



Private Property I&I

Program in Orwigsburg Borough

Bryon Killian, PE
bkillian@entecheng.com
10/17/17 @ 1:10PM



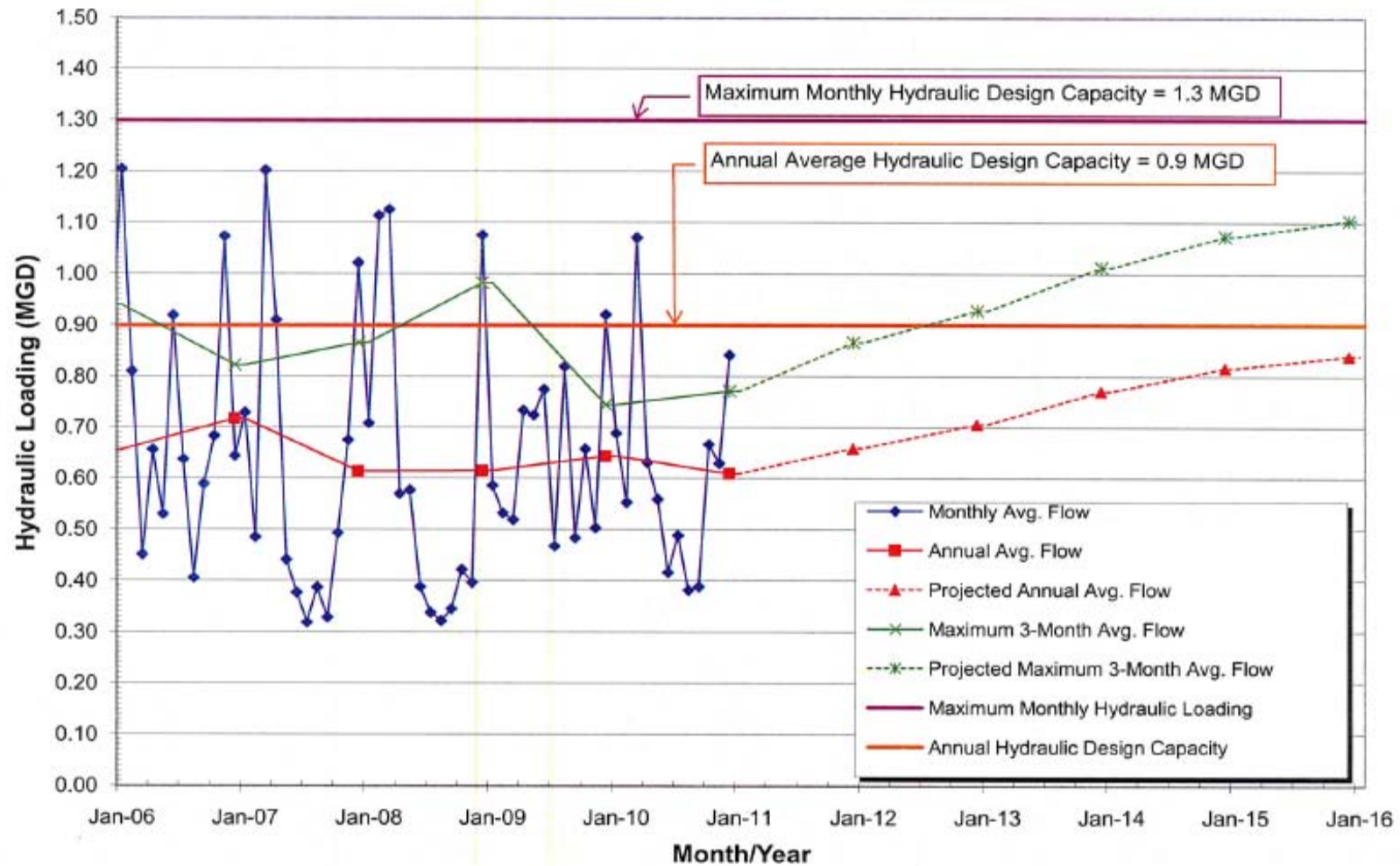
TABLE 2-1
Hydraulic Loading Data

Borough of Orwigsburg
Wastewater Treatment Plant

MONTH	MONTHLY AVERAGE WASTEWATER FLOWS (MGD)					PROJECTED WASTEWATER FLOWS (MGD)				
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
January	0.838	1.119 *	1.206 *	0.730	0.709 *					
February	0.674	0.739 *	0.811 *	0.486 *	1.114 *					
March	0.738	0.963 *	0.452 *	1.203 *	1.126 *					
April	0.809	0.951	0.657	0.911 *	0.571					
May	0.684	0.431	0.531	0.442	0.578					
June	0.626	0.379	0.920	0.378	0.389					
July	0.717	0.483	0.638	0.320	0.339					
August	1.063 *	0.362	0.407	0.388	0.323					
September	0.940 *	0.310	0.590	0.330	0.346					
October	0.741 *	0.682	0.684	0.494	0.423					
November	0.837	0.580	1.074	0.676	0.397					
December	1.109	0.880	0.645	1.022	1.076					
ANNUAL AVERAGE	0.815	0.657	0.718	0.615	0.616	0.624	0.650	0.684	0.709	0.722
NUMBER OF CONNECTIONS	1379	1392	1400	1410	1412	1450	1567	1723	1837	1896
FLOW per CONNECTION (GPD)	591	472	513	436	436	430	415	397	386	381
MAX 3-MONTH AVERAGE	0.915	0.940	0.823	0.867	0.983	0.837	0.871	0.918	0.951	0.968
RATIO (MAX 3-MONTH TO ANNUAL AVERAGE)	1.123	1.432	1.148	1.409	1.596					
AVERAGE OF 5-YEAR RATIOS	1.34									

* Indicates the maximum three consecutive months

FIGURE 2A
Hydraulic Loading



116 PA-443

Orwigsburg, Pennsylvania

Google, Inc.

Street View - Aug 2015



Building Inspections

Roof Leaders

Smoke Testing

Dye Testing

Sump Pumps

Dye Testing

Basement/Driveway/Yard Drains

Smoke Testing

Dye Testing

Others





LEGAL ADVICE



