WADSWORTH WASTEWATER TREATMENT PLANT

2012

ANNUAL REPORT

Submitted by
John Clark, superintendent
Wastewater Treatment

TABLE of CONTENTS

Page number:

1	Annual Summary
3	List of Employees
4	Design Data Summary
5	Liquid Stream flow chart
6	Solids Stream flow chart
7	Graph- Effluent flow by the month
8	Graph- Flow vs. Precipitation
9	Daily flow vs. Design
10	Sludge

As we all know precipitation amounts in 2012 were considerably lower than in past years. The dryer weather resulted in lower flows at the wastewater treatment plant than in 2011. Wet weather impacts the waste flow because of inflow/infiltration (I&I), a result of illegal storm drain taps, rain and melted snow that makes its way into the collection system from leaks in joints, etc. The treatment plant received *one billion, one hundred forty-four million, thirty-one thousand (1,144,031,000) gallons* of waste from the city and Medina County last year. Of the above total, *one billion, one hundred thirty-one million, seventy-six thousand (1,131,076,000) gallons* of clean effluent water was released to the River Styx, the plant receiving stream. The remaining nearly thirteen million gallons of treated water was recycled by the plant to support various processes, i.e. hosing, pump water seals, etc, or was returned to the plant headworks for further treatment from tertiary filter backwashes. Overall, the plant, on average, operated at ±63% capacity of design.

Work was completed on the new chemical feed system that is used to remove phosphorus from the wastewater effluent. The system was placed on line in April and was fully operational by June. The chemical of choice used to remove the phosphorus is sodium aluminate. We chose this chemical after extensive testing because of its performance. As an added benefit, sodium aluminate also increases the alkalinity of the water, a key component to assure the removal of nitrogen ammonia. The plant is reducing the total phosphorus discharged to the receiving stream to <1 mg/l as required by the permit. The feed control system currently operates based on the amount of influent flow. This works fine during normal, dry weather flows but is very inefficient during wet weather, high flows. We have recently purchase an in line analyzer from Applied Spectrometry Associates, Inc that will be used to monitor the actual amount of phosphorus in the wastewater and adjust chemical feed rates to this number. The result will be reduced chemical feed and a cost savings to the city.

Also included in the above mention project was the installation of a filter sand bed. FOG (fats, oil, and grease) accumulations from the collection system were cleaned from the system and dumped into the plant influent. FOG is as detrimental to the plant as it is to the collection system as it will plug lines and pumps. Rather than putting the concentrated FOG into the plant, it is now dumped on the sand bed, dewatered and sent directly to an approved landfill.

All plant operators have now obtained, at a minimum, their Class I operator license, as required by the AFSCME contract. In May of 2012, Penny Schwanger (lab technician) and Tuck Wade (OIT) went to Columbus and took the Class I operators exam and passed. They were among the 39% of the test takers to achieve passing scores. Once again, Wadsworth personnel excelled, as Penny scored the highest mark on the exam out of the 286 individuals who took the test. Congratulations are due. Both Penny and Brett Rooks took the Class II

operator exam in 2012, passed it, and now have the advanced licensing. Congratulations to these employees.

This past year, through attrition, the wastewater plant has reduced the size of the staff. Roy Boyes, a long time (23 plus years) employee at the plant, retired early last year. After much thought it was determined that no negative impact would result by not filling this position, resulting in reduced costs to the city in the form of payroll and benefit payments. The remaining staff has “picked up the slack” and has kept the plant running optimally.

The staff at the wastewater treatment plant continues to produce a quality effluent that helps maintain or improve the health of the receiving stream. We look forward to providing the citizens and business’ of Wadsworth the best level of service we can in 2013.

