

**2016 ACT 537 SEWAGE FACILITIES PLAN
SPECIAL STUDY
FOR
WEST WYNN I AREA**

JULY 2016

PREPARED FOR:

**WESTTOWN TOWNSHIP
1039 WILMINGTON PIKE, WEST CHESTER, PA 19382**



PREPARED BY:

**CARROLL ENGINEERING CORPORATION
949 EASTON ROAD, WARRINGTON, PA 18976**

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SECTION 1.0 – INTRODUCTION

Westtown Township adopted the West Wynn I area Act 537 Special Study (2013 Special Study) in September 2013. The Special Study was prepared as directed by the Department of Environmental Protection to evaluate the sewage disposal needs of the West Wynn I Area, because the Township's Sewage Management Program (SMP) that was adopted as part of a broader Township wide planning completed in September 2012 was deemed to be insufficient to address the sewage disposal needs of the neighborhood.

The Special Study provided for the implementation of the following planning activities:

1. Continued use of on-lot sewage disposal systems (OLDS) subject to the Township's SMP.
2. Metering of the sewer interceptor tributary to the Chester Creek Wastewater Treatment Plant (CCWWTP), to establish a baseline for needed upgrades to facilitate future planning.
3. Adopt and submit an updated Act 537 Special Study for the West Wynn I Area by October 31, 2016.
4. Preparation of a Township wide Act 537 Plan for all existing residences within 5 to 10 years (by July 1, 2023) as outlined in DEP's June 7, 2013 approval of the September 2012 Act 537 Plan.

The Special Study was approved by the Department of Environmental Protection (DEP) on December 17, 2013. Copies of both the June 7, 2013 and December 17, 2013 approval letters are contained in Appendix A.

This Act 537 Plan Special Study will update the 2013 Special Study with data gathered from the SMP and interceptor metering to determine if sewage disposal needs of the West Wynn I area are being met through the implementation of the SMP.

SECTION 2.0 – 2013 SPECIAL STUDY

The West Wynn I area of Westtown Township is a residential neighborhood located in the northeast corner of the Township. The neighborhood covers 60 properties on Diane Drive, Leslie Lane, Grant Road and Charles Road as shown in **Figure No. 1**. Currently, all properties use on-lot sewage disposal systems (OLDS) for wastewater treatment.

The evaluation of the West Wynn I Area in the 2013 Special Study relied on publically available OLDS data including Chester County Health Department (CCHD) records, age of OLDS, soils mapping and lot sizes. Data obtain from the Chester County Health Department as of the date of the 2013 Special Study is contained in **Appendix B**. Table 1 and Map 1 reproduced from the 2013 Special Study, summarize the CCHD data categories. Appendix B from the 2013 Special Study which summarizes the CCHD records is also reproduced.

The 2013 Special Study concluded that 15% of the West Wynn I area may be experiencing OLDS problems. This conclusion was derived from CCHD records that indicate 9 parcels required permits for absorption area repairs. However, permits were approved and/or issued for the 9 properties. More indicative of the condition of OLDS in the West Wynn I area are 4 properties identified as having “no repair feasible” and 1 property for which a permit application was submitted, but no permit was issued. File review comments for the latter property indicate that percolation passed at 60”, but no additional information is available. These results indicate that 8% of the properties may be experiencing OLDS problems.

SECTION 3.0 – 2016 SPECIAL STUDY

As outlined in Section 1.0, the two main planning activities to be implemented from the 2013 Special Study are: 1) continued use of OLDS subject to the Townships SMP, and 2) metering of the Chester Creek Wastewater Treatment Plant interceptor to determine needed upgrades for future planning.

3.1 Sewage Management Program Results

In December 2013, the Township adopted an Ordinance to implement an on-lot Sewage Management Program. Phase I of the SMP including the West Wynn I neighborhood commenced on December 8, 2013, with inspection to be completed by September 7, 2014. As of the 2015 annual status report submitted to the Department in May 2015, there was a greater than 99% inspection compliance rate for Phase I, including 100% of the properties in West Wynn I.

The SMP inspection reports were reviewed to identify properties requiring OLDS repairs, and the type of repairs required. The SMP results for all West Wynn I properties are tabulated and mapped on **Figure No. 1**. Nine properties required OLDS repairs. Two properties were observed to have surface discharges. One property submitted a repair application to CCHD subsequent to the SMP inspection, even though no repairs were required.

As noted on Figure No. 1, required repairs identified in the SMP inspections include septic tank baffles (6 properties); septic tanks baffles and cracks in the tank and lid (1 property); distribution box out of level (1 property); and an open pipe discharge (1 property). All nine properties have completed the required system repairs.

Two properties, 1503 Grant Drive and 500 Diane drive were noted to have surface discharges in the inspection reports. Follow up inspections at 1503 Grant Road by the Township's On-Lot Management Coordinator indicate no recurrence of surface discharges. Follow up inspections at 500 Diane Drive indicate the situation is being controlled by more frequent pumping and no recurrence of surface discharge has been noted. Enforcement action by the Township is not warranted at this time. 500 Diane Drive is able to connect to the Township's sewer system if necessary.

Subsequent to the completion of Phase I SMP inspections, 301 Diane Drive applied to the CCHD for an on-lot sewage system permit for a new on-lot sewage disposal system, which has been installed.

The results of the SMP inspections indicate that contrary to the conclusions of the 2013 Special Study, there are no long term concerns with on-lot system function in the West Wynn I area. **Figure No. 2** combines the information presented in Map 1 of the 2013 Special Study along with SMP inspection results shown on **Figure No. 1**. As shown on **Figure No. 2**, only two properties, 1503 Grant Road and 1507 Charles Road were identified in both the 2013 Special Study and the SMP as having indicators for on-lot system problems. As previously discussed, the SMP inspection for 1503 Grant Road noted surface discharge, which was not observed during subsequent inspections by the Township's On-Lot Management Coordinator. THE SMP inspection for 1507 Charles Road noted a broken inlet baffle which was repaired. Frequent system pumping which was identified in the 2013 Special Study was not noted on the SMP inspection.

None of the remaining 18 properties shown on Map 1 of the 2013 Special Study were identified as needing repairs based on the results of the their SMP inspection reports.

3.2 Chester Creek Wastewater Treatment Plant Interceptor Metering

The Chester Creek Wastewater Treatment Plant Interceptor (Interceptor) conveys all wastewater collected in the CCWWTP basin to the CCWWTP. The Interceptor route is shown in **Figure No. 3**. The Interceptor starts at manhole CC0001 on the east side of Westtown Road, and continues east to manhole CC0017 in Lees Link Lane. The Interceptor is 10" asbestos cement pipe (ACP).

Metering of the Interceptor was identified in the 2013 Special Study as a means of establishing a baseline for needed upgrades to facilitate future planning and consider more cost effective solutions for a limited sewer extension project that may serve only the West Wynn I area. Four tasks related to the interceptor metering were completed:

- Metering of actual flows at key locations in the Interceptor
- Field survey of the Interceptor including distances between manholes, and rims and inverts
- Calculation of pipe capacities
- Flow analysis of influent flow to the CCWWTP to determine flows for specific flow frequencies

Metering of the Interceptor was performed between February and July 2014, and field survey of the Interceptor was performed in July 2015. Locations in the Interceptor where meters were installed, pipe lengths, and rims and inverts are shown in **Figure No. 3**. In addition to flow meters installed in the Interceptor, three flow meters were installed farther upstream in the collection system in the vicinity of 1401 Carter Place, 600 Chesterville Way and 1549 Wickerton Drive.

The interceptor metering data provides a snapshot of flow conditions during the period the meters were installed. In addition, the accompanying report provides calculations of peaking factors based on the ratio of short term flow recordings to a base line flow established in the study period.

Given the short time frame of the meter study, a comprehensive flow analysis of influent flow to the CCWWTP was used to establish the average daily, maximum monthly and peak daily flows in the Interceptor. In addition to flow from the Interceptor, CCWWTP receives flow from the Bayard Rustin Pump Station (BRPS) and two small pump stations serving Westtown School (WSPS). The force main from the pump stations discharge to manhole CC0001. Therefore, the average daily flow for the Interceptor can be estimated by subtracting average daily pump flows from the average daily influent flow at CCWWTP.

The pump stations are relatively new (BRPS dedicated in 2012, WSPS placed in operation in 2015 and 2016) and serve small collection systems. For the purpose of the flow study, it is assumed that flows are not influenced by significant inflow and infiltration (I&I). Thus, calculation of maximum monthly and peak daily flows for the Interceptor will be conservatively (high), since all I&I seen at the CCWWTP is assumed to be conveyed via the Interceptor.

The detailed methodology used to prepare the flow analysis is contained in **Appendix C**. The flow analysis used daily influent flows recorded at the CCWWTP from January 1, 2010 through December 31, 2015. Results of the flow analysis indicate an average daily flow of 0.247 million gallons per day (MGD), a maximum monthly flow of 0.335 MGD and a peak daily flow of 0.447 MGD. The calculated peaking factors for maximum monthly flow and peak daily flow are 1.36 and 1.81, respectively.