A 3D rendered image featuring a green apple with a brown stem, resting on a stack of two books. The top book has an orange cover, and the bottom book has a blue cover. Behind the books is a green chalkboard with a gold-colored frame. The word "EDUCATION" is written on the chalkboard in white, chalky, uppercase letters. The background is a gradient of colors, transitioning from red and orange on the left to blue on the right.

EDUCATION





07.14.2010 08:38



07.14.2010 09:05

MANDATORY REMOVAL OF STORMWATER CONNECTIONS FROM THE WASTEWATER COLLECTION SYSTEM

Dear Customer:

The Borough has recently completed a study on the sanitary sewer system. This study identified that the sanitary sewer system is receiving a substantial amount of stormwater and groundwater flow from the home owner side of the system.

THE PROBLEM

The additional stormwater and groundwater entering the system (which was created to only take sanitary wastewater) can create overflows in the collection system, which can:

- Lift manhole lids, allowing for sewage to overflow into streets, walkways, and yards.
- Cause basement flooding from back-up of the sanitary sewer lateral. This flooding can cause thousands of dollars in property loss and more significantly presents an unnecessary health hazard.

THE SOLUTION

Over the next several months, the Borough will inspect homes and businesses within the Borough to determine if roof drains, foundation drains, sump pumps, and other groundwater / stormwater sources are connected to the sanitary sewer system. The goal of this inspection program is to reduce the excessive flows that enter the sanitary sewer system through groundwater / stormwater sources.

All inspections will be pre-scheduled with the Borough, will be performed by trained inspectors wearing photo ID badges (inspector names will be identified when you schedule your inspection), and should take less than a half hour. Make sure an adult is at home when the inspector arrives. The inspector will check your sump pump discharge system and check your roof drains/leaders.