Respectfully submitted,

John Clark, superintendent
Wadsworth Regional Wastewater Treatment Plant

CITY OF WADSWORTH

WASTEWATER TREATMENT PLANT

EMPLOYEE	DATE of HIRE	YEARS of EXPERIENCE	CERTIFICATION	POSITION
John Clark	3/29/2010	25	WW-IV / WS-II	DIVISION SUPERINTENDENT
Mike Lucas	6/11/1975	37	WW-III	CHIEF OPERATOR
Penny Schwanger	5/23/2011	12	Lab analyst II/ WW-II	LAB TECHNICIAN
Larry Morgan	5/1/1986	26	WW-I	OPERATOR I
Roy Boyes (retired)	7/11/1988	24	WW-II	OPERATOR II
Rex Randolph	9/6/1995	17	WW-I	OPERATOR I
Brett Rooks	11/8/2004	8	WW-II	OPERATOR II
Dillon Miller	5/9/2011	1	WW-I	OPERATOR I
Tuck Wade	5/12/2008	4	WW-I	OPERATOR I
Robert Stonerock	9/23/2002	10		MECHANIC
TOTAL EXPERIENCE		164 YEARS		
AVERAGE EXPERIENCE		16.4 YEARS		

Design Data Summary

Design Flows and Loadings

Average Daily Influent Flow (ADF): 5 mgd

Peak Daily Influent Flow (PDF): 10 mgd

Peak Hourly Influent Flow (PHF): 15 mgd

Headworks

