

The City of

**Alliance,** Ohio 44601

WASTEWATER TREATMENT PLANT

*"The Carnation City"*

12251 Rockhill Ave., N.E.

# ANNUAL REPORT

## 2021



SUBMITTED BY:  
KIMBERLY LAQUATRA, SUPERINTENDENT  
JOSHUA ZWICK, ASSISTANT SUPERINTENDENT

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The following reports are available upon request:

Annual Sludge Report

Annual & Quarterly Pretreatment Reports (5)

Monthly Operating Reports (12)

Annual Air Pollution Report

Annual & Quarterly Stormwater PPP (5)

Detailed information about the treatment plant processes is also available.

## INTRODUCTION

The City of Alliance Wastewater Treatment Plant (AWWTP) has been located at 12251 Rockhill Ave., N.E. since 1929. The AWWTP is classified as a Class IV Plant according to the Ohio EPA. Our current National Discharge Elimination System (NPDES) Permit went into effect on November 1, 2018 and will expire on January 31, 2022. The Ohio EPA conducted an inspection of the AWWTP on November 22, 2021. The purpose of the inspection was to evaluate the operation and maintenance of the AWWTP, gather supplemental information for renewal of the NPDES permit, and to evaluate compliance with the terms and conditions of the NPDES permit. No violations were found. The full report is available upon request. The Ohio EPA is in the process of writing the renewal.

The AWWTP treats domestic, commercial and industrial wastewater from the City and areas surrounding the City. There are currently 13 Significant Industrial Users. Three of them are considered Categorical Users. Five of the Industrial Users have a process discharge that is regularly monitored by the City. Four are landfills that discharge more than 25,000 gallons per day. The flows from Industrial Users are low enough that there is no noticeable impact on the plant. Annual inspections are done at all Significant Industrial Users sites through our Industrial Pretreatment Program which includes collecting samples as described in their permits.

The City also receives additional flow from septage and leachate. We have fourteen landfills that transport leachate to the Alliance Wastewater Treatment Plant. Contracts expire on 12/31/2022. The fee schedule is \$22.50/1000 gallons for the first 2 million gallons a year, then \$20.00/1000 gallons for the remaining gallons. There were twenty-six septic companies permitted last year. Each paid a \$100 permit fee and pays \$63.00/1000 gallons of septage.

The City of Alliance Wastewater Treatment Plant original design dates back to 1929, the current system configuration was completed in 1984. The most recent major upgrade occurred in 2018, when the City added a thermal treatment process to facilitate their biosolids program.

The City's population is approximately 22,000. The City of Alliance Wastewater Treatment Plant is designed to treat 7.5 million gallons per day (MGD). The actual average flow per day is 5.0 MGD. The maximum hydraulic capacity prior to inline flow equalization is 32 MGD. The maximum hydraulic capacity after inline flow equalization is currently 19 MGD. We are currently in the construction phase to increase the flow after equalization to 50 MGD. The purpose of the project is to increase the hydraulic capacity to reduce/eliminate sewer overflow bypass events and back-ups that occur as a result of wet weather events.

The final effluent discharges into Beech Creek before it travels to the Mahoning River. This is also the head works of Berlin Reservoir. Berlin Reservoir is used for flood control and recreational purposes.

## HISTORY OF ALLIANCE WASTEWATER TREATMENT

The history of wastewater treatment in Alliance goes back to 1895. The original plant was located on Keystone Street and was designed for chemical precipitation, the second such treatment facility in the State. The City's second plant was built in 1912 and was located on Gaskill Street. It was a contact bed, fine grain filter type of sewage plant. The 1912 plant was modified in 1916. Plain settling basins were converted to Imhoff tanks and additional fine grain filters were installed. The first glass covered sludge drying beds in the country were constructed at this plant.

Due to rapid population growth and the need for additional treatment facilities, a second plant was built in 1929 on the site of the present treatment plant. This was the fourth plant in the history of sewage treatment in Alliance and the first to incorporate secondary treatment of wastewater. Raw wastewater was screened and grit removed. Imhoff tanks provided primary settling and anaerobic digestion. The secondary treatment was provided by two trickling filter beds. Final settling followed in two clarifiers. Digested sludge was dried in nine glass covered drying beds and nine open beds.

Over the years, the original plant was modified and improved upon to replace worn or outdated equipment. New facilities were also added as treatment needs changed. In 1943, the screening and grit removal facilities were renovated, and the trickling filters modified. In 1953, a 50 foot diameter anaerobic digester was added. This digester was equipped with a floating cover for gas collection. The collected gas was burned to heat the sludge and stabilize it. A major renovation program was completed in 1958. This included two 50 foot primary settling tanks (one is now the gravity thickener), a second anaerobic digester (still in use), 9 new sludge beds and a vacuum filter. In 1970 chlorination facilities were added to disinfect the secondary effluent prior to discharge.