To schedule your inspection, please contact Mr. Michael Lonergan, Borough Manager, at 570-366-3103. We would also be available to answer questions about I/I or the private property inspection program.

BUILDING SEWER INSPECTION PROGRAM - rev. 10.5.09

(7)

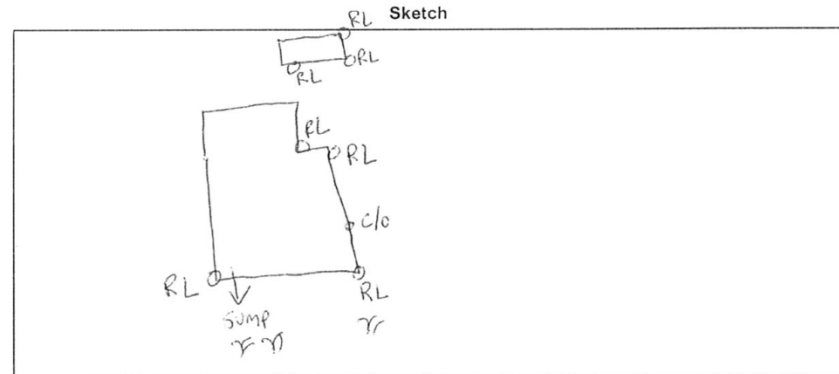
N/A

N/A

(1)

NOT
LOCATED

- **Roof Drains/Leader**
Roof drains and leaders direct storm water from roof gutters to the ground through pipes and downspouts. Roof drains should not be connected to the sanitary sewer but should discharge to the ground outside of a building. If your roof drains are connected to the sanitary sewer, disconnect them, plug any open connections to the sanitary sewer using a non-shrink permanent material, and redirect the roof drains onto the ground outside the building.
- **Foundation Drains**
Foundation drains are underground pipes that collect storm water from around the base of a building and into a sump basket, where it is then pumped outside of the building. Foundation drains should not be connected to the sanitary sewer. The process could involve excavation to disconnect the foundation drain from the sanitary sewer and installation of a sump pump system. The new sump system must pump directly to the ground outside of the building or be connected to the storm sewer system.
- **Floor Drains**
Floor drains are designed to capture surface or ground water that enters basements or crawl spaces. Floor drains should not be connected to the sanitary sewer. The process could involve excavation to disconnect the floor drain from the sanitary sewer and redirect to the storm system or installation of a sump pump system. The new sump system must pump directly to the ground outside of the building or be connected to the storm sewer system.
- **Sump Pump Systems**
Sump pumps are designed to capture surface or ground water that enters basements or crawl spaces and pump it away from the house. The basic sump system includes drain tile, a sump pit, a sump pump, a float or switch, and a drain line. The sump pit extends below the slab and collects surface water that enters the basement/crawl space or groundwater that rises to the slab. Sump pumps should not be connected to the sanitary sewer. Sump pumps should drain into the storm sewer system through one of two methods: a direct connection (a pipe from the house to the main storm sewer line), if available, or directly onto the ground (preferably 20 feet from the house and not into a neighbor's yard).
- **Vents and Cleanouts**
Vents and cleanouts are designed to vent sewer gases and provide lateral access for maintenance. Low lying and/or broken vents and cleanouts can be responsible for extraneous flow entering the sanitary sewer system. Inspections to be made on existence, location, and structural condition of vents/cleanouts.



INITIAL INSPECTION

Inspector Name:

Inspector Signature:

Home Owner Name:

Home Owner Signature:

House Address:

Date:

Problems Identified:

Solutions Identified:

BRYON KILLIAN

[Signature]

N/A - FOR SALE

N/A

13 BIRCH STREET

11/27/09

NONE

N/A

FOLLOW-UP INSPECTION (IF NECESSARY) - WITHIN 30 DAYS FROM INITIAL INSPECTION

Follow-up Inspection Date:

Have all issues been corrected:

N/A

N/A



What did we find?