The average daily flow for the BRPS reported in the 2014 and 2015 Chapter 94 Reports is 4,532 gallons per day (GPD) for the 2-year period. Since the BRPS currently only serves Bayard Rustin High School, flow averages are based on flows from January through May and September through December of each year to account for reduced flow during summer months when school is not in session. Limited flow data is available for the WSPS given the short period of time the two pump stations have been connected to the CCWWTP. Current total average daily flow is 20,070 GPD. Total average daily flow that is not conveyed through the Interceptor is 24,602 GPD, for a net Interceptor average daily flow of 0.222 MGD.

For the purposes of the flow analysis it assumed that the calculated peaking factors for maximum monthly and peak daily flow do not apply to flow from BRPS and WSPS, because of the newer age of the facilities. Therefore, net maximum monthly and peak daily flows for the Interceptor will be calculated by subtracting the total average daily flow for BRPS and WSPS

from the respective flow frequencies. This results in net maximum monthly and peak daily flows of 0.310 MGD and 0.422 MGD respectively.

The individual pipe capacities for the Interceptor were calculated based on pipe lengths, and inverts obtained from field surveying. Given the age of the pipe and pipe material, a higher Manning's roughness coefficient of 0.015 was used for the capacity calculations. The calculated pipe capacities shown in **Table No. 1**. Manhole CC0013 was suspected to be buried and was not field located. The pipe capacity was calculated for a continuous run from manhole CC0014 to manhole CC0012.

Table No. 1 shows that the critical pipe section in the Interceptor is between manholes CC0006 and CC0005. The calculated capacity of the pipe section is 0.552 MGD. Using a peaking factor of 2.5 for the Interceptor, the average daily capacity is calculated at 0.221 MGD. The calculated average daily capacity in the Interceptor is slightly lower than the calculated average daily Interceptor flow, while calculated pipe capacity is greater than the calculated peak daily flow from the flow analysis. However, the calculated peaking factors from the flow analysis are lower than the assumed peaking factor for the Interceptor. Applying the peak day flow peaking factor from the flow analysis, the average daily capacity of the Interceptor is more on the order of 0.305 MGD.

The West Wynn I area consists of 60 single family residences. Using the Township's standard equivalent dwelling unit (EDU) allocation of 250 gallons per EDU, connecting all 60 properties to sewer system will generate an additional 15,000 GPD, for a total Interceptor flow of 0.237 MGD. Accounting for various calculated flows and pipe capacities, from a sewage facilities planning standpoint there is sufficient capacity to serve the West Wynn I area.

Table No. 1
Westtown Township
Chester Creek Wastewater Treatment Plant Interceptor Capacities

Pipe Diameter	Sectional Area	Hydraulic Radius	Roughness Coefficient	K	Diameter SF	K	Q Peak GPM	Q Average GPM	Q Peak MGD	Q Average 2.5 PF MGD	Q Average 1.81 PF MGD
10	0.545	0.208	0.015	18.95							
Manhole	Inv Feet	Length Feet	Slope				Q Peak GPM	Q Average GPM	Q Peak MGD	Q Average 2.5 PF MGD	Q Average 1.81 PF MGD
17	287.81	346	0.0048		10	18.95	589.21	235.68	0.848	0.339	0.469
16	286.15	160	0.0072		10	18.95	721.18	288.47	1.038	0.415	0.574
15	285.00	333	0.0035		10	18.95	502.06	200.83	0.723	0.289	0.399
14	283.84	156	0.0046		10	18.95	576.27	230.51	0.830	0.332	0.458
13	Not Found	197	0.0040		10	18.95	540.20	216.08	0.778	0.311	0.430
12	282.22	305	0.0057		10	18.95	641.28	256.51	0.923	0.369	0.510
11	280.99	322	0.0029		10	18.95	457.33	182.93	0.659	0.263	0.364
10	279.16	301	0.0027		10	18.95	445.48	178.19	0.641	0.257	0.354
9	278.29	299	0.0031		10	18.95	475.53	190.21	0.685	0.274	0.378
8	277.47	304	0.0034		10	18.95	492.77	197.11	0.710	0.284	0.392
7	276.52	298	0.0020		10	18.95	383.58	153.43	0.552	0.221	0.305
6	275.52	300	0.0033		10	18.95	490.32	196.13	0.706	0.282	0.390
5	274.91	304	0.0029		10	18.95	458.04	183.22	0.660	0.264	0.364
4	273.90	338	0.0035		10	18.95	504.39	201.76	0.726	0.291	0.401
3	272.92	347	0.0059		10	18.95	655.18	262.07	0.943	0.377	0.521
2	271.70	354			10	18.95					
1	269.60				10	18.95					

SECTION 4.0 – SEWAGE DISPOSAL ALTERNATIVES and IMPLEMENTATION

Results of SMP inspections in the West Wynn I area indicate that currently there are no long term concerns with OLDS function. Therefore, the sewage disposal alternative is the continued use of OLDS in conjunction with the SMP. At least two more rounds of SMP inspections will be completed in the West Wynn I area prior to completion of the Township wide Act 537 Plan in July 1, 2023. Westtown Township will continue to review and evaluate the results of SMP inspections to determine if further planning activities are warranted.

Evaluation of the Interceptor indicates that sufficient capacity exists for connection of the West Wynn I area if future evaluations of the area warrant extension of the sewer system.

Inasmuch as the SMP has already been implemented, no additional planning activities are required for the sewage disposal alternative.

APPENDIX A

June 7, 2013 and December 17, 2013 Department of Environmental Protection
Act 537 Plan Approval Letters



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DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHEAST REGIONAL OFFICE

December 17, 2013

Mr. Robert Layman, Manager
Westtown Township
P.O. Box 79
Westtown, PA 19395

Re: Act 537 Plan Update
West Wynn I Area
Status: ISSUED
Westtown Township
Chester County

Dear Mr. Layman:

We have completed our review of your municipality's updated official sewage facilities plan entitled *West Wynn I Area Act 537 Special Study* as prepared by URS Corporation, dated September 2013. The review was conducted in accordance with the provisions of the Pennsylvania Sewage Facilities Act.

Approval of the Plan is hereby granted. The Plan provides for the following:

1. The Plan provides for the continued use of on-lot sewage facilities in the West Wynn I area, an area comprised of 60 residential lots in the northeast quadrant of the Westtown Township (Township). The on-lot sewage facilities serving the West Wynn I area will be subject to a Sewage Management Program ("SMP").

The Township adopted Ordinance No. 2013-3, *An Ordinance providing for an On-Lot Sewage Management Program for Westtown Township*, on December 2, 2013. This ordinance provides for the regulation, inspection, maintenance and rehabilitation of on-lot sewage disposal systems; allows for intervention in situations which may constitute a public nuisance or hazard to public health; and establishes penalties and appeal procedures necessary for the proper administration of a sewage management program.

2. The Township will meter flows in key main interceptor segments to clearly identify average and peak flows and will establish an accurate baseline for needed upgrades to facilitate future planning.

3. The Township will adopt and submit to DEP an updated Act 537 Special Study ("West Wynn I Special Study") by October 31, 2016, for the West Wynn I area. The West Wynn I Special Study will include data collected as a result of the sewage management program and from the interceptor metering project and will address long-term sewage needs of this area.
4. Consistent with DEP's letter of June 7, 2013, concerning the September 2012 Act 537 Special Study for Westtown Township, the Township has committed to preparing an updated Act 537 Plan ("Plan Update") for all existing residences within 5 to 10 years.

DEP has the following comments concerning the Plan Update

- a. DEP requests that the Plan Update be a comprehensive, Township-wide plan, meeting the requirements of Chapter 71. We recommend that the Township and its consultants schedule a pre-plan of study meeting with DEP to discuss the requirements of the Plan Update.
- b. The Plan Update should evaluate all of the data collected as a result of the SMP.
- c. DEP requests that the Plan Update be adopted by the Township and submitted to DEP by July 1, 2023.
- d. If, in the interim, additional planning is necessary to address sewage disposal needs in a portion of the Township, the Township may prepare a special study to address those needs.

Please be advised that Items 3-5 of the Consent Order and Agreement executed on August 16, 2011, are terminated in accordance with Paragraph 18 of that document.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

IMPORTANT LEGAL RIGHTS ARE AT STAKE, HOWEVER, SO YOU SHOULD SHOW THIS DOCUMENT TO A LAWYER AT ONCE. IF YOU CANNOT AFFORD A LAWYER, YOU MAY QUALIFY FOR FREE PRO BONO REPRESENTATION. CALL THE SECRETARY TO THE BOARD (717.787.3483) FOR MORE INFORMATION.