Capacity: 20 mgd (screen/grit tanks)/ 16.2 mgd (influent pumps)

Equipment:

- One (1) mechanical screen with 3/8" punch plate holes
- Four (4) dry pit horizontal non-clog centrifugal pumps @3750 gpm with VFD's
- One (1) Smith and Loveless grit removal system

Primary Treatment

Capacity: 15 mgd

Equipment:

- Two (2) 70' diameter settling tanks with 12' side water depth. Scraper type sludge collection mechanism

Second Treatment

Capacity: 10 mgd

Equipment:

- Aeration Tanks
  - Tanks 1-4: 20' x 80' x 15' deep; 24,000 cf volume each
  - Tanks 5-8: 20' x 70' x 15' deep; 21,000 cf volume each
  - Tanks 9-12: 20' x 80' x 10' deep; 16,000 cf volume each
  - Total volume: 244,00 cf or 1.825 MG
  - Fine bubble, rubber membrane diffusers
- Two (2) 84' diameter final settling tanks with 14' side water depth, suction header type sludge collector mechanism

Tertiary Treatment

Capacity: 15 mgd

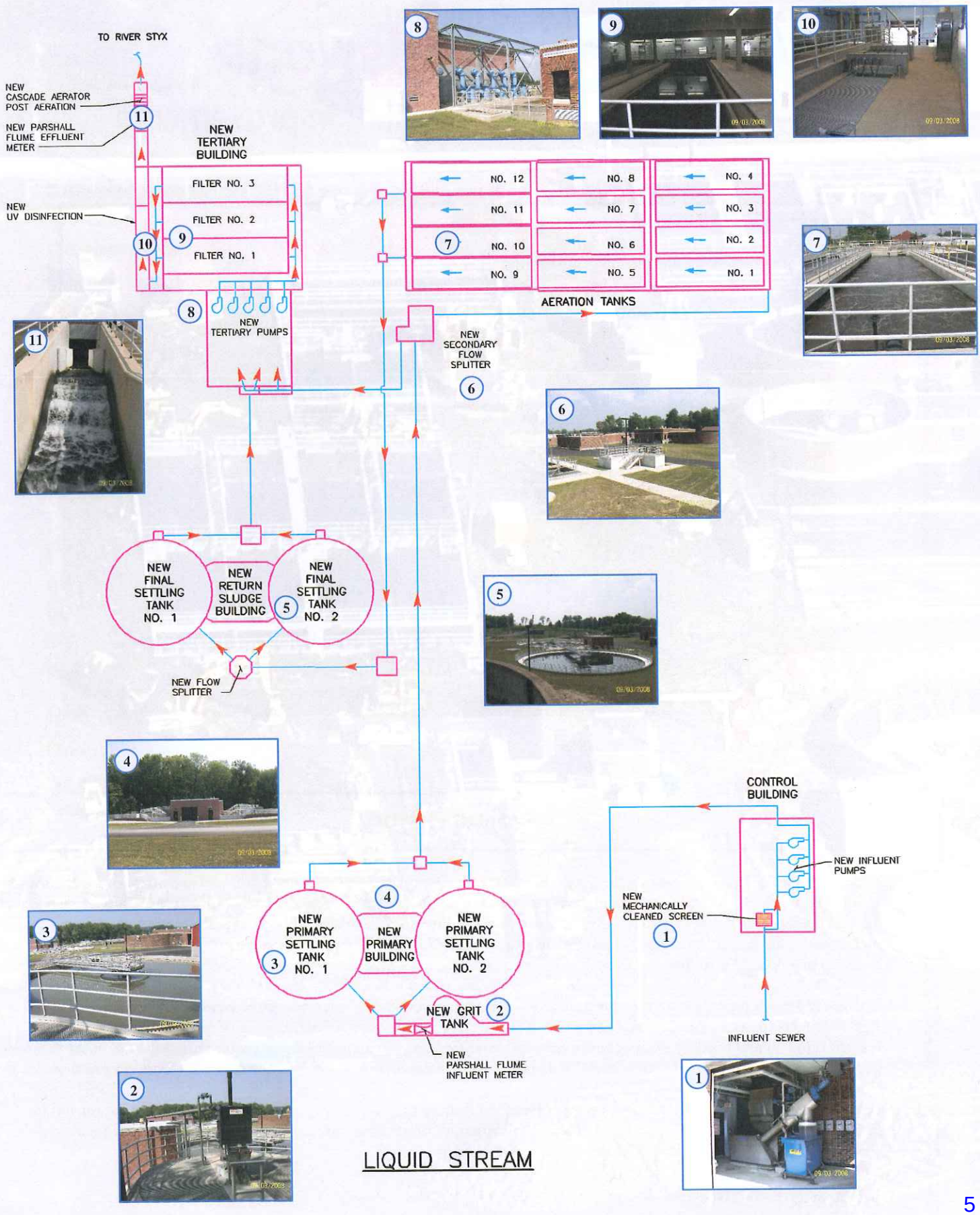
Equipment:

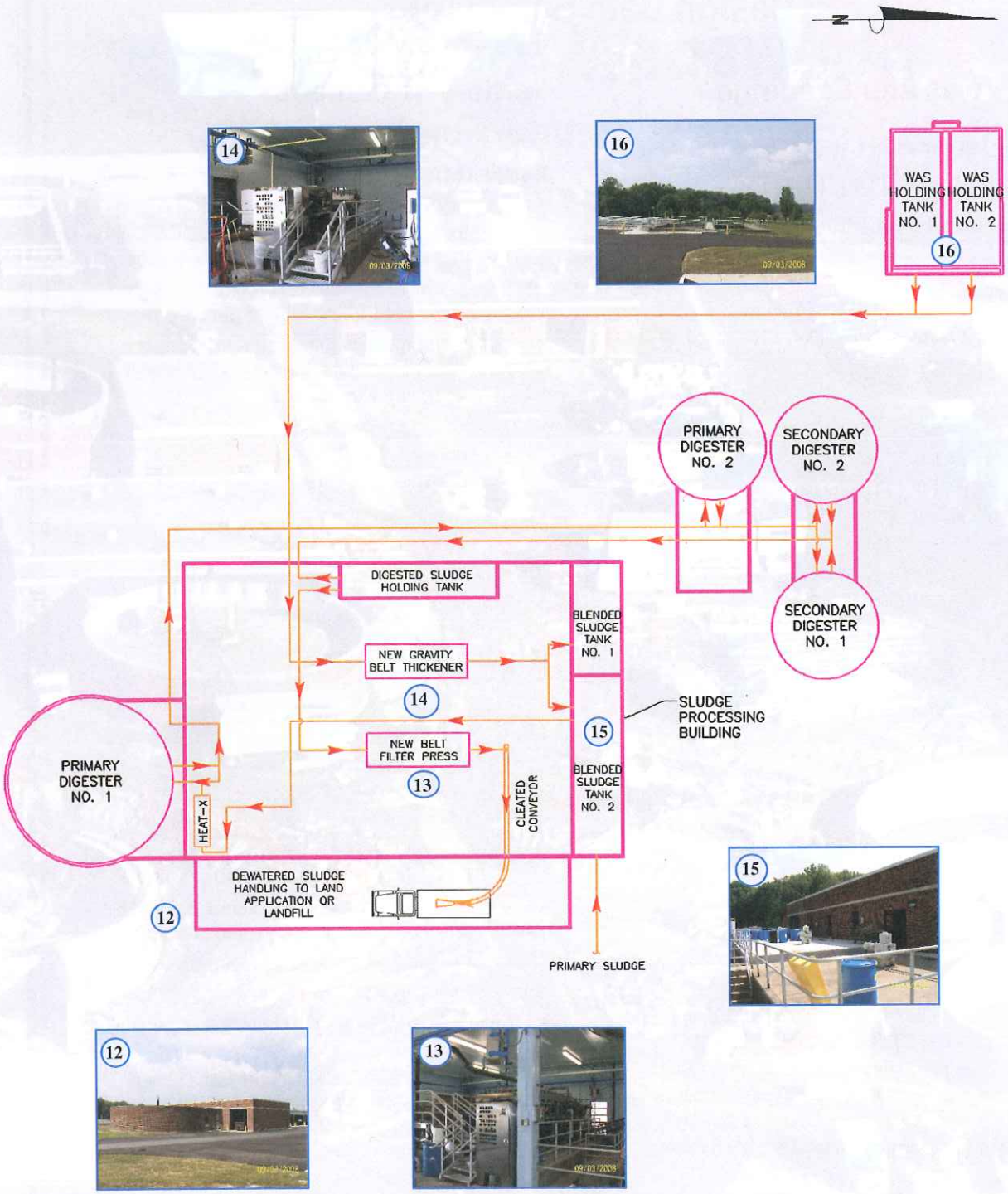
- Five (5) vertical can pumps with submersible propellers and VFD: 2 @ 1390 gpm and 3 @ 4650 gpm
- Three (3) traveling bridge sand filters @ 4.65 gpm/sf
- Two (2) modules, in series, of low pressure ultraviolet lights for disinfection