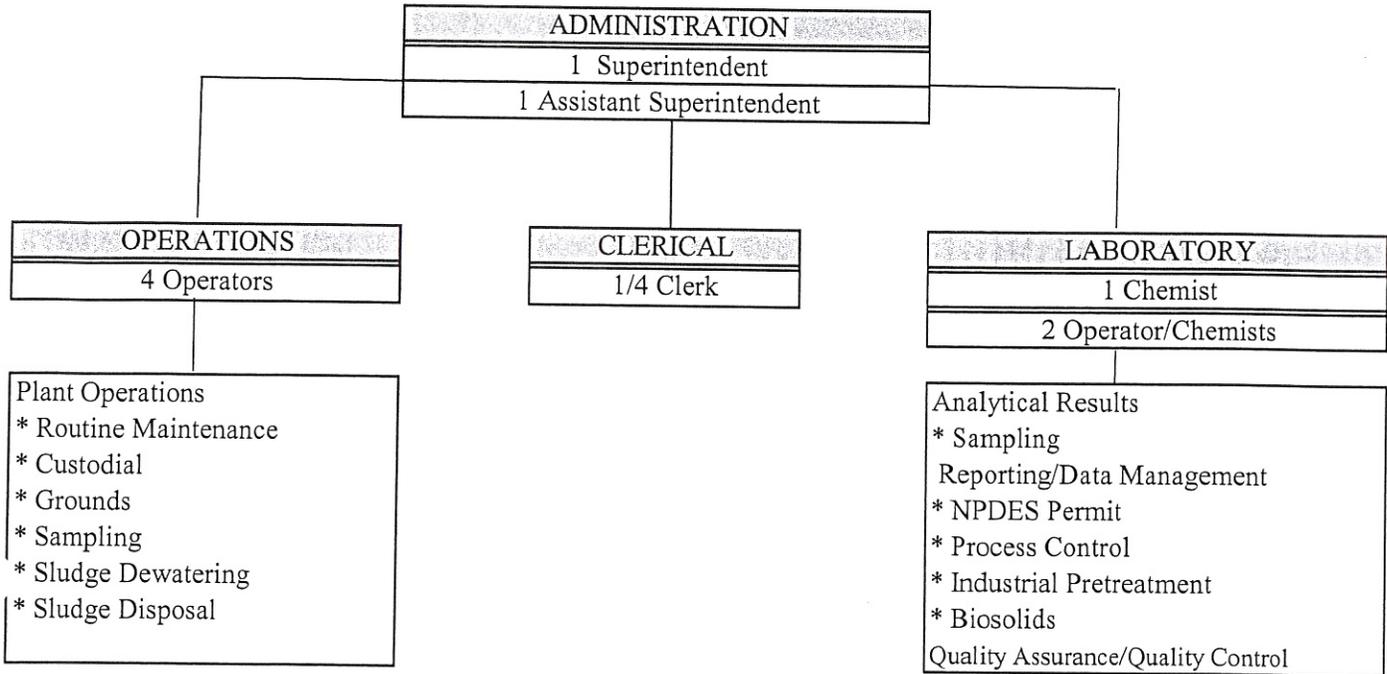
In 1984, a few components of the old treatment plant were renovated. The old administration building, sludge filter building and one primary settling tanks were renovated and put to reuse. They are now the maintenance building, the scum concentrator building and the gravity thickener building. All other existing process units were demolished. Additions to plant included: the administration building, grit tanks and screw lift pump wells, the primary clarifier building, screw lift pumps, equalization basin, aeration tanks and secondary clarifiers, addition to the chlorine contact tank, digester building, and sludge holding tanks.

Since 1984 several improvements have been made. Influent flow metering was installed in 1995. In 1996, dechlorination equipment was installed to reduce the chlorine in the final effluent, a new chemical feed building was built, and the flow equalization basin was updated by removing the rock liner and replacing it with a high density polyethylene liner. The chemical feed building stores and feeds ferric chloride for phosphorus removal and caustic soda to increase the pH of the final effluent. The comminutors were replaced with automatically cleaned fine screens in 2002. In 2008, the screw pumps were replaced with submersible pumps, and in 2010, the City began to install a SCADA system. A Sludge Dewatering Facility and two dosing tanks were completed in 2017. The latest addition in 2018 was a Thermal Treatment system that kills pathogens in the sludge making it exceptional quality biosolids. A No Feasible Alternative Analysis was conducted in 2019, determining the need for an additional Secondary Clarifier to increase peak flow capacity and eliminate the bypasses at the plant. Phase 1 construction began January of 2022. The City of Alliance will continue to upgrade the wastewater treatment plant to meet the ever changing needs of our community and to comply with current and future environmental regulations.

## PLANT STAFFING

The Wastewater Treatment Plant has a staff of 9.25 employees. The functions discussed in this report are carried out by a Superintendent, an Assistant Superintendent, four Operators, one Chemist, two Operator/Chemists and a part time Plant Clerk.