44 Downspouts

77 Floor Drains

21 Sump Pumps

43 Low Lying Cleanouts

9 Others



source: Coon Rapids Municipal Utilities <http://www.crmu.net/images/illegal-cross-connection.jpg>



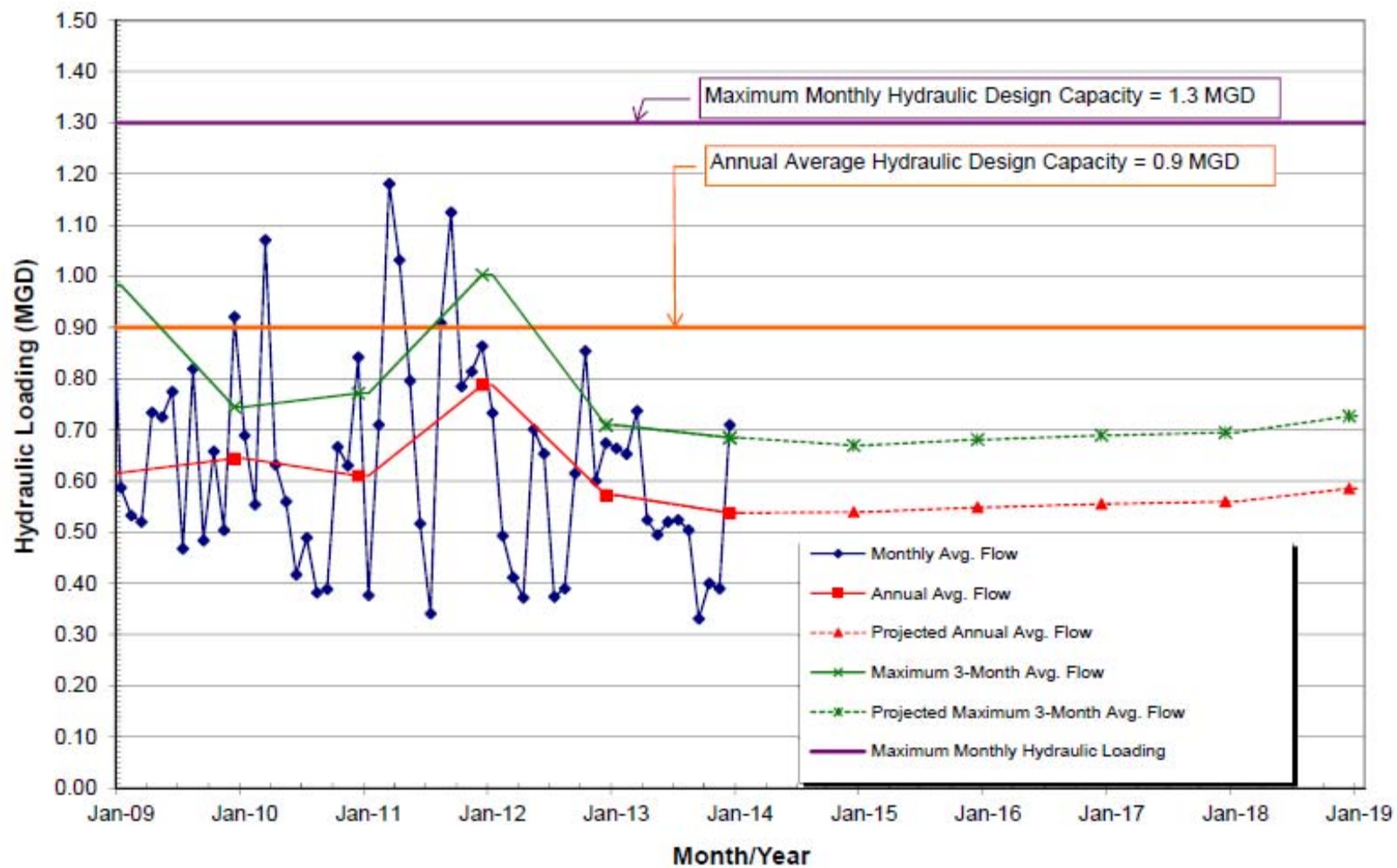
TABLE 2-1
Hydraulic Loading Data

Borough of Orwigsburg
Wastewater Treatment Plant

MONTH	MONTHLY AVERAGE WASTEWATER FLOWS (MGD)					PROJECTED WASTEWATER FLOWS (MGD)				
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
January	0.587	0.689 *	0.377	0.733	0.664 *					
February	0.533	0.554 *	0.710	0.493	0.653 *					
March	0.520	1.071 *	1.181 *	0.412	0.737 *					
April	0.734 *	0.632	1.032 *	0.372	0.524					
May	0.725 *	0.560	0.796 *	0.701	0.495					
June	0.775 *	0.417	0.517	0.654	0.520					
July	0.468	0.489	0.341	0.374	0.524					
August	0.820	0.382	0.909	0.390	0.504					
September	0.484	0.389	1.125	0.615	0.331					
October	0.658	0.667	0.785	0.854 *	0.400					
November	0.504	0.630	0.814	0.600 *	0.390					
December	0.921	0.842	0.864	0.674 *	0.710					
ANNUAL AVERAGE	0.644	0.610	0.788	0.573	0.538	0.540	0.549	0.556	0.560	0.586
NUMBER OF CONNECTIONS	1415	1415	1415	1415	1476	1481	1504	1521	1532	1596
FLOW per CONNECTION (GPD)	455	431	557	405	364	364	365	365	366	367
MAX 3-MONTH AVERAGE	0.745	0.771	1.003	0.709	0.685	0.670	0.681	0.690	0.695	0.727
RATIO (MAX 3-MONTH TO ANNUAL AVERAGE)	1.156	1.264	1.274	1.239	1.273					