Solids Stream

Equipment:

- Class B dewatered sludge to landfill or land application (preferred)
- Two (2) 23' x 60' x 15' waste holding Tanks with coarse bubble diffusers
- One (1) two (2) meter WAS gravity belt thickener
- Two (2) primary and two (2) secondary digesters
  - Primary no.1: 60' diameter with 19.3' side water depth
  - Primary no. 2: 45' diameter With 18' side water depth
  - Secondary tanks: 45' diameter with 19' side water depth
- One (1) 2-meter Ashebrook belt filter press
- One (1) 50,000 sq ft pole building for sludge cake storage

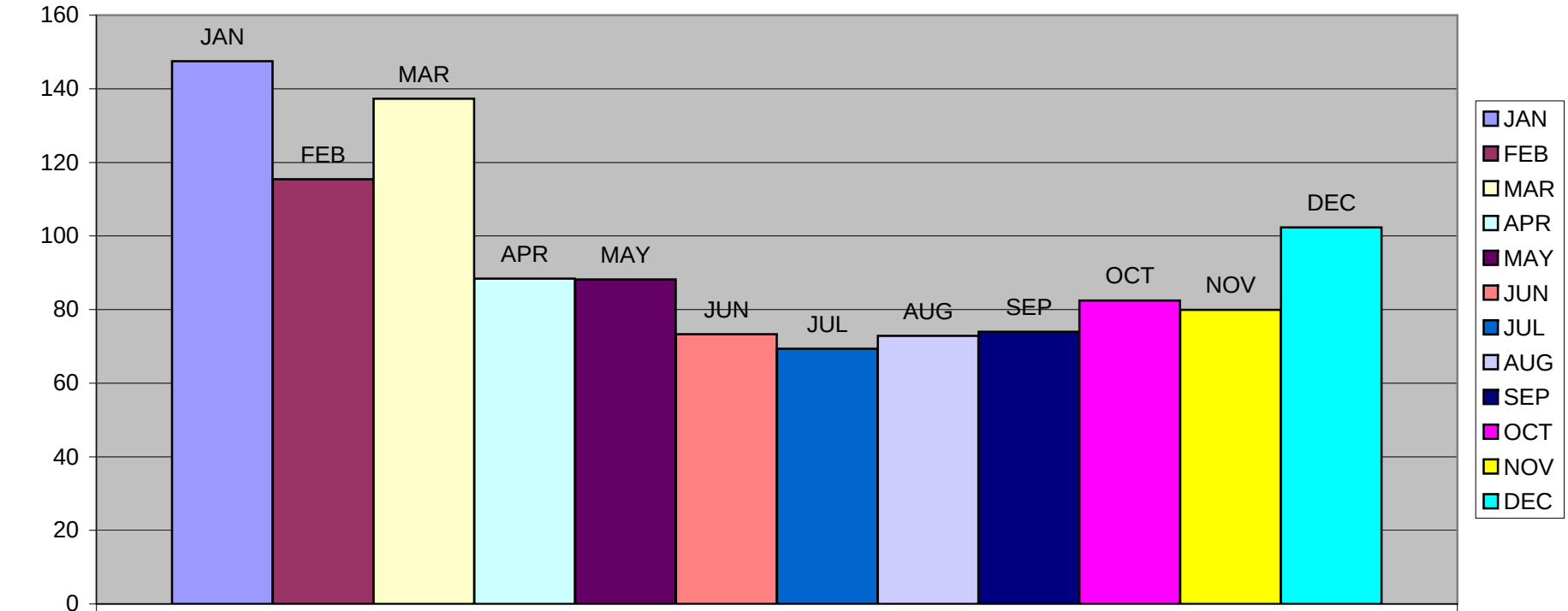

TO RIVER STYX
NEW CASCADE AERATOR POST AERATION
NEW PARSHALL FLUME EFFLUENT METER
NEW UV DISINFECTION
NEW TERTIARY BUILDING
FILTER NO. 3
FILTER NO. 2
FILTER NO. 1
NEW TERTIARY PUMPS
NO. 12
NO. 11
NO. 10
NO. 9
NO. 8
NO. 7
NO. 6
NO. 5
NO. 4
NO. 3
NO. 2
NO. 1
AERATION TANKS
NEW SECONDARY FLOW SPLITTER
NEW FINAL SETTLING TANK NO. 1
NEW RETURN SLUDGE BUILDING
NEW FINAL SETTLING TANK NO. 2
NEW FLOW SPLITTER
NEW PRIMARY SETTLING TANK NO. 1
NEW PRIMARY BUILDING
NEW PRIMARY SETTLING TANK NO. 2
NEW GRIT TANK
NEW PARSHALL FLUME INFLUENT METER
CONTROL BUILDING
NEW INFLUENT PUMPS
NEW MECHANICALLY CLEANED SCREEN
INFLUENT SEWER
LIQUID STREAM