Below is our Table of Organization at the end of 2021:



The Operators are scheduled to work three shifts/day with staggered days off in order to cover 24 hours/day, 7 days/week. All other personnel work day-shift Monday through Friday. The Superintendent, Ass't. Superintendent, two Operator Chemists and the four Operators are State Certified in Wastewater Treatment. The Superintendent and Ass't. Superintendent have a Voluntary Lab Analyst Certificate. In addition, seven personnel have a Commercial Drivers License (CDL).

Superintendent:	Kimberly Laquatra
Assistant Superintendent:	Josh Zwick
Operators:	Jim Cowgill, Steve Ray, Ron Timmerman and TJ Yost
Chemist:	Laurie Lipely
Operator/ Chemists:	James Bresnahan and Alex Rotz-Shafer
Clerk:	Megan Morrison

## ALLIANCE WWTP NPDES PERMIT

Effective Date: November 1, 2018

Expiration Date: January 31, 2022

### FINAL EFFLUENT LIMITS

PARAMETER	CONCENTRATION LIMITS		
	30 DAY	7 DAY	1 DAY
CBOD <sub>5</sub>	10 mg/l	15 mg/l	
TSS	20 mg/l	30 mg/l	
Oil and Grease	Not to exceed 10 mg/l at any time.		
Nitrogen, Ammonia (summer only)	2.0 mg/l	3.0 mg/l	
Phosphorus, T. (P)	1.0 mg/l	1.5 mg/l	
E. Coli (summer only)	126/100 ml	284/100 ml	
Chlorine Residual (summer only)	Not to exceed 0.019 mg/l at any time.		
pH	Minimum of 6.5 S.U., maximum of 9.0 S.U.		
Dissolved Oxygen	Not less than 6.0 mg/l at any time.		

Monitoring only is required (no limit) for: water temperature; chemical oxygen demand; total kjeldahl nitrogen; total nitrate plus nitrite; free cyanide; total copper; total cadmium; dissolved hex. chromium; total beryllium; total nickel; total zinc; total lead; total chromium; total mercury; total dissolved solids; acute toxicity; chronic toxicity and flow rate.

mg/l = milligrams/liter or ppm = parts per million

µg/l = micrograms/liter or ppb = parts per billion or 1/1000 mg/l

ng/l = nanograms/liter or ppt = parts per trillion or 1/1000 µg/l

CITY OF ALLIANCE WASTEWATER TREATMENT PLANT  
SUMMARY OF OPERATING DATA - 2021

**RAW INFLUENT**

Month	pH MAX	pH MIN	TSS mg/l	CBOD mg/l	Phos mg/l	NH4 mg/l	TKN mg/l	CN, F. ug/l	Phenol µg/L	TDS mg/l	HEX-Cr µg/L	As µg/L
Jan	7.54	7.38	185	362.0	4.06	67.5	47.4	<3.0	<50	1056	19.0	<10
Feb	7.68	7.38	223	436.0	3.85	83.2	44.4	<3.0		1356	25.0	<10
Mar	7.46	7.32	906	471.8	4.32	52.3	49.6	<3.0		1116	<25	<10
April	7.42	7.17	626	554.8	4.52	35.5	105.0	4.000	308.0	1152	<10	17.5
May	7.46	7.20	290	356.1	3.72	31.9	32.1	<3.0		664	<25	<10
June	7.56	7.24	388	496.8	3.38	50.2	32.1	<3.0		1100	<10	<10
July	7.56	7.21	317	410.5	3.95	51.9	82.5	<3.0	116.0	1228	67.5	10.6
Aug	7.63	7.21	341	545.3	4.48	60.6	89.8	<3.0		1168	<25	<10
Sept	7.70	7.18	634	610.0	4.53	59.1	85.1	<3.0		1204	<10	<10
Oct	7.67	7.30	1180	718.2	6.12	64.9	206.0	<3.0		960	<25	<10
Nov	7.67	7.41	198	515.2	3.57	54.2	71.3	<3.0	250.0	1052	26.6	<10
Dec	7.64	7.38	309	525.1	2.58	53.9	63.8	<3.0		924	<25	<10
Avg.	7.58	7.28	466	500.2	4.09	55.4	80.0	3.08	181.0	1082	24.4	10.7