If you have any questions, please contact Ms. Kelly A. Sweeney by the telephone located in the first page footer.

Sincerely,



Jenifer Fields, P.E.
Regional Manager
Clean Water

cc: Chester County Planning Commission
Chester County Health Department
Mr. Corbett
Ms. Sweeney
Ms. Maisey
Mr. Bram - OCC
Ms. Vollero - RCSOB, 11th Floor, Sewage Facilities
Planning Section
Re 30 (GJe13CLW)351-9



pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHEAST REGIONAL OFFICE

JUN 07 2013

Mr. Robert Layman, Manager
Westtown Township
P.O. Box 79
Westtown, PA 19395

Re: Act 537 Plan Update
Westtown Township
Chester County

Dear Mr. Layman:

The Department of Environmental Protection ("DEP") has completed the review of your municipality's updated official sewage facilities plan entitled *Act 537 Official Sewage Facilities Plan Special Study* ("Special Study") as prepared by URS Corporation dated September 2012. The Special Study was supplemented by additional information that we received on December 12, 2012, and April 18, 2013.

The review was conducted in accordance with the provisions of the Pennsylvania Sewage Facilities Act.

Our review has indicated that portions of the Special Study can be approved, while other portions of the Special Study are not in accordance with the Pennsylvania Sewage Facilities Act and the provisions set forth in the Pennsylvania Code, Title 25, Chapter 71.

DEP hereby grants approval for the following provisions of the Special Study:

1. Westtown Township ("Township") will implement a Sewage Management Program ("SMP") for all on-lot sewage disposal systems within the Township. The on-lot management ordinance will be adopted within 6 months of the date of this letter. A copy of the adopted ordinance shall be provided to DEP within 7 days of its adoption.

DEP has the following comments concerning the SMP:

- a. If the Township wishes to phase the implementation of the ordinance to create districts with staggered pumping/inspection dates, we request that the following areas be considered a priority for the implementation of the SMP: Tyson Drive, Hummingbird Farm, Carolyn Drive, Hunt Drive, Kilduff Circle, Farmview, Grandview Acres, Westover Farms, Butternut Lane, Avon Lea, West Lynn Area, Edgewood Chase, and Westtown Farms.

JUN 07 2013

Mr. Robert Layman, Manager

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- b. DEP requests that the Township provide an annual status report, identifying the tasks that have been completed under the SMP, the rate of compliance with the SMP, and the enforcement actions taken to obtain compliance with the SMP. We request that the status report be submitted by June 1, annually, and without further notice.
 - c. This approval does not waive any enforcement action available to DEP under any of its statutes or regulations. The Township may be subject to future planning orders if the annual status report reveals excessive noncompliance with the SMP or if DEP becomes aware of immediate sewage disposal needs that cannot be addressed by the continued implementation of the SMP.
2. The Township has committed to preparing an updated Act 537 Plan ("Plan Update") for all existing residences within 5 to 10 years of this action.

DEP has the following comments concerning the Plan Update:

- a. DEP requests that the Plan Update be a comprehensive, Township-wide plan, meeting the requirements of Chapter 71. We recommend that the Township and its consultants schedule a pre-plan of study meeting with DEP to discuss the requirements of the Plan Update.
- b. The Plan Update should evaluate all of the data collected as a result of the SMP.
- c. DEP requests that the Plan Update be adopted by the Township and submitted to DEP by July 1, 2023.
- d. If, in the interim, additional planning is necessary to address sewage disposal needs in a portion of the Township, the Township may prepare a special study to address those needs.

The following provision of the Special Study is hereby denied:

The selected alternative for the West Wynn I area is the implementation of the SMP. West Wynn I is comprised of approximately 60 lots. The majority of the lots are less than 1 acre net, or less than $\frac{3}{4}$ acre net, if served by public water. The majority of the lots are served by systems that predate the regulations. Eight percent (8 percent) of the lots in this area applied for, but did not receive, a repair permit, including 4 lots for which no feasible repair was available. Ten percent (10 percent) of the systems appear to require pumping more than one time per year.

Mr. Robert Layman, Manager

- 3 -

Consistent with Chapter 71, Section 71.32(d)(1), in approving or disapproving an official plan or official plan revision, DEP will consider whether the plan or revision meets the requirements of Chapter 71. DEP questions how the implementation of only a SMP will resolve the sewage disposal needs in this area, as required by Section 71.12(a).

The portion of the Special Study that focuses on the West Wynn I area is subject to the provisions of Milestone Event 3 of the August 16, 2011, Consent Order and Agreement ("2011 CO&A") by and between DEP and the Township. Within 120 days of the date of this letter, the Township shall submit another plan update for the West Wynn I area. This plan update may be in the form of a special study. Any failure of the municipality to submit the required planning within the time frame specified in this letter shall constitute a violation of Milestone Event 3 and subject the Township to remedies as set forth in the 2011 CO&A. The plan update for West Wynn I should thoroughly evaluate the conditions in this area and the alternatives available and choose an alternative that will adequately address the needs in this area. Alternately, in lieu of completing a plan update for this area, the Township may elect to implement the portion of its approved 2006 Act 537 plan update that pertained to West Wynn I. If the Township elects this alternative, please inform us of your intent to do so within 120 days of the date of this letter and provide a revised implementation schedule to us for our approval. The 2011 CO&A remains in effect until the Township has complied fully with the obligations in paragraphs 3, 4, and 5 of the 2011 CO&A.

Any person aggrieved by this action may appeal, pursuant to Section 4 of the Environmental Hearing Board Act, 35 P.S. Section 7514, and the Administrative Agency Law, 2 Pa.C.S. Chapter 5A, to the Environmental Hearing Board, Second Floor, Rachel Carson State Office Building, 400 Market Street, P.O. Box 8457, Harrisburg, PA 17105-8457, 717.787.3483. TDD users may contact the Board through the Pennsylvania Relay Service, 800.654.5984. Appeals must be filed with the Environmental Hearing Board within 30 days of receipt of written notice of this action unless the appropriate statute provides a different time period. Copies of the appeal form and the Board's rules of practice and procedure may be obtained from the Board. The appeal form and the Board's rules of practice and procedure are also available in braille or on audiotape from the Secretary to the Board at 717.787.3483. This paragraph does not, in and of itself, create any right of appeal beyond that permitted by applicable statutes and decisional law.

IF YOU WANT TO CHALLENGE THIS ACTION, YOUR APPEAL MUST REACH THE BOARD WITHIN 30 DAYS. YOU DO NOT NEED A LAWYER TO FILE AN APPEAL WITH THE BOARD.

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JUN 07 2013

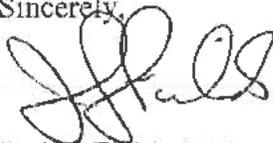
Mr. Robert Layman, Manager

- 4 -

RECEIVED
JUN 12 2013
CORPORAT

If you have any questions, please contact Ms. Kelly A. Sweeney of this office.

Sincerely,



Jenifer Fields, P.E.
Regional Manager
Clean Water

cc: Chester County Planning Commission
Chester County Health Department
Mr. Corbett – URS Corporation
Ms. Sweeney
Ms. Vollero – RCSOB, 11th Floor, Sewage Facilities
Planning Section
Re 30 (joh13clw)155-11

APPENDIX B

2013 Special Study Chester County Health Department Data

- Age of sewage systems – DEP policies identify areas constructed prior to initiation of current standards for on-lot sewage systems in 1972 as potential sewage needs areas.
- Soils mapping – data which categorizes soils with regard to on-lot sewage system suitability can help identify the likelihood of current or future problems.
- Lot sizes – the size of lots can help identify where sufficient area may exist to install replacement on-lot sewage system absorption areas if needed.

A brief summary of each criterion as applicable to the West Wynn I area follows, with updated information where available.

2.1 Chester County Health Department Records

CCHD sewage system repair permitting records documented in the 2012 Special Study included all available data through June of 2012. Based upon updated CCHD records through July of 2013, there are two lots in the West Wynn I area which have since received permits for installation of new absorption areas to address both a malfunction and a failed certification. Both absorption areas were permitted without reducing any minimum isolation distance requirements. No additional CCHD information is available with regard to frequent sewage system pumping activities.

Map 1 illustrates the updated CCHD records for the West Wynn I area in accordance with the categories discussed in the 2012 Special Study, and Table 1 shows the relative incidence of each CCHD data category in the West Wynn I area. A summary of CCHD records by parcel for the West Wynn I area can be found in Appendix B.