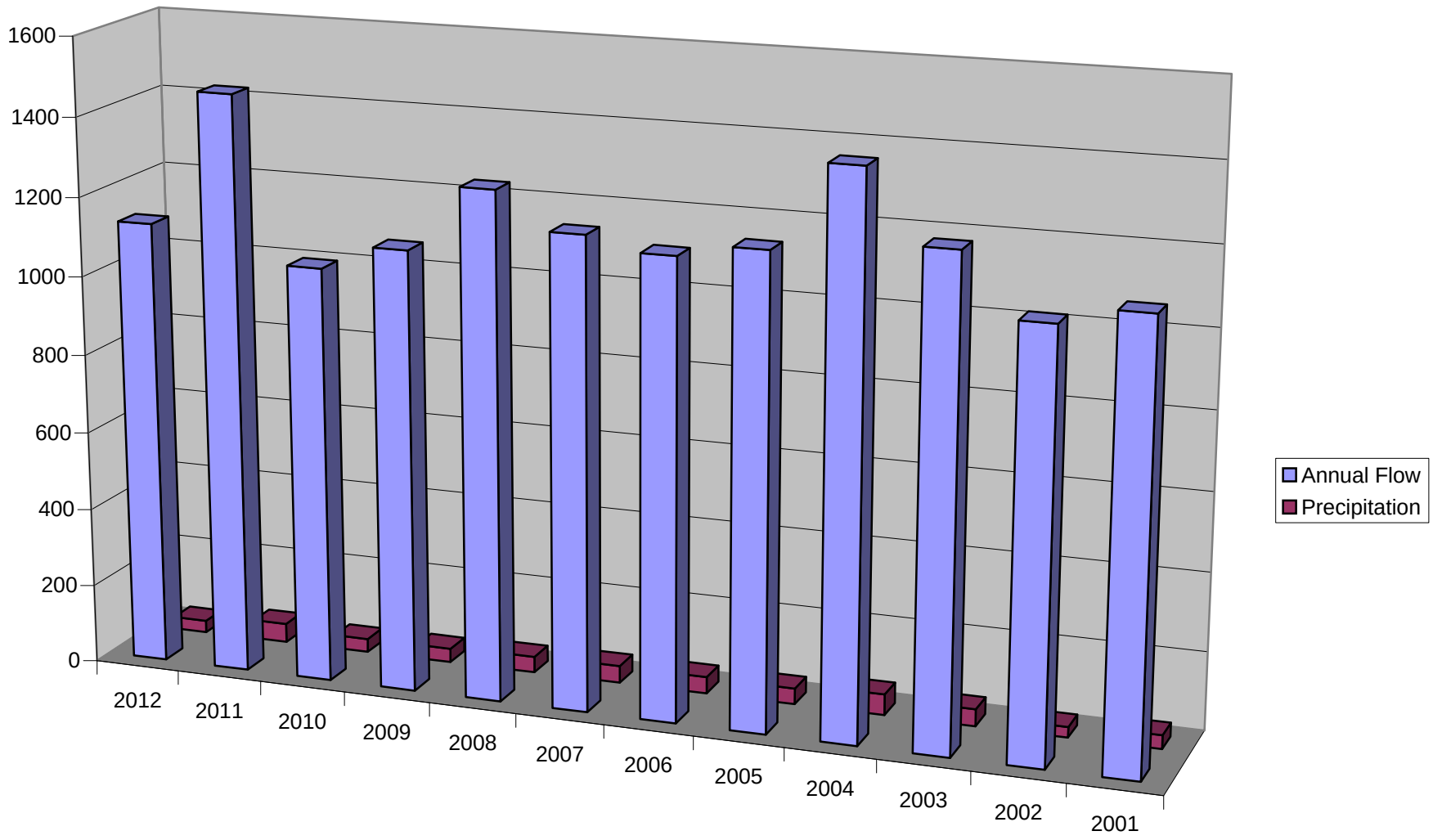
Plant Schematic

SOLID STREAM

Effluent Flow by Month

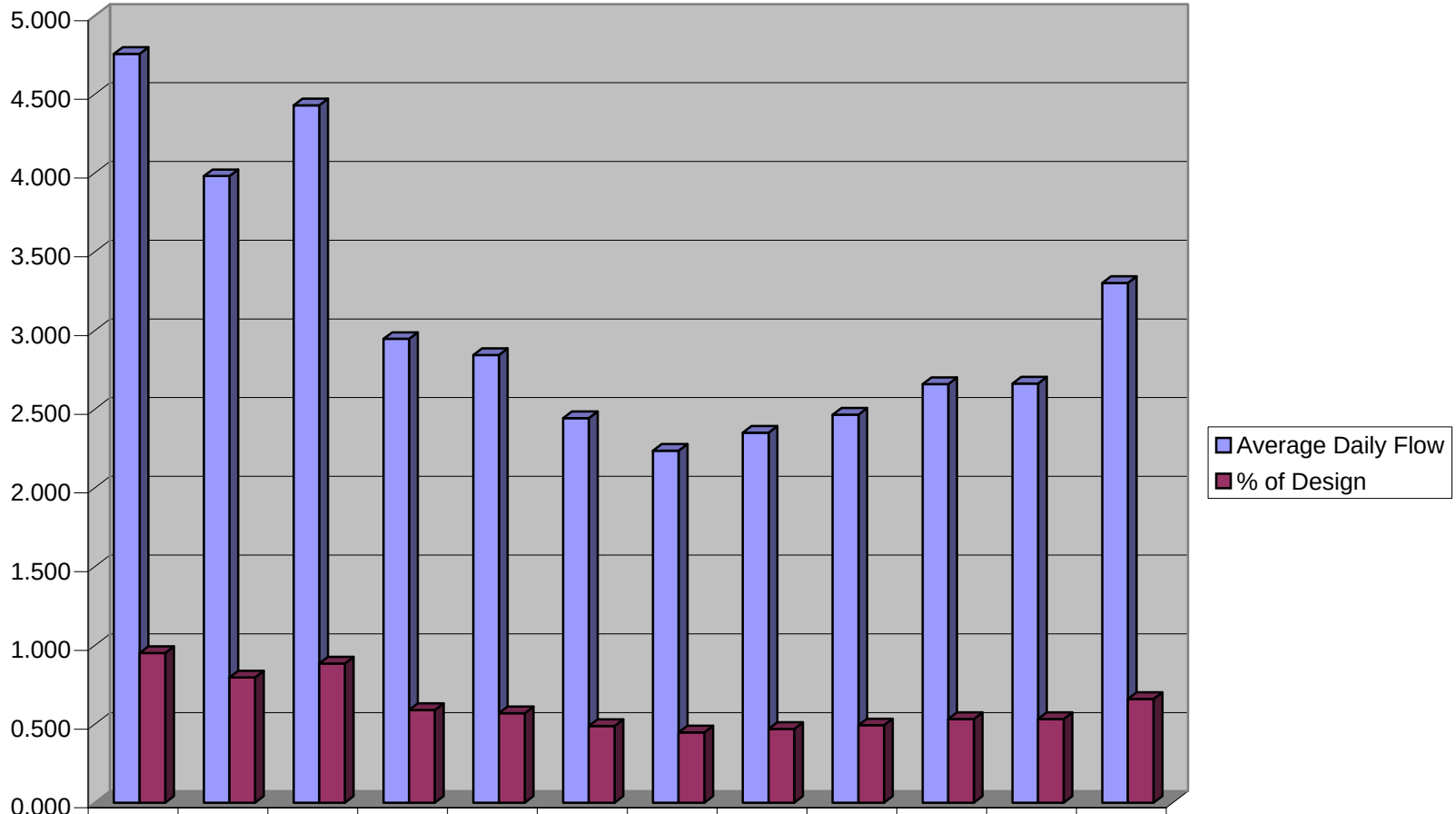


	Totals
JAN	147.483
FEB	115.448
MAR	137.335
APR	88.406
MAY	88.194
JUN	73.295
JUL	69.336
AUG	72.88
SEP	73.962
OCT	82.458
NOV	79.926
DEC	102.353



	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Annual Flow	1131.08	1470.29	1055.24	1118.86	1284.56	1192.53	1159.57	1191.95	1407.62	1229.1	1074.93	1118.01
Precipitation	30.84	48.53	34.44	35.29	40.71	43.89	42.24	40.6	53.1	43.23	26.86	34.82

Daily flow vs. Design



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Average Daily Flow	4.758	3.981	4.430	2.947	2.845	2.443	2.237	2.351	2.465	2.660	2.664	3.302
% of Design	95.15%	79.62%	88.60%	58.94%	56.90%	48.86%	44.73%	47.02%	49.31%	53.20%	53.28%	66.03%

ANNUAL SLUDGE REPORT

	GALLONS POLYMER USED	COST	HAULING COST	TOTAL COST
2008	4100	$51,320.00	$27,295.00	$78,615.00
2009	3780	$51,840.00	$38,595.57	$90,435.57
2010	2970	$32,250.00	$19,615.76	$51,865.76
2011	1890	$24,045.00	$16,963.40	$41,008.40
2012	2700	$34,350.00	$23,647.37	$57,997.37

	SLUDGE PRESSED (GALS)	DRY TONS PRODUCED	WET TONS TO FIELD	COST PER DRY TON
2008	3,913,984	346	1459.2 (est)	$227.21
2009	4,203,297	368	2044 (est)	$245.75
2010	3,179,058	281	683 (est)	$184.58
2011	1,603,593	245	698.35	$167.38
2012	2,229,599	324	1842.26	$179.00