COZEN O'CONNOR

February 1, 2021

VIA E-FILE

David P. Zambito
Direct Phone 717-703-5892
Direct Fax 215-989-4216
dzambito@cozen.com

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
Harrisburg, PA 17120

Re: Investigation Instituted per Section 529 into Whether the Commission Shall Order a Capable Public Utility to Acquire Delaware Sewer Company; Docket No. I-2016-2526085

Answer and New Matter of Pennsylvania-American Water Company to the Petition of Delaware Sewer Company to Order Pennsylvania-American Water Company to Close Transaction by March 1, 2021

Dear Secretary Chiavetta:

Enclosed for filing with the Pennsylvania Public Utility Commission is the above-referenced pleading, filed on behalf of Pennsylvania-American Water Company. A notice to plead and a verification are included with the pleading. A complete copy of this filing has been served in accordance with the attached Certificate of Service.

If you have any questions regarding this filing, please direct them to me. Thank you for your attention to this matter.

Sincerely,

COZEN O'CONNOR

By: David P. Zambito
Counsel for *Pennsylvania-American Water Company*

DPZ
Enclosure
cc: Honorable Steven K. Haas
Per Certificate of Service
Susan Simms Marsh, Esquire
Paul T. Diskin, Director, Bureau of Technical Utility Services
Office of Special Assistants at ra-OSA@pa.gov

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Investigation Instituted Per Section 529 into Whether the Commission Shall Order a Capable Public Utility to Acquire Delaware Sewer Company	:	Docket No. I-2016-2526085

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the **Answer and New Mater of Pennsylvania-American Water Company to the Petition of Delaware Sewer Company to Order Pennsylvania-American Water Company to Close Transaction by March 1, 2021**, upon the parties, listed below, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a party).

DUE TO THE COVID-19 PANDEMIC, SERVICE IS BEING MADE BY E-MAIL ONLY

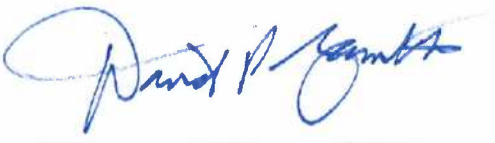
Thomas T. Niesen, Esquire
Thomas, Niesen & Thomas, LLC
212 Locust Street, Suite 600
Harrisburg PA 17101
tniesen@tntlawfirm.com
Counsel for *Delaware Sewer Company*

Christine Maloni Hoover, Esquire
Erin L. Gannon, Esquire
Office of Consumer Advocate
555 Walnut Street
Forum Place, 5th Floor
Harrisburg, PA 17101-1923
choover@paoca.org
egannon@paoca.org
Counsel for *Office of Consumer Advocate*

Scott B. Granger, Prosecutor
Allison C. Kaster, Prosecutor
Pennsylvania Public Utility Commission
Bureau of Investigation & Enforcement
Commonwealth Keystone Building
400 North Street, 2nd Floor West
P.O. Box 3265
Harrisburg, PA 17105-3265
sgranger@pa.gov
akaster@pa.gov
Counsel for *Bureau of Investigation & Enforcement*

Alexander Stahl, Esquire
Aqua Pennsylvania Wastewater, Inc.
762 W Lancaster Avenue
Bryn Mawr, PA 19010
Counsel for *Aqua Pennsylvania Wastewater, Inc.*

DATED: February 1, 2021



David P. Zambito, Esquire
Counsel for
Pennsylvania-American Water Company

VERIFICATION

I, Andrew L. Swope, hereby state that the facts set forth above are true and correct to the best of my knowledge, information and belief and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: 1/29/2021

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Investigation Instituted per Section 529 into Whether the Commission Shall Order a Capable Public Utility to Acquire Delaware Sewer Company	: : : :	Docket No. I-2016-2526085

NOTICE TO PLEAD

TO WHOM IT MAY CONCERN:

YOU ARE HEREBY ADVISED THAT, PURSUANT TO THE REGULATIONS OF THE PENNSYLVANIA PUBLIC UTILITY COMMISSION AT 52 PA. CODE § 5.63, YOU MAY FILE A REPLY TO THE NEW MATTER IN THIS ANSWER AND NEW MATTER WITH THE SECRETARY'S BUREAU OF THE PENNSYLVANIA PUBLIC UTILITY COMMISSION AT THE FOLLOWING ADDRESS:

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street – Filing Room (2nd Floor)
P.O. Box 3265
Harrisburg, PA 17105-3265

A REPLY MAY BE FILED WITHIN TWENTY (20) DAYS OF THE DATE OF SERVICE OF THIS ANSWER AND NEW MATTER. FOR MORE INFORMATION REGARDING THE FILING OF A REPLY, PLEASE CONTACT THE SECRETARY'S BUREAU AT (717) 772-7777. A COPY OF ANY REPLY SHOULD BE SERVED ON THE UNDERSIGNED COUNSEL.

David P. Zambito, Esq. (PA ID 80017)
Jonathan P. Nase, Esq. (PA ID 44003)
Cozen O'Connor
17 North Second Street, Suite 1410
Harrisburg, PA 17101
E-mail: dzambito@cozen.com
E-mail: jnase@cozen.com
Telephone: (717) 703-5892
Counsel for *Pennsylvania-American Water Company*

Susan Simms Marsh, Esq. (PA ID 44689)
Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
E-mail: Susan.Marsh@amwater.com
Telephone: (717) 550-1570

Date: February 1, 2021

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Investigation Instituted per Section 529 into Whether the Commission Shall Order a Capable Public Utility to Acquire Delaware Sewer Company	: : :	Docket No. I-2016-2526085

ANSWER AND NEW MATTER OF PENNSYLVANIA-AMERICAN WATER COMPANY TO THE PETITION OF DELAWARE SEWER COMPANY TO ORDER PENNSYLVANIA-AMERICAN WATER COMPANY TO CLOSE TRANSACTION BY MARCH 1, 2021

AND NOW COMES Pennsylvania-American Water Company ("PAWC"), by and through its counsel, Cozen O'Connor, to Answer and present New Matter to the "Petition of Delaware Sewer Company to Close Transaction by March 1, 2021" ("Petition"), which Delaware Sewer Company ("DSC") filed on January 21, 2021. For the reasons set forth below, PAWC respectfully submits that the Commission should (1) summarily deny the Petition, and (2) require DSC to file for Commission approval of an affiliated interest arrangement with Forest City Partnership, LLC ("FCP"), Linde NGS, Inc. ("Linde"), and any other relevant affiliates pursuant to 66 Pa. C.S. §§ 2101, 2102.

ANSWER

I. Summary of Answer

Procedurally, the Petition constitutes a Petition to Amend pursuant to 66 Pa. C.S. § 703(g) and 52 Pa. Code § 5.572 because it seeks to modify the Commission's Order of March 26, 2020 (the "March 2020 Order"). The March 2020 Order approved a Joint Petition for Settlement of All Issues (the "Settlement") after years of litigation. In that Settlement, PAWC

agreed to acquire and rehabilitate a small, troubled wastewater utility that is releasing raw sewage into the environment and failing to provide customers with reasonable and adequate service at just and reasonable rates. *Petition of Delaware Sewer Company for the Opening of an Investigation into Whether the Public Utility Commission Should Order a Capable Public Utility to Acquire the Company Pursuant to 66 Pa. C.S. § 529,* Docket No. P-2014-2404341 (Opinion and Order entered January 28, 2016) p. 13. Specifically, pursuant to the Settlement, PAWC would acquire the wastewater system of DSC and, simultaneously, acquire land owned by FCP[1] that is necessary for PAWC to provide wastewater service to existing and future customers of DSC (the "Transaction"). *See* Asset Purchase Agreement dated August 31, 2018 between DSC and PAWC (the "APA") (Appendix A to the Settlement) § 8.1(n); *see also* Land Transfer Agreement dated August 31, 2018 between PAWC and FCP (the "LTA") (Appendix B to the Settlement) § 1.

The Petition asks the Commission to add a term to the Settlement that was not part of the parties' agreement, as approved by the Commission.[2] The additional term would specify that closing on the Transaction must occur by a date certain. The Settlement as approved by the Commission took a different approach: it gave the parties an incentive to close quickly by providing that either DSC or PAWC could unilaterally terminate the APA for any reason at any time before closing, if closing did not occur by December 31, 2018. APA § 10.1(b). Granting

[1] As stated below, on information and belief, PAWC submits that DSC, FCP and Linde are affiliated interests as defined by 66 Pa. C.S. § 2101.

[2] By Tentative Opinion and Order entered in this matter on April 29, 2019, the Commission modified the Settlement in ways not material to the instant dispute. Because the Settlement provided that any party could withdraw from the Settlement if the Commission modified it in any respect, the Commission entered its order as a Tentative Opinion and Order and gave the parties an opportunity to file comments and to withdraw from the Settlement. Tentative Opinion and Order ¶ 16. The Office of Consumer Advocate ("OCA") filed comments. The Commission denied these comments and made the Tentative Opinion and Order final by its Final Opinion and Order entered June 13, 2019. The OCA subsequently filed a Petition for Reconsideration regarding issues not material to the instant dispute, The Commission granted reconsideration, within the meaning of Pa. R.A.P. Rule 1701(b)(3), pending review of, and consideration on, the merits, by Opinion and Order entered July 11, 2019. The March 2020 Order denied the OCA's Petition for Reconsideration.

DSC's Petition would compel the parties to close on the Transaction, thus depriving both PAWC and DSC of their existing right to terminate the APA (and, by extension, the LTA and the Settlement) if they cannot reach terms of acquisition that are acceptable to both parties. Consequently, granting DSC's Petition would modify the parties' agreement, as approved by the Commission, both by adding a term to the Settlement *and* by modifying an existing term in the Settlement. There can be little doubt that the Petition constitutes a Petition to Amend the March 2020 Order and to modify the Settlement it approved.

In *Application of Susquehanna Valley Limousine, Inc.*, Docket Nos. A-2013-2395502 and A-00110765 (Order entered November 13, 2014) p. 4, the Commission stated:

> A petition to amend a final Commission Order may only be granted judiciously and under appropriate circumstances, because such an action results in the disturbance of final orders. *City of Pittsburgh v. Pennsylvania Department of Transportation*, 490 Pa. 264, 416 A.2d 461 (1980). Additionally, we recognize that, while a petition under Section 703(g) may raise any matter designed to convince us that we should exercise our discretion to amend or rescind a prior order, at the same time "[p]arties . . . , cannot be permitted by a second motion to review and reconsider, to raise the same questions which were specifically considered and decided against them." *Duick v. Pennsylvania Gas and Water Company*, 56 Pa. P.U.C. 553 (Order entered December 17, 1982) (quoting *Pennsylvania Railroad Co. v. Pennsylvania Public Service Commission*, 179 A. 850, 854 (Pa. Super. Ct. 1935)). Such petitions are likely to succeed only when they raise "new and novel arguments" not previously heard or considerations which appear to have been overlooked or not addressed by the Commission. *Duick* at 559.

The Petition should be denied because it does not meet the *Duick* standards. In fact, the Petition never even addresses the *Duick* standards. The Petition offers no new or novel arguments, nor does it allege that the Commission overlooked or failed to address any issues when it approved the Settlement. Clearly, when the parties negotiated the APA, the LTA, and the Settlement, they could have included a provision in their agreements that required closing to occur by a date certain. They did not. The Commission approved the bargain that the parties struck at that time. The Petition represents an attempt by DSC and its affiliated interests to

achieve through litigation what they could not achieve in contract negotiations. The Commission should summarily reject this attempt.

The Petition presumably attempts to meet the *Duick* standards by alleging a change in fact after the Commission issued the March 2020 Order. The Petition suggests that PAWC is trying to change the Settlement by negotiating with Linde for an additional agreement, which was not part of the Settlement approved by the Commission.[3] The Commission should reject this argument.

There has been no change in the facts since the Commission issued the March 2020 Order. The Settlement has not changed; *no new agreement* has been executed or agreed-to between PAWC and Linde[4] – let alone one that changes the Settlement. PAWC admits that it is attempting to negotiate an additional agreement, but those negotiations have not yet been successful. Additionally, PAWC submits that its proposed agreement would be consistent with the Settlement.

A change in the Settlement will occur only if a new agreement is executed or agreed-to *that in fact changes the Commission-approved Settlement*. If that were to occur, which PAWC does not anticipate, PAWC would work with the other parties to the Settlement to file the new agreement with the Commission and request a modification of the March 2020 Order. At this time, however, the *Duick* standards have not been met and Commission action would be premature.

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[3] As discussed further below, PAWC submits that it reasonably requires this additional agreement to obtain the benefit of its bargain with DSC and FCP.

[4] Upon information and belief, PAWC avers that the only additional agreement that has been executed since the Settlement was submitted to the Commission is the Consent Order and Agreement between the Pennsylvania Department of Environmental Protection ("DEP") and PAWC for the DSC system, attached as Exhibit 2. This agreement is consistent with and effectuates the Settlement, as approved by the Commission, and does not require Commission approval. It is attached hereto for informational purposes only.

Even if the Commission finds that the *Duick* standards have been satisfied, the Commission should not grant the Petition. PAWC is acting reasonably, and as a prudent wastewater service provider, in seeking a Surface Use Agreement with Linde. The sand mounds and certain other assets critical to the operation of the DSC wastewater system are located on the property owned by FCP (the "FCP Property"). Additionally, PAWC's Plan for Improvements (Appendix C to the Settlement, pp. 4-5) indicates that PAWC needs to purchase the entire 140 acre tract to provide wastewater service to a full build-out in DSC's certificated service territory. The Plan for Improvements further states: "The site must be protected from the off road vehicle damage the existing mounds have incurred by fencing the *entire* site." *Id.*, p. 5 (emphasis added).

Shortly before the LTA was executed, however, FCP executed a deed (the "FCP-Linde Deed") conveying the mineral rights in the FCP Property to Linde. This deed was mentioned in the Form of Indenture ("Indenture Form") included in the LTA submitted to the Commission as part of the Settlement, but was not submitted to the Commission. It is attached as **Exhibit 1**.

The relevant language in the Indenture Form concerning the FCP-Linde Deed is as follows (emphasis added):

> **EXCEPTING AND RESERVING THEREFROM** all right, title and interest in and to any and all of the oil, gas, natural gas, petroleum or other products, including all carbon-related and hydrocarbon products, and other minerals in and under, and that may be produced from, the lands as conveyed to Linde NGS, Inc. by Deed dated May 29, 2018 and recorded June 7, 2018 in Pike County Record Book 2551 at page 1949.
>
> **PROVIDED, HOWEVER,** *Provided however that the foregoing exceptions and reservations shall not disturb the surface of the Lands which would interfere with [PAWC's] intended purpose for the Lands relating to the subsurface disposal of sanitary waste, without the written consent of [PAWC].* The construction of any well pad or other related surface improvements for the extraction of subsurface minerals by [FCP] is prohibited unless approved in writing by both parties. Surface access to [FCP] including without limitation [FCP's] heirs, successors

> and assigns, shall be limited to access that is necessary to traverse the property, at a future location, which shall be mutually agreeable to [FCP] and [PAWC]. [PAWC] shall not unreasonably withhold, delay or condition [FCP's] access to the above-described property.

Based on the italicized sentence of the "Provided However" clause, PAWC respectfully submits that a critical part of its bargain with FCP (and indirectly DSC) was that the "foregoing exceptions and reservations" (including the FCP-Linde Deed) would not disturb the surface of the FCP Property in a way that would interfere with PAWC's intended use of that land to dispose of sanitary waste, without PAWC's written consent.

The delay in closing on the Transaction is being caused by a discrepancy between the Indenture Form and the FCP-Linde Deed. Specifically, the FCP-Linde Deed does not contain language restricting Linde's use of the surface of the FCP Property in the manner described in the "Provided However" clause of the Indenture Form. Obviously, PAWC cannot use the FCP Property as part of a wastewater system if Linde has the right to use the surface of the land extensively for Marcellus Shale operations. Consequently, PAWC is attempting to negotiate a Surface Use Agreement with Linde that would prevent Linde from disturbing the surface of the FCP Property in a way that would interfere with PAWC's intended use of that property for the provision of wastewater service to the public, without the written consent of PAWC. Such an agreement is entirely consistent with the Plan for Improvements and the "Provided However" clause in the Indenture Form. To date, those negotiations have been unsuccessful. When they are brought to a successful conclusion (in a manner that will not interfere with PAWC's obligations to provide wastewater service to the public), PAWC estimates that it can be ready for closing on the Transaction in approximately two weeks.

PAWC has acted reasonably and prudently in trying to ensure that it obtains the benefit of its bargain with FCP. It has committed to pay $420,000 for the FCP Property – an investment

(on behalf of PAWC's customers) that would be largely wasted if Linde can use the surface of the FCP Property extensively for Marcellus Shale operations.

The Commission is not a super board of directors for public utilities, *Metropolitan Edison Co. v. Pa. Pub. Util. Comm'n,* 437 A.2d 76, 80 (Pa. Cmwlth. 1981), and should not over-rule PAWC management's determination that a Surface Use Agreement consistent with the "Provided However" clause must be executed on or before the date of closing on the Transaction. This is exactly what the Petition asks the Commission to do; it requests that the Commission determine that the Surface Use Agreement is not necessary and to order PAWC to close on the Transaction without it. The Commission should deny this request. In addition, the Commission, as detailed in the New Matter below, should examine DSC's affiliated interest arrangement with FCP, Linde, and other relevant affiliates, which is jeopardizing the Commission-approved Settlement. Without a full understanding of the affiliated interest arrangement, the Commission cannot make an informed decision regarding appropriate next steps in this proceeding.

Additionally, the Commission should not grant the Petition to Amend because the requested amendment is unreasonable. The Petition, filed on January 21, 2021, requests that the Commission issue an order requiring the parties to close on the Transaction by March 1, 2021. Considering that PAWC's Answer is not due until February 1, 2021, and that DSC did not request expedited consideration, it is unlikely that the Commission will act on the Petition at its public meeting of February 4 or February 25, 2021. This is particularly true, considering that PAWC has now raised new matter, to which the other parties to this proceeding must be given an opportunity to respond. PAWC respectfully submits that it would be unreasonable for the Commission to issue an order at a public meeting in, for example, April or May, 2021, that

requires PAWC to close on the Transaction by March 1, 2021. Obviously, compliance with such an order would be impossible.

Even if the Commission does not deny the Petition, it should not grant the Petition at this time. Section 703(g) of the Pennsylvania Public Utility Code ("Code"), states: "The commission may, at any time, after notice and *after opportunity to be heard* as provided in this chapter, rescind or amend any order made by it." There is clearly a material factual dispute between the parties regarding the necessity for the Surface Use Agreement and, accordingly, a remand and evidentiary hearings would be appropriate. However, before the Commission goes down the path of a Section 703(g) amendment of the March 2020 Order, it should (as discussed in the New Matter below) require DSC to make an affiliated interest arrangement filing for an examination of DSC's affiliated interest arrangements with FCP, Linde, and other relevant affiliates which threaten to undermine the Settlement.

Finally, in the event that the Commission decides to grant the Petition (which it should not), PAWC respectfully submits that the Commission must do so in a Tentative Order. As discussed above, the Commission's decision would amend a prior Order *and the Settlement it approved.* That Settlement, ¶ 33, gives the parties the opportunity to withdraw from the Settlement if it was modified by the Commission. If the Commission modifies the Settlement, by requiring closing on the Transaction by a date certain, the Commission must give the parties an opportunity to withdraw from the Settlement.[5] If no party withdraws from the Settlement, the Commission can enter a Final Order granting the Petition.

[5] This procedural requirement constitutes another reason why the Commission should not grant the Petition. As stated earlier, this proceeding has been in litigation for years and customers have yet to receive improved service. The Commission should not take the risk that any party would withdraw from the Settlement and re-open the litigation at this late date. Instead, the Commission, in the first instance, should undertake an examination of DSC's affiliate arrangements which have given rise to the instant controversy.

II. Answers to Specific Paragraphs of the Petition

Introductory Paragraph. DSC states that its Petition is filed pursuant to 52 Pa. Code § 5.572, which permits the filing of petitions for rehearing, reargument, reconsideration, clarification, rescission, amendment, supersedeas or the like. In footnote 1, DSC suggests that its petition is requesting relief under the language "or the like." This suggestion is denied.

The Petition seeks to amend the Commission's March 2020 Order, which approved the Settlement. Specifically, the Petition requests that the Commission modify the Settlement, as approved by the Commission: PAWC and DSC would be required to close on the Transaction by March 1, 2021, whereas there was no requirement to close by a date certain in the Settlement previously approved by the Commission. Significantly, Section 10.1(b) of the APA, as approved by the Commission, gives both DSC and PAWC the right to terminate the APA (and, by extension, the LTA and the Settlement), at any time prior to closing upon written notice to the other, if the closing shall not have occurred on or prior to December 31, 2018. A Commission Order requiring the parties to close on the Transaction would take away this existing right to terminate the agreement at any time prior to closing. Clearly, a Commission order granting the requested relief would amend the March 2020 Order to result in modifications in the Settlement.

The Commission will only grant a Petition to Amend if it satisfies the criteria set forth in *Duick*. In that case, the Commission stated:

> We view the situation as follows:
>
> 1. A petition for rehearing, under the provisions of 66 Pa. C.S. § 703(f), properly must seek the reopening of the record for the introduction of additional evidence of some sort. As grounds therefore it must allege newly discovered evidence, not discoverable through the exercise of due diligence prior to the close of the record. *Public Utility Commission v. Reading Co.* (1975) 21 Pa. Cmwlth. 334, 338, 345 A.2d 311; *Mobilfone v. Pennsylvania Pub. Utility Commission* (1975) 24 Pa. Cmwlth. 243, 355 A.2d 611; *Abramson v. Pennsylvania Pub. Utility Commission* (1980) 489 Pa. 267, 414 A.2d 60.