**Table 1
Summary of CCHD Data Categories**

CCHD Data Category	No. of Parcels	% of Total
Absorption Area Repair, No Mitigating Circumstances	9	15.00%
Non Absorption Area Repair (tank replacement)	2	3.33%
No Repair Feasible	4	6.67%
Repair Potential Unresolved	1	1.67%
Frequent Pumping (and not identified as no repair feasible)	4	6.67%
No CCHD Data	40	66.66%
Total No. of Parcels	60	100.00%

Legend

- Municipal Boundary
- Parcel Boundary
- Stream
- Study Area Boundary

CCHD Records

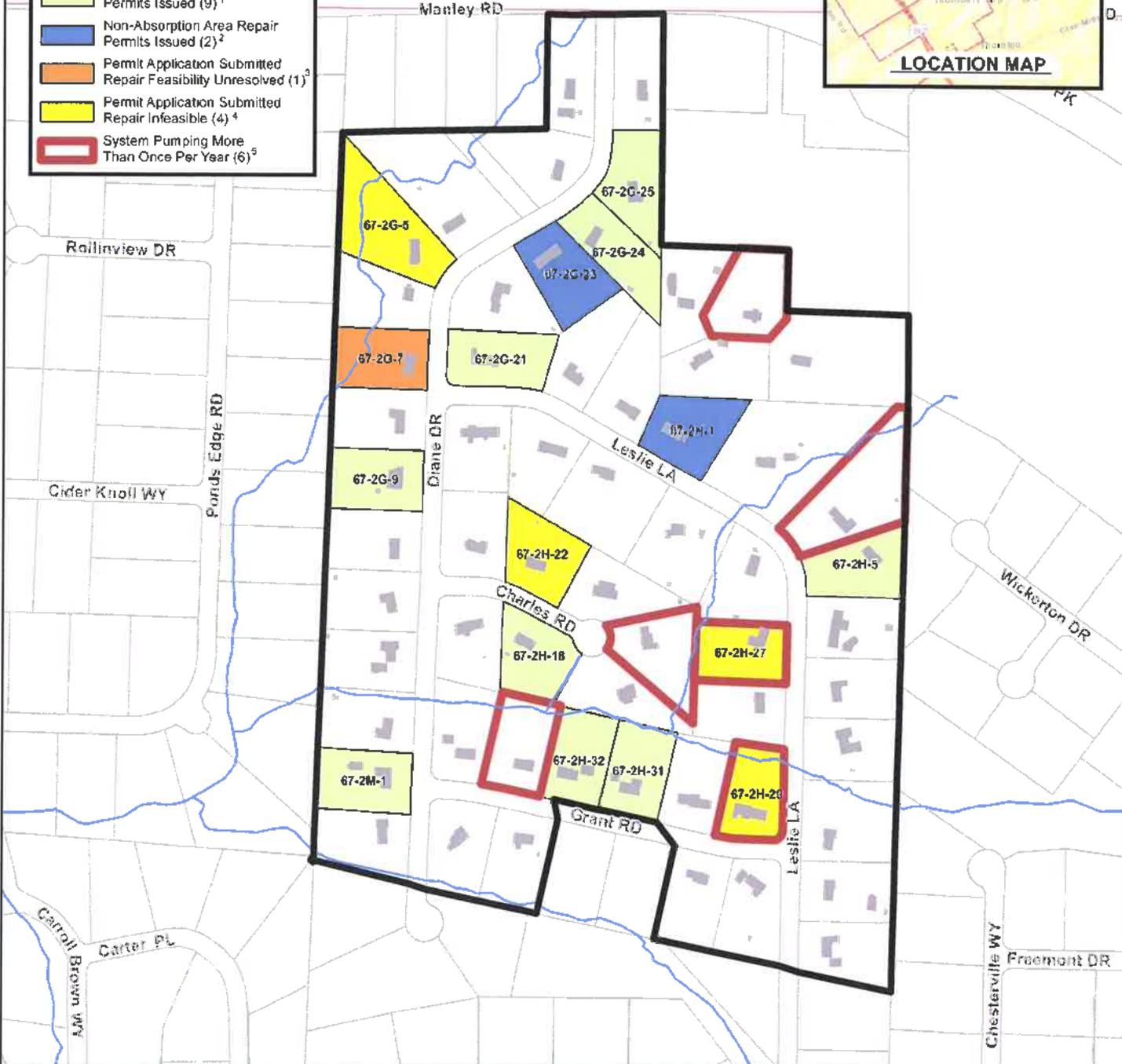
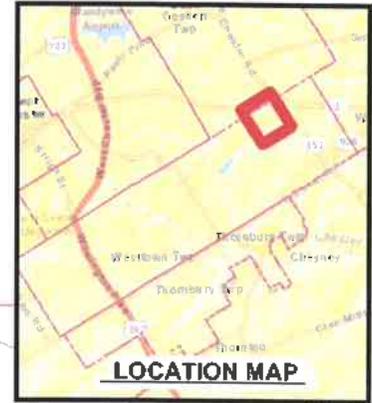
- Absorption Area Repair Permits Issued (9)¹
- Non-Absorption Area Repair Permits Issued (2)²
- Permit Application Submitted Repair Feasibility Unresolved (1)³
- Permit Application Submitted Repair Infeasible (4)⁴
- System Pumping More Than Once Per Year (6)⁵

Notes:

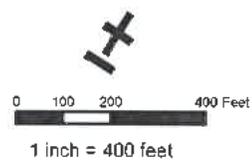
1. Repairs with no Best Technical Guidance (BTG).
2. Tank and delivery line repairs.
3. Incomplete or passing soils testing with no follow-up.
4. Failed soils testing and/or CCHD notes indicating unstable site.
5. Based upon CCHD seepage management database records for 2005 - May 2012.

Data Source:

- *Base data - Chester County GIS Dept, May 2011
- *Septic Repair Permit Activity - Chester County Health Department, July 2013



V:\Projects\1551APA_Westtown\20911093\GIS_Job\Maping\1_SystemRepairs_8x11.mxd



MAP FORMATED FOR 'A' (8 1/2" X 11") SIZE SHEET.
SCALE NOT VALID FOR DIFFERENT PAGE SIZE

FILE NUMBER:	-
DESIGNED BY:	-
DRAWN BY:	RM
CHECK BY:	SC

URS
 Iron Hill Corporate Center
 Sabre Building Suite 300
 4051 Ogletown Road
 Newark, DE 19713

MAP 1
CHESTER COUNTY HEALTH
DEPARTMENT RECORDS
WEST WYNN I
ACT 537 SPECIAL STUDY
 Westtown Township, Chester County, Pennsylvania

PROJECT NUMBER:	20911093
DATE:	7/29/2013
FIGURE NUMBER:	1

Appendix B:

Summary of Chester County Health Department Records

CHESTER COUNTY HEALTH DEPARTMENT SEWAGE SYSTEM REPAIR PERMITTING RECORDS IN WEST WYNN I AREA

Parcel No.	Site Address	Permit No.	Permit Status	Application Date	Issued Date	Final Approval Date	Repair Reason	Absorption Area Permitted	Additional File Review Comments
67-2G-21	401 Leslie La	Z126341	Approved	Not specified	11/15/2012	11/19/2012	Unsatisfactory Certification	Subsurface Sand Filter Bed	
67-2G-23	307 Diane Dr	Z015429	Approved	5/19/2006	5/19/2006	6/15/2006		Septic Tank Only	TANK ONLY PERMIT FINALED 6/15/06; CCHD DATABASE SHOWS > 1 PUMP/YR, BUT ONLY 1 PUMP SINCE PERMIT FINALED
67-2G-24	305 Diane Dr	Q20057	Approved	8/13/1999	8/13/1999	9/28/1999	Malfunction	Standard Bed	
67-2G-25	303 Diane Dr	R18361	Approved	12/1/2003	12/1/2003	12/17/2003	Malfunction	Standard Trench	
67-2G-5	308 Diane Dr	T021343	Not issued	4/13/2004			Malfunction		FAILED ESM PERC. NO ADDITIONAL INFO
67-2G-7	312 Diane Dr	T008828	Not issued	10/16/2003			Unsatisfactory Certification		IZ@84", PERC FAILED @ 12"/36", PERC PASSED @ 60", NO ADDITIONAL INFO
67-2G-9	402 Diane Dr	Z042695	Issued	Not specified	7/1/2013		Malfunction	Standard Bed	
67-2H-1	501 Leslie La	R35149	Approved	9/21/2000	9/21/2000	10/24/2000	Malfunction	Septic Tank Only	
67-2H-18	1504 Charles Rd	O17182	Approved	4/9/1997	4/9/1997	5/12/1997	Not specified	Subsurface Sand Filter Bed	
67-2H-22	1503 Charles Rd	T018739	Not issued	10/12/2004			Malfunction		NO SUITABLE SITE PER CCHD; NO DRIP MICROMOUND SUITABILITY PER CPSS, DEP SFTF PERMIT APP SUBMITTED BUT NOT APPROVED
67-2H-27	419 Leslie La	Z112000	Not issued	11/10/2011			Unsatisfactory Certification		IZ <20", NO PERC PER PERMIT DATA; SYSTEM PUMPED 8 TIMES FROM 5/22/05 THRU 5/31/12 PER CCHD DATABASE
67-2H-29	1511 Grant Rd	Z64673	Not issued	8/6/2008			Unsatisfactory Certification		NO SUITABLE SITE PER CCHD; CPSS TP'S INDICATE SUITABLE FOR DRIP BUT SEO NOTES SAY INSUFFICIENT AREA FOR DRIP; PUMPED 7 TIMES FROM 12/1/05 THRU 1/16/12 PER CCHD DATABASE
67-2H-31	1507 Grant Rd	Z056922	Approved	5/5/2010	10/18/2010	11/16/2010	Unsatisfactory Certification	Standard Bed	
67-2H-32	1505 Grant Rd	Q19688	Approved	9/27/1999	9/27/1999	10/7/1999	Unsatisfactory Certification	Standard Bed	
67-2H-5	415 Leslie La	T008783	Approved	10/29/2003	10/29/2003	12/15/2003	Unsatisfactory Certification	Standard Trench	
67-2M-1	412 Diane Dr	Z057223	Approved	1/7/2009	1/7/2009	3/25/2009	Malfunction	Standard Bed	SYSTEM PUMPED 9 TIMES FROM 10/6/05 THRU 2/6/09 PER CCHD DATABASE; NEW AA FINALED 3/25/09, NO SUBSEQUENT PUMPING