AVERAGE OF 5-YEAR RATIOS	1.24									

* Indicates the maximum three consecutive months

FIGURE 2A
Hydraulic Loading



Facility Name:

Existing Hydraulic Design Capacity: MGD

Upgrade Planned in Next 5 Years? Year:

Future Hydraulic Design Capacity: MGD

Monthly Average Flows for Past Five Years (MGD)

Month	2012	2013	2014	2015	2016
January	0.733	0.664	0.78	0.37	0.56
February	0.493	0.653	0.44	0.31	0.96
March	0.412	0.737	0.72	0.75	0.41
April	0.372	0.524	0.88	0.57	0.39
May	0.701	0.495	0.87	0.31	0.4
June	0.654	0.52	0.53	0.58	0.34
July	0.374	0.524	0.3	0.72	0.4
August	0.39	0.504	0.28	0.31	0.32
September	0.615	0.331	0.21	0.25	0.24
October	0.854	0.4	0.3	0.34	0.27
November	0.6	0.39	0.28	0.36	0.25
December	0.674	0.71	0.54	0.75	0.44
Annual Avg	0.573	0.538	0.51	0.47	0.42
Max 3-Mo Avg	0.709	0.685	0.82	0.54	0.76
Max : Avg Ratio	1.24	1.27	1.61	1.15	1.81
Existing EDUs	1,415.0	1,476.0	1,476.0	1,480.0	1,503.0
Flow/EDU (GPD)	404.9	364.5	345.5	317.6	279.4
Flow/Capita (GPD)	115.7	104.1	98.7	90.7	79.8
Exist. Overload?	NO	NO	NO	NO	NO

No more I&I Problem?

“I did I&I work five years ago and I still have a problem!”



The reduction and control of I&I should be considered a disciplined, long-term monitoring and maintenance program.

NOT A ONE TIME FIX. IT'S A PROGRAM NOT A PROJECT.