> 2. A petition seeking reopening of the record (more properly one for rehearing) may be entertained as a petition for reconsideration, under the provisions of 66 Pa. C.S. § 703(g), if the newly discovered evidence, was not in existence, or was not discoverable through the exercise of due diligence, prior to the expiration of the time within which to file a petition for rehearing, under the provisions of 66 Pa. C.S. § 703(f). *Pennsylvania R. Co. v. Pennsylvania Pub. Service Commission* (1935) 118 Pa. Super. Ct. 380, 179 Atl. 850; *Beaver Valley Water Co. v. Pennsylvania Pub. Utility Commission* (1940) 140 Pa. Super. Ct. 297, 35 PUR NS 119, 14 A.2d 205; *Pennsylvania Dept. of Highways v. Pennsylvania Pub. Utility Commission* (1962) 197 Pa. Super. Ct. 350, 178 A.2d 820; *Crooks v. Pennsylvania Pub. Utility Commission* (1971) 1 Pa. Cmwlth. 583, 276 A.2d 364.
>
> 3. A petition for reconsideration, under the provisions of 66 Pa. C.S. § 703(g), may properly raise any matters designed to convince the Commission that it should exercise its discretion under this code section to rescind or amend a prior order in whole or in part. In this regard we agree with the Court in the *Pennsylvania Railroad Company* case, wherein it was said that "[p]arties ..., cannot be permitted by a second motion to review and reconsider, to raise the same questions which were specifically considered and decided against them. . . ." What we expect to see raised in such petitions are new and novel arguments, not previously heard, or considerations which appear to have been overlooked or not addressed by the Commission. Absent such matters being presented, we consider it unlikely that a party will succeed in persuading us that our initial decision on a matter or issue was either unwise or in error.

Duick, 1982 Pa. PUC Lexis 4, 11-13.

DSC bears the burden of proving that the Petition satisfies the *Duick* standards, 66 Pa. C.S. § 332(a), but the Petition fails to discuss these standards at all. PAWC respectfully submits that the Petition does not satisfy these standards. The Petition contains no new or novel arguments, nor does it allege that the Commission overlooked or failed to address any issues when it approved the Settlement in the March 2020 Order. When the parties negotiated the APA, the LTA and the Settlement, they could have included a requirement that closing occur by a date certain. They did not. The Petition asks the Commission to circumvent its own order and processes in order to give DSC and its affiliated interests what they could not achieve through arms-length negotiations with PAWC.

The Petition appears to suggest that changes in the facts since entry of the March 2020 Order justify an amendment of the March 2020 Order. In fact, there has been no change in the facts since the Commission issued the March 2020 Order. The Settlement has not changed; *no new agreement* has been executed or agreed-to between PAWC and Linde[6] – let alone one that changes the Settlement. PAWC admits that it is attempting to negotiate an additional agreement, but those negotiations have not yet been successful. Additionally, PAWC submits that its proposed agreement would be consistent with the Settlement.

A change in the Settlement would only occur if the parties agree-to or enter into an additional agreement *that in fact changes the Commission-approved Settlement.* If such a change would occur, PAWC would work with the other parties to the Settlement to file a Petition to Amend the March 2020 Order to reflect that new agreement.

The proper procedure in this case is for the Commission to allow the parties to do what they believe is necessary to prepare for closing on the Transaction – including requesting an amendment of the March 2020 Order, if necessary. Instead, DSC preemptively seeks to have the Commission order PAWC to proceed to closing despite a serious deficiency (created by DSC's affiliated interest arrangement with FCP, Linde, and potentially other affiliates) that would prevent or impair PAWC's ability to provide wastewater service to present and future customers of the DSC system. This result would not be in the public interest.

A. Background

1. Admitted. By way of further answer, PAWC notes that this matter has been in litigation in some form since at least February 6, 2014. *Petition of Delaware Sewer Company for the Opening of an Investigation into Whether the Public Utility Commission Should Order a*

[6] As noted in footnote 4, *supra*, the only new agreement of which PAWC is aware, relating to the Settlement, is the Consent Order and Agreement between the Pennsylvania Department of Environmental Protection ("DEP") and PAWC for the DSC system, attached as Exhibit 2.

Capable Public Utility to Acquire the Company Pursuant to 66 Pa. C.S. § 529, Docket No. P-2014-2404341. Nevertheless, the customers of DSC have yet to receive relief in the form of improved service and continue to suffer from DSC's historic neglect of its system. The only thing standing in the way of closing is a Surface Use Agreement between PAWC and Linde that is consistent with the "Provided However" clause in the Indenture Form approved by the Commission. Once the parties reach an agreement to execute such an agreement at or before closing on the Transaction, PAWC can be ready to close in approximately two weeks.

Rather than modifying the March 2020 Order and the Settlement it approved, thereby taking the risk that a party will exercise its right to withdraw from the Settlement, ¶ 33, the Commission should deny the Petition and require DSC to make an affiliated interest filing regarding its arrangement with FCP, Linde, and other relevant affiliates that is undermining the Settlement and closing on the Transaction.

2. Admitted.

3. Admitted. By way of further answer, it is worth noting that DSC started the litigation in 2014, but the legal instrument currently causing the delay in closing (the FCP-Linde Deed – an affiliated interest arrangement between DSC, FCP, Linde, and potentially other affiliates) was not executed until May 29, 2018 and not recorded until June 7, 2018 – when PAWC and DSC were negotiating the APA, the LTA and the Settlement. The Commission should examine the affiliated interest arrangement, including its genesis and potential impact on the public interest.

4. Admitted.

5. The Settlement is a written document that speaks for itself. It is admitted, however, that the parties to the Settlement intended that the 140-acre FCP Property is to be used

and useful in the provision of wastewater service to the public. The sand mounds and certain other assets critical to the operation of the DSC wastewater system are located on this property, and PAWC's Plan for Improvements (which was approved by the Commission in the March 2020 Order), indicates that PAWC will use this entire tract to provide wastewater service to full build-out in DSC's certificated service territory. The Plan for Improvements, page 5, states: "The site must be protected from the off road vehicle damage the existing mounds have incurred by fencing the entire site."

This purpose would be frustrated if the FCP-Linde Deed permits Linde to make extensive use of the surface of the FCP Property for Marcellus Shale operations. PAWC will pay and rate base $420,000 for the FCP Property, which would be largely wasted if PAWC and its ratepayers do not receive the benefit of PAWC's bargain as expressed in the "Provided However" clause of the Indenture Form. PAWC is acting reasonably in attempting to negotiate a Surface Use Agreement with Linde that effectuates the Settlement. A grant of DSC's Petition, forcing PAWC to close on the Transaction without a Surface Use Agreement in place, would be contrary to the public interest.

6. Admitted.

7. Denied. The Indenture Form is a written document that speaks for itself. It is interesting to note that, although DSC makes much of the FCP-Linde Deed, DSC did not attach that document to its Petition; nor was it previously filed with the Commission. PAWC attaches it as **Exhibit 1** as evidence of its good faith in arguing that there is a discrepancy between that document and the "Provided However" clause of the Indenture Form. PAWC incorporates by reference its Answer to Paragraph 9 (#1), *infra.*

8. It is admitted that, when executing the LTA, PAWC knew of the FCP-Linde Deed, which had been recorded. The FCP-Linde Deed, however, was not submitted to the Commission in the Settlement, nor (to the knowledge of PAWC) was it submitted to the Commission by DSC for approval as an affiliated interest arrangement directly related to DSC's sale of its system to PAWC.

9. (#1) Denied. The Indenture Form is a written document that speaks for itself. By way of further answer, the first sentence of the "Provided However" clause indicates that a critical part of PAWC's bargain with FCP was that the "foregoing exceptions and reservations" (including the FCP-Linde Deed) would not disturb the surface of the FCP Property in a way that would interfere with PAWC's intended use of that land to dispose of sanitary waste, without PAWC's written consent.

As frequently happens in complex transactions, PAWC subsequently reviewed the documents again when it was obtaining title insurance. At that time, PAWC reasonably became concerned about the discrepancy between the Indenture Form and the FCP-Linde Deed. Specifically, there is no language in the FCP-Linde Deed that limits Linde's rights to use the surface of the FCP Property in the manner described in the "Provided However" clause in the Indenture Form. The role of DSC's ownership and management in orchestrating the FCP-Linde Deed should be scrutinized by the Commission as an affiliated interest arrangement; not only because of its potential impact upon PAWC and its customers but also because of its potential impact on DSC and its customers should PAWC's acquisition of the DSC system not occur.

PAWC management believes that addressing this discrepancy is critical to the Transaction. Obviously, PAWC cannot use the FCP Property as part of a wastewater system if Linde has the right to use the surface of the land extensively for Marcellus Shale operations. The

Commission is not a super board of directors for public utilities, *Metropolitan Edison Co., supra,* and should not over-ride management's determination that a Surface Use Agreement is necessary to give the company the benefit of its bargain with FCP and to protect PAWC's customers.

Significantly, Sections 6.3 and 6.4 of the APA require DSC to cooperate with PAWC to cause to be taken any actions reasonably requested by the other party to make effective the transactions contemplated in the APA. Since the APA contemplated that PAWC would use the FCP Property to provide wastewater service to the public, and since PAWC cannot use the FCP Property for that purpose if Linde can make extensive use of the surface of the FCP Property for Marcellus Shale operations, DSC should be cooperating with PAWC in securing a Surface Use Agreement with Linde that would resolve the discrepancy between the FCP-Linde Deed and the Indenture Form in a manner that would effectuate the APA.

9. (#2) Denied. The Recommended Decision is a written document that speaks for itself.

10. (#1) Denied. The Tentative Opinion and Order and the Final Opinion and Order are written documents that speak for themselves.

9. (#3) Denied. The OCA's Petition for Reconsideration and the Commission's March 2020 Order are written documents that speak for themselves.

B. The Commission Should Not Order PAWC to Close on the Transaction at this Time.

10. (#2) After reasonable investigation, PAWC is unable to admit or deny the allegation that DSC is willing and able to close on the Transaction. PAWC admits that it is attempting to negotiate a satisfactory Surface Use Agreement with Linde that will resolve the discrepancy between the FCP-Linde Deed and the "Provided However" clause in the Indenture

Form. Although negotiations have been on-going for an extended period, no agreement has yet been finalized despite PAWC's good faith efforts.[7] As such, the Settlement as submitted to the Commission has not been modified and there is no change in the facts since the Commission issued its March 2020 Order. Additionally, the document attached to the Petition as Exhibit B should be disregarded by the Commission because it is merely a draft that could be extensively revised during negotiations.

11. It is admitted that the Surface Use Agreement was drafted by PAWC. The remaining averments of this paragraph are denied. PAWC incorporates by reference its Answers to Paragraphs 5, 7 and 9 (#1), *supra.*

By way of further answer, the allegations of this paragraph indicate that there is a material factual and legal dispute between the parties as to the need for the Surface Use Agreement. Consequently, the Commission should not grant the Petition.

12. It is admitted that Linde is not a party to this proceeding. By way of further answer, PAWC incorporates by reference its Answers to Paragraphs 5, 7 and 9 (#1), *supra.* PAWC avers, on information and belief, that Linde, DSC, FCP, and potentially other persons and entities are affiliated interests under common ownership and control. PAWC submits that FCP-Linde Deed is part of an affiliated interest arrangement between DSC, FCP, Linde, and potentially other affiliates that was directly related to the Settlement and should have been submitted to the Commission for review and approval pursuant to 66 Pa. C.S. § 2102 (see New Matter below).

[7] PAWC's good faith in moving promptly toward closing on the Transaction is evidenced by, among other things, the time and expense it incurred to obtain the Consent Order for the DSC system, attached hereto as Exhibit 2.

13. This paragraph contains legal argument to which no response is necessary. By way of further answer, PAWC incorporates by reference its Answer to Paragraphs 5, 7 and 9 (#1), *supra*.

14. The Commission's Tentative and Final Orders in this proceeding are written documents that speak for themselves. It is admitted that these orders have not been stayed or challenged. These orders, however, do not require the parties to close on the Transaction by a date certain. The remainder of this paragraph contains legal argument to which no response is necessary.

By way of further Answer, the relief requested by DSC is unreasonable and should be summarily denied. The Petition, filed on January 21, 2021, does not request expedited processing. Nevertheless, it requests that the Commission order the parties to close on the Transaction in less than six weeks. It is unlikely that the Commission can issue an order on the Petition at its public meetings of February 4 or February 25, 2021 (especially considering that PAWC has properly pleaded New Matter, to which the other parties to this proceeding must be given an opportunity to respond). PAWC respectfully submits that it would be unreasonable for the Commission to issue an order at a public meeting in, for example, April or May of 2021, that requires PAWC to close on the Transaction by March 1, 2021. Compliance with such an order would be impossible. The Commission should not issue such an absurd and unreasonable order.

Finally, if the Commission decides to grant the Petition (which it should not), PAWC respectfully submits that the Commission must do so in a Tentative Order. The Commission's decision would amend a prior Order *and the Settlement it approved.* That Settlement, ¶ 33, gave the parties the opportunity to withdraw from the Settlement if it was modified by the Commission. If the Commission modifies the Settlement by requiring closing on the Transaction

by a date certain, the Commission must give the parties an opportunity to withdraw from the Settlement. If no party withdraws from the Settlement, the Commission can enter a Final Order granting the Petition.

NEW MATTER

III. DSC Should Be Required to Make an Affiliated Interest Arrangement Filing with the Commission

15. The paragraphs of the above Answer are incorporated herein by reference.

16. In pertinent part, Section 2101 of the Code defines an affiliated interest as:

> (1) Every corporation and person owning or holding directly or indirectly 5% or more of the voting securities of such public utility.
>
> (2) Every corporation and person in any chain of successive ownership of 5% or more of voting securities.
>
> (3) Every corporation 5% or more of whose voting securities are owned by any person or corporation owning 5% or more of the voting securities of such public utility or by any person or corporation in any such chain of successive ownership of 5% or more of voting securities.
>
> (4) Every person who is an officer or director of such public utility or of any corporation in any chain of successive ownership of 5% or more of voting securities.
>
> . . .
>
> (6) Every corporation or person which the commission may determine as a matter of fact after investigation and hearing is actually exercising any substantial influence over the policies and actions of such public utility even though such influence is not based upon stockholding, stockholders, directors or officers to the extent specified in this section. As used in this part substantial influence means any corporation or person which or who stands in such relationship to the public utility that there is an absence of free and equal bargaining power between it or him and the public utility.

66 Pa. C.S. § 2101.

17. In pertinent part, Section 2102(a) of the Code broadly specifies that no "arrangement" between affiliated interests is valid and effective unless it first receives written approval of the Commission:

> No contract or arrangement providing for . . . services, and *no contract or arrangement for the purchase, sale, lease, or exchange of any property, right, or thing or for the furnishing of any service, property, right or thing* other than those above enumerated, made or entered into after the effective date of this section *between a public utility and any affiliated interest shall be valid or effective unless and until such contract or arrangement has received the written approval of the commission.* If such contract is oral, a complete statement of the terms and conditions thereof shall be filed with the commission and subject to its approval.

66 Pa. C.S. § 2102(a) (emphasis added).

18. In pertinent part, Section 2102(b) of the Code describes the required filing for an affiliate arrangement:

> It shall be the duty of every public utility to file with the commission a verified copy of any such contract or arrangement, or a verified summary as described in subsection (a) of any such unwritten contract or arrangement. . . . The commission shall approve such contract or arrangement . . . only if it shall clearly appear and be established upon investigation that it is reasonable and consistent with the public interest. . . .

66 Pa. C.S. § 2102(b).

19. On information and belief, DSC, FCP and Linde are owned and controlled by the same persons and entities and, as such, are affiliated interests as defined by 66 Pa. C.S. § 2101.

20. On information and belief, the FCP-Linde Deed is part of an affiliated interest arrangement that has never been submitted to the Commission for approval as being reasonable and consistent with the public interest. That arrangement involved a single common scheme in which: (1) DSC would sell its wastewater system for $61,700; (2) its affiliate, FCP would sell its real estate for $420,000 (to be used to provide wastewater service to DSC's present and future customers); but (3) FCP would retain the potentially-lucrative mineral rights in the FCP Property by conveying those rights to yet another affiliate, Linde, for a mere $1,000.

DSC should not be permitted to use multiple affiliates to evade the requirements of Section 2012. DSC's arrangement among affiliated interests involves, but is not limited to, the

sale of property by a public utility, and the purchase of property rights by an affiliate of that public utility from a common affiliate. Although DSC is not selling property directly to its affiliate, PAWC respectfully submits that the arrangement described above falls within the purview of Section 2102(a), which was broadly intended to prevent public utilities from using affiliates to effectuate transactions that are not in the public interest.

21. Upon information and belief, PAWC avers that DSC has never made an affiliated interest filing for the above-described arrangement with FCP, Linde, and potentially other affiliates.

22. A discrepancy between the FCP-Linde Deed and the "Provided However" clause in the Indenture Form is now jeopardizing the Settlement in this matter, which has been determined by the Commission to be in the public interest. Yet, the Commission and the parties to the instant proceeding lack any meaningful understanding of the affiliated interest arrangement between DSC, FCP, Linde, and potentially other affiliates that gave rise to the FCP-Linde Deed. Without an understanding of the arrangement, the Commission and the parties cannot make informed decisions on the appropriate next steps for the proceeding.

23. If the Transaction does not close, the FCP-Linde Deed will potentially impact DSC's service to its customers by restricting the use of land upon which DSC may need to install a treatment system in order to provide safe, adequate, and reliable wastewater service to its customers. As such, Commission review and approval of DSC's affiliated interest arrangement with FCP, Linde, and potentially other affiliates is also important to the public interest outside the context of a PAWC acquisition of the DSC system.

24. Even if the Commission lacks jurisdiction over FCP, Linde and other affiliates, it unquestionably has jurisdiction over DSC and can require DSC to make an affiliated interest

arrangement filing in order to gather information about the affiliated interest arrangement with non-regulated affiliates for purposes of other potential legal actions.

IV. Conclusion and Request for Relief

WHEREFORE, for the reasons set forth above, PAWC respectfully requests that the Commission enter an order:

(1) That the Petition be denied;

(2) That, within 30 days of Commission entry of its final order denying the Petition, DSC be required, pursuant to 66 Pa. C.S. §§ 2101, 2102, to make a filing for approval of its affiliated interest arrangement with FCP, Linde and any other relevant affiliate with respect to the APA, the LTA and the FCP-Linde Deed, and shall serve copies on all parties to this proceeding; and

(3) That, if DSC fails to make the required affiliated interest arrangement filing:

(a) The Commission shall rescind its approval of the Settlement and the Section 529 investigation shall be remanded to the Office of Administrative Law Judge for further proceedings; and

(b) The Commission's Bureau of Investigation & Enforcement shall be directed to investigate DSC's affiliated interest arrangements and take whatever action it deems appropriate.

[Signature appears on next page.]

Respectfully submitted,

David P. Zambito, Esq. (PA ID 80017)
Jonathan P. Nase, Esq. (PA ID 44003)
Cozen O'Connor
17 North Second Street, Suite 1410
Harrisburg, PA 17101
E-mail: dzambito@cozen.com
E-mail: jnase@cozen.com
Telephone: (717) 703-5892

Susan Simms Marsh, Esq. (PA ID 44689)
Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
E-mail: Susan.Marsh@amwater.com
Telephone: 717-550-1570

Counsel for *Pennsylvania-American Water Company*

Date: February 1, 2021

Exhibit 1

FCP-Linde Deed

201800004177
Electronic Filing
From: Weir & Partners LLP
Thru: SIMPLIFILE

Instrument BOOK PAGE
201800004177 OR 2551 1949

PREPARED BY:
Daniel B. Markind, Esq.
Weir & Partners LLP
1339 Chestnut Street, Suite 500
Philadelphia, PA 19107

201800004177
Filed for Record in
PIKE COUNTY, PA
SHARON SCHROEDER
06-07-2018 At 09:36 am.
MIN DEED 101.75
OR BOOK 2551 PAGE 1949 - 1954

RETURN TO:
Daniel B. Markind, Esq.
Weir & Partners LLP
1339 Chestnut Street, Suite 500
Philadelphia, PA 19107

201800004177
Exempt Status - N
STATE RE $ 10.00
LOCAL RE $ 10.00
$ 5.00 DELAWARE TWP
$ 5.00 DELAWARE VALLEY SCHOOL DISTRIC

THIS INDENTURE made as of the 29th day of May, 2018

BETWEEN **Forest City Partnership, LLC, a Pennsylvania limited liability company**

(hereinafter called the Grantor), party of the one part,

AND

Linde NGS, Inc., a Pennsylvania corporation

(hereinafter called the Grantee), party of the other part,

Witnesseth, That the said Grantor for and in consideration of the sum of One Thousand Dollars ($1,000), lawful money of the United States of America, unto it well and truly paid by the said Grantee, at or before the sealing and delivery hereof, the receipt whereof is hereby acknowledged, does hereby remise, release and quit-claim unto the said Grantee forever all of the said Grantor's interest in and to all of the oil, gas, natural gas, petroleum or other products, including all carbon-related and hydrocarbon products, and other minerals in and under, and that may be produced from, the lands situate in Delaware Township, Pike County, Pennsylvania which are more fully described in Exhibit "A" attached hereto and made a part hereof (the "Lands").

Together with the right of ingress and egress at all times for the purpose of mining, drilling, exploring, operating and developing the Lands for oil, gas, natural gas, petroleum or other products, including all carbon-related and hydrocarbon products, and other minerals and storing, handling, transporting and marketing the same therefrom with the right to remove from the Lands all of the Grantor's property and improvements, subject to the limitation that the Grantee shall not unreasonably interfere with the quiet enjoyment of the Grantor's use of the surface of the Lands.

EXHIBIT "A"

LEGAL DESCRIPTION

ALL that certain tract, piece or parcel of land situate in Delaware Township, Pike County, Pennsylvania bounded and described as follows:

BEGINNING at the most westerly corner of the Thomas Carney warrantee, on line of the Isabella Mease warrantee, also a corner of the Elizabeth Ingram warrantee; thence along said Isabella Mease warrantee, now or formerly of the Mink Pond Club, North 31 degrees East 1,155 feet, more or less, to a corner; thence through the aforementioned Thomas Carney warrantee, of which this tract was formerly a part, South 70 degrees East 5,280 feet more or less to a corner on line of the Hannah Carney warrantee; thence along said Hannah Carney warrantee South 31 degrees West 1,155 feet, more or less to a corner; thence along the aforementioned Elizabeth Ingram warrantee, now or formerly of the Mink Pond Club, North 70 degrees West 5,280 feet, more or less, to the place of **BEGINNING.**

CONTAINING 140 acres, more or less.