Month	Ag ug/L	Cd µg/L	Cr µg/L	Cu µg/L	Pb µg/L	Hg ng/L	Mo µg/L	Ni µg/L	Se µg/L	Zn ug/L
Jan	<1	<1	20.5	21.8	<20	15.0	<10	14.3	<10	51.2
Feb	<1	<1	20.0	18.1	<10	162.0	<10	23.3	<10	165.6
Mar	<1	<1	16.9	19.9	20.7	29.7	<10	27.3	<10	<50
April	<1	<1	26.7	27.1	<10	10.7	<10	29.8	<10	174.2
May	<1	<1	11.9	<10	73.3	121.0	<10	<10	<10	536.9
June	<1	<1	18.0	18.4	<10	481.0	<10	16.2	<10	<50
July	<1	9.0	48.8	71.0	<10	16.7	<10	60.4	<10	598.3
Aug	<1	<1	22.3	19.0	<10	71.3	<10	17.1	<10	161.5
Sept	<1	<1	18.8	<10	<10	72.7	<10	11.0	<10	64.4
Oct	<1	11.0	220.0	790.6	167.4	280.0	38.0	135.5	<10	1422.0
Nov	<1	<1	40.7	53.2	41.9	13.7	<10	24.1	<10	110.7
Dec	<1	2.62	31.0	67.1	64.9	38.7	<10	29.1	<10	206.7
Avg.	<1	2.63	41.3	93.8	37.4	100.3	12.3	33.2	<10	299.3

CITY OF ALLIANCE WASTEWATER TREATMENT PLANT  
SUMMARY OF OPERATING DATA - 2021

**PRIMARY EFFLUENT**

Month	TSS mg/l	CBOD mg/L	Phos mg/L	NH4 mg/L	Phenol µg/L	TDS mg/L	Hex-Cr µg/L	As ug/L	Cd µg/L	Cr µg/L	Cu µg/L
Jan	78	198.8	3.21	78.2	<50	1088	<25	<10	<1	19.6	21.9
Feb	85	223.2	4.57	91.7		1540	45.2	<10	<1	45.2	39.6
Mar	91	145.2	3.51	58.6		1092	11.2	<10	<1	11.2	<10
April	56	144.5	3.18	36.7	61.0	1120	18.0	11.2	<1	18.0	28.2
May	60	134.2	1.08	36.8		760	<10	<10	<1	<10	14.2
June	56	213.2	2.45	63.5		1112	15.7	16.0	<1	15.7	45.4
July	48	150.1	2.91	51.0	<50	1132	28.8	<10	1.3	28.8	38.9
Aug	60	184.9	3.5	64.0		1164	19.8	<10	<1	19.8	17.2
Sept	54	184.8	2.82	62.8		996	<10	<10	<1	<10	28.3
Oct	87	231.3	3.29	66.9		1092	19.7	<10	<1	19.7	45.4
Nov	58	215.0	2.44	58.1	<50	1160	16.7	<10	<1	16.7	<10
Dec	59	234.3	2.44	56.6		1112	12.6	<10	<1	12.6	22.6
Avg.	66	188.3	3.0	60.4	52.8	1114	19.4	10.6	1.0	18.9	26.8

Month	Pb µg/L	Mo µg/L	Ni µg/L	Se µg/L	Ag µg/L	Zn ug/L
Jan	<10	<10	17.1	<10	<1	<50
Feb	<10	<10	40.1	<10	<1	145.7
Mar	<10	<10	33.5	<10	<1	<50
April	<10	<10	22.7	<10	<1	107.0
May	57.8	<10	<10	<10	<1	66.8
June	10.9	<10	16.7	<10	<1	<50
July	<20	<10	49.8	<10	<1	51.1
Aug	<10	<10	18.1	<10	<1	89.9
Sept	<10	<10	10.3	<10	<1	143.3
Oct	<10	<10	18.8	20.8	<1	76.4
Nov	10.5	<10	14.7	<10	<1	<50
Dec	32.9	<10	19.2	<10	<1	123.5
Avg.	16.8	<10	22.6	10.9	<1	83.7

CITY OF ALLIANCE WASTEWATER TREATMENT PLANT  
SUMMARY OF OPERATING DATA - 2021

**FINAL EFFLUENT**

Month	Flow MGD	Temp °C	DO mg/L	pH max.	pH min.	TSS mg/L	CBOD mg/L	Phos mg/L	NH4 mg/L	TKN mg/L	Nitrate mg/L	O&G mg/L
Jan	5	10	8.40	7.53	7.37	10	4.83	0.33	0.15	3.83	34.0	<4
Feb	5	9	7.66	7.25	7.19	15	6.77	0.64	7.65	7.74	37.0	<4
Mar	5	11	7.62	7.17	7.27	14	10.11	0.73	1.63	4.34	22.7	<4
April	4.4	14	7.87	7.31	7.20	13	6.70	0.76	<0.1	8.93	34.8	<4
May	4.9	17	7.81	7.28	7.15	5	2.58	0.48	<0.1	2.98	28.7	<4
June	4.3	21	6.65	7.24	7.16	2	2.65	0.63	0.83	3.96	39.3	<5
July	5.5	23	6.35	7.35	7.20	1	2.41	0.75	0.12	4.28	66.4	<5
Aug	4.9	24	6.84	7.38	7.29	1	1.92	0.43	0.21	5.45	21.1	<5
Sept	5.1	23	6.56	7.38	7.27	4	2.71	0.84	0.17	3.29	39.9	<5
Oct	5.5	22	6.64	7.40	7.31	2	2.24	0.51	<0.1	4.33	78.0	<5
Nov	5.2	17	7.79	7.50	7.41	7	3.19	0.53	<0.1	1.86	32.6	<5
Dec	5.6	13	7.89	7.42	7.37	2	3.72	0.27	<0.1	4.01	31.1	<5
Avg.	5.0	17	7.34	7.35	7.27	6	4.15	0.58	0.94	4.58	38.8	4.58

