR						JET							
	SANITARY FEET	STORM FEET	SANITARY FEET	DEBRIS REMOVED FT3	STORM FEET	DEBRIS REMOVED FT3	BASINS #	DEBRIS REMOVED FT3	FLUSHING FEET	REPAIRED #	PATCHED #				SANITARY FEET	STORM FEET
JANUARY	0	0	3,136	1	0	0	6	0	0	0	3	0	1	5	2,885	0
FEBRUARY	0	0	16,964	17	0	0	130	1,313	0	0	1	0	11	3	3,451	1,932
MARCH	0	0	23,678	43	0	0	200	2,424	0	0	0	2	8	8	6,111	2,723
APRIL	0	0	12,498	96	330	0	255	3,030	0	0	23	0	3	8	0	0
MAY	0	0	29,575	107	0	0	374	3,939	0	0	12	0	9	4	5,004	0
JUNE	0	0	19,164	24	31	0	375	3,737	0	0	16	0	2	7	3,158	0
JULY	0	0	21,652	77	0	0	297	2,727	0	0	28	0	0	4	7,410	0
AUGUST	0	0	30,340	44	0	0	364	3,535	0	0	3	0	0	6	4,733	0
SEPTEMBER	0	0	20,600	34	0	0	203	1,515	0	0	17	0	2	4	3,511	0
OCTOBER	0	0	22,985	68	0	0	266	1,717	0	0	16	1	10	8	3,880	0
NOVEMBER	0	0	21,360	22	921	10	216	1,717	0	0	8	0	1	6	1,011	0
DECEMBER	0	0	0	0	0	0	102	909	0	0	12	0	1	9	0	0
TOTAL	0	0	221,952	533	1,282	10	2,788	26,563	0	0	139	3	48	72	41,154	4,655
2015 TOTAL	0	0	202,004	191	3,513	25	2,222	20,099	0	11	221	4	51	100	58,780	565

SEWER MAINTENANCE
COST OF OPERATION

	2015	2016
PAYROLL & BENEFITS	$764,077	$690,320
UTILITIES (electric, water & sewage)	$12,843	$13,472
WATER & SEWER LINE MAINTENANCE	$30,446	$7,790
VEHICLE & EQUIPMENT MAINTENANCE	$39,791	$22,848
FUEL	$25,771	$17,770
MISCELLANEOUS	$33,693	$30,444
CAPITAL EQUIPMENT	$135,818	$32,011
TOTAL	**$1,042,439**	**$814,656**

2016 Annual Report
Stormwater Maintenance Department

The Stormwater Maintenance Department works in a combined effort with Sewer Maintenance to maintain and repair the storm sewer system within the City of Findlay corporation limits. The collection system consists of approximately six thousand four hundred (6,400) catch basins connected by an unknown amount of sewer line and manholes. Throughout the year, two thousand seven hundred and eighty-eight (2,788) catch basins along with one thousand two hundred eight-two (1,282) feet of storm sewer were cleaned. These efforts removed 26,563 cubic feet of debris from the stormwater collection system. A total of one hundred thirty nine catch basins (139) were patched.

Through the Engineering department, a private contractor completed a sewer separation project at G & H and Lynn Streets in an effort to continue removing stormwater from the sanitary system. These separations help decrease the amount of flow to the treatment plant during rain events and cut down on the amount of stormwater that is unnecessarily treated.

In an effort to decrease stormwater pollution, the Public Works department with partial funding from the Stormwater Maintenance unit put in over 1,200 man hours on the street sweepers in 2016. This sweeping removed 1,080 cubic yards of debris from the streets and prevented this pollution from entering into the storm sewer system and then flowing into the receiving stream.

With Ordinance 2015-37 and 2015-38 concerning illicit discharge, illegal connection control, drainage, and erosion and sediment control in place, Mitchell Heacock, in the Engineering Department has been able to put the Storm Water Management Plan (MS4) into action.
The plan addresses the following six minimum controls which were set forth by the OEPA:

- Public Education and Outreach
- Public Participation and Involvement
- Illicit Discharge Detection and Elimination
- Construction Site Runoff Control
- Post Construction Storm Water Management
- Pollution Prevention and Good Housekeeping

Each of these controls have BMPs (Best Management Practices) or activities which have measurable goals. Each of these goals have an implementation schedule to track the progress of the activities that are being achieved.

There are currently seven (7) private projects under construction that are following the MS4 ordinances and they are being “spot checked” for compliance by the Engineering department. One project has been completed and has a long term yearly maintenance agreement in place.

During the year, dry weather screening of outfalls and ditches within the city limits continued in an effort to eliminate illicit discharge. Sixty-one (61) outfalls located in Wolf Ditch and the Tall Timbers area were successfully screened.

All City departments submitted their of Municipal Operations Pollution Prevention/Good Housekeeping reports which require each city department to complete quarterly non-stormwater inspections during dry weather, semi-annual stormwater inspections during rain events, and an annual site inspection report each year that sums up all findings from the year and explains the actions taken to correct any problems. There were again no significant issues found from this reporting.

Continued outreach to the public through the distribution of fliers in the water and sewer bills helps to alert residents of the hazards of storm water pollution and how they can prevent it. Educational materials were also provided during field trips and tours given at the WPCC.

STORMWATER MAINTENANCE COST OF OPERATION		
	2015	**2016**
PAYROLL & BENEFITS	$135,527	$139,057
WATER LINE, SEWER LINE, & CATCH BASIN MAINTENANCE	$11,088	$23,831
VEHICLE & EQUIPMENT MAINTENANCE	$10,903	$18,824
STREET SWEEPING	$38,926	$20,173
MISCELLANEOUS	$10,758	$7,685
CAPITAL EQUIPMENT	$200,132	$0
TOTAL	**$407,335**	**$209,569**