APPENDIX C

Chester Creek Wastewater Treatment Plant Flow Analysis

WESTTOWN TOWNSHIP
CHESTER CREEK WASTEWATER TREATMENT PLANT INTERCEPTOR
FLOW ANALYSIS MODEL

The flow analysis model for calculating wastewater flow for specific flow frequencies in the Chester Creek Wastewater Treatment Plant Interceptor (Interceptor) is based on “Statistical analysis of flow rates, constituent concentrations and mass loadings” from “Wastewater Engineering, Treatment and Reuse”, Metcalf and Eddy 4th edition.

The model allows for calculation of a specific flow based on a known flow probability or frequency. Typical flow frequencies are:

- Average daily flow (ADF) – Probability = 50%
- Maximum monthly flow (MMF) – Probability = 92.31%
- Peak daily flow (PDF) – Probability = 99.73%

Probabilities are the number of periods divided by the number of periods + 1. For maximum monthly flow the number of periods is 12 months and the probability is 12 months/12+1 months.

The calculated flow for a corresponding flow frequency represents the required capacity of a facility based on the flow data set used to create the flow analysis model. For the Interceptor, the calculated flow represents the required Interceptor capacity. For an existing facility, the calculated flow can be compared to the calculated Interceptor capacity to see if the Interceptor can convey the flow.

The flow data source is recorded influent flow at the Chester Creek Wastewater Treatment Plant (CCWWTP). Daily flow data is available from January 1, 2010 through December 31, 2015.

Flow data is sorted and ranked from lowest to highest flow value. The ranking number (1, 2, 3,...) is converted to a probability for the specific corresponding flow occurrence in the total flow data. The probability is ranking number divided by the number of data points + 1. The flow probability is linearized to create a z-Scale normal quantile probability distribution using the NORMSINV function contained in Microsoft Excel™. Flows on a logarithmic scale are plotted against the z-Scale to obtain a linear plot of the data. A trend line and equation are generated by Excel™ and added to the graph. The trend line equation is used to calculate a flow for a specific probability or flow frequency. The R² value for the data is also automatically calculated. The R² value is a statistical measure of how close the data are to the trend line. The closer to 1.0 the R² value, the more reliable the flow prediction for the plotted data.

Figure No. C1 shows the flow analysis for the CCWWTP. The R² value of 0.981 shows a very good correlation of the trend line to the underlying data. Using the trend line equation shown in Figure No. C1, flow values can be calculated for specific flow frequencies. For the above listed flow frequencies, the corresponding flows are:

- Average daily flow = 0.253 MGD
- Maximum monthly flow = 0.360 MGD
- Peak daily flow = 0.502 MGD

Closer inspection of the plotted flow data and trend line in Figure No. C1 shows that at the high and low ends of the flow data, the data diverges significantly from the trend line and the density of the plotted data decreases. The divergence and decrease in plot data density indicate that a few "outlier" data that may influence calculated flows.

To determine if outlier data is influencing the calculated flow, a revised flow analysis is prepared to see if flow data on the high and low end should be removed. The flow analysis is revised by calculating the arithmetic mean (**A**) and standard deviation (**SD**) of the original data. Any flow data point less than $A - (2 * SD)$ or greater than $A + (2 * SD)$ is removed from the data and a new data plot is created. The arithmetic mean of the flow data is 0.261 MGD and the standard deviation is 0.072 MGD. Flow data less than 0.117 MGD or greater than 0.405 is removed from the data.

Figure No. C2 shows the revised flow analysis. The R^2 value of 0.9953 again shows a very good correlation of the trend line to the underlying data and improves on the original flow analysis. Using the trend line equation shown in Figure No. C2, flow values can be calculated for specific flow frequencies.

Average daily flow = 0.247 MGD
Maximum monthly flow = 0.335 MGD
Peak daily flow = 0.447 MGD

The revised flow analysis shows that the fewer high flow data points in the original flow analysis result in higher calculated peak flows in the original flow analysis, while the average daily flow is only slightly lower.

Figure No. C1
Flow Analysis - Chester Creek WWTP
Logarithm Normal Distribution Plot