Month	COD mg/L	CN, F. mg/L	Phenol µg/L	TDS mg/L	Cl, F. ug/L	E. Coli #/100	Hex-Cr ug/L	Ortho mg/L	As ug/L	Cd µg/L	Cr µg/L	Cu µg/L
Jan	93.3	<3.0	<50	1284			<25	<0.2	<10	<1	<10	15.3
Feb	129.4	<3.0		1218			<10	<0.2	<10	<1	<10	<10
Mar	84.3	<3.0		998			<10	<0.2	<10	<1	<10	<10
April	114.4	<3.0	<50	926			<25	0.2	<10	<1	14.5	28.6
May	54.2	<3.0		944	0.04	27	<25	0.3	<10	<1	<10	<10
June	38.7	<3.0		1144	0.03	21	<25	0.6	<10	<1	<10	<10
July	35.5	<3.0	<50	1300	0.03	31	<25	0.3	<10	<1	11.7	<10
Aug	57.6	<3.0		1118	0.03	51	<25	<0.2	<10	<1	<10	<10
Sept	63	<3.0		840	0.03	44	<25	0.6	<10	<1	<10	<10
Oct	93	<3.0		1042	0.04	40	<25	0.4	<10	<1	12.5	<10
Nov	110.5	<3.0	<50	1056			<25	0.3	<10	<1	<10	<10
Dec	54.1	<3.0		1136			<25	0.3	<10	<1	<10	<10
Avg.	77.3	<3.0	<50	1084	0.03	34	22.5	0.3	<10	<1	10.7	12.0

Month	Pb µg/L	Hg ng/L	Mo µg/L	Ni µg/L	Se µg/L	Ag µg/L	Zn µg/L
Jan	<20	2.21	<10	<10	<10	<1	54.0
Feb	<10	2.6	<10	17.9	<10	<1	56.3
Mar	<10	4.99	<10	41.0	<10	<1	<50
April	<10	1.6	<10	32.5	<10	<1	77.4
May	62.6	3.02	<10	<10	<10	<1	70.0
June	<10	1.87	<10	15.3	<10	<1	<50
July	<10	0.84	<10	26.1	<10	<1	<50
Aug	<10	2.27	<10	13.9	<10	<1	<50
Sept	<10	0.65	<10	<10	<10	<1	62.5
Oct	<10	2.84	<10	20.6	<10	<1	<50
Nov	<10	1.54	<10	13.8	<10	<1	<50
Dec	<10	0.917	<10	14.3	<10	<1	<50
Avg.	15.2	2.11	<10	18.8	<10	<1	55.9

Acute Tox. <i>P. promelas</i>	Chronic Tox. <i>P. promelas</i>	Acute Tox. <i>C. dubia</i>	Chronic Tox. <i>C. Dubia</i>
<0.2	<1.0	<0.2	<1.0
<0.2	<1.0	<0.2	<1.0

CITY OF ALLIANCE WASTEWATER TREATMENT PLANT  
SUMMARY OF OPERATING DATA - 2021

**UPSTREAM**

Month	Temp °C	DO mg/L	pH	Phos mg/L	NH4 mg/L	NITRATE mg/L	TDS mg/L	E. Coli #/100	As µg/L	Cd µg/L	Cr µg/L
Jan	5	11.64	7.91	<0.2	0.1	1.02	384		<10	<1	<10
Feb	1	13.13	7.97	<0.2	0.26	0.52	640		<10	<1	<10
Mar	3	11.24	7.56	<0.2	0.17	0.6	308		<10	<1	<10
April	13	11.11	7.69	<0.2	<0.1	<0.4	408		<10	<1	<10
May	15	7.47	7.32	<0.2	0.32	<0.4	242	710	<10	<1	<10
June	18	10.85	7.58	<0.2	<0.1	0.66	316	200	<10	<1	<10
July	24	8.09	7.67	<0.2	<0.1	1.38	292	20	<10	<1	<10
Aug	21	10.73	8.21	<0.2	<0.1	<0.4	480	40	<10	<1	<10
Sept	21	5.65	7.32	<0.2	0.23	<0.4	440	140	<10	<1	<10
Oct	18	7.99	7.88	<0.2	<0.1	<0.4	656	100	<10	<1	<10
Nov	8	9.88	7.89	<0.2	<0.1	<0.4	368		<10	<1	<10
Dec	4	11.42	7.95	<0.2	<0.1	<0.4	508		<10	<1	<10
Avg.	13	9.93	7.75	<0.2	0.15	0.58	420	108	<10	<1	<10