BEING Parcel No. 2 in that certain deed from First Eastern Bank, N.A. to Consolidated Pocono Utilities, Inc. dated September 28, 1993 and recorded in Pike County Record Book 778 at page 29.

ALSO BEING Parcel No. 6 in that certain deed from Michael Dalessio, Jr. to Michael Dalessio, Jr. and Debra Z. Dalessio, his wife, dated June 5, 1990 and recorded June 5, 1990 in Pike County Record Book 226 at page 200.

Grantee agrees to execute such further assurances as may be requisite for the full and complete enjoyment of the rights herein granted.

This Deed Conveying Mineral Rights (the "Deed") is made without warranty of title, either express or implied. This Deed further is made and accepted upon the understanding and agreement that the Grantor makes no warranty or representation, express or implied, as to the accuracy or completeness of any data, information, or materials heretofore furnished the Grantee in connection with the subject interests. Any and all data, information or other materials furnished by the Grantor are provided as a convenience to the Grantee and any reliance thereof or use of same shall be at the sole risk of the Grantee.

To have and to hold the above-described property and easement with all and singular rights, privileges and appurtenances thereunto or in any wines belonging to the Grantee, its heirs, successors, personal representatives, administrators, executors and assigns forever and does hereby agree to defend all and singular the said property and to the said Grantee, its heirs, successors, executor words, personal representatives and assigns against every person whomsoever claiming or to claim the same or any part thereof.

This Deed shall bind and inure to the benefit of the heirs, successors and assigns of the parties hereto. It is the intent of the Grantor to convey unto the Grantee, an undivided interest in all of the Grantor's right, title and interest and claims in and to the lands as identically described above.

In Witness Whereof, the said Grantor has signed and sealed these presents the day and year first above written.

FOREST CITY PARTNERSHIP, LLC

By: _____
Name: Scott P. Linde
Title: Manager

Sealed and Delivered
in the presence of us:

Commonwealth of Pennsylvania :
: SS:
County of Luzerne :

On this, the 29th day of May, 2018, before me, a Notary Public the undersigned officer, personally appeared Scott F. Linde, who acknowledged himself to be the Manager of **FOREST CITY PARTNERSHIP, LLC,** a Pennsylvania limited liability company, and that he, as such member/manager, being authorized to do so, executed the foregoing instrument for the purposes therein contained, by signing the name of the limited liability company by himself as such officer.

In Witness Whereof, I hereunto set my hand and official seal.

Leigha M. Serafin Seal
Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Leigha M. Serafin, Notary Public
Pittston Twp., Luzerne County
My Commission Expires Jan. 12, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

Instrument 201800004177 OR BOOK 2551 PAGE 1953

DEED CONVEYING MINERAL RIGHTS

GRANTOR: **Forest City Partnership, LLC**

TO

GRANTEE: **Linde NGS, Inc.**

PREMISES

Mineral Rights at premises located in Delaware Township, Pike County, PA as described herein

The address of the above named Grantee is: 118 Armstrong Road, Pittston, PA 18640

On behalf of the Grantee

531444

Instrument 201800004177 OR BOOK PAGE 2551 1954

REV-183 EX (2-15)

pennsylvania
DEPARTMENT OF REVENUE
Bureau of Individual Taxes
PO BOX 280603
Harrisburg, PA 17128-0603

REALTY TRANSFER TAX STATEMENT OF VALUE

See reverse for instructions.

RECORDER'S USE ONLY
State Tax Paid 10.00
Book Number 2551
Page Number 1949
Date Recorded 6-7-18

Complete each section and file in duplicate with Recorder of Deeds when (1) the full value/consideration is not set forth in the deed, (2) the deed is without consideration or by gift, or (3) a tax exemption is claimed. If more space is needed, please attach additional sheets. A Statement of Value (SOV) is not required if the transfer is wholly exempt from tax based on family relationship or public utility easement. However, it is recommended that a SOV accompany all documents filed for recording.

A. CORRESPONDENT – All inquiries may be directed to the following person:

Name	Telephone Number:
Daniel B. Markind, Esq	(215) 665-8181

Mailing Address	City	State	ZIP Code
1339 Chestnut Street, Suite 600	Philadelphia	PA	19107

B. TRANSFER DATA

Date of Acceptance of Document / /

Grantor(s)/Lessor(s)	Telephone Number:	Grantee(s)/Lessee(s)	Telephone Number:
Forest City Partnership, LLC		Linde NGS, Inc.	

Mailing Address	Mailing Address
118 Armstrong Road	118 Armstrong Road

City	State	ZIP Code	City	State	ZIP Code
Pittston	PA	18640	Pittston	PA	18640

C. REAL ESTATE LOCATION

Street Address	City, Township, Borough
118 Armstrong Road	Delaware Township

County	School District	Tax Parcel Number
Pike	Delaware Valley	074082 & 074083

D. VALUATION DATA

Was transaction part of an assignment or relocation? ☐ Y ☒ N

1. Actual Cash Consideration	2. Other Consideration	3. Total Consideration
1,000.00	+0.00	= 1,000.00
4. County Assessed Value	**5. Common Level Ratio Factor**	**6. Computed Value**
Mineral	X Mineral	= Mineral

E. EXEMPTION DATA – Refer to instructions for exemption status.

1a. Amount of Exemption Claimed	1b. Percentage of Grantor's Interest in Real Estate	1c. Percentage of Grantor's Interest Conveyed
$ 0.00	100.00 %	100.00 %

2. Check Appropriate Box Below for Exemption Claimed.

- ☐ Will or intestate succession. _____ (Name of Decedent) _____ (Estate File Number)
- ☐ Transfer to a trust. (Attach complete copy of trust agreement identifying all beneficiaries.)
- ☐ Transfer from a trust. Date of transfer into the trust _____
  If trust was amended attach a copy of original and amended trust.
- ☐ Transfer between principal and agent/straw party. (Attach complete copy of agency/straw party agreement.)
- ☐ Transfers to the commonwealth, the U.S. and instrumentalities by gift, dedication, condemnation or in lieu of condemnation. (If condemnation or in lieu of condemnation, attach copy of resolution.)
- ☐ Transfer from mortgagor to a holder of a mortgage in default. (Attach copy of mortgage and note/assignment.)
- ☐ Corrective or confirmatory deed. (Attach complete copy of the deed to be corrected or confirmed.)
- ☐ Statutory corporate consolidation, merger or division. (Attach copy of articles.)
- ☐ Other (Please explain exemption claimed.) _____

Under penalties of law, I declare that I have examined this statement, including accompanying information, and to the best of my knowledge and belief, it is true, correct and complete.

Signature of Correspondent or Responsible Party — Date

Attorney for Linde NGS Inc — 6/5/18

FAILURE TO COMPLETE THIS FORM PROPERLY OR ATTACH REQUESTED DOCUMENTATION MAY RESULT IN THE RECORDER'S REFUSAL TO RECORD THE DEED.

Exhibit 2

Consent Order and Agreement between DEP and PAWC

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

IN THE MATTER OF:

Pennsylvania-American Water Company	:	Clean Streams Law
Delaware Sewer Company System	:	Delaware Township, Pike County
	:	

CONSENT ORDER AND AGREEMENT

This Consent Order and Agreement is entered into this 9th day of October, 2020, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection (hereinafter "**Department**") and Pennsylvania-American Water Company (hereafter "**PAWC**").

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce The Clean Streams Law, Act of June 22, 1937, P.L. 1987, *as amended*, 35 P.S. §§ 691.1-691.1001 ("**The Clean Streams Law**"); the Pennsylvania Sewage Facilities Act, Act of January 24, 1966, P.L.1535, *as amended*, 35 P.S. § 750.1-750.20 ("**Sewage Facilities Act**"); Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. § 510-17 ("**Administrative Code**"); and the rules and regulations ("**Regulations**") promulgated thereunder.

B. PAWC is a Pennsylvania corporation and has a mailing address of 852 Wesley Drive, Mechanicsburg, Pennsylvania 17055. PAWC is a public utility company regulated by the Pennsylvania Public Utility Commission that provides water and sewage services throughout Pennsylvania.

C. The Delaware Sewer Company ("**DSC**"), a Pennsylvania public utility corporation, currently owns and operates sewerage collection and treatment facilities pursuant to a certificate

of public convenience issued by the Pennsylvania Public Utility Commission ("**PUC**") which authorizes DSC to operate in a defined service territory within Delaware Township, Pike County.

D. DSC's wastewater collection and treatment system (the "**System**") currently provides service to approximately 39 existing residences in the Wild Acres Development (the "**Development**") in Delaware Township, Pike County.

E. DSC's certificate of public convenience describes the authorized sewer service territory as consisting of Sections 19 through 22 of the Development with a total lot number of 557. Since the original subdivision, many lots have been combined. Based on the current tax parcel maps, there are currently 372 lots within Sections 19 through 22. Subtracting utility lots, open space, unbuildable lots and additional combined lots, the ultimate build-out of the Development, should it ever occur, would involve approximately 306 lots.

F. In late 1979, the Department issued to Marcon, Inc. and its subsidiary Delaware Sewer Company NPDES Permit No. PA0060160 and a Water Quality Management Permit No. 5278404 authorizing construction of a centralized wastewater treatment plant ("**WWTP**") serving the Development discharging to Sand Spring Run, which was classified as a high quality, special protection water. Several hunting and fishing clubs and Lehman Township appealed issuance of the two permits to the Environmental Hearing Board ("**EHB**") in *Maskenozha Rod and Gun Club v. Department of Environmental Resources, Marcon, Inc. and Delaware Sewer Company*, EHB Docket No. 7-155-S. In an adjudication issued September 4, 1981, the EHB set aside the two permits.

G. During the pendency of the EHB appeal proceedings, DSC constructed the WWTP and commenced discharges to the stream.

H. Following the EHB's adjudication, in order to serve the 39 residential dwellings that had already been connected to the System at the time of the EHB adjudication, DSC installed an elevated sand mound disposal system to receive the treated effluent from the WWTP. Construction of the elevated sand mound disposal system was authorized under a permit issued by the Township.

I. Delaware Township (the "**Township**") is responsible for the adoption and implementation of sewage facilities planning under the Sewage Facilities Act.

J. The Official Sewage Facilities Plan adopted by Delaware Township in January 2010 pursuant to the Sewage Facilities Act called for DSC to provide the community wastewater service for all lots within Sections 19 through 22 of the Development, but recites observed deficiencies in the facilities which provide only limited capacity to serve the approximately 38 existing homes already connected to the System, and cites to an April 2006 Entech Engineering evaluation that recommends that most of the unit processes in the WWTP be removed and that the system be converted to a conventional community septic system with disposal at the sand mounds.

K. At some point, Township imposed a moratorium on the issuance of new building permits and connections to the DSC System.

L. Currently, wastewater from the limited number of residences connected to the System flows to the WWTP. The WWTP was originally designed to consist of equipment and systems to provide treatment consisting of a rotating biological contactor (RBC) system, a sand filter, and effluent pumping station with discharge to Sand Springs Run, a tributary to Little Bushkill Creek. However, following the EHB's adjudication, DSC installed a series of two (2) septic tanks (that is, tanks where sewage is collected, solids settle out, and the sewage is allowed

to decompose through bacterial activity) with a total capacity of 16,000 gallons (the "**Septic Tanks**"). Liquid effluent from the Septic Tanks in the WWTP flows to a pumping station that pumps the effluent through a force main delivery line (the "**Delivery Line**") to an elevated sand mound disposal system which is located on an approximately 140 acre parcel rectangular shaped tract, located south of Hilltop Drive and west of Westwood Circle in proximity to the WWTP (the "**FCP Parcel**"), which parcel is currently owned by Forest City Partnership, LLC ("**FCP**"). FCP is an affiliate of DSC.

M. The WWTP and related elevated sand mound system are in poor condition. The elevated sand mound system is not fenced, has little to no vegetation cover, and has been prone to soil erosion and large deep ruts caused by off-road vehicles. The sand mound distribution piping is exposed and broken in several locations, leading to ponding on the surface at several areas around the sand mound system.

N. The Department and PUC have previously issued multiple notices of violations to DSC concerning conditions relating to the System, including Department notices of violation dated May 2, 2014 and December 5, 2003, and the PUC Bureau of Investigation and Enforcement's Formal Complaint filed February 3, 2017; but DSC repeatedly failed to take effective action to correct such violations.

O. On February 6, 2014, DSC filed a Petition with the PUC asking the PUC to open an investigation pursuant to Section 529 of the Public Utility Code, 66 Pa.C.S. § 529 into whether the PUC should order a capable public utility to acquire the DSC System. The PUC granted that request on January 28, 2016, and initiated investigation proceedings as to whether it should order another utility to acquire the DSC System (the "**Section 529 Proceedings**"). Section 529 of the Public Utility Code grants the PUC the power to "order a capable public utility to acquire a small

water or sewer utility" if the PUC finds, among other things, that (1) the small utility is in violation of statutory or regulatory standards, including the Clean Streams Law and Sewage Facilities Act, which affect the safety, adequacy, efficiency or reasonableness of the service provided by the small water or sewer utility; (2) the small utility has failed to comply, within a reasonable period of time, with any order of the Department of Environmental Protection of PUC concerning the safety, adequacy, efficiency or reasonableness of service; (3) the small water or sewer utility cannot reasonably be expected to furnish and maintain adequate, efficient, safe and reasonable service and facilities in the future; (4) alternatives to acquisition have been considered and have been determined by the PUC to be impractical or not economically feasible; (5) the acquiring capable public utility is financially, managerially and technically capable of acquiring and operating the small utility; and (6) the rates charged by the acquiring capable public utility to its preacquisition customers will not increase unreasonably because of the acquisition.

P. By letter from the PUC Secretary dated June 7, 2017, PAWC was notified that the PUC Bureau of Investigations and Enforcement ("**I&E**") had identified PAWC as a proximate public utility providing the same type of service as DSC. PAWC subsequently intervened in the Section 529 Proceedings.

Q. The contested Section 529 Proceedings involved multiple parties, including I&E, the Office of Consumer Advocate ("**OCA**"), PAWC and DSC, thereafter extended over many months with the submission of direct and rebuttal testimony before an Administrative Law Judge, followed by an extended period within which the participating parties sought to negotiate a settlement agreement. As a result of those multi-party negotiations, on October 12, 2018, the parties filed with the PUC a joint Petition for Approval of Settlement of All Issues in the Section 529 Proceedings (the "**Settlement Agreement**"). That Settlement Agreement provided for the

transfer of the System from DSC to PAWC pursuant to an Asset Purchase Agreement dated as of August 31, 2018 (the "**Purchase Agreement**"), transfer of the FPC Parcel from FPC to PAWC under a separate agreement, and a series of provisions concerning the establishment of rates and the treatment and recovery of certain System improvement costs to be incurred by PAWC following System acquisition.

R. Following submission of the Settlement Agreement to the PUC, additional proceedings ensued during which additional issues concerning PAWC's Long-Term Infrastructure Improvement Plan, the treatment of costs incurred to implement that plan, and associated ratemaking issues were raised and contested. On June 13, 2019, the PUC entered a Final Order approving the Settlement subject to certain modifications. As a result of a Petition for Reconsideration filed by the OCA, the PUC engaged in further review, ultimately culminating in the PUC's Opinion and Order dated March 26, 2020, finally approving the Settlement.

S. During the pendency of the Section 529 Proceedings, PAWC undertook to evaluate the condition of the WWTP and related sand mound system. On April 15, 2019, PAWC submitted to the Department "Preliminary Hydrogeological Investigation, Delaware Sewer Wild Acres Subdivision Sections 19 through 22" prepared by Spotts, Stevens and McCoy dated March 26, 2019 (the "**SSM Report**"). The SSM Report and PAWC cover letter dated April 15, 2019 are attached hereto as **Exhibit 1**. As part of the Settlement Agreement, PAWC submitted to the PUC a "Plan of Improvements" to address the deficiencies of the System. The Plan of Improvements as submitted to the PUC is attached hereto as **Exhibit 2**.

T. The Plan of Improvements submitted to the PUC and SSM Report and PAWC's April 19, 2019 submission to the Department propose a phased approach to address the System's deficient conditions.

U. The SSM Report defines "Phase 1" to consist of actions to address immediate System deficiencies and provide additional capacity to serve up to 79 homes. The subsequent Plan of Improvements submitted to the PUC defined Phase 1 to consist of actions to address immediate System deficiencies and additional capacity to serve up to 80 homes.

V. As described in the SSM Report, Phase I elements include the following: (1) demolition of the RBC units and sand filter equipment in the WWTP that is not in use; (2) replace the existing pump station and force main Delivery Line that pump and transmit effluent from the WWTP to the sand mound disposal system; (3) rehabilitate the existing sand mounds and existing Septic Tanks to provide treatment and disposal capacity for the existing 39 homes currently connected to the System; (4) construct a new subsurface disposal system on identified areas within the 140 acre parcel adjacent to the WWTP and additional septic tank capacity at the WWTP in order to provide capacity for up to 40 future homes; and (5) install a fence and controls around the sand mound system area to protect against off road vehicle damage (collectively, the "**Phase I Improvements**"). The Phase I Improvements are anticipated to provide adequate capacity for a 15 to 20 year period.

W. The SSM Report indicates that future phases of improvements to the System would depend upon future growth of demand within the System's service area (that is, Sections 19-22 of the Development); and that appropriate planning and development of plans for additional improvements would be triggered when annual demand and growth estimates indicate that the projected demand within a future five-year timeframe would exceed the Phase I permitted capacity of 79 homes.

X. On June 26, 2019, the Department provided the following comments on the report:

- Phase 1 [*PAWC's Phase IA*] will address the 39 homes currently serviced by the existing tanks and community disposal beds. Planning

will be required through completion of a Component 2 Planning Module. No hydrogeological evaluation is required for Phase 1A. The proposed repair/replacement of the existing system (collection, transport and treatment) will need to be authorized by a Water Quality Management, Part II, construction permit. The volume of that permit will be 39 homes x 400 gallons/home (15,600 gpd).

- The existing disposal beds may be evaluated as part of the planning process.

- Phase 2 [*PAWC's Phase 1B*] will address the 40th home and so on, i.e., the next gallon of wastewater generated past the existing 39 homes. Phase 2 will require standard soils and hydrogeologic evaluations. The preliminary hydrogeologic evaluations and cursory soils characterization look favorable for future permitted systems. The land application areas should be reserved and protected by land use deed/covenant.

- The ultimate obligation to supply service to deeded lots up to the consolidated 306 lot number is noted.

- Operating malfunctions that require pump and transport are not waived.

Y. Because of the interrelatedness of actions required to address existing System deficiencies and to provide capacity for up to 80 residences, this Consent Order and Agreement refers to the first portion of the work as being "Phase 1A" and "Phase 1B".

Z. For purposes of this Consent Order and Agreement, "**Closing of the Transaction**" means the consummation of the sale and purchase of the DSC System pursuant to the Purchase Agreement when title to the System is conveyed to PAWC. DSC is solely responsible for compliance with all legal requirements, including The Clean Streams Law, the Regulations, and all NPDES and WQM Permits, applicable to the DSC System prior to Closing of the Transaction. Upon Closing of the Transaction, PAWC will become the owner and operator of the System, and will be thereafter legally obligated to maintain compliance with all legal requirements, including The Clean Streams Law, the Regulations, and all NPDES and WQM Permits applicable to the

System. Upon Closing of the Transaction, PAWC's obligations under this Consent Order and Agreement shall become effective.

AA. PAWC and the Department desire to establish a program and schedule for correcting the deficiencies and violations described in Paragraphs J-N above.

ORDER

After full and complete negotiation of all matters set forth in this Consent Order and Agreement and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and be legally bound, it is hereby ORDERED by the Department and agreed to by PAWC as follows:

1. **Authority.** This Consent Order and Agreement is an Order of the Department, authorized and issued pursuant to Sections 5, 203, 402, and 610 of The Clean Streams Law, 35 P.S. §§ 691.5, 691.203, 691.402, 691.610; Section 10 of the Sewage Facilities Act, 35 P.S. § 750.10; and Section 1917-A of the Administrative Code.

2. **Findings**.

a. PAWC agrees that the findings in Paragraphs A through AA are true and correct and, in any matter or proceeding involving PAWC and the Department, PAWC shall not challenge the accuracy of validity of these findings.

b. The parties do not authorize any other persons to use the findings in this Consent Order and Agreement in any manner or proceeding.

3. **Permit Transfers to PAWC.** Within 30 days of discovery of any PADEP Permits for the System that PAWC has not already applied to receive, PAWC shall apply for these newly discovered permits by submitting to the Department a Transfer Application to transfer those permits into PAWC's name.