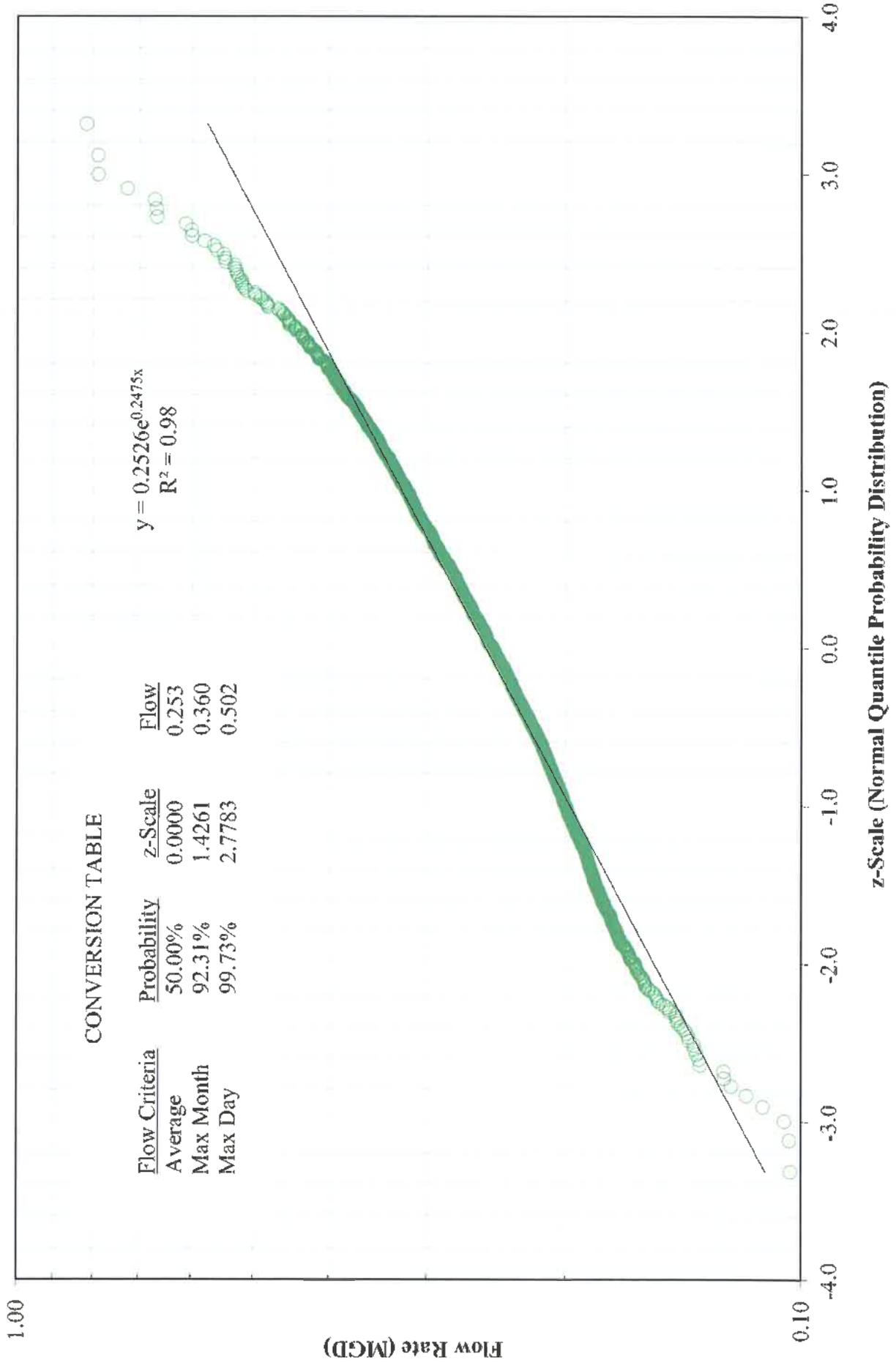
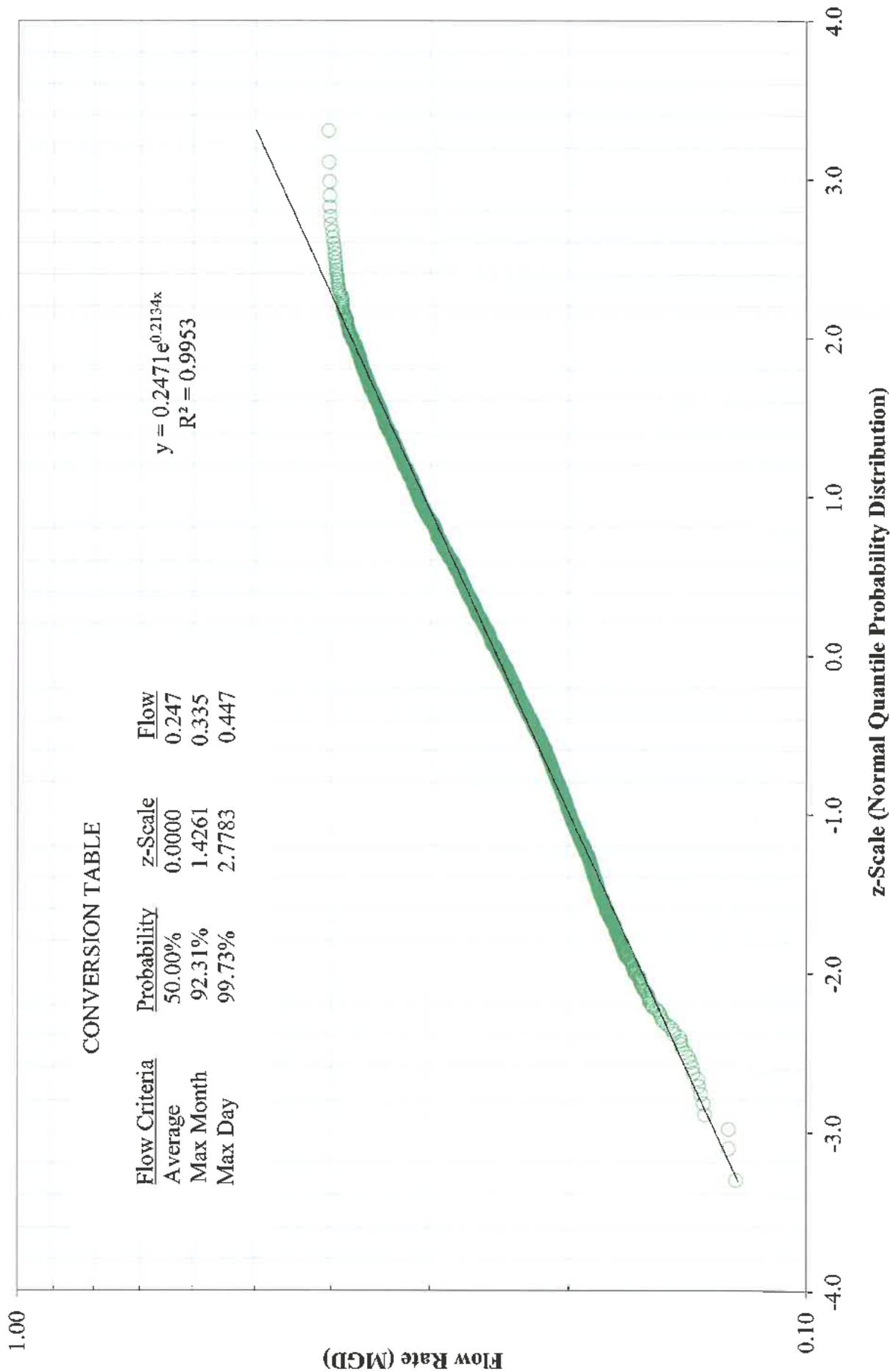


Figure No. C2

Flow Analysis - Chester Creek WWTP Revised

Logarithm Normal Distribution Plot



APPENDIX D

Resolution No. ____ Westtown Township, Montgomery County, PA
Adopting the Act 537 Plan Special Study

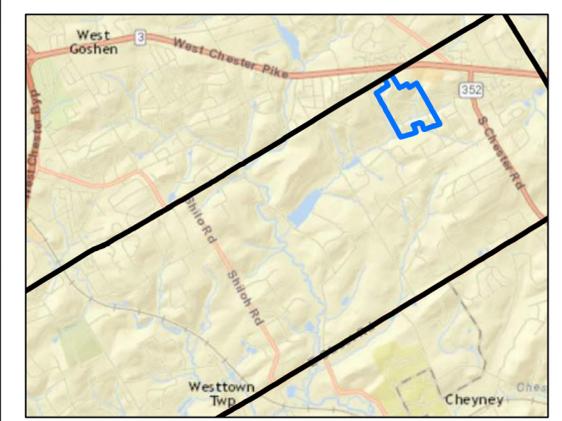
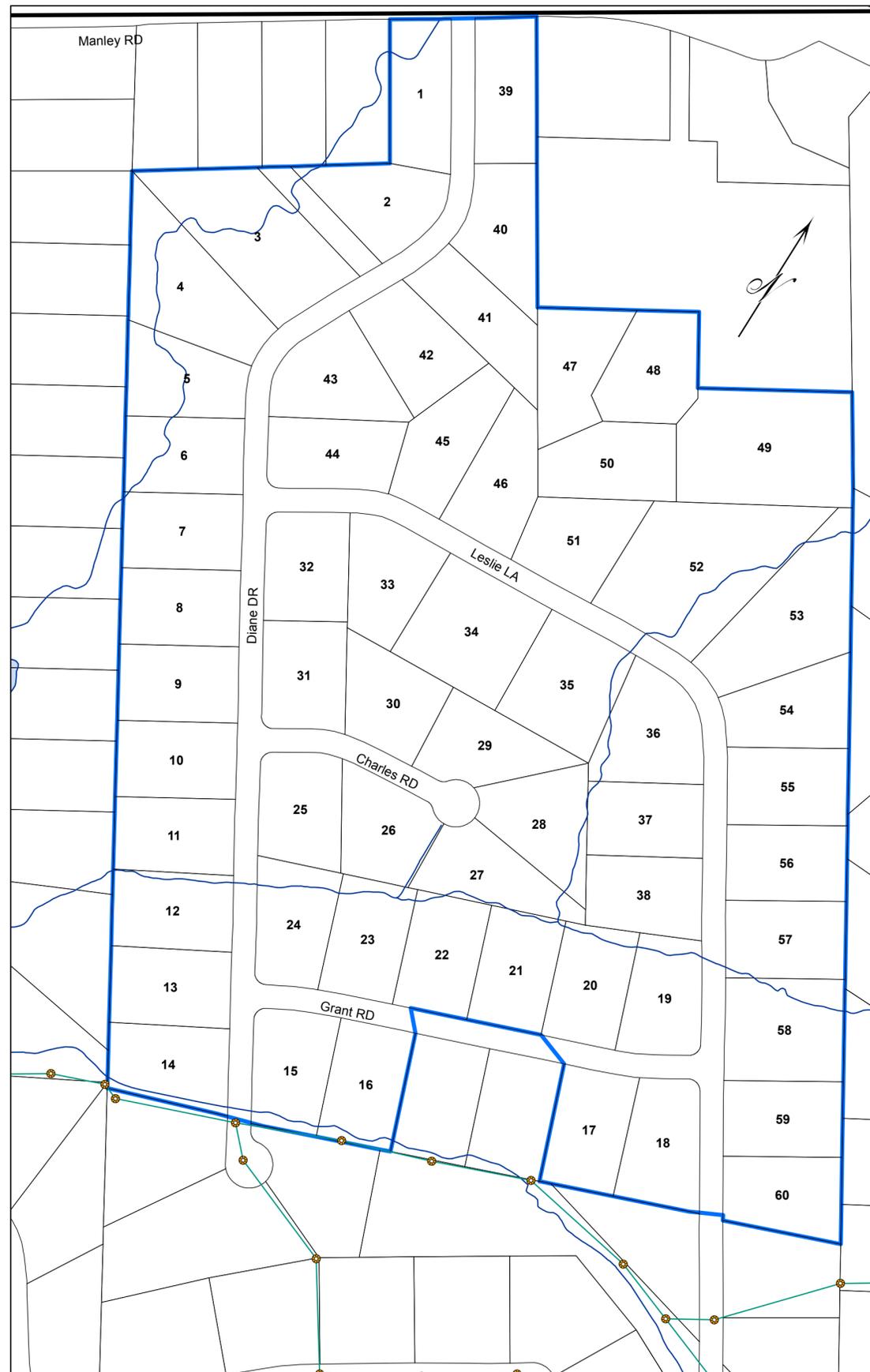
APPENDIX E