Month	Cu µg/L	Pb µg/L	Mo µg/L	Ni µg/L	Se µg/L	Ag µg/L	Zn µg/L
Jan	<10	<10	<10	<10	<10	<1	<50
Feb	<10	<10	<10	<10	<10	<1	<50
Mar	<10	<10	<10	<10	<10	<1	<50
April	<10	<10	<10	<10	<10	<1	<50
May	<10	53.7	<10	<10	<10	<1	56.3
June	<10	12.1	<10	<10	<10	<1	<50
July	<10	<10	<10	12.6	<10	<1	<50
Aug	<10	<10	<10	<10	<10	<1	<50
Sept	<10	<10	<10	<10	<10	<1	<50
Oct	<10	<10	<10	<10	<10	<1	<50
Nov	<10	<10	<10	<10	<10	1.3	<50
Dec	<10	<10	<10	<10	<10	<1	<50
Avg.	<10	13.8	<10	10.2	<10	1.0	50.5

Acute Tox. <i>P.promela</i>	Chronic Tox. <i>P.promelus</i>	Acute Tox. <i>C.dubia</i>	Chronic Tox. <i>C.dubia</i>
<2.0	<5.0	<0.2	<1.0
<2.0	<5.0	<0.2	<1.0

CITY OF ALLIANCE WASTEWATER TREATMENT PLANT  
SUMMARY OF OPERATING DATA - 2021

**DOWNSTREAM**

Month	Temp °C	DO mg/L	pH	Phos mg/L	NH4 mg/L	NITRATE mg/L	TDS mg/L	E. coli #/100	HEX-Cr µg/L	As µg/L
Jan	5	11.84	7.71	<0.2	<0.1	0.92	332		<10	<10
Feb	2	13.14	7.9	<0.2	0.28	2.51	680		<25	<10
Mar	4	10.99	7.74	<0.2	0.22	0.59	292		<10	<10
April	13	10.68	7.55	<0.2	<0.10	0.45	408		<25	<10
May	15	7.40	7.10	<0.2	0.16	0.52	324	570	<10	<10
June	19	12.20	7.90	<0.2	0.1	0.7	404	150	<25	<10
July	25	7.92	7.87	<0.2	<10	1.4	304	120	<25	<10
Aug	22	10.77	8.24	0.22	<0.10	<0.4	5408	20	<25	<10
Sept	21	5.66	7.61	<0.2	0.22	0.77	408	120	<25	<10
Oct	19	7.27	7.59	<0.2	0.19	19.7	792	100	<25	<10
Nov	8	9.69	7.89	<0.2	<0.10	1.71	416		<25	<10
Dec	5	11.12	7.91	<0.2	<0.10	<0.4	540		<25	<10
Avg.	13	9.89	7.75	0.2	0.15	2.51	859	116	21.25	<10

Month	Cd µg/L	Cr µg/L	Cu µg/L	Pb µg/L	Mo µg/L	Ni µg/L	Se µg/L	Ag µg/L	Zn µg/L	Hardness
Jan	<1	<10	<10	<10	<10	<10	<10	<1	<50	160
Feb	<1	<10	<10	<10	<10	<10	<10	<1	<50	292
Mar	<1	<10	<10	<10	<10	<10	<10	<1	<50	152
April	<1	<10	<10	<10	<10	<10	<10	<1	<50	160
May	<1	<10	<10	52.2	<10	<10	10.7	<1	72.8	140
June	<1	<10	<10	14.6	<10	<10	<10	<1	<50	172
July	<1	<10	<10	<10	<10	13.2	<10	<1	<50	112
Aug	<1	<10	<10	<10	<10	<10	<10	<1	<50	122
Sept	<1	<10	<10	<10	<10	<10	<10	<1	51.9	252
Oct	<1	<10	<10	<10	<10	<10	<10	<1	<50	278
Nov	<1	<10	10.4	<10	<10	<10	<10	<1	<50	240
Dec	<1	<10	<10	<10	<10	<10	<10	1.7	<50	272
Avg.	<1	<10	10.0	13.9	<10	10.3	10.1	1.1	52.0	196



## VIOLATIONS

The City reported the following violations in 2021:

<u>Date</u>	<u>Violation</u>	<u>Explanation</u>
March	CBOD monthly concentration Limit Exceeded	High loadings
May	EQ Basin Overflow	Excessive rain

## **LABORATORY**

The laboratory at the Wastewater Treatment Plant routinely analyzes the wastewater and the sludges for 35 different parameters. In addition to testing samples collected at the plant, we also conduct tests on samples from the receiving stream, our Industrial Users, septic haulers and leachate from the landfills. Approximately 15,000 analyses are performed yearly on the wet chemistry side, 3,900 analyses for metals with an additional 5,000 quality control checks and 150 more analyses to determine our Method Detection Limit for each parameter.