4. **Corrective Actions**. PAWC shall take the following actions with respect to the System:

a. ***Act 537 Transfer Plan Update Revision.*** Within 180 days of Closing of the Transaction, PAWC shall prepare and submit to Delaware Township a limited scope Act 537 Plan Update Revision that addresses the transfer of ownership of the System from DSC to PAWC (the "**Transfer Plan Update Revision**"), and PAWC shall thereafter cooperate with Delaware Township in relation to the Township's review and approval of the Transfer Plan Update Revision and the Township's submission of thereof to the Department. The Transfer Plan Update Revision shall describe the current state of the System to the extent known, and generally describe the plans for improvement of the System in a phased manner consistent with this Consent Order and Agreement and the Plan for Improvements approved by the PUC. The Transfer Plan Update Revision shall contain as applicable and appropriate elements referenced in the Department's draft guidance entitled "Private-to-Private Wastewater Disposal System Transfers – Act 537 Planning Requirements." The Parties acknowledge and agree that the Transfer Plan Update Revision is not required to evaluate or provide alternatives for the buildout of the Development, but shall be focused on the institutional and operational elements associated with transfer of the System from DSC to PAWC and recognize the phased approach to planning for and implementing the improvements contemplated by this Consent Order and Agreement and the PUC-approved Plan of Improvements.

b. ***Septic Tanks***. Within ten (10) months of Closing of the Transaction, PAWC shall remove any wastewater and solids from the Septic Tanks in the WWTP, inspect the interior of each of the Septic Tanks, and provide to the Department a report which summarizes the results of such Septic Tank inspections and identifies any structural, hydraulic or other deficiencies

requiring repair or replacement of the Septic Tanks (the "**Septic Tank Deficiency Report**"). Within twelve (12) months of Closing of the Transaction, PAWC shall submit to the Department a corrective action plan to address the deficiencies identified in the Septic Tank Deficiency Report (the "**Septic Tank CAP**"), which may involve repair or replacement of the Septic Tanks. The Septic Tank CAP shall provide a schedule for correction of the deficiencies identified in the Septic Tank Deficiency Report in diligent manner as soon as reasonably practicable. Upon Department approval, PAWC shall implement the Septic Tank CAP according to the schedule contained therein.

c. ***Emergency Phase 1A Repairs to Delivery Line and Existing Sand Mound System Components.*** In accordance with the following provisions, PAWC shall make emergency repairs to the delivery line from the WWTP to the existing sand mound system and to the distribution laterals with the sand mound system, with the objective of providing continuing service for the 39 homes currently connected to the System (i.e., the Phase 1A homes) pending the Phase 1B improvements work described in Section 4.d below in order to eliminate or minimize the surface discharge of untreated, or inadequately treated, effluent in the area of the delivery line and sand mound system:

(i) Within six (6) months of the Closing of the Transaction, PAWC shall (i) undertake an initial inspection and evaluation of the delivery line from the WWTP to the existing sand mound system and the distribution laterals within the sand mound system with the objective of identifying locations of any breaks causing surface discharges, and (ii) complete emergency repairs to correct the identified breaks in any such lines or laterals. Following completion of such emergency repairs, PAWC shall regularly (at least weekly) inspect the discharge line from the WWTP the sand mounds and the sand mound system for evidence of breaks

or discharges. Within 48 hours of the observation of any delivery line or sand mound system distribution lateral break or surface discharge of untreated, or inadequately treated, effluent in the area of the delivery line and sand mound system, PAWC shall mobilize and to investigate and determine if the cause is a line or lateral break and if so, the break location, and shall thereafter as soon as reasonably practicable complete emergency repairs to correct the break in any such affected line or lateral.

(ii) Within fourteen (14) months of Closing of the Transaction, PAWC shall perform a condition based assessment of the effluent pump station and delivery line, with tasks including excavations to uncover the Delivery Line to repair leaks and determine if the existing Delivery Line can be utilized in the future. PAWC shall provide to the Department a report which summarizes the results of such inspections and identifies any deficiencies requiring repair or replacement of the Sand Mounds and Delivery Line (the "**Sand Mound and Delivery Line Deficiency Report**"). Within sixteen (16) months of Closing of the Transaction, PAWC shall submit to the Department a corrective action plan to address the deficiencies identified in the Sand Mound and Delivery Line Deficiency Report (the "**Sand Mound and Delivery Line CAP**"), which may involve repair or replacement of the Sand Mounds or Delivery Line. The Sand Mound and Delivery Line CAP shall identify those in-kind and emergency repairs to the existing facilities that can be implemented without issuance of a Water Quality Management Part II Permit ("**WQM Permit**") versus those improvements requiring WQM Permit approvals. The Sand Mound and Delivery Line CAP shall provide a schedule for correction of the deficiencies identified in the Sand Mound and Delivery Line Deficiency Report in diligent manner as soon as reasonably practicable. Upon Department approval, PAWC shall implement the Sand Mound and Delivery Line CAP according to the schedule contained therein.

d. ***Phase 1B Improvements Work.*** PAWC shall undertake the Phase 1B improvements work necessary to provide capacity sufficient for treatment and disposal of flows from up to 80 total residences (39 current and 41 future) in accordance with the following provisions:

(i) In accordance with the following schedule and in coordination with the work being performed under Section 4.c, PAWC shall (i) complete an evaluation of the existing sand mound system and determine whether it can be repaired to provide the Phase 1B capacity, or will need to be replaced by a new surface disposal system; and (ii) conduct additional soils testing as required and finalize the hydrogeological studies necessary to determine the suitability of the FPC Parcel for installation and operation of a sub-surface disposal system capable of disposing of the Phase 1B flows, including the identification of specific areas (if required) for installation of a replacement subsurface disposal system (the "**Phase 1B Studies**"):

(1) Within six (6) months of Closing of the Transaction, PAWC shall identify and provide to the Department a list of all permits required to obtain access necessary to conduct the Phase 1B Studies (e.g., permits required to construct access roads, erosion and sedimentation control plans, etc.) (the "**Study Access Permits**"). Within ninety (90) days of Closing of the Transaction, PAWC shall prepare and submit complete applications for the Study Access Permits, and PAWC shall diligently prosecute the Study Access Permit applications.

(2) Within fifteen (15) months of obtaining the Study Access Permits, PAWC shall complete the Phase 1B Studies and provide to the Department a report summarizing the results of the Phase 1B Studies.

(ii) Within fifteen (15) months of obtaining the Study Access Permits, PAWC shall prepare and submit to Delaware Township a Sewage Facilities Act Component 2

Minor Act 537 Plan Update Revision for the improvements to accommodate the Phase 1B flows (the "**Phase IB Sewage Plan Revision**").

(iii) Within twelve (12) months after approval by Delaware Township and the Department of the Phase 1B Sewage Plan Revision, PAWC shall prepare complete design plans for the Phase 1B improvements to accommodate the Phase 1B flows and submit to the Department complete and accurate application for a WQM Permit to authorize such improvements.

(iv) Within six (6) months from receipt of the WQM Permit for the Phase 1B improvements, PAWC shall prepare final construction plans and specifications for Phase 1B improvements and issue a solicitation for bids for the construction activities for the Phase 1B improvements.

(v) Within eighteen (18) months of receipt of the WQM Permit and all other permits required for the Phase 1B improvements, PAWC shall complete construction and acceptance testing of all of the Phase 1B improvements described in the WQM Permit application.

e. ***Collection System Evaluation***.

(i) Within fifteen (15) months of Closing of the Transaction, PAWC shall complete an evaluation of the System's collection sewer line condition and hydraulic capacity and submit a written report to the Department describing the results of the evaluation (the "**Collection System Deficiency Report**"). The collection system evaluation shall involve at least the cleaning, closed circuit TV inspections and manhole inspections of gravity portions of the collection system.

(ii) Within three (3) years of Closing of the Transaction, PAWC shall prepare and submit to the Department's review and approval a Corrective Action Plan to address any collection system hydraulic deficiencies or other operating deficiencies identified in the

Collection System Deficiency Report (the "**Collection System CAP**"). The Collection System CAP shall include a plan and schedule for implementing improvements needed to correct the hydraulic deficiencies identified in the Hydraulic Capacity Deficiency Report in a prioritized manner. The schedule shall provide for implementation of the projects and actions described in the Collection System CAP in a diligent manner as soon as reasonably practicable. Upon Department approval of the Collection System CAP, PAWC shall implement the projects and actions described in the approved Collection System CAP according to the schedule contained therein.

5. **Future Phases**. PAWC shall, in consultation with the Township, at least annually evaluate the pace of building development within the System's PUC-defined service area and the trends in terms of sewage flow and utilization of System capacity. When sewage flows to the system reach 80% of the System's then permitted capacity, PAWC shall, in consultation with the Township, initiate and undertake the process of planning for the next phase of System improvements, including an evaluation of the incremental existing capacity appropriate to meet System requirements over the next 5-year and 10-year periods. PAWC shall cooperate with the Township in preparing appropriating sewage facility plan updates to address each such additional phase, and subject to Township approval of such sewage facility plan updates, PAWC shall prepare designs and implement such phased improvements in an organized and timely basis.

6. **Progress Reports.** Until commencement of construction of the Phase 1B improvements, PAWC shall submit to the Department written "Progress Reports" on a quarterly basis (due March 31, June 30, September 30 and December 31 of each year), and shall describe the actions PAWC has taken in the previous calendar quarter to comply with the requirements set forth in Paragraph 4 of this Consent Order and Agreement. After commencement of construction

of the Phase 1B improvements, Progress Reports shall be submitted on a semi-annual basis (due June 30 and December 31 of each year). Progress Reports shall be submitted in hard copy, and if requested by the Department, electronically. The first Progress Report shall be due March 31, 2021.

7. **Additional Information.** Within thirty (30) calendar days from receipt of a written request from the Department for modification or supplement of any applications, plans, or schedules called for herein, or should a longer time frame as may be approved by the Department, PAWC shall modify or supplement the document in the manner requested by the Department.

8. **Stipulated Penalties**.

a. In the event PAWC fails to comply in a timely manner with the terms or conditions of this Consent Order and Agreement contained in Paragraphs 4 above, PAWC shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty of (i) $100 per day for the first 30 calendar days of each violation; and (ii) $250 per day for each violation extending beyond the first 30 calendar days.

b. Stipulated civil penalty payments shall be payable monthly on or before the 28th day of each succeeding month. Payment shall be made by corporate check or the like made payable to the "Commonwealth of Pennsylvania Clean Water Fund", and sent to the individual at the address set forth in Paragraph 12 (Correspondence with the Department), below.

c. Any payment under this Paragraph shall neither waive the PAWC's duty to meet its obligations under this Consent Order and Agreement, nor preclude the Department from commencing an action to compel PAWC to comply with the terms and conditions of this Consent Order and Agreement. The payment resolves only PAWC's liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

d. Stipulated penalties shall be due automatically and without notice.

9. **Additional Remedies**.

a. In the event that PAWC fails to comply with any provision of this Consent Order and Agreement, the Department may, in addition to the remedies prescribed herein, pursue any remedy available for a violation of an order of the Department, including an action to enforce this Consent Order and Agreement.

b. The remedies provided by this paragraph and Paragraph 8 (Stipulated Penalties) are cumulative and the exercise of one does not preclude the exercise of any other. The failure of the Department to pursue any remedy shall not be deemed to be a waiver of that remedy. The payment of a stipulated penalty, however, shall preclude any further assessment of civil penalties for the violation for which the stipulated penalty is paid.

10. **Reservation of Rights.** The Department reserves the right to require additional measures to achieve compliance with applicable law. PAWC reserves the right to challenge any action which the Department may take to require those measures.

11. **Liability of Operator.** PAWC shall be liable for any violations of the Consent Order and Agreement, including those caused by, contributed to, or allowed by its officers, agents, employees, or contractors. PAWC also shall be liable for any violation of this Consent Order and Agreement caused by, contributed to, or allowed by its successors and assigns.

12. **Correspondence with Department.** All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

Program Manager
Clean Water Program
Pennsylvania Department of Environmental Protection
Northeast Regional Office
2 Public Square
Wilkes-Barre, PA 18701
Phone: (570) 826-2511
Fax: (570) 830-3016

13. **Correspondence with PAWC.** All correspondence with PAWC concerning this Consent Order and Agreement shall be addressed to:

E. Christopher Abruzzo, Esquire
Director, Water Quality and Environmental Compliance
Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
Phone: (717) 550-1542
Email: Chris.Abruzzo@amwater.com

With a copy to:

General Counsel
Pennsylvania-American Water Company
852 Wesley Drive
Mechanicsburg, PA 17055
Phone: (717) 550-1560
Email: andrew.swope@amwater.com

PAWC shall notify the Department whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent Order and Agreement, including its enforcement, may be made by mailing a copy by first-class mail to the above address.

14. **Transfer**.

a. The duties and obligations under this Consent Order and Agreement shall not be modified, diminished, terminated or otherwise altered by the transfer of any legal or

equitable interest in the System, or any part thereof unless agreed to by the Department as set forth in Paragraph 14.c, below.

b. If PAWC intends to transfer any legal or equitable interest in the System affected by this Consent Order and Agreement, PAWC shall serve a copy of this Consent Order and Agreement upon the prospective transferee of the legal or equitable interest at least thirty (30) days prior to the contemplated transfer and shall simultaneously inform the Northeast Regional Office of the Department of such intent.

c. The Department, in its sole discretion, may agree to modify or terminate said PAWC's duties and obligations under this Consent Order and Agreement upon transfer of the System. PAWC waives its rights that it may have to challenge the Department's decision in this regard.

15. **Force Majeure**.

a. In the event that PAWC is prevented from complying in a timely manner with any time limit imposed in this Consent Order and Agreement solely because of a strike, fire, flood, act of God, or other circumstances beyond PAWC's control and which PAWC, by the exercise of all reasonable diligence, is unable to prevent, then PAWC may petition the Department for an extension of time. An increase in the cost of performing the obligations set forth in this Consent Order and Agreement shall not constitute circumstances beyond PAWC's control. PAWC's economic inability to comply with any of the obligations of this Consent Order and Agreement shall not be grounds for any extension of time.

b. PAWC shall only be entitled to the benefits of this paragraph if it notifies the Department within five (5) working days by telephone and within ten (10) working days in writing of the date it becomes aware or reasonably should have become aware of the event

impeding performance. The written submission shall include all necessary documentation, as well as a notarized affidavit from an authorized individual specifying the reasons for the delay, the expected duration of the delay, and the efforts which have been made and are being made by PAWC to mitigate the effects of the event and to minimize the length of the delay. The initial written submission may be supplemented within ten (10) working days of its submission. PAWC's failure to comply with the requirements of this paragraph specifically and in a timely fashion shall render this paragraph null and of no effect as to the particular incident involved.

c. The Department will decide whether to grant all or part of the extension requested on the basis of all documentation submitted by PAWC and other information available to the Department. In any subsequent litigation, PAWC shall have the burden of proving that the Department's refusal to grant the requested extension was an abuse of discretion based upon the information then available to it.

16. **Severability.** The paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

17. **Entire Agreement.** This Consent Order and Agreement shall constitute the entire integrated agreement of the parties. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or extent of any provisions herein in any litigation or any other proceeding.

18. **Attorney Fees.** The parties shall bear their respective attorney fees, expenses and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

19. **Modifications.** No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the parties hereto.

20. **Titles.** A title used at the beginning of any paragraph of this Consent Order and Agreement may be used to aid in the construction of that paragraph, but shall not be treated as controlling.

21. **Decisions under Consent Order.** Any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that civil penalties or stipulated penalties are due under this Consent Order and Agreement, is intended to be neither a final action under 25 Pa. Code § 1021.2, nor an Adjudication under 2 Pa.C.S. § 101. Any objection which PAWC may have to the decision will be preserved until the Department enforces this Consent Order and Agreement.

22. **Termination of Obligations.** PAWC's obligations under this Consent Order and Agreement shall commence upon Closing of the Transaction. If Closing of the Transaction occurs, PAWC's obligations, but not the Findings, of this Consent Order and Agreement shall terminate when PAWC has: (1) completed all the requirements of Section 4 of this Consent Order and Agreement; and (2) paid any outstanding stipulated civil penalties due under Section 8 (Stipulated Civil Penalties), or otherwise in the sole discretion of the Department.

23. **Execution of Agreement**. This Consent Order and Agreement may be signed in counterparts, each of which shall be deemed to be an original and all of which together shall constitute one and the same instrument.

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IN WITNESS WHEREOF, the parties hereto have caused this Consent Order and Agreement to be executed by duly authorized representatives. The undersigned representatives of PAWC certify under penalty of law, as provided by 18 Pa.C.S. § 4904, that they are authorized to execute this Consent Order and Agreement on behalf of PAWC, that PAWC consents to the entry of this Consent Order and Agreement; that PAWC hereby knowingly waives any right to a hearing under the statutes referenced in this Consent Order and Agreement; and that PAWC knowingly waives its right to appeal this Consent Order and Agreement, which rights may be available under Section 4 of the Environmental Hearing Board Act, Act of July 13, 1988, P.L. 530, 35 P.S. § 7514; the Administrative Agency Law, 2 Pa.C.S. § 103(a) and Chapters 5A and 7A, or any other provision of law. Signature by PAWC's attorney certifies only that the agreement has been signed after consulting with counsel.

FOR PENNSYLVANIA-AMERICAN WATER COMPANY:

F. Michael Doran 10/08/2020

F. Michael Doran Date
President

Andrew L. Swope 10/08/2020

Andrew L. Swope Date
Vice President, General Counsel and Secretary

R. Timothy Weston 10/08/2020

R. Timothy Weston Date
K&L Gates LLP
Attorney for Pennsylvania-American Water Company

FOR THE COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION:

B R Patel 10/08/2020

Bharat Patel, P.E. Date.
Program Manager Clean Water Program

Ann Conserette 10/09/2020

Ann Conserette Date
Assistant Counsel

EXHIBIT 1 – SSM Report

[see attached]

PENNSYLVANIA
AMERICAN WATER

Pennsylvania American Water
4 Wellington Blv, Suite 2
Reading, PA 19610
www.amwater.com

P 484-855-1006
F 610-678-6057
email gerald debalko@
amwater.com

April 15, 2019

Mr. Patrick Musinski
Pennsylvania Department of Environmental Protection
Southeast Regional Office
2 Public Square
Wilkes-Barre, PA 18701-1915

RE: Delaware Sewer Company

Dear Mr. Musinski:

The Pennsylvania American Water Company (PAWC) would like to thank you for setting up our meeting at your office on February 27, 2019 regarding Delaware Sewer. We feel the meeting was very productive. As the main take away from the meeting, PAWC has prepared the attached report for the submission to the Department for review and comment. The attached report entitled "Preliminary Hydrogeological Investigation for Delaware Sewer Wild Acres Subdivision sections 19 through 22 dated 3/26/2019" prepared by SSM, is a preliminary hydrogeological report which includes groundwater sampling results and soils testing of the 140 acre parcel south of the Wild Acres Development section 19 through 22.

The design details, permitting, and construction of the proposed improvements are associated with the pending acquisition of Delaware Sewer by PAWC.

Design details discussed and agreed upon at the meeting that are included in the PAWC submission to PaDEP include:

- Phased Approach - PAWC would not be required to immediately construct sewer facilities to accommodate the ultimate build-out of the development. Our proposed phased approach is discussed in the report.
- PAWC could use the 262.5 gpd/EDU as requested specifically for the Nitrate Balance equation. PAWC will size the beds for the 400 gpd/EDU
- The area to the north of the disposal area could be used for the Nitrate Balance.
- Use of the existing disposal site - PAWC proposes to rehabilitate the existing sand mounds as per the suggestion of PaDEP.
- The dry year recharge was agreed to be utilizing a 1 in 10 year equal to 1,062 gpd per acre.

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AMERICAN WATER

- The attached report estimates the septic tank effluent to contain 45 mg/l Nitrates and a target nitrate concentration of 10 mg/l Nitrate leaving property.

- PAWC will not be required to pump and haul after this acquisition.

After the Department has time to review the PAWC submission of the proposed improvements at Delaware Sewer, PAWC requests to meet with your legal department to discuss a Consent Order and Agreement. Please contact me at 484-855-1006 if you should have any questions, comments or require any additional information.

Sincerely,

Gerald A. DeBalko, P.E.
Senior Project Manager

cc Mr. David Kaufman, P.E., PAWC VP-Engineering

Preliminary Hydrogeological Investigation

Delaware Sewer
Wild Acres Subdivision Sections 19 through 22

Delaware Township
Pike County, Pennsylvania
Prepared for: Pennsylvania American Water Co.

March 26, 2019

Spotts, Stevens and McCoy | Engineering, Surveying and Environmental Services

Preliminary Hydrogeological Investigation

Delaware Sewer
Wild Acres Subdivision Sections 19 through 22
Delaware Township
Pike County, Pennsylvania

Prepared for: Pennsylvania American Water Co.
c/o Mr. Gerald A. DeBalko, P.E.
Project Manager, PAW – Southeast Region
4 Wellington Blvd.
Wyomissing, Pennsylvania 19610

March 26, 2019

Prepared by: Spotts, Stevens and McCoy

Scott R. Mundell, PG

SSM File 108631.0165 Task 5

Preliminary Hydrogeological Investigation

Delaware Sewer

Wild Acres Subdivision Sections 19 through 22
Delaware Township
Pike County, Pennsylvania
Prepared for: Pennsylvania American Water Co.

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Introduction

Pennsylvania American Water Company (PAWC) has contracted Spotts, Steven and McCoy (SSM) to evaluate the Delaware Sewer Company (DSC) wastewater system which provides service to approximately 39 existing homes in sections 19 through 22 of the Wild Acres Development in Delaware Township, Pike County, Pennsylvania. The wastewater from the collection system flows into the wastewater treatment plant (WWTP). The effluent from the WWTP flows to a pumping station that pumps the effluent through a force main to a subsurface disposal system. The system is not currently operating as designed. It is being operated as a septic tank system. The WWTP was designed to serve the residential dwelling lots within Sections 19 through 22 of the development. The original design intent of the WWTP was for effluent to discharge to Sand Spring Run. Following the issuance of the National Pollutant Discharge Elimination System (NPDES) permit, the Pennsylvania Environmental Hearing Board revoked the NPDES permit. To serve the 39 residential dwellings that were already connected to the system, an elevated sand mound disposal system was constructed to receive the treated effluent from the WWTP for subsurface disposal and the stream discharge was terminated. The elevated sand mound disposal system was constructed on a small portion of an approximately 140 acre parcel adjacent to the WWTP and just south of section 19 through 22 of the Wild Acres Development.

SSM's task was to evaluate the 140 acre parcel for subsurface discharge using septic tank treated effluent and provide an estimate of the maximum number of residential units that could be served by the 140 acre parcel. SSM performed a preliminary soils evaluation, conducted groundwater sampling, and a preliminary hydrogeological investigation to estimate the nitrate-nitrogen assimilation capacity of a 140 acre parcel. SSM has prepared this Preliminary Hydrogeological Study for PAWC to present to the Pennsylvania Department of Environmental Protection (PADEP) as a beginning step for planning the sewerage capabilities of the 140 acre parcel.

1.0 Background Information

Delaware Sewer Company (DSC) is located in Delaware Township, Pike County, Pennsylvania. The general site location is shown on **Figure 1**. The system currently provides sewer service to 39 existing homes in a portion of the Wild Acres development (Sections 19 through 22 only). PAWC serves public water to these 39 residents as well as the entire Wild Acres Development.

DSC's certificate of public convenience describes the sewer service territory as Section 19 through 22 of the Development with a total lot number of 557. Since the original subdivision, many lots have been combined. Based upon current tax parcel maps, there are currently 372 lots within sections 19 through 22. Subtracting utility lots, open space, unbuildable lots and additional combined lots, the ultimate build-out of the subdivision is estimated to be approximately 306 lots.

The January 2010 Act 537 plan for Delaware Township describes the community sewer service for Sections 19 through 22 of the Wild Acres subdivision. Service to these sections is to be provided by the DSC community system.