Proof of Submission for Review, Review Comments and Comment Responses

APPENDIX F

Proof of Public Notice

Parcel ID	Street Address	SMP Inspection Results	SMP Repairs
1	300 Diane Drive	Open Pipe Discharge	Pipe was not in use/abandoned
2	302 Diane Drive		
3	306 Diane Drive		
3	306 Diane Drive		
4	308 Diane Drive		
5	310 Diane Drive		
6	312 Diane Drive		
7	400 Diane Drive	Outlet Baffle	Baffle replaced
8	402 Diane Drive		
9	404 Diane Drive		
10	406 Diane Drive		
11	408 Diane Drive		
12	410 Diane Drive		
13	412 Diane Drive		
14	500 Diane Drive	Surface Discharge	Additional pumping/sewer connection available
15	501 Diane Drive	Inlet Baffle	Baffle replaced
16	1504 Grant Road		
17	1510 Grant Road		
18	1512 Grant Road		
19	422 Leslie Lane		
20	1509 Grant Road	Inlet and Outlet Baffles	Baffles replaced
21	1507 Grant Road		
22	1505 Grant Road		
23	1503 Grant Road	Surface Discharge	More frequent pumping/follow up inspections show no current issues
24	1501 Grant Road		
25	1500 Charles Road		
26	1504 Charles Road		
27	1506 Charles Road		
28	1507 Charles Road	Inlet Baffle	New baffle installed
29	1505 Charles Road	Inlet Baffle	New baffle installed
30	1503 Charles Road		
31	1501 Charles Road		
32	400 Leslie Lane		
33	402 Leslie Lane		
34	406 Leslie Lane		
35	408 Leslie Lane		
36	412 Leslie Lane	Distribution Box Out of Level	Distribution box leveled
37	416 Leslie Lane		
38	420 Leslie Lane		
39	301 Diane Drive		
40	303 Diane Drive		
41	305 Diane Drive		
42	307 Diane Drive		
43	309 Diane Drive		
44	401 Leslie Lane		
45	403 Leslie Lane		
46	405 Leslie Lane		
47	1512 Manley Road		
48	1516 Manley Road		
49	1510 Manley Road		
50	1514 Manley Road		
51	407 Leslie Lane		
52	409 Leslie Lane		
53	413 Leslie Lane		
54	415 Leslie Lane		
55	417 Leslie Lane		
56	419 Leslie Lane	Inlet Baffle	New baffle installed
57	421 Leslie Lane		
58	423 Leslie Lane		
59	501 Leslie Lane		
60	503 Leslie Lane	Inlet and Outlet Baffles/Cracks in Tank and Lid	New tank installed



LOCATION MAP
1 inch = 6,000 feet

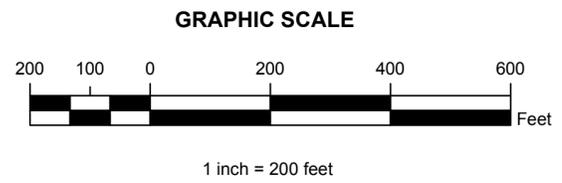


Figure No. 1

PLANNING AREA MAP AND SEWAGE MANAGEMENT PROGRAM INSPECTION RESULTS

2016 WEST WYNN I ACT 537 SPECIAL STUDY
SITUATED IN:
WESTTOWN TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA

PREPARED FOR:
WESTTOWN TOWNSHIP
1039 WILMINGTON PIKE
WEST CHESTER, PENNSYLVANIA 19382

Carroll Engineering Corporation

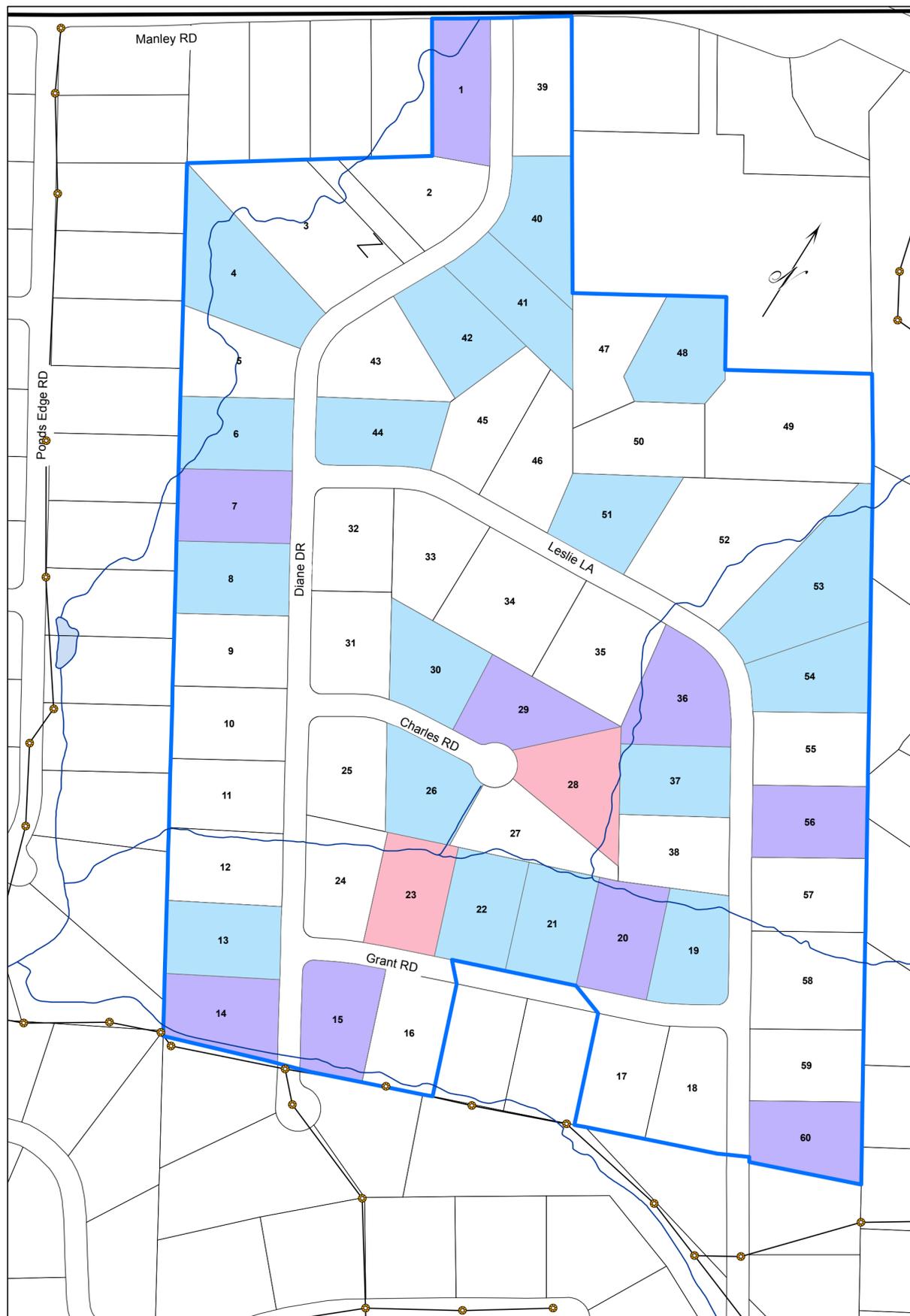
949 Easton Road Warrington, PA 18976 Phone: 215-343-5700 Fax: 215-343-0875		105 Rader Boulevard, Suite 206 Hillsborough, NJ 08844 Phone: 908-874-7500 Fax: 908-874-5762
630 Freedom Business Ctr. 3rd Fl. King of Prussia, PA 19406 Phone: 610-489-5100	www.carrollengineering.com	101 Linderwood Drive, Suite 225 Malvern, PA 19355 Phone: 484-875-3075

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DATE: 07/08/16 JOB NO: 15-5714.01 SCALE: 1" = 200 ft.