The Chemists participate in the required Discharge Monitoring Report – Quality Assurance Study (DMRQA). The DMRQA Study contains blind samples of all the parameters we are required to test for according to our permit. The Chemists analyze the samples and report the results to determine if they are in the acceptable range.

Very few of the samples we collect are sent to an outside laboratory. For those samples it is more cost effective for us to contract with an outside lab than to buy the needed equipment.

In addition to the laboratory work, the Chemists also assume most of the data management and report generation work. They prepare and submit the monthly operating report.

The Chemist is in charge of the lab under the supervision of the Assistant Superintendent. There are two Operator/Chemists that assist the Chemist during high work volumes.

## **MAINTENANCE**

The routine preventative maintenance, such as: changing oil, lubrication, painting, lawn care, minor repairs, etc. is performed by our operators. A computer program is used to track and schedule the preventative maintenance. The maintenance department handles the heavier maintenance tasks that we don't have the manpower or equipment to do.

## **INDUSTRIAL PRETREATMENT**

The City's Industrial Pretreatment Program (IPP) is mandated by Federal and State Law based on the size of our treatment plant. It is considered an approved Pretreatment Program by the Ohio EPA. The IPP regulates and monitors the industries that are on our sewer system. The amount of pollutants each industry is permitted to discharge to us is determined based on either the limits set by the federal category of the industry, or by the local limits we develop.

As required in our NPDES Permit, we developed new local limits for our industries and submitted them to Ohio EPA. The local limits and modifications were approved and new permits were issued to our industries in 2018.

In 2021 we had 13 industries under permit. Each industry must be inspected once a year. Nine industries have a process discharge that we monitor by sampling their discharge four times a year each.

The program requires submittal of an annual report and quarterly reports. We must also publish yearly a list of the Industrial Users who were in Significant Non Compliance. The annual report and the quarterly reports are available to anyone who wants to review them.

## **AIR POLLUTION PERMIT**

In 2015, we were issued an Air Pollution Permit-to-Install and Operate for the boiler used to heat the sludge in our primary digester and the flare that burns off the excess methane gas produced by our digesters.

The Permit requires us to monitor the methane gas for the hydrogen sulfide concentration weekly and the BTU value monthly. In addition, we have to monitor the pilot light on the flare to assure it is always lit when gas is being sent to the flare and keep records of the gas usage.

An annual report is required and is available to anyone who wants to review it.

## **STORMWATER POLLUTION PREVENTION PLAN**

In 2017, we were required to develop and implement a Stormwater Pollution Prevention Plan. The purpose of the plan is to improve water quality by minimizing the possibility of pollutants being contained in storm water being discharged from the Wastewater Treatment Plant's site. Routine and visual inspections are done quarterly and a comprehensive inspection is done annually.

## HAULED WASTE

The City currently accepts leachate from landfills and residential and commercial septage waste. Leachate- We took leachate from fourteen landfills in 2021. Contracts expire on 12/31/2022. The fee schedule is \$22.50-1000 gallons for the first 2 million gallons a year, then \$20.00/1000 gallons for the remaining gallons. Septage- Twentysix companies were permitted last year. Each paid a \$100 permit fee and \$63.00/1000 gallons of septage.

<b>LANDFILLS</b>	<b>GAL TREATED</b>	<b>COST</b>
American	4,766,562.97	\$100,331.26
Akron Central Transfer	387,300.00	\$8,714.25
Statewide	6,000.00	\$135.00
Suburban	8,995,899.98	\$184,918.00
Apex	16,073,430.99	\$326,468.62
Central Waste	821,400.00	\$18,481.50
Carbon Limestone	1,419,500.00	\$31,938.75
Countywide	12,541,123.29	\$255,822.47
Willow Creek	1,424,400.00	\$32,049.00
CLD	134,251.00	\$3,020.65
Hilltop	262,700.00	\$5,910.75
Apex Solids Control	26,544.37	\$664.75
Westmoreland Sanitary	139,240.00	\$3,132.90
Penn Ohio	238,920.00	\$5,375.70
<b>LEACHATE TOTALS</b>	<b>47,237,272.60</b>	<b>\$976,963.60</b>
<b>SEPTIC HAULERS</b>	<b>GAL TREATED</b>	<b>COST</b>
ABC Porta Thrones	85,375	\$5,377.81
ACE Portable Restrooms	55,500	\$3,495.83
All Clean	362,700	\$22,848.02
Allen	199,000	\$12,536.75
Atomic Sewer	865,100	\$54,497.11
Bosely Drain and Septic	264,050	\$16,634.30
CJ's Port-a-Potty	44,575	\$2,807.88
Cowboy Miller	627,250	\$39,513.42
Dig This Septic Pumping	215,600	\$13,581.87
Erwin Septic	29,000	\$1,826.84
Fred's	830,050	\$52,288.59
Hoffman's	594,650	\$37,458.52
Humbert Sanitary	390,530	\$24,600.88
Miller & Company	835,400	\$52,625.50
Portage	7,350	\$462.72
Salem Septic Tank	7,000	\$440.57
Septiclean	433,450	\$27,304.63
Sosnick	1,399,700	\$88,174.24
Speedie	44,300	\$2,790.45
Steven Cutlip Excavating	228,000	\$14,363.12
Steve's	29,575	\$1,863.60
T.E. Griffith Septic	480,650	\$30,278.84
Whipkey Septic	239,600	\$15,093.95
Patterson Specialty Services	77,750	\$4,898.12
North Canton	7,750	\$488.16
Morris Drain Services	63,550	\$29,944.76
PERMIT FEES for Septic Haulers		\$2,600.00
<b>SEPTAGE TOALS</b>	<b>8,417,455</b>	<b>\$558,796.48</b>
<b>TOTALS</b>	<b>55,654,728</b>	<b>\$1,535,760.08</b>