Site Description

The subject site is a 140 acre, rectangular shaped tract, located south of Hilltop Drive and west of Westwood Circle just south of the Wild Acres community sewerage system area it serves. The long side of the rectangular parcel traverses east to west for approximately 5,635 feet. The site is currently wooded except for an approximate two acre area, south of Lilac Court, where the existing sand mounds and a borrow pit area are located. Surface topography is characterized as gently rolling landscape.

For the purpose of performing this evaluation, the subject tract was divided into three general drainage areas based to topographic contours. The western area of the overall tract with surface drainage to the north-northeast was determined not suitable for land application due to wetlands and poor soils. The center portion of the tract contains suitable soils for land application based on preliminary test pit evaluations (***Appendix A***). While the eastern most area contains the existing on-lot system. The main focus of this nitrate assimilation study is the middle drainage area shown in **Figure 2**. Surface drainage in both the center basin and eastern basin areas drain generally to the south perpendicular to the long side of the subject tract. Overall, site surface drainage is into unnamed tributaries to the Little Bushkill Creek which eventually flow into Bushkill Creek. This section of the Little Bushkill Creek is designated as HQ-CWF (High Quality-Cold Water Fishery).

The main (middle) drainage basin comprises 124.5 acres. It consists of the combined 80.9 acres of the subject tract and 44.6 acres of upslope area with surface drainage that flows onto the 140 acre parcel. The 44.6 acre offsite area is served by public water and the new, proposed community sewerage system. PAWC proposes to work with Delaware Township to prohibit groundwater wells within the 125.5 acre drainage piece through local zoning restrictions, if they are not currently in place.

The eastern portion of the site with the malfunctioning sewage disposal system is proposed to be improved and reused for the existing 39 units it serves. This eastern area of the 140 acres subject tract was not modeled for its nitrate assimilation capability; however, the existing 39 units served have been counted toward the total serviceability of the subject tract.

2.0 Hydrogeologic Investigation

Soils and Geology

Soils

The study area contains five different soils, most of which are very limited to wastewater disposal using conventional land treatment methods. Site soils are shown in **Figure 3** and are depicted by number and letter with the letter indicating the degree of slope (A=0-3%; B=0-8%; C=8-15% & D=15=30%). Slopes greater than 25% are not suitable for conventional land application systems.

According to the Web Soil Survey[1], prominent soils mapped within the subject site include the following in the order of prominence:

- **Swartswood (38 B, C & D)** stony fine sandy loam, extremely stony.
- **Wurtsboro (30 B)** stony fine sandy loam, extremely stony.
- **Gleneyre-Kimbles (12)** complex. (Minor coverage within study area).
- **Edgemere extremely (11A)** stony loam, very rubbly (Minor component within the study area).
- **Shohola-Edgemere (7B)** complex, very rubbly (Minor coverage within study area).

For sand mound type systems, a minimum soil depth of 20 inches is required.

Swartswood series soils (0-30% slopes) form on hills/side hills, and consist of a coarse-loamy till derived from sandstone. The profile is generally described as follows:

0-4 inches	stony fine sandy loam with 10% surface fragments
4-32 inches	channery fine sandy loam
32-70 inches	very gravelly fine sandy loam

The **Swartswood** series generally contains a restrictive fragipan between 28 to 36 inches, and a perched water table at 26 to 35 inches due to the fragipan condition. This soil's permeability (K_{sat}) generally falls between 0.06 – 0.60 inches/hour with the higher K_{sat} ranges in upper soils above the fragipan. For wastewater disposal purposes, this soil is classified as deep, moderately well drained (DMWD). The **Swartswood** mapped soil is the primary soil targeted for wastewater disposal within the subject tract. These soils are shown in brown shades on **Figure 3** and are designated by 38B, C or D. Within the 80.9

1 USDA, NRCS, Custom Soil Resource Report for Pike County, PA, 11/20/2018.

acre parcel area, there are 60.27 acres of **Swartswood** soils with slopes from 0 to 23% that are suitable for land application. Of these 60.27 acres, approximately 47 acres are readily accessible on the east side of the large wetland within the delineated basin area.

Swartswood soils are mapped south and east of the existing sand mound drain field. This soil areas could be used for replacement area for the existing 39 home system should the existing sand mound system be determined to be unrepairable.

Wurtsboro series soils, 0-8% slopes, formed on foot/base of slope positions, and is composed of coarse-sandy loam derived by weathered sandstone. The profile is generally described as follows:

0-4 inches	stony fine sandy loam with 10% surface fragments
4-22 inches	gravelly fine sandy loam
22-70 inches	gravelly fine sandy loam

The **Wurtsboro** series generally contains a restrictive fragipan between 17 to 28 inches, and a perched water table at 12 to 27 inches due to the fragipan condition. This soil's permeability (K_{sat}) generally falls between 0.06 – 0.20 inches/hour with the higher K_{sat} ranges in upper soils above the fragipan. For wastewater disposal purposes, this soil is classified as deep, somewhat poorly drained (DSPD). Due to the shallow fragipan, shallow water table, low permeability and low loading rate, this soil series was not deemed satisfactory to help meet the disposal needs for this project.

The **Gleneyre-Kimbles complex, Edgemere extremely stony loam and Shohola-Edgemere complex** soils are too limited (not suitable) for land application of wastewater and were not evaluated further in this assessment.

A separate detailed soils evaluation by a PA qualified soil scientist has been prepared for the project. This study contains much more detailed information about site soils including: test pit soil profiles, site specific limiting conditions, percolation and hydraulic conductivity test data. The soils report is included as ***Attachment A***. Generally, the onsite soils evaluated agree closely with the above noted fragipan and mottling depth limitations indicating that the **Smartswood** mapped soil as the only feasible series generally suitable for land application of wastewater.

Preliminary onsite percolation testing conducted at a depth of 20 inches indicate an average percolation rate in soil above the fragipan layer of 16.7 minutes per inch which is satisfactory for sand mound type systems. Cased borehole hydraulic conductivity tests were performed six (6) inches into the fragipan layer. A case borehole test isolates the vertical component of permeability through the layer being tested. Preliminary testing indicated the average vertical saturated hydraulic conductivity rate of the fragipan layer of 0.84 inch per day (0.035 inches per hour). The fragipan is expected to promote horizontal movement of water in the soils above the pan at saturation while inhibiting vertical water movement through the layer.

Geology

The Pennsylvania Department of Conservation and Natural Resources[2] web mapping application depicts that the study area as underlain primarily by sandstone materials. The eastern approximate 1/3rd of the 140 acre tract is mapped as the Towamensing Member of the Catskill Formation; while, the western 2/3rds are mapped as undifferentiated Long Run and Walcksville Members of the Catskill Formation. The undifferentiated Long Run/Walcksville Member dominates within the 125.5 acre delineated basin area where new wastewater absorption areas are proposed; while, the Towamensing Member underlies the existing sand mound system. Site geology is depicted on **Figure 4**. Davis[3] describes these members as:

Long Run and Walcksville Members of the Catskill Formation

> *Consists of cyclic sequences of gray, planar-bedded and crossbedded, fine to medium grained sandstone. The member contains some thin red siltstone and claystone occurrences in the northeast which become thicker and more abundant to the southwest. Thin conglomeratic beds are also reported locally near the top of the member. This member is generally well bedded.*
>
> Delaware sewer is located along the eastern edge and near the middle of the Formation's outcrop area.

Towamensing Member of the Catskill Formation

> *Predominantly light to medium gray, crossbedded, fine to medium grained sandstone with some planar-bedded sandstone, some interbedded siltstone and claystone and intraformational conglomerate. Coarse grained sandstone or conglomeratic beds are not known to occur in this member. Siltstone and claystone beds are generally less than two feet thick. The member is well bedded with medium to thick beds.*

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2 PaGEODE, PA Department of Conservation and Natural Resources, accessed 2018-11-21, www.gis.dcnr.state.pa.us/geology/index.html.

3 Davis, D. K., 1989, Groundwater Resources of Pike County, Pennsylvania, PA Geological Survey, Water Resources Report 65.

Geyer and Wilshusen[4] generally report the sandstones to be moderately resistant to weathering with an overlying soil mantle expected to be 5-30 feet thick. Bedrock fragmentation, observable at the ground surface onsite, is generally blocky to flaggy. Joints within the bedrock are well developed, abundant, closely (2"-2') spaced and open. The system of joints provides low to moderate porosity and low to moderate (<14 feet/day) permeability. The median yield of wells is reported as 20 gallons per minute (gpm). Groundwater is typically soft with below neutral pH. Water quality is generally good to excellent.

Davis reports that rocks throughout most of the County are nearly horizontal dipping gradually to the northwest. Regional strike of the Catskill Formation is northeast to southwest.

The above described bedrock characteristics generally create suitable hydrogeological conditions for land application of wastewater enabling adequate groundwater mound dispersion which is known to occurs beneath large volume systems. Groundwater mounding must be modeled further during planning. This will entail monitoring well construction and aquifer hydraulic conductivity testing in addition to further soil hydraulic conductivity testing in the presence of PADEP.

Precipitation and Groundwater Recharge Characteristics

Precipitation is the primary source of groundwater in Pike County. The average annual precipitation recorded at Minisink Lake over a 24 year record is 44 inches (Davis). Evapotranspiration (17 inches annually) is reported as causing almost all of the water loss within the region surrounding the study area; thus, groundwater recharge is generally considered equal to stream baseflow. Wright[5] reports normal-year recharge within the Bushkill basin to be 20.3 inches per year (963,000 gpd/mi^2). This same study reports dryer year recharge with a ten-year recurrence interval at 14.3 inches per year (680,000 gpd/mi^2). PADEP requires the use of the dry year recharge for mass-balance assessments. This one in 10 year dry year recharge is equal to 1,062 gpd per acre.

Based on the nature of the geologic materials, groundwater is generally found first under watertable conditions in the unconfined glacial deposits or in weathered bedrock and becomes semi-confined with

4 Geyer, A. R., Wilshusen, J. P., 1982, Engineering Characteristics of the Rocks of Pennsylvania, PA Geological Survey, 4th Series, Env. Geo. Rpt. 1.
5 R.E. Wright Associates, Inc., 1983, Special Groundwater Study of the Upper Delaware River Basin Study Area III, Vol. 1, prepared for the Delaware River Basin Commission, Middletown, PA.

depth due to textural changes in the bedded rock. Water movement in the shallow aquifer is generally lateral controlled by topography through local flow paths to stream discharge points. Shallow groundwater flow will therefore resemble the surface topography, flowing from higher topographic areas to lower topographic areas. Water from the proposed wastewater disposal system and it's interaction with groundwater is therefore expected to flow in the general southerly direction. Subsequently, the southern property boundary of the tract will be the point of compliance for the nutrient (nitrate-nitrogen) dispersion analyses.

Background Groundwater Quality

For the purpose of this study, a pumped groundwater sample was collected from a PAWC well located at 120 Game Trail Court within Sections 19-22 of the Wild Acres development. Two other grab samples were also collected: one from a flowing foundation drain and one from a pumped sump containing groundwater at 169 Hilltop Drive located within the delineated basin. Samples were located in or in proximity to the 125.5 acre delineated basin area (**Figure 2**). Sample locations are shown on **Figure 2**. Sample were labeled, documented on a laboratory chain-of-custody, placed in a chest with ice and delivered to M. J. Reider Associates, Inc., a NELAC-accredited laboratory located in Reading, PA. The sample was analyzed for total coliform, e-coli, nitrate-nitrogen, chlorides and pH (field & lab). Results of the laboratory analysis are included in **Appendix B**.

All three sample nitrate concentrations were very similar and reported as follows:

Map ID		
#1	PAWC Well No. 5	0.30 mg/l
#2	169 Hilltop Dr. Footer Drain	0.43 mg/l
#3	169 Hilltop Dr. Sump - Groundwater	< 0.22 mg/l
		Average 0.32 mg/l

For the purpose of this study, the estimated 0.32 mg/l nitrate concentration was used as background for the mass-balance calculations. The final background nitrate concentration for planning approval must be determined by onsite monitoring well construction and sampling and could change; however, the concentration is not expected to vary significantly from the concentration reported above.

3.0 Nitrate Analyses

Wastewater Characteristics

Daily Flow Calculations

The site is proposed to be developed with single family homes. Home sizes (no. of bedrooms) are undetermined at this time. According to PADEP regulation Chapter 71.62 (c) (3) (ii), the flow required for Preliminary Hydrogeological Evaluations is 262.5 gallons per day (gpd) per home. Therefore, for the purpose of the nitrate mass-balance loading study, the estimated daily wastewater flow per unit is 262.5 gpd.

Wastewater Quality

The wastewater quality is anticipated to be of typical domestic strength. PADEP guidance documents indicate that nitrates generated in subsurface disposal systems enter the groundwater at levels of approximately 45 mg/l directly under the absorption field. The same guidance also notes that treatment capabilities of subsurface disposal systems have been claimed to be from 0% to 44% effective for removal of nitrate-nitrogen. However, no reductions are being presented in the assessment and the use of 45 mg/l of nitrates is considered an accepted value for wastewater loading in the mass-balance calculations. Treatment beyond that of septic tanks would be required to reduce the effluent nitrate concentration below the 45 mg/l concentration.

Discussion of the Nitrate Dilution Model

The nitrate dilution model is a nitrate mass-balance calculation intended to estimate nitrate concentrations in groundwater downgradient of a project site utilizing on-lot sewage disposal systems.

In applying this model, a series of assumptions are inherent to its use. The basic assumptions are as follows:

- *Nitrification of ammonium-nitrogen in the unsaturated zone beneath the disposal system is complete.*
- *Complete and uniform mixing of wastewater and recharge takes place at the water table.*
- *The water available to dilute wastewater is site specific recharge.*
- *Molecular dispersion and diffusion are not taken into account.*
- *The entire delineated basin area provides recharge to dilute the effluent.*
- *Denitrification is absent.*

The basic equation is as follows:

$Nr = (L)(Nw) + (R)(Nb)(A) / L + (R \times A)$ where:

Nr = concentration (mg/l)of nitrate-nitrogen in the groundwater at the downgradient end of the project site (property boundary)

L = volume of effluent (gpd)

Nw = concentration of nitrate in the effluent (mg/l)

R = volume of groundwater recharged over the project area (gpd)

Nb = background NO_3 concentration (mg/l)

A = area available to capture recharge (acres)

The model has typically been used to estimate the groundwater nutrient loading rate from a land application system that would be capable of achieving a target nitrate concentration at the downgradient property boundary. For this application to determine the number of units which could be served, the formula has been reconfigured to estimate area (in acres) needed to meet a target nitrate concentration of 10 mg/l at the downgradient point of compliance. In this case the point of compliance is the southern property boundary. The nitrate-nitrogen concentration of 10 mg/l is the drinking water maximum contaminant level (MCL).

Application of the Nitrate Dilution Model

Topographically, the subject basin drains a 125.5-acre area. There is upslope area within the basin that comprises lands served by Delaware Sewer's collection system. While the area is in the Township's Act 537 Planning and is designated to be served by Delaware Sewer, this area is not owned or directly controlled by PAWC. It is in PAWC's best interest to approach Delaware Township to place local controls within the delineated basin limiting well and individual septic system construction. The offsite area was modeled herein assuming PAWC will work with Delaware Township to prohibit groundwater wells within the 125.5 acre drainage piece through local zoning restrictions and PADEP to use this area for recharge capture.

Groundwater in the 125.5 acre delineated basin is assumed to flow in a southerly direction to the southernmost property boundary which is the point of compliance for this assessment. A nitrate mass balance calculation was utilized to approximate the potential impact associated with nitrate loading from

the proposed septic systems. As documented in previous sections of this report, the background nitrate-nitrogen concentration from the shallow groundwater sampling is 0.32 mg/l. The nitrate loading rate of the wastewater used in the calculation is based upon PADEP's policy of 45 mg/l. As previously noted, the groundwater recharge characteristics of the site are 1,062 gpd per acre during 1 in 10 dry years. Based upon the information presented and the use of an average flow of 262.5 gpd per household, the 125.5 acre basin can assimilate (by dilution) the nitrates in septic treated wastewater from 140 homes to 10 mg/l by the time it get to the southern property boundary. In other words, 125.5 acres is needed to dilute the nitrates from 140 homes to 10 mg/l at the downgradient property boundary. The mass-balance calculation for this determination is included in ***Appendix C.***

Including the 39 existing units for the upgraded sand mound area plus the 140 new units, the 140 acre tract appears to be capable of supporting an estimated 179 units. This calculation is for septic tank strength effluent. This estimated allowable unit density is subjective to review and agreement by PADEP.

Land Based Disposal Considerations

SSM also evaluated available lands within the 140 acres tract for land based disposal. This evaluation included a reviewed of set-back distances, the preliminary hydraulic conductivity testing estimated loading rate, expected wetted area loses, suitable soils, and PADEP 400 gpd/unit planning flows. The purpose of this evaluation was to determine if other site conditions limited land based disposal density before the nitrate assimilation capacity of the site was exceeded.

Sand Mound systems have the following limitations/conditions:

- 100% replacement areas assumed
- Property line setback: 10 feet minimum require
- Losses due to piping chases and berms: Estimated 50%
- 10% of the vertical hydraulic conductivity or 0.84 inch/day[6] (0.07 feet/day or 22,800 gpd/acre)
- Sand mound design encompassing approximately 1.2 acres [primary (0.6 acre) & replacement (0.6 acre) beds including berms and losses] each serving 10 homes at 400 gpd/home

The soils mapping does not exactly match the field test results nor an overlay of LiDAR slope, so the area suitable for sand mound placement could be larger, but a conservative estimate of approximately 36

6 Refer to Soils Report (Appendix A) for hydraulic conductivity rate calculation.

acres of Swartswood 0-8% sloped soils are available within the middle drainage basin area that appear suitable for sand mound type installations. The following general calculation of serviceability of the middle drainage basin results is 300 homes which closely matches the available remaining lots with the subdivision at 306. The expandability of the eastern drainage basin which contain the existing sand mounds was not considered within this calculation. Therefore, the below shows that hydraulic loading is not a limiting factor and the overall disposal site should be adequate from a hydraulic and soils perspective to provide service for the remaining lots within section 19 through 22 of the Wild Acres development.

The following serviceability estimate is:

36 acres available for wetting

36 acres / 1.2 acres/primary & replacement beds = 30 beds

30 beds x 10 homes/bed area = 300 homes

Allowable unit density based on hydraulic loading and available soils were determined not to be the limiting factors. The limiting factor appears to be the nitrate mass-balance which estimates 140 homes utilizing septic tank treated effluent for the delineated drainage area. Adding to this total the 39 units for the improved system which occupies the eastern area of the subject parcel, the total unit estimate for the 140 acre tract is capped at 179 residential dwelling units based on the nutrient assimilation capacity of the site.

What the above serviceability estimate indicates is that with tertiary treated effluent to nitrates less than 10 mg/l, the system appears to be expandable. Note that this tabletop analysis is only a preliminary estimate. Actual serviceability will depend on further detailed soils and hydrogeological studies and review by PADEP.

4.0 Existing System Improvements

Delaware Sewer currently serves 39 homes in the Wild Acres development with an on-lot sewage disposal system consisting of septic tank treated wastewater and elevated sand mound disposal. The on-lot system is in a state of disrepair due in part to neglect and vandalism. Pennsylvania American Water Company (PAWC) intent is to improve this existing system to maintain service to the existing units once the acquisition with Delaware Sewer Company has occurred and permits have been received from the Department.

To the best of our knowledge, no records of the existing sand mound system are available. To improve the existing system, SSM recommends pumping and visual inspection of the septic tanks, construction of two test borings per bed and piezometer construction to evaluate cover, aggregate, and sand depths; and to assess the past effects of hydraulic loading to the beds and the sand/soil interface. We then recommend the elimination of the suspected syphon chamber in conjunction with the design and installation of new pumping (dosing) station(s), design/replacement of all force mains, delivery pipes, manifolds and laterals within the existing sand mounds. During sand mound pipe replacement, improve damaged berm areas. Finally, we recommend security fencing around the facilities to prevent vandalism.

5.0 Conclusion

This study was prepared to estimate the wastewater serviceability of a 140 acre tract dedicated to the repair and expansion of the Delaware Sewer system. This study evaluated land based disposal using septic tank treated effluent by nitrate mass-balance analysis techniques. The subject site and is served by public water and sewer.

Preliminary soil testing indicates that there appears to be sufficient area of Smartswood mapped soils (0-8% slopes) for elevated sand mound type disposal systems to serve the project needs well into the projected future. Site geology, hydrogeological conditions and background water quality appears conducive for land application of wastewater. Based on the preliminary hydrogeological study's mass-balance assessment using septic tank treated effluent, an effluent nitrate concentration of 45 mg/l, sewage flows of 262.5 gpd/unit and 1 in 10 year drought recharge, the subject tract is estimated to be able to support an additional 140 new residential units.

Improvements to the existing sand mounds will allow the already connected 39 units to maintain their current footprint. An in-situ investigation of the existing sand mounds is recommended before a determination is made for their improvement or replacement. Should the in-situ investigation recommend replacement, Smartswood soils mapped east and south of the sand mounds appear satisfactory for 100% of the replacement needs, subject to testing of course.

Improve the existing septic system for the existing 39 homes plus the addition of 140 new residential units, preliminary studies indicate the site can support an estimated 179 homes using septic tank treated effluent and standard land application techniques. For additional units above the 179 estimate, tertiary treated effluent would be required. Based on preliminary system size and space limitations estimates, tertiary treated effluent and sand mound type disposal, the maximum site serviceability for the tract is estimated to max-out at approximately 300 units.

PAWC has proposed a phased approach to address the immediate deficiencies and the long term growth of the development. A phased approach is necessary due to the uncertainty of the growth rate and ultimate build-out of the development. The construction of a treatment facility sized for the ultimate build-out at the present time would cause severe operational problems with the treatment due to

inadequate nutrient loading of the biological treatment process. From discussions with Delaware Township, we do not anticipate a sustainable growth of more than an average of 2 to 3 homes per year, resulting in a 20 year growth projections of an additional 40 to 60 homes. This approach will balance the capacity requirements of the projected customer growth with the operational needs of the treatment and disposal system. PAWC proposes to perform the planning and permitting for the maximum allowable homes to be served by a septic tank effluent with subsurface disposal as determined by this report to be 179 homes.