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Parcel ID	Street Address	OLDS Issues Identified in the 2013 Special Study	SMP Inspection Results	SMP Repairs
1	300 Diane Drive		Open Pipe Discharge	Pipe was not in use/abandoned
2	302 Diane Drive			
3	306 Diane Drive			
3	306 Diane Drive			
4	308 Diane Drive	Permit Application Submitted, Repair Infeasible		
5	310 Diane Drive			
6	312 Diane Drive	Permit Application Submitted, Repair Feasibility Unresolved		
7	400 Diane Drive		Outlet Baffle	Baffle replaced
8	402 Diane Drive	Absorption Area Repair Permit Issued		
9	404 Diane Drive			
10	406 Diane Drive			
11	408 Diane Drive			
12	410 Diane Drive			
13	412 Diane Drive	Absorption Area Repair Permit Issued		
14	500 Diane Drive		Surface Discharge	Additional pumping/sewer connection available
15	501 Diane Drive		Inlet Baffle	Baffle replaced
16	1504 Grant Road			
17	1510 Grant Road			
18	1512 Grant Road			
19	422 Leslie Lane	Permit Application Submitted, Repair Infeasible		
20	1509 Grant Road		Inlet and Outlet Baffles	Baffles replaced
21	1507 Grant Road	Absorption Area Repair Permit Issued		
22	1505 Grant Road	Absorption Area Repair Permit Issued		
23	1503 Grant Road	Pumping More Than Once per Year	Surface Discharge	More frequent pumping/follow inspections show no current issues
24	1501 Grant Road			
25	1500 Charles Road			
26	1504 Charles Road	Absorption Area Repair Permit Issued		
27	1506 Charles Road			
28	1507 Charles Road	Pumping More Than Once per Year	Inlet Baffle	New baffle installed
29	1505 Charles Road		Inlet Baffle	New baffle installed
30	1503 Charles Road	Permit Application Submitted, Repair Infeasible		
31	1501 Charles Road			
32	400 Leslie Lane			
33	402 Leslie Lane			
34	406 Leslie Lane			
35	408 Leslie Lane			
36	412 Leslie Lane	Permit Application Submitted, Repair Infeasible	Distribution Box Out of Level	Distribution box leveled
37	416 Leslie Lane			
38	420 Leslie Lane			
39	301 Diane Drive			
40	303 Diane Drive	Absorption Area Repair Permit Issued		
41	305 Diane Drive	Absorption Area Repair Permit Issued		
42	307 Diane Drive	Non-Absorption Area Permit Issued		
43	309 Diane Drive			
44	401 Leslie Lane	Absorption Area Repair Permit Issued		
45	403 Leslie Lane			
46	405 Leslie Lane			
47	1512 Manley Road			
48	1516 Manley Road	Pumping More Than Once per Year		
49	1510 Manley Road			
50	1514 Manley Road			
51	407 Leslie Lane	Non-Absorption Permit Issued		
52	409 Leslie Lane			
53	413 Leslie Lane	Pumping More Than Once per Year		
54	415 Leslie Lane	Absorption Area Repair Permit Issued		
55	417 Leslie Lane			
56	419 Leslie Lane		Inlet Baffle	New baffle installed
57	421 Leslie Lane			
58	423 Leslie Lane			
59	501 Leslie Lane			
60	503 Leslie Lane		Inlet and Outlet Baffles/Cracks in Tank and Lid	New tank installed



Legend

- West Wynn I Study Area
- Properties Identified on Map 1 of the 2013 West Wynn I Act 537 Special Study as Indicative of Potential Existing Sewage System Problems
- Properties Requiring Sewage System Repairs Resulting from SMP Inspections
- Properties Identified in Both the West Wynn I Special Study and SMP Inspections
- Manhole
- Gravity Main
- Municipal Boundary
- Parcels
- Lakes
- Streams

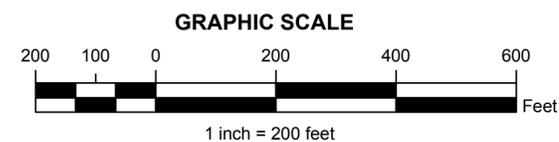


Figure No. 2

**COMPARISON OF 2013 & 2016
SPECIAL STUDY ON-LOT SEWAGE
SYSTEM CONDITION INDICATORS**

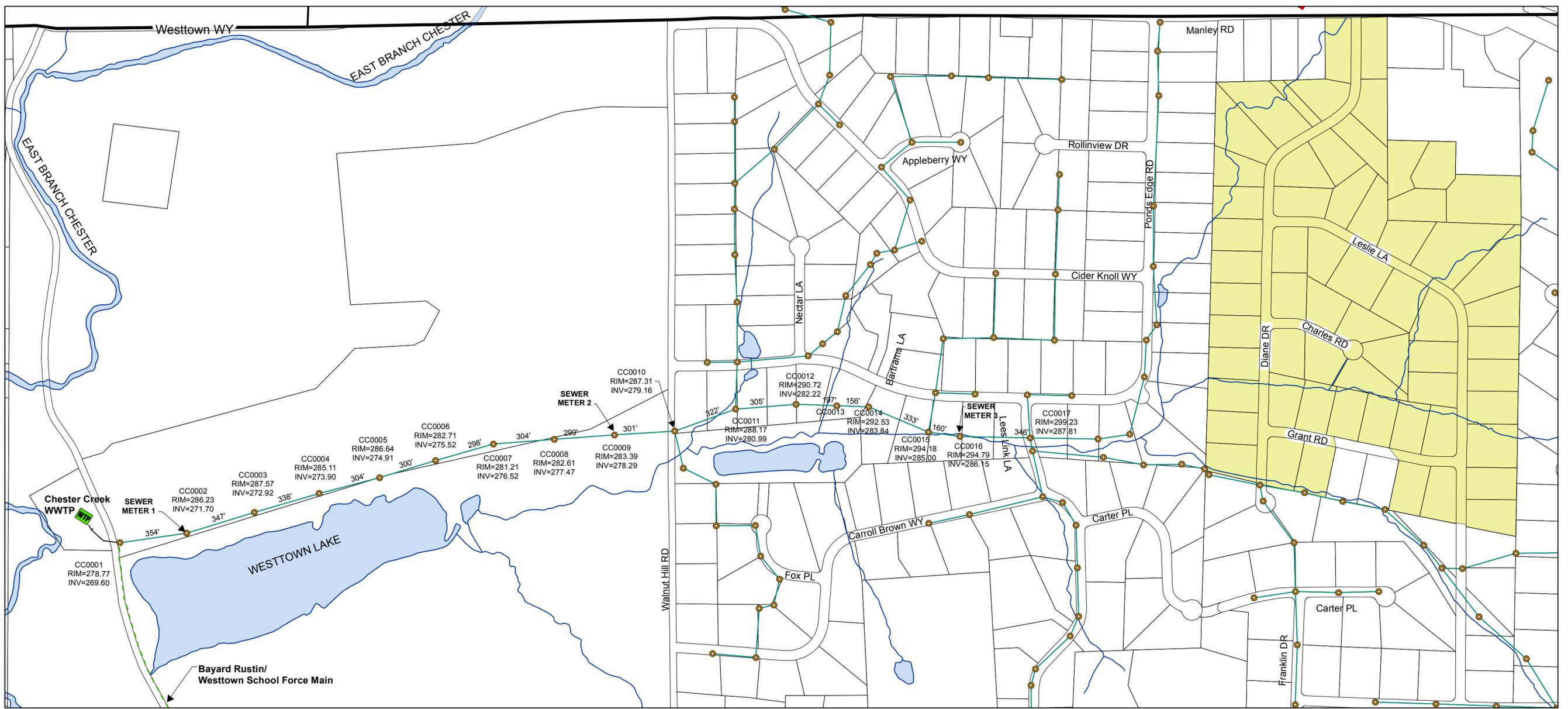
2016 WEST WYNN I ACT 537 SPECIAL STUDY
SITUATED IN:
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CHESTER COUNTY, PENNSYLVANIA**
PREPARED FOR:
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1039 WILMINGTON PIKE
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Carroll Engineering Corporation

949 Easton Road Warrington, PA 18976 Phone: 215-343-5700 Fax: 215-343-0875		105 Raifer Boulevard, Suite 206 Hillsborough, NJ 08844 Phone: 908-874-7500 Fax: 908-874-5762
630 Freedom Business Ctr., 3rd Fl. King of Prussia, PA 19406 Phone: 610-489-5100		101 Lindenwood Drive, Suite 225 Malvern, PA 19355 Phone: 484-875-3075

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Legend

- West Wynn I Study Area
- Manhole
- Gravity Main
- Force Main
- Municipal Boundary
- Parcels
- Lakes
- Streams

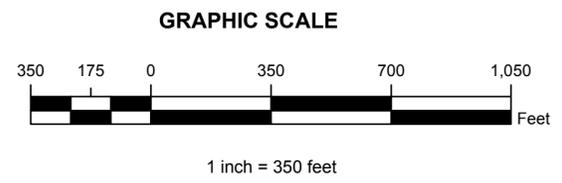


Figure No. 3

CHESTER CREEK WASTEWATER TREATMENT PLANT INTERCEPTOR

2016 WEST WYNN I ACT 537 SPECIAL STUDY
SITUATED IN:

**WESTTOWN TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA**

PREPARED FOR:
**WESTTOWN TOWNSHIP
1039 WILMINGTON PIKE
WEST CHESTER, PENNSYLVANIA 19382**

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DATE: 07/08/16 JOB NO: 15-5714.01 SCALE: 1" = 350 ft.

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