## BIOSOLIDS MANAGEMENT

One of the byproducts of wastewater treatment is sludge. After sludge is further processed it is called biosolids.

We use three different processes to treat our biosolids before they are removed from our plant. They are, in order: Thermal Treatment for pathogen reduction; Anaerobic digestion for vector attraction reduction; and Dewatering for thickening by liquid removal.

In 2018, the City added a thermal treatment process to facilitate their biosolids program. Thermal Treatment is the process in which raw sludge undergoes a time and temperature regime prior to digestion to reduce pathogen levels, specifically, fecal coliform and Salmonella sp. Bacteria. Treatment criteria follow the guidelines found in Ohio EPA OAC 3745-40-04 (B) (8) in order for the resulting biosolids to classify as Exceptional Quality. Exceptional Quality biosolids have had the pathogens reduced to a level that makes the biosolids safe to use for many purposes. To reduce our costs, the City has been able to use the biosolids throughout the city for different projects, residents have come in and taken biosolids to use on their yards and garden, Keep Alliance Beautiful used the biosolids in their flower pots and we are continuing to keep relationships established with local farmers if we ever need to land apply again.

In 2021, 1,359.43 dry tons were used for beneficial use and 0.00 dry tons were landfilled. There were no costs for trucking and disposal.

## VEHICLES

Below is a list of the current vehicles we have in our department:

#	Year & Model	Condition	Use
R-2	2016 Ford Transit	Good	administrative needs; sampling; etc.
R-3	2015 Ford F-150 Pickup	Good	plant maintenance
R-5	1999 Freightliner Semi Tractor	Good	used to haul tankers to farm land
R-6	2000 Freightliner Semi Tractor	Good	used to haul tankers to farm land
R-7	2008 Ford 4X4 F-250 Pickup	Poor	plow snow; haul fuel for loader etc.
T-1	1982 5000 gal. SS tanker	Fair	used to haul biosolids to farm land
T-2	1982 5000 gal. SS tanker	Fair	used to haul biosolids to farm land
---	2015 Kubota zero turn	Very Good	mow grass
---	Club Car electric cart	Poor	in-plant transportation
---	E-Z Go electric cart	Poor	in-plant transportation
---	Tow Motor	Good	Used to load/unload heavy items
---	Front End Loader	Good	Used to load/unload heavy items
---	Centrifuge	Good	Dewatering system

Listed below are the ending hours and/or miles on each vehicle or equipment, and the hours and/or miles each was used in 2021:

Vehicle #	Used		Ending	
	Hours	Miles	Hours	Miles
R-2		2,798		25,095
R-3		3,230		22,847
R-5		0		550,105
R-6		0		410,765
R-7		718		33,306
Kubota	173.1		266.0	
Tow M.	59		315	
Centrifuge	2,190		7,031	
Loader	214		2,555	
Emergency Generators:				
EG #1	11		338	
EG #2	11		339	
EG #3	4		331	

## PROJECTS

To ensure our treatment plant produces a high quality effluent, at the lowest possible cost to our customers, we must continually reinvest in our facility. The projects we worked on in 2021 are:

### Primary Digester Roof

Repaired the Primary Digester Roof

### Painting

Painted exterior piping

### Aeration Stones

Clean and stored aeration stones

### Inspections

Cleaned and inspected #1,2 and 3 Primary Clarifiers and #1,2 and 3 Secondary Clarifiers

### Waste Pumps

Installed new waste pumps and VFD's

### Triplex Rebuild

Rebuilt the Primary Digester Triplex

### Raw Influent Pump

Repaired #5 Raw Influent Pump

### VFD Maintenance

Performed preventative maintenance on the Raw Influent Pumps

### Transformers

Conducted oil testing on eleven transformers

### ICP

Installed new software and performed major preventative maintenance on the ICP

### Centrifuge

Performed major preventative maintenance on dewatering centrifuge

Alliance Wastewater Treatment Plant  
 Flow Diagram  
 NPDES 3PD00000\*ND