Phase 1 – To address the immediate deficiencies and provide additional capacity to serve up to 79 homes. Phase 1 includes the demolition of the existing RBC units and the sand filter equipment that is not in use. The existing pump station must be replaced in its entirety as well as the force main and subsurface disposal system. The existing elevated sand mounds will be rehabilitated as well as the existing septic tanks to provide treatment and disposal capacity for the existing 39 homes. A new subsurface disposal system would be constructed in the middle drainage basin along with increased septic tank capacity at the WWTP, to provide capacity for 40 future homes. The site must be protected from the off road vehicle damage the existing mounds have incurred by fencing the entire site. The increased capacity would be provided by the installation of additional septic tanks and sand mounds for subsurface disposal. The Phase 1 expansion should provide adequate capacity for a 15 to 20 year period. PAWC will continue to monitor growth and update the growth estimates annually. When the projected growth rate exceeds the permitted capacity (79 homes) within a five year timeframe, PAWC will begin to implement plans to expand the system to 179 homes for Phase 2.

6.0 List of References

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Figures

Appendix A

Preliminary Soils Evaluation

1590 Canary Road, Quakertown PA 18951 | 215-536-7006 | Fax: 215-538-6136

VW Consultants LLC

November 26, 2018

Scott R. Mundell, P.G.
Sr. Geologist, Water Resources
Spotts, Stevens and McCoy
1047 North Park Road
Reading PA 19610-0307
scott.mundell@ssmgroup.com

Preliminary Soil Evaluation
Large Volume Land Application Wastewater Facility
Wild Acres
Delaware Township Pike Co
VW#17-48

Dear Scott:

VW Consultants, LLC completed a preliminary soil evaluation of the above referenced site. The purpose of the evaluation was to determine the feasibility of the site for a new large volume wastewater treatment facility using land application. Our findings indicate that the site is feasible for land application of wastewater using elevated sand mounds or spray irrigation. There are about 50 acres of feasible soils that were identified which do not include loss to buffers or isolation distances to property line lines. Final site approval is dependent on detail site testing results conducted with the Pennsylvania Department of Environmental Protection (PADEP) and hydrogeological studies.

The site was initially evaluated on 6/5/17 by two staff soil scientists. Additional preliminary site testing was conducted 10/26/18 and 10/31/18 using back hoe excavated test pits, percolation tests and hydraulic conductivity (HC) tests. The soils at the site are limited for on-lot sewage disposal by seasonal soil wetness which was exhibited by a discoloration of the soil called soil mottling (redox depletions and concentrations). This seasonal soil wetness is considered a limiting zone by the regulations administered by the PADEP. A minimum of twenty inches to a limiting zone is required for a large volume wastewater treatment system using an elevated sand mound or spray irrigation for land application.

Back hoe excavated test pits were used to evaluate the soils at the site The soils on the property evaluated by VW are mapped by the United States Department of Agriculture-Natural Resource and Conservation Service (USDA-NRCS) to the Swartswood, Wurtsboro, and Edgemere and Shohla soil series. Of these soils, the Swartswood series with slopes less than 15% are best suit for land application of wastewater. Twenty-two test pits were evaluated over the 80 acre study area. Areas of obvious wetness and surface stoniness were avoided. Two of the twenty-two test pits were not feasible for land application of wastewater. The soils feasible for wastewater ranged from 20 to 34 inches to a seasonal high water table as exhibited by soil redox features. A summary of the test pit results and typical soil profile descriptions are attached to this report. Approximately 50 acres of soils feasible for land application were identified. This does not include any required buffers or off sets to the property line. The attached plan shows the approximate location of the test pits and areas feasible for land application of wastewater.

At five test pit locations, a preliminary percolation test was conducted at a twenty inch depth. In addition, a HC test was also conducted 6 inches into the fragipan to determine the vertical permeability of this dense, brittle, firm soil horizon. The fragipan will promote horizontal water flow above the pan at saturated soil conditions. The average percolation rate at 20 inches was 16.7 MPI. The HC geometric mean was .35 inches per hour. The PADEP will allow only 10% of the measured HC value. Therefore a preliminary HC value of .035 inches per hour or .84 inch per day should be used. Please be aware that these values are preliminary. Detail testing conducted with the PADEP may be different.

In conclusion, the site is feasible for a large volume waste water treatment facility using land application. Final site approval, determination of the system type and the site capacity in gallons per day is dependent upon detail soil testing results conducted with the PADEP and the results of a hydrogeological study. Our preliminary site testing indicates that a HC value of .84 inch per day could be considered. Based on this value and not accounting for a water budget balance using precipitation, a 5000 sq. ft. mound could accommodate 3333 gallons per day based on the perc rate and 2625 gallons per day based on the HC. Therefore the HC rate would be more limiting. The issue for this site does not appear to be the soils and HC values. The limiting factor for this site could be the hydrogeological issues and a nitrate plume analysis.

Should you like to pursue the detail site testing with the PADEP we should schedule a pre-site testing meeting with that agency. If you have any questions regarding this matter, please do not hesitate to contact me at 267-784-6873 or by email at valsoils@verizon.net.

Sincerely,

VW CONSULTANTS, LLC
Joseph A. Valentine
Qualified Soil Scientist

ATTACHMENTS

Wild Acres
Percolation & Hydraulic Conductivity Testing
10/31/18

Testing Location	Depth of Test (in. bgs)	Perk Rate (MPI)	Recorded Hydraulic Conductivity Drop (in./hr.)	Calculated Hydraulic Conductivity Rate (in./hr.)
1	20	8.9	--	--
1	46	--	2.5	0.85
2	20	17.1	--	--
2	36	--	0.5	0.15
3	20	26.7	--	--
3	34	--	2.25	0.75
4	20	15.0	--	--
4	40	--	4.75	2.59
5	20	16.0	--	--
5	32	--	0.5	0.15

Perk Rate Average - 8.9+17.1+26.7+15+16 = 83.7/5 = 16.74 MPI

Hydraulic Conductivity Geometric Mean - 0.85, 0.15, 0.75, 0.15 = 0.35 in./hr.
(Geomean excludes high rate of 2.59)

HC Rate for Design - 10% of 0.35 in./hr. = 0.035 in./hr. or 0.84 in./day

VW Consultants LLC
1590 Canary Road, Quakertown, PA 18951 | 215-536-7006 | 215-538-6136

SATURATED HYDRAULIC CONDUCTIVITY CALCULATIONS

Project Name:	Wild Acres	Project No.:	VW#p101918
VW Technician:	Matt Hostrander, CPSS	Test No.:	1 (adjacent TP-1 2017)
DEP Witness:	None	Date:	10/31/2018
Township Witness:	None	Weather:	Sunny, 40s

FIELD DATA

	in	cm
Cross-Sectional Area (A):	12.56	45.60365
Cased Hole Diameter (D):	4	10.16
Pipe Insertion Depth:	1	2.54
Initial Height of Water Column (h1):	4	10.16
Final Height of Water Column (h2):	2.75	6.98043
Testing Depth:	46	116.84

	ml	cm^3
Final Drop:	145	145

inches
1.25

	min	sec
Time Interval (t):	30	1800

Reading	Time Interval	Drop (ml)
1	30 min.	260
2	30	160
3	30	170
4	30	145
5	30	145
6		
7		
8		
9		
10		

Constants
F = 2.75

CALCULATIONS

Kv = Vertical Permeability $Kv = [A / (F * D * t)] \times \ln (h1 / h2)$

0.86 in/interval

1.71 in/hr

41.14 in/day

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SATURATED HYDRAULIC CONDUCTIVITY CALCULATIONS

Project Name:	Wild Acres	Project No.:	VW#p101918
VW Technician:	Matt Hostrander, CPSS	Test No.:	2 (adjacent TP-1 2018)
DEP Witness:	None	Date:	10/31/2018
Township Witness:	None	Weather:	Sunny, 40s

FIELD DATA

	in	cm
Cross-Sectional Area (A):	12.56	45.60365
Cased Hole Diameter (D):	4	10.16
Pipe Insertion Depth:	1	2.54
Initial Height of Water Column (h1):	4	10.16
Final Height of Water Column (h2):	3.74	9.502158
Testing Depth:	36	91.44

	ml	cm^3
Final Drop:	30	30

inches
0.26

	min	sec
Time Interval (t):	30	1800

Reading	Time Interval	Drop (ml)
1	30 min.	430
2	30	30
3	30	60
4	30	30
5	30	30
6		
7		
8		
9		
10		

Constants
F = 2.75

CALCULATIONS

Kv = Vertical Permeability $Kv = [A / (F * D * t)] \times \ln (h1 / h2)$

0.15 in/interval

0.31 in/hr

7.34 in/day

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SATURATED HYDRAULIC CONDUCTIVITY CALCULATIONS

Project Name:	Wild Acres	Project No.:	VW#p101918
VW Technician:	Matt Hostrander, CPSS	Test No.:	3 (adjacent TP-5 2018)
DEP Witness:	None	Date:	10/31/2018
Township Witness:	None	Weather:	Sunny, 40s

FIELD DATA

	in	cm
Cross-Sectional Area (A):	12.56	45.60365
Cased Hole Diameter (D):	4	10.16
Pipe Insertion Depth:	1	2.54
Initial Height of Water Column (h1):	4	10.16
Final Height of Water Column (h2):	2.88	7.309351
Testing Depth:	34	86.36

	ml	cm^3
Final Drop:	130	130

inches
1.12

	min	sec
Time Interval (t):	30	1800

Reading	Time Interval	Drop (ml)
1	30 min.	160
2	30	145
3	30	130
4	30	130
5		
6		
7		
8		
9		
10		

Constants
F = 2.75

CALCULATIONS

Kv = Vertical Permeability $Kv = [A / (F * D * t)] \times \ln (h1 / h2)$

0.75 in/interval

1.50 in/hr

36.10 in/day

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SATURATED HYDRAULIC CONDUCTIVITY CALCULATIONS

Project Name:	Wild Acres	Project No.:	VW#p101918
VW Technician:	Matt Hostrander, CPSS	Test No.:	4 (adjacent TP-6 2018)
DEP Witness:	None	Date:	10/31/2018
Township Witness:	None	Weather:	Sunny, 40s

FIELD DATA

	in	cm
Cross-Sectional Area (A):	12.56	45.60365
Cased Hole Diameter (D):	4	10.16
Pipe Insertion Depth:	1	2.54
Initial Height of Water Column (h1):	3.5	8.89
Final Height of Water Column (h2):	1.13	2.859781
Testing Depth:	40	101.6

	ml	cm^3
Final Drop:	275	275

	inches
	2.37

	min	sec
Time Interval (t):	30	1800

Reading	Time Interval	Drop (ml)
1	30 min.	350
2	30	350
3	30	300
4	30	275
5		
6		
7		
8		
9		
10		

Constants
F = 2.75

CALCULATIONS

Kv = Vertical Permeability $Kv = [A / (F * D * t)] \times \ln (h1 / h2)$

2.59 in/interval

5.18 in/hr

124.32 in/day

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SATURATED HYDRAULIC CONDUCTIVITY CALCULATIONS

Project Name:	Wild Acres	Project No.:	VW#p101918
VW Technician:	Matt Hostrander, CPSS	Test No.:	5 (adjacent TP-2 2018)
DEP Witness:	None	Date:	10/31/2018
Township Witness:	None	Weather:	Sunny, 40s

FIELD DATA

	in	cm
Cross-Sectional Area (A):	12.56	45.60365
Cased Hole Diameter (D):	4	10.16
Pipe Insertion Depth:	1	2.54
Initial Height of Water Column (h1):	4	10.16
Final Height of Water Column (h2):	3.74	9.502158
Testing Depth:	32	81.28

	ml	cm^3
Final Drop:	30	30

	inches
	0.26

	min	sec
Time Interval (t):	30	1800

Reading	Time Interval	Drop (ml)
1	30 min.	275
2	30	145
3	30	40
4	30	30
5		
6		
7		
8		
9		
10		

Constants
F = 2.75

CALCULATIONS

Kv = Vertical Permeability $Kv = [A / (F * D * t)] \times \ln (h1 / h2)$

0.15 in/interval

0.31 in/hr

7.34 in/day

10/31/18 Perk Testing Wild Acres

6" ø HOLES

TEST PIT	DEPTH	RATE	IN/HR	HC
① 2017	20"	3 3/8	6.75	—
4" HEAD	46"	1 1/4	2.50	0.85 in/hr
① 2018	20"	1 3/4	3.50	—
4" HEAD	36"	1/4	0.50	0.15 in/hr
⑤ 2018	20"	1 1/8	2.25	—
4" HEAD	34"	1 1/8	2.25	0.75 in/hr
⑥ 2018	20"	2	4.00	—
3.5" HEAD	40"	2 3/8	4.75	2.05 in/hr
② 2018	20"	1 7/8	3.75	—
4" HEAD	32"	1/4	0.50	0.15 in/hr

Darcy's Law Equation

$$Ksat = \left[A / (F \times D \times t) \right] \times Ln\left(H1/H2\right)$$

$$\frac{12.56}{2.75 \times 4 \times 0.5} \times Ln\left(4/2.75\right)$$

$$2.28 \times Ln\ 1.45 \text{ or } 0.37$$

$$Ksat = 0.85 \text{ in./hr.}$$

1 T.P. from 2017

10/26/18

	HC	Pan
✓	1	30
✓	2	26
	3	29
	4	30
✓	5	28
✓	6	~~38~~ 34

Dig Perk 6" into pan plus do 20" perks for real testing

6" head on perks

perk hole size 6"

HC cake needed.

6/5/17

✓	1	40
	2	40
	5	42
	6	40
	7	50
	14	36

WILD ACRES 10/26/18

T.P. #	D.O.P.	LZ	TYPE	PAN	NOTES
* 1	40	24	M	30	Swart
4	44	20	M	26	"
5	40	24	M	27	"
8	24	8	M	/	? Rocks WET
6	40	24	M	30	Swarts
3	36	24	M	28	"
2	36	20	M	26	"
7	SWAMP				

DONE

10/31/18

9	46	30	M F/F	38	SWARTS
10	44	26	M F/F	36 C/D IN PAN	"
11	40	24	M F/F	30 IN PAN C/D	"
12	40	26	M F/F	32 IN PAN C/D	"

Joe 570-332-3123

PIT		SOIL CHANGE	REDOX	PAN	D.O.P.
1	217 WAY POINT	19	32	40	60
2	216	20	30	40	70
3	215	22	32	39	70
4	(202) 203	18	26	38	64
5	204	14	27	42	62
6	205	28	34	40	60
7	206	17	28	50	60
8	207	20	28	40	56
9	208	17	32	42	60
10	209	13	24	34	60
11	210	18	26	43	66
12	211	23	34	40	60
13	212	16	30	48	58
14	213	16	24	36	60
	214?	mistake			

Percolation Test Report

Site: Wild Acres

Municipality: Delaware Twp

County: Pike County

Date: 10/31/18

Weather Conditions:
- ☐ Below 40°F
- ☑ 40°F or Above
- ☑ Dry
- ☐ Rain, Sleet, Snow (last 24 hours)

Soil Conditions:
- ☑ Wet
- ☐ Dry
- ☐ Frozen

Josh / Matt

Butch / York from Morgan

Hole #	Drop during final	Perc Rate (Min/in)

Total= _____

Average Percolation Rate = _____

Final Presoak Water Remaining?

Hole #												
Y												
N												
Interval Reading (min)	30											
P-1 H	1 (17)		1 (18)		5 (18)		6 (18)		2 (18)			
Depth of Hole	20"	46"	20"	36"	20"	34"	20"	90"	20"	32"	20	
Hole #												
Interval 1												
Start	11:55	11:55	12:15	12:15	12:40	12:40	2:55		3:05			
End	12:25	1 1/4	1 1/8	3 1/4	1:10	1:10	3:25	3+	3:35	2 3/4	2 3/8	
Drop	4+				1 3/8	1 3/8	3+		2 3/4			
Interval 2	12:55		1:15		1:40		3:55		4:05			
Start												
End	3 1/2	1 3/4	2	1/4	1 1/4	1 1/4	2 1/2	3	2 3/8	1/4		
Drop												
Interval 3	1:25		1:45		2:10		4:25		4:35			
Start												
End	3 5/8	1/2	3/4	1/2	1 1/8	1/8	2 1/2	2 5/8	2 1/4	3/8		
Drop												
Interval 4	1:55		2:15		2:40		4:55		5:05			
Start												
End	3 1/4	1 1/4	1 3/4	1/4	1 1/8	1 1/8	2	2 3/8	1 1/8	1/4		
Drop												
Interval 5	2:25		2:45		3:15							
Start												
End	3 3/8	1/4	1 3/4	1/4	✓	✓						
Drop												
Interval 6	2:55		3:15		3:40							
Start												
End	✓	✓	✓	✓								
Drop												
Interval 7	3:25		3:45		4:10							
Start												
End												
Drop												
Interval 8	3:55		4:15		4:40							
Start												
End												
Drop												
ref	8	8	8	8	5	8	7	7	7	7		
head	4	4	4	4	3	4	3	3.5	3	4		

Matthew C. Hostrander, CPSS
Professional Soil Scientist

Date: 6/5/17 Pit # 1
Project: PA American Water
Location: Wild Acres
Delaware Twp., Pike Co., PA
Soil Series Mapped: Swartswood
Soil Series Classified: Swartswood

Limiting Zone 32" Slope: 3-5% Conduct Percolation Test at N/A"

Horizon	Depth (In.)	Matrix Color	Texture	Structure	Consistence	Fe Redox Depletions	Fe Redox Concentrations	Boundary
A	0-2	10YR 2/1	sil	1 f gr	very friable	none	none	abrupt smooth
E	2-4	10YR 4/1	sil	1 f sbk	very friable	none	none	abrupt smooth
Bs	4-9	10YR 5/8	l	1 f sbk	very friable	none	none	abrupt smooth
Bw1	9-19	10YR 5/6	l	1 m sbk	friable	none	none	clear wavy
Bw2	19-32	10YR 5/4	fsl	1 m sbk	friable	none	none	clear wavy
Bw3	32-40	10YR 5/4	fsl	1 m sbk 1 m pl	friable	f f	f f	clear wavy
Bx	40-60	2.5Y 5/4	cb fsl	1 m pl	friable firm	c f	c f	

Township Representative:: Soil Scientist: Matthew C. Hostrander

Notes:
Weather / Field Conditions:
Others Present at Site:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Cambic
Fragipan
Spodic

SOIL ORDER
Inceptisol

DRAINAGE CLASS
Moderately well drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Glacial Till

BEDROCK LITHOLOGY
Sandstone

COARSE FRAGMENTS (% of Vol.)

15-35%	35-65%	>65%
(gr) gravelly	(vgr) very gravelly	(egr)extr. gravelly
(ch) channery	(vch) very channery	(ech) extr.channery
(cb) cobbly	(vcb) very cobbly	(ecb) extr. cobbly
(fl) flaggy	(vfl) very flaggy	(efl) extr. flaggy
(st) stony	(vst) very stony	(est) extr. stony
(bd) bouldery	(vbd) very bouldery	(ebd) extr. bouldery

TEXTURE
cos - coarse sand
s - sand
fs - fine sand
vfs - very fine sand
lcos - loamy coarse sand
ls - loamy sand
lfs - loamy fine sand
lvfs - loamy very fine sand
cosl - coarse sandy loam
sl - sandy loam
fsl - fine sandy loam
vfsl - very fine sandy loam
l - loam
sil - silt loam
si - silt
scl - sandy clay loam
cl - clay loam
sicl - silty clay loam
sc - sandy clay
sic - silty clay
c – clay

STRUCTURE
Grade
Structureless - 0
Weak - *1*
Moderate - *2*
Strong - *3*
Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky
m - massive
s - single grain
Size
vf - very fine
f - fine
m - medium
co - coarse
vc - very coarse
vt - very thin
t - thin
th - thick
vth - very thick

REDOX FEATURES
Abundance
f - Few <2%
c - Common 2-20%
m - Many >20%
Contrast
f - Faint
d - Distinct
p - Prominent

BOUNDARY
Distinctness
Abrupt <1" (thick)
Clear 1-2.5"
Gradual 2.5 -5"
Diffuse >5
Topography
Smooth - boundary is nearly level
Wavy - pockets with width greater than depth
Irregular - pockets with depth greater than width
Broken discontinuous

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Consultants LLC

Project: PA American Water
Location: Wild Acres
Delaware Twp., Pike Co., PA

Date: 6/5/17

Pit	Soil Change	Redox	Pan	Depth of Pit
1	19	32	40	60
2	20	30	40	70
3	22	32	39	70
4	18	26	38	64
5	14	27	42	62
6	28	34	40	60
7	17	28	50	60
8	20	28	40	56
9	17	32	42	60
10	13	24	34	60
11	18	26	43	66
12	23	34	40	60
13	16	30	48	58
14	16	24	36	60

Matthew C. Hostrander, CPSS
Professional Soil Scientist

Date: 10/26/18 Pit # 101
Project: PA American Water
Location: Wild Acres
Delaware Twp., Pike Co., PA
Soil Series Mapped: Swartswood
Soil Series Classified: Swartswood

Limiting Zone 24" Slope: 5-8% Conduct Percolation Test at N/A"

Horizon	Depth (In.)	Matrix Color	Texture	Structure	Consistence	Fe Redox Depletions	Fe Redox Concentrations	Boundary
E	0-2	10YR 2/2	fsl	1 f gr	very friable	none	none	abrupt smooth
Bs	2-5	10YR 3/6	gr fsl	1 f gr	very friable	none	none	clear wavy
Bw1	5-18	10YR 5/6	gr fsl	1 f sbk	very friable	none	none	gradual wavy
Bw2	18-24	10YR 5/6	cb fsl	1 f sbk	friable	none	none	clear wavy
Bw3	24-30	10YR 4/6	cb fsl	1 f sbk 1 t pl	friable	c f	c f	clear wavy
Bx	30-40	10YR 4/4	cb fsl	1 th pl	firm	c d	c d	

Township Representative:: Soil Scientist: Matthew C. Hostrander

Notes:
Weather / Field Conditions:
Others Present at Site:

EPIPEDON
Ochric

SUBSURFACE HORIZON(S)
Cambic
Fragipan

SOIL ORDER
Inceptisol

DRAINAGE CLASS
Moderately well drained

LANDFORM
Upland

POSITION
Backslope

PARENT MATERIAL
Glacial Till

BEDROCK LITHOLOGY
Sandstone

COARSE FRAGMENTS (% of Vol.)

15-35%	35-65%	>65%
(gr) gravelly	(vgr) very gravelly	(cgr)extr. gravelly
(ch) channery	(vch) very channery	(ech) extr.channery
(cb) cobbly	(vcb) very cobbly	(ecb) extr. cobbly
(fl) flaggy	(vfl) very flaggy	(efl) extr. flaggy
(st) stony	(vst) very stony	(est) extr stony
(bd) bouldery	(vbd) very bouldery	(ebd) extr. bouldery

TEXTURE
cos - coarse sand
s - sand
fs - fine sand
vfs - very fine sand
lcos - loamy coarse sand
ls - loamy sand
lfs - loamy fine sand
lvfs - loamy very fine sand
cosl - coarse sandy loam
sl - sandy loam
fsl - fine sandy loam
vfsl - very fine sandy loam
l - loam
sil - silt loam
si - silt
scl - sandy clay loam
cl - clay loam
sicl - silty clay loam
sc - sandy clay
sic - silty clay
c – clay

STRUCTURE
Grade
Structureless - 0
Weak - *1*
Moderate - *2*
Strong - *3*
Type
pl - platy
pr - prismatic
cpr - columnar
gr - granular
abk - angular blocky
sbk - subangular blocky
m - massive
s - single grain
Size
vf - very fine
f - fine
m - medium
co - coarse
vc - very coarse
vt - very thin
t - thin
th - thick
vth - very thick

REDOX FEATURES
Abundance
f - Few <2%
c - Common 2-20%
m - Many >20%
Contrast
f - Faint
d - Distinct
p - Prominent

BOUNDARY
Distinctness
Abrupt <1" (thick)
Clear 1-2.5"
Gradual 2.5 -5"
Diffuse >5
Topography
Smooth - boundary is nearly level
Wavy - pockets with width greater than depth
Irregular - pockets with depth greater than width
Broken discontinuous

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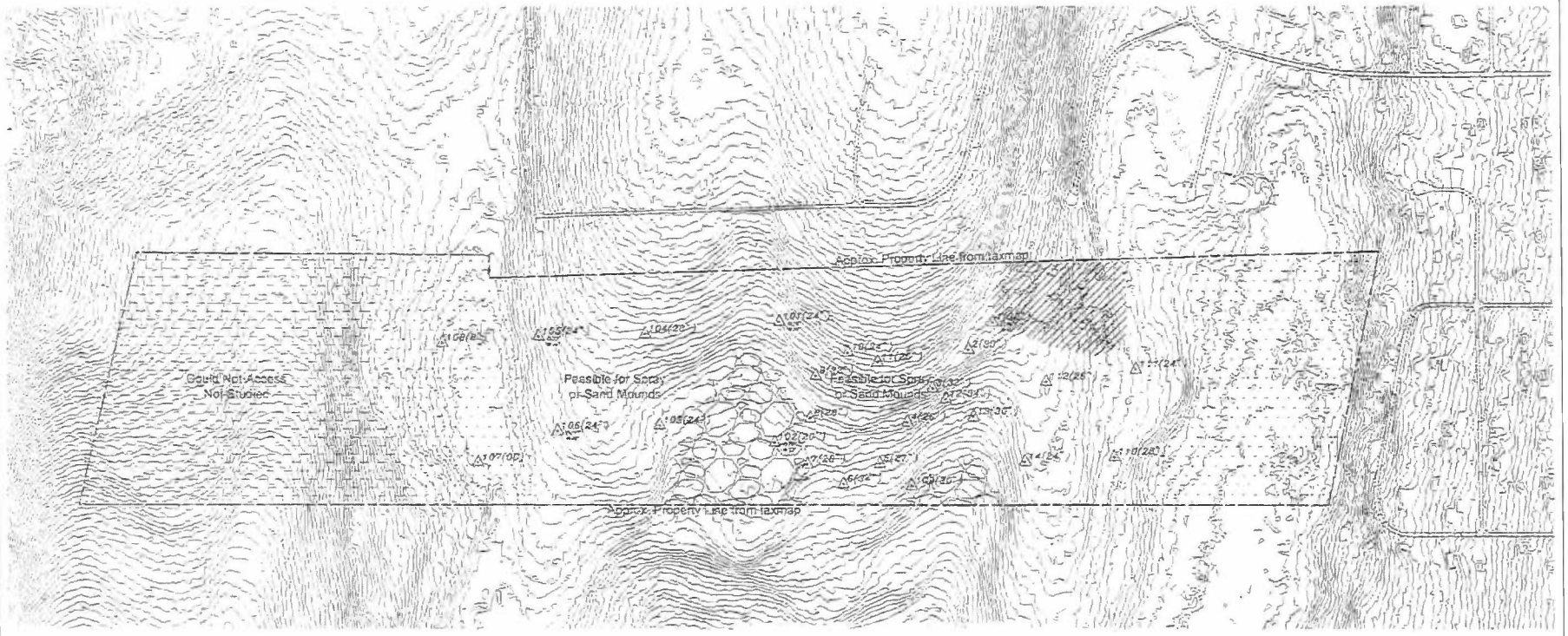
Consultants LLC

Project: PA American Water
Location: Wild Acres
Delaware Twp., Pike Co., PA

Date: 10/26/18

Pit	Soil Change	Redox	Pan	Depth of Pit
101		24	30	40
102		20	24	36
103		24	28	36
104		20	26	44
105		24	29	40
106		24	30	40
107				
108		8	-	24



NOTE REGARDING THIS PLAN:

CALL BEFORE YOU DIG

STOP! CALL!

Consultants LLC
1580 Canary Road
Quakertown, PA 18951
(215) 529-7000 Phone
(215) 538-0130 Fax

Wild Acres

Preliminary Wastewater Feasibility Plan

Appendix B

Analytical Results from Groundwater Sampling

Certificate of Analysis

M.J. Reider Associates, Inc.
ENVIRONMENTAL TESTING LABORATORY
U.S EPA/PA DEP #06-00003

Laboratory No.: 8029487
Report: 10/09/18
Lab Contact: Twila Dixon

Attention: Scott R. Mundell
Reported To: Spotts Stevens and McCoy
1047 North Park Road, P.O. Box 6307
Reading, PA 19610

Project Info: Delaware Sewer - Poconos (108631.0165)

Lab ID: 8029487-01 **Collected By:** Client **Sampled:** 10/03/18 11:15 **Received:** 10/04/18 08:06
Sample Desc: _____ **Sample Type:** Grab

	Result	Unit	Rep. Limit	Procedure	Analyzed	Analyte Notes	Analyst
Field							
No Sample	0				10/03/18	CST-01	CST

Lab ID: 8029487-02 **Collected By:** Client **Sampled:** 10/03/18 14:20 **Received:** 10/04/18 08:06
Sample Desc: 169 Hilltop Dr Sump **Sample Type:** Grab

	Result	Unit	Rep Limit	Procedure	Analyzed	Analyte Notes	Analyst
Field							
pH	5.2	SU			10/03/18 14:20	CST-01	CST
General Chemistry							
Chloride	4	mg/l	2	EPA 300.0 Rev 2.1	10/04/18		JAF
Nitrate as N	<0.22	mg/l	2.00	EPA 300.0 Rev 2.1	10/04/18 12:34	U	JAF
pH	5.12	SU	1.00	SM 4500-H+ B	10/04/18 9:18	G-20	AJS
Microbiology							
Escherichia coli	3	mpn/100ml	1	SM 9223 B/Quantitray	10/04/18 16:30		PLW
Total Coliform	>2400	mpn/100ml	1	SM 9223 B/Quantitray	10/04/18 16:30		PLW

M.J. Reider Associates, Inc.

Lab ID: 8029487-03 **Collected By:** Client **Sampled:** 10/03/18 14:30 **Received:** 10/04/18 08:06
Sample Desc: 169 Hilltop Dr Footer Drain **Sample Type:** Grab

	Result	Unit	Rep. Limit	Procedure	Analyzed	Analyte Notes	Analyst
Field							
pH	5.8	SU		-	10/03/18 14:30	CST-01	CST
General Chemistry							
Chloride	<2	mg/l	2	EPA 300.0 Rev 2.1	10/04/18		JAF
Nitrate as N	0.43	mg/l	2.00	EPA 300.0 Rev 2.1	10/04/18 12:18	J	JAF
pH	5.53	SU	1.00	SM 4500-H+ B	10/04/18 9:25	G-20	AJS
Microbiology							
Escherichia coli	8	mpn/100ml	1	SM 9223 B/Quantitray	10/04/18 16:30		PLW
Total Coliform	>2400	mpn/100ml	1	SM 9223 B/Quantitray	10/04/18 16:30		PLW

Lab ID: 8029487-04 **Collected By:** Client **Sampled:** 10/03/18 11:15 **Received:** 10/04/18 08:06
Sample Desc: Wild Acres Well No. 5 **Sample Type:** Grab

	Result	Unit	Rep. Limit	Procedure	Analyzed	Analyte Notes	Analyst
Field							
pH	6.46	SU		-	10/03/18 11:15	CST-01	CST
General Chemistry							
Chloride	<2	mg/l	2	EPA 300.0 Rev 2.1	10/04/18		JAF
Nitrate as N	0.30	mg/l	2.00	EPA 300.0 Rev 2.1	10/04/18 12:51	J	JAF
pH	6.59	SU	1.00	SM 4500-H+ B	10/04/18 9:27	G-20	AJS
Microbiology							
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	10/04/18 16:30		PLW
Total Coliform	<1	mpn/100ml	1	SM 9223 B/Quantitray	10/04/18 16:30		PLW

Notes and Definitions

CST-01	The analysis was performed in the field by the customer. The specific method of analysis used by the customer is unknown. These results are being provided on this report to the customer for their convenience only.
G-20	The laboratory pH was analyzed beyond the recommended 15 minute holding time.
J	Estimated value
U	Analyte was not detected above the indicated value.

M.J. Reider Associates, Inc.
107 Angelica St, Reading PA, 19611
610-374-5129 www.mjreider.com

WORK ORDER
Chain of Custody

8029487

Client Code: 0119
Project Manager: Twila Dixon
Client: Spotts Stevens and McCoy
Project: Delaware Sewer - Poconos (108631.0165)
Report To: Spotts Stevens and McCoy - Scott R. Mundell - 1047 North Park Road, P.O. Box 6307, Reading, PA 19610
Invoice To: Spotts Stevens and McCoy - Scott R. Mundell - 1047 North Park Road, P.O. Box 6307, Reading, PA 19610

Comments: ~~[illegible]~~ OK TO RUN OUT OF HOLD.

Collected By: S. MUNDELL
(Full Name)

8029487-01 ~~WILD ACRES WELL NO. 5~~ ~~FIELD PH 6.46 SU~~
pH-Field SM 4500H+B____SU
EC (#) SM 9223B Confirmation, NO3-N EPA 300.0, pH SM 4500H+B, TC (#) SM 9223B
Cl- EPA 300.0

Matrix: Non-Potable Water
Type: Grab
A - Pl 250ml NP
B - Sterile Pl 125ml NaThio
C - Pl 250ml NP
Date: ~~10/3/2018~~
Time: ~~11:35~~

8029487-02 169 HILLTOP DR SUMP
pH-Field SM 4500H+B 5.2 SU
EC (#) SM 9223B Confirmation, NO3-N EPA 300.0, pH SM 4500H+B, TC (#) SM 9223B
Cl- EPA 300.0 TNS TNS

Matrix: Non-Potable Water
Type: Grab
A - Pl 250ml NP
B - Sterile Pl 125ml NaThio
C - Pl 250ml NP
Date: 10/3/2018
Time: 14:20

8029487-03 169 HILLTOP DR. FOOTER DRAIN
pH-Field SM 4500H+B 5.3 SU
EC (#) SM 9223B Confirmation, NO3-N EPA 300.0, pH SM 4500H+B, TC (#) SM 9223B
Cl- EPA 300.0 TNS TNS

Matrix: Non-Potable Water
Type: Grab
A - Pl 250ml NP
B - Sterile Pl 125ml NaThio
C - Pl 250ml NP
Date: 10/3/2018
Time: 14:30

8029487-04 WILD ACRES WELL NO. 5 FIELD PH 6.46
pH-Field SM 4500H+B 6.46 SU
EC (#) SM 9223B Confirmation, NO3-N EPA 300.0, pH SM 4500H+B, TC (#) SM 9223B
Cl- EPA 300.0 TNS TNS

Matrix: Non-Potable Water
Type: Grab
A - Pl 250ml NP
B - Sterile Pl 125ml NaThio
C - Pl 250ml NP
Date: 10/3/2018
Time: 11:35

Relinquished By	Date/Time	Received By	Date/Time
[signature]	10/4/2018		08:00
Relinquished By	Date/Time	Received at Laboratory By: Jean Vantzue	10/4/18 8:00

Sample Kit Prepared By:	Date/Time

Sample Temp (°C): 7°C
Samples on Ice? Yes No
Approved By: TDV
Entered By: [illegible]

Printed: 10/2/2018 10:58:00

Twila Dixon

From: mundell, scott <scott.mundell@ssmgroup.com>
Sent: Monday, October 08, 2018 9:27 AM
To: Twila Dixon
Subject: RE: Delaware Sewer project

Hi Twila,
The PO for the Delaware Sewer (PA American Water Company) project is 20180961.
Regards,
Scott

From: Twila Dixon [mailto:tdixon@mjreider.com]
Sent: Monday, October 08, 2018 8:29 AM
To: mundell, scott
Subject: Delaware Sewer project

Hi Scott:
Please provide a Purchase Order # for this project.
Thanks
Twila

Twila Dixon
Technical Director

Want to see another use for those 1 liter glass organic containers? Look here...

M.J. Reider Associates, Inc.
Environmental Testing Laboratories
107 Angelica Street, Reading, PA 19611
610-374-5129 office
610-374-7234 fax
tdixon@mjreider.com
www.mjreider.com

We appreciate your feedback.....feedback@mjreider.com

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the

Reviewed and Approved by:

Twila Dixon

Twila Dixon
Technical Director

Appendix C

Mass Balance Calculation

Nitrate Dispersion Calculation

Delaware Sewer

Septic Tank Treated Effluent Assessment

Basin Area: **125.5 ACRES**

No. Units & Flows: **140 units x** **262.5 gpd/unit=** **36,750 gpd**

Required Area:

Wastewater Flows		36,750 gpd
Groundwater Recharge:		
Normal Year*	=	1,504 gpd/acre
Drought Year *	=	1,062 gpd/acre
Loading System	=	1,653,750 mg*gal/l*day
Final Concentration	=	10 mg/l
Flow System	=	36,750 gpd
Background Conc.	=	0.32 mg/l

Loading System = Initial Nitrate Conc x % Reduction x Wastewater Flow

Loading System = 1,653,750 mg*gal/l*day

Initial Nitrate Conc. = 45 mg/l

Nitrate Reduction = 0%

Wastewater Flow = 36,750 gpd

Formula:

Area Dispersion = Loading System - (Final Conc x Flow System)
Recharge Aquifer x (Final Conc - Background Conc.)

Area Dispersion = area, in acres, of nitrate dispersion to dilute to 10 mg/l.

Loading System = system nitrate loading, assuming a 45 mg/l NO3-N concentration as a standard for waste loading calculations.

Final Concentration = Final Nitrate (NO3-N) concentration of 10 mg/l as established by PA Drinking Water Criteria

Flow System = system flow, projected at 36,750 gpd.

Groundwater Recharge = aquifer recharge rates, in gpd/acre

Background Conc. = average background nitrate (NO3-N) concentration

Area Dispersion	**=**	**88.35 Acres**	**Normal Year**
	=	**125.12 Acres**	**Drought Year**

SSM Project No. 108631.0165

Figure 1
Site Location
Delaware Sewer
WW Feasibility Study
Delaware Township
Pike County, PA

Site Location

Parcel Boundary

N

0 1,000 2,000 Feet

1 inch = 1,500 feet

Data Source:
Parcel, Pike Co., 2018

SSM
SPOTTS | STEVENS | MCCOY
Engineering and Environmental Services
Reading | Lehigh Valley | Lancaster
P: 610.621.2000 F: 610.621.2001
ssmgroup.com

03/26/19

G:\projects\w100000w108631w01651\108631w01651.aprx

Figure 2
Drainage Basin Areas
Delaware Sewer
WW Feasibility Study
Delaware Township
Pike County, PA

- Test Pit
- Groundwater Sample
- 2-ft Interval Contour
- Tract Portion
- Total Basin
- Parcel Boundary

N

0 250 500 Feet

1 inch = 350 feet

Data Sources:
Parcel, Pike Co., 2018
Basins, SSM, 2018
Contours, LIDAR
Test Pits

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03/26/19

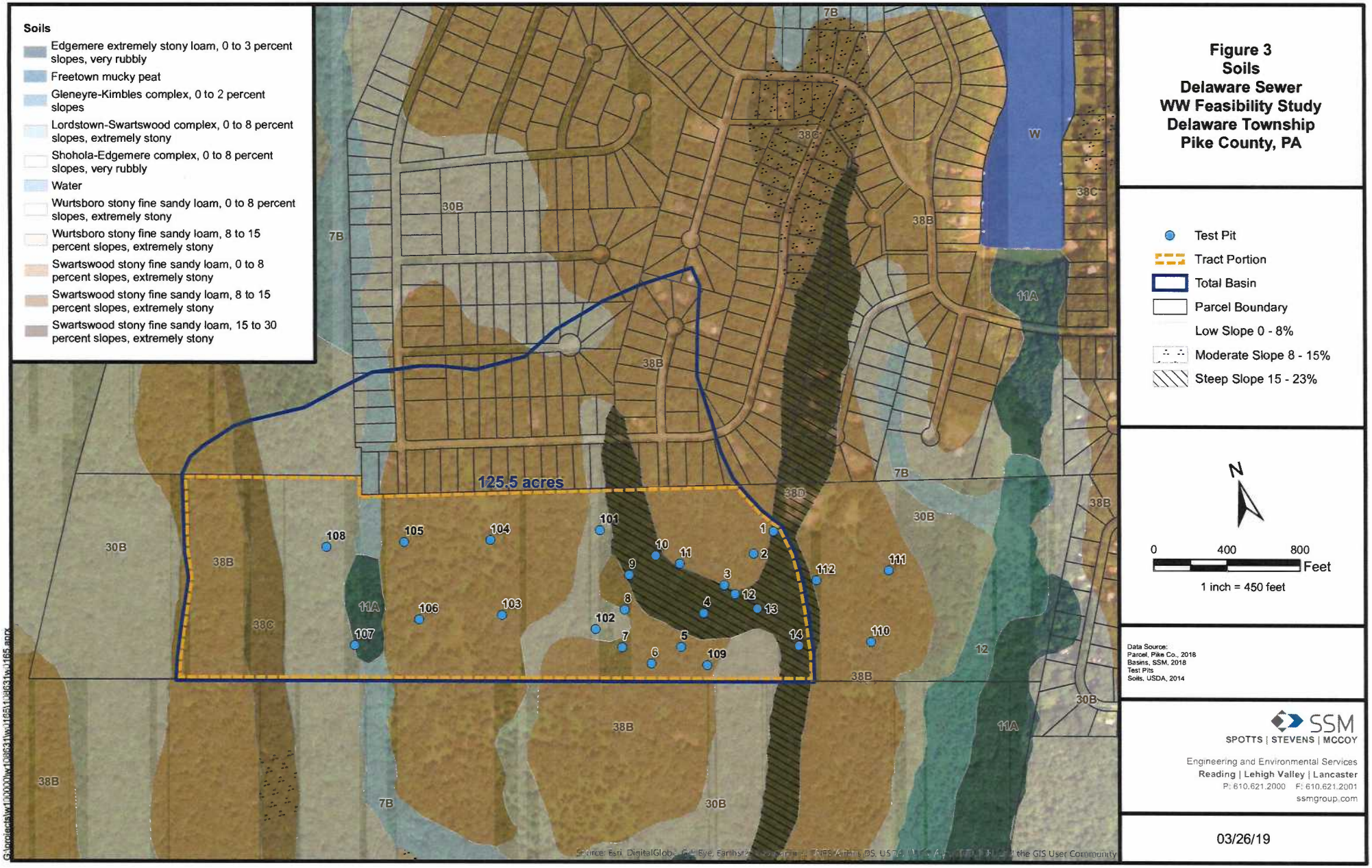

Figure 3
Soils
Delaware Sewer
WW Feasibility Study
Delaware Township
Pike County, PA

- Test Pit
- Tract Portion
- Total Basin
- Parcel Boundary
- Low Slope 0 - 8%
- Moderate Slope 8 - 15%
- Steep Slope 15 - 23%

N

0 400 800 Feet

1 inch = 450 feet

Data Source:
Parcel, Pike Co., 2018
Basins, SSM, 2018
Test Pits
Soils, USDA, 2014

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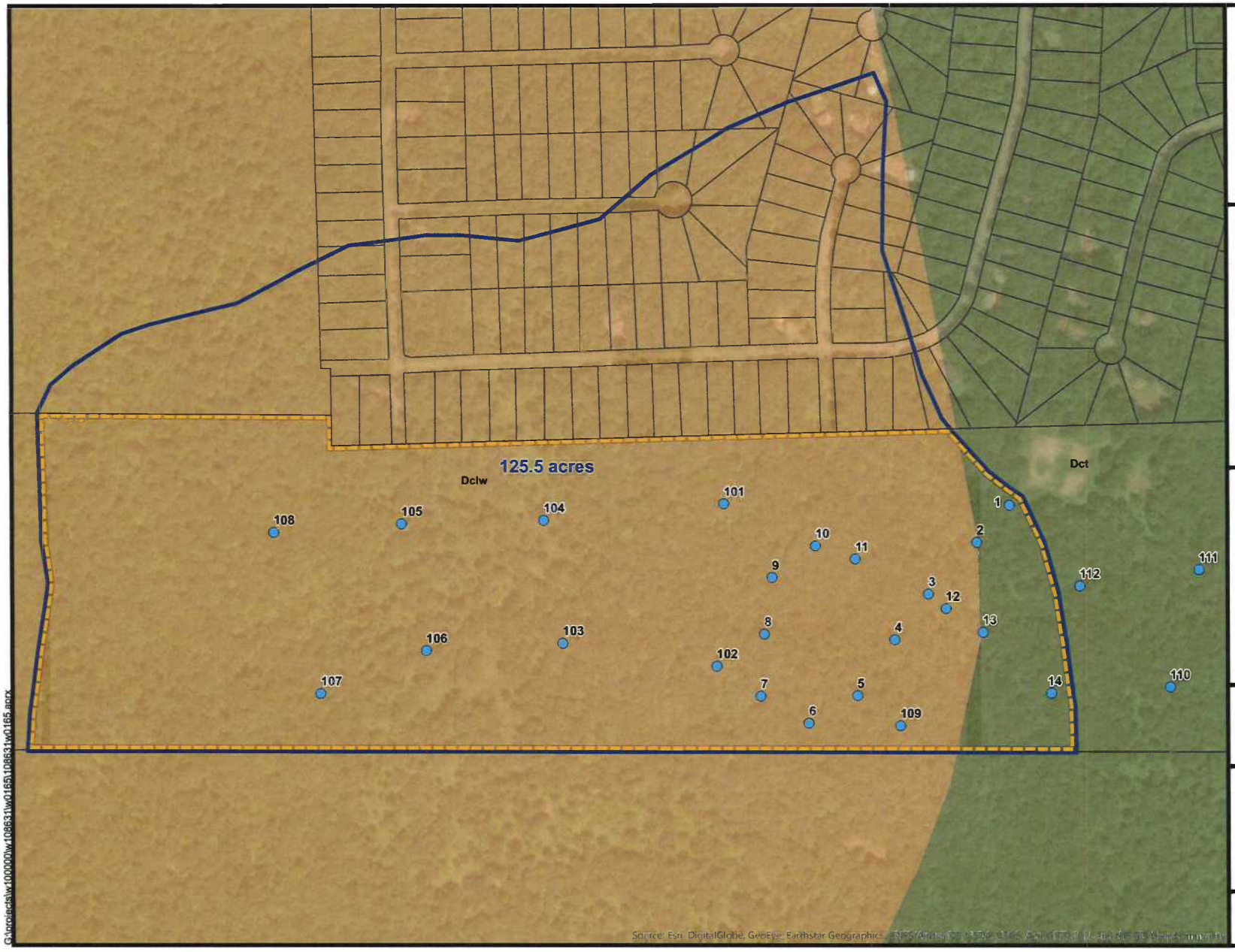

Figure 4
Geologic Formation
Delaware Sewer
WW Feasibility Study
Delaware Township
Pike County, PA

- Test Pit
- Tract Portion
- Total Basin
- Parcel Boundary

Geologic Formation

- Dclw - Long Run and Walcksville Members of Catskill Formation, undivided
- Dct - Towamensing Member of Catskill Formation

N

0 250 500 Feet

1 inch = 300 feet

Data Source:
Parcel, Pike Co., 2018
Basins, SSM, 2018
Test Pits
Geology, DCNR, 2001 (1:250,000)

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Engineering and Environmental Services
Reading | Lehigh Valley | Lancaster
P: 610.621.2000 F: 610.621.2001
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ssmgroup.com

READING
1047 North Park Road; PO Box 6307
Reading PA 19610-0307
P. 610.621.2000 | F. 610.621.2001

LEHIGH VALLEY
Roma Corporate Center
1605 North Cedar Crest Boulevard; Suite 106
Allentown PA 18104
P. 610.849.9700 | F. 610.621.2001

LANCASTER
701 Creekside Lane
Lititz PA 17543
P. 717.568.2678 | F. 610.621.2001

EXHIBIT 2 – Plan of Improvements

[see attached]

Appendix C. Plan for Improvements

Description of System

General

Delaware Sewer Company (DSC) is located in Delaware Township, Pike County, Pennsylvania. The system provides public sewer service to 39 existing homes in a portion of the Wild Acres development. PAWC serves public water to these 39 residents in this portion of the development as well as the entire Wild Acres Development. The other portions of the Wild Acres Development that are not served by Delaware Sewer Company have on-lot septic systems.

The Delaware Sewer Company certificate of franchise from 1978 describes the sewer service area as Sections 19 through 22 of the Wild Acres subdivision with a total number of lots of 557. Since the original subdivision of 557 lots, many lots have been combined and based upon the current tax parcel maps there are 372 lots within Sections 19 through 22. Attachment No. 1 depicts the proposed service territory.

The January 2010 Act 537 plan for Delaware Township describes the community sewer service for Sections 19 through 22 of the Wild Acres subdivision. The community sewer service is to be provided by the Delaware Sewer Company wastewater collection and treatment (Wild Acres WWTP) systems.

The Wild Acres WWTP was designed to serve residential dwelling lots within Sections 19 through 22 of the Wild Acres subdivision. The facility is owned by the Delaware Sewage Company and located off Child's Park Road. The WWTP's original intent was for the facility to discharge into Sand Spring Run, a tributary to Little Bushkill Creek. Following the issuance of the NPDES permit, the Pennsylvania Environmental Hearing Board revoked the permit. The hearing board ruled in favor of the local fishing club which was the complainant against Delaware Sewer to eliminate the stream discharge. Consequently, approximately thirty-nine residential dwellings were already connected to the system. An elevated sand mound disposal system was constructed to receive the treated effluent for disposal and the stream discharge was terminated.

Delaware Township has the responsibility for sewage planning and enforcement associated with the Act 537 Plan. The official Act 537 plan adopted by Delaware Township specifically mentions the Wild Acres Section 19 through 22 as a designated public sewer service area. The existing treatment and disposal system is inadequate to provide proper sewer service to the existing lots, therefore, a moratorium has been placed upon these sections of the Wild Acres development. Improvements or upgrades to the sewer system require regulatory approval from the Delaware Township and PaDEP. Delaware Township and PaDEP will require planning approval for a plan to address the immediate and long term needs in order to lift the moratorium.

Collection System

The collection system consists of a gravity system proximate to the treatment plant and a low pressure sewer collection system in the remaining areas. The collection system consists of approximately 22,000 ft. of low pressure sewer, 8,700 ft. of gravity pipe, 30 manholes, and one pump station. The majority of the customers are connected to the gravity portion of the system with 3 customers connected to the low pressure portion of the system adjacent to the gravity system.

Treatment Plant

The treatment system consists of two 15,000 gallon septic tanks followed by a non-functioning Rotating Biological Contactor (RBC) treatment process. The volume of the septic tanks is based on information from the owner and has not been verified. Effluent is pumped to a dosing tank which splits flow to the existing sand mounds. The pump station has two pumps with no local alarm and auto-dialer. Based on mapping, the sand mounds appear to be approximately 60,000 ft. square in total area.

System Deficiencies

Collection System

Based on the limited information provided by DSC, we do not anticipate to have a capacity issue within the existing collection system. The conveyance capacity of the collection system has not been evaluated.

Treatment Plant

The overall treatment facility was observed to be in poor condition. The two 15,000 gallon septic tanks appeared to be functioning and are of adequate size for the existing 39 homes. The RBC units were not rotating and internally the discs and shafts appeared to be broken and in disrepair. Its enclosure was showing signs of deterioration, the foundation appeared to be crumbling and the exterior insulation is wearing off the building. It appeared the housing for the air filters for the blowers were rusted shut, an indication that the air filters may have never been checked or replaced.

While the sand filter receives and passes the flow, the filter backwash system does not function. According to the wastewater operator, residual sludge has not been removed from the system. The disinfection and flow metering systems have been removed from service; therefore there is no historical record of flows that the treatment system has received. The effluent pump station appeared to be deteriorated to the point with large holes in the concrete structure with plywood covering.

The elevated sand mound system is not fenced, had little to no vegetation cover, and has been prone to soil erosion and large deep ruts caused by indiscriminant off-road vehicles. The sand mound distribution piping have been exposed and broken in several locations, to the point where the discharge from the pump station is not getting conveyed to the sand mound but rather ponding to the surface in several areas around the sand mounds.

Preliminary Investigations

PAWC's present understanding of the system, the compliance status of facilities and the capital improvements required to correct system deficiencies is based on system reports and operations testimony collected during the pre-acquisition investigations. While PAWC did receive all of the information requested from DSC that DSC had available to them, additional investigation post-acquisition is necessary in order to perform a complete evaluation to determine all reasonably prudent final corrective actions.

PAWC has knowledge of a total of one (1) regulatory permit issued to DSC that will be transferred as part of the acquisition. The permit consist of a Water Quality Management ("WQM") Permit (#5278404).

Plan to Correct System Deficiencies

Based on the studies and information available at this time, the treatment and subsurface disposal of the sewer system appears to be in such a state of disrepair that it has been deemed useless. A new subsurface disposal system should be constructed adjacent to the existing sand mounds. Once the new subsurface disposal system is constructed, the existing sand mounds can be abandoned in place. The existing septic tank appear to be functional and may be reused or refurbished, and additional septic tanks added as necessary. A new pump station will need to be installed to convey the effluent from the septic tanks to the sand mounds for disposal. The remaining portions of the existing treatment system can then be demolished. The existing sand mound is on a larger parcel of land, presently owned by Forest City Partnership. LLC, but PAWC has entered into a Land Transfer Agreement to acquire this parcel.

A phased approach is recommended to address the immediate deficiencies and the long term growth of the development. A phased approach is necessary due to the uncertainty of the growth rate and ultimate build-out of the development. The construction of a treatment facility sized for the ultimate build-out at the present time would cause severe operational problems with the treatment due to inadequate nutrient loading of the biological treatment process. From discussions with Delaware Township, we do not anticipate a sustainable growth of more than an average of 2 to 3 homes per year, resulting in a 20 year growth projections of an additional 40 to 60 homes. This approach will balance the capacity requirements of the projected customer growth with the operational needs of the treatment and disposal system.

Phase 1 – To address the immediate deficiencies and provide additional capacity to serve up to 80 homes. Phase 1 includes the demolition of the existing RBC units and the sand filter equipment that is not in use. The existing pump station must be replaced in its entirety as well as the force main and subsurface disposal system. The new subsurface disposal system would be constructed at an adjacent location to maintain some level of service. The site must be protected from the off road vehicle damage the existing mounds have incurred by fencing the entire site. The increased capacity would be provided by the installation of additional septic tanks and sand mounds for subsurface disposal.

During the first year of operation, PAWC plans to conduct soils testing and hydrogeological studies to determine the suitability of the site for sub-surface disposal. The site studies will include the proposed layout of a community on-lot system capable of providing service to Phase 1 or 80 homes (39 existing, 41 future growth). The studies will also project the suitability of the site for expansion beyond Phase 1 and improvements needed.

In addition to the activities described above, PAWC will prepare and submit Act 537 planning documents in the form of a planning module 3M form for the upgrade and expansion of the sewer system to accommodate Phase 1 of the project. Upon acquisition of DSC, PAWC will undertake limited remedial measures in coordination with the local Delaware Township Sewage Enforcement Officer (SEO) to try to correct some of the visual deficiencies.

During the second year of operation, PAWC will begin the final design/permitting stage of the project. Subject to more extensive investigation, construction and demolition plans will be developed for the improvements described above in Phase 1 of the project. A permit package will be submitted to PaDEP for review and approval.

During the third year of operation, PAWC should enter the implementation stage. The implementation stage will begin upon PAWC's receipt of all necessary permits in order to proceed with construction. PAWC anticipates the implementation stage to last between 12 to 18 months after all required permits are received.

Plan to Provide Service to Full Build-Out in DSC's Certificated Service Territory

DSC's certificated service territory consists of sections 19 through 22 of the Wild Acres subdivision. Since the original subdivision of 557 lots, many lots have been combined and based upon the current tax parcel maps there are 372 lots within Sections 19 through 22. In addition, the full build out for the subdivision is further reduced by the number of utility lots, lots designated as open space and unbuildable lots, the ultimate build out is estimated to be 306 lots.

Phase 2 – The Phase 1 expansion should provide adequate capacity for a 15 to 20 year period. PAWC will continue to monitor growth and update the growth estimates annually. When the projected growth rate exceeds the permitted capacity (80 homes) within a five year timeframe, PAWC will begin the planning, design and permitting stages for Phase 2. The exact number of new homes that Phase 2 would be capable of serving is uncertain and dependent upon details of the soils, groundwater, and overall permitting process, which are also uncertain. However for the purpose of this plan, we are estimating using general guidelines based upon the land available for disposal. Phase 2 would provide additional capacity to serve up to 180 homes. Phase 2 includes the installation of additional septic tanks and sand mounds for sub surface disposal. The pump station capacity would be increased to meet the higher flow rates and additional force main installed to the sand mounds. The site must be protected from the off road vehicle damage the existing mounds have incurred by fencing the entire site. The 180 homes is the estimated limit (pending permitting) that a traditional septic tank and sand mound system would be allowed given our knowledge of the existing soil characteristics and the

amount of acceptable land available. Further increases would require a biological treatment process.

Phase 3 – The Phase 2 expansion should provide adequate capacity well into the future, however, the land to serve the ultimate subdivision sewage flows must be considered. The acquisition of the land presently owned by Forest City Partnership, LLC is essential to achieving public sewer service to the maximum number of homes. The ultimate buildout of the subdivision is estimated to be 306 homes. PAWC will continue to monitor growth and update the growth estimates annually. When the projected growth rate exceeds the permitted capacity (180 homes) within a five year timeframe, PAWC will begin the planning, design and permitting stages for Phase 3. The exact number of new homes that Phase 3 would be capable of serving is uncertain and dependent upon details of the soil characteristics, groundwater, and overall permitting process, which are also uncertain. However for the purpose of this plan we are estimating that Phase 3 improvements would generally allow for increased capacity and may be able to get up to the ultimate buildout. Phase 3 would provide additional capacity to serve up to 306 homes. Phase 3 includes the installation of additional sand mounds to continue the sub surface disposal but also require the installation of a biological treatment process. The pump station capacity would be increased to meet the higher flow rates and additional force main installed to the sand mounds. The site must be protected from the off road vehicle damage the existing mounds have incurred by fencing the entire site.

Limitations on Liability and Enforcement Actions

Pursuant to Section 529, upon approval by the Commission of PAWC's Plan for Improvements and PAWC's subsequent acquisition of DSC, PAWC will be entitled to certain statutory protections against liability and enforcement actions. 66 Pa. C.S. § 529(k), (l). Specifically, PAWC will not be liable for damages beyond an aggregate amount of $50,000, including a maximum amount of $5,000 per incident, and shall not be subject to any enforcement actions by state or local agencies which had notice of the plan, provided that the basis for damages or an enforcement action is proximately related to identified statutory or regulatory violations by DSC. The Joint Petition for Settlement includes provisions intended to ensure that PAWC receives the protection of these provisions.

That being said, certain limitations apply to the limitations on liability/enforcement action provisions. One such limitation is that the cause/basis for damages or an enforcement action must be "proximately related to identified violations of applicable statutes or regulations" by DSC. 66 Pa. C.S. § 529(k) and (l)(3). DSC has disclosed violations of law on Schedule 4.1(p) of the Asset Purchase Agreement, and has disclosed environmental conditions on Schedule 4.1(r)(iv) of the Asset Purchase Agreement. Additional violations may be revealed in the course of PAWC's continuing due diligence. PAWC will work diligently to implement the improvements described in this Plan for Improvements to remedy existing physical conditions that may cause future violations. Nevertheless, PAWC should not be unfairly penalized for future violations due to system conditions that it did not create but which will be corrected according to the present plan.

Estimated Cost for Capital Improvements

At this time, the majority of the estimated capital expenditure is for the replacement of the treatment and disposal system. Additional costs associated with the gravity collection system and low pressure system are to be determined during the first year of operation. .

The Phase 1 improvements are currently estimated at approximately $1.0 million in capital expenditure. The breakdown of the estimated cost including overheads and contingencies, engineering, and interest during construction (AFUDC) is as follows:

Delaware Sewer Company Cost Estimate of Improvements
Improvements to Provide service up to 80 homes

1	Rehab existing septic tanks	$	21,650.00
2	Demolition RBC structure	$	23,000.00
3	Demolition filter building structure	$	27,500.00
4	Demolition old pump station	$	7,000.00
5	Install new pump station	$	112,500.00
6	Install New Force Main	$	120,000.00
7	Demolition existing sand mounds	$	50,000.00
8	Construct new sand mounds (6-5,000SF beds)	$	308,900.00
9	Distribution boxes	$	15,000.00
10	Site Fencing	$	65,900.00
	SUBTOTAL	**$**	**751,450.00**
11	Permitting, Engineering and Design	$	90,000.00
12	AFUDC and Overheads (7.5%)	$	75,000.00
13	Contingency (10%)	$	56,000.00
	TOTAL	**$**	**972,450.00**

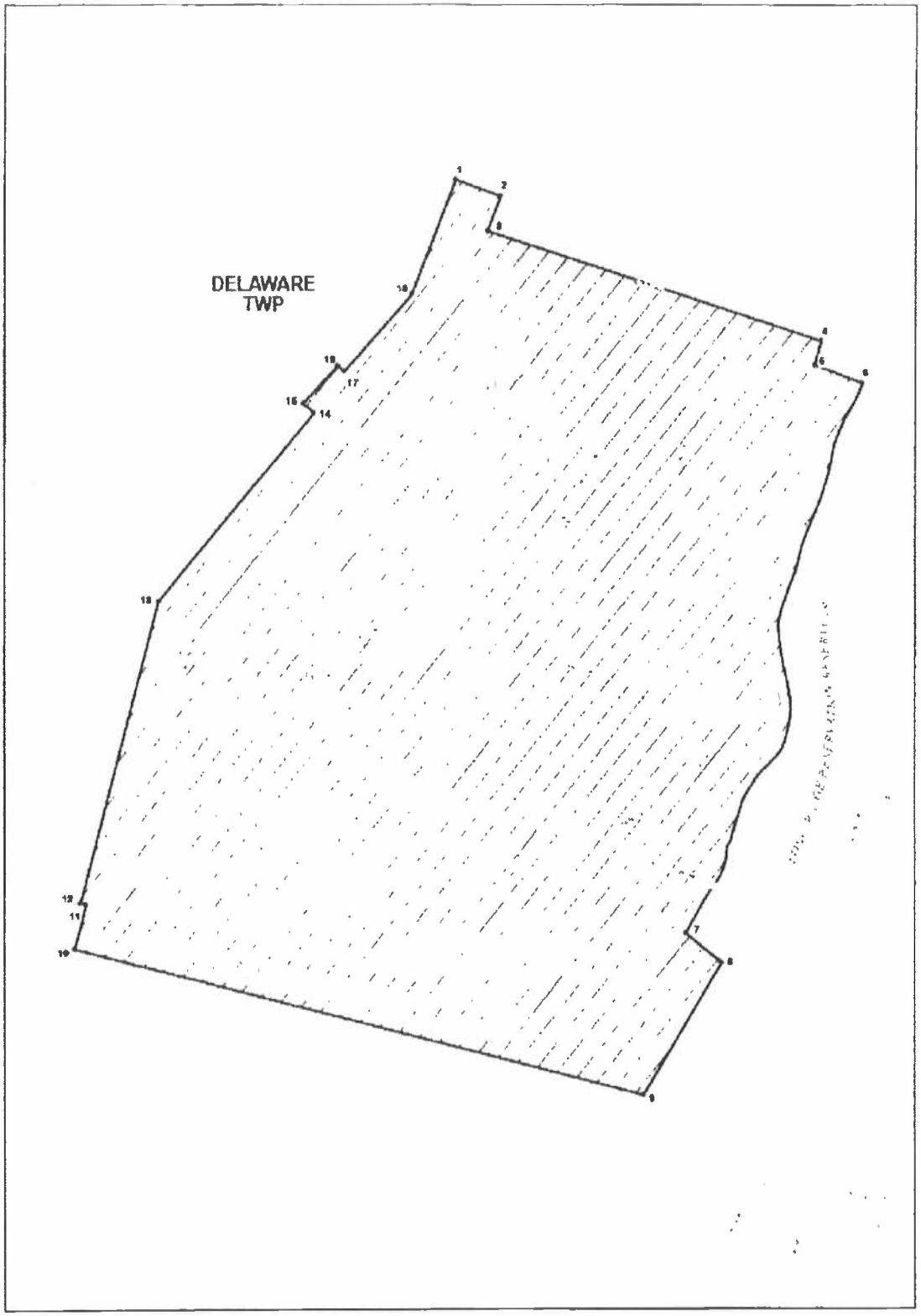
Operations

PAWC personnel will be utilized to staff this operation with the support from our neighboring Lehman Pike District. These personnel will assist in the identification of system deficiencies and address customer service issues.

Schedule

The presently estimated timeline for improvements is shown on Attachment No. 2. The proposed schedule includes time for testing, design, permitting and construction.

Attachment No. 1



Starting point at northern most parcel corner of service territory. Note: Point 6 to point 7 are bounded by the shore of Long Ridge Reservation Reservoir.

Sequence	From	To	Bearing	Distance (ft)
1	1	2	S70°47'02"E	270.41
2	2	3	S20°34'11"W	208.19
3	3	4	S71°58'45"E	1985.19
4	4	5	S16°23'12"W	138.24
5	5	6	S69°53'02"E	293.93
6	6	7	S18°06'23"W	3220.92
7	7	8	S51°00'05"E	263.78
8	8	9	S30°57'22"W	857.34
9	9	10	N75°43'15"W	3314.40
10	10	11	N14°21'15"E	254.12
11	11	12	N74°40'04"W	32.14
12	12	13	N14°39'23"E	1739.00
13	13	14	N40°07'00"E	1365.73
14	14	15	N51°19'37"W	81.01
15	15	16	N42°40'50"E	285.07
16	16	17	S50°09'24"E	48.19
17	17	18	N41°34'00"E	572.73
18	18	1	N20°51'46"E	682.33

ESTIMATED TIMELINE FOR IMPROVEMENTS

		Year 1				Year 2				Year 3				Year 4			
ID	Task Name	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	Soils Testing	■	■														
2	Hydrogeological Study	■	■														
3	Preliminary Design Development			■													
4	Planning Module 3M			■													
5	Final Base Plan				■	■											
6	Permitting						■	■	■								
7	Construct Improvements Phase 1									■	■	■	■	■	■		

Attachment No. 2